AQUIFER CHARACTERIZATION REPORT

TASK 4 OF THE AQUIFER CHARACTERIZATION PLAN
MITIGATION ORDER ON CONSENT DOCKET NO. P-121-07
COCHISE COUNTY, ARIZONA

Volume I
(Text, Tables, and Figures)

Prepared for:

FREEPORT-MCMORAN CORPORATION, COPPER QUEEN BRANCH
36 West Highway 92
Bisbee, Arizona 85603

Prepared by:

HYDRO GEO CHEM, INC.
51 West Wetmore Road
Tucson, Arizona 85705
(520) 293-1500

April 29, 2009

HYDRO GEO CHEM, INC.
Environmental Science & Technology

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Volume II
(Appendices A through N)

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36 West Highway 92
Bisbee, Arizona 85603

Prepared by:

HYDRO GEO CHEM, INC.
51 West Wetmore Road
Tucson, Arizona 85705
(520) 293-1500

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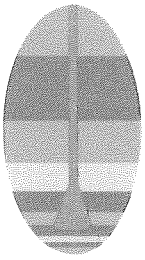

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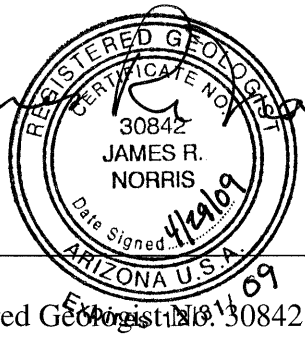
Approved by:



James R. Norris
Arizona Registered Geologist No. 30842

April 29, 2009

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LIST OF ABBREVIATIONS AND ACRONYMS

ac-ft/yr	acre-feet per year
ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
ARCH	air rotary casing hammer
AWC	Arizona Water Company
cm/s	centimeters per second
COB	City of Bisbee
CTSA	Concentrator Tailing Storage Area
CQB	Freeport-McMoRan Corporation, Copper Queen Branch
ELMA	Errol L. Montgomery and Associates
EPA	United States Environmental Protection Agency
ft amsl	feet above mean sea level
ft bls	feet below land surface
ft/day	feet per day
ft^2/day	square-feet per day
gpm	gallons per minute
hrs	hours
HGC	Hydro Geo Chem, Inc.
Kh	horizontal hydraulic conductivity
Kv	vertical hydraulic conductivity
MGD	million gallons per day
mg/L	milligrams per liter
NSD	Naco Sanitation District
NTS	Not to Scale
NWC	Naco Water Company
PD	Phelps Dodge Corporation
PWS	Public Water System
Sac LOGS1	Sacramento Low Ore Grade Storage No. 1
Sac LOGS2	Sacramento Low Ore Grade Storage No. 2
SAIC	Science Applications International Corporation
SET	Savci Environmental Technologies
SGC	Southwest Ground-water Consultants
TDS	total dissolved solids
TVI	Turquoise Valley, Inc.
UTM	Universal Transverse Mercator
Work Plan	Revision 1 Work Plan to Characterize and Mitigate Sulfate in Drinking Water Supplies in the Vicinity of the Concentrator Tailing Storage Area (Work Plan)
WIA	well inventory area
WMC	Water Management Consultants
WRD	ADWR Well Registry Database

1. INTRODUCTION

1.1 Purpose and Scope of the Aquifer Characterization Report

The purpose of this report is to present the results of work to characterize a groundwater sulfate plume in the vicinity of the Freeport-McMoRan Corporation, Copper Queen Branch[1] (CQB) Concentrator Tailing Storage Area (CTSA) south of Bisbee, Arizona (Figure 1). The work reported here was conducted in response to Mitigation Order on Consent Docket No. P-121-07 between CQB and Arizona Department of Environmental Quality (ADEQ) (the Mitigation Order). The Mitigation Order requires CQB to characterize the extent of the groundwater sulfate plume originating from the CTSA and to develop a Mitigation Plan for impacted drinking water supplies attributable to the CTSA. The Mitigation Order sets an action level for drinking water supplies of 250 milligrams per liter (mg/L) sulfate at the point of use. The 250 mg/L level for sulfate was set to address the taste of drinking water. For the purpose of the Mitigation Order work, the sulfate plume is considered to consist of groundwater with sulfate in excess of 250 mg/L attributable to the CTSA (Figure 2). The investigations reported here were conducted to describe the nature and extent of the sulfate plume and to provide information for a Feasibility Study to evaluate mitigation action alternatives.

This Aquifer Characterization Report is a requirement of Section III.C of the Mitigation Order. The scope of the Aquifer Characterization Report covers the hydrologic investigations conducted from February 2008 through February 2009 in accordance with the Aquifer

[1] Freeport-McMoRan Copper Queen Branch operated as Phelps Dodge Copper Queen Branch prior to April 2008.

Characterization Plan in *Revision 1 Work Plan to Characterize and Mitigate Sulfate in Drinking Water Supplies in the Vicinity of the Concentrator Tailing Storage Area* (Work Plan) (Hydro Geo Chem, Inc. (HGC), 2008a). HGC prepared the Work Plan, conducted Aquifer Characterization Plan investigations, and prepared this report for CQB.

Section III.C of the Mitigation Order requires the Aquifer Characterization Report to address the following:

- Current sulfate plume delineation
- Sulfate plume fate and transport
- Identification of registered drinking water wells within a one-mile radius of the sulfate plume's down gradient and cross gradient edge

This report provides the results of the following three aquifer characterization tasks conducted to address the Mitigation Order requirements and develop data for the Feasibility Study:

- Task 1 – Well Inventory – The well inventory identified and sampled drinking water supply wells in the sulfate plume and within one mile of the plume
- Task 2 – Plume Characterization – Plume characterization work consisted of compiling existing information about environmental conditions in the plume area and field activities to further define the hydrogeology and groundwater quality in the vicinity of the plume. The primary field activities consisted of water quality monitoring; drilling, installation, and testing of new monitoring wells; and hydraulic testing at existing wells. Plume characterization was divided into the following subtasks:
    - Task 2.1 Data Compilation and Evaluation
    - Task 2.2 Groundwater Monitoring
    - Task 2.3 Well Installation and Testing
    - Task 2.4 Additional Hydraulic Testing
- Task 3 – Sulfate Fate and Transport Evaluation – The sulfate fate and transport evaluation described and quantified the factors controlling the transport of sulfate in

groundwater and migration of the sulfate plume. A numerical model of groundwater flow and sulfate transport was developed for use as a tool with which the Feasibility Study can assess potential mitigation actions

The Work Plan detailed the scope, methods, and reporting schedule for the aquifer characterization tasks. This report was prepared for Task 4 of the Work Plan to describe the methods and results of the aquifer characterization tasks. The results of the aquifer characterization tasks are used to describe the hydrogeology of the sulfate plume, the nature and extent of sulfate in groundwater, and the fate and transport of the sulfate plume.

1.2 Organization of Report

The remainder of this report is organized as follows:

- Section 2 – Site Background – Discusses the site history and hydrogeologic setting
- Section 3 – Aquifer Characterization Methods and Results – Describes the methods and presents the results of the well inventory (Task 1) and plume characterization (Task 2) work
- Section 4 – Geology and Hydrology of the Sulfate Plume Area – Describes the geology and groundwater hydrology of the sulfate plume area based on historical data and information collected for plume characterization
- Section 5 – Nature and Extent of Sulfate – Discusses the physical extent of the sulfate plume, general water quality characteristics, and fate and transport considerations
- Section 6 – Conceptual Site Model – Discusses the source, migration pathway, and potential receptors of the sulfate plume
- Section 7 – Numerical Model of Groundwater Flow and Sulfate Transport – Presents the results of groundwater flow and sulfate transport modeling conducted for Task 3 to evaluate sulfate fate and transport and develop a model for simulating plume control strategies
- Section 8 – Conclusion – Presents a summary and describes future deliverables for the Mitigation Order

- Section 9 – References – Lists references for the Aquifer Characterization Report

This report also includes referenced tables, figures, plates and appendices as listed in the Table of Contents. For completeness, the following reports that were previously prepared and submitted to ADEQ for the Mitigation Order are included in Portable Document Format on the compact disc in Appendix A:

- HGC. 2008a. Revision 1 Work Plan to Characterize and Mitigate Sulfate with Respect to Drinking Water Supplies in the Vicinity of the Concentrator Tailing Storage Area, Cochise County, Arizona. Mitigation Order on Consent Docket No. P-121-07. July 3, 2008

- HGC. 2008b. Well Inventory Report, Task 1 of Aquifer Characterization Plan for Mitigation Order on Consent No. P-121-07, Cochise County, Arizona. July 28, 2008

- HGC. 2008c. First and Second Quarters 2008 Groundwater Monitoring Report, Task 2.2 of Aquifer Characterization Plan, Mitigation Order on Consent Docket No. P-121-07, Cochise County, Arizona. July 30, 2008

- HGC. 2008e. Third Quarter 2008 Groundwater Monitoring Report, Tasks 1, 2.2, and 2.3 of Aquifer Characterization Plan, Mitigation Order on Consent Docket No. P-121-07, Cochise County, Arizona. October 27, 2008

- HGC. 2009. Fourth Quarter 2008 Groundwater Monitoring Report, Tasks 1, 2.2, and 2.3 of Aquifer Characterization Plan, Mitigation Order on Consent Docket No. P-121-07, Cochise County, Arizona. January 23, 2009

Previously submitted reports are also available at the CQB Mitigation Order document repository at the Copper Queen Library in Bisbee or at the CQB document library website at http://www.fcx.com/bisbee/bisbee.htm.

2. SITE BACKGROUND

This section describes the CTSA, the regulatory history of the sulfate plume, and provides an introduction to the hydrogeology of the CTSA as a basis for later sections describing the methods, results, and interpretation of the aquifer characterization work.

2.1 Concentrator Tailing Storage Area

The CTSA is located approximately 3.5 miles southeast of Bisbee, approximately four miles northeast of Naco, and approximately one mile south of Warren (Figure 1). As defined by the Mitigation Order, the CTSA consists of two inactive tailing impoundments (the North Tailing Impoundment and the South Tailing Impoundment), a former evaporation pond, and a stormwater impoundment known as Horseshoe Pond (Figure 2). The North and South Tailing Impoundments and former evaporation pond cover an area of approximately 1,000 acres in Sections 27, 33, and 34, Range 24 East, Township 23 South, and Sections 3 and 4 in Range 24 East, Township 24 South.

The CTSA facilities and other facilities described in Section 2.1.1 were used variably from 1905 through 1987 for the storage and evaporation of excess mine water, the placement of tailing and mine materials, and containment of stormwater. The CTSA facilities are currently inactive and receive no process solids or liquids.

The North and South Tailing Impoundments are uncapped and unlined except for the north slope of the North Tailing Impoundment and the south slope of the South Tailing

Impoundment. Capping and closure plans for the North and South Tailings Impoundments are in development and will be submitted to ADEQ. The upper surface of the South Tailing Impoundment collects incident rainfall and stormwater runoff in its present configuration. The pond on the South Tailing Impoundment is currently being dewatered in anticipation of reclamation. Dewatering is needed to dry the surface to a point at which it can support the heavy equipment needed for reclamation activities.

The former evaporation pond had a surface footprint of approximately 350 acres. Delivery of excess mine water to the former evaporation pond began in 1908 and ceased in 1987. Surficial pond sediments were excavated and placed on the south slope of the South Tailing Impoundment between 1989 and 1990.

Horseshoe Pond is an unlined stormwater impoundment covering an area of approximately six acres that was constructed within the footprint of the former evaporation pond in 1990. Horseshoe Pond collects incident rainfall and stormwater runoff from the North and South Tailing Impoundments, and areas north of the CTSA (Phelps Dodge Corporation [PD], 2004). Stormwater that collects in Horseshoe Pond is currently pumped to the Lavender Pit for evaporation to dry the pond area in anticipation of reclamation.

2.1.1 Historical Land Use of the CTSA and Vicinity

Mining activities in the Bisbee area began in 1880. Historical facilities in the vicinity of the CTSA include the former Warren Ranch irrigation area that used excess mine water south

and southwest of the CTSA, the former Crawford Mill, the former Crawford Mill tailing pile, the former Sacramento concentrator, and the former low-grade ore stockpile areas (Sacramento Low Ore Grade Storage No. 1 [Sac LOGS1] and Sacramento Low Ore Grade Storage No. 2 [Sac LOGS2]) (PD, 1990) (Figure 2).

Mining and smelting of ore from the Sacramento Pit began in 1919 (Stegan, et al, 2005) and operation of the Sacramento Mill began in 1923. Low ore grade material from the Sacramento Pit was stockpiled at Sac LOGS1 and Sac LOGS2 from 1923 to 1932 (PD, 2004) and tailing from the mill was piped as slurry to the North Tailing Impoundment until 1932 (PD, 1990). Crawford Mill tailing produced from 1945 through 1954 was sent to the 12.6-acre Crawford Mill Tailing Impoundment (PD, 2004). Ore from the Lavender Pit was milled at the Lavender Mill from 1954 to 1974. The Lavender Mill tailing was sent to the North and South Tailing Impoundments. The former Warren Ranch irrigation area is located in Sections 3, 4, 8, 9, and 10, Range 24 East, Township 24 South. Delivery of excess mine water to the irrigation area began in 1905 and ceased in 1985. In 1991 and 1992, the relatively small Crawford Mill Tailing Impoundment, the Sac LOGS1, and the Sac LOGS2 were excavated and placed on the North Tailing Impoundment (PD, 2004).

The historical land uses in the CTSA and vicinity that involved processing and storing ore material and tailing could have released sulfate-bearing seepage to the subsurface. However, as will be discussed in this report, previous investigations concluded that the primary source of the sulfate plume from the CTSA is due to the infiltration of excess mine water stored in the former evaporation pond and, to a lesser degree, excess mine water used for crops at the Warren

Ranch irrigation area (PD, 1990; SET, 1998a). Former mining facilities in the CTSA and vicinity are not considered to be current sources of sulfate or to constitute significant potential future sources of sulfate because they have been inactive for many years and have been managed to minimize potential infiltration.

Water was pumped from various shafts in the Warren Mining District to dewater underground workings throughout the history of underground mining (PD, 1990 and 2004; WMC, 2006). The volume of groundwater pumped from underground workings from 1906 through 1987 is approximately 168.6 billion gallons (WMC, 2006). Water from underground workings was used in mining and excess mine water was stored in the former evaporation pond or used at the Warren Ranch irrigation area. Southwest Ground-water Consultants, Inc. (2004) provides additional description of historical underground pumping.

2.1.2 Historical Use of Excess Mine Water

The use of excess mine water for irrigation of the former Warren Ranch irrigation area started in 1905 and was followed by discharge of additional excess mine water to the former evaporation pond commencing in 1908 (PD, 2004). Mine water was delivered to the former Warren Ranch irrigation area until 1985 and to the former evaporation pond until 1987. Research conducted by CQB for this investigation confirmed that discharges to the Warren Ranch irrigation area stopped in 1985 as reported by PD (1990) rather than in 1987 as reported by Savci Environmental Technologies (SET) (1998c) and PD (2004).

Mine water was reported by PD (2004) to have been pumped to the former Warren Ranch irrigation area at an average rate of approximately 2,350 acre-feet per year (ac-ft/yr), or 1,457 gallons per minute (gpm). The former evaporation pond received excess water from underground mine dewatering at an average rate of approximately 4,430 ac-ft/yr, or 2,746 gpm (PD, 2004). Based on descriptions of mine water use by PD (1990 and 2004), detailed records of the production and placement of mine water were not kept and the estimates above are likely the best available approximations. Section 3.2.7.2 discusses the former Warren Ranch irrigation area and former evaporation pond further in the context of artificial recharge.

There are limited water quality data for the mine water sent to the Warren Ranch irrigation area or the former evaporation pond. PD (1990) provided a general characterization of the mine water pumped between 1954 and 1974 as consisting of 47 percent clean water, 45 percent hard water, and 8 percent mineralized water on a flow weighted basis. The pHs of clean, hard, and mineralized waters were reported to be 7.5, 6.6, and 2.5, respectively. With respect to the mineral content of the mine waters, the hardness of the clean and hard waters was reported as 840 parts per million (ppm) and 3,100 ppm, respectively.

SET (1998c) and Water Management Consultants (WMC) (2006) report that a 1982 PD letter identifies a similar three-part classification of mine water. The former evaporation pond reportedly received mineralized water while the Warren Ranch irrigation area received clean and hard water SET (1998c). WMC (2006) indicates that at least some mineralized water was reused in mining processes; that hard water, with high total dissolved solids (TDS) and a pH of

approximately 5.3, was sent to the former evaporation pond and the Warren Ranch irrigation area; and that the clean water was used at the mine.

There are few water quality analyses of the underground mine water. Water quality data for samples from the Junction Shaft in 1988 and 1990 indicate that sulfate concentrations ranged between approximately 4,000 mg/L and 6,000 mg/L (Southwest Ground-water Consultants [SGC], 2004; WMC, 2006). Although these analyses post-date operation of the Warren Ranch irrigation area and the former evaporation pond, the analyses provide an example of the sulfate concentrations that could potentially have been in water pumped from some underground workings.

Estimation of the sulfate concentration in water delivered to Warren Ranch and the former evaporation pond is difficult based on the foregoing data. Presumably, the mineralized and hard waters would have been elevated in sulfate. Further, it is uncertain how or if the water quality of mine water changed over the history of its application because the source of underground pumpage changed over time as different mineral deposits were mined and accessed by different shafts (SGC, 2004). Section 7.1.7 discusses further the potential sulfate concentrations in the recharge from the Warren Ranch irrigation area and former evaporation pond.

2.2 Regulatory History

In 1987, groundwater south of the CTSA was reported to contain elevated sulfate (Littin, 1987). In 1988 and 1989, CQB installed a series of monitoring wells in the CTSA and defined a zone of elevated sulfate concentrations extending southwesterly and southerly from the former evaporation pond toward Naco and Bisbee Junction (PD, 1990). Between 1990 and 2007, the extent and characteristics of the sulfate plume were studied by various CQB consultants as a part of Aquifer Protection Permit investigations for the CTSA (e.g., Canonie Environmental, 1990; Steffan, Robertson and Kirsten [SRK], 1997; SET 1998a, 1998b, and 1998c; and PD 1990 and 2004).

In 2007, ADEQ determined that a drinking water source was, or was about to be, rendered unusable without treatment because sulfate concentrations approaching and exceeding 250 mg/L were found in drinking water supply wells downgradient of the CTSA (Mitigation Order Section II.A.5). For that reason, CQB and ADEQ entered into the Mitigation Order on November 14, 2007 to address the sulfate in groundwater attributable to the CTSA. The Mitigation Order requires CQB to characterize the extent of sulfate in groundwater and to develop a Mitigation Plan for existing drinking water supplies impacted due to sulfate from the CTSA. A maximum average sulfate concentration of 250 mg/L at the point of use for drinking water supplies is stipulated in the Mitigation Order. The aquifer containing the sulfate plume is designated a Sole Source Aquifer by the United States Environmental Protection Agency (EPA) (EPA, 2001).

The Mitigation Order provides a structure for conducting additional environmental investigations and evaluating potential mitigation alternatives for sulfate from the CTSA. Sulfate is a non-hazardous constituent and the applicable legal criteria to address the plume are set forth in the Mitigation Order and Arizona Revised Statutes § 49-286.

In addition to investigation of the sulfate plume, the Mitigation Order also requires:

- Formation of a Community Advisory Group, requiring a minimum of eight people, which will meet four times yearly
- Creation of a local information repository for the dissemination of information about the Mitigation Order
- Submittal of quarterly status reports to ADEQ

The Community Advisory Group initially met in January 2008 and the group has met quarterly since then in conformance with the Mitigation Order. CQB established and maintains an information repository at the Copper Queen Library in Bisbee. The information repository contains correspondence and reports associated with the Mitigation Order. CQB also maintains an internet site with an electronic document repository of project correspondence and reports that can be downloaded from http://www.fcx.com/bisbee/bisbee.htm. CQB has submitted quarterly reports to ADEQ since February 2008 as required by the Mitigation Order. The status reports are available at the Copper Queen Library and the document repository on the internet site.

2.3 Hydrogeologic Setting

This section provides an overview of the hydrogeologic setting in the vicinity of the CTSA. The purpose of this discussion is to provide background on the general hydrogeology of

the area. A detailed discussion of the hydrogeology of the sulfate plume based on the findings of the aquifer characterization tasks is contained in Sections 4 and 5.

The CTSA is located in the northeastern portion of the Bisbee-Naco physiographic basin south of the Mule Mountains (Figures 1 and 2). The Mule Mountains and the Cerro La Muela in Sonora, Mexico form the northern and eastern margins of the basin. The Sierra San Jose in Sonora, Mexico forms the southern boundary of the physiographic basin, approximately one-half of which lies in Mexico. The mountains surrounding the basin are composed of bedrock materials, and the basin area consists of clastic sediment underlain by bedrock. Surface runoff from the Bisbee-Naco watershed drains into Greenbush Draw, which flows west and then northwest into the Upper San Pedro River (Figure 1).

Geologic data have been drawn from a number of sources including U.S. Geologic Survey publications, Arizona Geological Society publications, reports on environmental investigations, and a review of lithologic logs for area wells. The geology of the Mule Mountains and Bisbee-Naco basin has been mapped and described by Hayes (1970) and Hayes and Landis (1964). Stegan, et al. (2005) describe the geology and mineralization of the Bisbee-Warren Mining District, and reference original detailed geologic studies of the mining district.

Mining in the Bisbee area is concentrated in the Mule Mountains, which are composed of Precambrian metamorphic rocks, Paleozoic and Cretaceous sedimentary formations, and Jurassic and Tertiary intrusive rocks. Mining activities focused primarily on the copper, lead, zinc, gold, and silver deposits occurring in the Paleozoic sedimentary units and Jurassic intrusive rocks.

The geologic units present in the Bisbee-Naco area and surrounding mountains can be divided into three generalized units: Recent alluvium, Quaternary and Tertiary basin fill deposits, and the bedrock complex. Recent alluvium consists of unconsolidated alluvial material. Basin fill consists of poorly to moderately lithified clastic material (Littin, 1987). The bedrock complex comprises older indurated units including sedimentary rocks of the Cretaceous Bisbee Group, Jurassic to Tertiary igneous rocks, Paleozoic sedimentary formations, and Precambrian metamorphic rocks. Figure 3 is a generalized geologic map of the area based on mapping by Hayes and Landis (1964). Table 1 is a generalized geologic column for the Bisbee-Naco area.

2.3.1 Recent Alluvium

Recent alluvium includes stream channel sediments, pediment and terrace gravel, sheet wash deposits and alluvial fans (Hayes and Landis, 1964). Recent alluvium occurs primarily along Greenbush Draw (Figure 3) and is not a significant aquifer because it typically is unsaturated.

2.3.2 Basin Fill

The Tertiary to Quaternary basin fill deposits are primarily poorly to moderately lithified sand and gravel lying unconformably on Cretaceous or older sedimentary bedrock. The basin fill consists of interbedded boulder to pebble conglomerate, gravel, sand, silt and clay (Littin, 1987).

Caliche cementation is commonly present within the upper 40 to 130 feet of the basin fill penetrated by monitoring wells.

In the vicinity of the sulfate plume, the basin fill ranges in thickness from zero at its contact with surface outcrops of bedrock to more than 600 feet thick near Naco. Basin fill thickness data are not available for the southern portion of the Bisbee-Naco physiographic basin which lies in Sonora, Mexico. The basin fill deposits south of the international border appear to form alluvial fans that slope north and east from the base of the Sierra San Jose toward Greenbush Draw (Figure 1).

2.3.3 Bedrock Complex

For the purposes of this report, bedrock refers to lithified rock units regardless of whether or not they are water-bearing. Bedrock in the vicinity of CTSA consists of the lower Cretaceous Bisbee Group formations. Paleozoic sedimentary rocks and Precambrian Pinal Schist have been intercepted beneath basin fill only in monitoring wells north of the CTSA (PD, 1990 and WMC, 2006).

2.3.3.1 Cretaceous Sedimentary Rocks

The Bisbee Group consists of four sedimentary formations, which are, in descending order, Cintura Formation, Mural Limestone, Morita Formation, and Glance Conglomerate. These formations have gradational contacts and are conformable with one another where they are

exposed in the Mule Mountains north and east of the CTSA (Hayes, 1970). The Bisbee Group formations are the principal bedrock units underlying basin fill in the region of the CTSA.

The Cintura Formation is comprised of grayish red siltstone and mudstone, feldspathic sandstone, and minor amounts of green-gray calcareous claystone, with a few thin beds of fossiliferous limestone in its basal 100 feet. Hayes (1970) notes that the lithology of the Cintura Formation is so similar to that of the Morita Formation that distinguishing between the two formations would be difficult except for their relative stratigraphic positions with respect to the intervening Mural Limestone. Maximum preserved thickness of Cintura Formation in the Mule Mountains is 1850 feet (Hayes and Landis, 1964).

The Mural Limestone is composed of an upper member of dark gray limestone that is up to 275 feet thick with subordinate sandstone in the upper 50 feet, and a lower member up to 453 feet thick consisting of interbedded calcareous sandstone, siltstone and impure fossiliferous limestone (Hayes and Landis, 1964).

The Morita Formation is generally composed of grayish red siltstone and mudstone, pale red feldspathic sandstone, minor amounts of greenish gray calcareous claystone, a few thin beds of impure limestone in the upper part of the formation, and a small amount of pebble conglomerate in the lower part of the formation. The upper 300 feet of the Morita Formation is primarily sandstone. Siltstone and mudstone cyclically interbedded with sandstone constitute the remainder of the formation. The Morita Formation probably represents deposition on a slowly subsiding subaerial deltaic plain. Sandstone beds in cut-and-fill relation on underlying siltstone

and mudstone are believed to represent channel deposits of meandering streams and intervening siltstone and mudstone units represent inter-fluvial flood deposits (Hayes, 1970). Where it outcrops in the Mule Mountains north and east of the CTSA, the formation is approximately 2,600 feet thick (Hayes, 1970).

The Glance Conglomerate is the basal unit of the Bisbee Group and lies unconformably on a variety of older lithologic units. The Glance Conglomerate outcrops north of the CTSA in and around the town of Warren, and over several square miles in the Mule Mountains east of the CTSA. Hayes and Landis (1964) estimated that the Glance Conglomerate ranges from zero to over 600 feet in thickness in the Mule Mountains. The Glance Conglomerate is an alluvial fan deposit made up of locally derived material with variable ratios of schist, limestone, and granitic clasts (Hayes, 1970); and consists of poorly sorted, poorly rounded, cobble- to pebble-sized clasts in a sandy and silty grayish-red to reddish brown mudstone matrix. Boulder-sized clasts are also locally present.

2.3.3.2 Paleozoic Rocks

Paleozoic sedimentary bedrock formations in the Mule Mountains are represented by, in descending order, the Naco Group, which includes the lower Permian Colina Limestone, upper Pennsylvanian Earp, and middle to upper Pennsylvanian Horquilla Limestone Formations; followed by the Mississippian Escabrosa Limestone, Devonian Martin Limestone, and the Cambrian Abrigo Limestone and Bolsa Quartzite (Table 1) (Hayes and Landis, 1964). Paleozoic

sedimentary units, particularly the Abrigo, Martin, and Escabrosa Limestones, are important hosts to metal mineralization in the Warren-Bisbee Mining District (Stegan, et al., 2005).

2.3.3.3 Igneous and Metamorphic Rocks

Igneous and metamorphic rocks in the Mule Mountains include Tertiary quartz latite, Jurassic Juniper Flat Granite, a tuff of probable Jurassic age, the Jurassic Sacramento intrusive complex associated with copper mineralization, and the Precambrian Pinal Schist. The Pinal Schist is a light colored quartz-sericite phyllite to quartz-muscovite schist (Stegan, et al., 2005). Eroded Pinal Schist is the source of schist clasts in the Glance Conglomerate (Hayes, 1970).

2.3.4 Structure

As will be discussed further in Sections 4, the structural geology of the CTSA is complex and appears to have significant influence on groundwater flow. Four major fault zones have been identified in the CTSA area: the Bisbee West fault and its eastward extension, the Gold Hill fault; the Abrigo fault; the Black Gap fault; and the Ninety-One Hills fault zone (Figure 3).

The south-dipping Bisbee West and Abrigo faults along the southern margin of the Mule Mountains trend west-northwest and are high-angle range front faults with normal offset. The subsurface projection of the Bisbee West fault passes to the north of the former Sac LOGS1 and Sac LOGS2. The projected trace of the Abrigo fault, as interpreted by SET (1998c), passes under the southwestern corner of the South Tailing Impoundment (Figure 3).

The Black Gap fault trends north-northeast and dips steeply to the west. On the surface the Black Gap fault is expressed by the offset of Paleozoic limestone beds and a topographic break known as Black Gap which forms a pass between Warren and the CTSA (Figure 3). From Black Gap, the fault extends to the north-northeast and is exposed again at the surface further north near the Dividend fault in the Mule Mountains (Hays & Landis, 1964). To the south of Black Gap, the subsurface projection of the Black Gap fault trace passes along the eastern margin of the North Tailing Impoundment and under the South Tailing Impoundment, where it meets the projected subsurface trace of the Abrigo fault (SET, 1998c).

The Ninety-One Hills fault zone is a west-northwest and west trending complex of faults paralleling the Abrigo and Bisbee West faults. The fault zone is located south of the CTSA approximately one mile southeast of Bisbee Junction (Hayes and Landis, 1964). The Ninety-One Hills fault zone has been interpreted to extend under the basin fill towards the west (SET, 1998c).

2.3.5 Hydrostratigraphic Units

The groundwater hydrology of the Bisbee-Naco area is discussed by Littin (1987), and the hydrologic conditions in the vicinity of the CTSA and the sulfate plume by Canonie Environmental (1990), PD (1990), and SET (1998a, 1998b, and 1998c). The Greenbush Draw watershed and the aquifer in the vicinity of the sulfate plume is separate from those of the mining area in the Mule Mountains to the north. The hydrology of the mine area is discussed in WMC (2006).

Groundwater occurs in two hydrostratigraphic units in the vicinity of the CTSA: basin fill and bedrock consisting of the Bisbee Group sedimentary formations. Recent alluvium is typically unsaturated and not a significant source of water to area wells.

2.3.5.1 Basin Fill

South of the Abrigo fault and west of the Black Gap fault, basin fill is the principal aquifer due to its high permeability and large saturated thickness. In this area, the basin fill provided about 95 percent of all water for domestic purposes in the Bisbee area in the 1980s (Littin, 1987). The thickness of the basin fill increases from zero at the margins to more than 600 feet in the central portion of the basin north of Naco. North of the Abrigo fault and east of the Black Gap fault, the basin fill is typically unsaturated.

2.3.5.2 Bedrock Complex

The bedrock complex generally has low permeability unless the intrinsic permeability is enhanced by secondary structures such as faults, fractures, and/or dissolution in the case of limestone. For this reason, the bedrock units typically do not yield as much water to wells as the basin fill (Litten, 1987), although the Bisbee Group is a source of water in portions of the Bisbee-Naco area. The Morita Formation and Glance Conglomerate are the primary water-bearing formations east of the Black Gap fault where the basin fill is unsaturated and thin. The principal water-bearing bedrock formations west of the Black Gap fault include the Cintura Formation, Mural Limestone, and Morita Formation. As reported in Sections 3 and 4, drilling

conducted for the aquifer characterization intersected bedrock materials interpreted as Cintura Formation and Mural Limestone in the southwestern portion of the study area where they had not previously been identified.

Paleozoic sedimentary rocks, igneous rocks, and metamorphic rocks have not been intercepted in wells south of the Bisbee West-Gold Hill fault except at Arizona Water Company (AWC) well No. 5 (AWC-05), near Naco which reportedly intercepted volcanic rock at a depth of 1,140 feet (Arizona Department of Water Resources [ADWR], 2008). Although Paleozoic sedimentary rocks, igneous rocks, and metamorphic rocks are not a source of water in the vicinity of the plume area wells, in the Warren Mining District, highly fractured zones associated with faults in the Paleozoic units are capable of producing large volumes of water in localized areas (Littin, 1987; WMC, 2006).

2.3.6 Groundwater Flow

Groundwater flow in the vicinity of the CTSA is generally southward and westward from the area of the former evaporation pond toward Bisbee Junction and Naco. In detail, groundwater flow is highly influenced by the hydraulic properties of the hydrostratigraphic units and the geologic structure prevailing in different subregions of the area. Sections 3 and 4 present detailed information on water levels, hydraulic gradients, groundwater flow directions, and the hydraulic properties of hydrostratigraphic units.

3. AQUIFER CHARACTERIZATION METHODS AND RESULTS

The scope and methods followed by the aquifer characterization tasks are described in the Work Plan. The specifics of the procedures and methods applied during implementation of the tasks are discussed in this section and the results are provided. The characterization work was conducted in accordance with procedures described in the Work Plan. ADEQ approval was obtained for deviations from the Work Plan as discussed in Section 3.4.4. Sections 4 and 5 provide interpretations of the results and discuss the results in the context of the site hydrogeology and water quality.

3.1 Task 1 – Well Inventory

Section III.A.4 of the Mitigation Order requires *"A plan to inventory all existing private wells used as a drinking water source and public water system wells located within a one (1) mile radius of the sulfate plume's down and cross-gradient outer edge."* Consistent with the Mitigation Order requirement, the objective of the well inventory was to identify and sample drinking water supply wells within one mile of the downgradient and crossgradient edge of the sulfate plume from the CTSA. The well inventory also evaluated the presence of drinking water wells within the footprint of the plume. The well inventory was conducted according to the specifications of the Work Plan.

Specific well inventory tasks identified by the Work Plan include:

- Identify drinking water supply wells within one mile downgradient and crossgradient of the outer edge of the plume using the ADWR Program 55 Well Registry Database (WRD)
- Categorize wells based on water use to identify potential drinking water wells
- Cross-check potential drinking water wells identified from the WRD against ADEQ public water system data to identify any additional drinking water supply wells
- Check with local water providers and Cochise County to identify any drinking water supply wells in the area of interest
- Field check and obtain global positioning system coordinates for drinking water supply wells
- Collect a water quality sample from or obtain recent water quality data for drinking water supply wells, and, if possible, determine the depth to groundwater

The well inventory area (WIA), as defined by the Mitigation Order, consists of the area one-mile downgradient and cross gradient of the outer edge of the sulfate plume. To the extent that the boundary of the WIA would have extended into Mexico, the boundary was truncated at the U.S.-Mexico border. The "outer edge" of the sulfate plume for the well inventory was the 250 mg/L sulfate concentration contour delineated using sulfate concentration data for area wells. The well inventory was conducted in the first half of 2008 as reported by HGC (2008b). The initial estimate of the plume edge and the area of the well inventory was based on water quality data available at the time of the Work Plan. As described in Section 3.1.6, the WIA was modified over time as the shape of the sulfate plume was refined based on the results of groundwater sampling of drinking water supply wells for the well inventory, groundwater monitoring for Task 2.2 (Section 3.3), and groundwater sampling of new wells for Task 2.3 (Section 3.4). The identification and sampling of drinking water supply wells for the well inventory is updated as new data on the plume become available.

The initial well inventory consisted of three steps:

- Identification of all wells located within one mile downgradient and crossgradient of the outer edge of the sulfate plume and in the footprint of the plume
- A primary well screening to identify potential drinking water supply wells on the basis of the well and water use information in the WRD, and a cross-check of ADEQ public water systems
- Verification of potential drinking water wells by a review of well records, field inspection of wells and owner/operator contacts, including collection of water quality samples or data

3.1.1 Identification of Potential Drinking Water Supply Wells

The well inventory was conducted using the ADWR WRD compiled in October 2007 (ADWR, 2007), which was provided in both Microsoft Access database and Geographic Information System formats. The Geographic Information System format allows the use of spatial queries to identify and extract well information from the database on the basis of well location. Spatial queries were constructed using ArcView software using the geo-referenced shape files.

The WIA evaluated consists of the area one mile downgradient and crossgradient of the outer edge of the sulfate plume and the area within the footprint of the sulfate plume as shown in Figure 4. This is a conservative approach to defining the WIA because it encompasses all wells within one mile of the plume margin. Using ArcView software, a buffer of one mile around the plume margin was created based on the 250 mg/L sulfate contour line and used to create a search area polygon for the spatial query to identify wells within the WIA.

3.1.2 Well Search Process and Safety Factors

Wells within the WIA were identified using safety factors to account for uncertainty in location due to cadastral coordinates. Well locations in the ADWR WRD are described by cadastral coordinates based on township, range, and section. Each 640-acre section is divided into 160-acre quarters (NE, NW, SE, and SW). Location is further specified by a 40-acre quarter of the quarter section, and a 10-acre quarter of the 40-acre quarter, quarter section. For example: Section 25, NE, SW, NW describes a location in the NW 10-acre quarter of the SW 40-acre quarter of the NE 160-acre quarter of Section 25.

Although most well records in the ADWR WRD include information on the quarter, quarter, and quarter section, some records may only contain well location information accurate to the section; quarter section; or quarter, quarter section. Also, the cadastral coordinates impart an uncertainty to well locations because they are not exact. The WRD assigns the well location to the midpoint of the cadastral area, although the well can be anywhere in the described area. Thus, a well within the WIA might not be identified if the midpoint of the quarter, quarter, and quarter section lies outside the WIA boundary. Conversely, a well outside the WIA boundary could be identified as being in the WIA if the midpoint of its cadastral coordinate is within the WIA boundary.

To account for the uncertainty in well location due to cadastral coordinates and to ensure the well inventory is comprehensive and identifies wells potentially within the WIA, a series of safety factors were added to the search area to identify wells that might be in the WIA even though the midpoint of their cadastral coordinates are outside the WIA. An additional distance

of 3,735 feet was added to the WIA search radius. The safety factor of 3,735 feet represents the distance from a corner of a 640-acre section to its midpoint and is meant to account for wells known only to the section. Again, a buffer was created to extract wells within the given number of feet outside of the original mile search area polygon. The data set was reviewed for any wells identified only by the section number with no quarter section information.

Next, all wells within 1,870 feet of the WIA were identified. The safety factor of 1,870 feet is the distance from a corner of a 160-acre quarter section to its midpoint. Another buffer and spatial query were created and the resulting data set was reviewed for any wells identified only by the section number and the 160-acre quarter.

This process was repeated using safety factors of 935 feet and 470 feet to account for the distance from the corner of a 40-acre quarter, quarter section to its midpoint and from the corner of a 10-acre quarter, quarter, and quarter section to its midpoint, respectively. From the set of wells identified on this basis, wells were removed only if they could be verified as being outside the search area based on more detailed cadastral coordinates. The final set of wells remaining after this process constitutes the inventory of wells potentially within the WIA.

A total of 204 wells are identified in the WIA based on the sulfate plume defined using data available for the Work Plan. These wells included water production wells, monitor and piezometer wells, test wells, exploration and geotechnical boreholes, and cancelled, capped or abandoned wells. Appendix B lists information obtained from the ADWR WRD records for the wells identified in the WIA.

3.1.3 Primary Well Screening

The objective of the primary well screening was to identify potential drinking water supply wells for further evaluation from the 204 wells in the WIA and to eliminate from consideration those wells without a drinking water use. The primary well screening was conducted for the WIA based on the sulfate plume defined in the Work Plan.

3.1.3.1 Screening Based on Well Type, Well Use, and Water Use

Information in the WRD on all wells identified in the WIA was compiled into a spreadsheet and sorted according to well type, well uses, and water uses (Appendix B). This information was used to screen the population of wells in the WIA to identify potential drinking water supply wells and to eliminate wells without drinking water use.

For the primary well screening, wells listed with a water production well use and a domestic, domestic-irrigation, domestic-stock, municipal, utility, and stock water use were identified for further evaluation as potential drinking water wells. Water production wells listed with an industrial water use were evaluated on a well-by-well basis to identify wells used for other non-drinking water uses. Wells with no well or water use listed were also included for further evaluation.

The primary well screening excluded from further evaluation as potential drinking water wells those wells listed as:

- Abandoned, cancelled (abandoned or not drilled), or capped wells

- Wells associated with exploration, geotechnical, groundwater monitoring and observation

3.1.3.2 ADEQ Public Water System Review

Wells identified in the WIA were also cross-checked against ADEQ Public Water System (PWS) data (ADEQ, 2007b) to identify potential drinking water supply wells in the WIA. Potential drinking water supply wells identified by the ADEQ data were cross-checked against the well inventory list to ensure inclusion of potential drinking water supply wells. After completing the cross-check, no additional wells were added to the well inventory list. The cross-check methods are described below.

ADEQ provided a database of all registered public water systems in the State of Arizona (ADEQ, 2007a). These include water systems that provide drinking water to a minimum of 25 users or 15 service connections. The data included the water system identification number, county, water system name, water system type, population served, number of connections, water source, initial monitoring year, and the name of the principal city served. The following summarizes ADEQ public water system data evaluation procedures:

1. Water systems potentially in the WIA were identified using county and principal city served information. After sorting the data by county, water systems serving the cities of Bisbee and Naco were identified.

2. The Bisbee-Naco area PWS field inspector was contacted to verify any water systems not identified in ADEQ (2007b).

3. The water system names identified in step 1 were searched for in the WRD (ADWR, 2007) in three ways including: a) in the last name field, b) in the company field, and c) using a keyword search.

4. Matching records from the WRD were saved in a separate spreadsheet.

5. All wells compiled in the spreadsheet described in step 3 were plotted in ArcView as a layer on top of a layer representing wells identified in the WIA search.

6. Overlapping wells were assumed to have been included in the well inventory. All wells identified in this query had been previously identified by the WIA search.

3.1.3.3 Other Well Screening Methods

Additional sources of well information included: a cross check of the registered wells with information from ADEQ PWS database, interviews with local residents regarding potential drinking water wells, contact with AWC, Naco Water Company (NWC), and Cochise County Health Department, use of INTELIUS records search engine to locate registered well owners, contact with residents receiving bottled water from data provided by CQB, contact with ADEQ public water system field inspector in Bisbee-Naco area, and contact with local real estate agents regarding properties and current owners.

3.1.3.4 Results of Primary Well Screening

Table 2 summarizes the results of the primary well screening. Of the 204 wells identified in the WIA, 123 were considered potential drinking water supply wells based on the primary well screening and cross check of ADWR and ADEQ databases. The remaining 81 wells were classified as non-drinking water supply wells and eliminated from further consideration. The wells eliminated from the well inventory are described below and listed in Appendix B.

- Fifty (50) wells identified as abandoned, cancelled, or capped
- Four (4) wells associated with geotechnical or exploration

- Twenty-seven (27) wells associated with groundwater monitoring or observation use

3.1.4 Verification of Potential Drinking Water Supply Wells

Wells identified by the primary screening as potential drinking water supply wells were verified by 1) review of the ADWR imaged records for the well to further research its water use, 2) field checks of wells to determine their location and operational status, and 3) contacts with well owner/operators to determine well operational status and water use.

Records for each of the wells identified as potential drinking water supply wells were downloaded from ADWR's online Imaged Records Database and cross-checked with information obtained from ADWR (2007). Information such as ownership, water use, additional well identifiers, and well status was compiled and reviewed for information pertinent to well operational status and use.

A field check of wells identified as potential drinking water supply wells was conducted to verify the well location using a hand-held global positioning system unit, evaluate the operational status of the well, and gather supplemental well ownership information. Subsequent to the field check, well owners/operators were contacted on a case by case basis to verify water use and other well information.

The 123 potential drinking water supply wells identified in the WIA consisted of: 114 wells listed with a water use of domestic, domestic-industrial, domestic-irrigation, domestic-

municipal-industrial, domestic-stock, domestic-stock-irrigation, utility or stock; 1 well listed with no well use or water use; 2 wells listed as monitor wells that were verified by field interviews to be drinking water supply wells and; 6 wells identified during field interviews, from bottled water delivery information provided by CQB and a search of the ADWR Program 35 database. Figure 5 shows wells evaluated as potential drinking water supply wells.

Table 3 summarizes the results of the verification of potential drinking water supply wells and indicates the status of each well as a drinking water supply. Of the 123 wells identified as potential drinking water supply wells, 43 wells were verified as having a current drinking water supply use. Five of the drinking water supply wells are operated by public water companies, either AWC (one well in the WIA) or NWC (four wells), and the remaining wells are private domestic wells.

3.1.5 Water Quality Sampling

Forty-three active drinking water supply wells were identified out of 204 wells in the WIA. CQB requested permission from well owners/operators to sample wells that were verified as drinking water supply wells. Where permission was granted, HGC collected water quality samples and depth to water measurements, if possible. In some cases, water quality samples were collected and analyzed by the owner/operator and the information was provided to HGC.

Groundwater sampling and analysis methods used by HGC are described in the Quality Assurance Project Plan contained in Appendix F of the Work Plan. Filtered water samples were

collected and analyzed for sulfate by EPA Method 300. Prior to sampling, wells were purged to the degree permitted by site-specific circumstances. If it was not practical to purge three casing volumes from the well because of inconvenience to the owner/operator, wells were purged of less than three casing volumes. The purge condition under which the sample was collected was noted in the field logbook or on the groundwater sampling form. Some water quality data were provided by the operators of public drinking water systems. In those cases, the standard protocols of the water provider were used for sampling and analysis.

3.1.6 Results of Drinking Water Supply Sampling, Ongoing Monitoring, and Interim Actions

Water quality samples for the initial well inventory sampling were collected from 38 drinking water supply wells, and water quality data was supplied by AWC for one public supply well. Four wells could not be sampled because access was denied. Of the 39 wells sampled, 13 domestic supply wells had sulfate concentrations greater than 250 mg/L (Figure 6)[2].

Residents using 10 of the 13 wells with sulfate concentrations greater than 250 mg/L were already receiving bottled water. CQB has offered to provide bottled water to residents as an interim action for the three wells not already receiving bottled water. A copy of the May 22, 2008 Interim Action Report (CQB, 2008a) submitted to ADEQ as required by the Mitigation Order is included in Appendix C.

[2] Note that Figure 6 shows the sulfate plume based on Work Plan data. Subsequent plume maps were updated based on well inventory information.

The WIA has been modified over time as the results of initial well inventory sampling and the groundwater monitoring for Tasks 2.2 and 2.3 provided new data on the limits of the sulfate plume. When the extent of the plume was determined to be beyond the plume footprint in the initial well inventory, drinking water supply wells within a mile of the revised plume margin were identified and sampled. Specifically, during the third quarter of 2008 the plume margin was extended to the southwest (based on Turquoise Valley, Inc. [TVI] 875, 274 mg/L sulfate) and northeast (based on NOTEMAN, 274 mg/L) due to the collection of additional samples which better define the plume extent. Therefore, the one mile boundary downgradient and crossgradient of the outer edge of the sulfate plume also expanded to the southwest and northeast, resulting in the inclusion of AWC wells AWC-02, AWC-03, and AWC-04, and private well NESS, respectively. Drinking water supplies continue to be sampled according to the specifications of the Work Plan. Table 4 contains the results of ongoing monitoring of drinking water supply wells conducted in 2008. Figure 7 shows the results of sulfate analyses of drinking water supply wells in October 2008.

Section 4 of the Work Plan specifies procedures for ongoing monitoring of drinking water supply wells and conducting interim actions if the sulfate concentration of the supply exceeds 250 mg/L due to the sulfate plume from the CTSA. Since the first quarter of 2008, water supplies with a sulfate concentration less than 135 mg/L have been sampled quarterly, water supplies with a sulfate concentration between 135 mg/L and 250 mg/L were monitored monthly for at least five months and evaluated by a trend analysis to recommend a frequency for ongoing monitoring, and water supplies with sulfate greater than 250 mg/L have been offered bottled water as an interim action.

In February 2008, water quality sampling for the well inventory identified six wells (BIMA, BLOMMER, FULTZ, RAY, ROGERS 803, and SCHWARTZ) verified as drinking water supply wells that had a discrete sulfate concentration between 135 mg/L and 250 mg/L. These wells were sampled monthly for sulfate and a trend analysis was conducted. Based on the results of the trend analysis, it was recommended that wells BIMA, BLOMMER, FULTZ, RAY, and ROGERS 803 be monitored on a quarterly schedule (CQB, 2008b). SCHWARTZ, having a positive Mann-Kendall statistic indicating that the sulfate concentration may be increasing, was sampled monthly for an additional quarter (i.e., in October, November, and December 2008 [CQB, 2008b]). Subsequently, quarterly monitoring was recommended for SCHWARTZ based on a trend analysis of sulfate concentrations results (CQB, 2009). Copies of the trend analysis reports (CQB, 2008b and 2009) are in Appendix C.

Sampling of public drinking water supply wells operated by AWC and NWC was conducted quarterly under Task 1. AWC provided sulfate results for first and second quarters 2008, HGC collected samples third and fourth quarters 2008. Analytical results for groundwater samples collected on October 23, 2008 from AWC-02, AWC-03, AWC-04, and AWC-05 reported sulfate concentrations of 15.9 mg/L, 41.8 mg/L, 24 mg/L, and 15.4 mg/L, respectively.

NWC provided sulfate data for wells NWC-03, NWC-04, and NWC-06 for the first and second quarters 2008. Samples from NWC wells in the first three quarters of 2008 were not collected by HGC because an access agreement was still being developed. HGC collected samples during the fourth quarter 2008 at wells NWC-02, NWC-03, NWC-04, and NWC-06. Analytical results for groundwater samples collected on October 27, 2008 from NWC-02, NWC-

03, NWC-04, and NWC-06 reported sulfate concentrations of 5.1 mg/L, 489 mg/L, 162 mg/L, and 6.4 mg/L, respectively.

NWC-04, having a discrete sulfate concentration of 162 mg/L, is on a monthly sampling schedule and was sampled in January, February, March, and April 2009 to identify any trend in sulfate concentration over time. Based on the apparent trend in sulfate concentrations, a future monitoring schedule will be developed.

Based on the results of the fourth quarter 2008 sampling, three additional domestic wells (BIMA, COLLINS, and SCHWARTZ) and one public supply well (NWC-03) verified as drinking water supply wells were found to contain sulfate concentrations greater than or just below 250 mg/L (Figure 7). As an interim action, CQB has directly offered to provide bottled water to the two private well owners with sulfate above 250 mg/L and the one private well owner with a sulfate concentration just below 250 mg/L (245 mg/L). The NWC-03 well is a public water supply well with approximately eleven service connections. CQB notified NWC that it would provide bottled water to customers served by NWC-03. CQB did not offer bottled water directly to the users of NWC-03 because NWC maintains the customer list as confidential. A copy of the December 19, 2008 Interim Action Report (CQB, 2008c) submitted to ADEQ is included in Appendix C.

3.2 Task 2.1 – Data Compilation and Evaluation

The compilation and evaluation of data relating to the environmental conditions in the vicinity of the CSTA was performed under Task 2.1 of the Aquifer Characterization Plan in the Work Plan. The objective of Task 2.1 is to provide a comprehensive compilation of historic site data relevant to describing the hydrogeology in the vicinity of the sulfate plume. The data quality was evaluated for suitability of use for the aquifer characterization. The data compilation results were used for construction and calibration of the numerical model for groundwater flow and sulfate transport (Section 7). The data compiled and evaluated include the following:

- Geologic well logs and well construction diagrams
- Elevations and distributions of geologic formations
- Hydraulic testing of aquifer properties
- Historical water levels
- Historical water quality
- Historical groundwater pumping
- Historical aquifer recharge sources

Information sources consulted in the data compilation included CQB files, ADWR databases and imaged records, reports of previous field and numerical modeling investigations, public and private well owners in the Bisbee-Naco area, and public works personnel for the City of Bisbee (COB) and the City of Naco, Sonora.

3.2.1 Geologic Logs and Well Construction Data

Geologic logs and well construction data for existing wells were obtained from the ADWR 55 Registry (ADWR, 2007) ADWR 35 and 55 image records databases (ADWR, 2008), and various hydrogeologic reports (PD, 1990 and 2006; SET, 1998a; WMC, 2006). Figure 8 shows existing well locations. Table 5 summarizes well construction and geologic information for existing wells, and the ADWR imaged records are included electronically as Appendix D.

The convention used in this report for well names refers to wells by their common identifier, in the case of monitoring wells or water company wells (i.e., TM-19A or AWC-05), or by the name of the well owner, in the case of private wells. The well names are in capital letters as shown on Table 5. In the event a well owner has multiple wells the last three digits of the ADWR registration number are added to the owner name to differentiate between wells.

3.2.2 Elevations of Geologic Formations

A database of the elevations to the top of geologic formations was compiled for the sulfate plume area using borehole data from private and public drinking water supply wells and water quality monitoring wells, and from drilling conducted during aquifer characterization. Data from logs of wells existing prior to aquifer characterization drilling are presented in Table 5. Compiled data include the well location, well name, ADWR registration number, completion date, collar or measuring point elevation, depth drilled, screened interval, depth to bedrock, and bedrock formation or lithology underlying the basin fill (if known). Depth to bedrock and

bedrock lithology were obtained from borehole logs for use in developing geologic cross sections (Section 4.1) and a groundwater flow model (Section 7).

Geophysical surveys were not useful for defining depths of geologic formations in the sulfate plume area. Two geophysical surveys of the Upper San Pedro River Basin conducted by the United States Geological Survey (Gettings and Houser, 2000; Wynn, 2006) did not extend as far east as the CTSA.

3.2.3 Historical Information on Aquifer Properties

Historical information on aquifer properties identified for the data compilation includes a step pumping test performed at well AWC-05 by The Weber Group, Inc. in July 2002 (Weber, 2002); 16 constant rate pumping tests at TM-series wells conducted in 1989 by Errol L. Montgomery and Associates (ELMA) and reported by SRK (1997); hydraulic conductivity estimates for a calibrated groundwater flow model (SET, 1998c); and estimates of aquifer transmissivity based on well specific capacities for wells AWC-02, AWC-03, AWC-04, and AWC-05 (Geoscience Support Services [Geoscience], 2006). These tests are discussed below. Backup data for the hydraulic properties information are presented in Appendix E.

3.2.3.1 AWC-05

A three-step pumping test was conducted at well AWC-05 on July 31, 2002 using pumping rates of approximately 500, 750, and 1,000 gpm (Weber, 2002). The total time of the

pumping portion of the step test was approximately 15.5 hours (hrs), and the water level recovery was monitored for about 13.5 hrs. The water level drawdown versus time for the AWC-05 test and tabulated drawdown values are provided in Appendix E.1. HGC attempted to interpret the test using Well Hydraulics Interpretation Program (WHIP) (HGC, 1988), but achieving a satisfactory fit to all of the drawdown data was unsuccessful, even when non-linear well losses were considered in the solution. Partial fits to the drawdown profile suggest a hydraulic conductivity value of about 1 foot per day. The interpretation of the hydraulic test data is further confounded because the well log for AWC-05 indicates that the well is screened across multiple lithologic units including basin fill, "red clay" which is interpreted here to be bedrock of either the Cintura Formation or Morita Formation, and "volcanics". Additionally, interpretation was difficult because the drawdown profile suggests the possibility of interference from nearby pumping wells.

3.2.3.2 TM-Series Wells

Constant rate pumping tests at TM-series wells were conducted by ELMA (SRK, 1997). Test durations typically ranged between one and five days, and several tests include one or more observation wells in addition to the pumping wells. ELMA interpreted drawdown data for pumping and recovery periods using the log-log (Theis, 1935) and semi-log (Cooper and Jacob, 1946) methods (Appendix E.2). SRK (1997) reinterpreted the test using computer-aided solution methods that account for well losses, delayed yield, well storage, partial penetration of well screens, and/or fracture flow non-idealities that are apparent in the pumping test drawdown profiles (Appendix E.3).

The values for the hydraulic conductivity estimated by SRK were typically lower than those estimated by ELMA by a factor of 2 to 3. A comparison of the ELMA and SRK estimates is provided in Table 6. Although the solution methods used by SRK account for non-idealities that were not considered in the methods used by ELMA, the validity of some of the SRK results is also questionable because several of their estimates (e.g., for wells TM-01, TM-11, and TM-13) were obtained using parameters that unrealistically assume a vertical hydraulic conductivity value that is much greater than the horizontal hydraulic conductivity value.

ELMA also estimated the storage coefficient. Tests conducted in Morita Formation had storage coefficients ranging from 2×10^{-6} to 0.01. Tests conducted in wells open to both basin fill and Morita Formation had storage coefficients ranging from 2×10^{-6} to 5×10^{-4}.

The interpretation of the aquifer test results for the TM wells is complicated by non-idealities that are apparent in the drawdown profiles. For wells screened in basin fill, the drawdown profiles frequently appear to exhibit a delayed yield effect (i.e., decrease in the drawdown slope at late times). Wells screened in the Morita Formation often show draw-down profiles that are indicative of large-scale aquifer heterogeneities (i.e., multiple drawdown slopes on the semi-log scale) and/or fracture flow (i.e., a slope of one on the log-log scale). Erratic drawdown profiles for some wells (TM-30, TM-30A, TM-19, and TM-37) suggest interferences from other pumping wells or recharge sources or fluctuating pumping rates. Finally, several wells are screened across two formations (e.g., wells TM-01, TM-01A, TM-29, TM-29A, and TM-29B), which does not yield formation-specific hydraulic properties.

3.2.3.3 Estimates from SET (1998c)

SET (1998c) reported hydraulic conductivity estimates for a calibrated groundwater flow model of the sulfate plume area. Although not the results of field tests, the model-derived estimates are included in Table 6 for comparison because they represent an estimate of the volume-averaged hydraulic properties for the area.

3.2.3.4 Estimates from Specific Capacity

Transmissivities for wells AWC-02, AWC-03, AWC-04, and AWC-05 were estimated by Geoscience (2006) from the specific capacity of each well. Specific capacity is defined as the discharge rate divided by the difference between pumping water level and static water level of each well. The discharge rates were taken as the average pumping rate for 1998 through 2005, and static and pumping water levels were taken from measurements made in April 2005. Geoscience (2006) assumed a well efficiency of 70 percent, to compute transmissivities of 4,010 square-feet per day (ft^2/day) for AWC-02, 6,680 ft^2/day for AWC-03, 13,370 ft^2/day for AWC-04, and 1,740 ft^2/day for AWC-05. AWC-02, -03, and -04 are completed in basin fill. Assuming a saturated thickness of 300 feet, the hydraulic conductivity estimates for AWC-02, -03, and -04 are 13 feet per day (ft/day), 22 ft/day, and 45 ft/day, respectively. AWC-05 is completed in both basin fill and bedrock. Assuming a saturated thickness equal to the screen length (980 ft) yields a hydraulic conductivity estimate of 1.8 ft/day for AWC-05. The accuracy of these estimates is uncertain because the assumed well efficiency is not measurement-based and may not be representative of actual well efficiencies.

3.2.4 Historical Groundwater Levels

Sources for the compilation of historical groundwater levels included the following:

- Compilations of water level data (PD, 2006 and WMC, 2008)
- Data reports of PD (1990), SET (1998c), and WMC (2006)
- ADWR Groundwater Site Inventory database (ADWR, 1995; 2005 update)
- Municipalities and drinking water providers: COB, NWC, AWC, and Urbano Naco and Ejido Naco in Naco, Sonora, Mexico
- Private well owners

Appendix F lists, the measuring point elevation, depth to water, and groundwater elevation data assembled for each well in chronological order. The measuring point elevations provided by previous reports and databases are inconsistent overtime for some wells. The measuring point elevation at several wells was re-surveyed in 2008 as part of the aquifer characterization. The re-surveyed measuring point elevations were found to be different for most wells than those reported in historical water level reports and databases. Twenty-four wells had previously measured elevation datum. The differences between previously measured and re-surveyed datum ranged from essentially zero (0.02 feet) to approximately 20 feet, with the re-surveyed datum typically higher than the previously measured datum.

The measuring point, depth to water, and groundwater elevations reported in Appendix F have not been modified from the original reports to account for the different measuring point elevations used overtime at certain wells. The data were not modified because in many cases the data were insufficient to confidently back-calculate either depth to water or measuring point elevation. Data users should be aware of the measuring point elevation differences because

failure to consider these differences may lead to a false interpretation of groundwater level time-series data. Time-series water level data illustrated on hydrographs discussed in Section 4.4.3.3 were adjusted to the 2008 datum on a case by case basis.

3.2.5 Historical Groundwater Quality

Historical groundwater quality data were compiled for major element chemistry (calcium, magnesium, sodium, potassium, chloride, sulfate, alkalinity, fluoride, nitrate, nitrite, and pH) for wells in the CTSA area (Appendix G). Information sources consulted for the data compilation included the following:

- Compilations of water quality data (Clear Creek Associates, 2005; PD, 2006; and WMC, 2008)
- Data reported by PD (1990), Canonie Environmental (1990), SET (1998b, 1998c, and 1999), and Weiskopf (2006)
- Data provided by municipal entities and drinking water providers in the Naco area: Naco Sanitation District (NSD), NWC, and AWC
- Data provided by entities in Mexico: Urbano Naco (City of Naco, Sonora), and Ejido Naco (El Oasis)

3.2.6 Historical Groundwater Pumping

Tables of water supply wells and historical pumping rates in the sulfate plume area are provided in Appendix H. Table H.1 lists the water supply wells identified in the study area. Many of these wells are dry or are otherwise no longer in service. The historic water uses in the Bisbee-Naco area have been domestic, stock, municipal supply, and irrigation. Tables H.2 through H.5 provide pumping information for municipal and irrigation wells compiled from

existing records and reports. In general, detailed pumping records for area wells are scarce because there has been no requirement to report pumping until recently. Pumping rates used in the SET (1998c) numerical model are listed in Table H.6. The compilation of pumping information for domestic, stock, municipal, and irrigation wells is discussed below.

3.2.6.1 Domestic and Stock Wells

Most of the water supply wells are identified as being for domestic and/or stock supply use. Historical pumping information is unavailable for most of the wells. The pumping rates listed in Table H.1 are taken from well information reported in ADWR Program 55 imaged records and represent the maximum pumping rate for the period when the pump is on rather than the annual average pumping rate. Because all, or most, of the domestic and stock wells are pumped intermittently, average pumping rates are likely much lower. For example, assuming a per capita water demand for AWC of between 147 gallons per capita day and 178 gallons per capita day (ADWR, 2005) applies to the area's domestic demand, and further assuming that each domestic wells services between two and four individuals, the average pumping rates in domestic wells would range from 0.2 gpm to about 0.5 gpm if operated continuously. SET (1998c) used average pumping rates in their groundwater flow and sulfate transport model of 0.4 gpm for domestic wells. An average pumping rate of 1.8 gpm was used for stock supply wells (Table H.6).

3.2.6.2 Municipal Supply Wells

Limited historical production information is available for municipal supply wells. Data provided by AWC lists combined annual production totals from active AWC wells (AWC-02, AWC-03, AWC-04, and AWC-05) (Table H.2). Monthly totals for AWC-02, AWC-03, and AWC-04 are provided by Geoscience (2006) (Table H.3). These data indicate that AWC pumps an average of 377 million gallons per year, or at an average rate of just over 700 gpm. Monthly production totals for AWC from 1998 through 2005 show that AWC-03 was the most productive well during this period (Table H.3).

Monthly production totals from NWC wells are available from the Arizona Corporation Commission (ACC) for the year 2006 (ACC, 2007). These totals listed in Table H.4 for the year 2006, NWC pumped a total of approximately 33 million gallons, or at an average rate of 62 gpm.

Although not a Mitigation Order requirement, pumping data were also collected from a number of wells in Naco, Sonora to describe conditions south of the plume. The City of Naco, Sonora, Mexico has five wells historically used for public water supply, four that are currently in use and one that is no longer in service (Table H.5 and Figure 9). The pumping rates reported in Table H.5 likely represent maximum pumping rates and not annual average pumping rates. Also, the reported rates may be inflated estimates because the sum of the pumping rates (1,030 gpm) is greater than the total withdrawal rate of 635 gpm reported by the system operator (HGC, 2008d). A report published for the EPA in 1997 gives the total water supply production for the City of Naco, Sonora as 710,000 gpd, or 493 gpm (Science Applications International

Corporation [SAIC], 1997). When the SAIC report was published, Naco, Sonora was served by only two wells. No information is available concerning changes in production rates since then.

3.2.6.3 Irrigation Wells

The principal irrigation wells north of the United States-Mexico border are associated with TVI, and are used to supply water to the TVI Golf Course. TVI has four irrigation supply wells located on the golf course: two located south of Greenbush Draw (TVI 236 and SOUTHSIDE WELL 2, located approximately 30 feet north of TVI 236) and two located north of Greenbush Draw (TVI 713 and TVI 875) (HGC, 2008c). Historically, water supply to the golf course was provided by TVI 236, which was installed in 1934. The estimated historic pumping rates in TVI 236 range from about 140 gpm to about 300 gpm (Table H.6) (SET, 1998c). TVI 713 was installed in 1998 but was immediately capped because the well diameter was insufficient for the pumping. TVI 713 was replaced two months later by TVI 875.

All TVI pumps run intermittently. TVI 236 and TVI 875 cycle on and off year round, and SOUTHSIDE WELL 2 is only cycled on from March through November (HGC, 2008f). During the winter months, TVI 236 cycles on for about 7 to 8 hrs and TVI 875 cycles on for about 8 to 11 hrs every one to two weeks. During the summer months, TVI 236 and Southside Well 2 cycle on for 4 hrs about once per day and TVI 875 cycles on for 8 to 11 hrs once per day. When on, the pumping rates in the wells are approximately 350 gpm at TVI 236, 400 gpm at SOUTHSIDE WELL 2, and 500 gpm at TVI 875 (HGC, 2008f).

Other historical irrigation supply wells located north of the border included Goar wells (GOAR 686, GOAR 693, and GOAR 697), the HAUBERT well, the Galloping Goose Properties wells (GGOOSE 546 and GGOOSE 547), and others (Table H.1). Pumping from all, or most, of these wells has been discontinued or converted to stock or domestic use since the 1990s (Table H.6) (SET, 1998c).

El Oasis, the irrigation provider in Naco, Sonora has five irrigation supply wells, one of which (EN-01) is currently not in service (Table H.5) El Oasis estimates pumping rates in the active wells of between about 870 and 1,600 gpm (HGC, 2008b). These rates likely represent maximum pumping rates rather than annual averages. SET (1998c) estimates historic average pumping rates from the combined El Oasis wells of about 500 gpm in the 1960s and early 1970s and about 700 gpm thereafter (Table H.6).

3.2.7 Historical Aquifer Recharge Sources

Historically, the aquifer in the vicinity of the sulfate plume has been recharged by natural and artificial recharge sources. These recharge sources are depicted in Figure 9. A summary of the literature discussing natural and artificial recharges sources is provided in Table 7. The study with the scope of interest closest to that of the aquifer characterization for the Mitigation Order is the numerical model constructed and reported by SET (1998c). The recharge rates for all the natural and artificial recharge sources in the SET (1998c) model are provided in Table 8. Natural and artificial recharge sources are discussed below.

3.2.7.1 Natural Recharge Sources

Natural sources of potential recharge include infiltration of precipitation through soil (direct recharge), infiltration of surface runoff from mountain fronts (mountain front recharge), and recharge of water in streams and washes (river recharge). Several studies have estimated total natural recharge or individual components of natural recharge. The natural recharge estimates from the major studies are compiled in Table 7, and the estimates of direct recharge, mountain front recharge, river recharge and total natural recharge are discussed below.

Based on precipitation totals collected from 1893 through 2008, the Bisbee-Naco area receives about 18 inches of rainfall per year, with most of the rainfall occurring in July and August (Table 9). The percent of precipitation that directly recharges the aquifer is probably small except during occasions of heavy rains coupled with low evapotranspiration (Coes and Pool, 2005).

The Sierra San Jose mountain range located southwest of Naco, Sonora and the Mule Mountains to the northeast of Bisbee are sources of mountain front recharge. Although mountain fronts are located outside, or on the periphery, of the Greenbush Draw watershed, recharge from mountain fronts may extend to parts of the basin floor if it travels through rock fractures and faults in the subsurface (Littin, 1987) or is transported in ephemeral washes (Coes and Pool, 2005). Many studies do not distinguish mountain front recharge from other components of natural recharge, although SET (1998c) and Pool and Dickinson (2006) modeled higher natural recharge rates in the vicinity of mountain ranges (Table 7).

The main surface water drainage channel in the sulfate plume area is the ephemeral Greenbush Draw, which drains to the northwest toward the Upper San Pedro River. Recharge from Greenbush Draw was estimated to be 365 ac-ft/yr by Coes and Pool (2005) based on analysis of hydrologic properties, chloride concentrations, and isotopic studies. Assuming a stream length overlying alluvial deposits of 12.1 miles (Coes and Pool, 2005), the average recharge along Greenbush Draw is estimated to be 18.7 gpm per mile. This estimate is lower than the previous estimate of 973 ac-ft/yr (80.4 gpm per mile) by Correll et al. (1996). ADWR (2005) concluded that the Greenbush Draw recharge estimate of Correll et al. (1996) included artificial recharge.

Littin (1987) estimates the volumetric recharge rate via natural sources to range from 2,000 ac-ft/yr to 2,500 ac-ft/yr, or an aerial recharge rate ranging from 1.19×10^{-4} ft/day to 1.49×10^{-4} ft/day (using an area of 46,000 acres). The actual rate of natural recharge may be greater than this estimate because Littin (1987) was unable to close the water balance between recharge and discharge. Littin (1987) suggests that natural recharge is not uniform throughout the area. Areas of relatively high infiltration potential are inferred near the Mule Mountains to the north, the Sierra San Jose to the south, and immediately south of Greenbush Draw.

SET (1998c) started with the recharge rates of Littin (1987) and modified them during calibration of their numerical model. The range of areal natural recharge rates considered in SET (1998c) model calibration is 7.9×10^{-5} ft/day to 1.2×10^{-3} ft/day for "high" recharge areas (mountain fronts and ephemeral drainages) and 1.3×10^{-6} ft/day to 1.6×10^{-5} ft/day for "low" recharge areas (Table 8). The SET (1998c) final calibrated areal natural recharge rates were 8.4

x 10^{-4} ft/day and 8.9 x 10^{-6} ft/day for high and low recharge areas, respectively, for a total recharge rate of 3,763.5 ac-ft/yr. The high and low natural recharge areas specified by SET (1998c) based on Littin (1987) are shown in Figure 9.

Pool and Dickinson (2006) modeled the Sierra Vista sub-basin, which includes the Naco area, using higher and lower natural recharge rates. Higher rates (6.6 x 10^{-5} ft/day to 4.4 x 10^{-4} ft/day) were applied within 1 mile of mountain fronts, and lower rates (3.3 x 10^{-6} ft/day to 6.6 x 10^{-5} ft/day) were applied in areas of sedimentary rocks and alluvial surfaces.

3.2.7.2 Artificial Recharge Sources

Potential artificial recharge sources in the sulfate plume area include the CTSA (North and South Tailing Impoundments, the former evaporation pond, and Horseshoe Pond), irrigated lands (Warren Ranch irrigation area, TVI, and El Oasis), and wastewater treatment facilities (WWTFs) (the Warren, San Jose, NSD, and Naco, Sonora WWTFs). Artificial recharge sources are summarized in Table 7 and further discussed below.

North and South Tailing Impoundments

Tailing was deposited in the North and South Tailing Impoundments between 1923 and 1974. The water percolation rate through the North and South Tailing Impoundments is expected to be low due to the low hydraulic conductivity of the tailing material, a high evaporation rate, and the formation of a surface crust on the impoundments. Using measured climatic and tailing properties data, SET (1998a) constructed a water balance model to predict

the percolation rates through the impoundments. The model results predicted percolation rates through the impoundments of between 3.6 x 10^{-7} centimeters per second (cm/s) and 2.4 x 10^{-10} cm/s. SET (1998a) concluded that site factors for the impoundments combine to provide a level of containment equivalent to a clay liner system with a hydraulic conductivity value of 10^{-7} cm/s. No recharge from the North or South Tailing Impoundments was included in the SET (1998c) model, although some recharge probably occurred during the years of active tailing deposition.

Former Evaporation Pond

The former evaporation pond received excess water from mine dewatering activities from 1908 through 1987 (PD, 2004). PD (1990) indicated that continuous detailed records of water application rates were not maintained. PD (2004) later reported that approximately 350,000 ac-ft, or 4,430 ac-ft/yr, of mine water was discharged to the former evaporation pond between 1908 and 1987. SRK (1997) used water delivery estimates in a water budget and model calibration to groundwater levels to calculate an aquifer recharge from the evaporation pond of 488 ac-ft/yr, or about 12 percent of the total water delivered. In contrast, SET (1998c) used a higher recharge rate of 3,103 ac-ft/yr, or about 70 percent of the total water delivered as determined by model calibration.

Horseshoe Pond

No estimates of potential recharge to the aquifer from Horseshoe Pond are known to exist, and SET (1998c) did not include recharge from Horseshoe Pond in their model. The recharge potential from Horseshoe Pond is considered negligible given that it only periodically

receives stormwater runoff and is pumped to maintain dry conditions in anticipation of reclamation.

Warren Ranch Irrigation Area

The Warren Ranch irrigation area was operated from 1905 to 1985 and was irrigated with surplus mine water. PD (2004) estimates that a total of approximately 188,000 acre feet of water was delivered to the Warren Ranch irrigation area during that time period, at a delivery rate of 2,350 ac-ft/yr, (1,457 gpm). SET (1998c) applied a recharge rate for the Warren Ranch irrigation area of 1,135 ac-ft/yr from 1905 through 1987, with specific rates of 0.9 ft/yr and 0.072 ft/yr west and east, respectively, of the Black Gap fault. As discussed in Section 2.1.2, research by CQB has confirmed the discharges to the Warren Ranch irrigation area ceased in 1985, not 1987 as assumed by SET (1998c).

El Oasis Irrigation Area

The El Oasis irrigation area east of Naco, Sonora is believed to have begun operation in the 1960s (SET, 1998c). Its current footprint is estimated from areal images, as approximately 630 acres. SET (1998c) represented El Oasis recharge as a constant rate of 315.3 ac-ft/yr over an area of 306.4 acres (1.03 ft/yr). This recharge rate is about 14 percent of water pumped by El Oasis. In comparison, other models of the Sierra Vista sub-basin have assumed recharge rates of 30 percent of irrigation water (Pool and Dickinson, 2006).

Turquoise Valley Golf Course

The TVI golf course began operation on the south side of Greenbush Draw in 1934 and was expanded north of Greenbush Draw in about 1998. SET (1998c) modeled the golf course with a volumetric recharge rate of 33.2 ac-ft/yr before the expansion and 66.4 ft/yr after the expansion, using a constant areal recharge rate of 1.68 ft/yr. This rate is between 7 and 10 percent of water delivered before the expansion, and between 14 and 21 percent after the expansion. In comparison, Pool and Dickinson (2006) assumed recharge rates of 30 percent of irrigation water for turf facilities; whereas ADWR (1999, 2005) assumed recharge rates of only 5 percent for turf facilities.

Warren Wastewater Treatment Facility

SET (1998c) reports that effluent began to be delivered to the Warren WWTF ponds in the early 1930s (SET, 1998c); whereas other sources report that the WWTF was constructed in the 1970s (EPA, 2003b, North American Development Bank, 2003). Originally, the Warren WWTF operated with three stabilization lagoons and one holding pond. A fourth lagoon was constructed in 2002 (EPA, 2003b). Effluent from the lagoons was applied to a 40-acre disposal area located immediately south of the lagoons. The peak design capacity of the Warren WWTF was 0.39 million gallons per day (MGD), although flows of 1,200,000 MGD are reported (EPA, 2003b). SET (1998c) modeled the Warren WWTF with a recharge rate of 160 ac-ft/yr (0.143 MGD). Operations at the Warren WWTF were replaced with the opening of the expanded San Jose WWTF in 2006 (ADEQ, 2006).

San Jose Wastewater Treatment Facility

The San Jose WWTF was constructed in 1985 (EPA, 2003b). Prior to 2006, the San Jose WWTF had two lined lagoons and one holding pond. Effluent from the lagoons was applied to a 11-acre disposal area located southwest of the lagoons. During this period, the San Jose WWTF had a design treatment capacity of 0.137 MGD. The SET (1998c) model does not include aquifer recharge from the San Jose WWTF; however, recharge from the lagoons probably did occur because of the land disposal method (EPA, 2003b) and because the liners to the lagoons became damaged (North American Development Bank, 2003). In 2006, the San Jose WWTF was upgraded and expanded. In addition to handling the treatment requirements of the old San Jose WWTF, the expanded San Jose WWTF replaced the Warren and Mule Gulch WWTFs. The expanded San Jose WWTF is permitted to collect and treat 1.22 MGD (ADEQ, 2006), however, the effluent produced from the fourth quarter of 2006 through the end of 2008 averages only about one-third of the permitted amount (Table 10). Effluent from the expanded San Jose WWTF is permitted to discharge to the Greenbush Draw about 1.5 miles southwest of the facility, near where Greenbush Draw intersects the Naco Highway (ADEQ, 2006). Effluent-dependent surface flow in Greenbush Draw was observed throughout 2008 to occur for at least one mile downstream of the discharge point. In the future, all or part of the effluent from the San Jose WWTF may be used to irrigate the TVI golf course; although, there is no firm date for the implementation of this plan.

Naco Sanitation District Wastewater Treatment Facility

The NSD WWTF includes four lagoons. ADWR (2005) reports that in 2002 NSD WWTF produced 80 ac-ft of effluent, and that all effluent was evaporated. The SET (1998c) model did not include recharge from the NSD WWTF.

Naco, Sonora Wastewater Treatment Facility

The Naco, Sonora WWTF was constructed in the 1960s (SAIC, 1997). The Naco, Sonora WWTF operates two sets of lagoons. The eastside lagoons are a series of seven lagoons that are currently lined with compacted clay. The westside lagoons consist of 3 unlined lagoons. Originally, effluent from the westside lagoons was used to irrigate the El Oasis irrigation area. Problems with pumping and conveyance systems prevented the effective implementation of this use. In the 1970s the westside lagoons were abandoned and all wastewater was sent to the eastside lagoons. In the early 1980s the westside lagoons and conveyance system were rehabilitated, but were no longer functional by 1987. This led to frequent system overflows that discharged wastewater to natural drainageways and across the United States-Mexico border (SAIC, 1997). Currently, the westside lagoons are seldom used (HGC, 2008d). SET (1998c) modeled the Naco, Sonora WWTF with a recharge rate of 158.5 ac-ft/yr

3.3 Task 2.2 - Groundwater Monitoring

3.3.1 Overview of Groundwater Monitoring Program

Groundwater monitoring for Task 2.2 consisted of groundwater sample collection and water elevation measurement from wells in the vicinity of the CTSA. The Work Plan identifies two purposes for the groundwater monitoring program: regional monitoring and plume monitoring. Regional monitoring was conducted to characterize water levels and water quality away from the plume to develop information for fate and transport modeling. Regional monitoring encompasses wells that are generally more than a mile from the sulfate plume. Plume monitoring was conducted to track the position and concentration of the plume and includes wells that are in the plume or generally within a mile of the plume.

The Work Plan specified regional monitoring during only the first and third quarters of 2008 to characterize regional hydrologic conditions and any seasonality in water elevations. Samples for regional monitoring were analyzed for a suite of major element constituents to characterize general water quality conditions in addition to sulfate. Regional monitoring was conducted in both the first and third quarters of 2008.

Plume monitoring was conducted quarterly at wells that are within or proximal to the sulfate plume in order to track the plume's location in the aquifer. Samples for plume monitoring were analyzed only for sulfate in accordance with the Work Plan.

HGC conducted the majority of the groundwater monitoring pursuant to Task 2.2. Groundwater sampling and analysis methods used by HGC are described in the Quality Assurance Project Plan (Appendix F of the Work Plan). Some groundwater monitoring data were reported to HGC by other parties that may have used different, but comparable, sampling protocols. In addition, HGC collected groundwater samples from wells belonging to La Commission National del Aqua and Ejido Naco in Sonora, Mexico. Groundwater monitoring in Sonora, Mexico was not a Mitigation Order requirement, but was conducted to further define groundwater elevation and sulfate conditions south of the Mitigation Order study area.

The measuring point elevations of wells used for water level monitoring were surveyed for this investigation to provide a consistent datum. Surveying was conducted by Arizona Land Specialists, Inc., and Gilbert Technical Services, Inc.

Plume monitoring for Task 2.2 is ongoing. Monitor wells installed under Task 2.3 (Section 3.4) were added to the plume monitoring program after the collection of an initial water quality sample during aquifer testing (Section 3.4). During the fourth quarter 2008, water level measurements were collected at 89 wells and water quality samples were collected from 88 wells covering an area of approximately 20 square miles.

3.3.2 Results of Groundwater Monitoring

Data for the first and second (HGC, 2008c), third (HGC, 2008e), and fourth quarters of 2008 (HGC, 2009) were collected and reported under the groundwater monitoring program.

Appendix A contains copies of the quarterly monitoring reports. Tables 11 and 12 contain water quality and water level measurements, respectively, for Task 2.2 from the first through fourth quarters of 2008. Also included in Tables 11 and 12 are results of sampling for the well inventory (Section 3.1) and the initial sampling of newly installed monitoring wells (Section 3.4). The measuring point elevations in Table 12 are based on the survey conducted for the aquifer characterization. Elevation survey results, laboratory reports, field sampling forms, and data verification reports for the groundwater monitoring program are contained in HGC (2008c, 2008f, and 2009) (Appendix A). The groundwater monitoring results are discussed in the context of the site hydrogeology and groundwater chemistry in Sections 4 and 5, respectively.

During October 2008, HGC collected groundwater samples from the City of Naco and Ejido Naco wells to augment the data collected for the Work Plan. Groundwater samples were collected from four Urbano Naco and four Ejido Naco wells. Tables 11 and 12 respectively contain the dissolved sulfate concentrations for wells sampled and groundwater elevations from two Urbano Naco wells where water level measurements were collected in the fourth quarter 2008. The Urbano Naco wells were not operational and the depth-to-water measurements were made under static conditions.

Data verification reports were prepared for each quarterly report for quality assurance and quality control purposes. As determined by the analytical data verification review, all groundwater monitoring data collected for Task 2.2 are acceptable quality for use in the aquifer characterization program.

3.4 Task 2.3 - Monitoring Well Installation and Testing

Work Plan Task 2.3 consisted of installation and testing of new monitoring wells. The objectives and methods for well installation and testing are described in Section 3.3.3 and Table 7 of the Work Plan. The BMO-2008-series monitoring wells were installed to further define the lateral and vertical extent of the sulfate plume, characterize aquifer materials and hydraulic properties, determine bedrock depth, evaluate conditions in the former source area, and provide installations for ongoing groundwater water level and water quality monitoring.

Well locations and design objectives were based on position in relation to the plume, the level of information available in the area of the proposed well, and the potential long-term use of the monitoring well. Wells within the sulfate plume were installed to characterize the quality of water within the plume and evaluate the vertical extent of sulfate into the subsurface. Wells on the periphery of the plume were installed to evaluate the lateral extent of sulfate in the basin fill and bedrock. Aquifer testing was conducted on each of the wells after well development to evaluate aquifer characteristics at each well location. An initial water quality sample was collected from each of the wells during aquifer testing to document water quality conditions at each well location. After the initial sampling, the new monitoring wells were added to the list of wells sampled for the groundwater monitoring program (Section 3.3).

3.4.1 Overview of Well Installation and Reconnaissance Sampling Program

Completion of 16 monitor wells was accomplished from April 3 to December 12, 2008. Figure 10 shows the locations of wells installed for Task 2.3. A total of 10,438 feet was drilled

for the well installation and testing program. Table 13 lists the monitor well name, ADWR registration number, location, measuring point elevation, drilled depth, casing depth and diameter, screen interval depths, and water level for each well. Monitor wells were named using a project prefix, the year of installation, the site number, and a suffix indicating the formation. For example, "BMO-2008-4B" stands for Bisbee Mitigation Order, 2008, installation in basin fill at Site 4. "B" stands for basin fill; "M" for Morita, Cintura, or Lower Mural Limestone; "G" for Glance Conglomerate; "GU" means the upper or shallower of a pair of wells completed in the Glance Conglomerate; and "GL" means the lower or deeper of a pair of wells completed in the Glance Conglomerate.

The monitoring wells were drilled, installed, and developed through airlifting by WDC Exploration and Wells, Inc. with onsite oversight, documentation, water sampling, and logging of lithologic materials by HGC personnel. Additional well development by swabbing, bailing, and pumping; pump testing the wells for aquifer characteristics; and equipping the wells with permanent submersible pumps were completed by the Verdad Group L.L.C. with oversight and data collection by HGC personnel.

3.4.2 Drilling, Construction, and Development Methods

Drilling, construction, and development were completed using guidelines established in the Work Plan. The following sections detail the specific methods used during this phase of the investigation. Also included are procedures, such as video logging, that were not envisioned in the Work Plan.

3.4.2.1 Drilling Methods

Monitoring wells were drilled with George E. Failing Company Speedstar 50K-CH rotary drill rigs. Drilling methods were selected on the basis of site conditions, data collection objectives, relative cost, ease of well development, and rig capabilities. Drilling methods included Stratex under-reaming casing advance, air rotary casing hammer (ARCH), reverse-circulation air rotary using air lifting, and conventional circulation air rotary drilling. Drilling was accomplished without using bentonite ("mud") additives so that sampling of formation water could be performed during drilling for water quality evaluation.

The first boring drilled at each site was used to evaluate basin fill lithology and thickness, bedrock lithology, and water quality in the saturated materials encountered during drilling. Boreholes were typically started with Stratex or ARCH (casing advance methods) to penetrate unsaturated basin fill sediments and install temporary casing for borehole stability and conduct drill cuttings to the surface. Attempts were made to drive the temporary casing to the basin fill-bedrock interface so that groundwater in the basin fill could be isolated from that in the underlying bedrock. In many cases, formation conditions did not permit the casing to be safely driven all the way down to the bedrock contact.

Air rotary methods were used when further progress with casing advance methods was no longer possible or the bedrock aquifer was intercepted. Both conventional circulation and reverse circulation methods were used. The conventional air rotary method involves injecting air through the bit at the drilling face to lift cuttings up the annulus between the drill rods and borehole wall. This method was used when casing advance was no longer possible and there

was insufficient depth or water production to permit reverse-circulation drilling. Cuttings and formation water traveling up the annulus can be mixed with formation materials and groundwater from zones higher in the uncased portion of the borehole and may not be as reliable as the materials returned from a cased borehole.

The reverse-circulation method was used whenever possible in cases where casing advance was no longer possible. The method employed dual-wall drilling rods that carried air down the annulus between the inner and outer rod walls, and carried groundwater and cuttings up the center of the inner drilling rods. Air is passed from the annulus to the center of the drilling rods beneath the water table, which causes airlifting of the water and draws groundwater and cuttings up from the drilling face. This reverse-circulation technique lifts cuttings and groundwater from the drilling face and prevents interaction with materials and groundwater in transit to the surface. Procedures, relative quality, and results of water sampling during drilling are discussed in Section 3.4.2.2.

The quality of geologic information from drill cuttings collected under this Work Plan is partially dependent upon the specific drilling technique used. All of the methods used during this investigation required breaking down the formation into fragments small enough to be lifted out of the hole by the circulating medium (i.e., air or water). Size information for particles larger than fine gravel was unavoidably lost. The representativeness of the cuttings with respect to the formation being penetrated by the drill bit varied somewhat depending on the drilling technique. The cuttings from ARCH and Stratex drilling were considered the most representative because the temporary casing prevents materials from above from falling down and interacting with the

cuttings. The representativeness of cuttings derived from reverse-circulation can be compromised by materials falling from the annulus between the outer wall of the drill string and the borehole wall, but the forces required to dislodge materials from the upper portion of the borehole are typically absent. The representativeness of cuttings from conventional rotary drilling are the most likely to be compromised, because fluids and cuttings are flowing rapidly upward between the borehole wall and outside of the drill string.

Drill cuttings were sampled at 10-foot intervals during drilling and placed in labeled zip-seal plastic bags. Representative splits from each sample were placed in chip trays for reference purposes. HGC personnel prepared lithologic logs that include a description of each sample. Basin fill material was logged according to the specifications of American Society of Testing of Materials D2488-00. Lithologic logs of the pilot boreholes are provided in Appendix J.

During drilling, cuttings and excess drilling fluids were collected in a hopper. Drilling fluids were pumped to an area away from the borehole to infiltrate before leaving the property or entering jurisdictional waterways. Cuttings were dumped from the tilt hopper at locations away from the boreholes and spread on the site after completion of the drilling.

3.4.2.2 Reconnaissance Water Quality Sampling During Drilling

Samples of formation water were analyzed and the results used to evaluate progress of each borehole and make decisions concerning the construction of the well, as detailed in Section 3.4.4. Formation water samples were collected from the drilling return as soon as groundwater

was encountered in the boreholes. The drilling methods used air to lift the cuttings either directly in the case of direct rotary, Stratex, and ARCH, or indirectly using airlifting to induce reverse circulation. Formation water was collected from the discharge at the cyclone, typically at 20-ft intervals.

Collected water was tested in the field with a portable meter for temperature, electrical conductance, TDS, and pH. A portion of the sample was filtered using a 0.045 micron filter and analyzed for sulfate with a Thermo Orion Model AQ4000 colorimeter using AC 2082 reagent tablets. A portion of the filtered sample was also typically submitted to Turner Laboratories for analysis by ion chromatography.

Water samples recovered from the return had varying degrees of reliability in representing the groundwater quality at the drilling face. Samples recovered during ARCH drilling were considered the most reliable, since the temporary casing driven behind the drilling face essentially sealed off portions of the formation above the drilling zone. Hence, water recovered from the return stream was from the uncased borehole from up to 20 feet above the drilling face.

Samples recovered during Stratex drilling were considered moderately reliable, since the method involves driving temporary casing behind the air hammer used to advance the borehole. However, the under-reaming bit creates a borehole with a diameter slightly larger than the casing, permitting some communication of water from the cased horizon to the drilling zone. The degree of this communication depends on the hydrostatic pressure (depth beneath the water

table) and the productivity of the formation. The samples collected during Stratex drilling appeared to compare favorably with depth-specific water quality data from temporary wells in productive portions of the formation, and less favorably in unproductive portions of the formation. The latter was particularly apparent when transitioning from basin fill (productive) to bedrock (less productive). Samples recovered when transitioning from basin fill to bedrock appeared to be biased toward the concentration of the more productive basin fill. Consequently, Stratex drilling was typically discontinued and reverse-circulation or conventional rotary methods were used when bedrock was encountered. In these cases, the temporary casing was driven into the bedrock at the contact, if possible, in an attempt to isolate the overlying basin fill groundwater from interaction with the bedrock aquifer.

Samples of water recovered during reverse-circulation drilling were considered to have varying degrees of reliability depending on the productivity of the formation. Assessment of the reliability was based on changes in concentration with depth, verification through installation of temporary wells (Section 3.4.2.3), and relative productivity of the formation. Airlifting typically produced approximately 50 gpm during drilling. The length of borehole represented in the sample depended on the productivity of the formation. If the formation was productive, the samples appeared fairly reliable because most of the water produced was from near the drilling face. In bedrock formations with low productivity, the samples seemed to be a composite of the larger depth interval of the open borehole and were not considered representative of the formation water near the drilling face. In some cases (e.g., BMO-2008-8M [Section 3.4.4.7] and BMO-2008-13M [Section 3.4.4.11]), it seemed that the reverse-circulation drilling was pulling the sulfate-bearing water from the basin fill down into the fractured bedrock formation.

Samples of the water recovered using conventional air rotary were generally not considered reliable, since the formation water produced at the drilling face passed up the open borehole all the way to the surface. Therefore, all productive portions of the open borehole contribute to each sample. The exception to this assessment occurred when groundwater was first encountered. Water returned from the top of the water table was considered to accurately represent water quality at the top of the aquifer. Samples collected from greater depth had progressively more commingling of groundwater from the water-bearing portions of the borehole. Relative water quality of deeper samples was evaluated by changes in water quality. For example, a decrease in sulfate concentrations with depth was interpreted as indicating that deeper portions of the aquifer had lower sulfate, but the concentrations of the samples were not considered strictly representative of the aquifer at the sampled depth. Transition to reverse-circulation methods was attempted as soon as possible to improve the representativeness of the samples.

3.4.2.3 Temporary Well Sampling

Temporary wells were sampled in some boreholes to further evaluate the water quality with respect to depth in the borehole, particularly for making well construction decisions for cases in which the purpose of the well was to establish the vertical extent of the sulfate plume (e.g., BMO-2008-7M, BMO-2008-8M, BMO-2008-9M, BMO-2008-10GU, BMO-2008-10GL, and BMO-2008-13M). Temporary wells developed and sampled over a limited (40 feet) interval were considered to provide an accurate approximation of the water quality obtainable from samples extracted from a permanent well completed in the same horizon.

Temporary wells were constructed by inserting a 20-foot section of slotted 4-inch pipe at the end of dual-wall drill pipe to the desired depth, typically 10 feet from the bottom of the open borehole. Approximately 40 feet of No. 8 Tacna gravel filter pack was tremied in to the borehole, from the base to approximately 10 feet above the top of the slotted section of pipe. An annular seal, typically 10 feet of bentonite chips, was tremied in on top of the filter pack and allowed to hydrate.

As an alternative to constructing temporary wells, the use of straddle packers was attempted in BMO-2008-10GU to isolate a portion of the borehole for water sampling. One sample was successfully collected using the straddle packers, but the second attempt resulted in irreparable damage to the packers. The roughness and variable diameter of the boreholes indicated that this was not a viable technique for this project.

Temporary wells were developed and pumped using airlifting in the same manner that airlifting was accomplished for the reverse-circulation drilling. Air was sent down the outside annulus of the double-walled pipe and injected into center of the pipe, lifting the water column. Water produced by airlifting was monitored for pH, EC, TDS, temperature, and sulfate concentration using field test methods. When these parameters stabilized, a final sulfate concentration was measured and a sample collected for laboratory analysis. Field and laboratory results are presented by well in tables referenced in Section 3.4.4.

3.4.2.4 Well Construction

Monitor well construction was based on guidelines presented in Section 3.3.3.2 of the Work Plan. Typically, wells were completed with 100 feet of slotted casing placed within the depth interval to be sampled to accomplish the objective of the well. Casing and screen were constructed of welded ASTM A53B mild steel 5 inches in diameter. Factory cut slots 0.125 inch wide were arranged in vertical rows, resulting in approximately 3.6 percent open area. A sump of 10 feet of blank casing with a bottom cap was installed below the screen. A filter pack of No. 8 Tacna gravel was emplaced to a depth typically 10 to 20 feet above the top of the slotted casing. Transition sand consisting of 5 feet of 8-12 silica sand and 5 feet of No. 60 sand was placed between the filter pack and annular well seal. The annular well seal included approximately 10 feet of time-release bentonite pellets followed by high-solids bentonite grout to within 20 feet of the surface. The top 20 feet of annulus in each well was sealed with cement grout. HGC personnel recorded well construction progress in a field notebook and on a well construction summary form, and created a diagram of the construction as the well was built. Section 3.4.4 provides references to documentation in this report for each of the wells constructed for the aquifer characterization.

3.4.2.5 Well Development

Well development activities included swabbing, airlifting, bailing, and pumping. Swabbing and airlifting were conducted by WDC Exploration and Wells, Inc. with oversight by HGC personnel using the drill rig following well construction. Airlifting continued until the

discharge water was clear and free of sediment and until the indicator water quality parameters of pH, electric conductivity, and temperature had stabilized.

Well development and testing activities were conducted by Verdad Group L.L.C. after the drill rig had been demobilized from the site. Verdad Group L.L.C. swabbed the screened interval and bailed sediment out of the sump prior to aquifer testing. Pursuant to the Work Plan, aquifer testing and collection of an initial water sample were conducted at each site following these well development activities. Aquifer testing typically consisted of step tests at 1/3 and 2/3 of the well's pumping capacity for one hour each followed by a constant rate test at full capacity for approximately 8 hrs. The well's production capacity was evaluated using flow rates observed during airlifting combined with test pumping the day before the aquifer test. Details of the pumping tests are presented in Section 3.5 and Appendix N. Water produced by well development and aquifer testing was pumped to an area away from the borehole and allowed to infiltrate before leaving the property or entering a jurisdictional waterway.

Surface completion of the monitoring wells included equipping the wells with a sanitary seal, dedicated pump, sounding tube, control box, and protective box cover. A mark on the north side of the sounding tube establishes a permanent measurement datum for water levels. An Arizona Registered Land Surveyor, Arizona Land Specialists, Inc., surveyed this measuring point elevation to ± 0.01 ft. A locking painted steel box was installed around the well casing and control box on a concrete pad to protect the wellhead. The ADWR well registry number was stamped into the top of the well casing and the well name written on the concrete pad and well cover lid.

3.4.2.6 Downhole Logging

Video logging was conducted on two of the wells during drilling to evaluate the condition of the borehole wall. Southwest Exploration Services, L.L.C. conducted video, caliper, and natural gamma surveys of boreholes BMO-2008-8M and BMO-2008-13M on October 30, 2008. Southwest Exploration Services, L.L.C.'s report, video logs, and caliper logs are presented in Appendix I. The purpose of the surveys was to evaluate the condition of the borehole wall and amount of fracturing in the bedrock penetrated by the boreholes. The surveys were initiated because the results of temporary wells installed and sampled in both of these boreholes contained elevated sulfate concentrations at unanticipated depths, and the productivity of the formation in the temporary wells was inconsistent with the geologic logging, suggesting fracture flow may have been circumventing the annular seal above the screened interval, corrupting the integrity of the results. The results of the video surveys are included in Appendix I.

The video logging procedure included lowering a video camera with side scan capabilities to the bottom of the well and videotaping the results. The camera was lowered to the bottom of the borehole or to the maximum depth attainable, videotaping the entire time. The side scan camera was used to obtain additional detail concerning the condition of the borehole at interesting zones observed from the down-looking camera. In both boreholes, the camera was not able to reach the bottom of the borehole. In BMO-2008-8M, the borehole had been enlarged just below the contact between basin fill and bedrock. The enlargement was asymmetrical, which caused the centralizer to push the camera off to one side, causing it to bottom on a ledge. In BMO-2008-13M, temporary caving at 761 feet below land surface (ft bls) prevented deeper penetration of the camera and caliper tool.

Video logging was followed by a caliper/natural gamma survey. The caliper tool was lowered to the bottom of the open borehole to begin the survey. In BMO-2008-8M, this was the bottom of the borehole at 1,216 ft bls; in BMO-2008-13M, this was at 761 ft bls. Three arms extending from the caliper tool at 120° spacing were used to gauge the diameter of the borehole as the tool was slowly raised to the land surface. A detector on the caliper tool was used to record the flux of gamma rays generated by the borehole wall as the tool was elevated.

3.4.3 Geologic Summary

Boreholes drilled at the BMO-2008 sites intercepted Quaternary to Tertiary basin fill deposits overlying Cretaceous clastic sedimentary and limestone bedrock. The basin fill is composed of unconsolidated to moderately consolidated gravel, sand, silt, and clay. Caliche cement was typically encountered from the surface or near surface to depths of 50 to 130 ft bls. Basin fill thicknesses encountered in the pilot boreholes drilled to bedrock ranged from a minimum of 50 ft bls in BMO-2008-1G to a maximum of 636 ft bls in BMO-2008-4B.

The gravel fraction of the basin fill ranges from fine to coarse, but actual sizing of the gravels is obscured by the grinding action of the drill bit. Most gravel clasts are subangular to subrounded. In places, the presence of cobbles was inferred based on drill rig performance in conjunction with the presence of angular fragments, which were interpreted to represent larger gravel or cobbles reduced in size by the drilling process. The presence of coarse cobbly zones was confirmed by video logging in BMO-2008-8M and BMO-2008-13M.

Composition of the gravel clasts in the basin fill sequence is polymictic and includes varying ratios of clastic, carbonate, metamorphic, volcanic and plutonic igneous rocks. Clastic sedimentary rocks include quartzose sandstones, arkosic sandstone, arkose, quartzite, siltstone, and mudstone. Chemical sediments include various limestones, silicified limestone, and chert. Metamorphic clasts include fine-grained quartz-mica phyllite, schist, and metamorphic quartz derived from the Precambrian Pinal Schist. Pre-erosional hydrothermal alteration was occasionally observed in both igneous and sedimentary clasts, represented by oxidized sulfides occurring as limonite, calcite veinlets, and silicification.

The sand fraction of the basin fill encountered in the BMO-2008 monitoring wells is coarse to fine, and typically well-graded, commonly grading to silt. The sand is composed primarily of quartz and sedimentary and metamorphic lithic grains with trace magnetite. The fine sand fraction is typically mostly quartz, whereas coarser sand is often predominantly lithic grains.

The fine fraction (silt and clay) of the basin fill was visually estimated during logging of the drill cuttings. No geotechnical testing of the material was conducted. Silt and clay occur primarily intermixed with variable amounts of sand and occasionally gravel, as clay and/or silt with sand, sandy clay, or sandy silt.

Bedrock formations encountered in the BMO-2008 wells penetrating bedrock are interpreted to be (in descending order) Cintura Formation, and Mural Limestone, Morita Formation, and Glance Conglomerate. These four formations are members of the Bisbee Group

sedimentary sequence. The Mural Limestone is divided into an upper and lower unit. The Glance Conglomerate is typically easy to recognize in drill cuttings. The other units of the Bisbee Group are sometimes difficult to differentiate in drill cuttings due to the similarity of their lithologies. As will be discussed in Section 4.2.2, the three Bisbee Group formations overlying Glance Conglomerate also have similar overlapping ranges of hydraulic properties. Hereafter, for groundwater modeling and other purposes, the Cintura Formation, Mural Limestone, and Morita Formation are sometimes grouped together and referred to as "undifferentiated Bisbee Group".

3.4.4 Drilling and Construction of Individual Wells

This section describes the purpose and location of each site relative to the sulfate plume (defined by the 250 mg/L isoline), the geology encountered, summarizes the drilling and construction of wells, and rationale for screen depths. A generalized stratigraphy for each site is presented based on interpretation of the geologic logs. Locations of the wells installed under this task are presented on Figure 10.

Wells were installed at the 12 sites specified in the Work Plan with the following exceptions. All modifications of the drilling locations identified in the Work Plan were approved in advance by ADEQ (2008a, 2008b, 2008c, and 2008d). The proposed well at Site 2 was not installed because existing well, NWC-04, was deepened in 2008 and produced samples with sulfate concentrations below 250 mg/L, satisfying the objective of establishing the vertical extent of the sulfate plume in that location. The proposed well at Site 12 was not installed because an

existing well, COB WL (Figure 10), was identified as being suitable to accomplish the stated goals for the well that was to be installed at Site 12. Wells constructed in the basin fill and bedrock were added at Site 13 (Sec 3.4.4.11) to evaluate hydrologic parameters and vertical distribution of sulfate in the critical area of the sulfate plume. Well Sites 1, 5, and 6 were moved limited distances to accommodate land ownership issues and water quality data developed subsequent to the Work Plan.

Information including geologic logs, water quality data for reconnaissance samples and temporary wells, well construction diagrams, and well construction summaries for the BMO-2008-series wells are provided in Appendices J, K, L, and M, respectively.

3.4.4.1 Site BMO-2008-1

Monitor well BMO-2008-1G was drilled south of Swan Road and north of the Bisbee Municipal Airport (Figure 10) in Section 2, Township 24 South, Range 24 East to evaluate the eastern limit of the sulfate plume near the former evaporation pond, determine hydraulic properties of the bedrock at this location, and to provide long-term water level and water quality data. Site 1 was moved approximately 1,000 feet to the east of the original Work Plan location because monitoring data developed as part of Task 2.1 showed the original Work Plan location was in the plume. ADEQ approved the site modification prior to drilling (ADEQ, 2008b).

BMO-2008-1G was drilled to total depth of 320 ft bls using Stratex and conventional air-rotary drilling methods. Bedrock was encountered at 50 ft bls and moisture was first noted at 70

ft bls. Inter-layered dry and damp zones were encountered to a depth of 210 ft bls, where inflow to the borehole became sufficient that reconnaissance water sampling was possible. The details of drilling and well construction are presented in Appendix M. Reconnaissance water samples were recovered approximately every 20 feet from 210 to 320 ft bls and analyzed in the field and laboratory, as shown in Table K.1. The water level rose to 61 ft bls within 24 hrs and persists at that approximate depth.

Materials encountered in the borehole include basin fill sediments, Morita Formation, and Glance Conglomerate. The geologic log for BMO-2008-1G is in Appendix J. The stratigraphy at BMO-2008-1G can be summarized as follows:

- 0-50 ft bls: Basin Fill; strongly caliche-cemented clayey to silty sand and gravel
- 50-170 ft bls: Morita Formation; reddish gray to brown sandy to clayey siltstone
- 170-320 ft bls: Glance Conglomerate; reddish brown conglomerate with sandy to silty matrix and few siltstone interbeds

BMO-2008-1G was completed in the Glance Conglomerate with well screen from a depth of 180 to 300 ft bls (Figure L.1). The basin fill is unsaturated in the borehole and water quality samples recovered during drilling from the bedrock aquifer contained sulfate concentrations below 250 mg/L (Table K.1), indicating the bedrock aquifer is outside of the plume at this location. Following the guidelines established in the Work Plan, the well was completed entirely in one formation (Glance Conglomerate) and monitors the unimpacted bedrock east of the source area. Initial sampling of the completed well conducted during hydraulic testing produced a sulfate concentration of 107 mg/L.

3.4.4.2 Site BMO-2008-3

Well BMO-2008-3B was constructed east of the City of Naco, Arizona to evaluate the southern lateral extent of the sulfate plume in this area, evaluate hydraulic properties of the basin fill at this location, and provide long-term water level and water quality data. The well is located east of Naco Highway and south of Purdy Lane on the Miller Ranch property (Figure 10) in Section 17, Township 24 South, Range 24 East.

BMO-2008-3B was drilled to a total depth of 590 ft bls using a combination of Stratex, ARCH, and reverse-circulation rotary drilling methods. The well encountered groundwater at approximately 136 ft bls and claystone bedrock at 470 ft bls. The details for drilling and well construction are presented in Appendix M. Reconnaissance water samples were recovered approximately every 20 feet from 156 to 580 ft bls and analyzed in the field and laboratory, as shown in Table K.2.

Materials encountered in the borehole include basin fill sediments and fine-grained clastic bedrock. The bedrock may be a portion of the Cintura Formation. Limestone intercepted at 580 feet is interpreted as the top of the Upper Mural Limestone. The geologic log for BMO-2008-3B is included in Appendix J. Summary geology for BMO-2008-3B is as follows:

- 0-70 ft bls: Basin Fill; moderately caliche-cemented reddish brown silt and silty sand with gravel
- 70-418 ft bls: Basin Fill; reddish brown gravel with silt and sand
- 418-470 ft bls: Basin Fill; reddish brown sandy clay grading to silty sand transition to bedrock
- 470-580 ft bls: Cintura/Morita Formation; interbedded pale red, gray, yellow and brown claystone, mudstone, and sandstone
- 580-590 ft bls: Upper Mural Limestone; medium gray limestone

BMO-2008-3B was completed in the upper portion of the basin fill with well screen from a depth of 150 to 250 ft bls (Figure L.2). Reconnaissance water samples contained sulfate concentrations below 250 mg/L except the sample from 220 ft bls, which yielded a concentration of 300 mg/L. Reconnaissance samples from depths greater than 220 ft bls exhibit a generally declining trend in sulfate concentrations. Following the guidelines established in the Work Plan, the well was screened in the upper 100 feet in the basin fill aquifer. Groundwater was first encountered at 156 ft bls, but water levels in the completed well rose to approximately 136 ft bls. The well monitors the unimpacted basin fill on the southern margin of the plume east of the City of Naco, Arizona. Initial sampling of the completed well conducted during hydraulic testing produced a sulfate concentration of 106 mg/L.

3.4.4.3 Site BMO-2008-4

Well BMO-2008-4B was drilled northeast of the City of Naco, Arizona to evaluate the vertical extent of sulfate near the downgradient toe of the sulfate plume, evaluate hydraulic properties of materials below the plume at this location, and provide long-term water level and water quality data. The well is located on the Rogers property on Mule Deer Road west of Naco Highway and south of Purdy Lane (Figure 10) in Section 18, Township 24 South, Range 24 East. BMO-2008-4B is located near two shallower wells that supply drinking water: the Rogers family private well (ROGERS 803) and public water supply well NWC-03. Groundwater samples from NWC-03 contain sulfate concentrations above 250 mg/L, indicating that its screened interval from 252 to 312 ft bls is within the plume.

BMO-2008-4B was drilled to a total depth of 660 ft bls using Stratex and reverse-circulation air-rotary drilling methods. The details of drilling and well construction are presented in Appendix M. Reconnaissance water samples were recovered approximately every 20 feet from 180 to 660 ft bls and analyzed in the field and laboratory, as shown in Table K.3.

Materials encountered in the borehole include basin fill sediments to a depth of approximately 636 ft bls and limestone bedrock from 636 to 660 ft bls. The bedrock is interpreted as Upper Mural Limestone. The geologic log of BMO-2008-4B is included in Appendix J. Summary geology for BMO-2008-4B is as follows:

- 0-75 ft bls: Basin Fill; moderately caliche-cemented reddish brown to brown sand and silt with gravel
- 75-170 ft bls: Basin Fill; weak to moderately cemented reddish brown sandy silt to silty sand with gravel
- 170-435 ft bls: Basin Fill; reddish brown gravel with sand and silt to sandy gravel
- 435-636 ft bls: Basin Fill; reddish brown gravelly sand with little silt
- 636-660 ft bls: Mural Limestone; light gray, fossiliferous, micritic limestone

BMO-2008-4B was completed in the lower portion of the basin fill with well screen from a depth of 500 to 600 ft bls (Figure L.3) for the purpose of monitoring groundwater in the basin fill beneath the sulfate plume. The saturated thickness of the basin fill at site BMO-2008-4 is approximately 506 feet, extending from the water table at approximately 130 ft bls to bedrock at 636 ft bls. Results of reconnaissance water sampling during drilling indicate that sulfate concentrations in excess of 250 mg/L may persist to a depth of 440 ft bls (Table K.3). Below 440 ft bls, sulfate concentrations in reconnaissance samples declined with depth from 240 mg/L at 460 ft bls to 190 mg/L at 660 ft bls. Following the guidelines established in the Work Plan, the annular seal extended 50 feet below impacted zone, resulting in the top of the screen being

set at 500 ft bls, which is within 100 feet of the impacted zone. Initial sampling of the completed well conducted during hydraulic testing yielded a sulfate concentration of 9.4 mg/L.

3.4.4.4 Site BMO-2008-5

Two monitor wells were drilled and installed at site BMO-2008-5 to evaluate the lateral extent and potential vertical zoning at the southwestern margin of the plume, evaluate hydraulic properties of the basin fill and bedrock at this location, and provide long-term water level and water quality data. The site is located on the Miller Ranch property west of Naco Highway and immediately north of Purdy Lane (Figure 10) in Section 7, Township 24 South, Range 24 East. Site BMO-2008-5 was moved approximately 1,200 feet northeast from the location proposed by the Work Plan on the AWC property. The site was moved based on the request of AWC to install two additional wells on the banks of Greenbush Draw. The present location was selected to provide a more even spacing between the proposed Greenbush Draw wells and Site 6 wells (Section 3.4.4.5) and was approved by ADEQ prior to installation (ADEQ, 2008c).

BMO-2008-5M was drilled to a total depth of 460 ft bls using a combination of ARCH and reverse-circulation rotary drilling methods. The details of drilling and well construction are presented in Appendix M. Reconnaissance water samples were recovered approximately every 20 feet from 180 to 460 ft bls and analyzed in the field and laboratory, as shown in Table K.4. Sulfate concentrations in the reconnaissance water samples were all below 250 mg/L, indicating that the site is outside the sulfate plume.

Materials encountered in the borehole include basin fill sediments to a depth of approximately 290 ft bls and bedrock composed of sandstone to claystone from 290 to 460 ft bls. The bedrock is interpreted to be either part of the Cintura Formation, or possibly the part of the mixed clastic-carbonate sequence of the lower Mural Formation. The geologic log of BMO-2008-5M is included in Appendix J. Summary geology for BMO-2008-5M is as follows:

- 0-65 ft bls: Basin Fill; strongly caliche-cemented brown to pink sandy silt and clay
- 65-165 ft bls: Basin Fill; strongly cemented brown to reddish brown sandy silt with little gravel
- 165-255 ft bls: Basin Fill; mottled gravel with sand and silt
- 255-290 ft bls: Basin Fill; brownish to reddish sand with gravel
- 290-460 ft bls: Cintura/Lower Mural Formation; yellow, gray, and brown calcareous sandstone to siltstone grading to interbedded sandstone and claystone and rarely limestone

BMO-2008-5M was completed in the Lower Mural/Cintura Formation with well screen from a depth of 340 to 440 ft bls (Figure L.4). Reconnaissance sampling data from the borehole (Table K.4) indicated that groundwater in the bedrock (and basin fill) contained sulfate concentrations below 250 mg/L. Following the guidelines established in the Work Plan, the annular seal extended 50 feet below the contact between the basin fill and bedrock, resulting in the top of the screen being set at 340 ft bls. The well monitors the bedrock beneath the basin fill. The initial sample of groundwater from the completed well collected during hydraulic testing contained a sulfate concentration of 107 mg/L.

BMO-2008-5B was drilled to a total depth of 295 ft bls using ARCH and air rotary methods approximately 50 feet west of BMO-2008-5M. The geologic log for BMO-2008-5M describes conditions at BMO-2008-5B (Appendix J). The details of drilling and well construction are presented in Appendix M. This well was installed to monitor the basin fill

aquifer outside of the plume at this location. The well was constructed with screen from 140 to 280 ft bls to span the basin fill aquifer (Figure L.5). Reconnaissance water samples collected from the basin fill during drilling of BMO-2008-5M (Table K.4) indicated that the sulfate plume has not reached this location. The initial sample of groundwater from the completed well collected during hydraulic testing contained a sulfate concentration of 193 mg/L.

3.4.4.5 Site BMO-2008-6

Two monitoring wells were drilled and installed at site BMO-2008-6 to evaluate the lateral extent of the sulfate plume at its northwest edge, changes in sulfate concentration with depth, hydraulic properties of materials in the basin fill and bedrock at this location, and provide long-term water level and water quality data. The site is located on the Miller Ranch north of Purdy Lane and west of Naco Highway (Figure 10) in Section 7, Township 24 South, Range 24 East. Well Site 6 was shifted approximately 1,500 feet southwest of the Work Plan location to accommodate the request of the land owner. ADEQ approved the modification of the well site location prior to drilling (ADEQ, 2008a).

BMO-2008-6M was drilled to a total depth of 460 ft bls using a combination of Stratex, ARCH, and air rotary drilling methods. The details of drilling and well construction are provided in Appendix M. Reconnaissance water samples were recovered approximately every 20 feet from 200 to 460 ft bls and analyzed in the field and laboratory, as shown in Table K.5. Sulfate concentrations in the reconnaissance water samples were all below 250 mg/L, indicating that the site is outside the sulfate plume.

Materials encountered in the borehole include basin fill sediments to a depth of approximately 240 ft bls and bedrock composed pale yellow sandstones with limey and silty interbeds. The basin fill-bedrock contact was initially interpreted to be at a depth of 270 ft bls. Review of the cuttings after the wells were constructed resulted in reinterpreting the contact at the base of a clay zone at 240 ft bls. The bedrock is interpreted as being Cintura Formation, but may also be part of the Lower Mural Limestone or Morita Formation. The geologic log for borehole BMO-2008-6M is in Appendix J. Summary geology for BMO-2008-6M is as follows:

- 0-95 ft bls: Basin Fill; strongly caliche-cemented, pink, light brown, and reddish brown silt with sand
- 95-240 ft bls: Basin Fill; moderately cemented reddish brown silty sand and gravel
- 240-460 ft bls: Cintura Formation; brown to yellow, calcareous arkosic sandstone interbedded with mudstone

BMO-2008-6M was completed in the upper portion of the bedrock with well screen from a depth of 340 to 440 ft bls (Figure L.6) for the purpose of monitoring groundwater in the bedrock west of the sulfate plume. Reconnaissance water sampling data from the borehole (Table K.5) indicated that groundwater in the bedrock and basin fill contained sulfate concentrations below 250 mg/L. Following the guidelines established in the Work Plan, the annular seal extended 80 feet below the contact between the basin fill and bedrock, resulting in the top of the screen being set at 340 ft bls. Initial sampling of the completed well conducted during hydraulic testing produced a sulfate concentration of 182 mg/L.

BMO-2008-6B was drilled to a total depth of 270 ft bls using Stratex and conventional air rotary drilling methods approximately 30 feet north of BMO-2008-6M to monitor the basin fill aquifer at this location. The geologic log for BMO-2008-6M describes conditions at BMO-2008-6B (Appendix J). The details of drilling and well construction are presented in Appendix

M. The well was constructed with screen from 195 to 255 ft bls to span the basin fill aquifer (Figure L.7). The weathered clayey character of the basin fill-bedrock contact obscured the exact location of the contact. As a result, the upper 15 feet of the bedrock was included in the screened interval based on initial interpretation of the bedrock contact, which was later revised after further examination of the cuttings. The completed well was developed using swabbing, bailing, and pumping because airlift development of this well was not possible. Reconnaissance water samples collected from the basin fill during drilling of BMO-2008-6M (Table K.5) indicated that the basin fill aquifer was outside of the plume at this location. Initial samples of groundwater from BMO-2008-6B collected during hydraulic testing contained a sulfate concentration of 53.3 mg/L.

3.4.4.6 Site BMO-2008-7

Well BMO-2008-7M was drilled near the COB's San Jose WWTF to evaluate the vertical extent of the sulfate plume, evaluate hydraulic properties of materials beneath the plume at this location, and provide long-term water level and water quality data. San Jose WWTF has a monitor well COB MW-1 on the facility site that is completed in basin fill impacted with sulfate. BMO-2008-7M is approximately 500 feet north-northwest of COB MW-1. BMO-2008-7M is located on CQB property north of Purdy Lane and west of the San Jose WWTF former recharge ponds (Figure 10) in Section 9, Township 24 South, Range 24 East.

BMO-2008-7M was drilled to a total depth of 750 ft bls, using a combination of ARCH, Stratex, and reverse-circulation rotary drilling methods. The details of drilling and well

construction are provided in Appendix M. Reconnaissance water samples were recovered approximately every 20 feet from 240 to 750 ft bls and analyzed in the field and laboratory. Temporary wells were installed, developed and tested approximately every 70 feet in the bedrock aquifer from 300 to 750 ft bls. Field and laboratory analytical results are shown in Table K.6.

Materials encountered in the borehole include basin fill sediments to a depth of approximately 490 ft bls and bedrock composed of mudstones to sandstones from 490 to 750 ft bls. The geologic log for borehole BMO-2008-7M is in Appendix J. Summary geology for BMO-2008-7M is as follows:

- 0-105 ft bls: Basin Fill; strongly caliche-cemented, pink to reddish brown silty sand with gravel
- 105-140 ft bls: Basin Fill; weakly cemented, light reddish brown clayey sand with gravel
- 140-210 ft bls: Basin Fill; moderately cemented, light reddish brown sandy clay
- 210-400 ft bls: Basin Fill; light reddish brown gravel with sand and clay with sandy gravel
- 400-490 ft bls: Basin Fill; reddish brown sand with gravel, trace fines
- 490-750 ft bls: Morita Formation; reddish gray calcareous siltstone, sandstone, and mudstone, locally slightly carbonaceous or arkosic

BMO-2008-7M was completed in the upper portion of the Morita Formation with well screen from a depth of 560 to 660 ft bls (Figure L.8) for the purpose of monitoring groundwater in the bedrock beneath the impacted basin fill. Sulfate concentrations in groundwater from the basin fill were greater than 500 mg/L, but all below 250 mg/L in temporary well samples collected from Morita Formation (Table K.6). Following the guidelines established in the Work Plan, the annular seal extended 50 feet below the contact between the basin fill and bedrock, resulting in the top of the screen being set at 560 ft bls. Initial sampling of the completed well conducted during hydraulic testing produced a sulfate concentration of 31.4 mg/L.

3.4.4.7 Site BMO-2008-8

Two wells were installed at site BMO-2008-8 to evaluate the distribution of sulfate in the basin fill and Morita Formation west of the projection of the Black Gap fault, evaluate hydraulic properties of materials in basin fill and bedrock, and provide long-term water level and water quality data. The wells at BMO-2008-8 were intended to evaluate the vertical extent of sulfate impacts at this location and explore the hydrologic influence of the Black Gap fault in conjunction with the BMO-2008-9M well. The site is located on CQB property approximately 1,800 feet southwest of the former evaporation pond within the sulfate plume and approximately 1,500 feet west of site BMO-2008-9 (Figure 10) in Section 4, Township 24 South, Range 24 East.

BMO-2008-8M was drilled to a total depth of 1,220 ft bls using Stratex, conventional air rotary and reverse-circulation air rotary drilling methods. The details of drilling and well construction are presented in Appendix M. Groundwater was encountered at approximately 355 ft bls. Reconnaissance water samples were recovered at 20 foot intervals from 360 to 1,220 ft bls and analyzed in the field and laboratory, as shown in Table K.7.

Materials encountered in the borehole include basin fill sediments to a depth of approximately 495 ft bls and Morita Formation bedrock composed of sandstones to mudstones from 495 to 1,220 ft bls. The geologic log for borehole BMO-2008-8M is in Appendix J. Summary geology for the borehole is as follows:

- 0-130 ft bls: Basin Fill; moderate to strongly caliche-cemented, light pinkish gray to reddish brown gravel with silt, clay, and sand and few interbeds of sand with silt and gravel

- 130-220 ft bls: Basin Fill; moderately cemented light reddish brown silty gravel with sand
- 220-350 ft bls: Basin Fill; moderately cemented reddish brown clayey to silty sand with gravel, interbeds of clayey gravel with sand
- 350-495 ft bls: Basin Fill; calcareous reddish brown sand with gravel, interbeds of gravel with sand
- 495-1220 ft bls: Morita Formation; reddish brown arkosic sandstone, interbeds of siltstone, claystone, and mudstone

Temporary wells were installed, developed, and tested approximately every 100 feet from 530 to 1,195 ft bls. Field and laboratory analytical results from the temporary wells are shown in Table K.7. Sulfate concentrations in the temporary well samples were greater than 250 mg/L, except for the sample recovered from 1,030 to 1,050 ft bls, which had a concentration of 120 mg/L as determined by the laboratory.

The EC, sulfate, and TDS results obtained from temporary wells suggested that fracturing in the bedrock was allowing high-sulfate water in the borehole to by-pass the bentonite seal at the top of the temporary well. The high-sulfate content resulted from basin fill groundwater entering the open borehole during drilling. If the borehole water could by-pass the bentonite seal through fractures in the formation, the temporary well samples might not represent the aquifer conditions within the temporary well. Several lines of evidence seemed to support this hypothesis. First, the productivity of the temporary wells was greater than expected by the cemented, fine-grained nature of the bedrock as evaluated by drill cuttings. Second, fluctuations in sulfate concentration with depth were inconsistent with reconnaissance and temporary well sample results of previous wells, such as BMO-2008-7M (Table K.6), BMO-2008-9M (Table K.8), and BMO-2008-3B (Table K.2), which exhibited comparatively consistent declines in sulfate concentration with depth. Third, the turbidity of water removed from the temporary wells

typically remained high, which is unexpected in temporary wells constructed in bedrock, indicating that fine sediments from the well bore above the bentonite seal were being drawn into the temporary wells. Uncertainty concerning the reliability of the temporary well samples confounded attempts to apply the guidelines for well depth and construction articulated in the Work Plan.

BMO-2008-8M was completed in the Morita Formation with well screen from a depth of 1,100 to 1,200 ft bls (Figure L.9). The temporary well data from the borehole (Table K.7) were ambiguous concerning the depth of elevated sulfate in the bedrock aquifer. However, the results, particularly temporary well sample collected from 1,030 to 1,050 ft bls, suggested that groundwater in the bedrock might have sulfate concentrations below 250 mg/L at the completion depth. Following the guidelines established in the Work Plan, BMO-2008-8M was completed with 100 feet of well screen to monitor the bedrock beneath the plume. Initial sampling of the completed well conducted during hydraulic testing produced a sulfate concentration of 197 mg/L, reinforcing the validity of the low sulfate concentrations of the temporary well sample from 1,030 to 1,050 ft bls.

BMO-2008-8B was drilled to a total depth of 492 ft bls using Stratex and conventional air rotary drilling methods approximately 30 feet north of BMO-2008-8M to monitor the impacted basin fill aquifer at this location. The geologic log for BMO-2008-8M describes conditions at BMO-2008-8B (Appendix J). The details of drilling and well construction are presented in Appendix M. The well was constructed with screen from 370 to 470 ft bls to span

the saturated basin fill aquifer (Figure L.10). Initial samples of groundwater from BMO-2008-8B collected during hydraulic testing contained a sulfate concentration of 1,890 mg/L.

3.4.4.8 Site BMO-2008-9

Well BMO-2008-9M was drilled on the east side of the projection of the Black Gap fault to evaluate the vertical extent of sulfate impacts to the Morita Formation east of the projection of the Black Gap fault, evaluate hydraulic properties of materials below the plume at this location, and provide long-term water level and water quality data. The site is located on CQB property approximately 1,300 feet south of the footprint of the former evaporation pond (Figure 10) in Section 3, Township 24 South, Range 24 East. BMO-2008-9M was also intended to explore the hydrologic influence of the Black Gap fault in conjunction with the BMO-2008-8M well.

BMO-2008-9M was drilled to a total depth of 785 ft bls using a combination of Stratex, conventional air rotary, and reverse-circulation air rotary drilling methods. Details of drilling methods and well construction are shown in Appendix M. Water was first encountered at 305 ft bls and reconnaissance samples were recovered at 20-foot intervals from 305 to 780 ft bls, as shown in Table K.8.

Temporary wells were installed, developed, and sampled approximately every 100 feet in the bedrock aquifer from 550 to 785 ft bls. Reconnaissance samples collected during drilling in the upper portion of the bedrock were suspected of being unrepresentative of groundwater in the aquifer. A sulfate concentration of 347 mg/L obtained from sampling the return water produced

from a depth of 740 feet the first thing in the morning was inconsistent with the 800 to 900 mg/L sulfate concentrations observed above and below this interval. Temporary wells were constructed to mitigate the influence of the high sulfate concentrations in the upper portion of the open borehole by isolating a 40-foot section of filter pack and well screen sealed by bentonite zones above and below. Data from the temporary wells are presented in Table K.8 and are considered to be more reliable than the reconnaissance water samples collected during drilling.

Materials encountered in the borehole include basin fill sediments to a depth of 130 ft bls and bedrock composed of Morita Formation from 130 to 780 ft bls. The geologic log for borehole BMO-2008-9M is in Appendix J. Summary geology for BMO-2008-9M is as follows:

- 0-65 ft bls: Basin Fill; strongly caliche-cemented reddish brown silty sand interbedded with sandy silt with gravel
- 65-130 ft bls: Basin Fill; moderately cemented, reddish brown silty gravel with sand, interbedded with gravelly silt with sand
- 130-785 ft bls: Morita Formation; weak red to light gray arkosic sandstone interbedded with reddish brown siltstone, mudstone, and claystone

BMO-2008-9M was completed in the Morita Formation with well screen from a depth of 665 to 765 ft bls (Figure L.11) for the purpose of monitoring groundwater in the Morita Formation beneath the plume on the east side of the Black Gap fault. Temporary well data from the borehole (Table K.8) were used to calculate that the lower extent of sulfate impact is approximately 630 ft bls by multiplying the distance between the zones by the ratio of the difference between the high concentration and 250 mg/L and the difference between the concentrations in the two zones. The calculation assumes that the concentration gradient between the two temporary well samples is linear with depth. Following the guidelines established in the Work Plan, top of the well screen was set at 665 ft bls to be less than 100 feet

from the bottom of the impacted zone. Initial sampling of the completed well conducted during hydraulic testing produced a sulfate concentration of 47.3 mg/L.

3.4.4.9 Site BMO-2008-10

Two monitoring wells were installed at site BMO-2008-10 to monitor sulfate concentrations in the vicinity of the source area, evaluate the vertical extent of sulfate impact to groundwater in the bedrock, evaluate hydraulic properties of bedrock materials in the source area, and provide long-term water level and water quality data. The site is located on CQB property south of the South Tailing Impoundment within the footprint of the former evaporation pond (Figure 10) in Section 3, Township 24 South, Range 24 East.

BMO-2008-10GU was drilled to a total depth of 700 ft bls, using a combination of Stratex and conventional air rotary drilling methods. The details of drilling and well construction are presented in Appendix M. Glance Conglomerate bedrock was encountered at approximately 130 ft bls and groundwater was encountered at approximately 230 ft bls. Reconnaissance water samples were recovered approximately every 20 feet from 230 to 700 ft bls and analyzed in the field and laboratory, as shown in Table K.9. Temporary wells were installed, developed and tested at several intervals, some of which used a straddle packer. Field and laboratory analytical results from those temporary wells are also shown in Table K.9.

Materials encountered in the borehole include basin fill sediments to a depth of approximately 130 ft bls and Glance Conglomerate from 130 to 700 ft bls. The geologic log for borehole BMO-2008-10GU is in Appendix J. Summary geology for the borehole is as follows:

- 0-77 ft bls: Basin Fill; strongly caliche-cemented, reddish brown silty gravel with sand, interbeds of silty sand with gravel, decreasing cementation from 55 to 77 ft bls
- 77-130 ft bls: Basin Fill; moderate to weakly cemented, reddish brown gravel with clay and sand, interbeds of clayey to silty sand with gravel
- 130-700 ft bls: Glance Conglomerate; reddish brown, clasts of predominantly Pinal Schist in a sandy to silty matrix

Reconnaissance water samples and temporary well samples indicated sulfate concentrations greater than 250 mg/L throughout the saturated portion of the borehole. The sulfate samples collected from the completed borehole corroborate the presence of high sulfate throughout the upper portion of the Glance Conglomerate at this location. The borehole was completed as a well to monitor the upper portion of the saturated Glance Conglomerate at this location because caving prevented advancement past 700 ft bls. BMO-2008-10GU was completed in the upper portion of the Glance Conglomerate with well screen from a depth of 239 to 439 ft bls (Figure L.12). The borehole beneath a depth of 460 ft bls was backfilled with bentonite chips to seal off the lower portion of the borehole. The initial sample of groundwater from BMO-2008-10GU collected during hydraulic testing contained a sulfate concentration of 2,210 mg/L.

BMO-2008-10GL was drilled to a depth of 820 ft bls using a combination of Stratex and conventional air rotary drilling methods. The details of drilling and well construction are presented in Appendix M. The well was positioned approximately 120 feet south of BMO-2008-10GU in an attempt to avoid caving problems encountered in 10GU. The borehole was dry to a

depth of 340 ft bls where a small amount of water was encountered. Temporary casing was installed to a depth of approximately 350 ft bls and the borehole was advanced with conventional air rotary methods. The borehole remained essentially dry to a depth of 780 ft bls where a water-bearing zone was encountered. Reconnaissance water samples were recovered approximately every 20 feet from 780 to 820 ft bls and analyzed in the field and laboratory, as shown in Table K.10. Water levels in the borehole rose to approximately 550 ft bls.

Materials encountered in the borehole include basin fill sediments to a depth of approximately 110 ft bls and Cretaceous Glance Conglomerate from 110 to 820 ft bls. The geologic log for borehole BMO-2008-10GL is in Appendix J. Summary geology for the borehole is as follows:

- 0-65 ft bls: Basin Fill; strongly caliche-cemented, light brown to reddish brown silty sand with gravel to silty gravel with sand
- 65-110 ft bls: Basin Fill; moderately to weakly caliche-cemented, reddish brown sandy clay to sand with clay and gravel
- 110-820 ft bls: Glance Conglomerate; reddish brown, clasts of predominantly Pinal Schist in a sandy to silty matrix

BMO-2008-10GL was completed in the lower portion of the Glance Conglomerate with well screen from 700 to 800 ft bls (Figure L.13). Reconnaissance groundwater samples collected during drilling indicated that the sulfate concentration of the groundwater encountered from 780 to 820 ft bls was below 250 mg/L (Table K.10). The reconnaissance sample collected at 780 ft bls is considered reliable because the borehole was dry to that depth. The sulfate concentration of a groundwater grab sample collected after removing over 2,500 gallons of water during air lift development was 96 mg/L. In contrast to the reconnaissance sample results, initial sampling of the completed well conducted during hydraulic testing produced a sulfate concentration of 1,320

mg/L. The increase in sulfate may be the result of pulling high sulfate groundwater through the fracture system in the low permeability formation during drilling, well development, and hydraulic testing. The difference in static water level elevations between BMO-2008-10GU and BMO-2008-10GL indicates poor hydraulic connection between the water-bearing zones tapped by the wells.

3.4.4.10 Site BMO-2008-11

Well BMO-2008-11G was drilled northwest of the former evaporation pond (Figure 10) to evaluate the northern limit of the sulfate plume west of the source area, evaluate hydraulic properties of bedrock materials at this location, and provide long-term water level and water quality data. The well also provides water levels and groundwater quality data west of the South Tailing Impoundment. BMO-2008-11G is located on CQB property in Section 33, Township 23 South, Range 24 East.

BMO-2008-11G was drilled to a depth of 820 ft bls using Stratex, conventional air rotary, and reverse-circulation air rotary drilling methods. The details of drilling methods and well construction are presented in Appendix M. Reconnaissance water samples were recovered approximately every 20 feet from 680 to 820 ft bls and analyzed in the field and laboratory, as shown in Table K.11. Sulfate concentrations ranged from 18 to 23 mg/L.

Materials encountered in the borehole include basin fill sediments to a depth of approximately 240 ft bls, Morita Formation bedrock to 490 ft bls, and Glance Conglomerate to

the total depth of the borehole. The geologic log for borehole BMO-2008-11G is in Appendix J. Summary geology for the borehole is as follows:

- 0-105 ft bls: Basin Fill; strongly caliche-cemented, pinkish gray to light brown sand, silt, and gravel
- 105-240 ft bls: Basin Fill; moderate to strongly cemented, light brown silty sand and gravel
- 240-490 ft bls: Morita Formation; light reddish brown, arkosic sandstone, interbeds of siltstone and mudstone
- 490-820 ft bls: Glance Conglomerate; reddish brown, clasts of predominantly Pinal Schist in a sandy to silty matrix

The basin fill is unsaturated at this location. A thin zone of groundwater appeared to be present at the interface between the Morita Formation and Glance Conglomerate. A sample of this groundwater recovered from the borehole (Table K.11) had a sulfate concentration of 24 mg/L. Drilling in the Glance Conglomerate produced dry cuttings until water was encountered at 680 ft bls.

BMO-2008-11G was completed in the Glance Conglomerate with well screen from a depth of 650 to 750 ft bls (Figure L.14) for the purpose of monitoring groundwater in the Glance Conglomerate bedrock outside of the sulfate plume west of the South Tailing Impoundment and northwest of the former evaporation pond. Groundwater encountered in the Glance Conglomerate at a depth of 680 ft bls contained sulfate concentrations below 250 mg/L. Following the guidelines established in the Work Plan, the well was completed with 100 feet of well screen to encompass the water bearing zone. The annular seal extends from 631 ft bls to the surface. Static water levels in the completed well rose to a depth of approximately 577 ft bls, indicating the fracture-controlled groundwater encountered at 680 ft bls has approximately 100

feet of hydraulic head where it was encountered in the borehole. The initial sample of groundwater from BMO-2008-11G contained 14.2 mg/L sulfate.

3.4.4.11 Site BMO-2008-13

Two wells were constructed at site BMO-2008-13 to evaluate hydraulic properties of basin fill and bedrock materials, identify the vertical extent of the plume, and provide long-term water level and water quality data in the western portion of the plume. Well installation at this site was not envisaged in the Work Plan, but was added during execution of the program to provide additional geologic, hydrologic, and water quality information midway between sites BMO-2008-7 and BMO-2008-6. The site, approved in advance by ADEQ (ADEQ, 2008d), is located on CQB property east of Naco Highway and north of Purdy Lane in Section 8, Township 24 south, Range 24 East (Figure 10). The site was positioned midway between sites BMO-2008-6 and BMO-2008-7 along a line that approximates the apparent flow path in the aquifer. The shallow well was intended to document the water quality within the plume in the basin fill aquifer and the deep well was intended to evaluate the vertical extent of sulfate in groundwater in this area.

BMO-2008-13B was drilled to a total depth of 700 ft bls using Stratex, conventional air-rotary, and reverse-circulation air rotary drilling methods. The details of drilling and well construction are provided in Appendix M. Groundwater was encountered at approximately 238 ft bls and reconnaissance water samples were recovered at 20-foot intervals from 240 to 700 ft

bls. One temporary well was constructed and sampled with screen from 550 to 570 ft bls. The results of field and laboratory water quality measurements are shown in Table K.12.

Materials encountered in the borehole include basin fill sediments to a depth of approximately 520 ft bls and limestone and calcareous clastic bedrock, interpreted as being part of the Mural Limestone from 520 to 700 ft bls. The geologic log for borehole BMO-2008-13B is in Appendix J. Summary geology for the borehole is as follows:

- 0-75 ft bls: Basin Fill; strongly caliche-cemented, pink, brown, and reddish clayey sand, locally with gravel
- 75-105 ft bls: Basin Fill; moderately cemented, reddish brown, clay with sand and gravel
- 105-245 ft bls: Basin Fill; moderate to weakly cemented, light reddish brown to pinkish gray gravel with clay and sand, locally interbedded with sand
- 245-520 ft bls: Basin Fill; weakly cemented, light reddish brown to pink gravel with sand, angular to subrounded
- 520-575 ft bls: Upper Mural Limestone; pinkish gray micritic limestone with clay, calcite, and iron staining on fracture fillings
- 575-700 ft bls: Lower Mural Limestone; light yellowish brown to gray calcareous siltstone and claystone to silty limestone

BMO-2008-13B was completed in the basin fill with well screen from 264 to 464 ft bls (Figure L.15). Borehole caving prevented this borehole from reaching its objective of evaluating the depth of the sulfate plume. Therefore, it was completed as a well to monitor the basin fill aquifer, which is approximately 280 feet thick from the water table at approximately 240 ft bls to bedrock at 520 ft bls. Reconnaissance water samples in the basin fill ranged in sulfate concentration from 870 to 1,200 mg/L (Table K.12). The well was constructed with 200 feet of well screen approximately centered within the saturated basin fill, following guidelines established in the Work Plan. The well monitors impacted basin fill near the western margin of

the plume. Initial sampling of the completed well conducted during hydraulic testing produced a sulfate concentration of 980 mg/L.

BMO-2008-13M was drilled to a total depth of 1,100 ft bls approximately 120 feet south of BMO-2008-13B using Stratex, conventional air-rotary, and reverse-circulation air rotary drilling methods. The details of drilling and well construction are provided in Appendix M. Groundwater was encountered at approximately 240 ft bls and reconnaissance water samples were recovered at 20-foot intervals from 260 to 1100 ft bls. Four temporary wells were constructed and sampled with 20 feet of well screen set in approximately 40 feet of filter pack. The tops of the temporary screened intervals were 720, 820, 920, and 1,070 ft bls. The results of field and laboratory water quality measurements are shown in Table K.13.

Temporary well samples from BMO-2008-13M exhibited some indication of being unrepresentative of the groundwater in the zone in which the temporary well was completed. The issues and observations concerning the temporary wells were similar to those previously described for BMO-2008-8M (Section 3.4.4.7). The upper two temporary well zones had airlift pumping rates that were unexpectedly high for the lithology represented by the drill cuttings (43 to 50 gpm in the 720 to 740 ft bls temporary well and 25 to 15 gpm in the 820 to 840 ft bls temporary well). The video log for this well showed that a portion of the zone sampled by these two temporary wells (626 to 761 ft bls) appeared to have numerous fractures and an irregular borehole wall, as reflected in the caliper log (Appendix I). The high flow rates suggested the possibility that high-sulfate water from the borehole above the temporary well seal was bypassing the seal and flowing through fractures in the bedrock into the temporary well.

Temporary wells at 920 to 940 ft bls and 1,080 to 1,100 ft bls were constructed with thicker bentonite well seals to mitigate potential fracture flow from the borehole that would corrupt the representativeness of the temporary well samples. Figure 11 shows the change in concentrations of TDS and sulfate with respect to time during development of the 920 to 940 ft bls temporary well. Sulfate concentrations declined from 563 mg/L at 15 minutes to 154 mg/L at 170 minutes of airlifting before rising to 798 mg/L after 440 minutes of airlifting. Flow rates began at 3.6 gpm, declining to 1.2 gpm at the end of airlift pumping. These observations were interpreted as indicating reduction of sulfate concentrations in water in the temporary well due to influx of low-sulfate water from the formation during the first 170 minutes of development, followed by increasing influx of high sulfate water from the borehole due to fracture flow. The reduction in concentration below 250 mg/L was interpreted as being a reliable indication that the groundwater at this depth interval was low in sulfate.

The temporary well from 1,080 to 1,100 ft bls began with a flow rate of 15 gpm, which declined to a rate of 1 gpm after 140 minutes of airlifting, accompanied by a decline in TDS from 967 ppm at 6 minutes to 693 ppm at 123 minutes before rising to 760 ppm at 206 minutes. Additional bentonite chips were added to increase the length of the seal, resulting in a decline in flow rate from 15 gpm at 4 minutes to 0.25 gpm at 290 minutes during airlifting the next day. However, the decline in flow rate did not result in declines in TDS or sulfate concentration and the turbidity of the water remained high with coloration changing from pale gray to reddish and then yellowish brown. These observations were interpreted as indicating that the productivity of the formation in the zone from 1,080 to 1,100 ft bls was insufficient to produce a representative

groundwater sample and that high-sulfate waters from the borehole were drawn through fractures into the temporary well.

Materials encountered in the BMO-2008-13M borehole were similar to those encountered in BMO-2008-13B. However, the 13M borehole encountered 106 feet of upper Mural Limestone from 520 to 626 ft bls. This indicates that the contact between the upper and lower members of the Mural Limestone has an apparent dip of approximately 24 degrees to the south. The geologic log for borehole BMO-2008-13M is in Appendix J. Summary geology for the borehole is as follows:

- 0-125 ft bls: Basin Fill; moderately caliche-cemented pink to light reddish brown clayey gravel and sand
- 125-245 ft bls: Basin Fill; moderate to weakly cemented light reddish brown gravel with clay and sand; locally sandy
- 245-435 ft bls: Basin Fill; weakly cemented gray to pale red gravel with sand, locally silty
- 435-520 ft bls: Basin Fill; weakly cemented reddish brown silty gravel with sand to silty sand with gravel
- 520-626 ft bls: Upper Mural Limestone; light gray argillaceous micritic limestone with shell fragments and clay, calcite in fractures, and local iron staining on fractures
- 626-1095 ft bls: Lower Mural Limestone; thinly interbedded gray to yellow-brown calcareous claystone, fine-grained sandstone, siltstone, and mudstone and impure limestone
- 1095-1100 ft bls: Morita Formation; gray to reddish gray calcareous fine-grained sandstone

BMO-2008-13M was completed in the lower member of the Mural Limestone with well screen from 920 to 1,020 ft bls (Figure L.16). Temporary well samples from the borehole appeared to be dominated by fracture flow that permitted communication (short-circuiting) between the borehole and the temporary well, in which case the results would be unreliable. Factors suggesting short-circuiting included: persistent turbidity, initial dips in sulfate

concentration followed by increases as airlifting progressed, and the decrease in flow rate from the same temporary well when the upper seal was lengthened to mitigate potential short-circuiting. The permanent well screen was positioned from 920 to 1,020 ft bls because the temporary well constructed at the top of this interval (920 to 940 ft bls) produced samples with sulfate concentrations below 250 mg/L for approximately 2 hrs (110 to 230 minutes of airlifting), before rising to 798 mg/L. The well monitors the bedrock beneath the impacted basin fill. Initial samples of groundwater from BMO-2008-13M collected during hydraulic testing contained a sulfate concentration of 494 mg/L.

3.5 Hydraulic Testing of BMO-2008 Wells (Task 2.3) and Existing Wells (Task 2.4)

This section describes hydraulic testing conducted at BMO-2008 groundwater monitoring wells and well nests installed under Task 2.3, and select existing wells under Task 2.4 of the Work Plan. Well construction diagrams and well construction summaries for the tested wells are in Appendices L and M, respectively. Geologic logs for the BMO-2008 wells are in Appendix J and a description of each well is provided in the well installation section of the report (Section 3.4.4). The methods, analysis, and results of hydraulic testing are summarized in this section. Appendix N contains a detailed report on the hydraulic testing including discussion of individual tests.

The purpose of hydraulic testing was to evaluate aquifer hydraulic properties, including transmissivity, storage coefficient, and where possible, vertical hydraulic conductivity in the vicinity of each well. Hydraulic testing was conducted using the procedures described in the

Work Plan. Most tests were conducted at multiple pumping rates (thereby constituting step rate tests), to enable evaluation of pumping well efficiency parameters. Pumping well efficiency parameters quantify the proportion of drawdown in the pumped well that is due to resistance to flow into the well bore and include non-linear head losses related to flow through well screen slots. In some cases, especially where the permeability of the aquifer is relatively high, the drawdown in the well is dominated by these head losses.

Hydraulic testing was conducted at each BMO-2008 well installed for Task 2.3 as described in the Work Plan. During hydraulic testing of the BMO-2008 wells, a water sample from each well was collected and analyzed for sulfate and a suite of major elements as an initial characterization of water quality. The results of the initial sampling of the BMO-2008 wells are included in Table 11.

3.5.1 Selection of Existing Wells

Hydraulic testing for Task 2.4 was conducted at existing wells to develop additional hydraulic properties data for aquifer characterization. Testing at existing wells required identifying appropriate and accessible wells. Wells identified by the well inventory (Section 3.1) were screened to eliminate previously tested wells, dry wells, and wells that were inappropriate due to obstructions, a lack of access ports, or a permanent cap. Additionally, wells were eliminated from testing if they were screened across more than a single geologic formation or if the geologic formation of the screened interval was unknown. Although there were a large number of potential wells considered, hydraulic testing was not practicable at the majority of

them because of difficulty obtaining access, the inability to interrupt water supply pumping, or construction characteristics that made the well poorly suited to hydraulic testing.

Five existing wells were selected for hydraulic testing: COB MW-1, GARNER 635, TM-02A, NWC-03, and TVI 875. COB MW-1 was chosen because it served as a basin fill well near the location of BMO-2008-7M. GARNER 635 and TM-02A were chosen to test the bedrock formations near the leading edge and source area of the sulfate plume, respectively. NWC-03 and TVI 875 were selected because they are in basin fill at the leading edge of the sulfate plume and have nearby wells that were used as observation wells.

3.5.2 Hydraulic Test Procedures

Hydraulic tests at the BMO-2008 wells and the selected existing wells consisted of step-rate pumping of the well, measuring the pumping rates, and measuring the water levels in the pumping well and nearby observation wells where available before, during, and after pumping. Constant-rate pumping was performed when step-rate pumping was not practical. Observation wells consisted of other newly installed wells in a nest, or pre-existing nearby wells, that were typically screened at intervals deeper or shallower than the pumped well, often within a different geologic formation than the pumped well. For example, one well may have been completed in the basin fill and the other in the underlying bedrock at a particular location. Barometric pressure was also measured during each test to allow correction for any barometrically induced water level changes. Collected data were analyzed to estimate pumped well efficiency parameters and aquifer hydraulic properties in the vicinities of the well nests.

3.5.2.1 Pumping Procedures

Hydraulic tests were conducted subsequent to development of each new well. A sufficient time was allowed between well developments and testing to allow recovery after development. Submersible pumps for testing BMO-series wells were supplied, deployed, and operated by Verdad Group L.L.C. Testing at existing wells was conducted using the dedicated submersible pumps in the wells. Each well was pumped at multiple increasing rates to allow analysis of pumping well efficiency parameters except COB MW-1, TM-02A, GARNER 635, NWC-03, and TVI 875, which were constant rate tests due to equipment constraints. Target pumping rates were approximately 15, 30, and 50 gpm for basin fill wells and 5, 10, and 20 gpm for bedrock wells. Actual pumping rates varied depending on pump capacities, well productivities, and aquifer properties. For example, most wells completed in the Glance Conglomerate were pumped at substantially lower rates due to the low productivity of the formation. In some cases (for example at BMO-2008-1G and BMO-2008-10GU), the tested well was pumped at only one or two rates due to low productivity. In general, the duration of pumping at the first two rates was approximately 1 hour for each, and at the maximum rate, approximately 8 hrs, although at some locations (i.e., BMO-2008-10GL) the initial low rate was sustained for approximately 8 hrs and the higher rates at about 1 hr each. Table 14 lists actual pumping rates and durations for each test.

Pumping rates for BMO-series tests were measured using in-line flowmeters supplied by Verdad Group L.L.C. and by measuring the time to fill a vessel of known volume (the "bucket and stopwatch" method). In most cases, the vessel consisted of a calibrated, 55-gallon drum that allowed very accurate calculation of actual pumping rates because of its large capacity. Pumping

rates for tests at pre-existing wells were measured using in-line flowmeters when possible or by the bucket and stopwatch method.

3.5.2.2 Water Level Monitoring

Water level monitoring consisted of continuous monitoring of water levels in pumping and observation wells where available prior to, during, and after pumping. Observation wells included available wells near (typically within a few hundred feet of) the pumped well. These were either other wells in the newly installed well nest, or pre-existing wells, screened at intervals either deeper or shallower than the pumped well. For example, BMO-2008-6M was used as an observation well during pumping of BMO-2008-6B and vice versa. BMO-2008-6B is completed in basin fill and upper 15 feet of weathered bedrock, whereas BMO-2008-6M is screened over a deeper interval within the underlying bedrock formation (Table 13).

Water levels were typically monitored at 30 second intervals using In-Situ Level Trolls. The Trolls, which are submersible instruments containing pressure transducers and data loggers, were initially placed at sufficient depths below the static water levels in the wells to remain submerged throughout each test. Some of the transducers used in the tests were vented to the atmosphere, and therefore measured gauge pressures, while others were absolute pressure transducers. In all cases, an absolute pressure transducer at the surface continuously recorded atmospheric pressure during each test. As an independent verification of the transducer data, water level measurements in pumping and observation wells were collected by hand using an electric water level sounder as frequently as practical. In cases where the drawdown in a well

exceeded the depth of placement of the transducer, the hand collected data were used during the period that the transducer was not submerged. In cases where the transducer data were of poor quality (excessively noisy), the hand collected data were used exclusively for analysis.

3.5.2.3 Data Analysis

Pressure data from the transducers were downloaded and converted to depths to water and to water level drawdowns for purposes of analysis. Although these data were corrected for changes in atmospheric pressure, the corrections were in most cases negligible with respect to drawdown. In many cases where sufficient measurements were available, the hand-collected depths to water were converted to water level drawdowns and analyzed independently.

Drawdown and pumping rate data were analyzed using WHIP, a well hydraulics interpretation package developed and marketed by HGC (HGC, 1988). WHIP has solutions that account for variable pumping rates, vertical flow and leakage, wellbore storage, and partial penetration of pumping and observation wells within a vertically anisotropic aquifer. WHIP also accounts for head losses in the pumped well resulting from well efficiency effects. Direct estimation of vertical hydraulic conductivities of the aquifer and an aquitard (if present) is available as part of the vertically anisotropic aquifer solution provided in WHIP.

Hydraulic properties and pumping well efficiency parameters were estimated using either the "homogeneous aquifer" solution or the "vertically anisotropic, partially penetrating well solution" (the partial penetration solution) available in WHIP. In many cases, both solutions

were used for comparison. The homogeneous aquifer solution assumes full well penetration, allows faster parameter estimation than the partial penetration solution, and accounts for well bore storage effects and vertical leakage (if present) into the aquifer. The homogeneous aquifer solution was used exclusively in cases where the pumped well fully penetrated the basin fill aquifer. The partial penetration solution accounts for partial penetration of pumping and observation wells, for vertical flow within an aquifer, and for leakage into the aquifer from an aquitard. The partial penetration solution was used for either basin fill or bedrock wells that did not fully penetrate the basin fill or bedrock unit within which they were completed. Appendix N describes the conceptual models used to interpret the hydraulic tests.

Hydraulic parameters estimated from each test included transmissivity, storage coefficient, and pumped well efficiency parameters. Vertical hydraulic conductivity was estimated when the partially penetrating well solution was used. In each case, pumping and recovery data were analyzed together to obtain the best fit to all collected data. In cases where a good fit to both were not obtained, drawdown and recovery data were analyzed separately.

Because the only wells close enough to serve as observation wells were completed within a different formation than the pumped well or were completed within a different depth interval of the same formation in which the pumped well was completed, drawdowns were not detectable at observation wells in most cases. Accurate estimation of storage coefficient is usually not possible using only data from the pumped well. Drawdowns in the pumped well are often significantly affected by borehole storage and head losses due to low well efficiency. Therefore, a storage coefficient value of 0.01 was initially assumed for wells completed in unconfined

aquifers, and 1 x 10^{-5} for wells which were assumed to be completed in confined aquifers. In general, wells completed in basin fill were assumed to be under unconfined conditions, and those completed in bedrock aquifers located beneath either saturated basin fill or saturated bedrock of an overlying formation were assumed to be under confined conditions. During analysis, the storage coefficient was adjusted to improve the fit between measured and simulated drawdowns at the pumped well even though analyzable observation well data were not obtained.

3.5.3 Results

The results of analyzing pumping rate and drawdown data at the tested wells are described in detail in Appendix N. Table 15 summarizes the ranges and provides a set of final values. The results of the analyses for sulfate in samples collected at the time of testing are provided in Table 11.

3.5.4 Discussion of Hydraulic Testing

As shown in Table 15, transmissivities are highest in basin fill and lowest in the Glance Conglomerate and Mural Limestone, with the Cintura and Morita Formations having intermediate values. Calculated hydraulic conductivities over the entire assumed aquifer thicknesses (which represent vertically averaged values) are also highest in the basin fill and lowest in the Glance Conglomerate and Mural Limestone. Although a number of different conceptual models were used to interpret data at some of the test locations, the hydraulic conductivity estimates shown in Table 15 are similar to previous estimates for the TM wells

(Table 6) and AWC wells (Section 3.2.3.1). The difference between maximum and minimum hydraulic conductivity estimates at individual test locations are greatest for bedrock wells, and are within a factor of two at all locations except at BMO-2008-5M, BMO-2008-7M, and BMO-2008-9M.

Some of the important results of the hydraulic testing include:

1. Vertical hydraulic conductivities in bedrock aquifers are likely small except in the areas where BMO-2008-5M and BMO-2008-7M were constructed

2. Responses in basin fill to pumping in the Cintura and Morita Formations at BMO-2008-5M and BMO-2008-7M, respectively, imply that either the upper bedrock and basin fill have similar hydraulic properties or that permeable vertical structures exist that connect them hydraulically at these locations

3. Vertically averaged horizontal hydraulic conductivities (calculated over the assumed aquifer thicknesses) can vary by two to three orders of magnitude in both basin fill and bedrock

4. Hydraulic conductivities generally decrease with depth within the bedrock

5. Flow within bedrock aquifers may be dominated (at least locally) by higher permeability zones of limited thickness and/or lateral extent (e.g., fractures, bedding planes, or thin beds of permeable strata)

6. In areas where relatively thin higher permeability zones dominate the bedrock flow system, the permeability of these zones could be substantially higher than the (vertically averaged) estimates shown in Table 15

The presence of relatively thin permeable zones in bedrock is indicated by the discontinuities in the measured drawdowns during pumping of BMO-2008-10GU. These discontinuities likely resulted from the development of seepage faces as the water level in the well dropped below a succession of relatively thin water bearing zones that presumably supplied most of the water to the well. The presence of these zones was evident at BMO-2008-10GU because the well was screened at a shallow depth near the water table. The shallow construction

and low permeability resulted in dewatering of a portion of the screened interval during the test, a necessary precondition for the development of seepage faces.

These thin water bearing zones in the bedrock likely have higher conductivities due to fracturing, which would also imply relatively low effective porosities. Under these conditions the rate of sulfate transport in these zones could be similar to the rate of transport in basin fill even though the rate of mass transport in bedrock may be substantially smaller because the average transmissivity of the bedrock is small compared to the basin fill.

In addition, background water level monitoring in the basin fill in the vicinity of BMO-2008-4B indicated that variations in water level of a few tenths of a foot to more than 1 foot (that are only partially related to changes in barometric pressure) can occur in this area. Water level fluctuations in BMO-2008-4B, screened from 500 to 600 ft bls, correlate poorly with water level fluctuations in NWC-03, screened to a depth of only 312 feet. The poor correlation indicates that changes in hydraulic head within the basin fill in this area can vary significantly with depth. These results imply that the permeability and the potential rate of sulfate transport within the basin fill may vary with depth. For example, this could result in a non-uniform vertical distribution of sulfate such as observed at BMO-2008-4B where the sulfate plume is restricted to the upper portion of the saturated basin fill (Sections 3.4.4.3 and 5.1.1.3).

4. GEOLOGY AND HYDROLOGY OF THE SULFATE PLUME AREA

4.1 Geology

Drilling and construction of the BMO-2008 monitor wells provides new insight into the geology of the study area. The general geologic setting of the area is provided in Section 2.3 and a summary of the findings of the BMO-2008 drilling is provided in Section 3.4.3. Figure 3 presents a generalized geologic map of the area. This section focuses on the detailed stratigraphic, structural, and basin configuration information synthesized from the findings of this and other drilling programs in the CTSA area.

Boreholes for which relevant geologic information exists are shown on Plate 1. The total depth, screened interval, static water level, sulfate concentration, and geologic information were used to plot fence diagrams presented as Sections A-A' through H-H' on Plates 2 and 3. The information on these plates forms the basis for the enhanced understanding of the basin configuration and the geology of the study area, which focuses on the sulfate plume and its immediate vicinity.

The cross sections in Plates 2 and 3 show the relative positions of caliche-cemented basin fill, basin fill, Cintura Formation, Upper Mural Limestone, Lower Mural Limestone, Morita Formation, and Glance Conglomerate. The complexity of the geology, wide spacing of boreholes, and the quality of geologic information available from drill cuttings complicated the development of a consistent depiction of the distribution of the Bisbee Group formations in the

subsurface beneath the plume. In some cases, stratigraphic position could be evaluated with confidence, such as when contacts were observed between Morita Formation and Glance Conglomerate and between Upper Mural Limestone and Lower Mural Limestone. In other cases, the absence of limestone and the similarity of lithologies in the Cintura and Morita Formations prevented determination of exact stratigraphic position. Therefore, the geology and structure depicted on Plates 2 and 3 represent one possible interpretation of the data.

4.1.1 Bedrock Lithology and Distribution

Information concerning the lithology of the bedrock was obtained at each of the sites drilled for this study, as presented in Section 3.4.4. The Glance Conglomerate was identifiable as deep reddish brown conglomerate of predominantly schist and limestone clasts in a sandy to silty matrix. It was observed in boreholes BMO-2008-1G, BMO-2008-10GU, BMO-2008-10GL, and BMO-2008-11G. Typical reddish brown Morita Formation sandstones, siltstones, and mudstones were encountered in BMO-2008-1G, BMO-2008-7M, BMO-2008-8M, BMO-2008-9M, and BMO-2008-11G. The sandstones were typically arkosic and the finer grained sediments appeared to be thinly laminated, although comminution of the formation during the drilling process obscures the bedding relationship of the cutting fragments. Upper Mural Limestone composed of micritic, light to medium gray fossiliferous limestone was encountered in BMO-2008-13B, BMO-2008-13M, and BMO-2008-4B. Its contact with the underlying Lower Mural Limestone was identified in both boreholes at site BMO-2008-13 and indicated a southerly dip. The Lower Mural Limestone was typically medium gray to yellowish gray sandy to silty limestone to calcareous sandstone and mudstone. Previously, Mural Limestone had only

been identified in the area at TM-17 and in the Ninety-One Hills (Plate 1 and Figure 3). A yellowish gray to brown arkosic sandstone to siltstone and mudstone was encountered in BMO-2008-5M and BMO-2008-6M and was interpreted to be either Cintura Formation or Morita Formation. Ransome (1904) reports "tawny to buff-colored" beds in the upper Morita Formation and some tawny, buff, or pinkish sandstones in the Cintura Formation. The high degree of similarity between the lithologies of the Morita and Cintura Formations was noted by Hayes (1970). Reddish mudstones and claystones grading into sandstones and limestone intersected at site BMO-2008-3 are interpreted to represent the lower portion of the Cintura Formation.

The lithologic information provided by the boreholes drilled for this investigation are insufficient to produce a unique interpretation of the distribution of Bisbee Group formations. However, some significant findings concerning the distribution of bedrock lithologies include the following.

- The absence of Morita Formation bedrock above the Glance Conglomerate at site BMO-2008-10
- Identification of the Morita Formation-Glance Conglomerate contact at sites BMO-2008-1 and BMO-2008-11
- Identification of Cintura Formation in BMO-2008-3B and possibly its contact with the Mural Limestone
- The presence of the Upper Mural Limestone at sites BMO-2008-13 and BMO-2008-4, and identification of the contact between the Upper and Lower Mural Limestone and possibly the contact between Morita Formation and Lower Mural Limestone in BMO-2008-13M
- Identification of yellowish sandstones and siltstones at sites BMO-2008-6 and BMO-2008-5 that are interpreted to be Cintura Formation but could be either Lower Mural Limestone or Morita Formation

Some general conclusions can be drawn concerning the bedrock geology beneath the study area, based on the above observations. The sequence of southwest-dipping Bisbee Group sediments is confirmed in the northern portion of the study area with the observation of Mural Limestone units at site BMO-2008-13. Thus, the pattern of dipping sedimentary beds is the same on both sides of the Black Gap fault, even though the beds may be shifted by the vertical offset of the fault. The occurrence of the Mural Limestone in BMO-2008-13M and its repetition approximately 5,700 feet south in BMO-2008-4B, however, suggests that the beds may be folded into a syncline in the southern portion of the study area or faulted along east-west trending planes (Section F-F', Plate 3), such as that represented by the Ninety-One Hills fault (Figure 3). The possibility of a syncline in the study area is fortified by the depiction of a syncline in the upper Bisbee Group mapped by Servico Geológico Mexicano (2003) across the international border to the southeast. This syncline projects into the study area, and the presence of Bisbee Group sediments in the foothills of Sierra San Jose to the southwest (Anderson and Nourse, 2005) support the hypothesis of a syncline in the southern portion of the study area.

4.1.2 Bedrock Structure

The study area lies on a block of the Cretaceous Bisbee Group on the southwestern limb of the southeast-plunging anticline that encompasses the Mule Mountains (Bilodeau, 1979). The southwest-tilting Bisbee Group beds have been eroded, exposing the lowermost formation, Glance Conglomerate, in the northern part of the area near the range front, and stratigraphically higher formations, such as the Mural Limestone, in the south. Thus, the typical progression from

north to south is up section from Glance Conglomerate to Morita Formation, Mural Limestone, and Cintura Formation.

The structural block on which the study area lies has been faulted northeastward by compressional forces during the Laramide orogeny (Bilodeau, 1979). According to Bilodeau (1979), the block is bounded on the north and east by the west-northwest-trending Abrigo, Bisbee West, and Gold Hill faults, the latter wrapping around the eastern margin of the block. A sub-parallel, imbricate fault, the Glance fault, repeats the Glance Conglomerate stratigraphy east of the study area (Figure 3). The southern and western boundaries of the block are concealed by basin fill. The structural block is broken by faults, the most prominent of which are a set of north-northeast-trending faults, typically dipping west, with normal (down on the west) displacement.

The Abrigo fault has been projected by SET (1998c) to trend southeastward beneath the South Tailing Impoundment. Bilodeau (1979) interprets the Abrigo fault as joining with the Bisbee West fault to form the northern boundary of the structural block whereas Hayes and Landis (1964) show the east end of the Abrigo fault as splaying into two faults, of which the southern splay projects toward the CTSA. The present investigation reveals no conclusive information concerning the trace of the Abrigo fault. However, the geologic data do not support significant displacement of the Bisbee Group sediments along the projection proposed by SET (1998c) (Plate 3, Sections D-D' and E-E').

The Black Gap fault is the most prominent of the north-northeast-trending faults. It is present beneath the town of Warren, passing through Black Gap and southward through most of the study area. SET (1998c) projected the Black Gap fault trend beneath the CTSA. The Black Gap fault is associated with a pronounced thickening of the basin fill from east to west that is interpreted as indicating that the fault was active during deposition of the basin fill (Plate 2). The location of the Black Gap fault in the study area is constrained by several pairs of boreholes that reflect this westward deepening (Plate 2, Sections A-A', B-B', and C-C'; Plate 3, Sections D-D' and H-H').

In a complimentary manner, the basin fill thins on the westside of the study area at sites BMO-2008-5 and BMO-2008-6 west of the Naco Highway (Plate 2, Section B-B' and C-C'). By analogy to the situation along the Black Gap fault, it seems reasonable that the bedrock rise in the west may be the result of faulting during deposition of the basin fill. In that case, the sense of movement would be up to the west, making the central portion of the study area a down-dropped, fault-bounded structural block, or graben. The thinning can also be explained by an erosional surface sloping east-southeastward upon which the basin fill was deposited.

4.1.3 Basin Fill Composition and Thickness

Throughout most of the study area, the bedrock is covered with unconsolidated basin fill sediments. Basin fill is composed of clay, silt, sand, gravel, and cobbles, derived presumably from the surrounding bedrock areas. The entire area of the sulfate plume is blanketed by basin fill, although bedrock outcrops near the eastern edge of the plume (Figure 3). Basin fill

intercepted in the monitor wells installed in Task 2.3 ranged from 50 ft in BMO-2008-1G to 636 feet in thickness in BMO-2008-4B.

The upper 50 to 165 feet of basin fill in most of the wells installed for Task 2.3 was strongly cemented with caliche (Plates 2 and 3). Caliche was typically thickest and strongest in the northern wells, those closest to the range front. Basin fill below the caliche zone commonly exhibited thin coatings of crystalline calcite and sand grains on gravel surfaces. These basin fill sediments are described as being "moderately cemented" or "calcareous."

The basin fill includes coarse-grained lithic fragments ranging in size from sand and gravel to cobbles and boulders. Maximum size of basin fill particles is poorly characterized because the drilling methods used during this and other well installation programs grind particles to a maximum of an inch or so prior to removal from the borehole. However, video logging (Section 3.4.2.6 and Appendix I) reveals cobbles in the basin fill greater than a foot in diameter. Lithology of the larger particles includes schist, limestone, sandstone, granite, volcanics, and quartzite. Schist fragments derived from the Pinal Schist or weathered from Pinal Schist fragments in the Glance Conglomerate dominate the distribution of lithic particles. Limestone fragments are the next most common type observed in the drill cuttings, reflecting the dominant lithology of the Paleozoic section (Section 2.3.3.2).

The northern part of the study area typically exhibits approximately 200 feet of basin fill sediments (Plate 2, Section A-A'). Basin fill is absent east of the study area where Morita Formation and Glance Conglomerate are exposed at the surface (Figure 3). The thickness of

basin fill east of the Black Gap fault is typically less than 200 feet (Plate 2, Sections A-A', B-B', C-C', D-D', and H-H'). West of the Black Gap fault, the basin fill thickens by up to 500 feet. The thickening increases from approximately 300 feet at TM-02 and TM-02A in the north to approximately 500 feet at GARNER 635 in the south (Plate 2, Sections A-A', B-B', C-C', and H-H').

The thickness of the basin fill persists at approximately 500 and 600 feet at BMO-2008-13M and BMO-2008-4B (Plate 3, Section F-F'). However, basin fill thins to 240 feet at BMO-2008-5M and 290 feet at BMO-2008-6M to the west. This bedrock rise forms the western margin of the deep central portion of the basin fill in the study area.

The thickness of the basin fill at BMO-2008-3 is approximately 470 feet, suggesting thinning of the basin fill to the southeast. This bedrock rise correlates with outcrops of Mural Limestone in the hills south of Bisbee Junction (Figure 3), which taper off to the west toward BMO-2008-3B. Additional information is lacking concerning the depth of basin fill in the southern portion of the study area and into northern Mexico.

4.2 Groundwater Hydrology

This section updates the groundwater hydrology based on the findings of the aquifer characterization. HGC (2008a) summarized the hydrology in the vicinity of the sulfate plume based on the reports of Littin (1987), PD (1990), and SET (1998a, 1998b, and 1998c).

4.2.1 Hydrostratigraphic Units

Groundwater occurs in two hydrostratigraphic units in the vicinity of the sulfate plume: the basin fill and the Bisbee Group bedrock.

4.2.1.1 Basin Fill

Basin fill is the principal aquifer south of the Abrigo fault and west of the Black Gap fault due to its relatively high permeability and large saturated thickness. In this area, the basin fill provides most of the water for domestic purposes in the Bisbee-Naco area. North of the Abrigo fault and east of the Black Gap fault, the basin fill is unsaturated.

Clay beds are locally interbedded with sand and gravel within the basin fill (PD, 1990; Wright, 2001). Although well logs indicate that there is interbedded clay and silt in the basin fill in some TM-series wells, GARNER 635, and BMO-2008-6B, clay and silt beds cannot be correlated from well to well and do not form a significant portion of the basin fill intercepted by the BMO-2008 drilling. The clay and silt beds are not laterally continuous and do not appear to control groundwater flow. However, where present, clay and silt beds are expected to locally reduce vertical communication within the aquifer.

4.2.1.2 Bisbee Group Bedrock

The Bisbee Group is a source of water in the vicinity of the sulfate plume, particularly where the basin fill is unsaturated. The bedrock generally has a lower hydraulic conductivity than basin fill making it less productive as a water supply. However, there are instances in which bedrock may locally be nearly as productive as the basin fill. For example, the hydraulic conductivity of the Cintura Formation at the location of BMO-2008-6M (Figure 10 and Table 15), near the center of the basin west of the Black Gap fault, is more typical of basin fill than bedrock. The Morita Formation and Glance Conglomerate are the primary water-bearing units east of the Black Gap fault. The Cintura Formation, Lower Mural Limestone, and Morita Formation are the water-bearing bedrock units identified in monitoring wells installed west of the Black Gap fault and south of the Abrigo fault.

4.2.2 Hydraulic Properties

Hydraulic conductivity data are available from pumping tests conducted at monitoring wells in the basin fill and bedrock aquifers. Data collected prior to the present investigation are summarized in Table 6. Data collected as part of the investigation are discussed in Section 3.5 and summarized in Table 15.

4.2.2.1 Previous Hydraulic Property Estimates

Hydraulic conductivity data summarized in Table 6 include estimates for basin fill, basin fill plus Morita Formation, and Morita Formation. Table 6 contains three sets of data. The two data sets reported by SRK (1997) consist of previously unpublished data for the original aquifer tests conducted by ELMA and SRK's reinterpretation of the results (Section 3.2.3.2). The third data set contains hydraulic conductivity estimates from the calibrated groundwater flow model of SET (1998c) (Section 7.2.3.3). The model-derived estimates are included for comparison because they represent volume-averaged hydraulic properties for the area. Most of the groundwater monitoring wells completed in basin fill are within the silty sand lithologic facies, and most of the monitoring wells completed in the Morita Formation are within the siltstone lithologic facies represented in the SET model (Figures 3-4 and 3-5 of SET, 1998c).

Based on the original pumping test interpretations by ELMA (SRK, 1997), estimates of the hydraulic conductivity in basin fill wells TM-11 and TM-13 range from 39.0 to 59.0 ft/day and average 49.0 ft/day. Average hydraulic conductivities in co-located wells open to both basin fill and Morita Formation were estimated at 24.1 ft/day at TM-01 and TM-01A, and 4.9 ft/day at TM-29, TM-29A, and TM-29B. Estimates of hydraulic conductivities for the Morita Formation west of the Black Gap fault average 9.3 ft/day based on pumping tests at TM-30, TM-30A, TM-19A and TM-38. TM-19A and TM-30A are now interpreted to be completed in the Cintura rather than Morita Formation. As discussed in Section 4.1, the Morita and Cintura Formations have similar lithologies.

East of the Black Gap fault, the hydraulic conductivity of the Morita Formation was estimated to be 1.3 ft/day at TM-16. Hydraulic conductivities reported by WMC (2006) for the Morita Formation in the mining area range from 5.8×10^{-4} to 14.4 ft/day and generally appear to be lower than Morita Formation hydraulic conductivities in the vicinity of the CTSA.

PD (1990) reported estimates of porosity. For the basin fill an average porosity of 0.35 and an average effective porosity of 0.25 are reported, and for the Morita Formation, an average porosity of 0.25 and an average effective porosity of 0.15 are reported.

4.2.2.2 2008 Hydraulic Property Estimates

Data collected for Tasks 2.3 and 2.4 of the Work Plan (Section 3.5) are summarized in Table 15 include estimates of hydraulic properties for the basin fill, Cintura Formation, Mural Limestone, Morita Formation, and Glance Conglomerate. Hydraulic property estimates include transmissivity, horizontal hydraulic conductivity, and storage coefficient. Because most of the analyzed data were derived from the pumped wells, estimates of storage coefficient are less reliable than estimates of transmissivity and hydraulic conductivity (Section 3.5). Vertical hydraulic conductivity was also estimated at many of the test locations; however, estimates of vertical hydraulic conductivity are not considered as reliable as estimates of horizontal hydraulic conductivity. More reliable estimates of vertical conductivity would require observation wells completed in the same formation as the pumped well but at different depth intervals than the pumped well. The only location at which observation wells meeting these criteria were available

was near BMO-2008-4B. In general, horizontal hydraulic conductivity estimates for the basin fill and Morita aquifers are similar to previous estimates.

Horizontal hydraulic conductivity estimates for basin fill range from 2.3 to 128 ft/day with an average of 40 ft/day and a geometric average of 29 ft/day; vertical hydraulic conductivity estimates range from 1.5 x 10^{-6} to 4.3 ft/day with an average of 1.4 ft/day and a geometric average of 0.13 ft/day. The vertical conductivity near BMO-2008-4B was estimated as 0.87 ft/day based on drawdowns measured at NWC-03 during pumping of BMO-2008-4B. The highest horizontal hydraulic conductivity for basin fill was estimated at COB MW-1 (128.9 ft/day) and the lowest at BMO-2008-6B (2.27 ft/day). The low value of 2.27 ft/day at BMO-2008-6B is representative of a mixture of basin fill and weathered Cintura Formation. The average basin fill horizontal hydraulic conductivity based on testing in 2008 lies between the average hydraulic conductivity of 49 ft/day estimated by ELMA and the SET model-derived value of 23 ft/day for silty sand.

Horizontal hydraulic conductivity estimates for the undifferentiated Bisbee Group formations stratigraphically above the Glance Conglomerate range from 0.01 to 16.2 ft/day with an average of 3.4 ft/day and a geometric average of 0.66 ft/day; and vertical hydraulic conductivity estimates range from 1.0 x 10^{-6} to 3 ft/day with an average of 0.45 ft/day and a geometric average of 2.6 x 10^{-3} ft/day. The highest horizontal hydraulic conductivity was estimated at BMO-2008-6M (interpreted to be completed in Cintura Formation) and the lowest at BMO-2008-13M (completed in Mural Limestone). The average horizontal hydraulic conductivity for the undifferentiated Bisbee Group lies between previous estimates of ELMA

(SRK, 1997) and SET (1998c). The average ELMA hydraulic conductivity was 9.3 ft/day and the SET model-derived hydraulic conductivity was 3 ft/day for the siltstone facies. Although the Morita and Cintura Formations have a similar lithology, the average hydraulic conductivity for wells completed in the Cintura Formation (BMO-2008-5M and BMO-2008-6M) was 7.4 ft/day, and the average hydraulic conductivity for wells completed in the Morita Formation (BMO-2008-7M through BMO-2008-9M) was 0.57 ft/day.

Horizontal hydraulic conductivity estimates for the Glance Conglomerate range from 5.1 x 10^{-3} to 0.35 ft/day with an average of 0.13 ft/day and a geometric average of 0.05 ft/day; and vertical hydraulic conductivity was estimated to be 5.0 x 10^{-7} ft/day at BMO-2008-1G and 1.0 x 10^{-2} ft/day at BMO-2008-10G. The highest horizontal conductivity was estimated at BMO-2008-11G and the lowest at BMO-2008-10GL.

As discussed in Appendix N, direct evidence of vertical hydraulic interaction between the basin fill and Cintura or Morita Formation aquifers was detected at the locations of BMO-2008-5 and BMO-2008-7. BMO-2008-5M (completed in the Cintura Formation) responded to pumping at BMO-2008-5B (completed in the basin fill) and vice versa; and COB MW-1 (completed in the basin fill) responded to pumping at BMO-2008-7M (completed in the Morita Formation). The cross-formational responses suggest that either the upper portion of the bedrock at these locations is so weathered, fractured, poorly cemented, or coarse-grained, that its behavior is hydraulically similar to the basin fill, or that permeable structures hydraulically connect the bedrock and basin fill exist at these locations.

4.2.3 Potentiometric Relationships

Groundwater elevations at the site vary with location, local geologic structure, depth below land surface, and the aquifer material. Structures that appear to influence groundwater elevations are the Abrigo and Black Gap faults. These structures define subregions of distinct groundwater regimes. Subregions of particular interest include: the area east of the Black Gap fault, the area south of the Abrigo fault and west of the Black Gap fault, and the area north of and in the vicinity of the Abrigo fault and west of the Black Gap fault. The area north of the Abrigo and west of the Black Gap faults appears to be hydraulically isolated from the other subregions in the study area.

The directions and magnitudes of the hydraulic gradients vary within these subregions. East of the Black Gap fault, where the basin fill is unsaturated, groundwater elevations generally decrease to the south and southwest. South of the Abrigo fault and west of the Black Gap fault, groundwater elevations generally decrease to the southwest and west. Groundwater gradients are also generally steeper and more variable east of the Black Gap fault than they are to the west of the fault. The steeper gradients east of the fault are primarily a function of the shallow water-bearing material, which is bedrock with lower hydraulic conductivity than the basin fill west of the fault.

4.2.3.1 Water Level Maps

The depth to water in the study area varies from approximately 60 feet east of the Black Gap fault to greater than 800 feet north of the Abrigo fault under the South Tailing

Impoundment. Figures 12 through 19 are potentiometric contour maps for the years 1989, 1996, 1999, and 2005, and the four quarters of 2008. Water level data shown in Figures 12 through 15 are compiled from CQB files, ADWR (2005), and previous hydrological investigations of the area. Fewer water level data are available for 1996, 1999, and 2005 than for 1989 because some of the monitoring points available in 1989 were not completed as wells and because some of the wells were abandoned by 1990 or went dry. The water level data shown for 1989, 1996, 1999, and 2005 are reported in Appendix F. Water level data for 2008 are in Table 12.

To provide sufficient coverage in Figure 12, 1988 and 1990 water levels are included for NWC and AWC wells, respectively, because 1989 data were not available for these wells. The water level at TM-35 was not used in contouring the 1989 data due to its anomalously low water level relative to neighboring wells to the west. The 1989 water elevations east of the Black Gap fault are interpreted to reflect mounding in the vicinity of the former evaporation pond.

Measuring point elevations of many wells were re-surveyed as part of the 2008 aquifer characterization investigation. Groundwater levels in Figures 12 through 15 are not based on re-surveyed measuring point elevations because many of the wells are abandoned and therefore unavailable for re-surveying (see also the discussion in Section 3.2.4). Changes in elevation due to re-surveying were small enough (less than 20 feet) and uniform enough in most cases to only minimally affect the shapes and spacing of contour lines and the calculation of hydraulic gradients. Groundwater levels in Figures 16 through 19 are based on re-surveyed elevations only. Differences between the 2005 and 2008 water levels shown in Figures 15 and 16 through 19, respectively, are partly due to the use of re-surveyed elevations in the latter.

The water elevation contour lines in Figures 12 through 19 are interpretive. Water level contours are not shown crossing the Abrigo and Black Gap faults in the vicinity of the tailing impoundments since differing water levels on either side of the faults indicate poor hydraulic communication across the faults in this area (i.e., contrast water elevations at well GL-03 with those at wells BF-01 and TM-02A south of the Abrigo fault and well TM-03 east of the Black Gap fault). Water level contours are shown crossing the southern portion of the Black Gap fault south of the former evaporation pond in instances when the interpolated contours appear consistent with those west of the fault.

The water level data shown in Figures 12 through 19 show a persistent pattern over time. Groundwater flows southwest and west on the west side of the Black Gap fault and south and southwest on the east side of the fault. South of the CTSA, the groundwater flow direction shifts to westerly in the vicinity of Naco and Greenbush Draw. Saturated thicknesses in the basin fill increase to the southwest from less than 1 foot near BF-01 to as much as 500 feet at BMO-2008-4B based on groundwater elevations measured in the fourth quarter of 2008 (Figure 20). The lateral extent of the saturated basin fill also increases to the southwest.

4.2.3.2 2008 Water Elevations

Groundwater elevations for the first through fourth quarters of 2008 are shown on Figures 16 through 19. In general, groundwater elevations decrease from north to south east of the Black Gap fault in the region between the Bisbee airport and Bisbee Junction, and from east to west across the central portion of the study area west of the Black Gap fault. Groundwater

levels in wells in Naco, Sonora indicate groundwater elevations decrease northward, towards, and converging on Greenbush Draw (Figure 21).

The water level relationships are relatively complex due to the multiple hydrostratigraphic units monitored and the complicated structural geology of the area. The water level data can be interpreted to represent conditions in three hydrologic subregions: east of the Black Gap fault, south of the Abrigo fault and west of the Black Gap fault, and north of and in the vicinity the Abrigo fault west of the Black Gap fault. The subregions are inferred based on the direction and magnitude of hydraulic gradients, and the magnitude and variability of groundwater elevations.

The subregion east of the Black Gap fault consists of the extreme eastern portion of the study area where wells are in shallow bedrock close to outcrops of the Glance Conglomerate and Morita Formation. The subregion east of the Black Gap fault extends from well TM-03 in the north to Bisbee Junction in the south. The characteristics of this domain are a relatively steep south- to southwest-dipping hydraulic gradient and a large variability in groundwater elevations between wells.

The subregion south of the Abrigo fault and west of the Black Gap fault encompasses the area where the sulfate plume is primarily in basin fill and most public water supply wells are located. Groundwater in this subregion occurs in basin fill and undifferentiated Bisbee Group bedrock. The subregion south of the Abrigo fault and west of the Black Gap fault is characterized by shallow westerly to southwesterly dipping hydraulic gradients and similar water elevations in wells in both basin fill and bedrock.

The subregion north of and in the vicinity of the Abrigo fault and west of the Black Gap fault is at the northern margin of the study area. This subregion is characterized by groundwater elevations that are low compared to water elevations south of the Abrigo fault and east of the Black Gap fault.

East of the Black Gap fault where groundwater is in the Morita Formation and Glance Conglomerate, the apparent hydraulic gradient is steeper than it is west of the fault where groundwater elevation measurements are primarily from wells in basin fill. The higher hydraulic gradient may be due to a lower average hydraulic conductivity in the bedrock compared to basin fill.

The direction of the hydraulic gradient east of the Black Gap fault is southerly from TM-03 towards the vicinity of Bisbee Junction and then westerly, whereas west of the fault the hydraulic gradient is predominantly westerly. The shift in the apparent groundwater flow direction may be due to a change in the character of the water bearing units. East of the Black Gap fault, wells are completed in shallow bedrock as opposed to basin fill west of the fault. The difference in groundwater elevation and flow direction between the domains east and west of the Black Gap fault suggests poor hydraulic communication between the subregions.

Water levels east of the Black Gap fault can display large differences in elevation (sometimes up to several hundred feet) between wells in relatively close proximity to one another. This variability in water elevation is evident at wells in the vicinity of Bisbee Junction area and, possibly, in the area east of the former evaporation pond. At Bisbee Junction, water

levels in the fourth quarter 2008 (Figure 19) range from less than 4,400 feet above mean sea level (ft amsl) at NWC-04 and BARTON 010 to 4,605 ft amsl at DODSON and STEPHENS. East of the former evaporation pond, water levels at the BIMA and SUNBELT wells range from 4,448 to 4,460 ft amsl, respectively. These water levels are significantly lower than wells BMO-2008-1G, COB-WL, and SWAN to the east which range from 4,689 to 4,773 ft amsl. The water levels at BIMA and SUNBELT are similar to the water level at BMO-2008-10GU to the west which is at 4,498 ft amsl. The BIMA and SUNBELT wells may be in bedrock that has a good hydraulic connection to bedrock at BMO-2008-10GU, but not the bedrock to the east and south.

The variability of water elevations east of the Black Gap fault may be because the hydraulic conductivity of the bedrock is low and heterogeneous so that certain portions of the bedrock are not hydraulically connected. Heterogeneity in hydraulic properties in bedrock would be due to the restriction of groundwater flow to permeable features such as permeable beds, bedding planes, or fracture systems within bedrock, which are not uniformly distributed throughout the area. A factor that may contribute to the apparent variability in water levels is that drawdown due to pumping in domestic wells in low-permeability bedrock could create zones of depressed water elevations that do not recover rapidly after pumping ceases.

Significant water level differences occur in the BMO-2008-10 site wells located east of the Black Gap fault at the southern margin of the former evaporation pond. Water levels in BMO-2008-10GU, completed within a shallow horizon of the Glance Conglomerate, are more than 200 feet higher in elevation than water levels in BMO-2008-10GL, located 100 feet south of

BMO-2008-10GU and completed within a deeper horizon of the Glance Conglomerate, indicating a poor hydraulic connection between the two screened intervals.

West of and in the immediate vicinity of the Black Gap fault, the apparent hydraulic gradient is westerly, water elevations do not show large fluctuations between nearby wells, and water elevations in co-located wells in basin fill and shallow bedrock are similar. In the western portion of the study area, water level elevations in co-located wells screened at different depths in the basin fill and the undifferentiated Bisbee Group overlying Glance Conglomerate vary by less than 3 feet. These data indicate a good hydraulic connection between the basin fill and undifferentiated Bisbee Group bedrock.

Groundwater elevations north of and in the vicinity of the projected trace of the Abrigo fault and west of the Black Gap fault are low compared to water elevations in the subregion south of the Abrigo fault and west of the Black Gap fault. Figures 17 through 19 show an area of low water elevations. The zone of low water levels straddles the projected trace of the Abrigo fault and is defined by the BMO-2008-11G, BURKE, SRC and GL-03 wells. Water elevations in these wells are approximately 200 feet lower than in wells to the south. The low water levels in this subregion suggest these wells may be within a separate structural block with poor hydraulic communication with the subregion to the south. Another factor that may explain the low water levels in the wells north of and in the vicinity of the Abrigo fault is well completion at depth in low permeability bedrock. According to well driller logs, SRC and BURKE are screened in "shale bedrock" and BMO-2008-11G and GL-03 are screened in the Glance Conglomerate, all at depths greater than 600 ft bls. Data from BMO-2008-11G, located just

south of the projected trace of the Abrigo fault, and west of the Black Gap fault, indicate that the basin fill and Morita Formation are unsaturated at this location.

Although complex, the water level data provide important information on the direction and magnitude of hydraulic gradients, which control the direction and movement of the sulfate plume. Comparison of the 2008 water elevations (Figures 16, 17, 18, and 19) with those in 1989, 1996, and 2005 (Figures 12, 13, 14, and 15) indicates a similar pattern of groundwater elevations and consequent flow directions over this time range.

4.2.3.3 Temporal Trends

Since 1988, when systematic water level measurements began, water levels in monitoring wells have generally declined. Wells in the vicinity of the former evaporation pond show the greatest decline. Hydrographs of wells BF-02, TM-02, TM-02A, TM-07, TM-19, and TM-19A located near and downgradient of the former evaporation pond are shown in Figure 22. Groundwater levels in Figure 22 are based on elevation datum re-surveyed in 2008. For wells that were not re-surveyed, corrections to groundwater elevation were based on differences in measuring point elevation between the non-re-surveyed and re-surveyed wells. The assumption was made that although the magnitude of older datum may differ from the re-surveyed datum, the relative differences in measuring point elevations between wells are accurate in the older survey.

Figure 22 shows a steady decline in water levels at BF-02, TM-02, TM-02A, TM-07, TM-19 and TM-19A from 1988 through 1997, probably reflecting the dissipation of a groundwater mound formed in response to infiltration of water discharged to the former evaporation pond between 1908 and 1987. The rate of dissipation of the mound appears to have slowed after 1997. Wells TM-02, BF-02, TM-07, and TM-19 were dry in 2008.

In contrast to the drop in water levels over time at the former evaporation pond area wells (Figure 22), the hydrograph of well GL-03, located north of the Abrigo fault and west of the Black Gap fault, shows a significant, nearly constant rise in water levels from the time the well was installed in 1993 through 2008 (Figure 23). The difference in water level trends over time between GL-03 and wells on opposite sides of the Black Gap fault and the projected trace of the Abrigo fault, indicates that there is poor hydraulic communication across the faults. As discussed by SET (1998c) and WMC (2006), the water level recovery at GL-03 matches that observed in the mining area to the north. On this basis, WMC (2006) concluded that the portion of the CTSA north of the Abrigo fault and west of the Black Gap fault lies in a structural block within the cone of depression resulting from mine dewatering. In this interpretation, the area north of the Abrigo fault is separated from the area south of the Abrigo fault by a groundwater divide, with groundwater flowing to the north in bedrock north of the Abrigo fault and to the south and west in basin fill and bedrock south of the Abrigo fault. The water level data shown on Plates 2 and 3 further illustrate potentiometric relationships in the vicinity of the Abrigo and Black Gap faults.

4.2.3.4 Horizontal Hydraulic Gradients

As seen in Figures 12 through 19, hydraulic gradients in the shallow groundwater have been consistently steeper east of the Black Gap fault than west of the fault. This is partly the result of the lower permeability of the bedrock hosting the shallow groundwater to the east of the fault compared to the higher permeability of the basin fill hosting the shallow groundwater west of the fault. West of the fault, hydraulic communication between the basin fill and shallow bedrock likely results in hydraulic gradients in the shallow bedrock that are similar to those in the basin fill.

Horizontal hydraulic gradients overtime in basin fill were estimated for several time periods between well pairs TM-02 and TM-11, TM-02 and WEISKOPF, and between BMO-2008-8B and WEISKOPF (Table 16). These well pairs are along a northeast-southwest line between the CTSA and Naco. The WEISKOPF well was used for the 2005 and 2008 calculations rather than TM-11 because water level data were unavailable for TM-11, and WEISKOPF (shown as 641802 on Figure 15) is the well closest to TM-11 for which data were available (Figures 15 and 19). Likewise, well BMO-2008-8B was used for the 2008 calculations rather than TM-02 because TM-02 is dry, and BMO-2008-8B is the well closest to TM-02 for which data were available (Figure 19). In addition, an east-west hydraulic gradient was calculated for basin fill between COB MW-1 and BMO-2006-6B using fourth quarter 2008 data.

West of the Black Gap fault, the southwesterly hydraulic gradient in basin fill was calculated in 1989 as approximately 0.0025 feet per foot between TM-02 and TM-11; in 2005 as approximately 0.0010 feet per foot between TM-02 and WEISKOPF; and in 2008 as

approximately 0.0011 feet per foot between BMO-2008-8B and WEISKOPF. The east-west hydraulic gradient in 2008 between COB MW-1 and BMO-2008-6B was calculated as approximately 0.0014 feet per foot (Table 16).

East of the Black Gap fault, groundwater gradients in bedrock range from generally north-south near the CTSA to west-southwest near Bisbee Junction. North-south groundwater gradients were estimated between Glance Conglomerate well TM-28 and Morita Formation well TM-16 (Figure 12), and between wells COB WL and TM-16 (Figure 19). East-west groundwater gradients were estimated between bedrock wells TM-16 and TM-19A. TM-16 is completed within the Morita Formation and TM-19A is reinterpreted to be within the Cintura Formation (Section 4.1).

East of the Black Gap fault, the north-south hydraulic gradient was calculated in 1989 as approximately 0.0145 feet per foot between TM-28 and TM-16; and in 2008 as approximately 0.0137 feet per foot between COB WL and TM-16. The north-south hydraulic gradient was not calculated in 2005 due to insufficient data. The east-west hydraulic gradient east of the fault between TM-16 and TM-19A was calculated in 1989 as 0.0146 feet per foot; in 2005 as 0.0181 feet per foot; and in 2008 as 0.0180 feet per foot (Table 16).

Southwesterly groundwater gradients in the basin fill west of the Black Gap fault diminished by nearly half between 1989 and 2005, and have not changed significantly between 2005 and the fourth quarter 2008. The reduction in hydraulic gradients west of the fault between 1989 and 2005 is interpreted as being due to the dissipation of a groundwater mound when discharges to the former evaporation pond ended in 1987 as discussed in Section 4.2.3.3.

The reduction in gradients was accompanied by a reduction in groundwater levels at wells near and downgradient of the former evaporation pond. Because groundwater levels near the former evaporation pond (for example, in well TM-02, Figure 22) diminished faster than levels downgradient of the pond (for example, in well TM-19A, Figure 22), a reduction in hydraulic gradient occurred. Rates of horizontal groundwater movement implied by hydraulic gradients measured between selected well pairs are provided in Section 4.2.4.

4.2.3.5 Vertical Hydraulic Gradients

Vertical hydraulic gradients defined by water level measurements at co-located wells installed prior to the present investigation, for example at TM-19 and TM-19A (Appendix F), were generally small and inconsistent as to direction. An exception is the large difference of more than 10 feet that existed between TM-02 and TM-02A prior to 1993 before TM-02 became dry. Vertical gradients as defined by water level measurements at co-located BMO-2008-series wells have been consistently downward. West of the Black Gap fault, differences in water levels measured in basin fill wells and the corresponding co-located wells completed in bedrock immediately beneath the basin fill ranged from approximately 0.56 feet at BMO-2008-6 to approximately 2.65 feet at BMO-2008-8 in the fourth quarter of 2008 (Table 16). Water level differences were 1.63 feet at BMO-2008-5, 1.0 feet at BMO-2008-7, and 1.64 feet at BMO-2008-13. Implied vertical hydraulic gradients based on these differences and the vertical distances between the screened interval midpoints range from 0.0027 feet per foot at BMO-2008-13 to 0.0091 feet per foot at BMO-2008-5.

The largest water level difference at co-located wells was 226 feet between BMO-2008-10GU and BMO-2008-10GL in the fourth quarter of 2008. These wells are both completed in Glance Conglomerate east of the Black Gap fault at the southern margin of the former evaporation pond. This water level difference implies a vertical hydraulic gradient of 0.55 feet per foot.

4.2.4 Groundwater Flow Rates

Apparent lateral groundwater flow velocities for the years 1989, 2005, and 2008 were estimated for the basin fill and bedrock aquifers using average horizontal hydraulic conductivity estimates, water level data for 1989, 2005, and 2008 (Figures 12, 15, and 19), and effective porosities of 0.25 and 0.15 for the basin fill and bedrock, respectively. Vertical groundwater flow rates were not calculated because the vertical hydraulic conductivity estimates presented in Section 3.5 are not considered as reliable as estimates of horizontal conductivity.

Table 17 summarizes the calculation of lateral groundwater flow velocities. To evaluate a potential range for groundwater flow velocities, the average hydraulic conductivities from field tests (Tables 6 and 15) and the estimated hydraulic conductivities from numerical modeling by SET (1998c) were used. The average conductivity from field tests was 41 ft/day for basin fill and 5.2 ft/day for undifferentiated Bisbee Group (i.e., Morita Formation, Mural Limestone, and Cintura Formation). The calibrated model hydraulic conductivity was 23 ft/day for basin fill and 3 ft/day for the Morita Formation (SET, 1998c). These model-derived values correspond to the

silty sand facies in the basin fill and siltstone facies in the Morita Formation which are the material types best correlating to the wells used in the calculations.

Groundwater pore velocities were estimated between the same well pairs used to calculate horizontal hydraulic gradients in Section 4.2.3.4. Using the field test and model-derived hydraulic conductivities, respectively, the following groundwater pore velocities were calculated for basin fill west of the Black Gap fault:

- 0.40 to 0.23 ft/day between TM-02 and TM-11 in 1989
- 0.16 to 0.09 ft/day between TM-02 and WEISKOPF in 2005
- 0.18 to 0.10 ft/day between BMO-2008-8B and WEISKOPF in 2008

Using the model-derived and field test hydraulic conductivities, respectively, the following yields the following north-south groundwater pore velocity estimates in bedrock east of the Black Gap fault:.

- 50 to 0.29 ft/day between TM-28 and TM-16 in 1989
- 0.48 to 0.27 ft/day between COB WL and TM-16 in 2008

Likewise, the pore velocity in the bedrock in the east-west direction between TM-16 and TM-19A was estimated to range from 0.51 to 0.29 ft/day in 1989, and from 0.63 to 0.36 ft/day in both 2005 and 2008. Pore velocity in the bedrock in the north-south direction east of the Black Gap fault in 2005 was not calculated due to insufficient water level data.

In summary, pore velocities based on the field hydraulic conductivity estimates are greater than those based on the SET (1998c) model estimates by a factor of approximately 1.8. The groundwater flow direction in the subregion west of the Black Gap fault and south of the Abrigo fault is generally to the west and southwest towards Naco. The groundwater flow direction in the subregion east of the Black Gap fault is generally southerly, towards Bisbee Junction. Rates of groundwater movement in the basin fill west of the Black Gap fault have diminished since 1989 due to a reduction in hydraulic gradients likely caused by the dissipation of mounding associated with historical mine water discharge. Rates of groundwater movement in the bedrock east of the Black Gap fault have changed little between 1989 and 2005 and between 2005 and 2008 because little change in hydraulic gradient has occurred. Calculated rates of movement are currently higher for the bedrock aquifers compared to basin fill because of higher hydraulic gradients and lower effective porosities in the former.

4.2.5 Groundwater Sources and Sinks

Groundwater sources and sinks in the sulfate plume area include natural and artificial sources. Natural sources include mountain front recharge, recharge by precipitation within the basin, recharge from surface flow into the basin, and subsurface flow into the basin. Artificial sources include recharge from agriculture, infiltration resulting from municipal wastewater treatment, and infiltration from the former evaporation pond and tailing impoundments. Groundwater sources and sinks are discussed in detail in Sections 3.2.6 and 3.2.7.

5. NATURE AND EXTENT OF SULFATE

Water quality data collected since the 1980's indicate that sulfate concentrations in the vicinity of the CTSA vary with location, time, and depth. The spatial and temporal distribution of sulfate in groundwater, the major element chemistry of groundwater in the vicinity of the plume, and factors that influence the fate and transport of sulfate are discussed in the following sections.

5.1 Groundwater Chemistry

CQB has monitored groundwater quality in the sulfate plume area since the late 1980s. Water quality data have been generated primarily from the sampling of groundwater monitoring wells, although some data are also available for municipal and private water supply wells. Appendix G provides sulfate concentration data compiled for this investigation. Table 11 contains water quality data collected in 2008 for this investigation.

Water quality samples have been collected from wells completed in the three principal water-bearing units in the area: the basin fill, the undifferentiated Bisbee Group (e.g., the Morita Formation, Mural Limestone, and Cintura Formation), and the Glance Conglomerate. Many of the groundwater monitoring wells sampled in 1989 are no longer available for sampling because they were abandoned by 1990 or have gone dry.

Water samples collected from monitoring wells in the vicinity of the CTSA have been analyzed for metals, organic compounds, and inorganic parameters such as sulfate. As discussed in the Work Plan, metals and organic compounds are not of concern because detections have been infrequent and at low concentrations. Section 5 focuses on the distribution of sulfate, the subject of the Mitigation Order, and major element chemistry that may be useful for distinguishing different water types in the vicinity of the plume.

5.1.1 Sulfate Distribution

The areal, temporal, and vertical distributions of sulfate are described below.

5.1.1.1 Areal Distribution

Figures 24, 25, 26, and 27 are contour maps showing the areal distribution of sulfate in August 1989, summer 1996, August through November 2005, and the fourth quarter 2008, respectively. Sulfate concentration contours on these maps are inferred using the maximum measured concentration at each location where differing concentrations were measured in closely spaced wells. This convention is a conservative method of plume delineation because it estimates the largest potential extent of the plume given the available data.

Figures 24 through 27 only show wells that have sulfate measurements for the period indicated with a few exceptions. The 1996 map shows 1997 data from wells for which 1996 data were unavailable. The map for August through November 2005 shows the most recent data

available for the period and includes one data point from 2006. The largest number of data points and the largest geographic distribution of measurements occur in the fourth quarter of 2008 (Figure 27).

The sulfate concentration contours are dashed to indicate that there is uncertainty in their exact locations. The sparse historical data and, in many cases, the lack of historical measurements from the same wells over time prevent precise positioning of contours and accurate determination of changes in contour positions over time. This is particularly true of the 250 mg/L contours, which are inferred over most of their extent for the older data sets. The large number of data available for the fourth quarter 2008 constrain sulfate concentration contours to a greater degree than at any prior time.

The sulfate concentration maps from 1998 through 2008 show sulfate extending from the area of the former evaporation pond and former irrigation area southwest to the vicinity of Naco, Arizona and to the south to Bisbee Junction. Data for the fourth quarter 2008 indicate that the sulfate plume extends over an area of approximately 2.8 miles in a northwest-southeast direction by 3.6 miles from northeast to southwest.

The historical and current data consist of sulfate concentrations in groundwater samples collected from the principal water-bearing units in the area: basin fill, undifferentiated Bisbee Group, and Glance Conglomerate. West of the Black Gap fault, the sulfate plume occurs within the basin fill and locally within the upper portion of the immediately underlying undifferentiated Bisbee Group. The plume is generally more laterally extensive in the basin fill than the bedrock.

East of the fault, where the basin fill is unsaturated, the sulfate plume has been identified in the underlying Morita Formation and Glance Conglomerate. The areal distribution of sulfate is complicated in plan maps because the sulfate plume can be underlain and overlain by groundwater with low sulfate concentrations. The stratification of sulfate concentrations is evidenced on plan maps by extreme differences in concentration between nearby wells because one well is in the plume and the other well is outside the plume, either above or below it. The vertical distribution of sulfate is discussed further in Section 5.1.1.3 and depicted on Plates 2 and 3.

5.1.1.2 Temporal Trends

Figure 28 compares the areal extent of the sulfate plume in 1996, 2005, and 2008. As indicated in Figure 28, the general outline of the plume is similar in 1996, 2005, and 2008, with a few differences, as discussed below.

The margin of the plume migrated to the southwest between 1996 and 2005 and impacted well NWC-03[3]. The average concentration at NWC-03 was 119 mg/L in August 1996, 460 and 390 mg/L in October and November 2005, and 489 mg/L in the fourth quarter 2008. Figure 29 shows sulfate concentrations over time at NWC-03 and other wells in the vicinity of the plume.

Elsewhere, between 1996 and 2005, changes in sulfate concentrations at the margin of the plume indicate that the plume expanded slightly, or, in places, contracted slightly.

[3] Note that NWC-03 is a replacement well for NWC-03 CAP, which is a capped well at the same location as NWC-03)

Concentrations at downgradient well TM-16 (in the southeastern portion of the plume near Bisbee Junction) increased from 500 mg/L in June 1996, to 528 and 619 mg/L in August and October 2005, respectively, indicating possible expansion of the plume. However, decreasing concentrations since 2005 at TM-16 and at NWC-04, located approximately 2500 feet south (and downgradient) of TM-16, indicate that the southeastern portion of the plume has contracted slightly. NWC-04 CAP was within the plume with an average concentration of 255 mg/L in August 1996, and was outside the plume in 2005, with October and November 2005 concentrations of 220 and 200 mg/L, respectively. A reduction in concentrations within the plume and possible contraction between 1996 and 2005 are also indicated by data from downgradient well TM-42 in the southern portion of the sulfate plume near Purdy Lane (Figure 29). Sulfate concentrations at TM-42 decreased from 985 mg/L in July 1997 to 656 mg/L in October 2005.

Sulfate concentrations in the upgradient portion of the plume (wells TM-02 and BF-01) did not change significantly between 1996 and 2005 (Figure 29), although concentrations at TM-02 decreased substantially between 1989 and 1996 (from greater than 2,500 mg/L to less than 1,300 mg/L). Specifically, concentrations at well TM-02 were 1,200 mg/L in June 1996 and 1,280 mg/L in October 2005 (TM-02 was dry in 2008). Sulfate concentrations in BF-01 were 1,400 mg/L in June 1996, 1,410 mg/L in October 2005 and between 1,320 mg/L and 1,490 mg/L in 2008. The post-1989 drop in sulfate concentrations in TM-02 probably reflects a lack of further sulfate source loading when mine water discharge to the evaporation pond stopped in 1987.

Changes in the general shape of the plume between 2005 and 2008 (Figure 28) are partly related to the additional data available in 2008 that allow a more detailed definition of the plume boundary. For example, the "embayment" in the northern portion of the plume is defined by data from TM-07, and the RUIZ, BLOMMER, and COOPER wells. These wells have sulfate concentrations below 250 mg/L. Although this feature may have existed in 2005 (Figure 26), it would not have been defined because data from these wells were not available at that time. Data for TM-07 indicate sulfate concentrations greater than 250 mg/L in 1989 and 1996 (Figures 24 and 25); but less than 250 mg/L in 2008 (Figure 27), indicating a significant concentration decrease over time.

Differences between the 2005 and 2008 plume margins include a slight expansion to the west/southwest at the southwest extremity of the plume (defined by TVI 875), a slightly larger extension to the east in the northeastern portion of the plume (defined by NOTEMAN), and a slight contraction in the southeast portion of the plume near NWC-04. The slight expansion to the west/southwest at the southwest extremity of the plume is supported by the increase in sulfate concentration at NWC-03 from 390 to 489 mg/L between 2005 and the fourth quarter of 2008 (Figure 29). The slight contraction in the southeast portion of the plume near NWC-04 is supported by the decrease in the sulfate concentration at NWC-04 from 200 to 162 mg/L and the decrease in sulfate at TM-16 from 619 to 547 mg/L between 2005 and the fourth quarter of 2008 (Figure 29). In the northern portion of the plume, concentrations have changed little since 2005.

The rate of plume migration, based on the movement of the 250 mg/L contour over time (Figure 24 to 27), was likely higher between 1989 and 1996 than between 1996 and 2005 or

between 2005 and 2008 due to reduced hydraulic gradients in the latter periods (Section 4.2.3.4). Because of dispersion and the reduction in hydraulic gradients over time, the plume may be relatively stagnant in some areas.

5.1.1.3 Vertical Distribution

Evaluation of the vertical distribution of sulfate is based on sampling data for wells located in close proximity, but completed with screen intervals at different elevations. Water quality sampling during drilling of the 2008 monitoring wells is also important in evaluating the vertical distribution of sulfate.

Historical sampling prior to the present investigation indicated that west of the Black Gap fault, where the basin fill is the principal aquifer, the sulfate plume was confined primarily to the basin fill. Wells completed in the underlying undifferentiated Bisbee Group formations or Glance Conglomerate west of the Black Gap fault were not impacted. For example, at paired wells TM-02/TM-02A, TM-19/TM-19A, and GARNER 557/GARNER 635 in which one of the pair is screened in basin fill and the other in bedrock, the bedrock aquifer was unimpacted (Appendix G and Tables 5 and 11). East of the Black Gap fault, where the basin fill is unsaturated, the sulfate plume was detected within the Morita Formation and Glance Conglomerate, but the vertical extent of sulfate was undetermined.

The aquifer characterization investigation developed additional information on the vertical extent of sulfate. BMO-2008-series wells completed within the plume in basin fill,

undifferentiated Bisbee Group, and Glance Conglomerate were installed at depths sufficient to define the depth of the plume in most cases. Also, the results of reconnaissance and temporary well sampling during drilling (Section 3.4.4) were used to estimate the depth of the plume. Plates 2 and 3 illustrate the vertical distribution of sulfate by showing sulfate concentration data for monitoring wells in the fourth quarter of 2008 and for temporary wells.

Sulfate concentrations from co-located wells and temporary wells demonstrate that some portions of the plume west of the Black Gap fault in basin fill are underlain by bedrock that may or may not contain elevated sulfate. For example, well BMO-2008-7 is screened 50 feet below the basin fill-bedrock contact and has a fourth quarter 2008 sulfate concentration of 34.5 mg/L (Plate 2, Sections B-B' and H-H'. In contrast, sulfate in excess of 250 mg/L was found in both the basin fill and the upper portion of the Morita Formation at site BMO-2008-8 (Plate 2, Section H-H' and Plate 3, Section E-E') and in basin fill and Lower Mural Limestone at site BMO-2008-13 (Plate 2, Section B-B' and Plate 3, Section F-F').

BMO-2008-8M and BMO-2008-13M are screened approximately 620 feet and 400 feet below the basin fill contact, respectively. During drilling of BMO-2008-8M, sulfate concentrations in temporary wells constructed in the borehole ranged from 1,500 mg/L approximately 40 feet below the basin fill-bedrock contact to a low of 120 mg/L approximately 540 feet below the contact (Table K.7). During drilling of BMO-2008-13M, sulfate concentrations in temporary wells ranged from a high of 840 mg/L approximately 200 feet below the basin-fill-bedrock contact to a low of 430 mg/L approximately 460 feet below the contact. BMO-2008-8M and BMO-2008-13M have fourth quarter 2008 sulfate concentrations of 197 and

494 mg/L, respectively. The concentration of 494 mg/L at BMO-2008-13M seems anomalous because it is located farther downgradient from the former evaporation pond than BMO-2008-7M which had a sulfate concentration of 34.5 mg/L. However, the sulfate concentration at BMO-2008-6M, located west and generally downgradient of BMO-2008-13M, is 199 mg/L, higher than the basin fill concentration of 60 mg/L at co-located well BMO-2008-6B.

Sulfate is vertically stratified within the basin fill west of the Black Gap fault at the locations of GARNER 635 (Plate 2, Section C-C' and Plate 3, Section H-H') and BMO-2008-4B (Plate 3, Section F-F'). Depth-specific sampling during drilling of GARNER 635 in 2001 indicated that sulfate concentrations in the basin fill decreased from 632 mg/L to 25.8 mg/L between the depths of 280 feet and 345 feet bls (Wright, 2001). The total depth of basin fill at GARNER 635 is 540 feet and the static water level was measured at a depth of 184 feet in October 2001. Water quality samples collected at depths of 250 to 280, 345 to 375, 455 to 485, 545 to 575, and 630 to 670 ft bls had sulfate concentrations of 632, 25.8, 16.7, 39.8, and 54.2 mg/L, respectively (Plate 2). These data indicate that at the time of drilling, the sulfate plume was localized in the upper portion of the 360-foot saturated thickness of basin fill. The underlying bedrock in which GARNER 635 was completed has a fourth quarter 2008 sulfate concentration of 36 mg/L (Table 11), indicating that the sulfate plume does not extend into the bedrock at this location.

Reconnaissance sampling during drilling of BMO-2008-4B near well NWC-03 indicated that sulfate concentrations in the basin fill decreased from a maximum of 700 mg/L to 210 mg/L between the depths of 220 feet and 620 feet bls (Figure 30 and Plate 3, Section F-F'). A general

decrease in concentrations occurred between 220 and 620 feet except for local minimum of 170 to 190 mg/L at 280 to 300 ft bls (likely related to the change from Stratex to reverse circulation drilling), and a local elevated concentration of 310 mg/L at 440 ft bls. The total depth of basin fill at BMO-2008-4B is approximately 630 feet and the static water level was measured at a depth of 131 feet in the fourth quarter 2008. These data indicate that the sulfate plume is localized in the upper half to two thirds (250 to 320 ft) of the 500-foot saturated thickness of basin fill.

East of the Black Gap fault BMO-2008-9M, BMO-2008-10GU, and BMO-2008-10GL are screened in bedrock within the plume. The water table is in Morita Formation at BMO-2008-9M (Plate 2, Section H-H') and in Glance Conglomerate at BMO-2008-10GU and BMO-2008-10GL (Plate 2, Sections A-A' and H-H'). Reconnaissance and temporary well samples at BMO-2008-9M indicate that the sulfate plume extends to a depth of approximately 600 ft bls or 320 feet below the water table (Table K.8). The sulfate concentration at BMO-2008-9M, completed below the plume with a screened interval of 665 ft bls to 765 ft bls, was 54.4 mg/L in the fourth quarter 2008 (Table 11).

Sulfate concentrations at BMO-2008-10GU and BMO-2008-10GL in the fourth quarter 2008 were 1,390 mg/L and 1,290 mg/L, respectively. Elevated sulfate was expected at BMO-2008-10GU based on reconnaissance and temporary well samples (Table K.9). Sulfate in excess of 250 mg/L at BMO-2008-10GL during quarterly groundwater monitoring was unexpected because reconnaissance water samples collected during drilling and airlift development indicated concentrations less than 100 mg/L in samples collected between 780 and 820 ft bls (Table K.10),

as discussed in Section 3.4.4.9. The apparent vertical extent of the plume at BMO-2008-10GL is at least 800 ft bls based on samples from the well. The contradictory sulfate concentration indicated, by reconnaissance and monitoring well samples, suggests incursion of sulfate-bearing water to the well during development and aquifer testing.

5.1.2 Major Element Chemistry

The composition of groundwater within and outside the sulfate plume was examined with regard to major ions, TDS, and pH. Figures 31 and 32 are trilinear diagrams that display the major ion composition of water quality samples collected in 1996 and 2008, respectively. Figure 31 and Table 18 show data from selected wells completed within both the basin fill and undifferentiated Bisbee Group. Data selected for the diagram are from sample dates as close to June 1996 as possible. Figure 32 and Table 19 shows data from wells completed in basin fill, undifferentiated Bisbee Group, and Glance Conglomerate that were sampled in the third quarter 2008.

There are two generally well-defined populations evident in Figure 31 that distinguish groundwater collected from inside the sulfate plume from groundwater collected from outside the plume. The distribution of data on the trilinear diagram indicates that the chemistry of groundwater outside the plume is generally similar in samples collected from both the undifferentiated Bisbee Group and basin fill, and that the chemistry of groundwater inside the plume is generally similar in both the undifferentiated Bisbee Group and basin fill. Otherwise, four distinct populations would be evident. The obvious outlier in Figure 31 is the sample from

NWC-05 that has a relatively high chloride concentration and may have been affected by the local infiltration of septage.

Figure 32, depicting water quality data collected in 2008, also displays two populations that distinguish groundwater collected from inside the sulfate plume from groundwater collected from outside the plume. As with the 1996 data, the chemistry of groundwater inside the plume is similar in samples from basin fill, undifferentiated Bisbee Group, and Glance Conglomerate. The 2008 data show a larger range of water quality than do the 1996 data; particularly in samples from undifferentiated Bisbee Group and Glance Conglomerate. The majority of data for bedrock samples outside the plume lie along lines representing mixing between plume water and ambient groundwater. The scatter in data for samples outside the plume represents the range in water quality in ambient groundwaters.

The tight grouping of samples representing groundwater inside the plume, regardless of hydrostratigraphic unit (basin fill, undifferentiated Bisbee Group, or Glance Conglomerate), indicates a common origin for the sulfate-impacted water. Groundwater inside the plume is a calcium sulfate type whereas groundwater outside the plume in basin fill is calcium-bicarbonate type, groundwater outside the plume in the undifferentiated Bisbee Group ranges from calcium-bicarbonate, calcium-sodium bicarbonate, and calcium-sodium-magnesium-bicarbonate types; and groundwater outside the plume from Glance Conglomerate is either calcium-bicarbonate or sodium-bicarbonate type.

Concentrations of calcium, magnesium, carbonate, and TDS strongly correlate with sulfate concentrations. This correlation exists for groundwater samples collected from the basin fill, undifferentiated Bisbee Group, and Glance Conglomerate. The concentration of TDS in a groundwater sample is a measure of the dissolved compounds in solution, whether ionized or not. Typically, the most abundant dissolved solids in groundwater are the major element cations of calcium, magnesium, sodium, and potassium, and the major anions of chloride, sulfate, and bicarbonate.

Appendix G provides TDS, calcium, sulfate, and bicarbonate concentrations for historical groundwater samples. The data in Appendix G indicate that the TDS concentration at TM-02 in the source area near the former evaporation pond ranged from a high of 5,530 mg/L to a low of 2,500 mg/L between January 1989 and November 1997. Sulfate, calcium, and bicarbonate can be seen to vary in rough proportion to TDS and to each other. Because there are elevated concentrations of calcium, sulfate, and bicarbonate associated with the sulfate plume, the TDS within the plume is elevated. Mitigation actions that address sulfate would also address TDS because sulfate is a major component of the TDS.

On average, groundwater in the sulfate plume has a slightly lower pH than groundwater outside the plume. The pH of groundwater in the basin fill, undifferentiated Bisbee Group, and Glance Conglomerate outside the sulfate plume is neutral to slightly alkaline (generally between 7 and 8) and inside the plume is neutral to slightly acidic (generally between 6 and 7). Strongly acidic conditions (pH <5) have not been detected in groundwater near the former evaporation pond or tailing impoundments.

5.2 Sulfate Fate and Transport

Sulfate is a naturally occurring, soluble, divalent anion (SO_4^{-2}) resulting from the oxidation of elemental sulfur, sulfide minerals (such as the minerals occurring in the ore deposits of the Warren Mining District), and organic sulfur. Anthropogenic sources of sulfate include the mining of sulfide minerals, sulfur-containing fossil fuels, household wastes and detergents, and industrial chemicals including sulfuric acid. Sulfate is a common ion in groundwater and is one of the major element ions used to chemically characterize water types (e.g., trilinear diagrams). Sulfate in solution tends to associate with cations, especially calcium and sodium.

Sulfate is non-volatile and does not partition into the vapor phase. Potential removal mechanisms for aqueous sulfate include reduction to a gaseous species such as hydrogen sulfide, precipitation as a solid phase, or sorption to solid phase aquifer materials. Sulfate reduction would require strongly reducing conditions, which are not seen in groundwater in the vicinity of the plume. Sulfate could precipitate as a metal sulfide in a reducing environment with aqueous metals, neither of which appear to be present in the plume area.

The concentration of sulfate in natural waters is controlled by the solubility of gypsum, which is less soluble than sodium or magnesium sulfates. Aqueous sulfate can precipitate as gypsum if concentrations of calcium and sulfate exceed the gypsum solubility limit. Hem (1985) identifies the concentration of sulfate in equilibrium with gypsum as between approximately 1,500 and 1,800 mg/L sulfate, although the actual concentration depends on the ionic composition of the water and chemical kinetics. Gypsum precipitation in the subsurface may have occurred historically if sulfate concentrations in groundwater were large, but gypsum

precipitation is not expected to be significant now because sulfate concentrations are generally less than gypsum saturation levels.

Research reported by EPA (2003c) indicates that sulfate does not adsorb strongly to soil and that sulfate is transmitted through unsaturated soil by percolating water. In general, soils retain sulfate weakly except in the presence of high amounts of ferric iron and aluminum oxides or organic matter (Bodeck et al., 1988). Sulfate can coprecipitate with calcium carbonate in soil, but this is not expected to be a significant sulfate removal process in the plume area.

Sulfate can be treated as a conservative ion for the purpose of evaluating migration of the sulfate plume because there are no significant chemical interactions at the site that would reduce the aqueous sulfate concentration in groundwater. Once dissolved in groundwater, the movement of the sulfate plume is affected primarily by physical properties.

The physical processes controlling movement of the plume are advection, dispersion, and dilution. Advection is the movement of sulfate along with the bulk movement of groundwater. The rate of advective transport is approximately the average pore velocity for a non- or poorly-sorbing constituent such as sulfate that is unsaturated with respect to it solubility limits. Dispersion refers to the real and apparent spreading of sulfate due to the mixing of waters with different concentrations as groundwater flows through saturated materials at different groundwater velocities. Dilution is a process that reduces sulfate concentrations, and potentially the apparent plume movement, as recharge with low sulfate concentrations mix with the plume.

6. CONCEPTUAL SITE MODEL

The conceptual site model describes the sources, environmental pathways, and potential receptors of sulfate associated with the sulfate plume from the CTSA. This report provides a large amount of information on the hydrogeology of the CTSA area (Sections 3 and 4), the nature and extent of sulfate (Sections 3 and 5), and the concentrations of sulfate in drinking water supplies (Section 3.1). These previously discussed data on the sulfate plume are summarized in the conceptual site model. Figure 33 is a schematic diagram of the site conceptual model.

6.1 Sulfate Sources and Release Mechanisms

As currently understood, the potential historical sources of sulfate are the tailing impoundments, the former evaporation pond, and the former Warren Ranch irrigation area. These potential sources would have received water containing elevated sulfate concentrations. Water in the tailing impoundments would have elevated sulfate levels probably due to the oxidation of sulfide minerals contained in the ore. Water applied at the former evaporation pond and former Warren Ranch irrigation area came from dewatering operations in the mine area that had a range of sulfate concentrations depending on its origin in the underground workings of the Warren Mining District. Underground water from zones where sulfide minerals were oxidizing, were likely acidic, and had elevated concentrations of sulfate. Water pumped from unoxidized portions of the mineral deposits may have had low to moderate sulfate concentrations.

The primary sources of sulfate-bearing seepage were likely the former evaporation pond and the former Warren Ranch irrigation area. The former evaporation pond was likely the major source of seepage because the high average rate (2,746 gpm) and long duration (80 years) of water application combined with the high hydraulic conductivity of the basin fill on which the water was applied (Section 3.5) likely resulted in significant infiltration. Relative to the former evaporation pond, infiltration from the former irrigation area was presumably less because of the lower average application rate (1,457 gpm) and the large area of agricultural land use would have resulted in a higher evapotranspiration rate.

Seepage from the tailing impoundments is believed to have been relatively low due to the relatively low hydraulic conductivity of the tailing material. Seepage from the tailing impoundments is likely negligible at the present time based on the results of investigations by SET (1998a) and the observation that sulfate concentration in wells in the vicinity of the tailing impoundments do not exceed 250 mg/L (e.g., GL-03, BMO-2008-11G, COB WL, and TM-03). Also, the tailing impoundments are largely north of the Abrigo fault and west of the Black Gap fault in a subregion that appears to be hydraulically isolated from the subregion containing the sulfate plume (Section 4.2.3.2).

The potential for the CTSA facilities to be a current or future source of sulfate is negligible because the facilities are inactive, only temporarily receive stormwater and rainfall, and are pumped to maintain dry conditions in preparation for reclamation (Section 2.1). The current potential for the Warren Ranch irrigation area to be a current or future source of sulfate is negligible because it has been inactive since 1985.

The release mechanism for sulfate-bearing water was land application of mine water for evaporation and irrigation. Water released to the surface from approximately 1905 through 1987 infiltrated into the subsurface and migrated vertically to the groundwater table where it mixed with groundwater. The sulfate plume formed because the discharge of sulfate-bearing water to the former evaporation pond persisted for decades. The source of sulfate-bearing seepage was eliminated when discharges to the former evaporation pond and former Warren Ranch irrigation area were eliminated in 1987 and 1985, respectively.

6.2 Environmental Pathways

The environmental pathway describes the transport medium and migration processes that may lead to exposure to sulfate-bearing groundwater. The environmental pathway of concern with respect to elevated concentrations of sulfate in drinking water supplies is groundwater flow. Although the sources of sulfate are inactive, previously impacted groundwater in the plume still migrates in the subsurface under the current hydraulic gradients occurring in the hydrostratigraphic units of the CTSA and vicinity. It is the flow and dispersion of previously impacted groundwater that presents a risk of impact to drinking water supply wells in the vicinity of the plume.

Sulfate-bearing seepage in the vicinity of the former evaporation pond mixed with groundwater in the basin fill and Morita Formation to the west of the Black Gap fault and with groundwater in the Morita Formation and Glance Conglomerate to the east of the fault. The sulfate impacted groundwater then flowed downgradient in the direction of groundwater

movement in each hydrostratigraphic unit (i.e., to the south, southwest, and west in basin fill and Morita Formation on the west side of the Black Gap fault, and to the south and southwest in the Glance Conglomerate and Morita Formation on the east side of the fault). At downgradient locations west of the Black Gap fault, sulfate has migrated into the Mural Limestone and Cintura Formations.

Groundwater flow is currently southerly and westerly from the area of the former evaporation pond. As shown by Figure 27, the sulfate plume extends south to Bisbee Junction and southwest to Naco. The leading edge of the plume appears to be moving southwest toward Naco even though the prevailing hydraulic gradient is to the west. This relationship is shown by Figure 34 which shows both the fourth quarter 2008 sulfate concentration and groundwater elevation. The apparent movement of sulfate in a direction oblique to the direction of the hydraulic gradient may be the result of historical hydraulic gradients due to groundwater mounding at the former evaporation pond or anisotropy in the basin fill.

A factor that may influence the apparent inconsistency between sulfate distribution and current groundwater flow directions is the lack of data concerning pre-1989 groundwater levels. The development of a groundwater mound beneath the former evaporation pond could have increased the hydraulic gradient to the southwest, south, and southeast. As a result, the plume would have migrated southwest, south, and southeast under the influence of the mound until the regional hydraulic gradient became predominant. In that case, the apparent movement to the southwest may be the result of westward movement of sulfate that had migrated further south in the area east of Naco than is indicated in Figure 34. In addition to time varying hydraulic

gradients, the shape of the plume is further influenced by transport through lower permeability, heterogeneous bedrock east of the Black Gap fault, and higher permeability, homogeneous basin fill west of the fault.

Anisotropy refers to a material property, such as hydraulic conductivity, that varies depending on direction. Anisotropy in the basin fill may have resulted from a northeast-southwest trending sedimentary facies or structural fabric that is roughly parallel to the trace of the Black Gap fault and the alignment of the basin into which the basin fill was deposited (Figure 20). For example, anisotropy could occur if the basin fill depositional system resulted in the formation of elongated bodies of higher and lower permeability materials oriented in a generally northeast-southwest direction or if a series of subparallel structures cut the basin fill. Such anisotropy could result in a higher hydraulic conductivity in the northeast-southwest direction than the northwest-southeast direction

The direction and rate of movement of the sulfate plume will also be locally influenced by areally non-uniform recharge rates and groundwater pumping. As sulfate moves downgradient, hydrodynamic mixing and dilution by low-sulfate recharge will act to reduce the average sulfate concentrations within the plume. This is evidenced by the apparent contraction of the plume on its southeastern boundary from 1996 to 2008 (Figure 28). Hydrodynamic mixing, dilution, and the absence of an ongoing source are important in reducing concentrations in both upgradient and downgradient portions of the plume. The reduction in hydraulic gradients over time due to dissipation of the groundwater mound has also acted to reduce, but not eliminate, the apparent rate of downgradient migration of the sulfate plume.

Sulfate is vertically stratified in basin fill along the southwestern margin of the plume (Section 5.1.1.3). Sulfate stratification was not observed in basin fill in the northern portion of the plume. The vertical stratification of sulfate in the basin fill may be enhanced by a high ratio of horizontal to vertical hydraulic conductivity in basin fill and bedrock.

Although movement of the plume has been primarily laterally in basin fill and bedrock, it has penetrated vertically into bedrock near the former evaporation pond. East of the Black Gap fault, the plume penetrated bedrock because the basin fill is thin. West of the Black Gap fault, the plume penetrates bedrock below basin fill at BMO-2008-8M and BMO-2008-13M, but not at BMO-2008-7M, GARNER 635, or TM-19A. Sulfate may have migrated to depth at BMO-2008-8M because it is close to the former evaporation pond and proximal to the Black Gap fault (Plate 2, Section H-H' and Plate 3, Section E-E'). Although there is a weak vertically downward hydraulic gradient between basin fill and bedrock (Section 4.2.3.5), rates of vertical movement are expected to be small due to the relatively low magnitude of its hydraulic conductivity and a high ratio of horizontal to vertical hydraulic conductivity (Section 3.5.3). The conditions that allow sulfate to penetrate to depth at BMO-2008-13M are uncertain, but may be due to larger vertical hydraulic gradients prior to dissipation of the groundwater mound.

6.2.1 Influence of Faults on Groundwater Flow and Sulfate Transport

Faults have been interpreted to play a role in controlling groundwater flow in the vicinity of the CTSA. The Abrigo and Black Gap faults have been regarded as hydraulic barriers or aquitards in previous hydrologic modeling of the sulfate plume area (SET, 1998b and 1998c).

Evidence cited for considering these features to be barriers to groundwater flow is the apparent discontinuity in water levels measured in wells on either side of the faults. However, the influence of faults on groundwater flow in the area is largely inferred from potentiometric data.

SET (1998c) projected the Abrigo fault from the Red Mountain area, northwest of the CTSA (Figure 3), to the south end of the South Tailing Impoundment. The fault trace is covered by basin fill and there is no definitive geologic evidence for the fault other than observed water level data. Between 1989 and 2005, groundwater levels in monitoring wells north of the projected trace of the Abrigo fault (for example, GL-03 and TM-9) were hundreds of feet lower than in monitor wells south of the fault (for example, BF-01 and TM-02A) as shown in Figures 12 through 15. Figures 17 through 19 show that in 2008 GL-03 maintained water elevations several hundred feet less than in wells to the south. However, monitoring for this investigation also identified an area of low groundwater elevation that appears to straddle the trace of the Abrigo fault based on measurements at BURKE, SRC, BMO-2008-11G, and GL-03. These data are the basis for defining the hydraulic subregion north of and in the vicinity of the Abrigo fault (Section 4.2.3.2) and suggest that the role of the Abrigo fault may not be as simple as previously supposed. Other differences between the subregions north and south of the Abrigo fault are:

- Water elevations at GL-03 have been increasing over time while water levels at wells south of the fault have been decreasing
- Wells defining the subregion north of the fault are relatively deep, greater than 600 feet, and completed in bedrock whereas wells south of the fault range from shallow to deep with the shallow wells being completed in saturated basin fill
- Sulfate concentrations in BURKE, SRC, BMO-2008-11G, and GL-03 are less than 50 mg/L (Table 11 and Figure 27) in contrast to wells in the subregion south of the fault which are in and marginal to the sulfate plume

The Black Gap fault is projected from Black Gap north-northeast of the CTSA (Figure 3). As discussed in Section 4.1, evidence for the Black Gap fault includes a rapid increase in the thickness of basin fill to the west of the projected Black Gap fault trace. Water elevation data collected at GL-03 and TM-3 since 1993 indicate a differential head of several hundred feet between the west side of the fault (GL-03) and the east side (TM-03) in the vicinity of the tailing impoundments. Historically, groundwater levels in wells TM-02 and TM-02A west of the Black Gap fault were tens to more than a hundred feet lower than in wells TM-29A and TM-41 east of the fault and south of the tailing impoundment (Figures 12 and 13). However, water level data collected in 2008 from BMO-2008-8M, BMO-2008-8B, and BMO-2008-9M do not show large differences (about 20 feet) in water levels across the Black Gap fault (Figures 18 and 19). These data suggest that water level differences across the Black Gap fault south of the tailing impoundments may have diminished over time as the groundwater mound associated with the former evaporation pond dissipated. Apparent water elevation differences across the southern end of the Black Gap fault in the study area, such as between TM-42 east of the fault and TM-19 and TM-19A west of the fault, have not been significant over time (Figures 13 through 19).

Although the evidence for the Black Gap fault based on water elevation differences is not strong south of the tailing impoundments, SET (1998c) found that treating it as a low permeability zone in the numerical model improved the water level calibration. Furthermore, groundwater elevations east of the Black Gap fault are anomalously low in some areas and vary widely over short distances in others (Figure 19) indicating a difference between groundwater regimes east and west of the fault. The observed variations in water elevations east of the Black Gap fault may be due in part to localized low permeability fault structures, but are also likely

influenced by permeability variations within the bedrock. Groundwater east of the Black Gap fault is in heterogeneous, low permeability bedrock (Glance Conglomerate and Morita Formation). Local pumping stresses may also account for some of the observed variations in water levels because pumping in low permeability bedrock can cause significant localized drawdown even at the low average pumping rates typical of domestic wells. As discussed in Section 4.2.3.2, the hydraulic subregion east of the Black Gap fault was identified based on its variability of water elevations and distinctly different hydraulic gradients than those observed west of the fault.

The traces of the Abrigo and Black Gap faults have been inferred by projecting mapped surface expressions of the faults and on the basis of water level differences across the faults. The hydraulic subregions are defined with respect to the Abrigo and Black Gap faults to identify areas that appear to possess different characteristics with respect to the magnitude of water levels, the variability of water levels with distance, and the direction of hydraulic gradients. The hydraulic behaviors that characterize the subregions can be due to contrasting hydraulic properties in the hydrostratigraphic units of the subregion, permeability reductions that occur along fault zones that separate the subregions, or both. Although the degree to which individual faults control groundwater flow is subject to interpretation, the traces of the Abrigo and Black Gap faults do generally coincide with the transitions between the subregions and represent fundamental structural elements in the study area.

The sulfate plume occurs in the subregion south of the Abrigo fault and west of the Black Gap fault and the subregion east of the Black Gap fault. The subregion north of and in the

vicinity of the Abrigo fault and west of the Black Gap fault does not appear to be hydraulically connected to the subregion to the south and is characterized by groundwater with low sulfate concentrations. The transition between the subregion north of the Abrigo fault and that to the south represents a groundwater divide and the subregion north of the fault is not expected to significantly influence the hydrology of the subregion to the south which contains the sulfate plume. The subregions east and west of the Black Gap fault appear to have a hydraulic connection south of the tailing impoundments, but not north of the former evaporation pond. The hydraulic communication across the Black Gap fault south of the tailing impoundments is highly influenced by the character of the low permeability bedrock east of the fault. The groundwater flow and sulfate mass transfer from east of the Black Gap fault to the subregion west of the fault will be controlled by both the relatively low hydraulic conductivities of the Glance Conglomerate and Morita Formation east of the fault, and any low permeability materials along the Black Gap fault. The available data provide sufficient information on the distribution of the plume, the hydraulic properties of the hydrostratigraphic units, and potentiometric conditions in the subregions studied to understand the large-scale characteristics of groundwater flow and sulfate transport in the vicinity of the plume and to construct a groundwater flow and sulfate transport model.

6.3 Potential Exposure Pathway and Receptors

The Mitigation Order sets a sulfate concentration limit of 250 mg/L for drinking water. EPA's Drinking Water Advisory for sulfate (EPA, 2003a) states *"In order to enhance consumer acceptance of water resources, this advisory recommends reducing sulfate concentrations to or*

below 250 mg/L, the EPA's Secondary Maximum Contaminant Level (SMCL) for sulfate. The SMCL is based on taste considerations". With respect to health concerns, sulfate ingestion exerts a laxative effect with short-term as opposed to long-term exposure. EPA (2003a) states *"the health-based advisory value of 500 mg/L will protect against sulfate's laxative effects in the absence of high concentration of other osmotically active chemicals in the water".*

The potential exposure pathway for sulfate is ingestion of sulfate-bearing water pumped from drinking water supply wells. As discussed in Section 3.1, the well inventory found that drinking water supply wells in the plume and near the plume edge include municipal and domestic water supply wells. A well that is screened entirely in the plume will produce water with a sulfate concentration greater than 250 mg/L. A well with a screen that only partially penetrates the plume may or may not have water that exceeds 250 mg/L sulfate depending on the proportions of plume and non-plume water drawn into the well. Figure 33 illustrates the source of sulfate, the migration pathway, and potential receptors.

Potential receptors of sulfate-impacted groundwater are users of municipal or private drinking water supply wells in the downgradient reaches of the plume near Bisbee Junction, Naco, and San Jose. Wells along the downgradient margin of the plume could potentially be affected by sulfate if the plume migrates into the vicinity of the well screen. Wells completed below the plume could potentially be affected by sulfate if downward migration of the plume occurs in response to naturally occurring or pumping-induced downward vertical hydraulic gradients. The potential for downward vertical migration of the plume would depend on the

ambient vertical hydraulic gradient, the hydraulic conductivity and the magnitude of any pumping induced vertical hydraulic gradient.

7. NUMERICAL MODEL OF GROUNDWATER FLOW AND SULFATE TRANSPORT

A numerical model for simulating groundwater flow and sulfate transport was developed for Task 3 of the Work Plan. The primary objective of the model is to evaluate potential mitigation actions for the Feasibility Study. Potential mitigation actions may include groundwater pumping for plume control and sulfate mass removal, groundwater recharge for plume control and flushing, and monitored natural attenuation. To accomplish this objective, the model must predict the future distribution of hydraulic heads and sulfate concentrations resulting from implementation of potential mitigation actions. The model will also be used to estimate flow rates needed for mitigation wellfields and pipelines for use in developing preliminary designs and cost analyses for the Feasibility Study.

Prior to model development, an evaluation of the existing data indicated that although data are available for hydrologic conditions since 1989, historical information was lacking in several key areas. Limited data are available on the following: the application rates, exact locations, and chemistries of mine waters applied to the former evaporation pond and Warren Ranch irrigation area; groundwater elevations prior to 1989; and groundwater quality prior to 1989. Although some additional historical data not included in previous reports was compiled by this investigation, the amount of pre-1989 data is still a significant data limitation.

Given the data limitations, model development focused on updating the existing groundwater flow and sulfate transport model developed by SET (1998c) (the SET Model) rather than constructing a new model, because the SET Model included most of the pre-1989

information that is available and many of the elements of the SET Model agree with the site conceptual model developed for this investigation. The updated SET Model developed for this investigation (hereafter referred to as the RSET Model) incorporates hydrogeologic data collected since 1998. Although the lack of data for calibration of historical conditions will provide little constraint on the pre-1989 predictions of the RSET model, the predictions of post-1989 conditions will be constrained by 19 years of hydrogeologic data, including information collected for this investigation. Constructing the RSET model to reflect new information on basin fill and bedrock geometry and calibrating it to potentiometric and water quality data since 1989 will allow the model to be used for simulation of current and potential future conditions.

Model development focused on simulating flow and transport in the basin fill because it is the primary hydrostratigraphic unit in which mitigation pumping strategies would be implemented. The basin fill would be the likely candidate for mitigation pumping because it hosts the majority of the plume and drinking water supply wells and because of its high hydraulic conductivity compared to bedrock. The RSET Model will have a good ability to predict future conditions in the vicinity of the plume for evaluation potential mitigation actions.

This section documents the development of the RSET Model, including its construction, calibration, and sensitivity. The use of the RSET Model for predictive simulations will be reported as part of the Feasibility Study.

7.1 Model Construction

The RSET Model incorporates information acquired since the construction of the SET Model (SET, 1998c), including hydrogeological information reported in Sections 3, 4, and 5 and reflects the conceptual site model as reported in Section 6. This sub-section describes the components of the RSET Model and documents the revisions the SET Model and the rationale for those revisions. A summary of changes made to the SET Model is provided in Table 20. The model components described in this section include numerical codes, model domain, temporal discretization, boundary conditions, hydraulic stresses, flow and transport parameters, sulfate sources, and initial conditions.

7.1.1 Numerical Codes

The RSET Model retains the numerical codes used in the SET Model: MODFLOW (McDonald and Harbaugh, 1988) for groundwater flow and MT3D (Zheng, 1993) for sulfate transport. Groundwater Vistas, Version 5 (Environmental Simulations, Inc., 2007) was used for pre- and post-processing of modeling files.

7.1.2 Model Domain

The RSET Model applied the same spatial extents and discretization as the SET Model, but modified the number of model layers and the layer elevations. The extent, spatial discretization, and model layers of the RSET Model are described below.

7.1.2.1 Model Extent

The RSET Model extent, shown in Figure 35, covers an area of nearly 60 square miles and encompasses the sulfate plume. The model extends in the north-south direction from approximately the location of the North Tailing Impoundment on the north (Universal Transverse Mercator [UTM] 3,475,000 North) to the southern edge of current footprint of the El Oasis irrigation area which lies approximately two miles south of the United State-Mexico border (UTM 3,464,000 North). The model extends in the east-west direction from approximately two miles west of the NSD WWTF on the west (UTM 595,000 East) to approximately two miles east of the South Tailing Impoundment on the east (UTM 609,000 East). The model domain extends several miles beyond the current extent of the sulfate plume, and is sufficiently large to simulate long-term plume migration under different mitigation alternatives, including monitored natural attenuation.

7.1.2.2 Spatial Discretization

The RSET Model domain is discretized into 110 rows, 140 columns, and 4 layers. The size of each horizontal cell is 100 meters by 100 meters (length by width) (Figure 36).

7.1.2.3 Model Layers

The model layers of the RSET Model are modified from the SET Model to reflect information developed for this investigation on the geometries for the basin fill and bedrock as described in Sections 3, 4, and 5. The RSET Model contains three hydrostratigraphic units: 1)

basin fill; 2) the undifferentiated Bisbee Group, consisting of the Morita Formation, Mural Limestone, and Cintura Formation; and 3) Glance Conglomerate. The RSET Model represents the undifferentiated Bisbee Group as two layers, rather than as a single layer as in the SET Model, to allow simulation of interactions between the shallow bedrock and basin fill. The RSET Model layering is as follows:

- Layer 1 = basin fill
- Layer 2 = shallow portion of the undifferentiated Bisbee Group
- Layer 3 = deep portion of the undifferentiated Bisbee Group
- Layer 4 = Glance Conglomerate

The shallow and deep portions of the undifferentiated Bisbee Group bedrock are specified to have equal thickness with the constraint that the thickness of the shallow portion (Layer 2) could not exceed 400 feet. The layer elevations defining the bottom surfaces for the basin fill and the undifferentiated Bisbee Group were modified to agree with the bedrock surfaces developed from data compiled as part of Task 2.1 (Sections 3.2) and defined by drilling in 2008 (Section 3.4). Figure 37 shows bedrock surface contours interpreted from the bedrock elevations. The thickness of the undifferentiated Bisbee Group is interpreted from the observations of undifferentiated Bisbee Group lithologies in the BMO-2008 boreholes in the southern portion of the study area and the geologic interpretation in Section 4, including the assumption that the Bisbee Group-Glance contact dips to the south-southwest toward Greenbush draw at approximately 15 degrees. The 15-degree south-southwest dip of the Bisbee Group-Glance contact is maintained roughly to Greenbush Draw, then reverses to approximately 15

degrees north-northwest. The reversal of dip is based on interpretation of regional folding (Section 4.1 and Plates 2 and 3).

7.1.3 Temporal Discretization

MODFLOW approximates transient groundwater flow with a series of steady-state "stress periods" that represent a specified time interval. Hydraulic stresses and boundary conditions may change from one stress period to another, but are constant within a given stress period. Each stress period is divided into computational "time steps" that correspond to real time sub-intervals. The SET Model used six stress periods for the historical simulation of 1905 through 1997. The RSET Model retains the definition of stress periods of the SET Model through SET Model stress period 6 (1997), although stress period 5 (1976 to 1987) was split into two stress periods (1976 to 1985 and 1986 to 1987) for a total of 7 stress periods to simulate cessation of recharge from the Warren Ranch irrigation area after 1985 (Sections 2.1.2). The RSET Model contains 11 stress periods following stress period 7, with each additional stress period representing one year to bring the historical simulation time through the end of 2008. A summary of each stress period and its relationship to real time is provided in Table 21.

7.1.4 Boundary Conditions

The RSET Model includes specified head and concentration, no flow, and specified flux and concentration boundary conditions. The first two boundary condition types are described

below. Specified flux boundaries are described in the section discussing hydraulic stresses and sulfate sources (Sections 7.1.5 and 7.1.7 respectively)

7.1.4.1 Specified Head and Concentration Boundaries

The RSET Model retains the specified head boundaries of the SET Model because water level data collected for this investigation (Section 4.2.3) provided no justification for changing specified head locations. Specified head boundaries are assigned along portions of the south, east, and west boundaries of the model to establish hydraulic head conditions in areas where the model domain is not bordered by physical boundaries (Figure 38). The specified head boundary values are constant in time.

Specified sulfate concentrations are associated with specified head boundaries. When the specified head boundary induces groundwater inflow, the sulfate concentration in the inflowing groundwater is determined by the specified sulfate concentration at the boundary cells. The SET Model specified a sulfate concentration of zero. Sulfate concentrations at the specified head boundaries were assumed to be 8 mg/L for the RSET Model to provide a minimum background sulfate concentration. This value for background concentrations was selected based on sulfate concentrations measured in wells outside of the sulfate plume near Naco, Arizona and Naco Sonora. Actual background concentrations of sulfate are probably not spatially uniform, but rather vary with location depending on the source of recharge and the local geology. Thus, actual background sulfate concentrations can be greater than the 8 mg/L assumed for modeling.

7.1.4.2 No Flow Boundaries

No flow boundaries are used to represent physical or hydraulic barriers to groundwater flow. The RSET Model retains the no flow boundaries of the SET Model. No flow boundaries are specified on the north and east ends of the model domain (Figure 38). The northern no flow boundaries coincide with the Bisbee West-Gold Hill and Abrigo faults in the northeast; and outcroppings of Paleozoic sedimentary rocks in the Naco Hills in the northwest. The eastern no flow boundaries in Layer 1 correspond to the outcropping of the undifferentiated Bisbee Group. The eastern boundary of Layers 2 and 3 is a no flow on the northern portion of the boundary and specified head on the southern portion. The eastern boundary of Layer 4 is a specified head boundary rather than a no flow boundary because the Glance Conglomerate extends east of the model domain.

7.1.5 Hydraulic Stresses

Hydraulic stresses applied in the RSET Model include groundwater pumping and aquifer recharge. Information on historic pumping and recharge is described in Sections 3.2.6 and 3.2.7, respectively. The incorporation of these hydraulic stresses into the RSET Model is discussed below.

7.1.5.1 Groundwater Pumping

Groundwater withdrawals in the sulfate plume area are not required to be reported to ADWR. Consequently, detailed pumping records for area wells are scarce. This is also true for

wells located in Mexico. The SET Model included 35 pumping wells, consisting of 11 domestic wells, 9 irrigation wells, 7 public supply wells, and 8 stock supply wells. Table 22 lists the water supply wells identified within the model domain, and lists the current status of the well, if known. The RSET Model retained the historical pumping rates specified in the SET Model through 1997 and updated pumping through the end of 2008. Wells and pumping rates used in the RSET Model are listed in Table 23.

Pumping rates for domestic wells not included in the SET Model were specified to pump at a constant rate of 0.3 gpm during years of operation. This pumping rate is based on an assumed domestic water demand of about 150 gallons per capita per day and a service of three individuals per domestic well. Pumping rates for stock supply wells not included in the SET Model were specified to pump at a constant rate of 1.8 gpm during the years of operation, which is the default rate used for stock supply wells in the SET Model. The years of operation are uncertain for some of the domestic and stock wells and had to be assumed. However, the model simulation results are expected to be insensitive to these assumptions because of the relatively low pumping rates in domestic and stock supply wells.

No changes to pumping in irrigation and municipal supply wells are made in the RSET Model prior to 1998. The SET Model did not include some municipal supply wells (e.g., AWC-02, NWC-2 and some Naco, Sonora wells); however the combined pumping rate from all wells associated with a given municipal supplier in the SET Model agreed with expected total production rates of that supplier, based on post-1997 pumping records (Section 3.2.6).

The RSET Model was modified to include post-1997 pumping data for water supply wells. The modifications include adding the municipal supply wells not explicitly included prior to 1998 and pumping wells that were installed after 1998 such as TVI 875 and AWC-05.

The pumping wells in the RSET Model are assigned to the model layer representing the corresponding wells' screened interval. For most wells, screened intervals were identified as part of the data compilation (Section 3.2). For some wells, particularly older wells and wells located in Mexico, no well construction information is available. The screened intervals of wells with no construction data are specified as being in basin fill, the primary water supply aquifer, based primarily on the shallow depths of these wells.

7.1.5.2 Aquifer Recharge

The aquifer recharge sources specified in the RSET Model included all of the recharge sources from the SET Model, with some modifications, plus additional recharge sources identified in the data compilation (Section 3.2.7 and Table 7). The locations of the recharge sources in the RSET Model are shown in Figure 39 and include:

1. Natural recharge (high and low)
2. Evaporation pond (east and west)
3. Warren Ranch irrigation area (east and west)
4. Warren WWTF lagoons
5. TVI Golf Course (original and expansion)
6. Naco, Sonora WWTF ponds (east and west)

7. El Oasis irrigation area (with added expansion area)
8. San Jose WWTF (original disposal and discharge to Greenbush Draw)

The RSET Model modified recharge from Warren Ranch irrigation area to terminate at the end of 1985 rather than at the end of 1987 as specified in the SET Model as discussed in Section 2.1.2. Another modification was an increase in the recharge rate for the Warren Ranch irrigation area on the east side of the Black Gap fault. The SET Model specified the Warren Ranch irrigation area recharge on the east side of the Black Gap fault to be over 10 times less than on the west side of the fault. In the RSET Model the recharge rate for the Warren Ranch irrigation area east of the Black Gap fault was increased during model calibration to match the rate on the west side of the fault (Section 7.2.4).

The RSET Model adds recharge from effluent discharged from the San Jose WWTF. Recharge from the San Jose WWTF is applied as two sources as described in the data compilation (Section 3.2.7). From 1986 to 2006, effluent recharged the aquifer via an 11-acre land application effluent disposal site located next to the San Jose WWTF (EPA, 2003b). The recharge rate for this time period was assumed to be 48 gpm, which is approximately one-half of the design capacity of the treatment plan. In 2006, the San Jose WWTF was expanded and permitted to discharge 1.22 MGD of effluent to Greenbush Draw and ceased recharging effluent through land application at the San Jose WWTF. Data supplied by the COB shows that effluent production for the fourth quarter 2006 through the end of 2008 averaged about 0.41 MGD (Table 10). In 2008 effluent dependent flow was observed in Greenbush Draw for at least one mile downstream of the discharge point. The assumption made in the RSET model is that 90 percent

of the effluent discharged to Greenbush Draw recharges the aquifer and that the recharge is distributed uniformly for one mile downstream of the discharge location.

The following additional changes were made to recharge sources in the RSET Model: 1) the source area of the Warren WWTF lagoons is increased to match its footprint as shown on aerial images, although the total recharge from the Warren WWTF lagoons was not changed; 2) recharge locations from the Naco, Sonora WWTF lagoons are slightly changed to match recent aerial images; and 3) the area representing the El Oasis irrigation area in Mexico was updated by increasing it from 306 acres in 1998 to 677 acres in 2008 based on recent aerial images. The per unit area recharge rate specified for the El Oasis irrigation area was kept constant, resulting in an increase in the total aquifer recharge from 315 ac-ft/yr (the original rate specified in the SET Model) to 697 ac-ft/yr as the area expanded.

The SET Model assumed that natural and artificial recharge did not contain sulfate other than at the former evaporation pond and the Warren Ranch irrigation area. The RSET Model modified recharge from WWTF sources and the El Oasis irrigation area to contain 46 mg/L sulfate. This value is the average sulfate concentration measured in samples taken from the effluent of the San Jose WWTF in 2006 and 2007 (Table 10). A sulfate concentration of 8 mg/L was assumed for natural recharge to be consistent with the background concentrations in groundwater outside the plume (Section 7.1.4.1). Sulfate concentrations in recharge from the former evaporation pond and Warren Ranch irrigation area are discussed in Section 7.1.7.

Aside from changes described above, the recharge rates of the SET Model are used as the initial recharge rates for the RSET Model. Table 24 summarizes the areas and initial and final (calibrated) recharge rates of the recharge sources in the RSET Model.

7.1.6 Flow and Transport Parameters

Flow and transport parameters in the model domain are defined by using zones, which are areas in the model domain with an equal value for a flow or transport parameter. Except for a few zones, the distribution of parameter zones is left unchanged from the SET Model, although parameter values for several zones were modified during calibration of the RSET Model. The distribution and values for the flow and transport parameters used in the RSET Model are discussed below and a summary of the initial and final flow and transport parameters used in the RSET Model is provided in Table 25.

7.1.6.1 Saturated Hydraulic Conductivity

Hydraulic conductivity controls the ease at which groundwater can flow through pore spaces under a hydraulic gradient. The RSET Model initially used the hydraulic conductivity values and zones specified in the SET Model. Some of these values were adjusted during model calibration to achieve a better match between simulated and measured groundwater levels and sulfate concentrations. Adjustments to hydraulic conductivity values were guided by aquifer tests conducted during aquifer characterization (Sections 3.5 and 4.2.2, Tables 6 and 15, and Appendix N).

Table 25 lists the initial and final hydraulic conductivity values for the RSET Model. Model calibration to groundwater levels was more sensitive to changes in horizontal hydraulic conductivity than to vertical hydraulic conductivity. In general, estimated hydraulic conductivity values for the basin fill in the center portion of the basin were equal to or greater than values used in the SET Model. Measured values of horizontal hydraulic conductivity for the basin fill in the center of the basin ranged from approximately 23 ft/day to 100 ft/day, compared to the value of 23 ft/day used in the SET Model. The exception to this was a relatively low hydraulic conductivity value of 2.3 ft/day estimated for BMO-2008-6B. Values used in the SET Model for the undifferentiated Bisbee Group (Layers 2 and 3) are consistent with aquifer test estimates for the undifferentiated Bisbee Group, except for the central portion of the basin, along Greenbush Draw. Here, 2008 aquifer tests yielded a much lower hydraulic conductivity value (1.2 ft/day) than used in the SET Model (20 ft/day). The SET Model hydraulic conductivity value for most of the Glance Conglomerate (1.6 ft/day) was generally greater than the hydraulic conductivity values (0.03 to 0.3 ft/day) estimated from tests in 2008 wells screened within the Glance Conglomerate. The Black Gap fault is shown on Figure 40 as a linier zone of lower permeability cells in Layers 2, 3, and 4.

The RSET Model retains all of the hydraulic conductivity zones of the SET Model but adds a small lower conductivity zone in Layer 1 near BMO-2008-6B to match estimates from aquifer tests and to improve model calibration (Section 7.2.3). Figure 40 shows the final distribution of hydraulic conductivity zones in Layers 1 through 4.

7.1.6.2 Storage Coefficient and Specific Yield

The storage coefficient is the volume of water released from a unit area of aquifer in a confined aquifer under a unit decrease in hydraulic head. The specific yield defines the amount of water released from a unit area of aquifer in an unconfined aquifer for a unit decrease in the water table. Values for the storage coefficient and specific yield were adjusted during model calibration. The zones for storage coefficient, specific yield, and effective porosity are specified together. Although no changes to the original zones from the SET Model were required for calibration of storage coefficient and specific yield, a new zone was added in Layer 1 (basin fill) on the west side of the Black Gap fault and in Layers 2 and 3 (undifferentiated Bisbee Group) on the east side of the Black Gap fault to accommodate the calibration of the effective porosity (Section 7.1.6.3). Figure 41 shows the final distribution of storage coefficient and specific yield zones in Layers 1 through 4. Table 25 gives the initial and final values for storage coefficients and specific yields used in the RSET Model.

7.1.6.3 Effective Porosity

Effective porosity is the fraction of the geologic material through which advective flow occurs. The transport velocity of the sulfate plume can be sensitive to value of the effective porosity. No site-specific measurements of effective porosities exist, but values of effective porosity are expected to be highest in the basin fill and lower in bedrock where most of the groundwater flow is limited to fractures. The SET Model values for effective porosity were generally within typical ranges for basin fill and bedrock materials except for a central zone of high effective porosity (0.55) in Layer 1 (basin fill) classified as silty-sand by SET (1998c)

(Layer 1). Total porosities for fine sand are estimated to be between 0.26 and 0.55 (Domenico and Schwartz, 1998). Because an effective porosity of 0.55 is higher than the total porosity expected for silty sand, this effective porosity zone was modified during calibration of the transport model (Section 7.2.3). The effective porosity for zones in Layers 2 and 3 on the east side of the Black Gap fault were also decreased during model calibration. Figure 41 shows the final distribution of effective porosity zones in Layers 1 through 4. Table 25 gives the initial and final effective porosity values used in the RSET Model.

7.1.6.4 Dispersivity

Dispersivity is an empirical parameter that determines the degree of hydrodynamic dispersion (mixing) of the sulfate in the longitudinal, transverse, and vertical directions relative to groundwater movement. No direct measurements of dispersivity exist for the model area. The simulated plume extent was relatively insensitive to the values of longitudinal, transverse, and vertical dispersivities; therefore adjusting dispersivity values was not emphasized during model calibration. Table 25 gives the initial and final dispersivity values used in the RSET Model. No changes were made to the distribution of dispersivity zones during model calibration. Figure 42 shows the distribution of dispersivity zones in Layers 1 through 4.

7.1.6.5 Solid-Water Distribution and Decay Coefficients

The RSET Model assumes sulfate to be a non-sorbing, conservative solute and specifies the solid-water distribution coefficient and the decay coefficient to be zero throughout the model domain.

7.1.7 Sulfate Plume Sources

The conceptual site model identifies the former evaporation pond and the Warren Ranch irrigation area as the primary sources of the sulfate plume; however, exact recharge rates and sulfate concentrations for these two sources are unknown. Consequently, recharge rates and sulfate concentrations for the two sulfate plume sources were adjusted during calibration of the RSET Model. Table 24 lists the initial and final recharge rates and sulfate concentrations specified for the former evaporation pond and Warren Ranch irrigation area in the RSET Model. Additional discussion of sulfate sources is provided below. The rationale for the RSET Model specifications is discussed in Section 7.2.

The SET Model specified sulfate concentrations in recharge from the former evaporation pond and Warren Ranch irrigation area on indirect evidence and model calibration. The SET Model used recharge sulfate concentrations of 3,000 mg/L and 1,500 mg/L for the evaporation pond and the Warren Ranch irrigation area, respectively, plus two smaller zones of elevated sulfate concentrations in the former evaporation pond, one to the west of the Black Gap fault (3,100 mg/L) and one to the east of the Black Gap fault (3,650 mg/L). The sulfate concentration of recharge from the former evaporation pond was based on sulfate measurements between 2,500

mg/L and 2,950 mg/L taken from TM-02 shortly after water delivery to the former evaporation pond was terminated (Figure 29 and Appendix G). TM-02 is located directly west of the former evaporation pond. The degree to which concentrations from TM-02 represent the temporal and spatial average concentration in the recharge water from the former evaporation pond is unknown, because historical measurements of sulfate in recharge water at the former evaporation pond do not exist. Additional indirect evidence is sulfate concentrations measured in BF-01, directly west of the former evaporation pond. BF-01 sulfate concentrations ranged from 1,400 mg/L to 1,500 mg/L in samples taken in 1993, several years after delivery of mine water ceased (Figure 29). Sulfate concentrations in the recharge from the Warren Ranch irrigation area are likewise poorly defined.

No documentation is available that gives specifics of the delivery rates or water quality for mine water sent to the Warren Ranch irrigation area or to the former evaporation pond. The existing information, summarized in Section 2.1.2, indicates that from 1954 to 1974, 92 percent of the mine water was clean and hard in approximately equal proportions and the remainder was mineralized water. Potential sulfate concentrations in clean and hard water are described below.

Clean and hard water are reported to have representative hardness concentrations of 840 ppm and 3,100 ppm, respectively (Section 2.1.2). Groundwater samples collected in 2008 having a hardness between 700 mg/L and 900 mg/L contain sulfate concentrations ranging from approximately 250 mg/L to 720 mg/L while samples with hardness greater than 2000 mg/L had sulfate concentrations of approximately 1,300 mg/L to 2,900 mg/L (Table 11). Assuming the reported hardness values are based on calcium and magnesium, and that the ppm values are

equivalent to mg/L as calcium carbonate equivalents, clean water may have had sulfate concentrations less than 1,000 mg/L and, perhaps, as low as 250 mg/L. Based on comparison to recent water samples, hard water probably had sulfate concentrations in the range of 3,000 mg/L, consistent with groundwater concentrations in the vicinity of the former evaporation pond, although lower concentrations could also have occurred. The sulfate concentration estimate for hard water is similar to, but lower than, the sulfate concentrations of 4,000 mg/L to 6,000 mg/L measured in Junction Shaft (Section 2.1.2).

Although there is no way to confidently characterize the rate and quality of water delivered to the former evaporation pond and the Warren Ranch irrigation area, the comparison of hardness and sulfate provides possible ranges for sulfate in the clean and hard mine waters. Mine operations probably also influenced disposal of different types of water. For example, mine operations may have had an incentive to preferentially send clean water to the Warren Ranch irrigation area for crops rather than hard water which had a higher salt content. Additional factors impacting sulfate concentrations in the recharge from the former evaporation pond and the Warren Ranch irrigation area are precipitation which would dilute sulfate and evaporation which would concentrate sulfate.

7.1.8 Initial Conditions

The initial condition for groundwater levels in the RSET Model is the hydraulic head distribution taken from the results of a steady-state simulation of pre-1905 aquifer conditions. The pre-1905 condition is used for steady-state conditions because this time pre-dates significant

pumping and artificial recharge in the CTSA area. The steady-state model was calibrated as discussed in Section 7.2. To approximate background sulfate concentrations, the RSET Model specifies an initial sulfate concentration of 8 mg/L throughout the entire model domain as discussed in Section 7.1.4.1, although actual background values of sulfate probably varied with location.

7.2 Model Calibration

The RSET Model was calibrated for the steady-state flow conditions, transient flow conditions, and sulfate transport conditions. Model calibration consisted of adjusting flow and transport parameters and recharge sources so that the simulations better matched field-measured groundwater elevations and sulfate concentrations. The calibration of flow and transport proceeded iteratively because the calibration of the flow component affected the calibration of the transport component, and vice versa. The iterative calibration of flow and transport helped to constrain model parameters and reduce the non-uniqueness of the model. The discussion below explains the development of calibration targets, the calibration procedure, and the calibration results.

7.2.1 Calibration Targets

Calibration targets for the steady-state flow, transient flow, and transport model components were developed from targets used to calibrate the SET Model, data compiled for aquifer characterization (Section 3.2), and groundwater levels and groundwater quality sampling

conducted during 2008 (Section 3.3). The development of calibration targets for each model condition is discussed below.

7.2.1.1 Steady-State Flow Targets

A challenge with using the pre-1905 period for the steady-state calibration is that no groundwater level measurements are available from that time period for use as calibration targets. The RSET Model used two inexact targets for calibration of the steady-state condition. The first target was the only target used to calibrate the steady-state flow condition of the SET Model, which is an indirect estimate of groundwater flux from the basin fill western boundary of 5,200 ac-ft/yr. This value was derived from an estimate made by Littin (1987) of the total groundwater flux leaving the basin in 1985. Because this target was estimated using a water balance, it can be considered approximate. The second steady-state target was a groundwater level measured at NWC-03 in 1930 (4,466 ft amsl) (Appendix F). This groundwater level measurement was considered useful for model calibration because it was early in the development history of the CTSA and provides a calibration target in the central portion of the basin; however, because it post-dates the steady-state calibration period it provides only an approximate calibration. The next groundwater level measured at NWC-03 was taken in 1960 and shows only a one-foot decline in the groundwater level. Both steady-state targets are inexact; therefore, they were used as a general guide, rather than hard constraints, for steady-state flow calibration. The two calibration targets for the steady-state flow condition are listed in Table 26.

7.2.1.2 Transient Flow Targets

Transient flow calibration targets for the RSET Model were identified from the groundwater level measurements compiled or collected for the aquifer characterization (Sections 3.2.4 and 3.3.2, respectively). Groundwater levels used for calibration targets were limited to area monitoring wells that represent static (non-pumping) conditions. Groundwater levels measured in wells east of the Black Gap fault often have groundwater level measurements differing by several tens of feet between nearby wells. To avoid calibration residuals being dominated by wells east of the Black Gap fault, they were excluded from use as quantitative calibration targets. They were, however, used to qualitatively evaluate the simulated groundwater gradients east of the Black Gap fault.

Retaining only groundwater levels measured in monitoring wells west of the Black Gap fault left groundwater level measurements from 49 wells between 1987 and 2008 for use as calibration targets. Final target values were developed by averaging multiple groundwater level measurements taken in a given year at the same well. The groundwater calibration targets for the transient simulations are listed in Table 27 and the wells used for calibration targets are mapped in Figure 43.

7.2.1.3 Transport Targets

Both qualitative and quantitative targets were used for calibration of the transport component. The highest priority for calibration was placed on a visual measure of how well the simulated sulfate plume agreed with major sulfate concentration contours (250, 500, 1,000, and

1,500 mg/L) interpreted from groundwater quality sampling in area wells conducted in the fourth quarter of 2008 (Figure 27). The fourth quarter 2008 sampling event provides the most comprehensive sulfate data set at the time of model calibration. The sulfate concentration contours interpreted from fourth quarter 2008 data provide the best approximation of the distribution of the sulfate plume at the end of the historical simulation period.

Quantitative targets for transport calibration were taken from groundwater quality measurements in individual wells. The RSET Model calibrated transport using sulfate concentration measurements compiled or collected for this report (Sections 3.2.5 and 3.3.2). Transport targets were developed from sulfate concentration measurements taken from 82 wells between 1985 and 2008. Final target values were developed by averaging multiple sulfate concentration measurements taken in a given year at the same well. The transport calibration target values are listed in Table 28 and the wells used for transport calibration targets are mapped in Figure 44.

7.2.2 Calibration Procedure

Calibration of both the flow and transport components focused on the parameter zones and calibration targets in the vicinity of the sulfate plume because the primary objective of the model is to evaluate plume control alternatives. This region also included most of the calibration target locations and aquifer characterization measurements. Parameter zones outside the current vicinity of the sulfate plume were left unchanged from the values used in the SET Model because calibration targets for outlying areas were limited or nonexistent.

Calibration parameters for groundwater flow included hydraulic conductivities, storage coefficients, specific yields, and artificial recharge rates. Specified-head boundary values were not adjusted during model calibration because recent water level measurements (Section 3.3.2) provided no justification for changing specified head locations or values from those in the SET Model. Natural recharge rates also were not adjusted during calibration to further constrain the number of calibration parameters. The values of the calibration parameters were varied manually or using automated calibration tools in order to have the simulation results better match calibration targets. The automated calibration tools used for calibration were PEST (Watermark Numerical Computing, 2008) and the automatic calibration package in Groundwater Vistas. Automated calibration tools allowed multiple parameters to be simultaneously considered in the calibration. Parameters were calibrated manually when only a single parameter was being tested.

The primary objective of model calibration for groundwater flow was to minimize the sum of squared residuals (differences between measured and simulated groundwater levels) and to have the mean residual (an indication of model bias) approach zero. Groundwater level measurements often fluctuate considerably both spatial and temporally, especially east of the Black Gap fault, but also at some locations west of the Black Gap fault (e.g., BMO-2008-11G), making large-scale reduction of residuals difficult. A qualitative evaluation of calibration was also performed by observing and attempting to remove spatial trends in residuals, such as areas with all positive or negative residuals.

Calibration parameters for transport included hydraulic conductivities (iterative with the flow calibration), effective porosities, dispersivities, and sulfate concentrations in recharge. The primary objective of transport calibration was to match the current sulfate plume distribution as

interpreted from samples collected in the fourth quarter of 2008 (Figure 27). Secondary objectives were to minimize the sum of squared residuals (differences between measured and simulated sulfate values) and to have the mean residual (an indication of model bias) approach zero for time series data from the calibration targets.

7.2.3 Calibration Results

Measured water levels in fourth quarter 2008 for the calibrated transient flow condition are shown for the four model layers in Figures 45 through 48. Simulated sulfate concentration contours (maximum over all layers) with measured concentrations and contours are shown in Figure 49. Initial and final parameters for the calibrated model are listed in Table 25, and statistics for the steady-state flow, transient flow, and transport calibration provided in Tables 26, 27, and 28 and Figure 50.

The calibrated RSET Model is able to match the 2008 plume extent in the basin fill and 2008 sulfate concentrations interior to the basin fill plume (Figure 49). The simulated 250 mg/L concentration contour closely matches the 250 mg/L sulfate concentration contour inferred from the fourth quarter 2008 groundwater quality monitoring. Interior to the basin fill sulfate plume, the simulated concentrations also provide a good match with the inferred 500 mg/L concentration contour at the southwest portion of the plume, although simulated concentrations are typically higher than the inferred concentrations farther into the plume interior.

The RSET Model is also able to simulate the sulfate plume in the bedrock layers in most areas. Sulfate concentrations at bedrock wells in the south-central portion of the Warren Ranch irrigation area (e.g. TM-19A, GARNER 685) are accurately predicted to be between about 50 and 80 mg/L. West of the former evaporation pond, the model also accurately predicts the edge of the sulfate plume in the undifferentiated Bisbee Group to be at the RUIZ well, although simulated concentrations north and east of the RUIZ well are unable to reproduce the apparent "embayment" of low concentrations in this area (Figure 27 and Section 5.1.1.2). This embayment may be a recent phenomenon because it is not manifest in 1989 (Figure 24) or 1996 (Figure 25). East of the Black Gap fault, the simulated sulfate transport in the shallow bedrock is slightly lower than indicated by water quality measurements, however the sulfate time-series is closely approximated at the water supply well NWC-04 (Figure 51).

The simulated sulfate concentration time series at individual wells further illustrate the predictions of the calibrated model. Simulated and measured sulfate concentration times series for the NWC wells, AWC wells, and TM-19 and TM-19A are shown in Figures 51, 52, and 53, respectively. The simulated sulfate time-series at NWC-03, located near the south-western edge of the plume, predicts an earlier arrival of the sulfate plume than shown in measurements, but demonstrates the rapid rise in concentration and gives a good match to sulfate concentrations measured in 2008 (Figure 51). Farther downgradient, the model accurately simulates the plume as not reaching wells NWC-02, NWC-06, and the AWC wells (Figures 51 and 52). As mentioned previously, the model closely predicts the sulfate time series for NWC-04 on the east side of the Black Gap fault. Interior to the sulfate plume, the model provides a good

approximation of the concentration time series for TM-19, completed in basin fill (Figure 53) and for TM-19A, completed in the undifferentiated Bisbee Group (Figure 53).

7.2.4 Modifications Made During Calibration

Three key modifications that were incorporated in the RSET Model provided the greatest improvement to the transport simulation. The key modifications were:

1. Reducing the effective porosity in a portion of "silty sand" zone of the SET Model (HGC Zone 4 of Layer 1) from 55 percent to 23.5 percent

2. Reducing the sulfate concentration in the Warren Ranch irrigation area recharge from 1,500 mg/L to 250 mg/L

3. Increasing the rate of recharge from the Warren Ranch irrigation area on the east side of the Black Gap fault to match the rate on the west side of the fault

Reducing the effective porosity and lowering the concentration in Warren Ranch recharge aided in reproducing the sulfate plume distribution on the west side of the Black Gap fault, including the non-parallel plume orientation (Sections 5.2 and 6.2). Increasing the rate of recharge from Warren Ranch east of the Black Gap fault improved the match between simulated and measured sulfate concentration time series for wells on the east side of the Black Gap fault. Several other, more minor, modifications were also made to improve model calibration.

The key modifications and the other minor modifications are discussed below. Model sensitivities to these modifications are discussed in Section 7.3.

7.2.4.1 Reduction in Effective Porosity

As discussed in Sections 5.2 and 6.2, the sulfate plume on the west side of the Black Gap fault has a southwest-northeast orientation; whereas a more east-west orientation would be expected based on the current hydraulic gradient in the basin fill. Section 6.2 discusses possible reasons for the apparent oblique orientation of the plume with respect to the current hydraulic gradient. These reasons include historical mounding due to recharge from the former evaporation pond and anisotropy in the basin fill.

Simulations that varied the estimated recharge rates for the former evaporation pond and Warren Ranch irrigation area were unable to cause groundwater mounding sufficient to produce the southwestern hydraulic gradient necessary to reproduce the observed plume orientation. For example, increasing the recharge rate at the former evaporation pond alone or in the former evaporation pond and Warren Ranch irrigation area to match their historical water delivery rates (i.e., 100 percent recharge efficiency) did not redirect the plume from a primarily west to a southwest orientation. The calibration to the current plume orientation could be significantly improved, however, by introducing material anisotropy and by reducing the sulfate concentration in the Warren Ranch irrigation area.

Calibration simulations were conducted to simulate anisotropy by including zones of lower hydraulic conductivity and/or the effective porosity in the vicinity of the sulfate plume. Both approaches were able to improve the match to the current plume orientation; however, a single zone of lower effective porosity in a portion of the “silty sand” zone (Zone 4) was selected over realizations with anisotropic hydraulic conductivity distributions because it provided the

most reasonable mechanism to explain the current plume orientation. Modification of the hydraulic conductivity was rejected as an approach for simulating anisotropy because it did not agree with the hydraulic conductivity data estimated by field tests and could potentially bias simulation of mitigation actions that may use groundwater pumping for plume control.

Reducing the effective porosity in a portion of the "silty sand" zone (Zone 4) of the basin fill from 0.55 to 0.235 aided in guiding plume migration between the former evaporation pond and the current plume edge. The lower effective porosity zone may represent anisotropy in the basin fill due to contrasting sedimentary facies deposited by a historic drainage toward Greenbush Draw or a contrast in basin fill material types due to deposition along the skarp of the Black Gap fault. Regardless of its origin, the effective porosity zone of 0.235 is a more reasonable value for basin fill than a value of 0.55.

7.2.4.2 Reduction in Sulfate Concentration in Warren Ranch Recharge

Lowering the sulfate concentration in recharge from for the Warren Ranch irrigation area recharge from 1,500 mg/L to 250 mg/L significantly improved the calibration to the current plume distribution by preventing the simulated plume from migrating too far to the west (Section 7.3.1). The sulfate concentration in the water delivered to the Warren Ranch irrigation area is uncertain (Section 7.1.7). Relatively low sulfate concentrations in Warren Ranch recharge are consistent with the interpretation that the sulfate plume primarily originated from the former evaporation pond and that the contribution from the Warren Ranch irrigation area recharge was a

less significant source. The improvement to the transport calibration when the sulfate concentration in the Warren Ranch irrigation area is reduced supports this supposition.

7.2.4.3 Increasing in Rate of Warren Ranch Recharge East of the Black Gap Fault

Increasing the rate of recharge from the Warren Ranch irrigation area on the east side of the Black Gap fault to match the rate on the west side of the fault improved the transport calibration on the east side of the Black Gap fault. The SET Model divided the former evaporation pond and the Warren Ranch irrigation area each into two zones, one zone each on either side of the Black Gap fault. The recharge rate in the zone west of the Black Gap fault was specified in the SET Model to be greater than the rate for the zone east of the fault. Increasing the recharge rate on the east side of the fault to match the rate on the west side of the fault during calibration of the RSET Model resulted in the build-up of hydraulic gradients sufficient to drive sulfate southeast of the Warren Ranch irrigation area and better match measured sulfate concentrations in the undifferentiated Bisbee group east of the Black Gap fault, such as at NWC-04.

7.2.4.4 Other Modifications

Other, less significant modifications were also made during model calibration. These modifications included the following:

1. Sulfate concentrations in the recharge from the former evaporation pond were reduced. The SET Model specified sulfate concentrations for the former evaporation pond recharge of 3,000 mg/L plus two small zones of 3,100 mg/L and 3,650 mg/L. The sulfate concentration was reduced to 2,500 mg/L for all

recharge zones in the former evaporation pond. The lower concentrations improved the transport calibration, although model sensitivity to the adjustment in these concentrations was low.

2. Hydraulic conductivity values for the central portion of the basin fill (zone 4 of Layer 1) and the undifferentiated Bisbee Group (Zones 5 and 6 of Layers 2 and 3) were adjusted from the original values in the SET Model (Table 25). Horizontal hydraulic conductivity values were approximately doubled in the central portion of the basin fill (Zone 4) from about 23 ft/day to 39 ft/day. Conversely, horizontal hydraulic conductivity values in the undifferentiated Bisbee Group were reduced by a factor of two or three from the original values. These changes improved model calibration and agree with hydraulic conductivity estimates made in basin fill and bedrock wells (Table 15).

3. A small inclusion of lower hydraulic conductivity (2.3 ft/day) was created in the basin fill (Layer 1) around BMO-2008-5B to match estimates made from aquifer testing at that well (Table 15).

4. The effective porosities for zones in Layers 2 and 3 on the east side of the Black Gap fault were reduced from 0.051 and 0.1 to 0.04 in order to facilitate sulfate transport on the east side of the Black Gap fault.

5. Adjustments to storage coefficients and specific yield were made as a result of modifying the hydraulic conductivity values.

7.3 Model Sensitivity

A model sensitivity analysis is an evaluation of how changing model parameters affects model calibration and model predictions. Model sensitivities were evaluated specifically for the key modifications during model calibration, and more generally for most flow and transport parameters.

7.3.1 Sensitivity to Key Modifications

The key modifications made during model calibration were reducing the sulfate concentration in the Warren Ranch recharge from 1,500 mg/L to 250 mg/L, reducing the

effective porosity in a portion of the central basin fill zone from 0.55 to 0.235, and increasing the recharge of recharge for Warren Ranch east of the Black Gap fault. These adjustments primarily affect only the transport simulation; therefore, model sensitivity was evaluated only with respect to sulfate transport. Sensitivity was evaluated by comparing simulations of the following realizations with the calibrated model simulation:

1. Original SET effective porosity of 0.55 and the calibrated sulfate concentration in the recharge from the Warren Ranch irrigation area of 250 mg/L

2. Original SET effective porosity of 0.55 and sulfate concentration in the recharge from the Warren Ranch irrigation area of 1,500 mg/L

3. Original sulfate concentration in the Warren Ranch irrigation area of 1,500 mg/L and calibrated effective porosity zone of 0.235

4. Original recharge rate for Warren Ranch east of the Black Gap fault

Simulated sulfate concentration contours (maximum across all model layers) for 2008 are shown for the first three sensitivity realizations in Figures 54 through 56. The fourth sensitivity realization is evaluated with the time series of sulfate concentrations at NWC-04 in Figure 57. When the calibrated Warren Ranch irrigation area recharge concentration of 250 mg/L is included and the lower effective porosity zone is not included, the simulated plume is about 4,500 feet short of its current southwest extent (Figure 54). When neither the SET Model Warren Ranch irrigation area recharge concentration of 1,500 mg/L nor the lower effective zone are included, the sulfate plume in the basin fill is simulated to be approximately 2,000 feet beyond the measured plume extent on the west and about 1,300 feet short of the measured plume extent on the south (Figure 55). When the calibrated effective porosity zone is included with a Warren Ranch irrigation area recharge concentration of 1,500 mg/L, the simulated plume in the basin fill is close to the measured plume extent on the south but approximately 3,300 feet beyond

the measured plume extent on the west (Figure 56). Only by including both the calibrated recharge concentration and the calibrated effective porosity, was it possible to match both the southern and western extents of the measured plume.

The sulfate time series at NWC-04 is sensitive to the recharge rate in Warren Ranch irrigation area east of the Black Gap fault (Figure 57). Increasing the recharge rate in the Warren Ranch irrigation area east of the Black Gap fault results in sulfate migration to the south and east of the Warren Ranch irrigation area footprint to match the elevated concentrations observed at NWC-04. Without the increase in recharge for Warren Ranch irrigation area, simulated concentrations at NWC-04 increase only slightly above background.

7.3.2 Sensitivity to Parameter Zones

The sensitivity of the flow solution to parameter values in individual zones was investigated by conducting a series of simulations in which the value of hydraulic conductivity for a specific zone was adjusted up and down. The following multipliers were used to adjust the value of horizontal hydraulic conductivity in each zone: 0.5, 0.75, 1, 1.25, and 1.5. For each simulation, the changes in the sum of squared residuals of groundwater level targets and the change in average change in hydraulic head were observed. The change in the sum of squared residuals is a measure of the sensitivity of the flow calibration to a particular zone. The change in the average hydraulic head is a measure of the sensitivity of the global flow solution to a particular zone.

The results of the sensitivity analysis are summarized in Table 29. The results of the sensitivity analysis reveal that the zones of relatively high sensitivity to the sum of square residual were Zones 4 (basin fill) and 5 (undifferentiated Bisbee Group). The sum of squared residuals showed a relatively moderate sensitivity for Zone 6 (undifferentiated Bisbee Group) and was relatively insensitive to other zones. In comparison, the average change in hydraulic head showed relatively high sensitivity to Zones 4 and 5 and also to Zone 13 (Glance Conglomerate); relatively moderate sensitivity to Zones 1 (basin fill), 9 (undifferentiated Bisbee Group), and 12 (Glance Conglomerate); and relatively low sensitivity to other zones. These results indicate that, except for Zone 13, zones which most influence the overall flow solution are also constrained by calibration targets.

7.4 Strengths and Limitations

The RSET Model will be used to evaluate hydraulic capture and sulfate plume mitigation under potential mitigation alternatives. To use this tool appropriately, the strengths and limitations of the model need to be understood. The RSET Model has several strengths that make it the best available tool for evaluation of mitigation alternatives. The strengths of the RSET Model include the following:

- The large spatial extents of the model domain that reduce the influence of boundary conditions within the vicinity of the current plume extent
- The long temporal extent, beginning in 1905, prior to the start of significant mining operations at the CTSA and other artificial groundwater withdrawal and recharge sources, minimizes the effect of initial conditions on future simulations
- The revision and recalibration of the previously calibrated SET Model incorporates the most comprehensive datasets on aquifer characteristics, hydrogeological processes, and groundwater monitoring

- The ability of the model to replicate hydraulic gradients downgradient of the former evaporation pond

- The ability of the model to simulate the current (2008) plume extent as well as the sulfate concentrations over time in key wells within the plume (e.g., NWC-03, TM-19, TM-19A)

As with all numerical models, the RSET Model is a simplification of a more complex natural system. In particular, the history and hydrogeology of the sulfate plume have several complexities that are still not well understood conceptually. These complexities include, the historical rates, concentrations, and locations for water delivery to the Warren Ranch irrigation area and former evaporation pond; the degree of faulting and its effects on local- and regional-scale hydrology and solute transport; the degree of heterogeneity in hydraulic properties within hydrostratigraphic units; and the degree of continuity in potentiometric conditions in deep bedrock. These uncertainties are common to numerical modeling and are not easily addressed, nor would addressing them provide substantial improvement to the predictions of the RSET Model versus the assumptions made for calibration.

The model can be expected to simulate the behavior of the sulfate plume, particularly in the basin fill where the majority of calibration measurements exist. However, the model is not expected to be an exact predictor of concentrations at precise locations or times. This is generally true because the RSET Model, like other numerical models, gives grid-cell and time-step averages of processes and properties that vary continuously in space and time. For highly heterogeneous systems, such as the CTSA and surrounding vicinity groundwater systems, model predictions may have difficulty matching point-scale values even as it provides a satisfactory representation of larger-scale hydraulic and plume behavior needed to simulate mitigation

alternatives. This will be particularly true in areas of steep hydraulic and concentration gradients such as near faults and at the margins of the sulfate plume.

With an understanding of the strengths and limitations of the RSET Model, the model can be used as a tool to evaluate mitigation alternatives. The predictive ability of the model will improve if it is periodically recalibrated as new data is collected. Additionally, to the degree that a mitigation alternative is implemented based on model predictions, field measurements would be used to validate and update the numerical model through a process of adaptive management.

8. CONCLUSION

Hydrologic field investigations required by the Aquifer Characterization Plan were implemented and completed between February 2008 and February 2009 in accordance with the Work Plan. This Aquifer Characterization Report is the final deliverable for the Aquifer Characterization Plan, although groundwater monitoring for Task 2.2 will be ongoing until superseded by a revised groundwater monitoring plan.

Significant accomplishments of the aquifer characterization work reported here include:

- Completion of a well inventory of drinking water supply wells within one mile of the sulfate plume, implementation of interim actions at 18 drinking water wells with sulfate concentration greater than 250 mg/L, and ongoing water quality monitoring at drinking water supply wells within one mile of the plume.

- Determination of the vertical and lateral extent of the sulfate plume through the installation of 16 monitoring wells and the collection and analysis of 350 groundwater samples from monitoring wells.

- Characterization of hydrostratigraphic units, potentiometric relationships in 2008, and hydraulic properties through compilation and evaluation of existing hydrogeologic information, geologic analysis of borehole data for new and existing wells, quarterly measurement of groundwater elevations at more than 50 wells, and the completion and analysis of 21 pumping tests at new and existing wells.

- Construction and calibration of a numerical model that simulates groundwater flow and sulfate transport to evaluate potential sulfate mitigation actions.

The aquifer characterization results reported here will be used to develop additional deliverables required under the Work Plan. Those deliverables currently in development are the Feasibility Study due July 31, 2009 and a Mitigation Plan due September 30, 2009.

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10. LIMITATIONS STATEMENT

The opinions and recommendations presented in this report are based upon the scope of services and information obtained through the performance of the services, as agreed upon by HGC and the party for whom this report was originally prepared. Results of any investigations, tests, or findings presented in this report apply solely to conditions existing at the time HGC's investigative work was performed and are inherently based on and limited to the available data and the extent of the investigation activities. No representation, warranty, or guarantee, express or implied, is intended or given. HGC makes no representation as to the accuracy or completeness of any information provided by other parties not under contract to HGC to the extent that HGC relied upon that information. This report is expressly for the sole and exclusive use of the party for whom this report was originally prepared and for the particular purpose that it was intended. Reuse of this report, or any portion thereof, for other than its intended purpose, or if modified, or if used by third parties, shall be at the sole risk of the user.

TABLES

TABLE 1
Generalized Geologic Column for the Bisbee-Naco Area

Age		Hydro-geologic Unit	GEOLOGIC UNIT
QUATERNARY	RECENT	ALLUVIUM	**Recent Alluvium** Unconsolidated stream channel sediments
QUATERNARY	Pliocene - Pleistocene	BASIN FILL	**Basin Fill** Valley fill, pediment, terrace and fan deposits; weakly to moderately consolidated interbedded gravel, sand, silt, and clay
TERTIARY		BEDROCK COMPLEX	**Intrusive Porphyry** Quartz latite porphyry
CRETACEOUS	*BISBEE GROUP*		**Cintura Formation** Grayish-red siltstone and mudstone, pale-red feldspathic sandstone, and minor greenish-gray calcareous claystone, few thin beds of limestone in basal 100 feet
			Mural Limestone Upper member: medium dark-gray limestone with subordinate sandstone in upper 50 feet Lower member: interbedded light-gray calcareous sandstone and siltstone and impure fossiliferous limestone
			Morita Formation Grayish-red siltstone and mudstone, pinkish-gray to pale-red feldspathic sandstone, minor greenish-gray calcareous claystone; few thin beds of impure limestone in the upper part and very subordinate pebble conglomerate in the lower part
			Glance Conglomerate Locally derived boulder to pebble conglomerate with grayish-red matrix
JURASSIC			**Jurassic Intrusive Complex** Stocks and dikes of porphyritic leucratic alkali granite
PALEOZOIC	*NACO GROUP*		**Colina Limestone** Medium-gray thick bedded limestone, locally slightly cherty
			Earp Formation Pale-red calcareous siltstone and mudstone with subordinate medium-gray thin bedded limestone and marl.
			Horquilla Limestone Light-gray, medium-bedded limestone with subordinate pale-red calcareous siltstone and silty limestone
	MISSISSIPPIAN		**Escabrosa Limestone** Medium- to light-gray thick-bedded to massive crinoidal limestone and medium- to dark-gray thin-bedded limestone
	DEVONIAN		**Martin Limestone** Medium- to dark-gray limestone, marl, dolomite and sandy dolomite, and calcareous siltstone
	CAMBRIAN		**Abrigo Limestone** Laminated hornfels with subordinate limestone, silty and argillaceous limestone with chert; overlain by interlaminated silty limestone and chert; glauconitic sandy dolomite, dolomitic sandstone, with minor interbedded marl, medium-gray locally dolomitized laminitic limestone
			Bolsa Quartzite Resistant yellowish- to reddish-brown-weathering siliceous sandstone
PRE-CAMBRIAN	*LOWER PRE-CAMBRIAN*		**Pinal Schist** Muscovite, sericite, chlorite and quartz schist

Source: Hayes and Landis 1964; Stegan et al, 2005

TABLE 2
Summary of Primary Well Screening for Well Inventory

Well Type	Well Use	Water Use	Number of Wells	Evaluated as Potential Drinking Water Supply Well
Monitor/Piezometer	Abandoned, Cancelled or Capped	Monitoring	50	0
Geotechnical/Exploration	Geotechnical/Cathodic	None	4	0
Monitor/Piezometer	Monitor/Observation/None	Monitoring/Test/None	29	2
Exempt	None Listed	None Listed	1	1
Exempt/Non-Exempt	Water Production	Domestic/Domestic-Irrigation/Domestic-Municipal-Industrial/Domestic-Stock/Domestic-Stock-Irrigation/Irrigation/Stock/Utility (Water Company)	114	114
Domestic Wells Identified During; Field Interviews, Bottled Water Deliveries List provided by Freeport and ADWR Program 35 Database	None Listed	None Listed	6	6
		Total	**204**	**123**

Notes:

CQB = Freeport-McMoRan Copper Queen Branch
ADWR = Arizona Department of Water Resources

TABLE 3
Summary of Well Verification for Well Inventory

Owner/Operator	ADWR 55 Registry No.	Well Name	Operational?	Active Drinking Water Supply Well?	Information Summary
Alvarez, Maria	650255	ALVAREZ	No Data	No Data	No Response
Anderson, David	613396	ANDERSON	Yes	Yes	Active Drinking Water Supply Well
Anderson, Mary	616775	ANDERSON 775	No Data	No Data	Owner Declined Participation in Program
Anderson, Mary	616776	ANDERSON 776	No Data	No Data	Owner Declined Participation in Program
Arizona State Land Department	616436	ASLD	No	No	ADWR Records indicate Stock Well
Arizona Water Company	616585	AWC-03	Yes	Yes	Active Drinking Water Supply Well; Public Water System; outside program area
Arizona Water Company	590620	AWC-05	Yes	Yes	Active Drinking Water Supply Well; Public Water System
Banks, Douglas	647986	BANKS 986	Yes	Yes	Active Drinking Water Supply Well
Banks, Douglas	647987	BANKS 987	No	No	Inactive Drinking Water Supply Well
Barton, Loyd	85010	BARTON 010	No	No	Inactive Drinking Water Supply Well
Barton, Loyd	644919	BARTON 919	No	No	Inactive Drinking Water Supply Well
Bernal, Luz	648363	BERNAL	No Data	No Data	Owner Deceased; unable to contact relatives
Bisbee Municipal Airport, LLC	577927	BIMA	Yes	Yes	Active Drinking Water Supply Well
Bisbee, City of	903992	COB MW-1	Yes	No	San Jose Wastewater Treatment Plant Industrial Water Well
Blommer, Connie	633472	BLOOMER	Yes	Yes	Active Drinking Water Supply Well
Blommer, Connie	645536	BLOMMER	No	No	Interview with owner confirmed same well as 633472
Brindley, Lou	86775	BRINDLEY	No Data	No Data	Unable to Contact Owner
Bullard, Bob	602134	BULLARD	No	No	Inactive Drinking Water Supply Well
Burke, James	212268	BURKE	No	No	Inactive Drinking Water Supply Well
Campbell, Don	215509	CAMPBELL	No	No	Inactive Drinking Water Supply Well
Chambers, Terry	629807	CHAMBERS	Yes	Yes	Active Drinking Water Supply Well
Chase, Charles	648359	CHASE	No Data	No Data	Unable to Contact Owner
Cooper, Charles	637069	COOPER C	Yes	Yes	Active Drinking Water Supply Well
Cooper, Teresa	623564	COOPER	Yes	Yes	Active Drinking Water Supply Well
Cota, Barbara	651116	COTA	No Data	No Data	Well Not Located
Crowley	510298	CROWLEY	No	No	Inactive Drinking Water Supply Well
Dodson, John	644927	DODSON	Yes	Yes	Active Drinking Water Supply Well
Douglass, James	592791	DOUGLASS 791	No	No	Inactive Drinking Water Supply Well
Douglass, James	592792	DOUGLASS 792	No	No	Inactive Drinking Water Supply Well
Durazo, Neltiz	NR	DURAZO	No Data	No Data	No Response
East, Leon	599796	EAST	Yes	Yes	Active Drinking Water Supply Well
Eberwein, Geraldo	641726	EBERWEIN	No	No	Inactive Drinking Water Supply Well
Englund, Lee	565260	ENGLUND	Yes	No	Inactive Drinking Water Supply Well
Eppele, Geneva	805641	EPPELE 641	Yes	Yes	Active Drinking Water Supply Well
Eppele, Geneva	805643	EPPELE 643	No	No	Inactive Irrigation Well
Eppele, Geneva	805642	EPPELE 642	No	No	Well used for landscape Irrigation
Franco, Irma	500101	FRANCO	Yes	Yes	Active Drinking Water Supply Well
Fultz, Richard	212447	FULTZ	Yes	Yes	Active Drinking Water Supply Well
Galloping Goose Properties, LLC	628546	GGOOSE 546	No	No	Inactive Drinking Water Supply Well
Galloping Goose Properties, LLC	628547	GGOOSE 547	No	No	Inactive Drinking Water Supply Well
Garner, Terry	587635	GARNER 635	Yes	Yes	Active Drinking Water Supply Well
Garner, Terry	558557	GARNER 557	Yes	No	Inactive Drinking Water Supply Well
Goar, Sheila	610694	GOAR	No	No	Inactive Drinking Water Supply Well
Goar, Sheila	610695	GOAR RANCH	No	No	Inactive Drinking Water Supply Well
Goar, Sheila	610686	GOAR 686	No	No	Well Dry
Goar, Sheila	610687	GOAR 687	No	No	Well Dry
Goar, Sheila	610688	GOAR 688	No	No	Well Dry
Goar, Sheila	610689	GOAR 689	No	No	Well Dry
Goar, Sheila	610690	GOAR 690	No	No	Well Dry
Goar, Sheila	610691	GOAR 691	No	No	Well Dry
Goar, Sheila	610692	GOAR 692	No	No	Well Dry
Goar, Sheila	610693	GOAR 693	No	No	Well Dry
Gregg, Diane	630852	GREGG	No	No	Well Dry
Haubert, John	801607	HAUBERT	No Data	No Data	Owner Declined Participation in Program
Heck, Harold	507823	HECK	No	No	Inactive Drinking Water Supply Well
Hoban, Barbara	805290	HOBAN	Yes	Yes	Active Drinking Water Supply Well
Howard, Joel	NR	HOWARD	Yes	Yes	Active Drinking Water Supply Well
Hull, Charles	606854	HULL 854	No	No	ADWR Records indicate Irrigation Well; Owner indicated that well collapsed
Hull, Charles	606855	HULL 855	No	No	Inactive Drinking Water Supply Well
Humphrey, Manuela	649153	HUMPHREY	No Data	No Data	Owner Deceased; unable to contact relatives
Irons, Lee	632924	IRONS	No Data	No Data	Owner Declined Participation in Program
Jackson, Joseph	506034	JACKSON	No Data	No Data	No Response from Current Resident
Jayln Associates, LLC	209737	JAYLN	No	No	Inactive Drinking Water Supply Well
Keefer, Craig	209744	KEEFER	Yes	Yes	Active Drinking Water Supply Well
Kennedy, David	647003	KENNEDY	No	No	Interview with owner confirmed same well as ASLD 616436
Lesnik, Ron	587749	LESNIK	No	No	Vacant Lot; Inactive Drinking Water Supply Well
Lucero, Marcos	618175	LUCERO	No	No	Owner indicated well not operational
McConnell, Russell	590386	MCCONNELL 386	No	No	Inactive Drinking Water Supply Well; Incomplete NOI on file with ADWR
McConnell, Virginia	539265	MCCONNELL 265	Yes	Yes	Active Drinking Water Supply Well
Mendez, Alfredo	650256	MENDEZ	No	No	Well Dry
Metzler, Triny	35-71891	METZLER	Yes	Yes	Active Drinking Water Supply Well
Miller, Charles	522699	TM-15 MILLER	Yes	Yes	Active Drinking Water Supply Well
Miller, Charles	641342	MILLER 342	No	No	Well Dry
Miller, Charles	641340	MILLER 340	No	No	Well Dry - Stock Well
Miller, Charles	641341	MILLER 341	No	No	Well Dry - Stock Well
Minnerly, Herbert	650662	MINNERLY	No Data	No Data	Well Not Located
Minor, Lawrence	633316	MINOR 316	No	No	Inactive Drinking Water Supply Well
Minor, Lawrence	633317	MINOR 317	No	No	Inactive Drinking Water Supply Well
Moore, Patrick	538847	MOORE	Yes	Yes	Active Drinking Water Supply Well

TABLE 3
Summary of Well Verification for Well Inventory

Owner/Operator	ADWR 55 Registry No.	Well Name	Operational?	Active Drinking Water Supply Well?	Information Summary
Moroyoqui, Helen	647847	MOROYOQUI	No	No	Inactive Drinking Water Supply Well
Naco Water Company	627682	NWC-01	No Data	No	Inactive Drinking Water Supply Well
Naco Water Company	562944	NWC-02	Yes	Yes	No Response to Request for Data
Naco Water Company	203321	NWC-03	Yes	Yes	No Response to Request for Data
Naco Water Company	551849	NWC-04	Yes	Yes	No Response to Request for Data
Naco Water Company	627685	NWC-04 CAP	Yes	Yes	No Response to Request for Data
Naco Water Company	627696	NWC-05	No Data	No	Inactive Drinking Water Supply Well
Naco Water Company	575700	NWC-06	Yes	Yes	No Response to Request for Data
Naco Water Company	627683	NWC-02 CAP	No	No	Inactive Drinking Water Supply Well; Replaced by NWC 02
Naco Water Company	627684	NWC-03 CAP	No	No	Inactive Drinking Water Supply Well; Replaced by NWC 03
Noble, Alice	618611	NOBLE	No Data	No Data	Unable to Contact Owner
Noteman, Russell	212483	NOTEMAN	Yes	Yes	Active Drinking Water Supply Well
Osborn, Dale	643436	OSBORN	Yes	Yes	Active Drinking Water Supply Well
Palmer, Patrick	578819	PALMER	Yes	Yes	Active Drinking Water Supply Well
Panagakos, Alfred	35-76413	PANAGAKOS	Yes	Yes	Active Drinking Water Supply Well
Parra, Steve	576415	PARRA	Yes	Yes	Active Drinking Water Supply Well
Pionke, Jim	613395	PIONKE	Yes	Yes	Active Drinking Water Supply Well
Pool, Joan	509518	POOL	Yes	Yes	Active Drinking Water Supply Well
Ramirez, Roberto	216425	RAMIREZ	Yes	Yes	Active Drinking Water Supply Well
Ray, Maria	803772	RAY	Yes	Yes	Active Drinking Water Supply Well
Rodriguez, Manuel	648360	RODRIQUEZ	No	No	Well Dry
Rogers, Ernest D	641803	ROGERS 803	Yes	Yes	Active Drinking Water Supply Well
Rogers, Ernest D	641801	ROGERS 801	No	No	Inactive Drinking Water Supply Well
Rogers, Ernest D	573596	ROGERS 596	No Data	No Data	Well Not Located
Rogers, Ernest M	216018	ROGERS E	Yes	Yes	Active Drinking Water Supply Well
Rollins, Mary	641750	ROLLINS	No Data	No Data	Unable to Contact Owner; Vacant Lot
Ross, Richard	517526	ROSS	No Data	No Data	Unable to Contact Owner
Ruiz, David	531770	RUIZ	Yes	Yes	Active Drinking Water Supply Well
Schwartz, Elizabeth	210865	SCHWARTZ	Yes	Yes	Active Drinking Water Supply Well
Shafer, Earnest	649994	SHAFER	No	No	Well Dry; Owner interview indicated no well on property, well buldozed
Stark-Campbell	643481	STARK-CAMPBELL	No	No	Inactive Drinking Water Supply Well
Stephens	808560	STEPHENS	No	No	Inactive Drinking Water Supply Well
Sunbelt Marketing, Inc.	201531	SUNBELT	No	No	Inactive Drinking Water Supply Well
Sunnyside Holdings, LLC	588270	SUNNYSIDE	No	No	Inactive Drinking Water Supply Well
Swan, Charles	NR	SWAN	Yes	Yes	Active Drinking Water Supply Well
Swan, Charles	522817	TM-08 SWAN	Yes	Yes	Active Drinking Water Supply Well
Turquoise Valley, Inc.	568875	TVI 875	Yes	No	Golf Course Irrigation
Turquoise Valley, Inc.	802236	TVI 236	Yes	No	Golf Course Irrigation
Turquoise Valley, Inc.	567713	TVI 713	No	No	Well Capped
Valenzuela, Gustavo	645050	VALENZUELA	No Data	No Data	Owner Declined Participation in Program
Weed, Peggy	544535	WEED	Yes	Yes	Active Drinking Water Supply Well
Weiskopf, Tom	641802	WEISKOPF	Yes	Yes	Active Drinking Water Supply Well
Willson, Thomas	648362	WILSON 362	No	No	ADWR Records indicate Stock Well
Willson, Thomas	648361	WILSON 361	No	No	Inactive Drinking Water Supply Well
Zander, Paul	205126	ZANDER	Yes	Yes	Active Drinking Water Supply Well

Notes:

ADWR = Arizona Department of Water Resources

35-71891 = ADWR Program 35 ID

NR = No Record

TABLE 4
Results of Drinking Water Supply Monitoring

Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Temperature (deg C)	Specific Conductance (µS/cm)	Sulfate, Dissolved (mg/L)
ANDERSON	613396	03/20/08	7.25	21.1	1176	431
ANDERSON	613396	05/05/08	7.03	21.8	1231	452
ANDERSON	613396	07/14/08	7.11	21.6	1260	472
ANDERSON	613396	10/15/08	7.10	21.3	1252	475
AWC-02	616586	01/07/08	ND	ND	ND	14
AWC-02	616586	03/03/08	ND	ND	ND	16
AWC-02	616586	05/05/08	ND	ND	ND	13.3
AWC-02	616586	08/12/08	7.01	22.3	630	14.3
AWC-02	616586	10/23/08	7.31	23.1	464	15.9
AWC-03	616585	01/07/08	ND	ND	ND	41
AWC-03	616585	03/03/08	ND	ND	ND	38
AWC-03	616585	05/05/08	ND	ND	ND	37.3
AWC-03	616585	08/12/08	7.28	22.4	469	38.8
AWC-03	616585	10/23/08	7.48	21.0	462	41.8
AWC-04	616584	02/04/08	ND	ND	ND	18
AWC-04	616584	04/07/08	ND	ND	ND	18
AWC-04	616584	06/02/08	ND	ND	ND	14.3
AWC-04	616584	08/12/08	7.08	22.5	458	21.6
AWC-04	616584	10/23/08	6.91	22.2	616	24
AWC-05	590620	02/04/08	ND	ND	ND	13
AWC-05	590620	04/07/08	ND	ND	ND	14
AWC-05	590620	06/02/08	ND	ND	ND	14.3
AWC-05	590620	08/12/08	6.74	23.3	425	14.9
AWC-05	590620	10/23/08	7.45	21.0	422	15.4
BANKS 986	647986	02/27/08	7.53	21.8	980	44
BANKS 986	647986	05/12/08	7.40	22.1	1021	65.2
BANKS 986	647986	07/21/08	7.43	22.9	1034	82.2
BANKS 986	647986	10/13/08	7.28	21.7	980	53
BIMA	577927	02/06/08	6.69	22.2	1335	210
BIMA	577927	04/25/08[1]	6.37	23.1	1521	190
BIMA	577927	05/13/08[1]	6.58	22.7	1489	195
BIMA	577927	06/23/08[1]	6.30	23.3	1572	225
BIMA DUP	577927	06/23/08[1]	6.30	23.3	1572	196
BIMA	577927	07/29/08[1]	6.44	23.0	1647	204
BIMA	577927	08/28/08[1]	M	23.0	1776	256
BIMA	577927	09/23/08[1]	6.29	23.0	1741	296
BIMA	577927	10/22/08[1]	6.41	22.3	1801	285
BLOMMER	633472	02/05/08	7.43	20.2	714	206
BLOMMER	633472	04/21/08[1]	7.06	21.9	753	201
BLOMMER	633472	05/15/08[1]	7.16	22.2	845	211
BLOMMER	633472	06/23/08[1]	6.93	21.5	903	193
BLOMMER	633472	07/29/08[1]	7.21	22.2	921	203
BLOMMER	633472	08/27/08[1]	7.12	22.1	864	189
BLOMMER	633472	09/23/08[1]	7.16	22.3	818	193
BLOMMER	633472	10/22/08[1]	7.17	21.3	873	200
BURKE	212268	02/07/08	7.17	23.0	411	29.5
BURKE	212268	04/22/08	7.13	27.0	423	26
BURKE	212268	08/05/08	7.06	26.8	496	21.9
BURKE	212268	10/20/08	7.57	26.0	466	20.5
CHAMBERS	629807	03/06/08	7.73	17.8	408	7.7
CHAMBERS	629807	05/05/08	7.15	22.1	421	6.0
CHAMBERS	629807	07/14/08	7.43	23.2	434	5.8
CHAMBERS	629807	10/15/08	7.41	22.5	420	4.0
COLLINS [2]	565260	02/12/08	6.88	21.6	1470	520
COLLINS	565260	05/29/08	7.01	22.0	1459	520
COLLINS	565260	07/31/08	6.86	21.6	1502	536
COLLINS	565260	10/20/08	8.44	24.7	1510	518
COOPER	623564	02/14/08	7.02	20.8	371	33
COOPER	623564	05/14/08	8.08	22.1	419	34.2
COOPER	623564	07/31/08	7.81	28.4	455	33.7
COOPER	623564	10/20/08	8.44	24.7	448	31.2
COOPER C	637069	03/20/08	6.93	21.3	2081	990
COOPER C	637069	05/05/08	6.78	22.4	2139	990
COOPER C	637069	07/15/08	6.86	22.3	2162	1040
COOPER C DUP	637069	07/15/08	6.86	22.3	2162	960
COOPER C	637069	10/16/08	6.80	21.4	2078	1020
DODSON	644927	02/20/08	7.61	17.3	857	54
DODSON	644927	05/12/08	7.11	21.1	1118	34.2
DODSON	644927	07/24/08	7.25	21.6	1233	49.3
DODSON	644927	10/13/08	7.15	20.5	1095	56.9
DURAZO	NR	02/10/09	7.22	18.8	848	386
EAST	599796	02/08/08	7.45	19.9	423	10.6
EAST	599796	05/14/08	7.31	20.9	595	14.8
EAST	599796	07/23/08	7.34	20.8	605	11.8
EAST	599796	10/14/08	7.33	20.3	531	8.9
EPPELE 641	805641	03/11/08	7.98	21.4	646	21.7
EPPELE 641	805641	05/12/08	7.21	21.7	667	24.7
EPPELE 641	805641	07/21/08	7.49	23.9	605	19.0
EPPELE 641	805641	10/14/08	7.56	20.4	642	21.8
FRANCO	500101	02/06/08	7.47	19.6	1301	670
FRANCO	500101	05/05/08	6.93	23.1	1557	680
FRANCO	500101	07/14/08	7.00	22.7	1586	680
FRANCO	500101	10/15/08	7.20	20.5	1560	680

TABLE 4
Results of Drinking Water Supply Monitoring

Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Temperature (deg C)	Specific Conductance (µS/cm)	Sulfate, Dissolved (mg/L)
FULTZ	212447	02/27/08	6.76	21.1	1827	152
FULTZ	212447	04/21/08[1]	6.74	22.0	1739	137
FULTZ	212447	05/14/08[1]	6.88	22.3	1532	131
FULTZ	212447	06/23/08[1]	6.74	22.0	1788	111
FULTZ	212447	07/29/08[1]	6.74	22.2	1989	152
FULTZ	212447	08/28/08[1]	M	21.6	1889	137
FULTZ	212447	09/23/08[1]	6.82	21.9	1821	137
FULTZ	212447	10/22/08[1]	6.80	21.4	1940	145
GARNER 635	587635	02/04/08	7.61	22.7	479	37.8
GARNER 635	587635	05/05/08	7.26	24.9	468	35.8
GARNER 635	587635	07/15/08	7.63	25.6	480	37.4
GARNER 635	587635	10/15/08	7.65	24.1	472	36.0
HOBAN	805290	02/27/08	6.93	22.1	1359	510
HOBAN	805290	05/07/08	6.88	22.3	1532	670
HOBAN	805290	07/14/08	6.88	23.1	1719	690
HOBAN	805290	10/16/08	6.98	22.4	1624	692
HOWARD	NR	03/04/08	7.06	20.4	1280	571
HOWARD	NR	05/08/08	6.95	21.0	1494	673
HOWARD	NR	07/14/08	7.00	21.1	1566	610
HOWARD	NR	10/15/08	7.00	20.6	1598	683
KEEFER	209744	02/06/08	7.70	19.0	378	6.8
KEEFER	209744	05/06/08	7.19	20.3	512	9.0
KEEFER	209744	07/16/08	7.21	21.4	539	8.0
KEEFER	209744	10/28/08	7.32	20.1	534	21.2
MCCONNELL 265	539265	02/20/08	7.21	21.1	1435	720
MCCONNELL 265	539265	05/06/08	6.77	21.6	1668	737
MCCONNELL 265	539265	07/15/08	6.91	22.3	1775	700
MCCONNELL 265	539265	10/15/08	6.82	21.3	1686	703
METZLER	35-71891	03/05/08	7.27	21.6	1055	317
METZLER	35-71891	05/15/08	7.12	22.8	1051	329
METZLER	35-71891	07/31/08	7.16	22.5	1078	317
METZLER	35-71891	10/20/08	7.24	22.2	1080	305
METZLER DUP	35-71891	10/20/08	7.24	22.2	1080	326
MOORE	538847	02/20/08	7.69	22.2	362	7.1
MOORE	538847	05/08/08	7.09	22.4	432	7.5
MOORE	538847	07/16/08	7.34	23.0	482	9.8
MOORE	538847	10/29/08	7.32	22.4	452	19.2
NESS	509127	07/24/08	7.35	26.5	563	50.2
NESS	509127	10/16/08	7.47	21.4	542	48.9
NOTEMAN	212483	02/05/08	6.70	19.9	1317	310
NOTEMAN	212483	05/13/08	6.67	23.0	1445	272
NOTEMAN	212483	07/24/08	6.68	24.2	1539	274
NOTEMAN	212483	10/23/08	6.57	23.2	1643	356
NWC-02	562944	10/27/08	7.47	22.2	438	5.1
NWC-03	203321	03/04/08	ND	ND	ND	560
NWC-03	203321	06/09/08	ND	ND	ND	524
NWC-03	203321	10/27/08	7.07	21.9	1374	489
NWC-04	551849	03/04/08	ND	ND	ND	240
NWC-04	551849	06/09/08	ND	ND	ND	231
NWC-04	551849	10/27/08	7.32	25.0	856	162
NWC-06	575700	03/04/08	ND	ND	ND	7.9
NWC-06	575700	06/09/08	ND	ND	ND	7.2
NWC-06	575700	10/27/08	7.35	23.3	414	6.4
OSBORN	643436	02/25/08	7.35	22.4	508	16.4
OSBORN	643436	05/13/08	7.22	22.2	576	17.2
OSBORN	643436	07/22/08	7.24	22.9	618	17.7
OSBORN DUP	643436	07/22/08	7.24	22.9	618	17.5
OSBORN	643436	10/16/08	7.39	22.4	595	15.9
PALMER	578819	02/14/08	7.91	17.5	435	15.9
PALMER	578819	05/13/08	7.92	22.9	508	16.6
PALMER	578819	07/22/08	7.64	25.8	548	16.2
PALMER	578819	10/16/08	7.61	17.0	527	15.9
PANAGAKOS	35-76413	04/21/08	6.80	20.5	1228	410
PANAGAKOS	35-76413	07/21/08	6.95	21.9	1390	444
PANAGAKOS	35-76413	10/13/08	6.86	21.2	1386	480
PANAGAKOS DUP	35-76413	10/13/08	6.86	21.2	1386	500
PARRA	576415	02/11/08	7.08	21.8	1067	360
PARRA	576415	05/15/08	7.10	21.8	1200	405
PARRA	576415	07/31/08	7.00	22.4	1248	423
PARRA DUP	576415	07/31/08	7.00	22.4	1248	404
PARRA	576415	10/20/08	7.07	22.9	1246	387
PIONKE	613395	02/06/08	7.53	19.9	910	394
PIONKE	613395	05/07/08	7.08	21.4	1100	391
PIONKE	613395	07/17/08	6.99	21.9	1209	420
PIONKE	613395	10/27/08	7.03	20.8	1175	460
POOL	509518	02/20/08	7.95	20.9	497	134
POOL	509518	05/19/08	7.40	22.2	585	122
POOL	509518	07/31/08	7.47	22.3	599	117
POOL	509518	10/21/08	7.51	21.4	598	120
RAMIREZ	216425	02/04/08	7.47	21.7	408	7.6
RAMIREZ	216425	05/06/08	7.19	22.7	405	8.3
RAMIREZ	216425	07/17/08	7.32	24.5	439	8.8
RAMIREZ	216425	10/27/08	7.41	22.2	412	7.3

TABLE 4
Results of Drinking Water Supply Monitoring

Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Temperature (deg C)	Specific Conductance (µS/cm)	Sulfate, Dissolved (mg/L)
RAY	803772	02/15/08	7.30	19.1	1540	159
RAY	803772	04/21/08[1]	6.92	21.3	1418	125
RAY	803772	05/13/08[1]	7.05	20.9	1418	123
RAY	803772	06/23/08[1]	6.87	21.1	1593	130
RAY	803772	07/29/08[1]	6.98	21.8	1411	120
RAY	803772	08/28/08[1]	M	21.1	1519	129
RAY	803772	09/23/08[1]	6.90	22.2	1519	125
RAY	803772	10/22/08[1]	6.96	20.8	1604	145
ROGERS 803	641803	02/07/08	7.45	18.6	601	125
ROGERS 803	641803	04/21/08[1]	7.32	21.4	552	128
ROGERS 803	641803	05/08/08[1]	7.14	21.2	622	141
ROGERS 803	641803	06/23/08[1]	7.06	22.9	660	129
ROGERS 803	641803	07/29/08[1]	6.78	23.1	339	134
ROGERS 803	641803	08/28/08[1]	7.18	21.6	635	128
ROGERS 803	641803	09/23/08[1]	7.24	21.9	599	133
ROGERS 803	641803	10/22/08[1]	7.36	21.3	650	144
ROGERS E	216018	02/04/08	7.40	21.0	435	4.6
ROGERS E	216018	05/07/08	7.18	22.2	415	5.9
ROGERS E	216018	07/17/08	7.28	23.0	446	7.1
ROGERS E	216018	10/27/08	7.38	21.4	434	15.7
RUIZ	531770	02/05/08	7.73	18.2	445	263
RUIZ	531770	05/15/08	7.23	25.9	965	265
RUIZ	531770	07/30/08	6.99	22.1	999	243
RUIZ	531770	10/20/08	7.04	22.0	995	238
SCHWARTZ	210865	02/08/08	7.52	21.5	506	158
SCHWARTZ	210865	04/21/08[1]	7.23	21.7	563	122
SCHWARTZ	210865	05/19/08[1]	7.38	22.4	629	130
SCHWARTZ	210865	06/23/08[1]	7.02	22.1	674	129
SCHWARTZ	210865	07/29/08[1]	7.25	22.4	955	245
SCHWARTZ	210865	08/28/08[1]	M	22.3	669	131
SCHWARTZ	210865	09/23/08[1]	7.27	22.2	607	124
SCHWARTZ	210865	10/22/08[1]	7.31	22.0	653	135
SCHWARTZ	210865	11/19/08[1]	7.38	21.1	612	140
SCHWARTZ	210865	12/17/08[1]	6.78	21.6	472	144
SWAN	NR	02/13/08	7.28	20.7	467	24.1
SWAN	NR	05/14/08	7.24	21.2	479	23.7
SWAN	NR	07/24/08	7.35	22.4	506	18.0
SWAN	NR	10/16/08	7.32	20.7	488	19.0
TM-08 SWAN	522817	02/13/08	7.63	25.2	511	12.6
TM-08 SWAN	522817	05/14/08	7.44	24.4	480	12.6
TM-08 SWAN	522817	07/23/08	7.76	28.1	522	12.6
TM-15 MILLER	522699	02/27/08	7.66	21.9	344	14
TM-15 MILLER	522699	05/23/08	7.54	22.1	371	14.4
TM-15 MILLER	522699	08/05/08	7.42	23.3	413	13.7
TM-15 MILLER	522699	10/28/08	7.63	22.6	387	18.6
TM-15 MILLER DUP	522699	10/28/08	7.63	22.6	387	18.8
WEED	544535	02/14/08	7.74	21.7	323	11.1
WEED	544535	05/15/08	7.22	22.7	365	12.6
WEED	544535	07/30/08	7.42	32.0	407	11.5
WEED	544535	10/20/08	8.10	31.6	405	10.2
WEISKOPF	641802	02/15/08	7.48	20.0	1072	500
WEISKOPF	641802	05/07/08	7.10	21.8	1251	483
WEISKOPF	641802	07/16/08	7.07	22.2	1399	560
WEISKOPF	641802	10/28/08	6.98	20.8	1401	602
ZANDER	205126	02/04/08	7.24	19.7	392	5.7
ZANDER	205126	05/06/08	7.26	21.2	404	6.3
ZANDER	205126	07/16/08	6.92	22.9	441	6.9
ZANDER	205126	10/28/08	7.40	21.2	415	15.0

Notes:
µS/cm = microsiemens per centimeter
deg C = degrees Celsius
SU = Standard Units
mg/L = milligrams per liter
DUP = Duplicate sample
M = pH meter malfunction
NA = Not Applicable
ND = No Data
NR = No Record
[1] Verified drinking water supply well, sample collected for sulfate trend analysis for interim action evaluation
[2] Former owner ENGLUND

TABLE 5
Well Information for Existing Wells

Well Name	ADWR 55 Registry No.	UTM E	UTM N	Coordinate Source[1]	Well Use	Installed	Total Well Depth (ft bgs)	Casing Depth (ft bgs)	Screened Interval (ft bgs)	Screened Formation Lithology	Depth to Bedrock (ft bgs)	Comment
ACKER CAP	214612	598847	3472874	ADWR	WATER PRODUCTION	06/08/07	905	905	860-905	Granite	825	Geologic Log
ALVAREZ	650255	601096	3467466	ADWR	WATER PRODUCTION	01/01/38	160	100	ND	ND	ND	No Log
ANDERSON	613396	601135	3468816	HGC	WATER PRODUCTION	01/01/54	236	110	ND	QTbf	NA	Based on well depth and geology map; Hayes and Landis (1964)
ANDERSON 775	616775	600793	3468573	ADWR	WATER PRODUCTION	05/17/82	ND	ND	ND	ND	ND	No Log
ANDERSON 776	616776	599996	3467763	ADWR	WATER PRODUCTION	01/01/16	200	ND	ND	ND	ND	No Log
ASLD	616436	601488	3469690	ADWR	WATER PRODUCTION	07/15/20	150	ND	ND	QTbf	NA	Based on well depth and geology map; Hayes and Landis (1964)
AWC-02	616586	598908	3468549	HGC	WATER PRODUCTION	01/01/55	330	333	100-215	QTbf	NA	Geologic Log
AWC-03	616585	599090	3468682	HGC	WATER PRODUCTION	07/20/56	270	269	83-269	QTbf	NA	Geologic Log
AWC-04	616584	598950	3468717	HGC	WATER PRODUCTION	01/01/59	250	ND	106-187	QTbf	NA	Geologic Log
AWC-05	590620	599270	3468542	HGC	WATER PRODUCTION	06/24/02	1183	1183	163-603 / 623-1163	Km/Volcanics	400	Geologic Log
BANKS 986	647986	606723	3469137	ADWR	WATER PRODUCTION	06/23/80	445	ND	ND	Km	NA	Based on well depth and geology map; Hayes and Landis (1964)
BANKS 987	647987	606982	3469206	HGC	WATER PRODUCTION	06/10/82	339	339	ND	Km	NA	Based on well depth and geology map; Hayes and Landis (1964)
BARTON 010	085010	606201	3469047	HGC	WATER PRODUCTION	01/01/81	300	300	180-300	Km	NA	Geologic Log
BARTON 919	644919	606244	3469077	HGC	WATER PRODUCTION	NR	130	130	ND	QTbf	NA	Based on well depth and geology map; Hayes and Landis (1964)
BERNAL	648363	600796	3467767	ADWR	WATER PRODUCTION	NR	125	ND	ND	ND	ND	No Log
BF-01	539783	604169	3472152	HGC	MONITOR	08/15/93	400	400	325-385	QTbf/Km	350	Geologic Log
BF-02	539786	603480	3471513	ADWR	MONITOR	08/05/93	326	265	265-305	QTbf	NA	Geologic Log
BIMA	577927	606001	3471853	HGC	WATER PRODUCTION	03/03/00	465	465	345-465	Km	27	Based on well drillers report to ADWR (1994)
BINYON	594938	608545	3468542	ADWR	WATER PRODUCTION	12/05/02	260	260	220-260	Km	60	Geologic Log
BLOMMER	633472	602726	3471529	ADWR	WATER PRODUCTION	11/01/78	380	380	ND	Km	245	Based on well depth and geology map; Hayes and Landis (1964)
BRINDLEY	5586775	601263	3472095	ADWR	WATER PRODUCTION	01/01/81	360	360	340-360	Km	295	Geologic Log
BULLARD	602134	602079	3470901	ADWR	WATER PRODUCTION	09/06/74	300	300	215-300	QTbf	NA	Based on well depth and geology map; Hayes and Landis (1964)
BURKE	212268	602230	3473030	HGC	WATER PRODUCTION	10/11/06	781	781	661-781	Km	150	Based on well drillers report to ADWR (1994)
CHAMBERS	629807	600097	3467462	ADWR	WATER PRODUCTION	01/01/77	245	245	ND	QTbf	NA	Based on well depth and geology map; Hayes and Landis (1964)
CHASE	648359	599695	3468062	ADWR	WATER PRODUCTION	01/01/70	100	100	ND	QTbf	NA	Based on well depth and geology map; Hayes and Landis (1964)
COB MW-1	903992	603153	3469890	HGC	WATER PRODUCTION	03/02/06	420	420	350-410	QTbf	NA	Geologic Log
COB MW-2	903984	600973	3468115	HGC	MONITOR	01/20/06	170	170	92-152	QTbf	NA	Geologic Log
COB MW-3	906823	599169	3468726	ADWR	MONITOR	04/20/07	269	269	83-269	QTbf	NA	Geologic Log
COB WL	593116	606358	3472502	HGC	MONITOR	07/22/02	150	150	90-150	Km	36	Geologic Log
COB WL ABND	570012	607673	3473952	ADWR	ABANDONED	08/31/98	118	148	108-148	Km	115	Geologic Log
COLLINS	565260	602551	3471341	HGC	WATER PRODUCTION	12/16/97	320	320	260-320	Km	40	Based on well drillers report to ADWR (1994)
CONNOR ABND	516399	600251	3472678	HGC	ABANDONED	01/20/87	220	220	ND	Granite	32	Geologic Log
COOPER	623564	602668	3472105	ADWR	WATER PRODUCTION	12/20/79	325	325	ND	QTbf	NA	Based on well depth and geology map; Hayes and Landis (1964)
COOPER C	637069	601350	3468913	HGC	WATER PRODUCTION	07/29/66	220	220	ND	QTbf	NA	Based on well depth and geology map; Hayes and Landis (1964)
COTA	651116	600197	3467563	ADWR	WATER PRODUCTION	NR	160	150	ND	ND	ND	No Log
CROWLEY	510298	602461	3473109	ADWR	WATER PRODUCTION	04/19/85	788	22	NA	Kg	22	Geologic Log; open hole
DODSON	644927	605595	3469064	HGC	WATER PRODUCTION	10/01/59	200	200	ND	Km	ND	Based on well depth and geology map; Hayes and Landis (1964)
DOUGLASS 791	592791	607633	3470223	HGC	WATER PRODUCTION	09/19/02	200	200	0-200	Kg	4	Geologic Log
DOUGLASS 792	592792	607608	3469829	HGC	WATER PRODUCTION	09/21/09	200	200	0-200	Kg	4	Geologic Log
DURAZO	NR	602041	3471284	HGC	WATER PRODUCTION	NR	NR	NR	NR	NR	NR	No ADWR Record
EAST	599796	607076	3468712	HGC	WATER PRODUCTION	10/24/03	125	125	85-125	Km	50	Geologic Log
EBERWEIN	641726	600185	3467214	ADWR	WATER PRODUCTION	NR	249	ND	ND	ND	ND	Based on well completion depth and lithology of nearby wells
EPPELE 641	805641	607165	3469230	HGC	WATER PRODUCTION	NR	265	265	ND	Km	ND	Based on well depth and geology map; Hayes and Landis (1964)
EPPELE 642	805642	607126	3469140	ADWR	WATER PRODUCTION	12/31/00	40	40	ND	Km	ND	Based on well depth and geology map; Hayes and Landis (1964)
EPPELE 643	805643	607126	3469140	ADWR	WATER PRODUCTION	NR	165	165	ND	Km	ND	Based on well depth and geology map; Hayes and Landis (1964)
FRANCO	500101	602850	3468836	HGC	WATER PRODUCTION	07/01/81	200	200	180-200	QTbf	NA	Geologic Log
FULTZ	212447	607153	3469064	ADWR	WATER PRODUCTION	06/23/06	300	300	200-300	Km	10	Based on well depth and geology map; Hayes and Landis (1964)
GALLANT	502527	607770	3468524	HGC	WATER PRODUCTION	04/26/82	190	190	40-60 / 80-140	Km	5	Geologic Log
GARNER 557	558557	602659	3468962	HGC	WATER PRODUCTION	09/04/96	300	310	180-220 / 240-300	QTbf	NA	Geologic Log
GARNER 635	587635	602665	3468968	HGC	WATER PRODUCTION	10/12/01	680	660	580-660	Km	540	Geologic Log
GGOOSE 546	628546	606115	3469534	ADWR	WATER PRODUCTION	02/11/63	800	430	ND	Km	ND	Based on well depth and geology map; Hayes and Landis (1964)
GGOOSE 547	628547	606257	3469820	HGC	WATER PRODUCTION	08/18/61	800	800	ND	Km	ND	Based on well depth and geology map; Hayes and Landis (1964)
GL-01	539785	605076	3473336	ADWR	MONITOR	08/20/93	833	468	768-808	Kg	230	Geologic Log
GL-02 ABND	539784	605889	3472943	ADWR	ABANDONED	08/08/93	400	20	NA	Kg	47	Geologic Log; well not constructed
GL-03	539782	604387	3473748	HGC	MONITOR	08/11/93	825	825	780-820	Kg	175	Geologic Log
GOAR 687	610687	602406	3468588	ADWR	WATER PRODUCTION	01/01/50	250	250	ND	QTbf	NA	Based on well completion depth and lithology of nearby wells
GOAR 688	610688	602406	3468588	ADWR	WATER PRODUCTION	01/01/50	250	250	ND	QTbf	NA	Based on well completion depth and lithology of nearby wells
GOAR 689	610689	602406	3468588	ADWR	WATER PRODUCTION	01/01/50	250	250	ND	QTbf	NA	Based on well completion depth and lithology of nearby wells
GOAR 690	610690	601596	3468580	ADWR	WATER PRODUCTION	01/01/50	250	250	ND	QTbf	NA	Based on well completion depth and lithology of nearby wells
GOAR 691	610691	602406	3468588	ADWR	WATER PRODUCTION	01/01/50	250	250	ND	QTbf	NA	Based on well completion depth and lithology of nearby wells
GOAR 692	610692	602406	3468588	ADWR	WATER PRODUCTION	01/01/50	250	250	ND	QTbf	NA	Based on well completion depth and lithology of nearby wells
GOAR 686	610686	602406	3468588	ADWR	WATER PRODUCTION	01/01/50	250	250	ND	QTbf	NA	Based on well completion depth and lithology of nearby wells
GOAR	610694	602217	3468916	HGC	WATER PRODUCTION	01/01/50	250	250	ND	QTbf	NA	Based on well completion depth and lithology of nearby wells
GOAR 693	610693	602406	3468588	ADWR	WATER PRODUCTION	01/01/50	250	250	ND	QTbf	NA	Based on well completion depth and lithology of nearby wells
GOAR RANCH	610695	602455	3468892	HGC	WATER PRODUCTION	01/01/50	250	250	ND	QTbf	NA	Based on well completion depth and lithology of nearby wells
GREGG	630852	607024	3469240	ADWR	WATER PRODUCTION	NR	ND	ND	ND	ND	ND	No Log
HAUBERT	801607	601596	3468580	ADWR	WATER PRODUCTION	01/01/55	195	195	ND	ND	ND	No Log
HECK	507823	602077	3471101	ADWR	WATER PRODUCTION	05/04/84	313	313	208-308	Kg	0	Geologic Log
HOBAN	805290	601706	3468880	HGC	WATER PRODUCTION	03/02/64	316	316	188-316	QTbf	NA	Geologic Log
HOWARD	NR	601282	3468769	HGC	WATER PRODUCTION	11/08/89	NR	NR	NR	NR	NR	No ADWR Record
HULL 854	606854	601475	3470899	ADWR	WATER PRODUCTION	01/01/15	25	ND	NA	QTbf	NA	Geologic Log; open hole
HULL 855	606855	601467	3471697	ADWR	WATER PRODUCTION	01/01/15	400	200	ND	Km	ND	Based on well completion depth and lithology of nearby wells
HUMPHREY	649153	600395	3468167	ADWR	WATER PRODUCTION	01/01/38	160	20	ND	ND	ND	No Log
IRONS	632924	602204	3468788	ADWR	WATER PRODUCTION	12/12/55	175	175	ND	ND	ND	No Log
JACKSON	506034	602479	3471103	ADWR	WATER PRODUCTION	08/16/83	342	342	2-342	Kg	20	Geologic Log
JALYN	209737	601496	3468680	ADWR	WATER PRODUCTION	11/16/05	245	245	185-245	QTbf	NA	Geologic Log
KEEFER	209744	599879	3468119	HGC	WATER PRODUCTION	11/15/05	245	245	185-245	QTbf	NA	Geologic Log
LESNICK	587749	607516	3470145	ADWR	WATER PRODUCTION	05/04/02	400	400	360-400	QTbf	NA	Geologic Log
LUCERO	618175	601293	3468274	ADWR	WATER PRODUCTION	06/26/72	301	301	ND	ND	ND	No Log
M-01 ABND	539787	604070	3472924	ADWR	ABANDONED	08/14/93	605	600	560 - 600	Km/Kg	185	Geologic Log
MCCONNELL 265	539265	601463	3468840	HGC	WATER PRODUCTION	07/06/93	216	216	174-216	QTbf	NA	Geologic Log
MCCONNELL 386	590386	601438	3468846	HGC	WATER PRODUCTION	NR	ND	ND	ND	QTbf	NA	Based on well completion depth and lithology of nearby wells
MENDEZ	650256	601096	3467466	ADWR	WATER PRODUCTION	01/01/38	160	100	ND	ND	ND	No Log
METZLER	35-71891	602091	3471381	HGC	WATER PRODUCTION	04/10/79	351	351	245-345	Km	ND	Based on well depth and geology map; Hayes and Landis (1964)
MILLER 340	641340	600090	3469474	ADWR	WATER PRODUCTION	01/01/40	200	200	ND	QTbf	NA	Based on well depth and geology map; Hayes and Landis (1964)
MILLER 341	641341	601699	3467875	ADWR	WATER PRODUCTION	01/01/20	100	100	ND	QTbf	NA	Based on well depth and geology map; Hayes and Landis (1964)
MILLER 342	641342	604520	3467499	ADWR	WATER PRODUCTION	01/01/57	200	200	ND	QTbf	NA	Based on well depth and geology map; Hayes and Landis (1964)
MINNERLY	650662	607223	3469441	ADWR	WATER PRODUCTION	NR	ND	ND	ND	ND	ND	No Log
MINOR 316	633316	601173	3468487	HGC	WATER PRODUCTION	01/01/55	208	208	ND	QTbf	NA	Based on well completion depth and lithology of nearby wells
MINOR 317	633317	601172	3468568	HGC	WATER PRODUCTION	01/01/56	155	155	ND	QTbf	NA	Based on well completion depth and lithology of nearby wells
MOORE	538847	599495	3468060	ADWR	WATER PRODUCTION	04/24/93	220	220	180-220	QTbf	NA	Geologic Log
MOROYOQUI	647847	600395	3468167	ADWR	WATER PRODUCTION	06/18/69	280	280	ND	Km	ND	Based on well completion depth and lithology of nearby wells
NESS	509127	607866	3471419	ADWR	WATER PRODUCTION	01/30/85	812	20	NA	Kg	20	Geologic Log; open hole
NOBLE	618611	602608	3468792	ADWR	WATER PRODUCTION	NR	ND	ND	ND	ND	ND	No Log
NOTEMAN	212483	606054	3471576	HGC	WATER PRODUCTION	06/26/06	400	400	0-400	Km	NA	Based on well depth and geology map; Hayes and Landis (1964)
NSD-01	NR	598080	3468647	ADWR	NR	NR	NR	NR	NR	NR	NR	No ADWR Record
NSD-02	527587	598884	3468847	HGC	MONITOR	05/12/90	120	120	75-115	QTbf	NA	Geologic Log
NSD-03	527586	598077	3468637	HGC	MONITOR	05/12/90	100	100	55-95	QTbf	NA	Geologic Log
NWC-01	627682	600144	3467140	HGC	WATER PRODUCTION	09/24/51	215	215	ND	QTbf	NA	Geologic Log
NWC-02 CAP	627683	600183	3467457	HGC	CAPPED	08/02/59	210	210	ND	QTbf	NA	Geologic Log
NWC-02	562944	600177	3467475	HGC	WATER PRODUCTION	06/11/97	312	312	212-312	QTbf	NA	Geologic Log
NWC-03 CAP	627684	601148	3468343	HGC	CAPPED	01/01/30	179	160	ND	QTbf	NA	Geologic Log
NWC-03	203321	601154	3468351	HGC	WATER PRODUCTION	06/22/04	312	312	252-312	QTbf	NA	Geologic Log
NWC-04	551849	605830	3469072	HGC	WATER PRODUCTION	08/24/95	795	795	540-580 / 755-795	Km	19	Geologic Log
NWC-04 CAP	627685	605915	3469113	HGC	CAPPED	12/31/26	379	379	322-462	QTbf	NA	Geologic Log
NWC-05	627696	606980	3469446	HGC	WATER PRODUCTION	01/01/60	175	86	ND	QTbf	NA	Geologic Log
NWC-06	575700	599823	3467750	HGC	WATER PRODUCTION	09/15/99	410	340	180-279 / 302-340	QTbf	NA	Geologic Log

TABLE 5
Well Information for Existing Wells

Well Name	ADWR 55 Registry No.	UTM E	UTM N	Coordinate Source[1]	Well Use	Installed	Total Well Depth (ft bgs)	Casing Depth (ft bgs)	Screened Interval (ft bgs)	Screened Formation Lithology	Depth to Bedrock (ft bgs)	Comment
OSBORN	643436	607032	3470271	HGC	WATER PRODUCTION	08/05/93	258	258	122-258	Kg	150	Deepened from ~ 150' to 250'
PALMER	578819	607724	3469545	ADWR	WATER PRODUCTION	01/10/00	220	220	200-220	Km	80	Geologic Log
PANAGAKOS	35-76413	605312	3469321	HGC	WATER PRODUCTION	07/01/57	200	200	140-200	Km	100	Geologic Log
PARRA	576415	602171	3471264	HGC	WATER PRODUCTION	10/06/99	355	355	255-355	Km	ND	Based on well depth and geology map; Hayes and Landis (1964)
PAVLOVICH	502193	601238	3474910	ADWR	WATER PRODUCTION	04/01/82	535	20	NA	Km	3	Geologic Log; open hole
PIONKE	613395	601045	3468961	HGC	WATER PRODUCTION	01/01/64	300	300	ND	QTbf	NA	Based on well completion depth and lithology of nearby wells
POOL	509518	599684	3470014	HGC	WATER PRODUCTION	12/12/84	313	313	213-300	QTbf	NA	Geologic Log
POWER	624535	608379	3472739	HGC	WATER PRODUCTION	01/01/67	100	100	60-99	Km	ND	Based on well depth and geology map; Hayes and Landis (1964)
RAMIREZ	216425	599731	3467584	ADWR	WATER PRODUCTION	NR	300	300	250-300	QTbf	NA	Based on well depth and geology map; Hayes and Landis (1964)
RAY	803772	607083	3469195	HGC	WATER PRODUCTION	NR	100	ND	ND	Km	ND	Based on well depth and geology map; Hayes and Landis (1964)
RICHARDS	531595	608716	3471353	ADWR	WATER PRODUCTION	05/03/91	445	20	NA	Granite	0	Geologic Log; well not constructed
RODRIGUEZ	648360	600697	3467464	ADWR	WATER PRODUCTION	NR	ND	ND	ND	QTbf	NA	Based on well completion depth and lithology of nearby wells
ROGERS 596	573596	600894	3468271	ADWR	WATER PRODUCTION	09/16/99	290	290	230-290	Km	140	Geologic Log
ROGERS 801	641801	601092	3468676	ADWR	WATER PRODUCTION	01/01/60	142	142	ND	QTbf	NA	Based on well completion depth and lithology of nearby wells
ROGERS 803	641803	600978	3468417	HGC	WATER PRODUCTION	01/01/60	140	140	230-290	QTbf	NA	Based on well completion depth and lithology of nearby wells
ROGERS E	216018	600450	3467636	ADWR	WATER PRODUCTION	09/10/07	290	290	240-285	Km	165	Geologic Log
ROLLINS	641750	601096	3467667	ADWR	WATER PRODUCTION	NR	126	ND	ND	QTbf	NA	Based on well completion depth and lithology of nearby wells
ROSS 351 CAP	513351	600254	3472688	ADWR	CAPPED	02/08/86	740	20	ND	Granite	200	Geologic Log
ROSS 398 ABND	516398	600052	3472887	ADWR	ABANDONED	01/21/87	200	21	ND	Granite	40	Geologic Log
ROSS 525	517525	599654	3472078	ADWR	WATER PRODUCTION	04/17/87	400	20	ND	Km	250	Geologic Log
ROSS 526	517526	599666	3471480	ADWR	WATER PRODUCTION	04/16/87	425	425	ND	Km	300	volcanics 300' - 375'; sandstone 375' - 425'
RUIZ	531770	602857	3471424	HGC	WATER PRODUCTION	05/29/91	312	312	252-312	QTbf/Km	265	Geologic Log
SCHWARTZ	210865	600812	3468268	HGC	WATER PRODUCTION	06/11/06	305	305	260-305	QTbf	NA	Geologic Log
SHAFER	649994	600497	3467463	ADWR	WATER PRODUCTION	07/15/66	162	162	ND	ND	ND	No Log
SILVESTRI	557742	600251	3473493	ADWR	WATER PRODUCTION	07/10/96	380	380	340-380	QTbf	NA	Geologic Log
SRC	211345	599722	3472503	HGC	WATER PRODUCTION	02/06/07	965	965	845-965	Km	500	Geologic Log
STEPHENS	808560	606982	3469073	HGC	WATER PRODUCTION	NR	NR	NR	NR	NR	NR	No ADWR Record
SUNBELT	201531	605998	3471735	HGC	WATER PRODUCTION	01/15/04	380	380	300-380	Km/Kg	2	Geologic Log
SUNNYSIDE	588270	601293	3468476	ADWR	WATER PRODUCTION	08/28/01	200	200	160-200	QTbf	NA	Geologic Log
SWAN	NR	607379	3470648	HGC	WATER PRODUCTION	NR	NR	NR	NR	Kg	ND	Based on well completion depth and lithology of nearby wells
TM-01 ABND	522569	604096	3470517	ADWR	ABANDONED	11/01/88	265	265	215-265	Km	215	Geologic Log
TM-01A ABND	525557	604096	3470517	ADWR	ABANDONED	09/09/89	265	265	204-265	QTbf/Km	217	Geologic Log
TM-01B ABND	525556	604096	3470517	ADWR	ABANDONED	09/11/89	265	265	204-265	QTbf/Km	211	Geologic Log
TM-02	522573	604078	3471921	ADWR	MONITOR	12/14/88	640	360	280-360	QTbf	NA	Geologic Log
TM-02A	522574	604152	3472009	HGC	MONITOR	02/10/89	925	925	825-925	Kg	345	Geologic Log
TM-03	522575	606366	3473711	ADWR	MONITOR	12/16/88	200	200	150-200	Kg	32	Geologic Log
TM-04 ABND	522693	606105	3471539	ADWR	ABANDONED	01/17/89	175	175	125-175	Kg	75	Geologic Log
TM-05 MILLER	522694	603900	3467190	HGC	MONITOR	01/13/89	160	160	120-160	QTbf	NA	Geologic Log
TM-06 MILLER	522695	606056	3468377	ADWR	MONITOR	01/24/89	200	200	150-200	Km	15	Geologic Log
TM-07	522576	603073	3471909	ADWR	MONITOR	11/04/88	350	350	259-349	Km	195	Geologic Log
TM-08 SWAN	522817	607787	3470667	HGC	WATER PRODUCTION	01/20/89	817	817	757-817	Kg	80	Geologic Log
TM-09 ABND	522577	603062	3473315	ADWR	ABANDONED	11/03/88	940	930	870-930	Kg	174	Geologic Log
TM-10 USBP	522696	601666	3471898	ADWR	MONITOR	11/08/88	290	290	240-290	Km	185	Geologic Log
TM-11 PIONKE	522815	600892	3468876	ADWR	MONITOR	11/18/88	160	159	99-159	QTbf	NA	Geologic Log
TM-12 MILLER	522697	601518	3467147	HGC	MONITOR	01/12/89	175	171	121-171	QTbf	NA	Geologic Log
TM-13 MILLER	522698	601284	3469891	ADWR	MONITOR	01/05/89	200	200	140-200	QTbf	NA	Geologic Log
TM-14 NELSON	522816	599624	3470112	ADWR	MONITOR	01/12/89	215	215	165-215	QTbf	NA	Geologic Log
TM-15 MILLER	522699	599617	3471428	HGC	WATER PRODUCTION	01/11/89	325	320	260-320	Km	220	Geologic Log
TM-16 MILLER	522578	605588	3469842	HGC	MONITOR	12/15/88	115	115	65-115	Km	40	Geologic Log
TM-17	522700	603915	3468504	ADWR	MONITOR	01/17/89	200	200	150-200	Kml	70	Geologic Log
TM-18 ABND	522579	603451	3475529	ADWR	ABANDONED	10/27/88	787.5	780	680-780	PC	0	Geologic Log
TM-19	522581	602506	3469093	ADWR	MONITOR	11/17/88	210	210	150-210	QTbf	NA	Geologic Log
TM-19A	522580	602459	3469197	HGC	MONITOR	11/16/88	700	695	585-695	Km	535	Geologic Log
TM-20 ABND	525147	605061	3475745	ADWR	ABANDONED	08/20/89	625	20	NA	Pz	0	Geologic Log; open hole
TM-21 ABND	525148	605061	3475745	ADWR	ABANDONED	11/08/89	630	20	NA	Pz	0	Geologic Log; open hole
TM-22 ABND	525146	605066	3475143	ADWR	ABANDONED	11/04/89	1000	1000	900-1000	Pz	0	Geologic Log
TM-23 ABND	525555	605067	3474741	ADWR	ABANDONED	08/18/89	220	215	155-215	QTbf/Km	169	Geologic Log
TM-24 ABND	525547	605872	3474350	ADWR	ABANDONED	09/10/89	106	105	44-105	Kg	33	Geologic Log
TM-25 ABND	525145	605071	3473737	ADWR	ABANDONED	08/18/89	805	104	NA	Kg	240	Geologic Log; well not constructed
TM-26	525144	605086	3472533	ADWR	MONITOR	09/07/89	800	199	NA	Kg	250	Geologic Log; well not constructed
TM-27 ABND	525143	603669	3472719	ADWR	ABANDONED	09/05/89	410	367	306-367	Km	239	Geologic Log
TM-28 ABND	525142	606098	3472542	ADWR	ABANDONED	08/04/89	140	140	55-140	Kg	60	Geologic Log
TM-29 ABND	525141	604891	3471328	ADWR	ABANDONED	08/10/89	140	140	85-140	QTbf/Km	95	Geologic Log
TM-29A ABND	525137	604891	3471328	ADWR	ABANDONED	08/09/89	165	165	85-165	QTbf/Km	99	Geologic Log
TM-29B ABND	525136	604891	3471328	ADWR	ABANDONED	08/06/89	165	165	85-165	QTbf/Km	106	Geologic Log
TM-30 ABND	525548	602500	3469496	ADWR	ABANDONED	09/25/89	700	700	555-700	Km	520	Geologic Log
TM-30A ABND	525558	602500	3469496	ADWR	ABANDONED	09/13/89	700	700	555-700	Km	465	Geologic Log
TM-30B ABND	525559	602500	3469496	ADWR	ABANDONED	09/26/89	210	210	149-210	QTbf	NA	Geologic Log
TM-32 ABND	525550	603457	3474725	ADWR	ABANDONED	11/08/89	293	98	NA	Kg	188	Geologic Log; open hole
TM-33 ABND	525140	604468	3473729	ADWR	ABANDONED	10/26/89	500	500	439-500	Kg	188	Geologic Log
TM-35 ABND	525139	607286	3473348	ADWR	ABANDONED	10/03/89	380	310	249-310	Kg	20	Geologic Log
TM-36 ABND	525138	607672	3474555	ADWR	ABANDONED	10/09/89	660	660	610-660	Pz	59	Geologic Log
TM-37 ABND	525552	602891	3470303	ADWR	ABANDONED	10/09/89	700	700	464-700	Km/Kg	451	Geologic Log
TM-38 ABND	525553	603502	3469707	ADWR	ABANDONED	10/03/89	700	700	375-700	Km	476	Geologic Log
TM-39 ABND	525554	604710	3469520	ADWR	ABANDONED	10/22/89	424	424	118-424	QTbf/Km	158	Geologic Log
TM-41	562555	604840	3471306	HGC	MONITOR	06/12/97	210	201	145-200	Km	95	Geologic Log
TM-42	562554	603698	3469105	HGC	MONITOR	06/13/97	250	241	180-240	Km	65	Geologic Log
TM-43	564729	605365	3474671	HGC	MONITOR	11/10/97	830	820	720-800	Km	70	Geologic Log
TM-43A	564726	605358	3474661	HGC	MONITOR	10/28/97	215	210	130-190	QTbf/Km	150	Geologic Log
TM-43B	565004	605814	3474380	HGC	MONITOR	10/29/97	215	210	150-190	Km	80	Geologic Log
TM-43C	565005	605872	3474752	ADWR	MONITOR	11/12/97	270	259	199-239	Km	50	Geologic Log
TM-44	564730	605267	3475146	ADWR	MONITOR	10/26/97	1150	1130	1020-1150	Pz	0	Geologic Log
TM-45	564728	604463	3474733	ADWR	MONITOR	11/17/97	520	500	400-480	Km	180	Geologic Log
TM-46	564727	604461	3475135	ADWR	MONITOR	12/12/97	1080	1060	940-1040	Pz	0	Geologic Log
TVI 236	802236	600552	3467978	HGC	WATER PRODUCTION	02/14/34	222	222	ND	QTbf	NA	Geologic Log
TVI 713 CAP	567713	600729	3468413	HGC	CAPPED	04/14/98	200	144	80-144	QTbf	NA	Geologic Log
TVI 875	568875	600694	3468471	ADWR	WATER PRODUCTION	06/14/98	330	330	166-320	QTbf	NA	Geologic Log
VALENZUELA	645050	600395	3468167	ADWR	WATER PRODUCTION	01/01/47	167	150	ND	ND	ND	No Log
WALKER	200393	607565	3468577	HGC	WATER PRODUCTION	11/12/03	120	120	80-100	Km	18	Geologic Log
WEED	544535	601276	3470699	ADWR	WATER PRODUCTION	07/09/94	320	320	280-320	Km/Kg	270	Geologic Log
WEISKOPF	641802	601155	3468659	HGC	WATER PRODUCTION	01/01/60	200	200	ND	QTbf	NA	Based on well completion depth and lithology of nearby wells
WILLSON 361	648361	602002	3468181	ADWR	WATER PRODUCTION	01/01/29	160	160	ND	QTbf	NA	Based on well completion depth and lithology of nearby wells
WILLSON 362	648362	601293	3468879	ADWR	WATER PRODUCTION	01/01/47	180	180	ND	QTbf	NA	Based on well completion depth and lithology of nearby wells
ZANDER	205126	599679	3467998	HGC	WATER PRODUCTION	02/10/05	280	260	220-260	QTbf	NA	Geologic Log

Notes:

[1]Coordinate Sources:
HGC = Survey or hand-held global positioning system
ADWR = Arizona Department of Water Resources Groundwater Services Index (GWSI)
UTM E = Universal Transverse Mercator, North American Datum 1983 (NAD83) Easting (meters)
UTM N = Universal Transverse Mercator, North American Datum 1983 (NAD83) Northing (meters)
QTbf = Quaternary - Tertiary basin fill
Kg = Cretaceous Glance Conglomerate
Km = Cretaceous Morita Formation
Pz = Paleozoic Rocks
PC = Precambrian
NR = not reported
NA = not applicable
ND = not determined
ft bgs = feet below ground surface

TABLE 6
Summary of Hydraulic Conductivity Estimates

Well or Boring	Aquifer Material	Hydraulic Conductivity (ft/day)		
		ELMA, 1989 as reported by SRK (1997)	SRK (1997) re-interpretation of ELMA, 1989 data	SET (1998c)
TM-11	basin fill	39.0	1.2	
TM-13	basin fill	59.0	19.1	
	average, basin fill	**49.0**	**10.1**	
TM-01	basin fill-Morita Formation	21.4	11	
TM-01A	basin fill-Morita Formation	26.8	not calculated	
	average, TM-01, TM-01A	**24.1**		
TM-29	basin fill-Morita Formation	6.7	not calculated	
TM-29A	basin fill-Morita Formation	4.0	1.3	
TM-29B	basin fill-Morita Formation	4.0	1.8	
	average, TM-29, TM-29B	**4.0**	1.6	
	average, all basin fill-Morita Formation	**12.6**	**4.7**	
TM-30	Morita Formation, west of Black Gap fault	12.0	not calculated	
TM-30A	Morita Formation, west of Black Gap fault	1.3	not calculated	
	average, TM-30, TM-30A	**6.7**		
TM-19A	Morita Formation, west of Black Gap fault	12.0	5.8	
TM-38	Morita Formation, west of Black Gap fault	12.0	not calculated	
	average, all Morita Formation, west of Black Gap fault	**9.3**	**5.8**	
TM-16	Morita Formation, east of Black Gap fault	1.3	2.2	
Flow and Transport Model (SET,1998c)	basin fill, gravel			72
	basin fill, gravelly sand			65
	basin fill, sand			30
	basin fill, silty sand			23
	average, basin fill			**48**
	Morita Formation, sandstone			20
	Morita Formation, siltstone			3
	Morita/Mural Formations, siltstone/limestone			2
	Morita Formation, siltstone/mudstone			1
	Morita Formation, mudstone			2
	average, Morita Formation			**6**
	Glance Conglomerate, silty matrix			2
	Glance Conglomerate, clayey matrix			1
	average, Glance Conglomerate			**1**

Notes:
ft/day = feet per day

TABLE 7
Aquifer Recharge Estimates

NATURAL RECHARGE SOURCES				
Recharge Type	**Reference**	**Volumetric Recharge Rate**	**Specific Recharge Rate**	**Notes**
Total Natural Recharge	Littin (1987)	2,000 to 2,500 ac-ft/yr	1.19E-4 to 1.49E-4 ft/d	1. Recharge may be underestimated because groundwater budget has a discrepancy of about 4,000 ac-ft/yr 2. Specific rate based on a study area of 46,000 acres
	SET (1998c)	3763.5 ac-ft/yr	8.49E-4 ft/d (high), 1.64E-5 ft/d (low)	1. Calibrated rates based on Littin (1987) 2. High recharge areas near mountain fronts and immediately south of Greenbush Draw (see Figure A.13)
Total Natural Recharge for Sierra-Vista Sub-basin	ADWR (2005)	18,000 ac-ft/yr		Modified estimate from Correll et al. (1996)
	Correll et al. (1996)	19,000 ac-ft/yr		Includes 1,000 ac-ft/yr from Greenbush Draw that may include discharge from mine water (ADWR, 2005)
Recharge from Greenbush Draw	Coes and Pool (2005)	365 ac-ft/yr	30.1 ac-ft/yr/mile	1. Estimated using tracer studies and stream monitoring 2. Specific rate based on a 19.5 km of alluvial stream reach
Recharge from Areas of Crystalline Rock	Pool and Dickinson (2006)		0 ft/d	
Recharge from Areas of Sedimentary Rock			3.29E-6 to 6.57E-5 ft/d	
Recharge Within 1.6 km of Mountain Fronts (mountain front recharge)			6.57E-5 to 4.38E-4 ft/d	
Recharge from Areas of Alluvium			3.29E-6 ft/d	

ARTIFICIAL RECHARGE SOURCES	
Potential Recharge Source	**Notes**
Concentrator Tailing Storage Area	
North and South Tailing Impoundments	- Percolation rate estimated to be between $3.6x10^{-7}$ and $2.4x10^{-7}$ cm/s (SET, 1998a)
	- No recharge to aquifer included in model of SET (1998c)
Evaporation Pond	- SRK (1997) estimated recharge rate of 488 ac-ft/yr
	- SET (1998c) modeled recharge rate of 3,103 ac-ft/yr
	- SET (1998c) modeled sulfate concentration of 3,000 mg/L, with two "elevated zones" of 3,100 mg/L (22.2 acres) and 3,650 mg/L (14.8 acres)
Horseshoe Pond	- 2008 - Water is pumped to the South Tailing Impoundment and then to Lavender Pit; no drainage or recharge estimates available
	- No recharge to aquifer included in model of SET (1998c)
Irrigation Areas	
Warren Ranch Irrigation Area	- Water delivery rates variable - up to 2,350 ac-ft/yr through 1985
	- SRK (1997) estimated recharge rate of 479 ac-ft/yr
	- SET (1998c) modeled recharge rate of 1,135 ac-ft/yr with a sulfate concentration of 1,500 mg/L
El Oasis Irrigation Area	- SET (1998c) modeled recharge rate of 315.3 ac-ft/yr
	- SET (1998c) modeled an area of 306.4 acres; the current area is 630 acres based on satellite imagery
Turquoise Valley Golf Course	- 1934 Golf course opens; golf course expands north of Greenbush Draw in 1998
	- SET (1998c) modeled recharge rate of 33.2 ac-ft/yr before expansion and 66.4 ac-ft/yr after expansion
Waste Water Treatment Facilities	
Warren WWTF Ponds	- Warren WWTF Ponds begin in 1930s (SET 1998c) or 1970s (EPA, 2003b) and terminates in 2006. Use of unlined ponds (NADB, 2003) and land disposal of effluent (EPA,
	- SET (1998c) modeled recharge of 159.9 ac-ft/yr during period of operation
San Jose WWTF	- 1985 - Effluent discharge to lined lagoons then land-disposed (EPA, 2003b). 0.137 MGD design capacity. Liners became damaged (NADB, 2003).
	- 2006 - Facility expanded and permitted for 1.22 MGD with effluent discharged to Greenbush Draw (ADEQ, 2006); discharge to lagoons ended
	- 2006 - Effluent discharged to Greenbush Draw (31° 20' 35"N, 109° 56' 10"W). Discharge to San Jose lagoons terminated.
	- SET (1998c) did not estimate recharge to aquifer from lagoons
	- 2008 - Effluent-dependent flow in Greenbush Draw persists for at least one mile downstream of discharge point.
	- In the future all or part of effluent may be used by TVI golf course
Naco Sanitation District (Arizona)	- ADWR (2005) estimated effluent production of 80 ac-ft/yr in 2002 with all effluent evaporated (no recharge)
	- No recharge to aquifer from lagoons included in model of SET (1998c)
Naco, Sonora WWTF	- Early 1960s - East (7 lagoons) and west (3 lagoons) constructed (SAIC, 1997)
	- SET (1998c) modeled recharge of 158.5 ac-ft/yr (half to east lagoon and half to west lagoon)
	- 2008 - Discharge to lagoons is approximately 589 ac-ft/yr with east lagoon lined with compacted clay and the unlined west lagoon "rarely used" (HGC, 2008d)
Combined Sources	
Combined WWTFs	- 1985 - All WWTFs estimated to have combined inflow of 500,000 gpd (560 ac-ft/yr) (Littin, 1987)
	- 1985 - All WWTFs estimated to have combined recharge rate of 250 ac-ft/yr (Littin, 1987)
	- 2005 - Combined effluent production in City of Bisbee of 610 ac-ft/yr. Some effluent infiltrates (ADWR, 2005)
Combined Artificial Recharge	- Littin (1987) estimated combined artificial recharge to range from 6,720 ac-ft/yr to 7,150 ac-ft/yr

Notes:
- *ac-ft/yr = acre-feet per year*
- *cm/s = centimeters per second*
- *ft/d = feet per day*
- *gpd = gallons per day*
- *km = kilometers*
- *mg/L = milligrams per liter*

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TABLE 8
Recharge Estimates from SET (1998c)

Recharge Source	Area (acres)	Years Applied	Volumetric Rate			Areal Rate		
			Final (ac-ft/yr)	Upper Limit (ac-ft/yr)	Lower Limit (ac-ft/yr)	Final (ft/d)	Upper Limit (ft/d)	Lower Limit (ft/d)
Natural Recharge - High	12,133.7	1905 - 2098	3707.7	5321.7	349.0	8.37E-04	1.20E-03	7.87E-05
Natural Recharge - Low	17,240.0	1905 - 2098	55.8	103.3	8.3	8.86E-06	1.64E-05	1.31E-06
Natural Recharge Total	**29,373.7**	**1905 - 2098**	**3763.5**	**5425.0**	**357.2**			
Evaporation Pond - West	106.3	1905 - 1997[1]	1847.0	6369.1	445.8	4.76E-02	1.64E-01	1.15E-02
Evaporation Pond - East	249.6	1905 - 1997	1256.2	14955.1	299.1	1.38E-02	1.64E-01	3.28E-03
Evaporation Pond Total	**355.9**	**1905 - 1997[1]**	**3103.3**	**21324.2**	**744.9**			
Warren Ranch Irrigation Area - West	1,178.7	1905 - 1987	1059.4	1059.4	53.7	2.46E-03	2.46E-03	1.25E-04
Warren Ranch Irrigation Area - East	1,057.6	1905 - 1987	76.0	329.5	63.4	1.97E-04	8.53E-04	1.64E-04
Warren Ranch Irrigation Area Total	**2,236.3**	**1905 - 1987**	**1135.4**	**1388.9**	**117.0**			
Warren WWTF Pond	7.4	1931 - 2098[2]	159.6	177.4	63.8	5.91E-02	6.56E-02	2.36E-02
TVI Golf Course - Original	19.8	1931 - 2098	33.2	49.8	16.6	4.59E-03	6.89E-03	2.30E-03
TVI Golf Course - Expansion	19.8	1998 - 2098	33.2	49.8	16.6	4.59E-03	6.89E-03	2.30E-03
Naco, Sonora, WWTF	19.8	1962 - 2098	158.5	268.1	158.5	2.19E-02	3.71E-02	2.19E-02
El Oasis Irrigation Area	306.4	1962 - 2098	315.4	804.1	268.0	2.82E-03	7.19E-03	2.40E-03

Notes:

ac-ft/yr = acre-feet per year

ft/d = feet per day

[1]Rate of Evaporation Pond-West reduced to 0.419 ft/d from 1988 to 1997

[2]Rate of Warren WWTF Pond only 14.37 ft/d from 1931 to 1954

TABLE 9
Precipitation Data for Bisbee-Naco Area

Year	January	February	March	April	May	June	July	August	September	October	November	December
1893	0.03	0.88	2.05	0	0.52	0	5.2	4.15	1.71	0.05	0	0.2
1894	0.61	1.25	1.87	0	0	0	1.63	8.73	0.39	1.47	z	1.31
1895	1.2	0.08	0	0.2	0.23	0.1	2.02	4.7	2.44	1.12	2.23	0.48
1896	0.55	1.04	0.27	0.23	0	0.45	2.8	3.1	2.35	7.82	0.4	0.36
1897	2.5	0.35	0.1	0	0.05	0.18	7.36	2.95	3.14	0.52	0	0.44
1898	2.57	0.26	1.94	0.47	0	1.91	8.86	3.84	2.11	0	1.01	2.9
1899	0.52	0.51	0.4	0	0	0.25	4.83	4.77	2.85	1.69	0.16	0.06
1900	0.54	1.41	2.23	0.97	0	0	1.12	1.38	6.54	0	1.31	0.28
1901	1.72	2.57	0.88	0.12	0.17	0	3.11	2.97	0.94	2.56	0.59	0.1
1902	0.68	0	0.29	0	0.4	0.3	0.54	5.17	1.64	z	1.55	1.85
1903	0.3	1.17	1.71	0	0.43	0.6	1.2	6.28	0.3	z	z	z
1904	0.12	0.4	0	0	1.12	0.22	2.59	5.77	0.43	1.34	0.16	1.33
1905	1.12	5.71	5.26	4.04	0	z	z	z	z	z	z	z
1906	1.36	2.29	1.11	0.05	0.01	0.02	4.86	2.75	0.74	0.44	1.23	5.1
1907	5.36	1.38	0.48	1.03	1.67	0	4.62	4.97	1.19	0.96	2.93	0
1908	1.09	2.11	0.24	0.4	0.23	0	4.51	8.17	1.9	0	0.45	1.79
1909	0.21	1.18	1.52	0	0	0.78	5.66	9.59	0.65	0	0.23	1.5
1910	0.26	0.15	0.07	0.07	0	0.54	5.72	3.22	1.84	0.24	0.61	0.13
1911	1.42	3.7	0.6	0.9	0.02	2.18	2.38	3.56	3.32	3.37	0.1	1.57
1912	0.03	1.2	2.32	0.59	0.06	0.53	5.34	10.15	z	0.3	0.22	0.52
1913	0.62	5.05	0	0.1	0.2	z	z	z	z	z	z	0.54
1914	0.75	0.81	1.6	0	0	0.36	3.81	4.78	2.16	3.43	1.58	7.4
1915	2.52	1.35	2.17	0.46	0	0	6.64	1.4	1.55	0	1.85	1.95
1916	3.42	0.45	1.29	1.19	z	z	6.67	4.78	0.22	0.76	z	0.5
1917	0.53	0.55	z	0.23	1.07	0.14	4.56	6.2	3.99	0	0	0
1918	1.77	1.41	0.12	0	0.1	0.46	3.18	2.03	0.1	0.63	1.9	1.95
1919	0.46	1.31	0.34	1.99	0.54	0.41	7.86	3.01	4.02	1.69	5.2	0.03
1920	2.66	0.89	1.42	0.79	0.38	0.52	2.69	2.14	0.6	0.64	0.16	0.29
1921	0.38	1.21	0.7	0.08	0	0.63	8.48	3.78	0.49	1.05	0.57	0.59
1922	0.92	0.14	0.67	0.27	0.1	1.87	4.61	7.4	1.22	0.51	1.46	0.38
1923	0.05	1.64	0.83	1.43	0	0.04	4.4	3.7	2.77	0.19	2.81	6.34
1924	0.03	0.08	2.78	0.43	0.05	0.46	5.8	2.27	0.44	0	0.08	1.2
1925	0.3	0.06	0.1	0.09	0.27	6.34	4.13	3.54	1.25	1.97	1.06	1.41
1926	0.86	1.2	3.17	2.78	0.73	0.04	3.94	1.68	9.05	1.46	0	2.55
1927	0	0.69	0.87	0	0	0.72	6.31	5.82	3.85	0.67	0.32	2
1928	0	0.97	0	0.04	0.67	0	2.55	7.5	0.06	2.39	0.39	0.56

TABLE 9
Precipitation Data for Bisbee-Naco Area

Year	January	February	March	April	May	June	July	August	September	October	November	December
1929	1.24	1.46	0.18	0	0	0.7	5.69	5.53	1.29	1.7	0.4	0.87
1930	1.39	0.89	1.88	0.19	0.54	1.18	7.06	5.3	1.14	0.65	2.2	0.9
1931	0.92	5.57	0.28	1.16	0.28	1.65	2.32	7.99	5.52	0.33	2.27	1.23
1932	1.89	1.23	0.2	0.09	0	0.79	4.4	5.99	0.06	0.58	0	2.09
1933	1.98	1.79	0	0.04	0	0.77	3.23	2	5.1	2.45	0.97	0.01
1934	0.38	0.71	0.5	0.12	0.13	0.43	4.37	5.46	0.83	0.58	0.71	2.78
1935	0.54	2.07	0.49	0.01	0.58	0.13	1.43	5.68	1.88	0	2.37	1.46
1936	0.46	0.84	0.66	0.02	0.01	0.77	3.08	1.12	3.67	0.42	1.47	1.28
1937	1.2	0.29	0.57	0	0.01	0.23	3.02	5.8	3.39	2.83	0.04	0.41
1938	0.93	0.81	1.15	0.45	0.07	1.35	6.37	5.36	1.84	0.11	0	2.46
1939	1.28	1.36	0.43	0.32	0	0.01	4.32	4.69	4.03	0.73	1.56	0.68
1940	1.32	3.09	0.18	0.13	0.51	2.04	2.42	3.56	2.61	0.45	0.72	2.94
1941	1.55	2.01	0.92	1.58	0.38	0.42	1.16	4.09	2.46	0.87	0.09	2.3
1942	0.68	2.37	0.53	1.29	0	0	2.52	2.45	2.99	0.91	0	1.91
1943	1.2	0	0.68	0	0.16	2.54	2.92	7.24	3.34	0.56	0.06	0.82
1944	1.24	1.18	1.77	0.7	0	0.01	4.03	2.4	3.56	1.98	0.95	1.4
1945	1.29	0.16	2.69	0.14	0	0	3.67	3.87	0.11	1.09	0	0.42
1946	3.66	0.05	0.6	0.16	0	1.11	3.44	3.57	2.32	0.99	0.46	0.89
1947	0.92	0.08	0.32	0.14	0.69	0.54	3.29	2.57	0	0.17	0.93	0.82
1948	0.07	1.28	0.2	0.03	0	0	1.29	4.75	3.35	0.68	0	1.95
1949	4.8	1.79	0.06	0	0	0.14	6.94	2.28	1.2	0.52	0.01	2.16
1950	0.98	1.22	0.46	0	0	2.52	4.18	1.68	0.48	0	0	0
1951	1.48	0.76	0.34	1.53	0.09	0	1.89	4.01	1.09	1.61	1.14	1.61
1952	0.41	0.07	2.92	3.12	0.01	2.08	1.14	4.86	0.42	0	1.49	1.17
1953	0.06	0.64	2.4	0.05	0	0.1	5.41	2.37	0	0.08	0.16	0.17
1954	1.02	0.37	0.73	0.02	0.29	0.41	4.9	5.81	1.62	1.22	0	0.02
1955	2.37	0.44	0.93	0	0.06	0.55	8.31	6.07	0.23	0.42	0.24	0.53
1956	0.89	0.21	0	0.19	0	0.94	5.35	2.58	0.24	0.4	0.06	0.18
1957	2.45	0.09	1.94	0.03	1.32	1.33	4.11	5.59	0.78	1.45	0.68	0.53
1958	0.06	1.59	2.9	1.05	0	0.53	3.44	6.29	3.43	1.4	0.65	0
1959	0	1.12	0.01	0.25	0	1.95	3.71	7.96	0.05	1.49	1.73	1.71
1960	3.33	0.35	0.16	0	0.07	0.12	3.11	3.8	1.29	2.37	0	0.42
1961	0.86	0.05	0.02	z	z	0.39	2.58	4.06	1.49	1.42	0.36	2.49
1962	1.76	0.16	1.31	0.11	0	0.42	2.29	0.69	1.55	0.06	1.59	1.39
1963	0.79	0.47	0.26	0.08	0.03	0.04	3.6	3.7	1.45	0.72	z	0.48
1964	0.32	z	z	0.13	0	0	4.76	2.94	2.73	0.63	0.82	0.2

TABLE 9
Precipitation Data for Bisbee-Naco Area

Year	January	February	March	April	May	June	July	August	September	October	November	December
1965	1.48	z	z	z	z	z	6.12	z	z	z	z	z
1966	z	z	z	z	0	0.37	5.81	4.15	2.62	0.08	0.22	0.23
1967	0	0.4	0.2	0.1	0.26	0.96	5.39	1.73	4.36	z	z	4.71
1968	0.81	2.34	1.76	0.53	0	0.07	3.72	z	0.4	0.23	0.68	0.72
1969	0.68	0.37	0.13	0	0.63	0.02	4.76	5.09	0.57	0	0.55	0.75
1970	0	0.04	1.07	0.41	0.07	0.23	1.92	6.46	2.03	0	0.13	0.49
1971	0	0.68	0	0.91	0.04	0.06	5.08	4.91	1.39	1.96	0.4	0.94
1972	0.04	0	0	0	0.85	1.24	3.08	3.16	2.63	2.92	0.75	0.82
1973	0.76	2.01	1.61	0	0.41	0.42	5.04	0.94	0.06	0	0.34	0
1974	1.5	0	0.05	0	0	0	6.51	5.78	0.63	3.04	0.4	0.07
1975	1.21	0.24	0.69	0.37	0	0	3.81	3.6	3.45	0.02	0.78	0.24
1976	0.27	0.76	0.2	0.43	0.3	0.25	5.61	4.51	1.33	z	1.14	1.23
1977	1.89	0	0	0.16	0	0.43	4.22	2.82	1.12	5.81	0.23	0.64
1978	2.43	2.32	1.98	0.02	0.24	0	4.03	3.13	0.89	2.04	1.94	z
1979	z	0	0	z	z	z	3.1	3.01	0.25	0	0	0.84
1980	0.55	1.83	0.15	z	z	0.37	0.48	0.6	0.22	0	0	z
1981	0.16	0.54	2.08	0.13	0.12	1.48	4.55	0.46	0.98	1.2	1.26	0
1982	z	z	0.41	0	1.32	0.02	2.33	5.94	3.21	0	1.2	4.07
1983	2.36	2.12	3.03	0.71	0	0	2.13	2.6	4.1	1.87	0.52	0.66
1984	2.09	0	0	1.08	0.23	2.1	z	8.89	0.53	2.12	1.42	4.4
1985	2.2	1.21	1.03	1.86	0	0.42	3.77	2.92	5	4.17	2.82	0.37
1986	0.2	2.41	2.23	0	0.12	1.74	8.83	8.9	0.85	0.68	1.03	3.64
1987	1.09	2.11	0.55	3.56	0.34	1.92	3.08	5.02	3.01	0.62	0.21	3.75
1988	2.19	0.42	0.44	1.86	0.02	0.46	4.4	3.86	3.22	3.77	0.94	1.01
1989	1.58	0.18	0.77	0.02	0.86	0	6.21	4.74	0.35	1.28	0.17	0.33
1990	1.49	1.1	0.49	0.18	0.14	0.71	8.11	6.71	2.4	1.52	1.51	2.63
1991	2.1	3.43	2.54	0	0.05	0.44	3.72	3.29	2.81	0.35	1.22	4.49
1992	2.8	1.25	2.01	0.31	z	z	z	z	z	z	z	z
1993	z	z	z	z	z	z	z	z	z	z	z	z
1994	z	z	z	z	z	z	z	z	z	z	z	z
1995	z	z	z	z	z	z	z	z	z	z	z	z
1996	z	z	z	z	z	z	z	z	z	z	z	z
1997	z	z	z	z	z	z	0.63	3.48	z	0.74	1.39	3.56
1998	0.1	3.03	0.83	0.01	0	0.25	4.4	1.77	0.75	0.44	0.94	0.52
1999	0	0	0	0.2	0	0.17	4.58	4.71	2.29	0	0	0
2000	0.05	0	0.42	0	0	2.93	2.75	6.73	0	8.71	2.06	0

TABLE 9
Precipitation Data for Bisbee-Naco Area

Year	January	February	March	April	May	June	July	August	September	October	November	December
2001	1.35	0.62	0.42	1.83	0.16	0.63	5.09	3.87	0.31	0.49	0.08	1.07
2002	0.46	1.3	0	0	0.01	0	3.91	5.67	0.58	0.6	0.28	1.54
2003	0.16	1.64	0.5	0	0.25	0.05	2.43	2.01	1.23	0.56	0.71	0.09
2004	2.4	0.93	1.3	1.87	0.08	0.39	1.52	1.92	2.87	0.6	0.94	1.15
2005	2.76	2.43	0.04	0.15	1.01	z	2.98	5.24	1.18	0.2	z	0.22
2006	0	0.32	0.73	z	z	z	z	z	z	z	z	0.38
2007	z	0.42	z	0.18	0	2.13	6.49	3	0.9	0.71	z	1.33
2008	0.19	z	z	z	0.26	0.21	z	4.72	2.5	0.12	0.24	z
Average	1.13	1.12	0.91	0.47	0.21	0.65	4.12	4.31	1.86	1.13	0.81	1.29
Maximum	5.36	5.71	5.26	4.04	1.67	6.34	8.86	10.15	9.05	8.71	5.20	7.40
Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.48	0.46	0.00	0.00	0.00	0.00

Average Annual	**18.0**

Notes:

All precipitation values in inches

z = 26 days or more of missing data. Month not included in statistics

Source: Western Regional Climate Center Summaries for the following stations:

Bisbee (020768) - January 1893 to May 1961; May 1982 to February 1985

Bisbee (020773) - June 1961 to April 1982; May 1992 to December 1997

Bisbee (020775) - March 1985 to April 1992; July 1992 to December 2008

TABLE 10
Discharge Rate and Sulfate Concentration of Effluent Released to Greenbush Draw from the San Jose Wastewater Treatment Facility

Period	Discharge Rate			Effluent Concentration	
	Total (MGD)	Average (MGD)	Maximum (MGD)	Sample Date	Sulfate (mg/L)
July 2006				07/27/06	56.0
October 2006	11.426	0.369	0.469	10/11/06	29.8
November 2006	12.612	0.420	0.630		
December 2006	11.997	0.387	0.859		
4th Quarter 2006	**36.035**	**0.392**	**0.859**		
January 2007	10.539	0.340	0.502	01/18/07	53.0
February 2007	8.731	0.312	0.376		
March 2007	12.187	0.393	0.798		
April 2007	10.663	0.355	0.6	04/11/07	41.6
May 2007	11.629	0.375	0.439		
June 2007	12.64	0.421	0.508		
July 2007	16.024	0.517	1	07/30/07	62.5
August 2007	20.108	0.649	1.246		
September 2007	13.671	0.456	0.523		
October 2007	12.946	0.418	0.494	10/30/07	35.4
November 2007	12.514	0.417	0.531		
December 2007	12.642	0.408	0.529		
2007	**154.294**	**0.423**	**1.246**		
January 2008	11.733	0.378	0.476		
February 2008	12.193	0.420	0.479		
March 2008	12.241	0.395	0.457		
April 2008	10.555	0.352	0.501		
May 2008	12.696	0.410	0.504		
June 2008	11.022	0.367	0.542		
July 2008	14.203	0.458	0.583		
August 2008	15.202	0.490	0.7		
September 2008	12.157	0.405	0.728		
October 2008	11.997	0.387	0.5		
November 2008	11.319	0.377	0.461		
December 2008	11.687	0.377	0.476		
2008	**147.005**	**0.403**	**0.728**	**Average**	**46.4**

Notes:
Data provided by the City of Bisbee
MGD = million gallons per day
mg/L = milligrams per liter

TABLE 11
WATER QUALITY DATA FOR 2008

Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Temp (deg C)	SC (µS/cm)	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrate/Nitrite as N, dissolved	Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved	Potassium, dissolved	Sodium, dissolved	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Total Alkalinity	Residue, Filterable (TDS) @ 180ºC	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
ANDERSON	613396	03/20/08	7.25	21.1	1176	431	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANDERSON	613396	05/05/08	7.03	21.8	1231	452	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANDERSON	613396	07/14/08	7.11	21.6	1260	472	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANDERSON	613396	10/15/08	7.10	21.3	1252	475	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC-02	616586	01/07/08	-	-	-	14	14	-	2.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC-02	616586	03/03/08	-	-	-	16	16	-	2.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC-02	616586	05/05/08	-	-	-	13.3	15.9	-	2.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC-02	616586	08/12/08	7.01	22.3	630	14.3	17.8	0.2	2.42	2.42	<0.01	66.4	9.1	2.1	20.0	181	5	<2	186	280	255	1.10	4.7	5.0	3.1
AWC-02	616586	10/23/08	7.31	23.1	464	15.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC-03	616585	01/07/08	-	-	-	41	14	-	2.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC-03	616585	03/03/08	-	-	-	38	14	-	2.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC-03	616585	05/05/08	-	-	-	37.3	12.2	-	2.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC-03	616585	08/12/08	7.28	22.4	469	38.8	15.5	0.2	2.28	2.28	<0.01	62.8	8.6	2.1	22.8	156	5	<2	162	290	260	1.12	4.6	4.9	3.2
AWC-03	616585	10/23/08	7.48	21.0	462	41.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC-04	616584	02/04/08	-	-	-	18	40	-	2.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC-04	616584	04/07/08	-	-	-	18	45	-	2.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC-04	616584	06/02/08	-	-	-	14.3	48	-	2.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC-04	616584	08/12/08	7.08	22.5	458	21.6	47.5	0.1	1.94	1.94	<0.01	88.7	11.6	2.6	22.8	206	<2	<2	206	380	328	1.16	6.0	6.4	3.2
AWC-04	616584	10/23/08	6.91	22.2	616	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC-05	590620	02/04/08	-	-	-	13	15	-	1.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC-05	590620	04/07/08	-	-	-	14	14	-	1.94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC-05	590620	06/02/08	-	-	-	14.3	15.6	-	1.86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC-05	590620	08/12/08	6.74	23.3	425	14.9	16.1	0.1	2.02	2.02	<0.01	50.6	6.2	2.2	35.6	164	8	<2	172	280	242	1.16	4.3	4.6	3.4
AWC-05	590620	10/23/08	7.45	21.0	422	15.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BANKS 986	647986	02/27/08	7.53	21.8	980	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BANKS 986	647986	05/12/08	7.40	22.1	1021	65.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BANKS 986	647986	07/21/08	7.43	22.9	1034	82.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BANKS 986	647986	10/13/08	7.28	21.7	980	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BF-01	539783	03/04/08	6.46	21.9	2745	1320	30.4	<0.1	0.92	0.92	<0.01	621.0	100.0	4.5	60.2	610	<2	<2	610	2850	2510	1.14	40.8	42.0	1.4
BF-01	539783	05/23/08	6.41	18.3	2698	1450	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BF-01	539783	08/05/08	6.11	22.4	3095	1330	30	<2	1.09	1.09	<0.01	624	107	4.5	61.3	579	<2	<2	579	2820	2510	1.12	40.4	42.8	2.9
BF-01	539783	11/05/08	6.33	19.9	3027	1490	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA	577927	02/06/08	6.69	22.2	1335	210	105	0.1	6.80	6.80	<0.01	224.0	48.4	12.4	65.9	510	<2	<2	510	980	1000	0.98	18.0	18.4	1.1
BIMA [1]	577927	04/25/08	6.37	23.1	1521	190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA [1]	577927	05/13/08	6.58	22.7	1489	195	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA [1]	577927	06/23/08	6.30	23.3	1572	225	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA DUP	577927	06/23/08	6.30	23.3	1572	196	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA [1]	577927	07/29/08	6.44	23.0	1647	204	101	0.1	7.85	7.85	<0.01	209	46.5	12.2	63.6	456	<2	<2	456	1040	945	1.10	16.8	17.4	1.8
BIMA [1]	577927	08/28/08	M	23.0	1776	256	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA [1]	577927	09/23/08	6.29	23.0	1741	296	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA	577927	10/22/08	6.41	22.3	1801	285	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	02/05/08	7.43	20.2	714	206	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER [1]	633472	04/21/08	7.06	21.9	753	201	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER [1]	633472	05/15/08	7.16	22.2	845	211	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER [1]	633472	06/23/08	6.93	21.5	903	193	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER [1]	633472	07/29/08	7.21	22.2	921	203	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER [1]	633472	08/27/08	7.12	22.1	864	189	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER [1]	633472	09/23/08	7.16	22.3	818	193	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	10/22/08	7.17	21.3	873	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BMO-2008-1G	909474	08/27/08	7.09	24.2	808	107	76.3	0.1	13.5	13.5	<0.01	124	32.2	6.4	35.7	229	9	<2	238	580	588	0.99	10.1	10.6	2.4
BMO-2008-1G	909474	11/11/08	7.00	20.8	721	143	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BMO-2008-3B	909147	07/18/08	7.35	23.9	615	106	24	0.3	3.68	3.72	0.04	64.5	12.0	2.9	53.6	151	3	<2	154	390	373	1.05	6.2	6.6	3.1
BMO-2008-3B	909147	11/04/08	7.36	21.4	599	179	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BMO-2008-3B DUP	909147	11/04/08	7.36	21.4	599	177	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BMO-2008-4B	910096	12/11/08	7.34	22.8	374	9.4	4.3	0.2	0.78	0.78	<0.01	49.2	7.1	1.4	33.4	183	<2	<2	183	240	228	1.05	4.2	4.5	3.4
BMO-2008-5B	909653	09/30/08	7.08	22.0	688	193	15	0.3	2.02	2.02	<0.01	108	17.0	2.8	40.1	155	<2	<2	155	510	478	1.07	7.7	8.6	5.5
BMO-2008-5M	909552	10/02/08	7.13	23.6	551	107	15.1	0.2	1.85	1.85	<0.01	75.8	11.4	2.6	34.1	138	<2	<2	138	390	337	1.16	5.5	6.2	6.0
BMO-2008-6B	909146	07/16/08	7.36	24.1	475	53.3	13	0.4	1.97	1.97	<0.01	59.7	10.2	3.0	26.2	151	9	<2	160	300	274	1.09	4.8	5.0	2.0
BMO-2008-6B	909146	11/04/08	7.41	21.5	398	60.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BMO-2008-6M	909019	07/10/08	-	22.1	702	182	16	0.3	1.98	1.98	<0.01	104	17.9	3.60	32.5	144	9	<2	153	480	460	1.04	7.4	8.1	4.5
BMO-2008-6M	909019	11/04/08	7.33	21.8	621	199	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BMO-2008-7M	908794	07/14/08	7.63	25.2	500	31.4	10.4	0.3	1.55	1.55	<0.01	32.4	11.4	2.70	60.8	188	13	<2	201	290	282	1.03	5.1	5.3	1.9
BMO-2008-7M	908794	11/06/08	7.53	22.6	380	34.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BMO-2008-8B	910097	12/05/08	6.47	20.1	2480	1890	80	0.1	2.91	2.93	0.02	529	195	14.4	46.4	630	<2	<2	630	3080	3150	0.98	54.7	44.9	-9.8
BMO-2008-8M	909711	12/09/08	7.16	23.4	852	197	13	0.3	1.78	1.78	<0.01	89	43.0	5.80	64.9	260			260	640	576	1.11	9.8	11.0	5.8
BMO-2008-9M	909255	08/08/08	7.72	25.7	415	47.3	14	0.10	1.90	1.93	0.03	28.0	17.8	3.4	64.6	193	6	<2	199	320	306	1.05	5.5	5.7	1.8
BMO-2008-9M	909255	11/05/08	7.89	21.4	444	54.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BMO-2008-10GU	909272	08/04/08	6.41	23.6	3660	2210	60	<2	0.13	0.16	<0.01	649	311	15.3	37.6	984	<2	<2	984	3810	3870	0.98	67.8	60.0	-6.1
BMO-2008-10GU	909272	11/05/08	6.15	20.2	3343	1890	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BMO-2008-10GL	909435	08/20/08	6.22	29.5	2924	1320	30.0	<2	<0.02	<0.02	<0.01	579	167	10.5	90.5	870	<2	<2	870	2970	2720	1.09	46.0	46.9	1.0
BMO-2008-10GL	909435	11/05/08	6.47	25.3	2573	1290	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 11
WATER QUALITY DATA FOR 2008

Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Temp (deg C)	SC (µS/cm)	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrate/Nitrite as N, dissolved	Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved	Potassium, dissolved	Sodium, dissolved	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Total Alkalinity	Residue, Filterable (TDS) @ 180ºC	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
BMO-2008-11G	909434	08/22/08	8.02	28.2	359	14.2	2.8	0.2	0.56	0.56	<0.01	10.7	5.1	1.7	64.2	149	14	<2	163	220	205	1.07	3.6	3.8	2.7
BMO-2008-11G	909434	11/12/08	7.96	24.2	257	13.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BMO-2008-13B	909551	10/03/08	6.49	21.6	2180	980	23	<0.2	1.92	1.92	<0.01	420	79.8	6.8	53.0	347	<2	<2	347	2040	1780	1.15	28.3	30.1	3.1
BMO-2008-13M	909760	12/03/08	7.73	24.1	1463	494	20	0.7	0.02	0.02	<0.01	35.1	13.2	3.4	286	259	3	<2	262	970	1010	0.96	16.2	15.5	-2.2
BURKE	212268	02/07/08	7.17	23.0	411	29.5	31.8	0.3	1.83	1.83	<0.01	62.3	22.8	2.8	26.0	212	<2	<2	212	360	311	1.16	5.9	6.2	2.5
BURKE	212268	04/22/08	7.13	27.0	423	26	11	0.2	2.88	2.88	<0.01	52.1	22.0	2.3	16.9	191	<2	<2	191	260	-	-	-	-	-
BURKE	212268	08/05/08	7.06	26.8	496	21.9	10	0.2	2.81	2.85	<0.01	52.5	22.3	2.3	16.1	187	<2	<2	187	260	250	1.04	4.6	5.2	6.1
BURKE	212268	10/20/08	7.57	26.0	466	20.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CAMPBELL	215509	02/05/08	7.87	18.3	823	211	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHAMBERS	629807	03/06/08	7.73	17.8	408	7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHAMBERS	629807	05/05/08	7.15	22.1	421	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHAMBERS	629807	07/14/08	7.43	23.2	434	5.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHAMBERS	629807	10/15/08	7.41	22.5	420	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB MW-1	903992	02/22/08	6.93	21.2	1401	720	19.8	0.3	2.33	2.33	<0.01	257.0	64.5	7.7	56.5	206	11	<2	217	1360	1270	1.07	20.2	20.8	1.5
COB MW-1	903992	05/20/08	6.88	22.0	2050	980	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB MW-1	903992	07/30/08	6.88	21.7	1780	730	19.8	0.1	2.50	2.50	<0.01	273	69.3	8.0	58.9	223	<2	<2	223	1500	1300	1.15	20.5	22.1	3.8
COB MW-1	903992	10/23/08	6.95	21.2	1690	750	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB MW-2	903984	02/22/08	7.28	20.2	417	41	19.4	0.3	6.49	6.49	<0.01	66.4	9.0	2.1	25.5	156	12	<2	168	340	298	1.14	5.2	5.2	0
COB MW-2	903984	05/20/08	7.32	21.2	490	40.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB MW-2	903984	07/30/08	7.34	20.8	511	37.6	19.9	<0.1	6.80	6.80	<0.01	66.3	9.0	2.1	26.6	158	<2	<2	158	330	286	1.15	4.9	5.2	3.0
COB MW-2	903984	10/23/08	7.36	20.3	498	34.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB MW-3	906823	02/28/08	7.39	21.0	416	57.8	16.2	0.2	2.0	2.0	<0.01	62.2	8.9	2.2	25.5	159	<2	<2	159	300	277	1.08	5.0	5.0	0.0
COB MW-3	906823	05/20/08	7.56	22.3	473	35.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB MW-3	906823	07/30/08	7.64	22.3	541	67.3	16.1	0.2	2.41	2.41	<0.01	66.1	9.2	2.4	26.5	149	<2	<2	149	320	288	1.11	5.0	5.2	2.0
COB MW-3	906823	10/23/08	7.43	20.8	507	76.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB WL	593116	02/22/08	6.99	20.6	919	90	106	0.3	3.91	3.91	<0.01	128	34.3	7.2	47.8	269	11	<2	280	650	603	1.08	10.8	11.5	3.1
COB WL	593116	05/20/08	7.30	21.9	1053	98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB WL	593116	07/30/08	7.17	22.0	1098	97.1	110	0.1	4.02	4.02	<0.01	130	35.0	7.5	51.5	274	<2	<2	274	700	613	1.14	10.9	11.8	4.0
COB WL	593116	10/23/08	7.23	21.4	1075	104	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COLLINS	565260	02/12/08	6.88	21.6	1470	520	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COLLINS	565260	05/29/08	7.01	22.0	1459	520	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COLLINS	565260	07/31/08	6.86	21.6	1502	536	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COLLINS	565260	10/20/08	8.44	24.7	1510	518	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COOPER	623564	02/14/08	7.02	20.8	371	33	17.5	0.3	2.82	2.82	<0.01	47.9	13.8	2.2	25.3	154	9	<2	163	270	254	1.06	4.6	4.7	1.1
COOPER	623564	05/14/08	8.08	22.1	419	34.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COOPER	623564	07/31/08	7.81	28.4	455	33.7	16.9	0.2	2.68	2.68	<0.01	48.9	13.3	2.1	24.6	150	7	<2	157	260	249	1.04	4.5	4.6	1.1
COOPER	623564	10/20/08	8.44	24.7	448	31.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COOPER C	637069	03/20/08	6.93	21.3	2081	990	49	<0.1	3.09	3.10	0.01	393	59.8	6.0	45.0	229	<2	<2	229	1810	1690	1.07	27.0	26.7	0.6
COOPER C	637069	05/05/08	6.78	22.4	2139	990	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COOPER C	637069	07/15/08	6.86	22.3	2162	1040	46.5	<0.1	3.24	3.24	<0.01	386	58.8	5.8	43.3	235	<2	<2	235	1860	1740	1.07	28.1	26.2	-3.5
COOPER C DUP	637069	07/15/08	6.86	22.3	2162	960	46.4	0.1	3.25	3.25	<0.01	398	61.7	6.1	46.2	234	<2	<2	234	1860	1670	1.11	26.4	27.2	1.5
COOPER C	637069	10/16/08	6.80	21.4	2078	1020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DODSON	644927	02/20/08	7.61	17.3	857	54	129	0.3	10.70	10.70	<0.01	111	37.5	12.3	41.2	252	14	<2	266	590	598	0.99	10.8	10.8	0
DODSON	644927	05/12/08	7.11	21.1	1118	34.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DODSON	644927	07/24/08	7.25	21.6	1233	49.3	160	0.2	13.1	13.1	<0.01	124	43.3	13.7	51.3	223	12	<2	235	740	646	1.15	11.2	12.4	5.1
DODSON	644927	10/13/08	7.15	20.5	1095	56.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EAST	599796	02/08/08	7.45	19.9	423	10.6	31.2	0.4	6.3	6.3	<0.01	59.9	24.3	2.5	31.6	227	<2	<2	227	320	325	0.98	6.1	6.4	2.4
EAST	599796	05/14/08	7.31	20.9	595	14.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EAST	599796	07/23/08	7.34	20.8	605	11.8	33.3	0.4	6.10	6.10	<0.01	59.5	24.4	2.4	31.4	217	6	<2	223	350	326	1.07	6.0	6.4	3.2
EAST	599796	10/14/08	7.33	20.3	531	8.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EN-02	NA	10/21/08	7.24	22.5	361	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EN-03	NA	10/21/08	7.39	23.9	346	8.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EN-05	NA	10/21/08	7.43	22.4	391	6.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EN-06	NA	10/21/08	7.35	22.5	349	9.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPPELE 641	805641	03/11/08	7.98	21.4	646	21.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPPELE 641	805641	05/12/08	7.21	21.7	667	24.7	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPPELE 641	805641	07/21/08	7.49	23.9	605	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPPELE 641	805641	10/14/08	7.56	20.4	642	21.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRANCO	500101	02/06/08	7.47	19.6	1301	670	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRANCO	500101	05/05/08	6.93	23.1	1557	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRANCO	500101	07/14/08	7.00	22.7	1586	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRANCO	500101	10/15/08	7.20	20.5	1560	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ	212447	02/27/08	6.76	21.1	1827	152	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ [1]	212447	04/21/08	6.74	22.0	1739	137	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ [1]	212447	05/14/08	6.88	22.3	1532	131	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ [1]	212447	06/23/08	6.74	22.0	1788	111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ [1]	212447	07/29/08	6.74	22.2	1989	152	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ [1]	212447	08/28/08	M	21.6	1889	137	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ [1]	212447	09/23/08	6.82	21.9	1821	137	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ	212447	10/22/08	6.80	21.4	1940	145	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GALLANT	502527	02/11/08	7.46	20.2	604	17.9	12.7	0.2	3.0	3.04	<0.01	106	15.9	4.3	25.6	344	<2	<2	344	400	402	1.00	7.8	7.8	0
GALLANT	502527	07/23/08	7.26	21.2	925	20.9	56.9	0.1	19.2	19.2	<0.01	138	19.8	4.8	29.6	303	<2	<2	303	560	537	1.04	9.4	9.9	2.6
GARNER 557	558557	02/21/08	6.70	20.9	822	123	14.3	0.2	1.70	1.70	<0.01	62.2	10.2	2.5	58.1	171	13	<2	184	420	394	1.07	6.7	6.5	-1.5

TABLE 11
WATER QUALITY DATA FOR 2008

Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Temp (deg C)	SC (µS/cm)	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrate/Nitrite as N, dissolved	Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved	Potassium, dissolved	Sodium, dissolved	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Total Alkalinity	Residue, Filterable (TDS) @ 180ºC	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
GARNER 635	587635	02/04/08	7.61	22.7	479	37.8	13.7	0.2	1.68	1.69	0.01	39.2	8.2	2.8	65.0	182	<2	<2	182	290	284	1.02	4.9	5.5	5.8
GARNER 635	587635	05/05/08	7.26	24.9	468	35.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GARNER 635	587635	07/15/08	7.63	25.6	480	37.4	13.5	0.2	1.92	1.92	<0.01	37.6	7.8	2.5	60.2	163	16	<2	179	300	281	1.07	4.0	5.2	4.0
GARNER 635	587635	10/15/08	7.65	24.1	472	36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GGOOSE 547	628547	05/21/08	7.08	22.7	856	199	37.1	0.1	7.14	7.14	<0.01	113	32.9	5.5	25.6	194	<2	<2	194	600	561	1.07	9.6	9.6	0
GGOOSE 547	628547	08/15/08	7.02	24.8	915	178	35.4	0.1	8.90	8.90	<0.01	117	32.4	5.6	25.4	187	<2	<2	187	590	545	1.08	9.1	9.7	3.2
GGOOSE 547	628547	10/29/08	7.27	22.6	897	216	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GL-03	539782	03/04/08	7.43	25.7	417	20.3	20.3	<0.1	0.75	0.77	0.02	46.7	22.8	2.6	18.7	192	<2	<2	192	260	250	1.04	4.8	5.1	3.0
GL-03	539782	05/22/08	7.06	25.3	647	43.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GL-03	539782	08/04/08	7.10	26.8	673	36.1	21.4	<0.1	0.60	0.62	0.02	68.7	38.9	3.4	19.5	278	<2	<2	278	400	358	1.12	6.9	7.5	4.2
GL-03	539782	11/12/08	7.21	25.2	478	34.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOBAN	805290	02/27/08	6.93	22.1	1359	510	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOBAN	805290	05/07/08	6.88	22.3	1532	670	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOBAN	805290	07/14/08	6.88	23.1	1719	690	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOBAN	805290	10/16/08	6.98	22.4	1624	692	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOWARD	NR	03/04/08	7.06	20.4	1280	571	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOWARD	NR	05/08/08	6.95	21.0	1494	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOWARD	NR	07/14/08	7.00	21.1	1566	610	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOWARD	NR	10/15/08	7.00	20.6	1598	683	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KEEFER	209744	02/06/08	7.70	19.0	378	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KEEFER	209744	05/06/08	7.19	20.3	512	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KEEFER	209744	07/16/08	7.21	21.4	539	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KEEFER	209744	10/28/08	7.32	20.1	534	21.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MCCONNELL 265	539265	02/20/08	7.21	21.1	1435	720	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MCCONNELL 265	539265	05/06/08	6.77	21.6	1668	737	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MCCONNELL 265	539265	07/15/08	6.91	22.3	1775	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MCCONNELL 265	539265	10/15/08	6.82	21.3	1686	703	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
METZLER	35-71891	03/05/08	7.27	21.6	1055	317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
METZLER	35-71891	05/15/08	7.12	22.8	1051	329	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
METZLER	35-71891	07/31/08	7.16	22.5	1078	317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
METZLER	35-71891	10/20/08	7.24	22.2	1080	305	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
METZLER DUP	35-71891	10/20/08	7.24	22.2	1080	326	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOORE	538847	02/20/08	7.69	22.2	362	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOORE	538847	05/08/08	7.09	22.4	432	7.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOORE	538847	07/16/08	7.34	23.0	482	9.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOORE	538847	10/29/08	7.32	22.4	452	19.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NESS	509127	07/24/08	7.35	26.5	563	50.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NESS	509127	10/16/08	7.47	21.4	542	48.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NOTEMAN	212483	02/05/08	6.70	19.9	1317	310	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NOTEMAN	212483	05/13/08	6.67	23.0	1445	272	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NOTEMAN	212483	07/24/08	6.68	24.2	1539	274	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NOTEMAN	212483	10/23/08	6.57	23.2	1643	356	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NSD-02	527587	02/05/08	-	-	-	43	52.5	0.201	<1.0	-	<0.01	-	-	-	-	-	-	-	-	388	-	-	-	-	-
NSD-02	527587	07/07/08	8.02	21.0	609	44	42	0.0431	0.641	-	0.007	-	-	-	-	-	-	-	-	369	-	-	-	-	-
NSD-03	527586	02/05/08	-	-	-	70.7	14.1	0.186	3.2	-	<0.010	-	-	-	-	-	-	-	-	396	-	-	-	-	-
NSD-03	527586	07/07/08	7.64	21.0	570	58.9	11.6	0.041	3.20	-	0.011	-	-	-	-	-	-	-	-	372	-	-	-	-	-
NWC-02	562944	10/27/08	7.47	22.2	438	5.1	20.7	0.1	2.74	2.74	<0.01	63.6	8.3	1.1	20.2	176	<2	<2	176	280	237	1.18	4.4	4.7	3.3
NWC-03	203321	03/04/08	-	-	-	560	30	-	4.64	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NWC-03	203321	06/09/08	-	-	-	524	-	-	4.75	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NWC-03	203321	10/27/08	7.07	21.9	1374	489	30	<0.1	4.41	4.41	<0.01	222	34.1	3.5	47.2	181	<2	<2	181	1010	954	1.06	15.10	16.1	3.20
NWC-04	551849	03/04/08	-	-	-	240	41	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NWC-04	551849	06/09/08	-	-	-	231	41.9	-	6.25	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NWC-04	551849	10/27/08	7.32	25.0	856	162	41.4	0.1	6.54	6.54	<0.01	91.5	36.7	6.2	41.5	182	<2	<2	182	540	518	1.04	8.6	9.5	5.0
NWC-06	575700	03/04/08	-	-	-	7.9	13	-	1.71	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NWC-06	575700	06/09/08	-	-	-	7.2	12.9	-	1.78	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NWC-06	575700	10/27/08	7.35	23.3	414	6.4	13.4	0.2	1.86	1.86	<0.01	54.5	7.4	1.4	26.4	173	<2	<2	173	260	222	1.17	4.1	4.5	4.7
OSBORN	643436	02/25/08	7.35	22.4	508	16.4	18.2	0.3	3.76	3.76	<0.01	84.4	15.4	4.3	25.2	246	29	<2	275	370	357	1.04	6.6	6.7	0.8
OSBORN	643436	05/13/08	7.22	22.2	576	17.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OSBORN	643436	07/22/08	7.24	22.9	618	17.7	19.7	0.4	4.4	4.4	<0.01	80.3	15.0	4.2	24.7	252	29	<2	281	350	362	0.97	6.8	6.4	-3.0
OSBORN DUP	643436	07/22/08	7.24	22.9	618	17.5	19.6	0.3	4.7	4.7	<0.01	80.9	15.1	4.2	25.0	250	31	<2	281	350	364	0.96	6.8	6.4	-3.0
OSBORN	643436	10/16/08	7.39	22.4	595	15.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PALMER	578819	02/14/08	7.91	17.5	435	15.9	11.3	0.4	2.13	2.13	<0.01	31.9	27.1	5.4	50.1	235	15	< 2	251	300	308	0.97	5.8	6.1	2.5
PALMER	578819	05/13/08	7.92	22.9	508	16.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PALMER	578819	07/22/08	7.64	25.8	548	16.2	11.3	0.4	2.34	2.34	<0.01	30	25.4	5.1	47.9	226	39	<2	265	300	321	0.93	6.1	5.8	-2.5
PALMER	578819	10/16/08	7.61	17.0	527	15.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PANAGAKOS	35-76413	04/21/08	6.80	20.5	1228	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PANAGAKOS	35-76413	07/21/08	6.95	21.9	1390	444	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PANAGAKOS	35-76413	10/13/08	6.86	21.2	1386	480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PANAGAKOS DUP	35-76413	10/13/08	6.86	21.2	1386	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PARRA	576415	02/11/08	7.08	21.8	1067	360	33.4	0.1	4.17	< 0.04	<0.01	178	50.4	4.4	31.6	177	<2	<2	177	880	783	1.12	12.3	14.5	8.2
PARRA	576415	05/15/08	7.10	21.8	1200	405	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PARRA	576415	07/31/08	7.00	22.4	1248	423	33.5	<0.1	4.23	4.23	<0.01	181	49.8	4.5	32.4	213	<2	<2	213	930	871	1.07	14.4	14.7	1.0
PARRA DUP	576415	07/31/08	7.00	22.4	1248	404	33.5	<0.1	4.33	4.33	<0.01	177	48.5	4.3	30.9	212	<2	<2	212	920	845	1.09	14.0	14.3	1.1
PARRA	576415	10/20/08	7.07	22.9	1246	387	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 11
WATER QUALITY DATA FOR 2008

Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Temp (deg C)	SC (µS/cm)	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrate/Nitrite as N, dissolved	Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved	Potassium, dissolved	Sodium, dissolved	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Total Alkalinity	Residue, Filterable (TDS) @ 180ºC	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
PIONKE	613395	02/06/08	7.53	19.9	910	394	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIONKE	613395	05/07/08	7.08	21.4	1100	391	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIONKE	613395	07/17/08	6.99	21.9	1209	420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIONKE	613395	10/27/08	7.03	20.8	1175	460	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
POOL	509518	02/20/08	7.95	20.9	497	134	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
POOL	509518	05/19/08	7.40	22.2	585	122	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
POOL	509518	07/31/08	7.47	22.3	599	117	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
POOL	509518	10/21/08	7.51	21.4	598	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
POWER	624535	02/12/08	7.11	18.9	428	15.5	6.1	0.1	7.00	7.00	<0.01	95	7.6	3.8	7.4	242	<2	< 2	242	310	312	0.99	5.8	5.8	0.0
POWER	624535	07/22/08	7.10	21.7	795	20.2	37.8	<0.1	24.1	24.1	<0.01	124	11.0	3.8	13.6	222	29	<2	251	550	479	1.15	8.2	7.8	-2.5
RAMIREZ	216425	02/04/08	7.47	21.7	408	7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAMIREZ	216425	05/06/08	7.19	22.7	405	8.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAMIREZ	216425	07/17/08	7.32	24.5	439	8.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAMIREZ	216425	10/27/08	7.41	22.2	412	7.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY	803772	02/15/08	7.30	19.1	1540	159	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY [1]	803772	04/21/08	6.92	21.3	1418	125	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY [1]	803772	05/13/08	7.05	20.9	1418	123	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY [1]	803772	06/23/08	6.87	21.1	1593	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY [1]	803772	07/29/08	6.98	21.8	1411	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY [1]	803772	08/28/08	M	21.1	1519	129	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY [1]	803772	09/23/08	6.90	22.2	1519	125	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY	803772	10/22/08	6.96	20.8	1604	145	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS 803	641803	02/07/08	7.45	18.6	601	138	13.2	0.2	4.69	4.71	0.02	94	11.7	3.0	26.6	148	<2	<2	148	410	383	1.07	6.3	6.9	4.5
ROGERS 803 [1]	641803	04/21/08	7.32	21.4	552	128	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS 803 [1]	641803	05/08/08	7.14	21.2	622	141	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS 803 [1]	641803	06/23/08	7.06	22.9	660	129	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS 803 [1]	641803	07/29/08	6.78	23.1	339	134	13.1	0.2	4.3	4.3	<0.01	92.5	12.6	3.3	28.7	149	<2	<2	149	430	393	1.09	6.4	7.0	4.5
ROGERS 803 [1]	641803	08/28/08	7.18	21.6	635	128																			
ROGERS 803 [1]	641803	09/23/08	7.24	21.9	599	133	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS 803	641803	10/22/08	7.36	21.3	650	144	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS E	216018	02/04/08	7.40	21.0	435	4.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS E	216018	05/07/08	7.18	22.2	415	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS E	216018	07/17/08	7.28	23.0	446	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS E	216018	10/27/08	7.38	21.4	434	15.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RUIZ	531770	02/05/08	7.73	18.2	445	263	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RUIZ	531770	05/15/08	7.23	25.9	965	265	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RUIZ	531770	07/30/08	6.99	22.1	999	243	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RUIZ	531770	10/20/08	7.04	22.0	995	238	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	02/08/08	7.52	21.5	506	158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ [1]	210865	04/21/08	7.23	21.7	563	122	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ [1]	210865	05/19/08	7.38	22.4	629	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ [1]	210865	06/23/08	7.02	22.1	674	129	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ [1]	210865	07/29/08	7.25	22.4	955	245	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ [1]	210865	08/28/08	M	22.3	669	131	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ [1]	210865	09/23/08	7.27	22.2	607	124	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ [1]	210865	10/22/08	7.31	22.0	653	135	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ [1]	210865	11/19/08	7.38	21.1	612	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ [1]	210865	12/17/08	6.78	21.6	472	144	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SRC	211345	04/23/08	7.57	25.8	380	19	10	0.2	3.61	3.61	<0.01	25.8	16.3	2.1	48.2	174	<2	<2	174	230	-	-	-	-	-
SRC	211345	08/05/08	7.40	27.2	452	15.4	10.4	0.2	3.74	3.74	<0.01	26.8	17.8	2.0	44.6	173	<2	<2	173	250	238	1.05	4.3	4.8	5.5
SWAN	NR	02/13/08	7.28	20.7	467	24.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWAN	NR	05/14/08	7.24	21.2	479	23.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWAN	NR	07/24/08	7.35	22.4	506	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWAN	NR	10/16/08	7.32	20.7	488	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-02A	522574	03/04/08	8.67	22.6	302	12.3	8.6	0.3	<0.02	0.02	0.02	12.6	5.8	2.2	58.0	146	9	<2	155	190	196	0.97	3.6	3.7	1.4
TM-02A	522574	05/23/08	7.75	22.9	321	14.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-02A	522574	08/15/08	7.84	26.4	369	14.4	8.2	0.2	0.3	0.3	<0.01	14.7	5.2	2.4	60.2	143	8	<2	151	190	200	0.95	3.5	3.8	4.1
TM-02A	522574	10/30/08	8.07	23.9	375	21.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-03	522575	05/20/08	7.51	22.2	778	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-03	522575	08/06/08	7.08	21.6	828	97	40.7	0.2	7.68	7.68	<0.01	94.3	36.6	3.5	27.8	221	<2	<2	221	510	467	1.09	8.1	9.0	5.3
TM-03	522575	11/12/08	7.47	20.5	590	128	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-06 MILLER	522695	02/27/08	7.44	19.6	457	13.9	7.1	0.3	0.96	0.96	<0.01	42.2	19.0	1.7	54.3	218	<2	<2	218	310	274	1.13	4.9	6.1	10.9
TM-06 MILLER	522695	05/20/08	7.50	20.7	506	32.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-06 MILLER	522695	08/04/08	7.41	20.7	529	31.3	18.0	0.7	0.89	0.89	<0.01	37.8	19.5	1.9	52.1	210	<2	<2	210	300	291	1.03	5.4	5.8	3.6
TM-06 MILLER	522695	10/29/08	7.55	20.2	531	34.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-07	522576	03/06/08	7.54	20.8	726	22.5	9	0.2	3.04	3.04	<0.01	49	15.8	2.0	22.6	133	9	<2	142	220	223	0.10	3.7	4.7	11.9
TM-07	522576	05/22/08	6.96	20.1	385	22.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-07	522576	08/06/08	7.04	22.8	519	22.2	8.9	0.2	2.52	2.52	<0.01	45.8	14.7	1.9	20.5	157	<2	<2	159	240	220	1.09	4.0	4.4	4.8
TM-07	522576	11/04/08	7.76	20.6	347	31.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-08 SWAN	522817	02/13/08	7.63	25.2	511	12.6	32.1	0.3	5.3	5.3	<0.01	43.4	21.4	4.9	35.5	204	<2	< 2	204	310	296	1.1	5.6	5.6	0
TM-08 SWAN	522817	05/14/08	7.44	24.4	480	12.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-08 SWAN	522817	07/23/08	7.76	28.1	522	12.6	14.8	0.3	2.86	2.86	<0.01	<0.02	<0.02	1.1	128	204	11	<2	215	310	303	1.02	5.2	5.6	3.7
TM-14 NELSON	522816	02/08/08	7.64	21.6	319	32.9	12.5	0.3	1.82	1.82	<0.01	56.1	10.0	2.8	23.6	166	<2	<2	166	250	246	1.02	4.5	4.7	2.2

Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Temp (deg C)	SC (µS/cm)	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrate/Nitrite as N, dissolved	Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved	Potassium, dissolved	Sodium, dissolved	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Total Alkalinity	Residue, Filterable (TDS) @ 180ºC	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
TM-15 MILLER	522699	02/27/08	7.66	21.9	344	14	7.1	0.4	1.56	1.56	<0.01	32.9	18.0	2.0	32.4	181	2	<2	183	220	224	0.98	4.2	4.6	4.5
TM-15 MILLER	522699	05/23/08	7.54	22.1	371	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-15 MILLER	522699	08/05/08	7.42	23.3	413	13.7	7.0	0.3	1.99	1.99	<0.01	29.8	18.9	2.0	32.0	173	<2	<2	174	210	216	0.97	4.1	4.5	4.7
TM-15 MILLER	522699	10/28/08	7.63	22.6	387	18.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-15 MILLER DUP	522699	10/28/08	7.63	22.6	387	18.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-16	522578	03/05/08	7.17	20.6	1351	497	28.9	<0.1	6.80	6.90	<0.01	225	51.7	13.4	30.7	205	<2	<2	205	1030	1000	1.03	15.8	17.2	4.2
TM-16	522578	05/22/08	7.05	20.5	1304	522	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-16	522578	08/06/08	6.67	20.9	1410	466	28.1	<0.1	8.07	8.07	<0.01	215	52.7	13.3	30.0	191	<2	<2	191	1070	955	1.12	15.0	16.7	5.4
TM-16	522578	11/05/08	7.14	19.8	1162	547	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-19A	522581	03/06/08	8.02	22.2	240	56.1	15.4	0.1	0.26	0.26	<0.01	37.9	11.6	3.0	57.7	119	19	<2	138	280	273	1.03	4.3	5.4	11.3
TM-19A	522581	05/22/08	7.36	24.0	501	64.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-19A	522581	08/06/08	7.32	22.6	494	55.3	15.4	0.1	0.09	0.09	<0.01	37.3	10.8	2.9	53.0	153	5	<2	158	270	272	0.99	4.7	5.1	4.1
TM-19A	522581	11/18/08	7.79	24.3	365	66.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-42	562554	03/05/08	7.10	20.8	1342	482	27	0.2	6.55	6.55	<0.01	185	55.8	10.4	37.9	186	<2	<2	186	980	939	1.04	15.1	15.8	2.3
TM-42	562554	05/22/08	7.05	21.4	1270	483	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-42	562554	08/06/08	6.69	22.0	1388	467	27.3	0.2	7.20	7.20	<0.01	191	60.7	10.1	38.7	208	<2	<2	208	1010	952	1.04	15.3	16.5	3.8
TM-42	562554	11/06/08	6.90	21.0	1025	477	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-43	564729	03/03/08	8.57	21.0	341	2.1	7.7	0.3	0.04	0.04	<0.01	10.1	5.7	2.2	79.4	197	20	<2	217	250	246	1.02	4.6	4.5	-1.1
TM-43	564729	08/04/08	8.14	25.7	436	<5	12.0	<1	0.25	0.25	<0.01	10.4	5.8	2.0	79.7	174	12	<2	186	270	227	1.19	4.0	4.5	5.9
TM-43A	564726	03/03/08	6.17	19.9	2788	1420	31	<0.2	0.99	0.99	<0.01	570	181	4.5	42.1	713	<2	<2	713	3000	2680	1.19	45.0	45.0	0.3
TM-43A	564726	08/04/08	6.03	21.6	3149	1320	30.0	<0.2	1.31	1.31	<0.01	577	188	4.7	40.5	658	<2	<2	658	2950	2560	1.15	41.8	46.2	5.0
TM-43B	565004	03/03/08	6.79	20.6	514	0.7	5	<0.1	0.05	0.06	0.01	54.6	23.8	2.9	47.9	338	<2	<2	338	350	338	1.04	6.9	6.8	-0.7
TM-43B	565004	08/05/08	6.89	21.0	507	31.8	4.7	<0.1	0.03	0.03	<0.01	47.5	21.5	2.6	44.9	231	<2	<2	231	300	292	1.03	5.4	6.1	6.1
TM-43B DUP	565004	08/05/08	6.89	21.0	507	32.5	4.7	<0.1	0.11	0.11	<0.01	47.9	21.7	2.5	44.9	234	<2	<2	234	310	295	1.05	5.5	6.2	6.0
TVI 236	802236	03/20/08	7.48	20.0	488	31.3	26	0.1	3.90	3.93	0.03	70.5	9.3	1.9	25.6	178	<2	<2	178	310	289	1.07	5.2	5.4	1.9
TVI 236	802236	05/07/08	7.13	20.4	494	32.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TVI 236	802236	07/15/08	7.39	21.9	532	37.6	23.5	0.2	3.46	3.46	<0.01	70.4	9.3	1.8	26.3	161	11	<2	173	310	292	1.06	5.1	5.4	2.9
TVI 236	802236	10/15/08	7.45	22.3	490	36.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TVI 875	568875	02/21/08	7.28	21.1	739	244	20.1	0.2	2.99	2.99	<0.01	120	16.1	2.9	41.1	161	11	<2	172	630	565	1.12	9.3	9.2	-0.5
TVI 875	568875	05/07/08	7.09	21.2	833	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TVI 875	568875	07/15/08	7.27	22.4	925	274	20.2	0.2	3.0	3.0	<0.01	131	17.4	2.8	39.6	148	11	<2	160	640.0	598	1.07	9.7	9.7	0
TVI 875	568875	10/15/08	7.26	22.1	878	245	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UN-02	NA	10/14/08	7.63	22.6	356	6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UN-03	NA	10/14/08	7.59	22.1	356	6.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UN-04	NA	10/14/08	7.39	21.4	376	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UN-05	NA	10/14/08	7.44	22.8	351	6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WALKER	200393	02/13/08	7.05	20.2	650	20	4	0.2	2.26	2.26	<0.01	117	14.4	3.6	14.3	355	<2	<2	355	440	396	1.11	7.8	7.7	-0.6
WALKER	200393	07/23/08	7.25	20.7	740	45.4	37.8	0.3	7.24	7.24	<0.01	89	27.9	2.9	28.6	250	7	<2	257	450	421	1.07	7.6	8.0	2.6
WEED	544535	02/14/08	7.74	21.7	323	11.1	9	-	1.72	1.72	<0.02	35.6	14.5	2.2	30.0	162	5	<2	168	230	212	1.08	3.9	4.3	4.9
WEED	544535	05/15/08	7.22	22.7	365	12.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WEED	544535	07/30/08	7.42	32.0	407	11.5	10.1	0.3	1.92	1.92	<0.01	34.1	13.6	2.2	29.4	163	2	<2	165	230	209	1.10	3.9	4.1	2.5
WEED	544535	10/20/08	8.10	31.6	405	10.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WEISKOPF	641802	02/15/08	7.48	20.0	1072	500	33.1	0.2	4.74	4.74	<0.01	218	31.4	4.3	35.7	177	<2	<2	177	1010	950	1.06	15.3	15.2	-0.3
WEISKOPF	641802	05/07/08	7.10	21.8	1251	483	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WEISKOPF	641802	07/16/08	7.07	22.2	1399	560	26.0	0.1	4.29	4.29	<0.01	248	34.3	4.4	38.6	170	3	<2	173	1060	1040	1.0	16.3	17.0	2.1
WEISKOPF	641802	10/28/08	6.98	20.8	1401	602	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZANDER	205126	02/04/08	7.24	19.7	392	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZANDER	205126	05/06/08	7.26	21.2	404	6.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZANDER	205126	07/16/08	6.92	22.9	441	6.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZANDER	205126	10/28/08	7.40	21.2	415	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

All units are in milligrams per liter (mg/L) unless otherwise noted
deg C = degrees Celsius
meq/L = milliequivalent per liter
EN = Ejido Naco, Sonora, Mexico
M = pH Meter Malfunction
NA = Not Applicable
NR = No Record
- = Not Analyzed
ND = No Data
SC = Specific Conductance
SU = Standard Units
TDS = Total Dissolved Solids
UN = Urbano Naco, Sonora, Mexico
µS/cm = microsiemens per centimeter
[1] *Verified drinking water supply well, sample collected for sulfate trend analysis for interim action evaluation*

TABLE 12
Water Level Data for 2008

Well Name	ADWR 55 Registry No.	UTM North	UTM East	Date	Measuring Point Elevation[1] (ft amsl)	Depth To Water (feet)	Groundwater Elevation (ft amsl)
ANDERSON	613396	3468816.065	601134.729	03/20/08	4580.34	145.46	4434.88
ANDERSON	613396	3468816.065	601134.729	05/05/08	4580.34	145.84	4434.50
ANDERSON	613396	3468816.065	601134.729	07/14/08	4580.34	146.16	4434.18
ANDERSON	613396	3468816.065	601134.729	10/15/08	4580.34	146.21	4434.13
AWC-02[2]	616586	3468549.357	598907.911	04/08/08	4547.64	116	4431.64
AWC-02	616586	3468549.357	598907.911	08/27/08	4547.64	121.12	4426.52
AWC-02[3]	616586	3468549.357	598907.911	October-08	4547.64	115	4432.64
AWC-03[2]	616585	3468681.898	599090.322	04/08/08	4539.52	112	4427.52
AWC-03	616585	3468681.898	599090.322	08/27/08	4539.52	119.40	4420.12
AWC-03[3]	616585	3468681.898	599090.322	October-08	4539.52	106	4433.52
AWC-04[2]	616584	3468717.084	598949.929	04/08/08	4540.48	108	4432.48
AWC-04	616584	3468717.084	598949.929	08/18/08	4540.48	112.56	4427.92
AWC-04[3]	616584	3468717.084	598949.929	October-08	4540.48	111.31	4429.17
AWC-05[2]	590620	3468541.692	599269.904	04/08/08	4542.51	284	4258.51
AWC-05	590620	3468541.692	599269.904	08/27/08	4542.51	299.65	4242.86
AWC-05[3]	590620	3468541.692	599269.904	October-08	4542.51	284	4258.51
BANKS 987	647987	3469206.175	606981.921	02/27/08	4648.18	208.00	4440.18
BANKS 987	647987	3469206.175	606981.921	05/12/08	4648.18	216.30	4431.88
BANKS 987	647987	3469206.175	606981.921	07/21/08	4648.18	228.95	4419.23
BANKS 987	647987	3469206.175	606981.921	10/13/08	4648.18	228.20	4419.98
BARTON 010	085010	3469047.469	606201.084	05/12/08	4688.95	227.50	4461.45
BARTON 010	085010	3469047.469	606201.084	07/23/08	4688.95	276.06	4412.89
BARTON 010	085010	3469047.469	606201.084	10/16/08	4688.95	Dry	<4372
BARTON 919	644919	3469076.689	606243.850	05/12/08	4692.36	113.71	4578.65
BARTON 919	644919	3469076.689	606243.850	07/23/08	4692.36	113.56	4578.80
BARTON 919	644919	3469076.689	606243.850	10/16/08	4692.36	113.20	4579.16
BF-01	539783	3472151.593	604169.077	03/04/08	4835.23	348.99	4486.24
BF-01	539783	3472151.593	604169.077	05/23/08	4835.23	348.80	4486.43
BF-01	539783	3472151.593	604169.077	08/05/08	4835.23	348.66	4486.57
BF-01	539783	3472151.593	604169.077	11/05/08	4835.23	348.94	4486.29
BIMA	577927	3471852.804	606001.245	05/13/08	4802.05	367.31	4434.74
BIMA	577927	3471852.804	606001.245	08/18/08	4802.05	370.24	4431.81
BIMA	577927	3471852.804	606001.245	10/23/08	4802.05	353.96	4448.09
BLOMMER	633472	3471529.090	602725.876	10/22/08	4753.69	300.78	4452.91
BMO-2008-1G	909474	3471723.644	606467.681	08/27/08	4805.10	62.05	4743.05
BMO-2008-1G	909474	3471723.644	606467.681	11/11/08	4805.10	60.95	4744.15
BMO-2008-3B	909147	3467919.582	602012.923	07/18/08	4583.97	138.05	4445.92
BMO-2008-3B	909147	3467919.582	602012.923	11/04/08	4583.97	137.95	4446.02
BMO-2008-4B	910096	3468383.430	601099.405	12/11/08	4573.17	130.77	4442.40
BMO-2008-5B	909653	3468994.715	600438.159	09/30/08	4585.10	145.10	4440.00
BMO-2008-5M	909552	3468994.282	600445.071	10/02/08	4585.02	146.65	4438.37
BMO-2008-6B	909146	3469820.644	600366.523	07/16/08	4627.44	190.13	4437.31
BMO-2008-6B	909146	3469820.644	600366.523	11/04/08	4627.44	190.23	4437.21
BMO-2008-6M	909019	3469813.885	600367.943	07/10/08	4626.90	191.63	4435.27
BMO-2008-6M	909019	3469813.885	600367.943	11/04/08	4626.90	190.25	4436.65
BMO-2008-7M	908794	3470029.283	603099.165	07/14/08	4688.33	238.31	4450.02
BMO-2008-7M	908794	3470029.283	603099.165	11/06/08	4688.33	239.69	4448.64
BMO-2008-8B	910097	3471141.719	604171.347	12/05/08	4753.25	297.94	4455.31
BMO-2008-8M	909711	3471127.902	604167.912	12/09/08	4752.45	299.79	4452.66
BMO-2008-9M	909255	3471121.675	604668.669	08/08/08	4762.61	287.17	4475.44
BMO-2008-9M	909255	3471121.675	604668.669	11/05/08	4762.61	287.65	4474.96
BMO-2008-10GU	909272	3471731.866	605267.551	08/04/08	4793.45	299.28	4494.17
BMO-2008-10GU	909272	3471731.866	605267.551	11/05/08	4793.45	295.89	4497.56
BMO-2008-10GL	909435	3471702.043	605264.072	08/20/08	4792.21	521.75	4270.46
BMO-2008-10GL	909435	3471702.043	605264.072	11/05/08	4792.21	520.50	4271.71
BMO-2008-11G	909434	3472626.482	603800.995	08/22/08	4844.67	577.76	4266.91
BMO-2008-11G	909434	3472626.482	603800.995	11/12/08	4844.67	576.80	4267.87
BMO-2008-13B	909551	3470076.358	601657.612	10/03/08	4649.21	206.42	4442.79
BMO-2008-13M	909760	3470040.455	601650.495	12/03/08	4647.15	206.00	4441.15
BURKE	212268	3473029.816	602230.087	04/22/08	4856.30	606.55	4249.75
BURKE	212268	3473029.816	602230.087	08/05/08	4856.30	605.86	4250.44
BURKE	212268	3473029.816	602230.087	10/28/08	4856.30	604.88	4251.42
CAMPBELL	215509	3469320.340	606420.836	02/05/08	4694.29	180.60	4513.69
CAMPBELL	215509	3469320.340	606420.836	05/13/08	4694.29	181.80	4512.49
CAMPBELL	215509	3469320.340	606420.836	10/16/08	4694.29	200.00	4494.29
COB MW-1	903992	3469889.889	603153.259	02/22/08	4683.26	232.47	4450.79
COB MW-1	903992	3469889.889	603153.259	05/20/08	4683.26	233.12	4450.14
COB MW-1	903992	3469889.889	603153.259	07/30/08	4683.26	233.37	4449.89
COB MW-1	903992	3469889.889	603153.259	10/23/08	4683.26	233.62	4449.64

TABLE 12
Water Level Data for 2008

Well Name	ADWR 55 Registry No.	UTM North	UTM East	Date	Measuring Point Elevation[1] (ft amsl)	Depth To Water (feet)	Groundwater Elevation (ft amsl)
COB MW-2	903984	3468114.836	600973.257	02/22/08	4566.21	122.85	4443.36
COB MW-2	903984	3468114.836	600973.257	05/20/08	4566.21	123.00	4443.21
COB MW-2	903984	3468114.836	600973.257	07/30/08	4566.21	123.53	4442.68
COB MW-2	903984	3468114.836	600973.257	10/23/08	4566.21	124.02	4442.19
COB MW-3	906823	3468726.000	599169.225	02/28/08	4538.63	120.84	4417.79
COB MW-3	906823	3468726.000	599169.225	05/20/08	4538.63	125.00	4413.63
COB MW-3	906823	3468726.000	599169.225	07/30/08	4538.63	118.50	4420.13
COB MW-3	906823	3468726.000	599169.225	10/23/08	4538.63	117.93	4420.70
COB WL	593116	3472502.012	606357.506	02/22/08	4832.06	56.50	4775.56
COB WL	593116	3472502.012	606357.506	05/20/08	4832.06	57.50	4774.56
COB WL	593116	3472502.012	606357.506	07/30/08	4832.06	58.64	4773.42
COB WL	593116	3472502.012	606357.506	10/23/08	4832.06	58.76	4773.30
COLLINS	565260	3471341.335	602551.286	02/12/08	4733.72	289.47	4444.25
COLLINS	565260	3471341.335	602551.286	05/29/08	4733.72	288.53	4445.19
COLLINS	565260	3471341.335	602551.286	07/31/08	4733.72	290.08	4443.64
COLLINS	565260	3471341.335	602551.286	10/20/08	4733.72	290.15	4443.57
COOPER C	637069	3468913.011	601349.987	03/04/08	4595.06	155.08	4439.98
COOPER C	637069	3468913.011	601349.987	05/05/08	4595.06	155.34	4439.72
COOPER C	637069	3468913.011	601349.987	07/15/08	4595.06	156.01	4439.05
COOPER C	637069	3468913.011	601349.987	10/16/08	4595.06	155.85	4439.21
DODSON	644927	3469063.772	605594.560	05/12/08	4686.34	81.38	4604.96
DODSON	644927	3469063.772	605594.560	07/24/08	4686.34	82.20	4604.14
DODSON	644927	3469063.772	605594.560	10/13/08	4686.34	81.82	4604.52
DOUGLASS 791	592791	3470222.677	607632.993	02/13/08	4703.27	22.11	4681.16
DOUGLASS 791	592791	3470222.677	607632.993	05/13/08	4703.27	24.60	4678.67
DOUGLASS 791	592791	3470222.677	607632.993	07/22/08	4703.27	27.00	4676.27
DOUGLASS 791	592791	3470222.677	607632.993	10/16/08	4703.27	23.60	4679.67
DOUGLASS 792	592792	3469829.115	607607.541	02/13/08	4681.73	87.76	4593.97
DOUGLASS 792	592792	3469829.115	607607.541	05/13/08	4681.73	87.21	4594.52
DOUGLASS 792	592792	3469829.115	607607.541	07/22/08	4681.73	86.90	4594.83
DOUGLASS 792	592792	3469829.115	607607.541	10/16/08	4681.73	86.45	4595.28
EAST	599796	3468712.215	607076.365	02/08/08	4626.01	50.20	4575.81
EAST	599796	3468712.215	607076.365	05/14/08	4626.01	52.45	4573.56
EAST	599796	3468712.215	607076.365	07/23/08	4626.01	52.16	4573.85
EAST	599796	3468712.215	607076.365	10/14/08	4626.01	52.19	4573.82
EPPELE 641	805641	3469229.942	607165.354	03/11/08	4642.86	29.52	4613.34
EPPELE 641	805641	3469229.942	607165.354	05/12/08	4642.86	30.64	4612.22
EPPELE 641	805641	3469229.942	607165.354	07/21/08	4642.86	25.59	4617.27
EPPELE 641	805641	3469229.942	607165.354	10/14/08	4642.86	24.53	4618.33
FULTZ	212447	3469063.892	607153.306	10/22/08	4642.92	40.59	4602.33
GALLANT	502527	3468524.363	607769.640	02/11/08	4599.58	28.32	4571.26
GALLANT	502527	3468524.363	607769.640	07/23/08	4599.58	33.05	4566.53
GALLANT	502527	3468524.363	607769.640	10/16/08	4599.58	30.70	4568.88
GARNER 557	558557	3468962.415	602659.240	02/21/08	4626.44	191.05	4435.39
GARNER 557	558557	3468962.415	602659.240	05/05/08	4626.44	191.28	4435.16
GARNER 557	558557	3468962.415	602659.240	07/15/08	4626.44	191.44	4435.00
GARNER 557	558557	3468962.415	602659.240	10/16/08	4626.44	191.83	4434.61
GARNER 635	587635	3468967.902	602665.352	02/04/08	4628.29	193.20	4435.09
GARNER 635	587635	3468967.902	602665.352	05/05/08	4628.29	195.90	4432.39
GARNER 635	587635	3468967.902	602665.352	07/15/08	4628.29	193.58	4434.71
GARNER 635	587635	3468967.902	602665.352	10/15/08	4628.29	194.35	4433.94
GGOOSE 547	628547	3469820.260	606256.657	05/21/08	4717.11	220.91	4496.20
GGOOSE 547	628547	3469820.260	606256.657	08/15/08	4717.11	238.48	4478.63
GGOOSE 547	628547	3469820.260	606256.657	10/29/08	4717.11	235.90	4481.21
GL-03	539782	3473747.953	604386.940	05/22/08	4924.31	660.15	4264.16
GL-03	539782	3473747.953	604386.940	08/04/08	4924.31	659.79	4264.52
GL-03	539782	3473747.953	604386.940	12/02/08	4924.31	658.25	4266.06
GOAR RANCH	610695	3468892.471	602454.751	02/21/08	4631.13	183.90	4447.23
GOAR RANCH	610695	3468892.471	602454.751	05/05/08	4631.13	188.11	4443.02
GOAR RANCH	610695	3468892.471	602454.751	07/16/08	4631.13	184.41	4446.72
GOAR RANCH	610695	3468892.471	602454.751	10/22/08	4631.13	184.68	4446.45
HOBAN	805290	3468880.329	601705.848	02/27/08	4597.21	163.05	4434.16
HOBAN	805290	3468880.329	601705.848	05/07/08	4597.21	163.28	4433.93
HOBAN	805290	3468880.329	601705.848	07/14/08	4597.21	163.87	4433.34
HOBAN	805290	3468880.329	601705.848	10/16/08	4597.21	163.95	4433.26
HOWARD	NR	3468768.622	601281.936	03/04/08	4589.70	150.10	4439.60
HOWARD	NR	3468768.622	601281.936	05/08/08	4589.70	150.70	4439.00
HOWARD	NR	3468768.622	601281.936	07/14/08	4589.70	150.91	4438.79
HOWARD	NR	3468768.622	601281.936	10/15/08	4589.70	151.12	4438.58
KEEFER	209744	3468119.015	599879.175	02/06/08	4572.03	134.67	4437.36
KEEFER	209744	3468119.015	599879.175	05/06/08	4572.03	135.28	4436.75
KEEFER	209744	3468119.015	599879.175	07/16/08	4572.03	136.24	4435.79
KEEFER	209744	3468119.015	599879.175	10/28/08	4572.03	135.87	4436.16

TABLE 12
Water Level Data for 2008

Well Name	ADWR 55 Registry No.	UTM North	UTM East	Date	Measuring Point Elevation[1] (ft amsl)	Depth To Water (feet)	Groundwater Elevation (ft amsl)
MCCONNELL 265	539265	3468840.139	601463.094	02/20/08	4600.70	156.15	4444.55
MCCONNELL 265	539265	3468840.139	601463.094	05/06/08	4600.70	156.40	4444.30
MCCONNELL 265	539265	3468840.139	601463.094	07/15/08	4600.70	157.07	4443.63
MCCONNELL 265	539265	3468840.139	601463.094	11/19/08	4600.70	157.17	4443.53
METZLER	35-71891	3471381.176	602091.308	03/05/08	4728.53	288.30	4440.23
METZLER	35-71891	3471381.176	602091.308	05/15/08	4728.53	286.53	4442.00
METZLER	35-71891	3471381.176	602091.308	07/31/08	4728.53	286.82	4441.71
METZLER	35-71891	3471381.176	602091.308	10/20/08	4728.53	287.09	4441.44
MINOR 317	633317	3468568.043	601172.150	02/12/08	4578.86	135.30	4443.56
NESS	509127	3471419.494	607866.391	07/24/08	4761.23	557.90	4203.33
NESS	509127	3471419.494	607866.391	10/16/08	4761.23	549.30	4211.93
NOTEMAN	212483	3471576.400	606053.800	05/13/08	4800.68	339.77	4460.91
NOTEMAN	212483	3471576.400	606053.800	08/27/08	4800.68	344.34	4456.34
NOTEMAN	212483	3471576.400	606053.800	11/22/08	4800.68	322.26	4478.42
NWC-02	562944	3467816.969	600347.933	10/27/08	4600.06	160.51	4439.55
NWC-03	203321	3468350.838	601153.857	11/03/08	4574.99	131.48	4443.51
NWC-04	551849	3469071.959	605829.808	12/02/08	4690.77	352.11	4338.66
OSBORN	643436	3470270.548	607031.823	05/13/08	4711.95	68.65	4643.30
OSBORN	643436	3470270.548	607031.823	08/05/08	4711.95	69.53	4642.42
OSBORN	643436	3470270.548	607031.823	10/16/08	4711.95	69.83	4642.12
PARRA	576415	3471263.549	602170.716	05/15/08	4727.21	279.78	4447.43
PARRA	576415	3471263.549	602170.716	08/18/08	4727.21	280.06	4447.15
PARRA	576415	3471263.549	602170.716	11/03/08	4727.21	280.39	4446.82
PIONKE	613395	3468960.981	601045.471	07/17/08	4592.13	149.88	4442.25
PIONKE	613395	3468960.981	601045.471	11/03/08	4592.13	150.99	4441.14
POOL	509518	3470013.823	599683.603	02/20/08	4639.09	204.22	4434.87
POOL	509518	3470013.823	599683.603	05/19/08	4639.09	204.72	4434.37
POOL	509518	3470013.823	599683.603	07/31/08	4639.09	205.56	4433.53
POOL	509518	3470013.823	599683.603	10/21/08	4639.09	205.06	4434.03
POWER	624535	3472738.941	608379.424	02/12/08	4840.37	42.30	4798.07
POWER	624535	3472738.941	608379.424	07/22/08	4840.37	42.82	4797.55
POWER	624535	3472738.941	608379.424	10/21/08	4840.37	32.66	4807.71
RAMIREZ	216425	3467584.363	599730.649	10/27/08	4596.61	159.45	4437.16
RAY	803772	3469195.147	607083.422	02/15/08	4647.91	40.85	4607.06
RAY	803772	3469195.147	607083.422	05/13/08	4647.91	43.82	4604.09
RAY	803772	3469195.147	607083.422	07/29/08	4647.91	45.25	4602.66
RAY	803772	3469195.147	607083.422	10/22/08	4647.91	44.54	4603.37
ROGERS E	216018	3467636.029	600449.648	07/17/08	4590.66	149.65	4441.01
ROGERS E	216018	3467636.029	600449.648	11/03/08	4590.66	150.15	4440.51
ROGERS 803	641803	3468417.386	600977.690	02/07/08	4579.02	129.85	4449.17
ROGERS 803	641803	3468417.386	600977.690	07/29/08	4579.02	131.86	4447.16
ROGERS 803	641803	3468417.386	600977.690	10/22/08	4579.02	132.08	4446.94
RUIZ	531770	3471424.219	602857.357	02/05/08	4735.18	293.29	4441.89
RUIZ	531770	3471424.219	602857.357	05/15/08	4735.18	293.57	4441.61
RUIZ	531770	3471424.219	602857.357	07/30/08	4735.18	293.86	4441.32
RUIZ	531770	3471424.219	602857.357	10/20/08	4735.18	294.18	4441.00
SCHWARTZ	210865	3468268.057	600811.529	02/08/08	4551.58	121.80	4429.78
SCHWARTZ	210865	3468268.057	600811.529	05/19/08	4551.58	123.49	4428.09
SCHWARTZ	210865	3468268.057	600811.529	07/29/08	4551.58	122.64	4428.94
SCHWARTZ	210865	3468268.057	600811.529	10/22/08	4551.58	123.39	4428.19
SRC	211345	3472505.400	599723.300	04/23/08	4807.37	541.10	4266.27
SRC	211345	3472505.400	599723.300	08/05/08	4807.37	543.70	4263.67
SRC	211345	3472505.400	599723.300	10/16/08	4807.37	545.15	4262.22
STEPHENS	808560	3469072.799	606981.766	05/13/08	4651.22	44.94	4606.28
STEPHENS	808560	3469072.799	606981.766	08/05/08	4651.22	46.61	4604.61
STEPHENS	808560	3469072.799	606981.766	10/16/08	4651.22	46.60	4604.62
SUNBELT	201531	3471735.149	605998.250	02/06/08	4806.52	352.10	4454.42
SUNBELT	201531	3471735.149	605998.250	05/15/08	4806.52	358.97	4447.55
SUNBELT	201531	3471735.149	605998.250	08/05/08	4806.52	Dry	<4426
SUNBELT	201531	3471735.149	605998.250	10/16/08	4806.52	347.00	4459.52
SWAN	NR	3470648.298	607378.547	02/13/08	4716.59	26.50	4690.09
SWAN	NR	3470648.298	607378.547	05/14/08	4716.59	30.69	4685.90
SWAN	NR	3470648.298	607378.547	07/24/08	4716.59	32.06	4684.53
SWAN	NR	3470648.298	607378.547	10/16/08	4716.59	27.53	4689.06
TM-02A	522574	3472008.794	604152.059	03/04/08	4808.43	346.62	4461.81
TM-02A	522574	3472008.794	604152.059	05/23/08	4808.43	346.16	4462.27
TM-02A	522574	3472008.794	604152.059	08/15/08	4808.43	353.91	4454.52
TM-02A	522574	3472008.794	604152.059	10/30/08	4808.43	349.45	4458.98
TM-03	522575	3473711.046	606366.130	03/12/08	4897.85	127.14	4770.71
TM-03	522575	3473711.046	606366.130	05/20/08	4897.85	127.40	4770.45
TM-03	522575	3473711.046	606366.130	08/06/08	4897.85	128.02	4769.83
TM-03	522575	3473711.046	606366.130	11/12/08	4897.85	128.00	4769.85
TM-06 MILLER	522695	3468376.658	606055.975	02/26/08	4707.88	158.78	4549.10
TM-06 MILLER	522695	3468376.658	606055.975	05/20/08	4707.88	158.76	4549.12
TM-06 MILLER	522695	3468376.658	606055.975	08/04/08	4707.88	158.80	4549.08
TM-06 MILLER	522695	3468376.658	606055.975	10/29/08	4707.88	158.85	4549.03

TABLE 12
Water Level Data for 2008

Well Name	ADWR 55 Registry No.	UTM North	UTM East	Date	Measuring Point Elevation[1] (ft amsl)	Depth To Water (feet)	Groundwater Elevation (ft amsl)
TM-14 NELSON	522816	3470111.613	599624.302	02/08/08	4643.48	211.79	4431.69
TM-14 NELSON	522816	3470111.613	599624.302	07/16/08	4643.48	Dry	<4433
TM-15 MILLER	522699	3471427.504	599617.331	02/27/08	4729.26	294.90	4434.36
TM-16	522578	3469842.199	605588.075	03/05/08	4717.71	81.00	4636.71
TM-16	522578	3469842.199	605588.075	05/22/08	4717.71	81.24	4636.47
TM-16	522578	3469842.199	605588.075	08/06/08	4717.71	81.65	4636.06
TM-16	522578	3469842.199	605588.075	11/05/08	4717.71	81.75	4635.96
TM-19A	522581	3469197.426	602458.710	03/06/08	4645.87	199.85	4446.02
TM-19A	522581	3469197.426	602458.710	05/22/08	4645.87	199.50	4446.37
TM-19A	522581	3469197.426	602458.710	08/06/08	4645.87	199.19	4446.68
TM-19A	522581	3469197.426	602458.710	11/18/08	4645.87	199.46	4446.41
TM-42	562554	3469104.903	603698.271	03/05/08	4666.67	211.04	4455.63
TM-42	562554	3469104.903	603698.271	05/22/08	4666.67	210.98	4455.69
TM-42	562554	3469104.903	603698.271	08/06/08	4666.67	211.55	4455.12
TM-42	562554	3469104.903	603698.271	11/06/08	4666.67	207.05	4459.62
TM-43	564729	3474670.811	605365.062	03/03/08	4971.44	149.05	4822.39
TM-43	564729	3474670.811	605365.062	08/04/08	4971.44	148.70	4822.74
TM-43	564729	3474670.811	605365.062	10/30/08	4971.44	148.72	4822.72
TM-43A	564726	3474661.168	605358.451	03/03/08	4969.95	133.71	4836.24
TM-43A	564726	3474661.168	605358.451	08/04/08	4969.95	133.71	4836.24
TM-43A	564726	3474661.168	605358.451	10/30/08	4969.95	133.46	4836.49
TM-43B	565004	3474379.892	605814.018	03/03/08	4922.18	64.00	4858.18
TM-43B	565004	3474379.892	605814.018	08/05/08	4922.18	65.21	4856.97
TM-43B	565004	3474379.892	605814.018	10/30/08	4922.18	62.89	4859.29
TVI 236	802236	3467978.431	600552.215	05/07/08	4561.98	123.30	4438.68
TVI 236	802236	3467978.431	600552.215	07/15/08	4561.98	121.55	4440.43
TVI 236	802236	3467978.431	600552.215	10/15/08	4561.98	122.35	4439.63
TVI 713	567713	3468412.946	600729.095	05/07/08	4567.22	127.10	4440.12
TVI 713	567713	3468412.946	600729.095	07/14/08	4567.22	126.30	4440.92
TVI 713	567713	3468412.946	600729.095	10/15/08	4567.22	130.00	4437.22
UN-01	NA	3466349.021	599993.615	10/14/08	4637.47	211.41	4426.06
UN-05	NA	3466050.570	602139.919	10/02/08	4749.51	272.00	4477.51
WALKER	200393	3468577.472	607564.689	02/13/08	4601.55	25.20	4576.35
WALKER	200393	3468577.472	607564.689	07/23/08	4601.55	42.65	4558.90
WALKER	200393	3468577.472	607564.689	10/21/08	4601.55	47.18	4554.37
WEISKOPF	641802	3468658.855	601154.951	02/15/08	4586.89	143.31	4443.58
WEISKOPF	641802	3468658.855	601154.951	05/07/08	4586.89	143.90	4442.99
WEISKOPF	641802	3468658.855	601154.951	07/16/08	4586.89	144.22	4442.67
WEISKOPF	641802	3468658.855	601154.951	10/28/08	4586.89	145.81	4441.08
ZANDER	205126	3467998.486	599678.880	02/04/08	4580.94	144.85	4436.09
ZANDER	205126	3467998.486	599678.880	05/06/08	4580.94	145.33	4435.61
ZANDER	205126	3467998.486	599678.880	07/16/08	4580.94	146.40	4434.54
ZANDER	205126	3467998.486	599678.880	10/28/08	4580.94	146.01	4434.93

Notes:

UTM = Universal Transverse Mercator Zone 12 Band R

ft amsl = feet above mean sea level

NA = Not Applicable

NR = No Record

UN = Urbano Naco, Sonora, Mexico

[1] Survey Source: Hydro Geo Chem, Inc. (measuring point elevation = top of well casing)

[2] Measuring point elevation for third quarter 2008 changed to reflect well survey completed in September 2008

[3] Depth to Water measurement provided by Arizona Water Company

COLLINS = former owner ENGLUND

TABLE 13
BMO-2008 Well Construction Information

Well Name	ADWR 55 Registry No.	UTM Northing NAD 83 (meters)	UTM Easting NAD 83 (meters)	Measuring Point Elevation (NAVD 88 feet)	Drilled Depth (ft bls)	Cased Depth (ft bls)	Casing Diameter (inches)	Screened Interval (ft bls)	Static Water Depth (ft bmp)	Static Water Elevation (NAVD 88 feet)
BMO-2008-1G	909474	3,471,723.644	606,467.681	4,805.10	320	310	5	180-300	62.05	4,743.05
BMO-2008-3B	909147	3,467,919.582	602,012.923	4,583.97	590	260	5	150-250	138.05	4,445.92
BMO-2008-4B	910096	3,468,383.430	601,099.405	4,573.17	660	610	5	500-600	130.77	4,442.40
BMO-2008-5B	909653	3,468,994.395	600,438.375	4,585.10	295	285	5	140-280	145.10	4,440.00
BMO-2008-5M	909552	3,468,993.961	600,445.302	4,585.02	460	450	5	340-440	146.65	4,438.37
BMO-2008-6B	909146	3,469,820.644	600,366.523	4,627.44	270	265	5	195-255	190.13	4,437.31
BMO-2008-6M	909019	3,469,813.885	600,367.943	4,626.90	460	450	5	340-440	191.63	4,435.27
BMO-2008-7M	908794	3,470,029.282	603,099.165	4,688.33	750	670	5	560-660	238.31	4,450.02
BMO-2008-8B	910097	3,471,141.719	604,171.347	4,753.25	492	480	5	370-470	297.94	4,455.31
BMO-2008-8M	909711	3,471,127.902	604,167.912	4,752.45	1,220	1,210	5	1100-1200	299.79	4,452.66
BMO-2008-9M	909255	3,471,121.675	604,668.669	4,762.61	785	775	5	665-765	287.17	4,475.44
BMO-2008-10GU	909272	3,471,731.866	605,267.551	4,793.45	700	449	5	239-439	299.28	4,494.17
BMO-2008-10GL	909435	3,471,702.043	605,264.072	4,792.21	820	810	5	700-800	521.75	4,270.46
BMO-2008-11G	909434	3,472,626.482	603,800.995	4,844.67	820	760	5	650-750	577.76	4,266.91
BMO-2008-13B	909551	3,470,076.358	601,657.612	4,649.21	700	474	5	264-464	206.42	4,442.79
BMO-2008-13M	909760	3,470,040.455	601,650.495	4,647.15	1,100	1,030	5	920-1020	206.00	4,441.15

Note:
ft bls = feet below land surface
ft bmp = feet below measuring point

TABLE 14
Summary of Hydraulic Test Conditions

Well	Rate 1 (gpm)	Duration (minutes)	Rate 2 (gpm)	Duration (minutes)	Rate 3 (gpm)	Duration (minutes)
BMO-2008-1G	3.50	127.0	6.00	482.0	NA	NA
BMO-2008-3B	15.00	62.0	41.00	64.5	62.00	480.0
BMO-2008-4B	21.00	65.0	48.00	78.0	60.50	461.0
BMO-2008-5B	20.00	60.0	43.00	60.0	61.00	480.0
BMO-2008-5M	3.50	60.0	6.00	61.5	8.50	601.5
BMO-2008-6B	1.00	62.0	1.70	64.5	3.90	484.0
BMO-2008-6M	10-24	60.0	42.00	74.0	60.00	367.5
BMO-2008-7M	11.00	61.5	23.00	62.5	34.00	484.0
BMO-2008-8B	15.00	60.5	30.00	64.5	53.00	475.5
BMO-2008-8M	3.00	59.5	8.30	61.2	14.00	479.2
BMO-2008-9M	20.00	60.0	25.00	60.0	38.00	479.5
BMO-2008-10GU	1.40	56.0	2.30	483.0	NA	NA
BMO-2008-10GL	1.10	483.0	2.20	89.0	3.60	62.0
BMO-2008-11G	1.00	118.0	1.70	196.5	4.60	362.0
BMO-2008-13B	8.8-12	60.0	42.50	60.0	58.00	480.0
BMO-2008-13M	1.75	60.0	3.75	420.8	NA	NA
GARNER 635	15.00	357.0	NA	NA	NA	NA
MW-01	11.00	601.0	NA	NA	NA	NA
NWC-03	52.00	20.5	NA	NA	NA	NA
TM-02A	9.00	15.0	NA	NA	NA	NA
TVI 875	380.00	2079	NA	NA	NA	NA

Notes:
NA = not applicable
gpm = gallons per minute

TABLE 15
Hydraulic Properties Estimates Based on 2008 Testing

Pumped Well	Geologic Unit	T (ft^2/day)	S	Kv (ft/day)	Kh (ft/day)	Range in Kh
BMO-2008-1G	Glance Conglomerate	44.9	5.39E-06	5.00E-07	0.23	0.17 - 0.29
BMO-2008-3B	Basin Fill	4,000	6.70E-05	NA	30.8	23.1 - 34.6
BMO-2008-4B	Basin Fill	19,950	4.33E-04	0.9335	39.5	39.4 - 39.6
BMO-2008-5B	Basin Fill	15,400	0.023	3.65	55.0	22.3 - 79.4
BMO-2008-5M	Cintura Fm.	1,238	0.013	2.045	5.4	1.7 - 7.6
BMO-2008-6B	Basin Fill	170	1.04E-04	NA	2.27	2.27
BMO-2008-6M	Cintura Fm.	2,613	1.00E-05	1.00E-06	15.5	15.1 - 16.2
BMO-2008-7M	Morita Fm.	152	0.21	1.83E-01	1.00	0.55 - 1.7
BMO-2008-8B	Basin Fill	3,500	0.010	0.1	17.8	17.8
BMO-2008-8M	Morita Fm.	106	0.30	3.40E-04	0.21	0.15 - 0.30
BMO-2008-9M	Morita Fm.	64	0.13	NA	0.49	0.21 - 0.78
BMO-2008-10GU	Glance Conglomerate	4.92	0.21	NA	0.035	0.035
BMO-2008-10GL	Glance Conglomerate	0.45	0.014	NA	0.0033	0.0033
BMO-2008-11G	Glance Conglomerate	88	5.50E-05	0.010	0.34	0.33 - 0.35
BMO-2008-13B	Basin Fill	7,500	0.010	1	24.0	24
BMO-2008-13M	Mural Limestone	0.661	0.019	1.00E-03	0.0051	0.0051
COB MW-1	Basin Fill	12,198	0.033	1.50E-06	100.9	74.7 - 127.8
NWC-03	Basin Fill	21,000	4.53E-04	3.45	41.6	41.6
GARNER 635	Cintura Fm.	142	1.00E-05	NA	1.18	1.18
TM-02A	Glance Conglomerate	8.9	0.021	NA	0.033	0.020 - 0.045
TVI 875	Basin Fill	24,900	2.42E-02	0.685	49.30	43.3 - 57.1

Notes:

T = Transmissivity

S = Storage coefficient

K_V = Vertical hydraulic conductivity

Kh = horizontal hydraulic conductivity

Fm. = Formation

ft/day = feet per day

ft^2/day = square feet per day

NA = Not Applicable

TABLE 16
Estimated Hydraulic Gradients in the Vicinity of the CTSA

HORIZONTAL HYDRAULIC GRADIENT	h1 (ft)	h2 (ft)	dH (ft)	dL (ft)	grad (ft/ft)
1989 Basin Fill: TM-02 to TM-11	4460.8	4497.72	-36.92	15000	-0.0025
2005 Basin Fill: TM-02 to WEISKOPF	4443	4457.9	-14.9	15000	-0.0010
2008 Basin Fill: BMO-2008-8B to WEISKOPF	4441.08	4455.31	-14.23	12800	-0.0011
2008 Basin Fill (East-West): COB MW-1 to BMO-2008-6B	4437.21	4449.64	-12.43	9150	-0.0014
1989 Bedrock (North-South): TM-28 to TM-16	4623.64	4750.59	-126.95	8750	-0.0145
2008 Bedrock (North-South): COB WL to TM-16	4635.96	4773.3	-137.34	10000	-0.0137
1989 Bedrock (East-West): TM-16 to TM19A	4470.07	4623.64	-153.57	10500	-0.0146
2005 Bedrock (East-West): TM-16 to TM-19A	4435.5	4625.8	-190.3	10500	-0.0181
2008 Bedrock (East-West): TM-16 to TM-19A	4446.41	4635.96	-189.55	10500	-0.0181
VERTICAL HYDRAULIC GRADIENT (Fourth Quarter 2008)					
BMO-2008-5B,M	4438.37	4440	-1.630	180	-0.0091
BMO-2008-6B,M	4436.65	4437.21	-0.560	165	-0.0034
COB MW-1, BMO-2008-7M	4448.64	4449.64	-1.000	230	-0.0043
BMO-2008-8B,M	4452.66	4455.31	-2.650	730	-0.0036
BMO-2008-13B,M	4441.15	4442.79	-1.640	606	-0.0027
BMO-2008-10GU,10GL	4271.7	4497.6	-225.9	226	-0.9996

Notes:
h1 = downgradient water level
h2 = upgradient water level
dH = water level difference
dL = for horizontal gradient: distance between water level measurement locations,
= for vertical gradient: distance between midpoint of screens
grad = hydraulic gradient
ft = feet

TABLE 17
Estimated Groundwater Flow Velocities in the Vicinity of the CTSA

Description	K (ft/d)	n	h1 (ft)	h2 (ft)	dH (ft)	dX (ft)	v (ft/d)
1989 Basin Fill: TM-02 to TM-11							
Average field-based hydraulic conductivity	41	0.25	4460.8	4497.72	-36.92	15000	**0.40**
Model-derived hydraulic conductivity (SET, 1998c)	23	0.25	4460.8	4497.72	-36.92	15000	**0.23**
2005 Basin Fill: TM-02 to WEISKOPF							
Average field-based hydraulic conductivity	41	0.25	4443	4457.9	-14.9	15000	**0.16**
Model-derived hydraulic conductivity (SET, 1998c)	23	0.25	4443	4457.9	-14.9	15000	**0.09**
2008 Basin Fill: BMO-2008-8B to WEISKOPF							
Average field-based hydraulic conductivity	41	0.25	4441.08	4455.31	-14.23	12800	**0.18**
Model-derived hydraulic conductivity (SET, 1998c)	23	0.25	4441.08	4455.31	-14.23	12800	**0.10**
2008 Basin Fill (East-West): COB MW-1 to BMO-2008-6B							
Average field-based hydraulic conductivity	41	0.25	4437.21	4449.64	-12.43	9150	**0.22**
Model-derived hydraulic conductivity (SET, 1998c)	23	0.25	4437.21	4449.64	-12.43	9150	**0.12**
1989 Bedrock (North-South): TM-28 to TM-16							
Average field-based hydraulic conductivity	5.2	0.15	4623.64	4750.59	-126.95	8750	**0.50**
Model-derived hydraulic conductivity (SET, 1998c)	3	0.15	4623.64	4750.59	-126.95	8750	**0.29**
2008 Bedrock (North-South): COB WL to TM-16							
Average field-based hydraulic conductivity	5.2	0.15	4635.96	4773.3	-137.34	10000	**0.48**
Model-derived hydraulic conductivity (SET, 1998c)	3	0.15	4635.96	4773.3	-137.34	10000	**0.27**
1989 Bedrock (East-West): TM-16 to TM-19A							
Average field-based hydraulic conductivity	5.2	0.15	4470.07	4623.64	-153.57	10500	**0.51**
Model-derived hydraulic conductivity (SET, 1998c)	3	0.15	4470.07	4623.64	-153.57	10500	**0.29**
2005 Bedrock (East-West): TM-16 to TM-19A							
Average field-based hydraulic conductivity	5.2	0.15	4435.5	4625.8	-190.3	10500	**0.63**
Model-derived hydraulic conductivity (SET, 1998c)	3	0.15	4435.5	4625.8	-190.3	10500	**0.36**
2008 Bedrock (East-West): TM-16 to TM-19A							
Average field-based hydraulic conductivity	5.2	0.15	4446.41	4635.96	-189.55	10500	**0.63**
Model-derived hydraulic conductivity (SET, 1998c)	3	0.15	4446.41	4635.96	-189.55	10500	**0.36**

Assumptions:

1. *Unidimensional (horizontal) groundwater flow in direction of measurement locations.*
2. *Linear water table with distance*
3. *Homogeneous, isotropic properties between well locations.*

Notes:

ft/d = feet per day
h1 = downgradient water level
h2 = upgradient water level

$$v = (-K/n)[dH/dx]$$

where:
v = groundwater flow velocity
K = hydraulic conductivity
n = porosity
dH = change in water elevation between locations
dX = distance between locations

TABLE 18
1996 Water Quality Data Used for Piper Diagram

Well No.	Database	Formation	Sample Date	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Cl (mg/L)	SO4 (mg/L)	HCO3 (mg/L)	CO3 (mg/L)	pH (standard units)	TDS (mg/L)
AWC-03	AWC-03	QTbf	08/06/96	60.4	7.6	15.7	2.27	8.0	5.0	109	0.3	7.6	248
BF-02	BF-02	QTbf	06/25/96	958	206	30.1	4.1	33	2000	602	0.3	6.3	3800
NWC-05	NWC-05	Kbu	08/07/96	158	33.0	25.8	4.56	180	78.9	77	0.3	7.4	888
TM-02	TM-02	QTbf	06/20/96	628	147	35.6	4.9	28	1200	457	0.3	6.4	2700
TM-05	TM-05 MILLER	QTbf	06/26/96	50.5	5.6	19.8	1.6	24	10	90	0.3	7.8	240
TM-06	TM-06 MILLER	Kbu	06/26/96	36.1	18.2	54	1.5	18	29	137	0.3	7.9	320
TM-12	TM-12 MILLER	QTbf	06/26/96	57.7	7.5	23.3	1.8	25	7	110	0.3	7.7	270
TM-15	TM-15 MILLER	QTbf	06/27/96	26	16.4	30.3	1.9	7.2	14	114	0.3	7.8	230
TM-16	TM-16	Kbu	06/27/96	200	44.1	28.2	11.1	28	500	126	0.3	7.4	1100
TM-19	TM-19	QTbf	06/20/96	427	55.6	41.3	4.3	19	1100	126	0.3	7.2	2100
TM-19A	TM-19A	Kbu	06/25/96	43.8	10.2	58.6	2.5	14	56	119	0.3	7.8	320
TM-41	TM-41	Kbu	07/30/97	620	250	47	28	22	1940	488	0.3	6.2	3600

Notes:
mg/L = milligrams per liter.
QTbf = basin fill
Kbu = undifferentiated Bisbee Group

TABLE 19
2008 Water Quality Data Used for Piper Diagram

Well Name	Sample Date	Screened Formation	Field pH (SU)	Sulfate, dissolved	Chloride, dissolved	Calcium, dissolved	Magnesium, dissolved	Potassium, dissolved	Sodium, dissolved	Bicarbonate as CaCO3	Carbonate as CaCO3	TDS (calculated)
AWC-02	08/12/08	QTbf	7.01	14.3	17.8	66.4	9.1	2.1	20.0	181	5	255
AWC-03	08/12/08	QTbf	7.28	38.8	15.5	62.8	8.6	2.1	22.8	156	5	260
AWC-04	08/12/08	QTbf	7.08	21.6	47.5	88.7	11.6	2.6	22.8	206	<2	328
AWC-05	08/12/08	Kbu/ Volcanics	6.74	14.9	16.1	50.6	6.2	2.2	35.6	164	8	242
BF-01	08/05/08	QTbf/Kbu	6.11	1330	30	624	107	4.5	61.3	579	<2	2510
BIMA	07/29/08[1]	Kbu	6.44	204	101	209	46.5	12.2	63.6	456	<2	945
BMO-2008-1G	08/27/08	Kg	7.09	107	76.3	124	32.2	6.4	35.7	229	9	588
BMO-2008-3B	07/18/08	QTbf	7.35	106	24	64.5	12.0	2.9	53.6	151	3	373
BMO-2008-6B	07/16/08	QTbf	7.36	53.3	13	59.7	10.2	3.0	26.2	151	9	274
BMO-2008-6M	07/10/08	Kbu	-	182	16	104	17.9	3.60	32.5	144	9	460
BMO-2008-7M	07/14/08	Kbu	7.63	31.4	10.4	32.4	11.4	2.70	60.8	188	13	282
BMO-2008-9M	08/08/08	Kbu	7.72	47.3	14	28.0	17.8	3.4	64.6	193	6	306
BMO-2008-10GU	08/04/08	Kg	6.41	2210	60	649	311	15.3	37.6	984	<2	3870
BMO-2008-10GL	08/20/08	Kg	6.22	1320	30.0	579	167	10.5	90.5	870	<2	2720
BMO-2008-11G	08/22/08	Kg	8.02	14.2	2.8	10.7	5.1	1.7	64.2	149	14	205
BURKE	08/05/08	Kbu	7.06	21.9	10	52.5	22.3	2.3	16.1	187	<2	250
COB MW-1	07/30/08	QTbf	6.88	730	19.8	273	69.3	8.0	58.9	223	<2	1300
COB MW-2	07/30/08	QTbf	7.34	37.6	19.9	66.3	9.0	2.1	26.6	158	<2	286
COB MW-3	07/30/08	QTbf	7.64	67.3	16.1	66.1	9.2	2.4	26.5	149	<2	288
COB WL	07/30/08	Kbu	7.17	97.1	110	130	35.0	7.5	51.5	274	<2	613
COOPER	07/31/08	QTbf	7.81	33.7	16.9	48.9	13.3	2.1	24.6	150	7.0	249
COOPER C	07/15/08	QTbf	6.86	1040	46.5	386	58.8	5.8	43.3	235	<2	1740
COOPER C DUP	07/15/08	QTbf	6.86	960	46.4	398	61.7	6.1	46.2	234	<2	1670
DODSON	07/24/08	Kbu	7.25	49.3	160	124	43.3	13.7	51.3	223	12	646
EAST	07/23/08	Kbu	7.34	11.8	33.3	59.5	24.4	2.4	31.4	217	6	326
GALLANT	02/11/08	Kbu	7.46	17.9	12.7	106	15.9	4.3	25.6	344	<2	402
GALLANT	07/23/08	Kbu	7.26	20.9	56.9	138	19.8	4.8	29.6	303	<2	537
GARNER 557	02/21/08	QTbf	6.70	123	14.3	62.2	10.2	2.5	58.1	171	13	394
GARNER 635	07/15/08	Kbu	7.63	37.4	13.5	37.6	7.8	2.5	60.2	163	16	281
GGOOSE 547	08/15/08	Kbu	7.02	178	35.4	117	32.4	5.6	25.4	187	<2	545
GL-03	08/04/08	Kg	7.10	36.1	21.4	68.7	38.9	3.4	19.5	278	<2	358
OSBORN	07/22/08	Kg	7.24	17.7	19.7	80.3	15.0	4.2	24.7	252	29	362
OSBORN DUP	07/22/08	Kg	7.24	17.5	19.6	80.9	15.1	4.2	25.0	250	31	364
PALMER	07/22/08	Kbu	7.64	16.2	11.3	30	25.4	5.1	47.9	226	39	321
PARRA	07/31/08	Kbu	7.00	423	33.5	181	49.8	4.5	32.4	213	<2	871
PARRA DUP	07/31/08	Kbu	7.00	404	33.5	177	48.5	4.3	30.9	212	<2	845
POWER	07/22/08	Kbu	7.10	20.2	37.8	124	11.0	3.8	13.6	222	29	479
ROGERS 803	07/29/08[1]	QTbf	6.78	134	13.1	92.5	12.6	3.3	28.7	149	<2	393
SRC	08/05/08	Kbu	7.40	15.4	10.4	26.8	17.8	2.0	44.6	173	<2	238
TM-02A	08/15/08	Kg	7.84	14.4	8.2	14.7	5.2	2.4	60.2	143	8	200
TM-03	08/06/08	Kg	7.08	97	40.7	94.3	36.6	3.5	27.8	221	<2	467
TM-06 MILLER	08/04/08	Kbu	7.41	31.3	18.0	37.8	19.5	1.9	52.1	210	<2	291
TM-07	08/06/08	Kbu	7.04	22.2	8.9	45.8	14.7	1.9	20.5	157	<2	220
TM-08 SWAN	07/23/08	Kg	7.76	12.6	14.8	<0.02	<0.02	1.1	128	204	11	303
TM-14 NELSON	02/08/08	QTbf	7.64	32.9	12.5	56.1	10.0	2.8	23.6	166	<2	246
TM-15 MILLER	08/05/08	Kbu	7.42	13.7	7.0	29.8	18.9	2.0	32.0	173	-	216
TM-16	08/06/08	Kbu	6.67	466	28.1	215	52.7	13.3	30.0	191	<2	955
TM-19A	08/06/08	Kbu	7.32	55.3	15.4	37.3	10.8	2.9	53.0	153	5	272
TM-43B	08/05/08	Kbu	6.89	31.8	4.7	47.5	21.5	2.6	44.9	231	<2	292
TM-43B DUP	08/05/08	Kbu	6.89	32.5	4.7	47.9	21.7	2.5	44.9	234	<2	295
TVI 236	07/15/08	QTbf	7.39	37.6	23.5	70.4	9.3	1.8	26.3	161	11	292
TVI 875	07/15/08	QTbf	7.27	274	20.2	131	17.4	2.8	39.6	148	11	598
WALKER	07/23/08	Kbu	7.25	45.4	37.8	89	27.9	2.9	28.6	250	7	421
WEED	07/30/08	Kbu/Kg	7.42	11.5	10.1	34.1	13.6	2.2	29.4	163	2	209
WEISKOPF	07/16/08	QTbf	7.07	560	26.0	248	34.3	4.4	38.6	170	3	1040

Notes:

All units are in milligrams per liter (mg/l) unless otherwise noted

- = Not Analyzed

SU = Standard Units

TDS = Total Dissolved Solids

Kbu = undifferentiated Bisbee group

QTbf = basin fill

Kg = Glance Conglomerate

[1] Verified drinking water supply well, sample collected for sulfate trend analysis for interim action evaluation

TABLE 20
Comparison of the SET (1998c) and RSET Models

Feature	SET (1998c)	HGC RSET
Spatial and Temporal Domain		
Extent	60 square miles	No change
Layers	3 layers representing (1) basin fill, (2) Morita Formation, and (3) Glance Conglomerate	4 layers representing 1) basin fill, 2) shallow bedrock composed of undifferentiated Bisbee Group (e.g., Morita Formation, Mural Limestone, or Cintura Formation, 3) deeper bedrock composed of undifferentiated Bisbee Group, and 4) Glance Conglomerate. Basin fill and undifferentiated Bisbee Group bottom surfaces reinterpreted to reflect additional lithologic information.
Spatial discretization	100 meter by 100 meter grid cell size	No change
Temporal discretization	6 stress periods simulating 1905 - 1997 (historical) and 1 stress period simulating 1998 - 2098 (predictive)	No change to first 6 stress periods; adding stress periods 7 to 17 to simulate 1998 - 2008 (historical)
Boundary and Initial Conditions		
Specified head/concentration boundaries	Located on southern, western, and portions of eastern boundaries. Specified sulfate concentration of zero.	No change to locations or head values. Modified specified sulfate concentration to be 8 mg/L
No flow boundaries	Located on north and portions of eastern boundary	No change
Initial conditions	Groundwater levels from calibrated steady-state model; sulfate concentrations set to zero.	Re-calibrated steady-state model and set initial sulfate background concentrations to be 8 mg/L
Hydraulic Stresses		
Groundwater Pumping	35 pumping wells, including domestic, irrigation, municipal, and stock	Added domestic and stock wells not included in SET Model and added all well types installed after 1997 (and thus not in SET Model). Updated pumping for 1998 - 2008 from historical records (if available).
Groundwater Recharge	Included natural recharge and recharge from former evaporation pond, irrigation areas, wastewater treatment facilities, and a golf course.	Modified or expanded locations of some recharge sources based on aerial images; included recharge to Greenbush Draw due to discharge of San Jose WWTF effluent (post-1998).
Model Parameters		
Hydraulic Conductivity	Four zones in basin fill (23 - 72 ft/d), five zones in Morita Formation (1.4 - 20 ft/d), two zones in Glance Conglomerate (0.6, 1.6 ft/d), and two fault zones (9.8E-5, 2.0E-4 ft/d)	Values recalibrated; low permeability zones (2.3 ft/d) added in basin fill near BMO-2008-6B to match field measurements. Other values recalibrated.
Storage Coefficient	Five zones in Morita Formation (1E-5 - 3.2E-3), two zones in Glance Conglomerate (2.8E-4, 3.3E-4), and two fault zones (1.5E-4, 1.5E-4 ft/d)	Values recalibrated
Specific Yield	Four zones in basin fill (0.08 - 0.2), five zones in Morita Formation (0.01 - 0.0955), two zones in Glance Conglomerate (0.068, 0.072), and two fault zones (0.028, 0.028)	Values recalibrated
Effective Porosity	Four zones in basin fill (0.212 - 0.55), five zones in Morita Formation (0.051 - 0.122), two zones in Glance Conglomerate (0.035, 0.080), and two fault zones (0.12, 0.12)	Values recalibrated; added lower effective porosity zone (0.22) in central basin fill

TABLE 20
Comparison of the SET (1998c) and RSET Models

Feature	SET (1998c)	HGC RSET
Longitudinal Dispersivity	Four zones in basin fill (33 - 121 ft), five zones in Morita Formation (17 - 66 ft), two zones in Glance Conglomerate (33 - 48 ft), and two fault zones (3, 16)	Values recalibrated
Sulfate Sources		
Evaporation Pond	Sulfate concentration of 3,000 mg/L plus two zones of elevated concentration (3,100 mg/L and 3,650 mg/L). Recharge from 1908 to 1987	Reduced sulfate concentration to 2,500 mg/L plus two zones of 3,000 mg/L. Recharge from 1908 to 1987
Warren Ranch Irrigation Area	Sulfate concentration of 1,500 mg/L. Recharge from 1905 to 1987	Reduced sulfate concentration to 250 mg/L. Recharge from 1905 to 1985
Other	No sulfate in recharge except for evaporation pond and Warren Ranch irrigation area	Added 8 mg/L sulfate in natural, irrigation, and golf course recharge; 46 mg/L to recharge from San Jose WWTF

Notes:
mg/L = milligrams per liter
ft/d = feet per day

TABLE 21
Summary of Stress Periods in RSET Model

Stress Period	Years	Number Time Steps	Historical Summary	References
1	1905 - 1930	4	Pumping of water to CTSA, Evaporation Ponds, and Warren Ranch Irrigation Area began. Only one pumping well (stock watering) and no artificial recharge to aquifer.	SRK (1997), SET (1998c)
2	1931 - 1954	4	Construction of Turquoise Valley Golf Course. Naco Water Company (NWC) drills two municipal supply wells. Warren WWTF began operation. Several stock and 4 domestic wells operational[1].	SET (1998c), EPA (2003b)
3	1955 - 1961	2	NWC drills a third municipal supply well. Arizona Water Company (AWC) drills one municipal supply well. Irrigation wells drilled northeast of Naco. The number of domestic and stock wells increase.	SET (1998c)
4	1962 - 1975	4	Construction of east and west Naco-Sonora WWTF (1960s). El Oasis irrigation area established (1960s). The number of domestic and stock wells increase.	SAIC (1997), SET (1998c)
5	1976 - 1985	8	Increased groundwater development, particularly in Mexico. Water delivery to Warren Ranch irrigation area terminated in 1985[2].	SRK (1997), SET (1998c), PD (2004)
6	1986 - 1987	2	Water delivery to evaporation pond terminated in 1987.	PD (1990, 2004)
7	1988 - 1997	11	No water delivery to the evaporation pond and Warren Irrigation District. Irrigation north of the border declines.	SET (1998c)
8	1998	4	TVI Golf Course expands north of Greenbush Draw and installs two new pumping wells.	SET (1998c)
9	1999	4	No significant development.	
10	2000	4	No significant development.	
11	2001	4	No significant development.	
12	2002	4	No significant development.	
13	2003	4	No significant development.	
14	2004	4	No significant development.	
15	2005	4	No significant development.	
16	2006	4	San Jose Wastewater Treatment Facility expands and begins discharging effluent to Greenbush Draw. Warren WWTF closes.	ADEQ (2006)
17	2007	4	No significant development.	
18	2008	4	No significant development.	

Notes:

[1] SET (1998c) states that the Warren WWTF Ponds began operating in the 1930's. This is contradicted by EPA (2003b), which states they began operating in the 1970s.

[2] PD (1990), SRK (1997), and Pool and Dickinson (2006) report 1985 as the year when water delivery to the Warren Irrigation Area terminated. PD (2004) reports a termination date of 1987. Research by Copper Queen Branch found 1985 to be the correct termination date.

References:

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TABLE 22
Water Supply Wells in the
RSET Model Domain

Well Name	ADWR 55 Registry No.	Water Use	Used In SET (1998b)	UTM E 83	UTM N 83	Date Installed	Reported Pumping Rate[1] (gpm)	Status
85343	55-85343	DOMESTIC		606721	3469338	Not Installed	NA	Cancelled
500431	55-500431	DOMESTIC		600096	3467864	Not Installed	NA	Cancelled
500881	55-500881	DOMESTIC		599896	3468063	Not Installed	NA	Cancelled
ACKER	55-214612	DOMESTIC		598847	3472874	6/8/2007		No Response
ALVAREZ	55-650255	IRRIGATION		601096	3467466	1938		Cancelled
ANDERSON	55-613396	DOMESTIC		601135	3468816	1954		Operational
ANDERSON M	55-616775	DOMESTIC/IRRIGATION		600793	3468573			Declined participation in monitoring program
ANDERSON M	55-616776	DOMESTIC		599996	3467763	1916		Declined participation in monitoring program
ASLD	55-616436	STOCK	X	601488	3469690	7/15/1920		Dry
AWC-02	55-616586	MUNICIPAL		598891	3468566	1955		Operational
AWC-03	55-616585	MUNICIPAL	X	599016	3468660	7/20/1956	850	Operational
AWC-04	55-616584	MUNICIPAL	X	599000	3468695	1959	1,400	Operational
AWC-05	55-590620	MUNICIPAL		599278	3468526	6/24/2002		Operational
BANKS 986	55-647986	DOMESTIC		606723	3469137	6/23/1980	10	Operational
BANKS 987	55-647987	DOMESTIC	X	606982	3469206	< 1982	10	Not Operational
BARTON 010	55-85010	DOMESTIC		606201	3469047	1981	13	Not Operational
BARTON 919	55-644919	DOMESTIC		606244	3469077	< 1982	15	Not Operational
BERNAL	55-648363	DOMESTIC		600796	3467767	< 1948		Not Operational
BIMA	55-577927	DOMESTIC		606001	3471853	3/3/2000		Operational, deepened
BINYON	55-594938	DOMESTIC		608545	3468542	12/5/2002	5	Operational
BLOMMER	55-633472	DOMESTIC	X	601376	3470798	11/13/1978	35	Not Operational; declined participation Q1 09
BLOMMER	55-645536	Duplicate registration of BLOMMER 633472						
BRINDLEY	55-86775	DOMESTIC	X	601263	3472095	4/30/1981	10	Not Located
BULLARD	55-602134	DOMESTIC	X	602079	3470901	9/6/1974	12	Not Operational
BURKE	55-212268	DOMESTIC		602230	3473030	10/11/2006		Capped
BURKE 236	55-207236	DOMESTIC		602261	3473107			Not Operational
BUSK	55-581107	DOMESTIC		605515	3469127	Not Installed	NA	Cancelled - not installed
CAMPBELL	55-643481	DOMESTIC		606519	3469336	1996		Operational
CHAMBERS	55-629807	DOMESTIC		600097	3467462	1977	26	Operational
CHASE	55-648359	DOMESTIC		599695	3468062	1970	15	Operational
COLLINS	55-565260	DOMESTIC		602551	3471341	12/16/1997	10	Operational
CONNOR	55-516399	DOMESTIC		600251	3472678	1/20/1987		Abandoned
COOPER	55-623564	DOMESTIC/IRRIGATION		602668	3472105	12/20/1979	30	Operational
COOPER C	55-637069	DOMESTIC		601350	3468913	7/29/1966	35	Operational
COTA	55-651116	DOMESTIC		600197	3467563	< 1962	30	Not Located
CROWLEY	55-510298	DOMESTIC		602461	3473109	4/19/1985	NA	Dry at installation
DODSON	55-644927	DOMESTIC	X	605595	3469064	10/1/1959	15	Operational
DOUGLASS 791	55-592791	DOMESTIC		607633	3470223	9/21/2002	20	Not Operational
DOUGLASS 792	55-592792	DOMESTIC		607608	3469829	9/19/2002	20	Not Operational
DURAZO	NR	DOMESTIC		602041	3471284	10/24/2003	15	Operational
EAST	55-599796	DOMESTIC		607076	3468712	10/24/2003	15	Operational
EBERWEIN	55-641726	DOMESTIC				1976	30	Not Operational
EN-1 (Ejido Naco)	NA (Mexico)	IRRIGATION		601753	3464463			Not Operational
EN-2 (Ejido Naco)	NA (Mexico)	IRRIGATION	X	601886	3465282	1962 - 1975		Operational
EN-3 (Ejido Naco)	NA (Mexico)	IRRIGATION	X	602356	3465212	1962 - 1975		Operational
EN-5 (Ejido Naco)	NA (Mexico)	IRRIGATION		602140	3466051			Operational
EN-6 (Ejido Naco)	NA (Mexico)	IRRIGATION		601962	3466114			Operational

TABLE 22
Water Supply Wells in the
RSET Model Domain

Well Name	ADWR 55 Registry No.	Water Use	Used In SET (1998b)	UTM E 83	UTM N 83	Date Installed	Reported Pumping Rate[1] (gpm)	Status
EPPELE 641	55-805641	DOMESTIC/IRRIGATION		607165	3469230		6	Operational
EPPELE 642	55-805642	DOMESTIC/IRRIGATION		607126	3469140	early 1900s	5	Not Operational
EPPELE 643	55-805643	DOMESTIC		607126	3469140		25	Not Operational
FLEMING	55-218386	DOMESTIC		605567	3469335	2/1/2009	35	Not Operational - never used
FRANCO	55-500101	DOMESTIC		602850	3468836	7/1/1981	25	Operational
FULTZ	55-212447	DOMESTIC		606924	3469139	6/23/2006	25	Operational
GALLANT	55-502527	DOMESTIC		607770	3468524	4/26/1982	35	Operational
GARNER 557	55-558557	DOMESTIC		602659	3468962	9/4/1996	16	Not Operational
GARNER 635	55-587635	DOMESTIC		602665	3468968	10/12/2001	20	Operational
GGOOSE 546	55-628546	DOMESTIC/IRRIGATION	X	606115	3469534	2/11/1963	100	Not Operational
GGOOSE 547	55-628547	DOMESTIC/IRRIGATION	X	606257	3469820	8/18/1961	100	Not Operational
GOAR	55-610686	IRRIGATION	X	602406	3468588	late 1940s or early 1950s	60	Dry
GOAR	55-610687	IRRIGATION	X	602406	3468588	late 1940s or early 1950s	60	Dry
GOAR	55-610688	IRRIGATION		602406	3468588	late 1940s or early 1950s	60	Dry
GOAR	55-610689	IRRIGATION	X	602406	3468588	late 1940s or early 1950s	60	Dry
GOAR	55-610690	STOCK/DOMESTIC		601596	3468580	late 1940s or early 1950s	60	Dry
GOAR	55-610692	STOCK/DOMESTIC		602406	3468588	late 1940s or early 1950s	Windmill	Dry
GOAR	55-610694	DOMESTIC		602217	3468916	late 1940s or early 1950s	15	Not Operational since 1995
GOAR	55-610691	DOMESTIC		602406	3468588	late 1940s or early 1950s	60	Dry
GOAR	55-610693	DOMESTIC		602406	3468588	late 1940s or early 1950s	15	Dry
GOAR RANCH	55-610695	DOMESTIC		602455	3468892	late 1940s or early 1950s	15	Not Operational since 1995
GREGG	55-630852	DOMESTIC	X	607024	3469240	< 1982		Dry
HAUBERT	55-801607	DOMESTIC/IRRIGATION	X	601596	3468580	~ 1955	60	Declined participation in monitoring program
HECK	55-507823	DOMESTIC		602077	3471101	5/4/1984		Not Operational
HOBAN	55-805290	DOMESTIC		601706	3468880	3/2/1964	15	Operational
HULL 854	55-606854	IRRIGATION	X	601475	3470899	< 1915		Not Located
HULL 855	55-606855	DOMESTIC		601467	3471697	< 1915	35	Not Located
HUMPHREY	55-649153	DOMESTIC		600395	3468167	1938		Declined participation in monitoring program
IRONS	55-632924	DOMESTIC/IRRIGATION		602204	3468788	12/12/1955	200	Declined participation in monitoring program
JACKSON	55-506034	DOMESTIC		602479	3471103	8/16/1983	35	No Response
JALYN	55-209737	DOMESTIC		601496	3468680	11/16/2005	25	Not Operational
KEEFER	55-209744	DOMESTIC		599879	3468119	11/15/2005	25	Operational
KENNEDY	55-647003	Duplicate registration of ASLD 616436						
LESNICK	55-587749	DOMESTIC		607516	3470145	5/4/2002	25	Not Located
LUCERO	55-618175	DOMESTIC		601293	3468274	6/26/1972	100	No Response
MCCONNELL 265	55-539265	DOMESTIC		601463	3468840	7/6/1993	20	Operational
MCCONNELL 386	55-590386	DOMESTIC		601438	3468846	2002	0	Well Installed; Not Operational
MENDEZ	55-650256	IRRIGATION		601096	3467466	1938		Dry
METZLER	35-71891	DOMESTIC		602091	3471381	4/10/1979		Operational
MILLER 340	55-641340	STOCK/DOMESTIC		600090	3469474	1940	10	Dry
MILLER 341	55-641341	STOCK	X	601699	3467875	1920	10	Dry
MILLER 342	55-641342	STOCK	X	604520	3467499	1957	10	Dry
MINNERLY	55-650662	DOMESTIC		607223	3469441			Not Located
MINOR 316	55-633316	DOMESTIC	X	601173	3468487	1955	35	Declined participation Q2 08
MINOR 317	55-633317	DOMESTIC		601172	3468568	1956	35	Operational, declined participation Q2 08
MOORE	55-538847	DOMESTIC		599495	3468060	4/24/1993	10	Operational
MOROYOQUI	55-647847	DOMESTIC		600395	3468167	6/18/1969	25	Dry

TABLE 22
Water Supply Wells in the
RSET Model Domain

Well Name	ADWR 55 Registry No.	Water Use	Used In SET (1998b)	UTM E 83	UTM N 83	Date Installed	Reported Pumping Rate[1] (gpm)	Status
NESS	55-509127	DOMESTIC		607912	3471347	1/30/1985	6	Operational
NOBLE	55-618611	DOMESTIC		602608	3468792			Not Located
NOTEMAN	55-212483	DOMESTIC		606054	3471576	5/9/2006		Operational
NSD-02	55-527587	MUNICIPAL		598884	3468847			Operational
NSD-03	55-527586	MUNICIPAL		598077	3468637			Operational
NWC-01	55-627682	MUNICIPAL	X	600144	3467140	9/24/1951	75	Not Operational
NWC-02	55-562944	MUNICIPAL		600348	3467817	6/11/1997		Operational
NWC-02 CAPPED	55-627683	MUNICIPAL		600183	3467457	8/2/1959	175	Not Operational, replaced by 562944
NWC-03	55-203321	MUNICIPAL		601149	3468343			Operational
NWC-03 CAPPED	55-627684	MUNICIPAL	X	601148	3468343	1930	35	Not Operational, replaced by 203321
NWC-04	55-551849	MUNICIPAL		605837	3469075	8/24/1995		Operational, deepened
NWC-04 CAPPED	55-627685	MUNICIPAL		605915	3469113	12/31/1926	180	Capped 3/29/2005, replaced by 551849
NWC-05	55-627696	MUNICIPAL	X	606980	3469446	1960	< 35	Not Operational
NWC-06	55-575700	MUNICIPAL		599826	3467742	9/15/1999	130	Operational
OSBORN	55-643436	DOMESTIC	X	607032	3470271	8/5/1993	20	Operational
PALMER 819	55-578819	DOMESTIC		607724	3469545	1/10/2000	25	Operational
PALMER 937	55-642937	STOCK				prior to 1925	20	Not Operational
PANAGAKOS	35-76143	DOMESTIC		605312	3469321	7/1/1957		Operational
PARRA	55-576415	DOMESTIC		602171	3471264	10/6/1999	25	Operational
PATSIS	55-544685	DOMESTIC		602673	3471705	Not Installed	NA	Not Installed
PAVLOVICH	55-502193	DOMESTIC		601238	3474910	4/1/1982	35	
PIONKE	55-613395	IRRIGATION		600936	3468837	1964	200	Operational
POOL	55-509518	DOMESTIC	X	599684	3470014	12/12/1984	30	Operational
POWER	55-624535	STOCK/DOMESTIC	X	608379	3472739	1967	15	Operational
RAMIREZ	55-216425	DOMESTIC		599696	3467661			Operational
RAY	55-803772	DOMESTIC		607083	3469195		< 35	Operational
RICHARDS	55-531595	DOMESTIC		608716	3471353	5/3/1991		Operational
RODRIGUEZ	55-648360	DOMESTIC		600697	3467464	~ 1930		Dry
ROGERS 596	55-573596	DOMESTIC		600894	3468271	9/16/1999	20	Not Operational
ROGERS 801	55-641801	DOMESTIC		601092	3468676	1960	20	Not Operational
ROGERS 803	55-641803	DOMESTIC		600978	3468417	1960	20	Operational
ROGERS E	55-216018	DOMESTIC		599895	3468264	9/10/2007	20	Operational
ROLLINS	55-641750	DOMESTIC		601096	3467667			Not Operational
ROSS	55-513351	DOMESTIC		600254	3472688	2/8/1986	500	Capped - never used
ROSS	55-516398	DOMESTIC		600052	3472887	1/21/1987		Cancelled - never used
ROSS	55-517525	DOMESTIC		599654	3472078	4/17/1987		Dry at installation
ROSS	55-517526	DOMESTIC		599666	3471480	4/16/1987	35	No Response
RUIZ	55-531770	DOMESTIC		602857	3471424	5/29/1991	10	Operational
SCHWARTZ	55-210865	DOMESTIC		600812	3468268		16	Operational
SHAFER	55-649994	DOMESTIC		600497	3467463	7/15/1966	30	Bulldozed
SILVESTRI	55-557742	DOMESTIC		600251	3473493	7/10/1996	28	Not Operational
SRC	55-211345	DOMESTIC		599722	3472503	2/6/2007		Capped - never used
STARK-CAMPBELL	55-215509	DOMESTIC		606421	3469320	4/11/2007		Not Operational
STEPHENS	55-808560	DOMESTIC		606982	3469073			Not Operational
SUNBELT	55-201531	DOMESTIC		605998	3471735	1/15/2004	25	Dry 2008
SUNNYSIDE	55-588270	DOMESTIC		601293	3468476	8/28/2001	10	Not Operational
TVI 161	55-556161	DOMESTIC		599895	3468264	Not Installed	NA	Cancelled, never installed

TABLE 22
Water Supply Wells in the
RSET Model Domain

Well Name	ADWR 55 Registry No.	Water Use	Used In SET (1998b)	UTM E 83	UTM N 83	Date Installed	Reported Pumping Rate[1] (gpm)	Status
TVI 236[2]	55-802236	IRRIGATION	X	600552	3467978	2/14/1934	600	Operational
TVI 713[2]	55-567713	IRRIGATION		600729	3468413	4/14/1998		Capped - never used
TVI 875[2]	55-568875	IRRIGATION		600694	3468471	6/14/1998	500	Operational
TVI Southside 2[2,3]		IRRIGATION		600052	3467988	~1970	400	Operational
UN-1 (Urbano Naco)	NA (Mexico)	MUNICIPAL	X	600000	3466343	1962 - 1975		Not Operational
UN-2 (Urbano Naco)	NA (Mexico)	MUNICIPAL		600013	3465397	before 1993		Operational
UN-3 (Urbano Naco)	NA (Mexico)	MUNICIPAL	X	599949	3465797	1962 - 1975		Operational
UN-4 (Urbano Naco)	NA (Mexico)	MUNICIPAL		601213	3466298	1996 - 1998		Operational
UN-5 (Urbano Naco)	NA (Mexico)	MUNICIPAL		600743	3464444	~ 2005		Operational
UNION PACIFIC RR	55-626702	MUNICIPAL		605916	3469131	1/31/1918	175	Capped 2005
VALENZUELA	55-645050	DOMESTIC		600395	3468167	1947		Declined participation in monitoring program
WALKER	55-200393	DOMESTIC		607565	3468577	11/12/2003		Operational
WEED	55-544535	DOMESTIC		601276	3470699	7/9/1994	25	Operational
WEISKOPF	55-641802	DOMESTIC		601155	3468659	< 1960	25	Operational
WILSON 361	55-648361	STOCK		602002	3468181	1929		Not Operational
WILSON 362	55-648362	STOCK		601293	3468879	1947		Not Operational
ZANDER	55-205126	DOMESTIC		599679	3467998	2/10/2005	10	Operational

Notes:
[1] The pumping rates listed represent maximum pumping rates. Information obtained from ADWR Image Records for wells in the United States. Data for Mexico wells [2] from personal communication with well operators.
[2] from HGC (2008c)
[3] Location, installation year, and pumping rate are approximate
UTM E = Universal Transverse Mercator, North American 1983 Datum Easting (meters)
UTM N = Universal Transverse Mercator, North American 1983 Datum Northing (meters)
gpm = gallons per minute
NA = not applicable

TABLE 23
Pumping Wells and Pumping Rates in RSET Model
(all rates in gallons per minute)

WellName	ADWR 55 Registry No.	Water Use	Screen Top[1] (ft amsl)	Screen Bottom[1] (ft amsl)	Stress Period	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
					Year	1905 - 1930	1931 - 1954	1955 - 1961	1962 - 1975	1976 - 1987	1988 - 1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
ACKER	55-214612	DOMESTIC	4492	4405		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3
ANDERSON	55-613396	DOMESTIC	4330	4280		0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
ANDERSON M	55-616775	DOMESTIC/IRRIGATION	4395	4335		0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
ANDERSON M	55-616776	DOMESTIC	3735	3615		0.2	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ASLD	55-616436	STOCK	4610	4466		0.0	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.0	0.0	0.0	0.0	0.0	0.0
AWC-02	55-616586	MUNICIPAL	4500	4385		0.0	0.0	0.0	0.0	0.0	0.0	26.9	29.3	42.6	28.3	39.8	48.9	38.9	78.9	71.4	63.8	63.8
AWC-03	55-616585	MUNICIPAL	4517	4331		0.0	0.0	340.5	340.5	340.5	366.9	576.4	561.7	362.4	390.7	551.5	504.0	514.6	483.6	330.1	176.7	176.7
AWC-04	55-616584	MUNICIPAL	4459	4378		0.0	0.0	0.0	340.5	340.5	366.9	80.6	101.6	346.0	285.6	166.3	144.1	21.6	17.4	76.0	134.5	134.5
AWC-05	55-590620	MUNICIPAL	4397	3397		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48.4	158.3	137.8	220.3	302.8	302.8
BANKS 986	55-647986	DOMESTIC	4425	4380		0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
BANKS 987	55-647987	DOMESTIC	4610	4320		0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BARTON 010	55-85010	DOMESTIC	4489	4439		0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BARTON 919	55-644919	DOMESTIC	4492	4442		0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BERNAL	55-648363	DOMESTIC	4370	4320		0.0	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BIMA	55-577927	DOMESTIC	4602	4552		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
BINYON	55-594938	DOMESTIC	4452	4402		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3
BJ-7			4577	4452		0.0	0.0	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BLOMMER	55-633472	DOMESTIC	4724	4385		0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BRINDLEY	55-86775	DOMESTIC	4724	4416		0.0	0.0	0.0	0.0	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.0	0.0
BULLARD	55-602134	DOMESTIC	4675	4388		0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BURKE	55-212268	DOMESTIC	4656	4606		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
CAMPBELL	55-643481	DOMESTIC	4494	4444		0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0
CHAMBERS	55-629807	DOMESTIC	4400	4350		0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
CHASE	55-648359	DOMESTIC	4357	4307		0.0	0.0	0.0	0.1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
COLLINS	55-565260	DOMESTIC	4534	4484		0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
CONNOR	55-516399	DOMESTIC	4636	4586		0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COOPER	55-623564	DOMESTIC/IRRIGATION	4643	4593		0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
COOPER C	55-637069	DOMESTIC	4395	4345		0.0	0.0	0.0	0.2	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DODSON	55-644927	DOMESTIC	4659	4469		0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DOUGLASS 791	55-592791	DOMESTIC	4503	4453		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.3	0.0	0.0	0.0
DOUGLASS 792	55-592792	DOMESTIC	4482	4432		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.3	0.0	0.0	0.0
DURAZO	NR	DOMESTIC	4334	4224		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3
EAST	55-599796	DOMESTIC	4452	4410		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3
EN-01	NA (Mexico)	IRRIGATION	4659	4232		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EN-02	NA (Mexico)	IRRIGATION	4659	4232		0.0	0.0	0.0	495.3	697.1	697.1	278.8	306.7	334.6	362.5	390.4	418.3	446.1	474.0	501.9	501.9	501.9
EN-03	NA (Mexico)	IRRIGATION	4642	4298		0.0	0.0	0.0	495.3	697.1	697.1	278.8	306.7	334.6	362.5	390.4	418.3	446.1	474.0	501.9	501.9	501.9
EN-05	NA (Mexico)	IRRIGATION	4659	4232		0.0	0.0	0.0	0.0	0.0	0.0	278.8	306.7	334.6	362.5	390.4	418.3	446.1	474.0	501.9	501.9	501.9
EN-06	NA (Mexico)	IRRIGATION	4659	4232		0.0	0.0	0.0	0.0	0.0	0.0	278.8	306.7	334.6	362.5	390.4	418.3	446.1	474.0	501.9	501.9	501.9
EPPELE 641	55-805641	DOMESTIC/IRRIGATION	4458	4398		0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EPPELE 642	55-805642	DOMESTIC/IRRIGATION	4442	4392		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
EPPELE 643	55-805643	DOMESTIC	4442	4392		0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FRANCO	55-500101	DOMESTIC	4436	4386		0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
FULTZ	55-212447	DOMESTIC	4451	4351		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3
GALLANT	55-502527	DOMESTIC	4400	4350		0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
GARNER 557	55-558557	DOMESTIC	4371	4271		0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GARNER 635	55-587635	DOMESTIC	4428	4378		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
GGOOSE 546	55-628546	DOMESTIC/IRRIGATION	4692	3905		0.0	0.0	0.0	76.9	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GGOOSE 547	55-628547	DOMESTIC/IRRIGATION	4692	4271		0.0	0.0	0.0	76.9	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GOAR	55-610686	IRRIGATION	4610	4363		0.0	0.0	100.0	100.0	100.0	18.3	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
GOAR	55-610687	IRRIGATION	4593	4353		0.0	0.0	100.0	100.0	100.0	18.3	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
GOAR	55-610689	IRRIGATION	4610	4363		0.0	0.0	100.0	100.0	100.0	18.3	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
GOAR RANCH	55-610695	DOMESTIC	4431	4381		0.0	0.0	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GREGG	55-630852	DOMESTIC	4626	4320		0.0	0.0	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HAUBERT	55-801607	DOMESTIC/IRRIGATION	4458	4408		0.0	0.0	100.0	100.0	100.0	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
HECK	55-507823	DOMESTIC	4724	4324		0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HOBAN	55-805290	DOMESTIC	4417	4297		0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
HULL 854	55-606854	IRRIGATION	4675	4490		1.8	1.8	1.8	1.8	1.8	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HULL 855	55-606855	DOMESTIC	4734	4404		0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HUMPHREY	55-649153	DOMESTIC	4354	4304		0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IRONS	55-632924	DOMESTIC/IRRIGATION	4416	4366		0.0	0.0	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
JACKSON	55-506034	DOMESTIC	4524	4424		0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
JALYN	55-209737	DOMESTIC	4396	4346		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0
KEEFER	55-209744	DOMESTIC	4372	4322		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3
L-1		STOCK	4495	4085		0.0	0.0	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
L-2		STOCK	4478	4052		0.0	0.0	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
L-3		DOMESTIC	4478	4052		0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LUCERO	55-618175	DOMESTIC	4377	4327		0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
M-1		STOCK	4610	4421		0.0	0.0	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
MCCONNELL 265	55-539265	DOMESTIC	4401	4351		0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
MENDEZ	55-650256	IRRIGATION	4380	4330		0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
METZLER	35-71891	DOMESTIC	4484	4384		0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
MILLER 340	55-641340	STOCK/DOMESTIC	4516	4496		0.0	0.2	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE 23
Pumping Wells and Pumping Rates in RSET Model
(all rates in gallons per minute)

WellName	ADWR 55 Registry No.	Water Use	Screen Top[1] (ft amsl)	Screen Bottom[1] (ft amsl)	Stress Period	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
					Year	1905 - 1930	1931 - 1954	1955 - 1961	1962 - 1975	1976 - 1987	1988 - 1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
MILLER 341	55-641341	STOCK	4544	4463		0.0	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0.0	0.0	0.0	0.0	0.0	0.0
MILLER 342	55-641342	STOCK	4610	4424		0.0	1.8	1.8	0.4	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MINNERLY	55-650662	DOMESTIC	4456	4436		0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
MINOR 316	55-633316	DOMESTIC	4544	4352		0.0	0.0	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MINOR 317	55-633317	DOMESTIC	4379	4329		0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
MOORE	55-538847	DOMESTIC	4354	4304		0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
MOROYOQUI	55-647847	DOMESTIC	4360	4310		0.0	0.0	0.0	0.2	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NESS	55-509127	DOMESTIC	4597	4547		0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NOBLE	55-618611	DOMESTIC	4439	4389		0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0
NOTEMAN	55-212483	DOMESTIC	4541	4496		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3
NSD-02	55-527587	MUNICIPAL	4445	4405		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3
NSD-03	55-527586	MUNICIPAL	4467	4427		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3
NWC-01	55-627682	MUNICIPAL	4560	4167		0.0	0.0	50.1	50.1	50.1	62.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NWC-02	55-562944	MUNICIPAL	4363	4263		0.0	0.0	0.0	0.0	0.0	0.0	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
NWC-02 CAPPED	55-627683	MUNICIPAL	4363	4263		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NWC-03	55-203321	MUNICIPAL	4318	4258		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1
NWC-03 CAPPED	55-627684	MUNICIPAL	4318	4258		0.0	22.0	22.0	32.1	50.1	50.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0	0.0	0.0	0.0	0.0
NWC-04	55-551849	MUNICIPAL	4593	4544		0.0	0.0	0.0	0.0	0.0	0.0	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3
NWC-04 CAPPED	55-627685	MUNICIPAL	4675	4610		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NWC-05	55-627696	MUNICIPAL	4659	4281		0.0	5.1	13.8	9.2	9.2	9.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NWC-06	55-575700	MUNICIPAL	4415	4255		0.0	0.0	0.0	0.0	0.0	0.0	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4
OSBORN	55-643436	DOMESTIC	4692	4547		0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PALMER 819	55-578819	DOMESTIC	4456	4406		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
PANAGAKOS	35-76143	DOMESTIC	4590	4490		0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
PARRA	55-576415	DOMESTIC	4527	4477		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
PAVLOVICH	55-502193	DOMESTIC	4918	4868		0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0
PIONKE	55-613395	DOMESTIC	4410	4360		0.0	0.0	0.0	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
POOL	55-509518	DOMESTIC	4610	4308		0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
POWER	55-624535	STOCK/DOMESTIC	4806	4718		0.0	0.0	0.0	1.8	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RAMIREZ	55-216425	DOMESTIC	4323	4283		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
RAY	55-803772	DOMESTIC	4396	4336		0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
RICHARDS	55-531595	DOMESTIC	4510	4470		0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
RODRIGUEZ	55-648360	DOMESTIC	4387	4337		0.0	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ROGERS 596	55-573596	DOMESTIC	4364	4314		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0
ROGERS 801	55-641801	DOMESTIC	4380	4330		0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ROGERS 803	55-641803	DOMESTIC	4379	4329		0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
ROGERS E	55-216018	DOMESTIC	4351	4301		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
ROLLINS	55-641750	DOMESTIC	4380	4330		0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0
ROSS	55-517526	DOMESTIC	4656	4606		0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
RUIZ	55-531770	DOMESTIC	4535	4485		0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
SCHWARTZ	55-210865	DOMESTIC	4352	4302		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3
SHAFER	55-649994	DOMESTIC	4489	4429		0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SILVESTRI	55-557742	DOMESTIC	4545	4465		0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUNBELT	55-201531	DOMESTIC	4607	4557		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.0
SUNNYSIDE	55-588270	DOMESTIC	4383	4333		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.0	0.0	0.0
TVI 236	55-802236	IRRIGATION	4528	4320		0.0	300.3	300.3	300.3	200.0	137.6	101.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0
TVI 875	55-568875	IRRIGATION	4400	4245		0.0	0.0	0.0	0.0	0.0	0.0	62.0	124.0	124.0	124.0	124.0	124.0	124.0	124.0	124.0	124.0	124.0
TVI-SS2		IRRIGATION	4528	4320		0.0	0.0	0.0	0.0	0.0	0.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0
UN-01	NA (Mexico)	MUNICIPAL	4659	4232		0.0	0.0	0.0	182.7	244.7	365.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
UN-02	NA (Mexico)	MUNICIPAL	4659	4232		0.0	0.0	0.0	0.0	0.0	0.0	332.9	332.9	332.9	332.9	332.9	332.9	332.9	332.9	332.9	332.9	332.9
UN-03	NA (Mexico)	MUNICIPAL	4675	4249		0.0	0.0	0.0	63.5	85.4	126.9	115.2	115.2	115.2	115.2	115.2	115.2	115.2	115.2	115.2	115.2	115.2
UN-04	NA (Mexico)	MUNICIPAL	4659	4232		0.0	0.0	0.0	0.0	0.0	0.0	153.6	153.6	153.6	153.6	153.6	153.6	153.6	153.6	153.6	153.6	153.6
UN-05	NA (Mexico)	MUNICIPAL	4659	4232		0.0	0.0	0.0	0.0	0.0	0.0	230.4	230.4	230.4	230.4	230.4	230.4	230.4	230.4	230.4	230.4	230.4
UNION PACIFIC RR	55-626702	MUNICIPAL	4550	4500		1.0	1.8	1.8	1.8	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VALENZUELA	55-645050	DOMESTIC	4354	4304		0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
WALKER	55-200393	DOMESTIC	4402	4352		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3
WEED	55-544535	DOMESTIC	4488	4438		0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0
WEISKOPF	55-641802	DOMESTIC	4387	4337		0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0
WILSON 361	55-648361	STOCK	4387	4337		0.0	0.3	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WILSON 362	55-648362	STOCK	4400	4350		0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
ZANDER	55-205126	DOMESTIC	4381	4331		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3

Notes:

[1] Elevations are estimated from available well information and may not be exact
UTM E = Universal Transverse Mercator, North American 1983 Datum Easting (meters)
UTM N = Universal Transverse Mercator, North American 1983 Datum Northing (meters)
ft amsl = feet above mean sea level
NA = not applicable

TABLE 24
Aquifer Recharge in the RSET Model

Source	Number of Model Cells	Area		Initial Rate			Final Rate			Initial Concentration	Final Concentration
		(m^2)	(acres)	in/yr	(ac-ft/yr)	(gpm)	in/yr	(ac-ft/yr)	(gpm)	(mg/L)	(mg/L)
Natural Recharge - high (1904-2008)	7,173	71,730,000	17,725	3.67	5,416	3,356	3.67	5,416	3,356	8	8
Natural Recharge - low (1904-2008)	7,025	70,250,000	17,359	0.00388	5.62	3.48	3.88E-03	5.62	3.48	8	8
Natural Recharge - total	**14,198**	**141,980,000**	**35,084**		**5,422**	**3,359**		**5,422**	**3,359**	**8**	**8**
Evaporation Pond - east (1905-1987)	101	1,010,000	250	60.4	1,256	778	60.4	1,256	778	3,000	2,500
Evaporation Pond - west (1905-1987)	43	430,000	106	208.5	1,846	1,144	208.5	1,846	1,144	3,000	2,500
Evaporation Pond - total	**144**	**1,440,000**	**356**	**269**	**3,102**	**1,922**	**269**	**3,102**	**1,922**	**3,000**	**2,500**
Warren Ranch Irrigation Area - east (1905-1985)	428	4,280,000	1,058	0.863	76.0	47.1	11.2	987	612	1,500	250
Warren Ranch Irrigation Area - west (1905-1985)	477	4,770,000	1,179	10.8	1,059	656	11.2	1,100	682	1,500	250
Warren Ranch Irrigation Area - total	**905**	**9,050,000**	**2,236**		**1,135**	**703**		**2,087**	**1,293**	**varies**	**varies**
Warren WWTF Ponds (1931-2005)	**5**	**50,000**	**12.4**	**155**	**160**	**99.1**	**155**	**160**	**99.1**	**46**	**46**
Golf Course - existing (1931-2008)	**8**	**80,000**	**19.8**	**20.1**	**33.2**	**20.5**	**20.1**	**33.2**	**20.5**	**8**	**8**
Golf Course - expansion (1998-2008)	**8**	**80,000**	**19.8**	**20.1**	**33.2**	**20.5**	**20.1**	**33.2**	**20.5**	**8**	**8**
Naco Sonora WWTF Pond - east (1962-2008)	4	40,000	9.9	96.1	79.1	49.0	96.1	79.1	49.0	46	46
Naco Sonora WWTF Pond - west (1962-2008)	4	40,000	9.9	96.1	79.1	49.0	96.1	79.1	49.0	46	46
Naco Sonora WWTF Pond - total	**8**	**80,000**	**20**		**158**	**98**		**158**	**98**	**25**	**25**
El Oasis Irrigation Ponds (1962-2008)	**124**	**1,240,000**	**306**	**95.9**	**2,449**	**1,517**	**25.9**	**661**	**409**	**8**	**8**
El Oasis Irrigation Ponds (1998-2008)	**155**	**1,550,000**	**383**	**95.9**	**3,061**	**1,896**	**20.9**	**666**	**412**	**8**	**8**
San Jose WWTF (lagoons, 2000-2006)	**5**	**50,000**	**12.4**	**75**	**77**	**48**	**75**	**77**	**48**	**46**	**46**
San Jose WWTF (Greenbush Draw, 2007-2008)	**16**	**160,000**	**39.5**	**140**	**460**	**285**	**140**	**460**	**285**	**46**	**46**

Notes:
m^2 = square meters
in/yr = inches per year
ac-ft/yr = acre-feet per year
gpm = gallons per minute
mg/L = milligrams per liter

TABLE 25
Initial and Final Flow and Transport Parameters in the RSET Model

Zone	Kh (ft/d)		Kv (ft/d)		S (ft/ft)		Sy (-)		θ_{eff} (-)		α_L (-)	
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
Layer 1 (Basin Fill)												
Zone 1	29.5	29.5	0.230	0.033	0.0001	0.001	0.2	0.2	0.212	0.212	1	1
Zone 2	72.4	72.4	2.62	2.62	0.0001	0.001	0.175	0.175	0.22	0.22	37	37
Zone 3	65.2	65.2	2.30	2.30	0.0001	0.001	0.2	0.2	0.22	0.22	37	37
Zone 4	23.0	39.4	3.61	3.28	0.0001	0.001	0.08	0.19	0.55	0.55	29.5	30
Zone 15[1]		39.4		3.28		0.001		0.19		0.235		
Layer 2/3 (Undifferentiated Bisbee Group)												
Zone 5	2.95	1.48	0.098	0.098	0.0001	0.001	0.01	0.001	0.1	0.1	9.5	9.5
Zone 6	1.39	0.44	0.0328	0.0033	0.0032	0.001	0.0955	0.001	0.06	0.06	20	20
Zone 7	1.97	1.97	2.62E-04	2.62E-04	0.00025	0.001	0.042	0.001	0.051	0.051	5.2	5.2
Zone 8	3.28E-03	3.28E-03	0.098	0.098	0.00015	0.0015	0.0275	0.0015	0.12	0.12	2.5	2.5
Zone 9	19.7	1.0	0.131	0.003	0.0005	0.001	0.05	0.001	0.08	0.08	12	12
Zone 10	0.0246	0.0610	0.098	0.098	0.00033	0.0033	0.074	0.0033	0.08	0.08		
Zone 11	1.64	0.33	1.02	0.33	1.00E-05	1.20E-05	0.01	0.000012	0.122	0.122		
Zone 16[2]						1.00E-03		0.03		0.04		
Layer 4 (Glance)												
Zone 8	3.28E-03	3.28E-03	0.0984	0.0984	0.00015	0.0015	0.0275	0.0015	0.12	0.12	2.5	5.2
Zone 10	0.0246	0.0610	0.0984	0.0984	0.00033	0.0033	0.08	0.0033	0.08	0.08	14.5	12
Zone 12	0.591	0.591	3.28E-03	3.28E-03	0.00028	0.0028	0.068	0.0028	0.035	0.035		
Zone 13	1.64	0.66	9.84E-03	9.84E-03								

Notes:

[1] Added during model calibration, replacing a portion of zone 4 on west side of Black Gap fault

[2] Added during model calibration, replacing a portions of zones 5 and 7 on east side of Black Gap fault

Kh = horizontal hydraulic conductivity

Kv = vertical hydraulic conductivity

S = storage coefficient

Sy = specific yield

θ_{eff} = effective porosity

α_L = longitudinal dispersivity

ft/d = feet per day

TABLE 26
Simulated and Estimated Target Values for Steady-State Simulation

Target	Target Value	Simulated Value
Groundwater flux through western boundary in basin fill; estimated by Littin, 1987 (ac-ft/yr)	5,200	7,647
Groundwater elevation in NWC-3; approximated from 1930 measurement (ft amsl)	4,466	4,458

Notes:
ac-ft/yr = acre-feet per year
ft amsl = feet above mean sea level

TABLE 27
Simulated and Measured Target Values for Transient Flow Simulation

Well Name	Year	Target Value (ft amsl)	Simulated Value (ft amsl)	Residual (ft)
BMO-2008-3B				
	2009	4445.97	4444.67	1.30
BMO-2008-5B				
	2009	4440.63	4437.20	3.43
BMO-2008-5M				
	2009	4438.98	4438.83	0.15
BMO-2008-6B				
	2009	4437.26	4438.13	-0.87
BMO-2008-6M				
	2009	4435.96	4436.74	-0.78
BMO-2008-7M				
	2009	4449.33	4460.48	-11.15
BMO-2008-9M				
	2009	4475.20	4489.01	-13.81
TM-10 (USBP)				
	1988	4492.22	4465.31	26.91
	1989	4481.83	4464.81	17.02
	1990	4479.98	4464.53	15.45
	1994	4471.02	4463.95	7.07
	1996	4465.12	4463.70	1.42
TM-11 (ANDERSON)				
	1988	4461.04	4451.40	9.64
	1989	4459.38	4450.91	8.48
	1990	4460.15	4450.45	9.70
TM-12 (MILLER)				
	1988	4461.99	4454.50	7.49
	1989	4460.58	4454.12	6.46
	1990	4457.99	4453.76	4.23
	1996	4443.14	4452.10	-8.97
	1997	4442.45	4451.96	-9.51
	1998	4441.30	4451.87	-10.57
	1988	4461.43	4458.18	3.25
	1989	4460.16	4457.54	2.61
	1990	4460.02	4456.97	3.05
	1994	4445.73	4455.17	-9.44
	2001	4447.30	4451.28	-3.98
TM-14 (NELSON)				
	2008	4431.69	4432.72	-1.03
	2009	4432.41	4432.40	0.01
TM-14 (PRESSLEY)				
	1988	4471.51	4440.77	30.74
	1989	4469.56	4440.40	29.16
	1990	4462.23	4440.03	22.20
TM-15 (MILLER)				
	1988	4460.37	4443.10	17.28
	1989	4459.96	4442.76	17.20
	1990	4461.79	4442.60	19.18
	1996	4445.45	4442.17	3.28
	1999	4444.36	4439.57	4.79
	2000	4443.06	4439.24	3.82
	2002	4440.70	4438.54	2.16
	2005	4584.46	4437.13	147.33

TABLE 27
Simulated and Measured Target Values for Transient Flow Simulation

Well Name	Year	Target Value (ft amsl)	Simulated Value (ft amsl)	Residual (ft)
	2006	4434.41	4436.84	-2.43
	2007	4434.26	4436.49	-2.23
	2008	4434.36	4436.32	-1.96
TM-17				
	1988	4468.37	4482.13	-13.76
	1989	4467.38	4481.55	-14.17
	1990	4468.53	4481.24	-12.72
	1994	4455.07	4480.61	-25.54
TM-19				
	1989	4470.39	4466.54	3.85
	1990	4466.64	4466.33	0.31
	1991	4462.37	4466.21	-3.84
	1992	4459.90	4466.13	-6.23
	1993	4455.79	4466.04	-10.25
	1994	4453.85	4465.91	-12.06
	1995	4451.00	4465.80	-14.80
	1996	4447.63	4465.72	-18.09
	2005	4429.47	4458.98	-29.52
	2006	4430.30	4458.66	-28.37
	2007	4428.65	4458.37	-29.71
TM-19A				
	1989	4484.83	4460.17	24.65
	1990	4488.05	4459.59	28.46
	1994	4468.02	4457.79	10.23
	1996	4460.86	4457.14	3.72
	1997	4459.32	4456.94	2.38
	1999	4460.85	4456.12	4.73
	2000	4458.68	4454.80	3.88
	2001	4456.90	4453.43	3.47
	2002	4454.63	4452.18	2.45
	2003	4453.26	4450.98	2.28
	2004	4451.28	4449.89	1.40
	2005	4449.94	4448.87	1.07
	2007	4446.82	4447.01	-0.19
	2008	4446.02	4446.32	-0.30
	2009	4446.49	4445.67	0.81
TM-01A				
	1989	4487.36	4394.79	92.57
TM-01B				
	1989	4489.23	4492.20	-2.97
TM-27				
	1989	4535.78	4513.34	22.44
	1990	4535.96	4512.76	23.20
TM-02A				
	1989	4489.72	4499.60	-9.88
	1990	4494.16	4499.41	-5.25
	1993	4457.90	4499.27	-41.37
	1994	4480.60	4499.22	-18.62
	1996	4477.25	4499.14	-21.89
	1997	4476.61	4499.12	-22.51
	1998	4475.99	4499.10	-23.12

TABLE 27
Simulated and Measured Target Values for Transient Flow Simulation

Well Name	Year	Target Value (ft amsl)	Simulated Value (ft amsl)	Residual (ft)
	1999	4473.73	4476.38	-2.65
	2000	4473.29	4476.00	-2.71
	2001	4473.61	4475.60	-1.99
	2002	4473.29	4475.37	-2.08
	2003	4471.72	4474.77	-3.05
	2004	4468.98	4474.63	-5.65
	2005	4465.97	4474.50	-8.53
	2006	4463.96	4474.34	-10.38
	2007	4462.63	4474.23	-11.60
	2008	4461.81	4474.18	-12.37
	2009	4458.59	4474.04	-15.45
TM-30				
	1989	4475.15	4462.03	13.12
TM-30A				
	1989	4476.06	4462.03	14.03
	1990	4475.62	4461.39	14.23
TM-30B				
	1989	4471.96	4467.56	4.39
	1990	4470.63	4467.32	3.31
TM-37				
	1989	4475.13	4469.37	5.77
	1990	4478.61	4468.61	10.00
TM-38				
	1989	4479.09	4468.71	10.37
	1990	4479.22	4467.96	11.26
TM-39				
	1989	4514.07	4549.61	-35.54
	1990	4512.64	4548.89	-36.25
TM-04				
	1988	4680.00	4667.13	12.87
	1989	4678.94	4666.93	12.00
	1990	4679.60	4666.88	12.71
TM-42				
	1997	4472.62	4487.42	-14.80
	1998	4471.56	4487.31	-15.75
	1999	4471.77	4480.58	-8.81
	2000	4468.46	4479.58	-11.12
	2001	4466.64	4478.49	-11.86
	2002	4464.27	4477.84	-13.57
	2003	4462.75	4476.98	-14.24
	2004	4460.97	4476.50	-15.53
	2005	4459.77	4475.94	-16.17
	2006	4458.01	4475.46	-17.45
	2007	4456.57	4475.09	-18.52
	2008	4455.63	4474.82	-19.19
	2009	4456.81	4474.36	-17.55
TM-05 (MILLER)				
	1988	4465.32	4467.92	-2.60
	1989	4464.89	4467.64	-2.74
	1990	4464.16	4467.35	-3.19
	1996	4449.13	4465.91	-16.78

TABLE 27
Simulated and Measured Target Values for Transient Flow Simulation

Well Name	Year	Target Value (ft amsl)	Simulated Value (ft amsl)	Residual (ft)
	1997	4447.78	4465.74	-17.96
	1998	4445.90	4465.58	-19.68
	1999	4446.51	4465.38	-18.88
	2000	4448.83	4465.16	-16.33
TM-06 (MILLER)				
	1988	4543.83	4549.74	-5.91
	1989	4544.46	4549.32	-4.86
	1990	4550.28	4548.92	1.36
	1996	4542.99	4547.15	-4.16
	1997	4542.95	4546.99	-4.04
	1998	4547.35	4546.90	0.45
	1999	4549.48	4544.26	5.22
	2000	4549.58	4543.90	5.68
	2001	4549.61	4543.26	6.34
	2002	4549.63	4542.89	6.74
	2003	4549.56	4542.23	7.32
	2005	4602.15	4541.60	60.54
	2006	4549.13	4541.28	7.85
	2007	4549.13	4541.06	8.07
	2008	4549.10	4540.92	8.18
	2009	4549.08	4540.55	8.53
TM-07				
	1988	4489.49	4489.74	-0.25
	1989	4491.19	4488.95	2.24
	1990	4487.32	4488.49	-1.17
	1991	4479.75	4488.19	-8.44
	1992	4475.05	4487.98	-12.93
	1993	4470.13	4487.77	-17.65
	1994	4467.11	4487.53	-20.42
	1995	4463.64	4487.33	-23.69
	1996	4459.57	4487.17	-27.60
	1997	4457.59	4487.06	-29.47
	1998	4455.00	4487.00	-32.00
	1999	4454.06	4472.98	-18.92
	2000	4454.40	4470.72	-16.32
	2001	4452.29	4468.97	-16.68
	2002	4449.60	4467.96	-18.36
UN-01 (NS-1)				
	2009	4426.06	4440.29	-14.23
UN-05 (NS-5)				
	2009	4477.51	4441.86	35.65

Notes:
ft = feet
amsl = above mean sea level

TABLE 28
Simulated and Measured Target Values for Transport Simulation

Well Name	Year	Target Value (mg/L)	Simulated Value (mg/L)	Residual (mg/L)
ANDERSON	2008	431	498	-67
ANDERSON	2009	462	508	-46
AWC-02	1995	15	10	5
AWC-02	1996	19	10	9
AWC-02	2000	7	10	-4
AWC-02	2001	7	11	-4
AWC-02	2002	7	11	-4
AWC-02	2003	7	11	-4
AWC-02	2004	8	11	-3
AWC-02	2005	13	11	1
AWC-02	2006	13	11	2
AWC-02	2007	10	11	-1
AWC-02	2008	14	12	2
AWC-02	2009	14	12	2
AWC-03	1994	23	15	8
AWC-03	2000	24	17	7
AWC-03	2001	20	18	2
AWC-03	2002	24	18	5
AWC-03	2003	28	19	9
AWC-03	2004	30	19	11
AWC-03	2005	34	19	15
AWC-03	2006	37	20	17
AWC-03	2007	41	21	20
AWC-03	2008	27	21	5
AWC-03	2009	39	22	17
AWC-04	1991	20	14	6
AWC-04	1999	19	18	1
AWC-04	2000	22	18	4
AWC-04	2001	23	19	4
AWC-04	2002	25	20	5
AWC-04	2003	31	20	11
AWC-04	2009	19	24	-5
AWC-05	2002	10	8	1
AWC-05	2004	10	8	2
AWC-05	2005	17	8	8
AWC-05	2006	11	8	3
AWC-05	2007	20	8	12
AWC-05	2009	15	8	7
BANKS 986	2008	44	47	-3
BANKS 986	2009	74	46	27
BF-02	1993	1900	907	993
BF-02	1996	1640	913	727
BIMA	2008	200	288	-88
BIMA	2009	220	270	-50
BINYON	2009	13	8	5
BLOMMER	1996	292	348	-56
BLOMMER	2008	204	332	-129
BLOMMER	2009	199	326	-127
BURKE	2008	26	8	18
BURKE	2009	22	8	14
CHAMBERS	2008	109	8	101

TABLE 28
Simulated and Measured Target Values for Transport Simulation

Well Name	Year	Target Value (mg/L)	Simulated Value (mg/L)	Residual (mg/L)
CHAMBERS	2009	6	8	-2
COB MW-1	2006	1307	1598	-292
COB MW-1	2008	720	1581	-861
COB MW-1	2009	855	1578	-723
COB MW-2	2008	41	144	-103
COB MW-2	2009	39	145	-106
COB MW-3	2008	58	30	27
COB MW-3	2009	52	32	20
COB WL	2008	90	8	82
COB WL	2009	98	8	89
COOPER	2008	33	106	-73
COOPER	2009	34	100	-67
COOPERC	2008	935	722	213
COOPERC	2009	1015	732	283
DODSON	2008	54	241	-187
DODSON	2009	42	241	-199
EAST	2008	11	109	-98
EAST	2009	13	108	-95
EPPELE 641	2008	22	19	2
EPPELE 641	2009	22	19	3
FULTZ	2008	141	52	89
FULTZ	2009	131	50	82
GALLANT	2008	18	37	-19
GALLANT	2009	21	36	-16
GARNER 635	2008	80	51	30
GARNER 635	2009	37	51	-14
GGOOSE 547	2009	189	8	180
HOBAN	2008	510	1112	-602
HOBAN	2009	680	1116	-436
HOWARD	2008	571	634	-63
HOWARD	2009	642	644	-2
KEEFER	2008	7	23	-16
KEEFER	2009	9	24	-15
MCCONNELL 265	2008	720	847	-127
MCCONNELL 265	2009	721	856	-135
METZLER	2008	317	11	306
METZLER	2009	323	11	312
MOORE	2008	7	11	-4
MOORE	2009	9	11	-2
NESS	2009	50	8	42
NOTEMAN	2008	310	117	193
NOTEMAN	2009	273	114	159
NSD-01	1997	14	8	6
NSD-01	2003	12	8	4
NSD-01	2004	26	8	18
NSD-01	2005	14	8	6
NSD-01	2006	9	8	1
NSD-01	2007	18	8	10
NSD-02	1997	25	18	7
NSD-02	2001	18	20	-2
NSD-02	2003	34	21	13

TABLE 28
Simulated and Measured Target Values for Transport Simulation

Well Name	Year	Target Value (mg/L)	Simulated Value (mg/L)	Residual (mg/L)
NSD-02	2004	16	21	-5
NSD-02	2005	45	22	23
NSD-02	2006	73	23	50
NSD-02	2007	61	23	37
NSD-02	2008	43	24	19
NSD-03	1986	71	202	-131
NSD-03	1996	109	382	-273
NSD-03	1997	135	399	-264
NSD-03	2002	215	463	-248
NSD-03	2004	94	485	-391
NSD-03	2005	171	496	-325
NSD-03	2006	39	505	-466
NSD-03	2007	38	513	-475
NSD-03	2008	71	517	-446
NWC-02	1996	31	8	23
NWC-03	1997	148	399	-251
NWC-03	2002	215	463	-248
NWC-03	2005	425	496	-71
NWC-03	2006	360	505	-145
NWC-03	2008	560	517	43
NWC-03	2009	524	519	5
NWC-04	1995	219	240	-21
NWC-04	1997	314	240	74
NWC-04	2002	255	238	17
NWC-04	2005	210	234	-24
NWC-04	2006	210	233	-23
NWC-04	2008	240	229	11
NWC-04	2009	231	227	4
NWC-06	1999	8	8	0
NWC-06	2008	8	8	0
NWC-06	2009	7	8	-1
OSBORN	2008	16	8	8
OSBORN	2009	17	8	9
PALMER 819	2008	16	8	8
PALMER 819	2009	16	8	8
PANAGAKOS	2008	410	238	172
PANAGAKOS	2009	444	238	206
PARRA	2008	360	26	334
PARRA	2009	405	26	378
PIONKE	2008	394	363	31
PIONKE	2009	422	372	49
POOL	2008	134	22	112
POOL	2009	120	23	97
POWER	2008	16	8	8
POWER	2009	20	8	12
RAMIREZ	2008	8	8	0
RAMIREZ	2009	9	8	1
RAY	2008	142	26	116
RAY	2009	126	24	101
ROGERS 803	2008	130	399	-269
ROGERS 803	2009	133	410	-277

TABLE 28
Simulated and Measured Target Values for Transport Simulation

Well Name	Year	Target Value (mg/L)	Simulated Value (mg/L)	Residual (mg/L)
ROGERSE	2008	5	37	-32
ROGERSE	2009	7	38	-32
RUIZ	2008	263	256	7
RUIZ	2009	254	248	6
SCHWARTZ	2008	140	223	-83
SCHWARTZ	2009	159	228	-70
SRC	2008	19	8	11
SRC	2009	15	8	7
SWAN	2008	21	8	13
SWAN	2009	122	8	114
TM-01	1989	1581	883	698
TM-01	1990	1480	898	582
TM-02A	1989	27	16	10
TM-02A	1990	27	16	10
TM-02A	1993	20	17	3
TM-02A	1996	15	18	-3
TM-02A	2008	12	19	-6
TM-02A	2009	15	19	-4
TM-06 (MILLER)	1996	29	83	-54
TM-06 (MILLER)	2008	14	88	-74
TM-06 (MILLER)	2009	32	89	-57
TM-07	1989	460	1320	-860
TM-07	1990	456	1317	-861
TM-07	1992	313	1310	-997
TM-07	1993	317	1307	-990
TM-07	1996	311	1298	-988
TM-07	1997	294	1295	-1001
TM-07	2003	219	998	-779
TM-07	2008	23	766	-743
TM-07	2009	23	727	-704
TM-08 (SWAN)	2008	13	8	5
TM-08 (SWAN)	2009	13	8	5
TM-10 (USBP)	1989	15	8	7
TM-10 (USBP)	1990	17	8	9
TM-11 (PIONKE)	1989	10	160	-150
TM-11 (PIONKE)	1990	9	168	-159
TM-14 (NELSON)	2008	33	22	10
TM-15 (MILLER)	1996	14	8	6
TM-15 (MILLER)	2008	14	8	6
TM-15 (MILLER)	2009	14	8	6
TM-16	1989	527	105	422
TM-16	1990	520	106	414
TM-16	1996	485	112	373
TM-16	1997	497	113	384
TM-16	2008	497	119	378
TM-16	2009	494	119	375
TM-19	1989	1119	1198	-79
TM-19	1990	1120	1209	-89
TM-19	1993	1100	1241	-141
TM-19	1996	1110	1273	-163
TM-19	1997	1140	1283	-143

TABLE 28
Simulated and Measured Target Values for Transport Simulation

Well Name	Year	Target Value (mg/L)	Simulated Value (mg/L)	Residual (mg/L)
TM-19A	1989	55	45	10
TM-19A	1990	62	46	16
TM-19A	1993	63	47	16
TM-19A	1996	56	48	8
TM-19A	2008	56	52	4
TM-19A	2009	60	52	8
TM-41	1997	1920	2219	-299
TM-42	1997	972	203	769
TM-42	2008	482	202	280
TM-42	2009	475	202	273
TVI 236	2008	35	35	0
TVI 236	2009	35	35	0
TVI 875	2008	244	236	8
TVI 875	2009	262	245	17
WALKER	2008	20	68	-48
WALKER	2009	45	68	-22
WEED	2008	11	342	-331
WEED	2009	12	338	-326
WEISKOPF	2008	500	491	9
WEISKOPF	2009	522	501	20
ZANDER	2008	6	11	-5
ZANDER	2009	7	11	-5

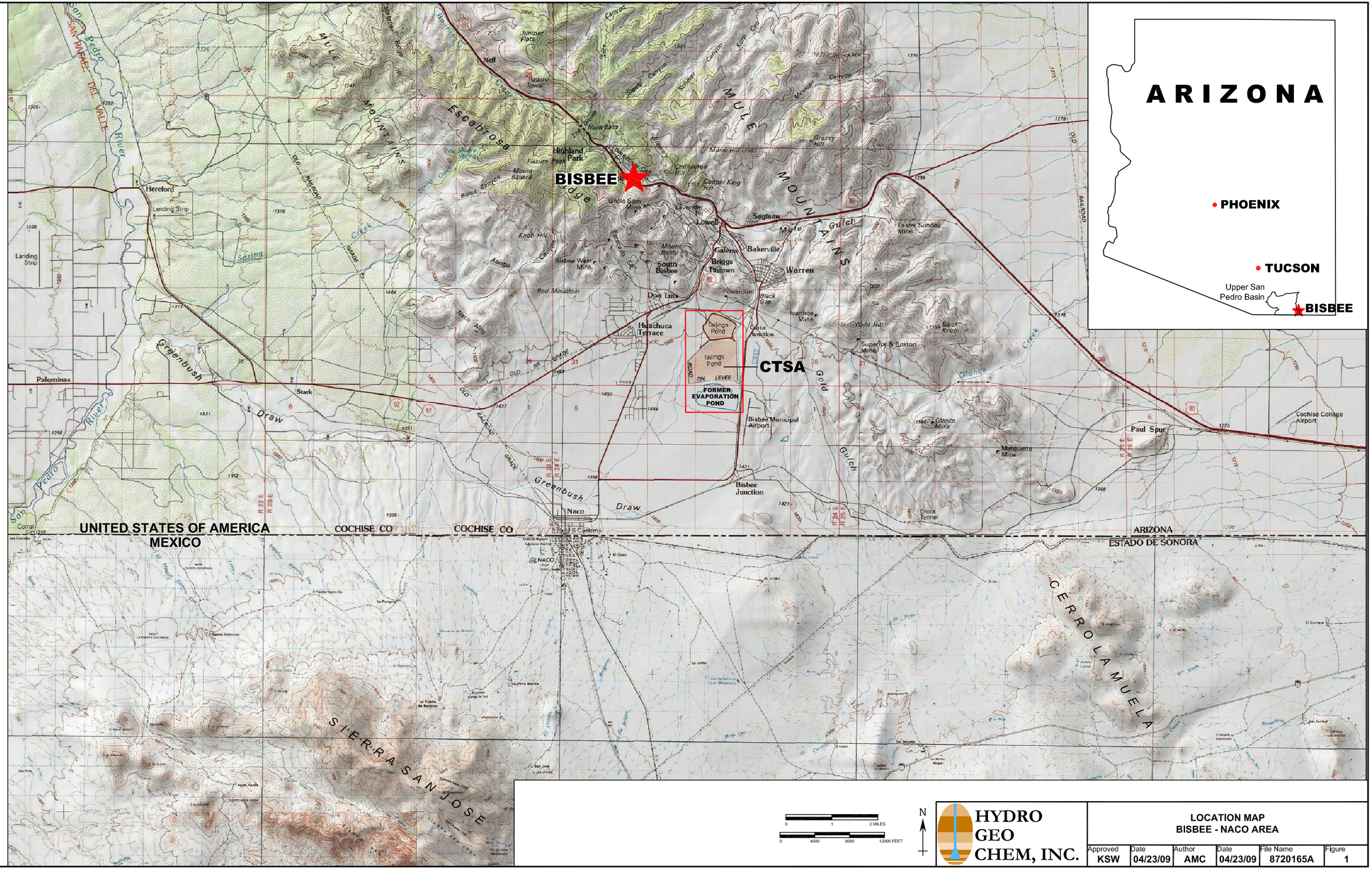
Notes:
mg/L = milligrams per liter
NF = In a no flow cell, no simulated value

TABLE 29
Sensitivity of Hydraulic Conductivity Zones

Percent Change in Sum of Squared Residuals for Variations in Hydraulic Conductivity					
Zone	Multiplier				
	0.5	0.75	1	1.25	2
1	2%	1%	0%	1%	2%
2	0%	0%	0%	0%	0%
3	0%	0%	0%	0%	0%
4	38%	13%	0%	7%	18%
5	146%	44%	0%	23%	53%
6	5%	2%	0%	2%	6%
7	0%	0%	0%	0%	0%
8	2%	1%	0%	1%	3%
9	1%	0%	0%	0%	1%
10	0%	0%	0%	0%	0%
11	0%	0%	0%	0%	0%
12	1%	0%	0%	0%	1%
13	8%	2%	0%	1%	2%

Average Change in Hydraulic Head (feet)					
Zone	Multiplier				
	0.5	0.75	1	1.25	2
1	1.60	1.35	1.19	1.09	0.94
2	1.19	1.19	1.19	1.19	1.19
3	1.24	1.21	1.19	1.18	1.15
4	0.38	0.87	1.19	1.44	1.95
5	0.66	0.98	1.19	1.36	1.74
6	1.21	1.21	1.19	1.19	1.17
7	1.25	1.21	1.19	1.16	1.13
8	1.30	1.24	1.19	1.14	1.04
9	1.03	1.12	1.19	1.26	1.41
10	1.24	1.21	1.19	1.18	1.11
11	1.22	1.21	1.19	1.18	1.14
12	1.39	1.27	1.19	1.12	0.96
13	0.54	0.93	1.19	1.38	1.72

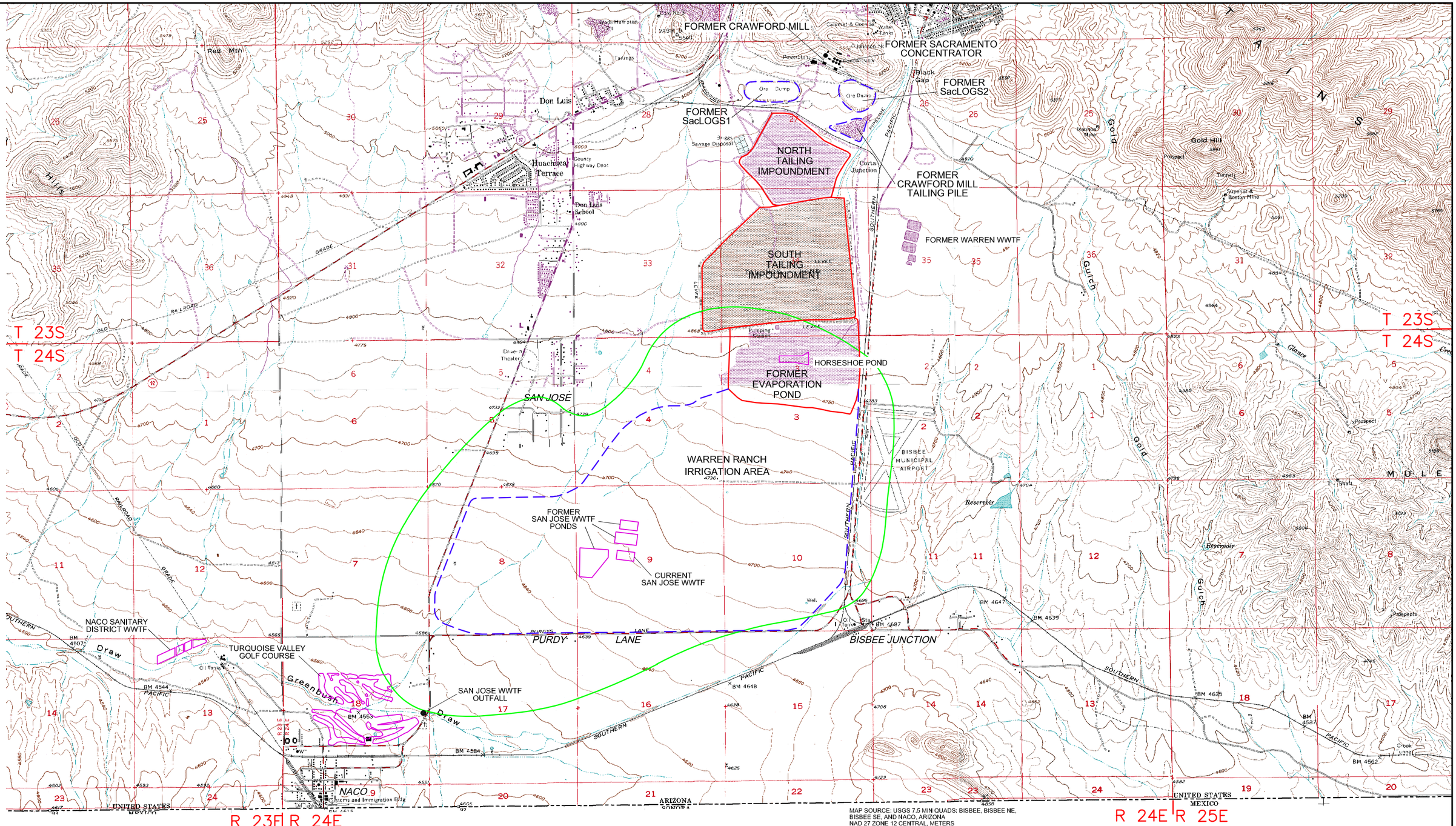
FIGURES



HYDRO GEO CHEM, INC.

LOCATION MAP
BISBEE - NACO AREA

Approved	Date	Author	Date	File Name	Figure
KSW	04/23/09	AMC	04/23/09	8720165A	1



MAP SOURCE: USGS 7.5 MIN QUADS: BISBEE, BISBEE NE, BISBEE SE, AND NACO, ARIZONA
NAD 27 ZONE 12 CENTRAL, METERS

CTSA FACILITY

FACILITY DISCUSSED IN TEXT

250 mg/L SULFATE ISOLINE (BASED ON FOURTH QUARTER 2008 DATA)

0 1/2 1 MILE

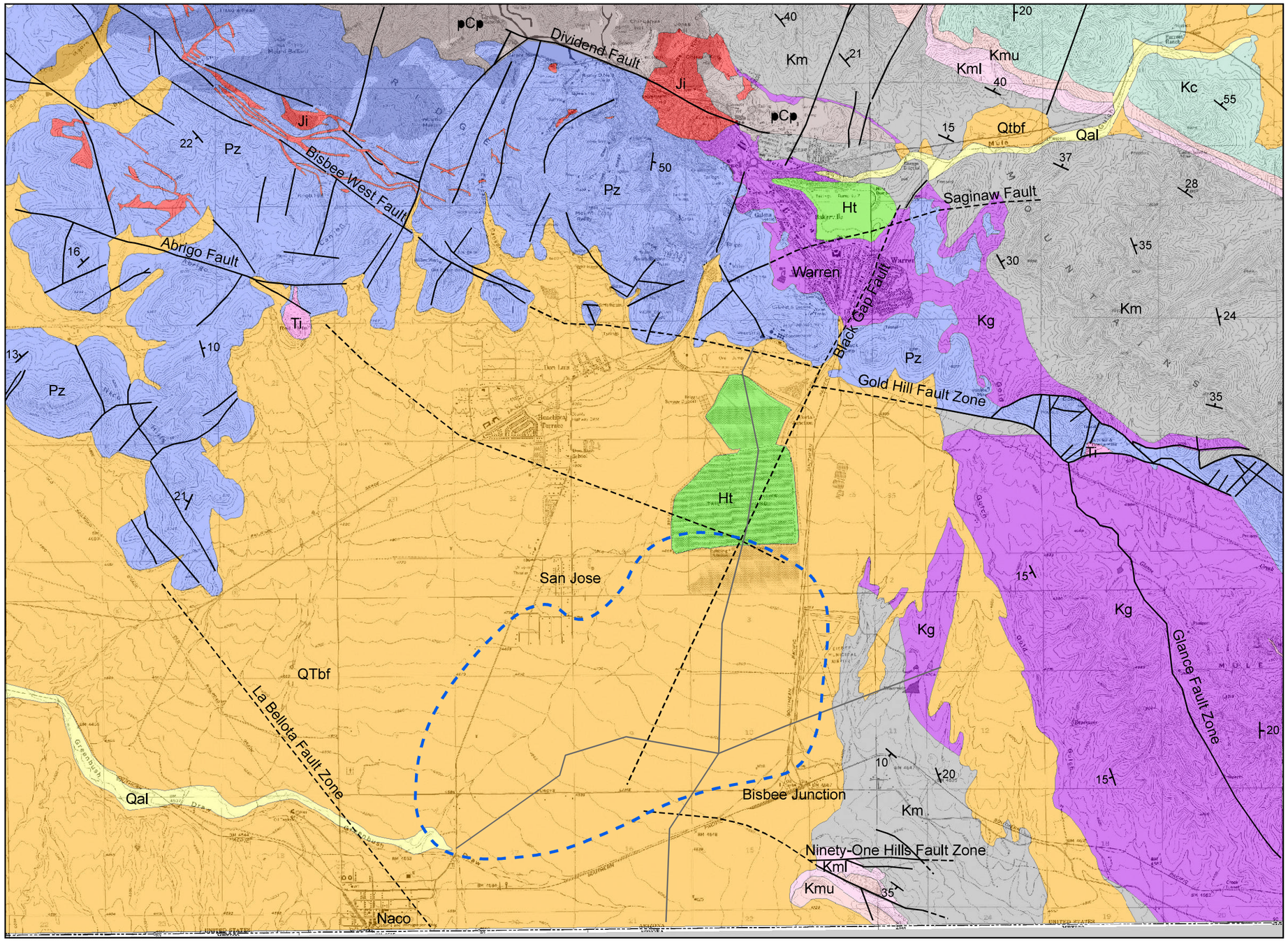
0 2000 4000 6000 FEET

N

HYDRO GEO CHEM, INC.

FACILITIES IN THE VICINITY OF THE CONCENTRATOR TAILING STORAGE AREA

Approved	Date	Author	Date	File Name	Figure
KSW	04/23/09	AMC	04/23/09	8720166A	2



EXPLANATION

- RECENT ALLUVIUM
  - Ht — HOLOCENE MINE DUMPS AND TAILINGS
  - Qal — QUATERNARY ALLUVIUM
- BASIN FILL
  - QTbf — QUATERNARY - TERTIARY BASIN FILL
- BEDROCK COMPLEX
  - Ti — TERTIARY INTRUSIVE
  - CRETACEOUS BISBEE GROUP
    - Kc — CINTURA FORMATION
    - Kmu — UPPER MURAL LIMESTONE
    - Kml — LOWER MURAL LIMESTONE
    - Km — MORITA FORMATION
    - Kg — GLANCE CONGLOMERATE
  - Ji — JURASSIC INTRUSIVE COMPLEX
  - Pz — PALEOZOIC SEDIMENTARY FORMATIONS, UNDIFFERENTIATED
  - pCp — PRECAMBRIAN PINAL SCHIST

FAULT (DASHED WHERE INFERRED)

250 mg/L SULFATE ISOLINE (BASED ON FOURTH QUARTER 2008 DATA)

37 STRIKE AND DIP OF BEDDING

SOURCES: GEOLOGY FROM HAYES AND LANDIS (1964)
FAULT PROJECTIONS FROM SET (1998c)
GLANCE AND LA BELLOTA FAULTS FROM ANDERSON AND NOURSE (2005)

0 0.5 1 Miles

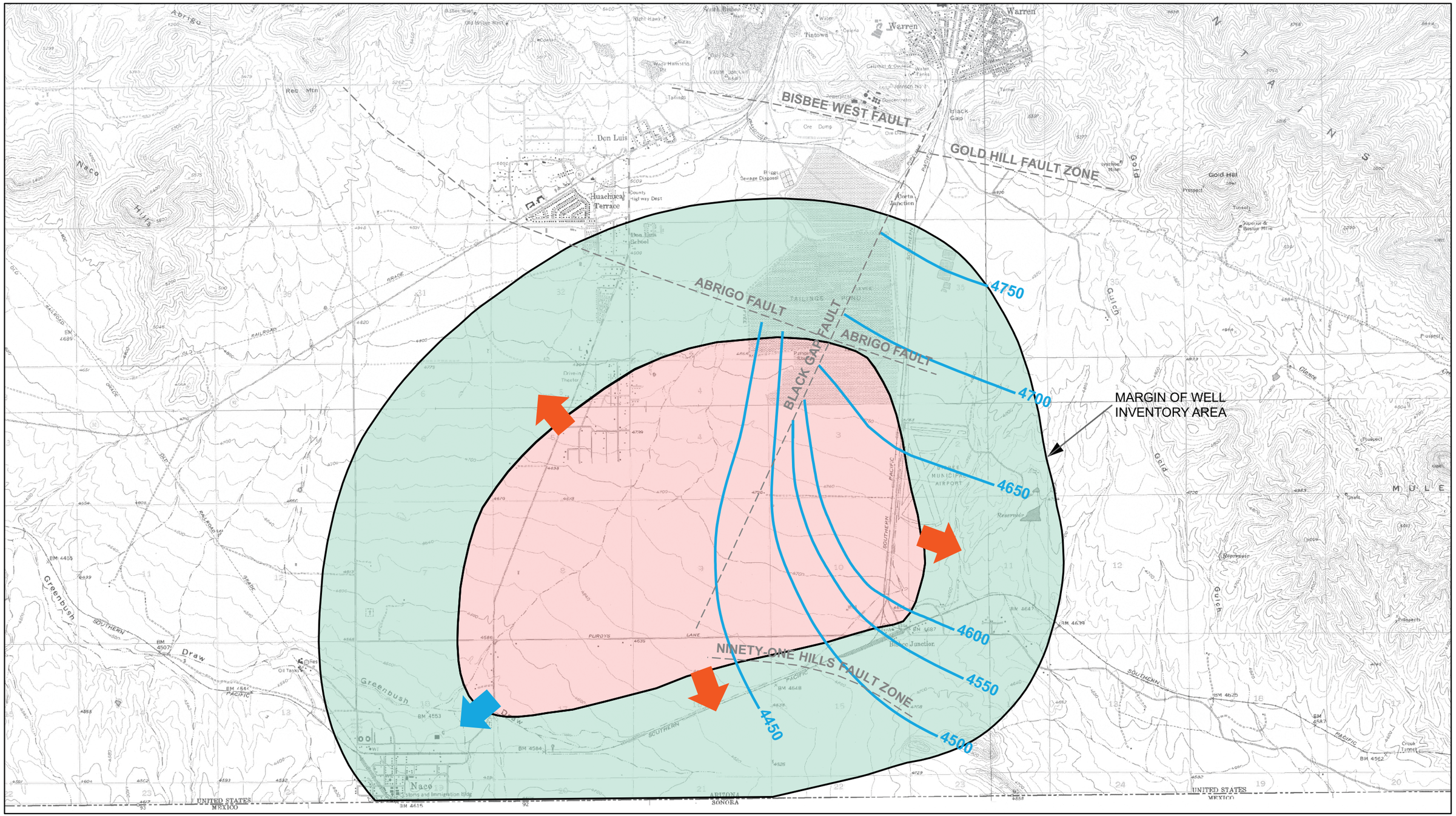
0 2000 4000 6000 Feet

N

HYDRO GEO CHEM, INC.

GEOLOGICAL MAP OF THE CTSA AND VICINITY

Approved	Date	Author	Date	File Name	Figure
KSW	04/29/09	AMC	04/29/09	8720217G	3



Legend

- Groundwater Elevation Contour (ft amsl, 50 ft interval) (September 2005, Work Plan Data)
- >250 mg/L Sulfate Plume Footprint (Based on Work Plan Data)
- 1 Mile Search Radius Area
- Downgradient Direction
- Cross-Gradient Direction

0 1750 3500 Feet

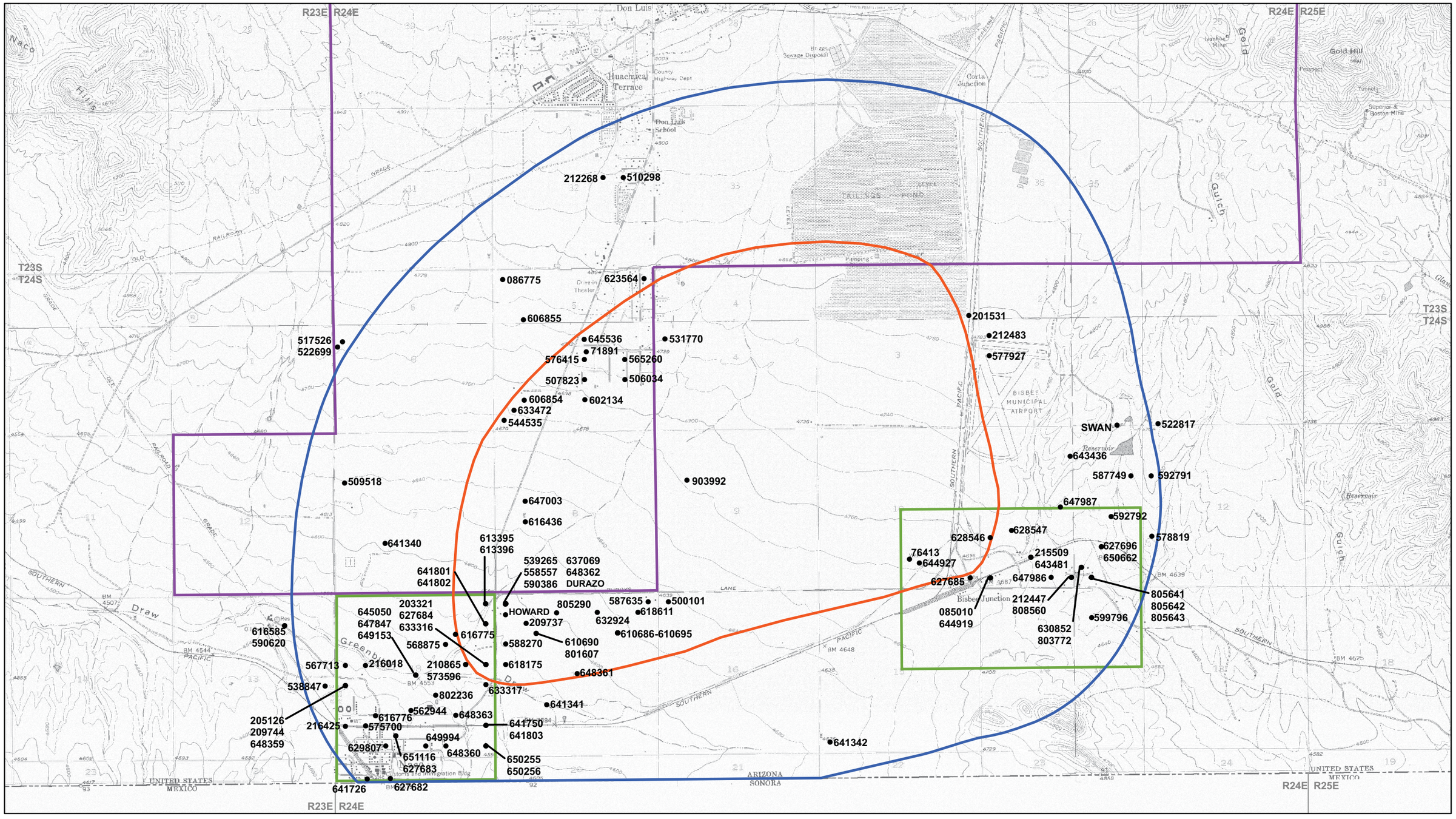
PROJECTION:
UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

WELL INVENTORY AREA, SULFATE PLUME, GROUNDWATER ELEVATIONS, AND HYDRAULIC GRADIENT DIRECTIONS

Approved	Date	Author	Date	File Name	Figure
DRS	04/23/09	AMC	04/23/09	8720218G	4



Legend

- Well Location and ID
- Naco Water Company Service Area
- Arizona Water Company Service Area
- Well Inventory Area
- 250 mg/L Sulfate Isoline (Based on Work Plan Data)

0 1500 3000 Feet

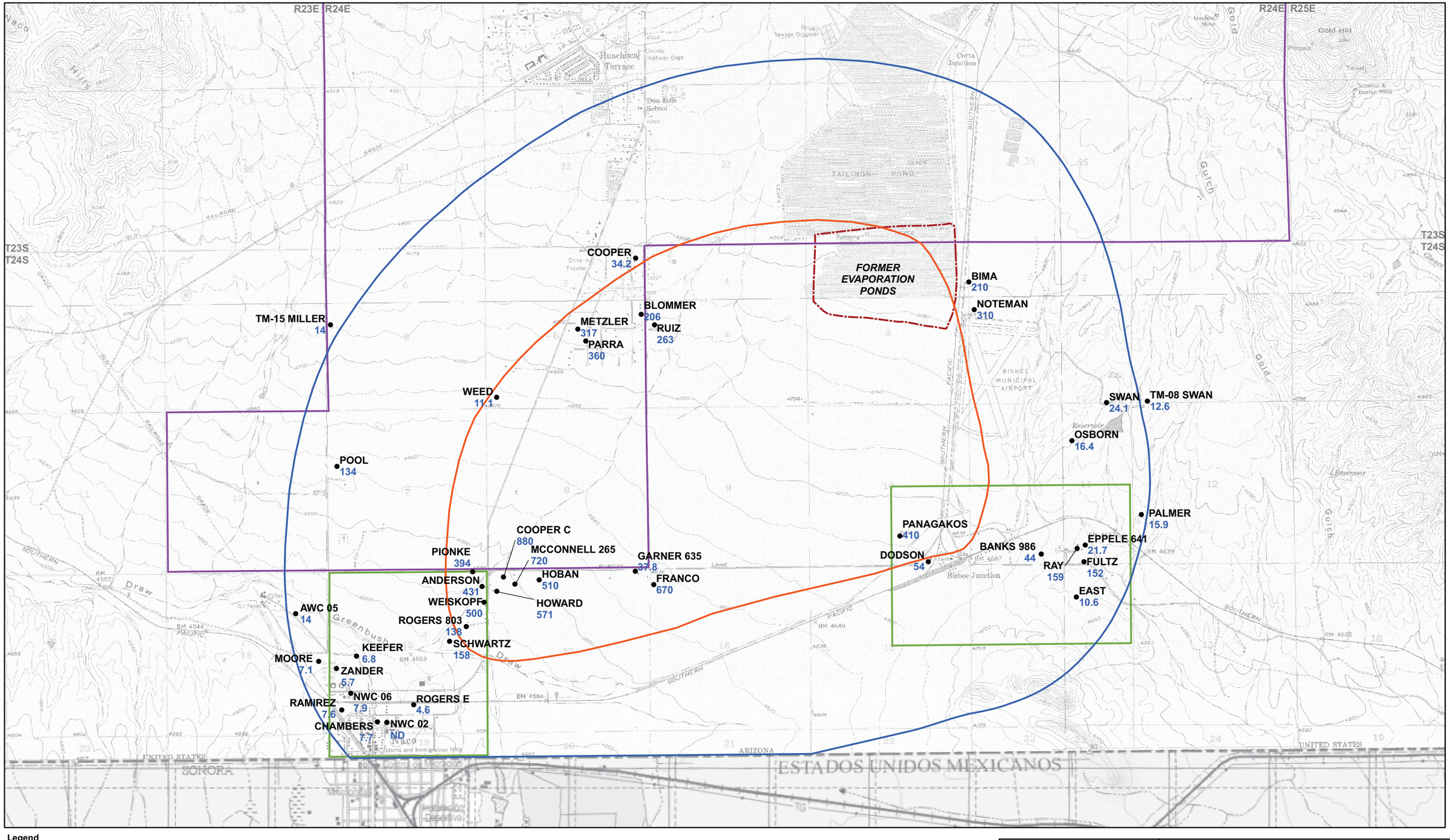
PROJECTION:
UTM Zone 12 Band R

N

HYDRO GEO CHEM, INC.

WELLS EVALUATED AS POTENTIAL DRINKING WATER SUPPLY WELLS

Approved	Date	Author	Date	File Name	Figure
DRS	04/23/09	AMC	04/23/09	8720219G	5



Legend

- ●509518 Well Location and ID
- 134 Sulfate Concentration in milligrams per liter (mg/L)
- 250 mg/L Sulfate Isoline (Based on Work Plan Data)
- ND = No Data
- Naco Water Company Service Area
- Arizona Water Company Service Area
- Well Inventory Area

0 1500 3000 Feet

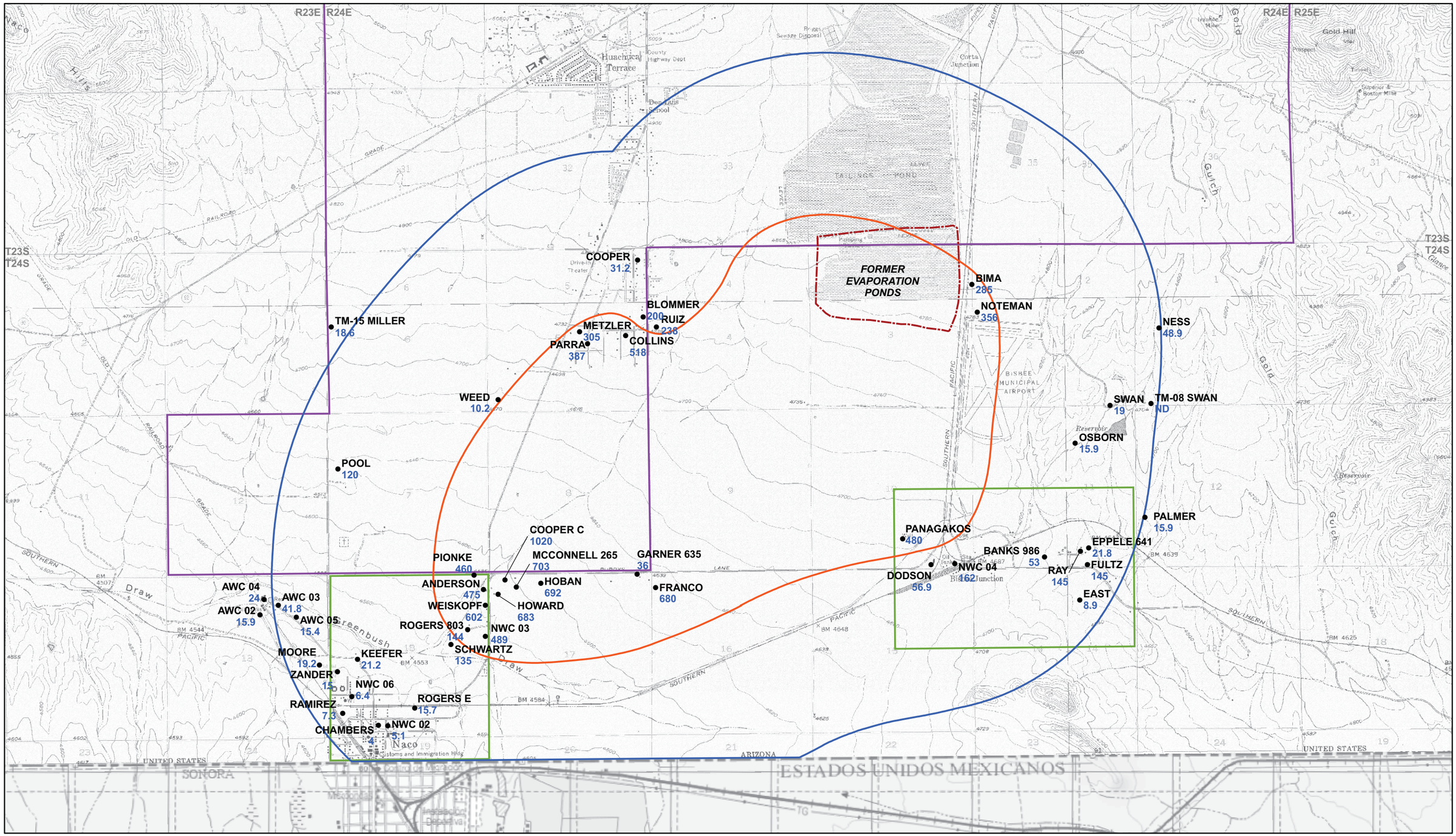
PROJECTION:
UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

SULFATE CONCENTRATIONS IN DRINKING WATER SUPPLY WELLS IN FEBRUARY THROUGH APRIL 2008

Approved	Date	Author	Date	File Name	Figure
DRS	04/23/09	AMC	04/23/09	8720220G	6



Legend

- ●**AWC 02** Well Location and ID
- 15.9 Sulfate Concentration in milligrams per liter (mg/L)
- 250 mg/L Sulfate Isoline (Fourth Quarter 2008 Data)
- ND = No Data
- Naco Water Company Service Area
- Arizona Water Company Service Area
- Well Inventory Area

0 1500 3000 Feet

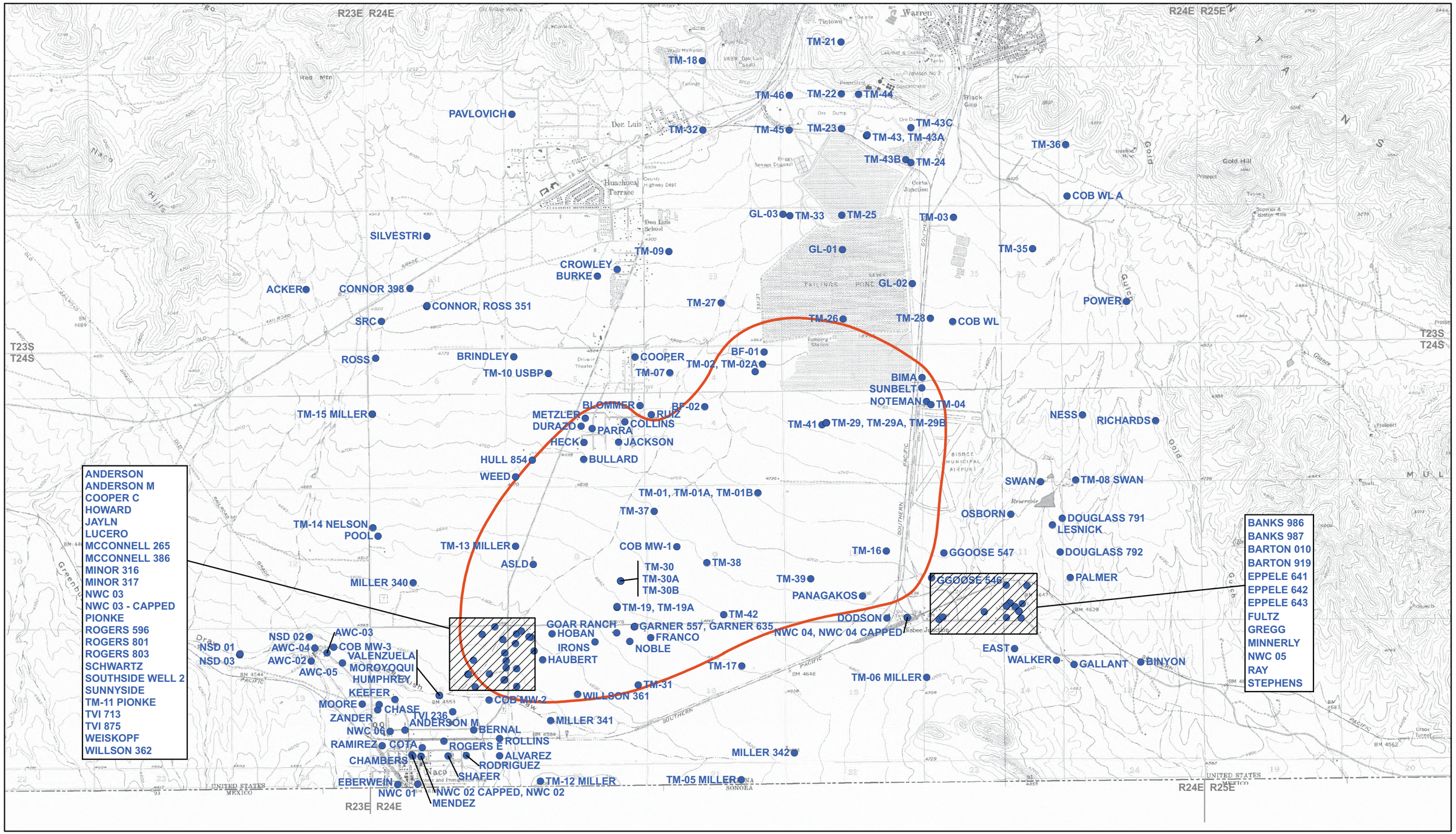
PROJECTION:
UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

SULFATE CONCENTRATIONS IN DRINKING WATER SUPPLY WELLS IN OCTOBER 2008

Approved	Date	Author	Date	File Name	Figure
DRS	04/27/09	AMC	04/27/09	8720221G	7



Legend

- Well Location and ID
- 250 mg/L Sulfate Isoline (Fourth Quarter 2008 Data)

0 1500 3000Feet

PROJECTION:
UTM Zone 12 NAD 83

N

HYDRO GEO CHEM, INC.

EXISTING WELLS IDENTIFIED FOR DATA COMPILATION (TASK 2.1)

Approved	Date	Author	Date	File Name	Figure
DRS	04/23/09	AMC	04/23/09	8720222G	8

R23E R24E

R24E R25E

T23S
T24S

FORMER SAC LOGS No.1

FORMER SAC LOGS No.2

FORMER CRAWFORD MILL TAILING PILE

NORTH TAILING IMPOUNDMENT

SOUTH TAILING IMPOUNDMENT

FORMER WARREN WWTP

FORMER EVAPORATION PONDS

WARREN RANCH IRRIGATION AREA

FORMER SAN JOSE WWTP PONDS

NACO SANITARY DISTRICT WWTP

TVI GOLF COURSE

SAN JOSE WWTP OUTFALL

NACO, SONORA WWTP PONDS

FORMER NACO, SONORA WWTP PONDS

UN-01

UN-02

UN-03

UN-04

EN-02

EN-03

EN-05

EN-06

EL OASIS

ESTADOS UNIDOS MEXICANOS

UNITED STATES

SONORA

ARIZONA

Legend

- Well Location and ID
- Natural Recharge – High (SET, 1998b)
- Natural Recharge – Low (SET, 1998b)

0 2000 4000 Feet

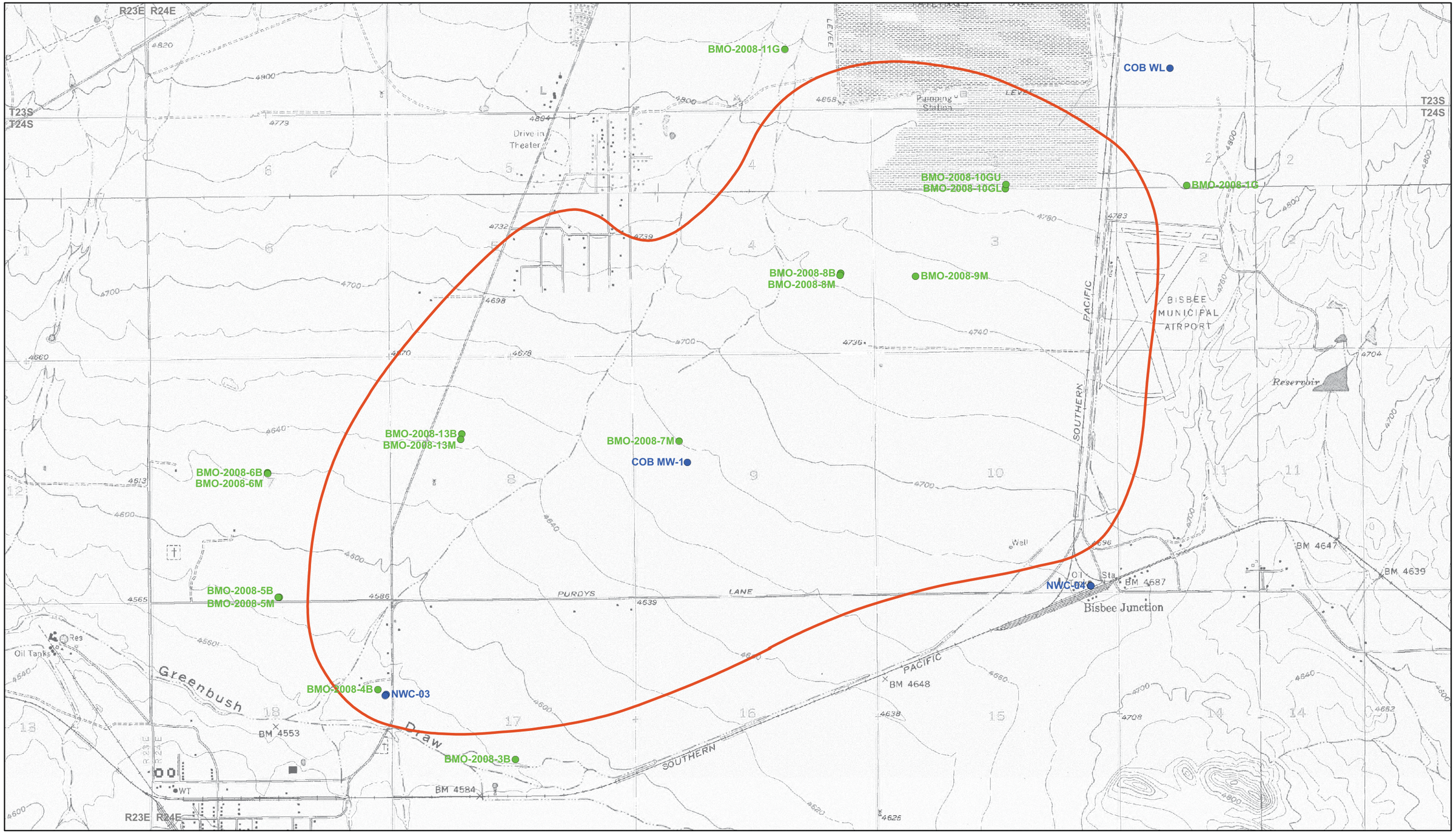
PROJECTION:
UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

NACO, SONORA WELLS AND AQUIFER RECHARGE SOURCES

Approved	Date	Author	Date	File Name	Figure
NWH	04/23/09	AMC	04/23/09	8720223G	9



Legend

- BMO-2008 Well Location and ID, as Discussed in Section 3.4
- Existing Well Location and ID
- **250 mg/L Sulfate Isoline (Fourth Quarter 2008 Data)**

0 1000 2000Feet

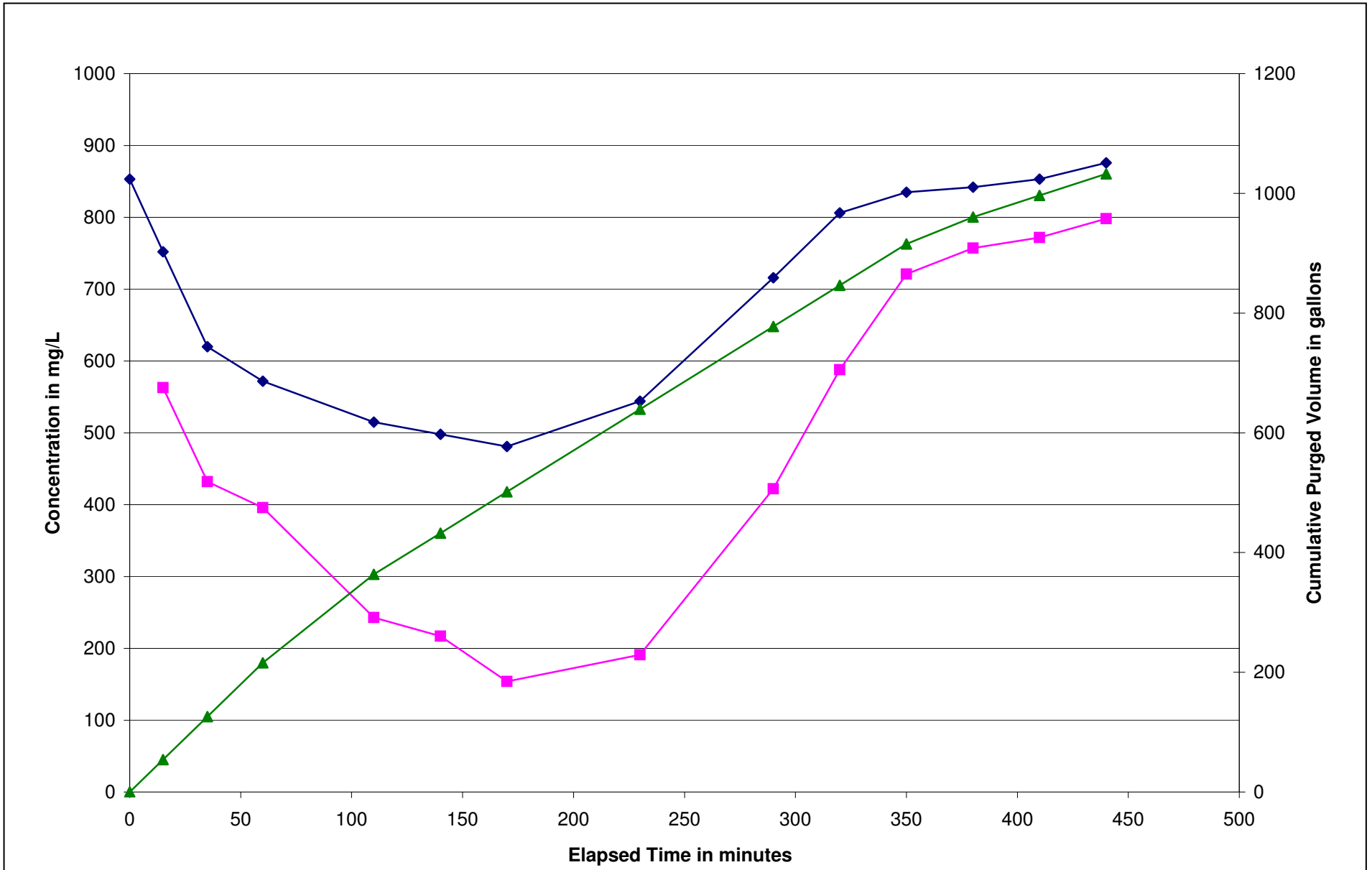
PROJECTION:
UTM Zone 12 NAD 83

N

HYDRO GEO CHEM, INC.

MITIGATION ORDER MONITORING WELL LOCATIONS

Approved	Date	Author	Date	File Name	Figure
JRN	04/23/09	AMC	04/23/09	8720224G	10

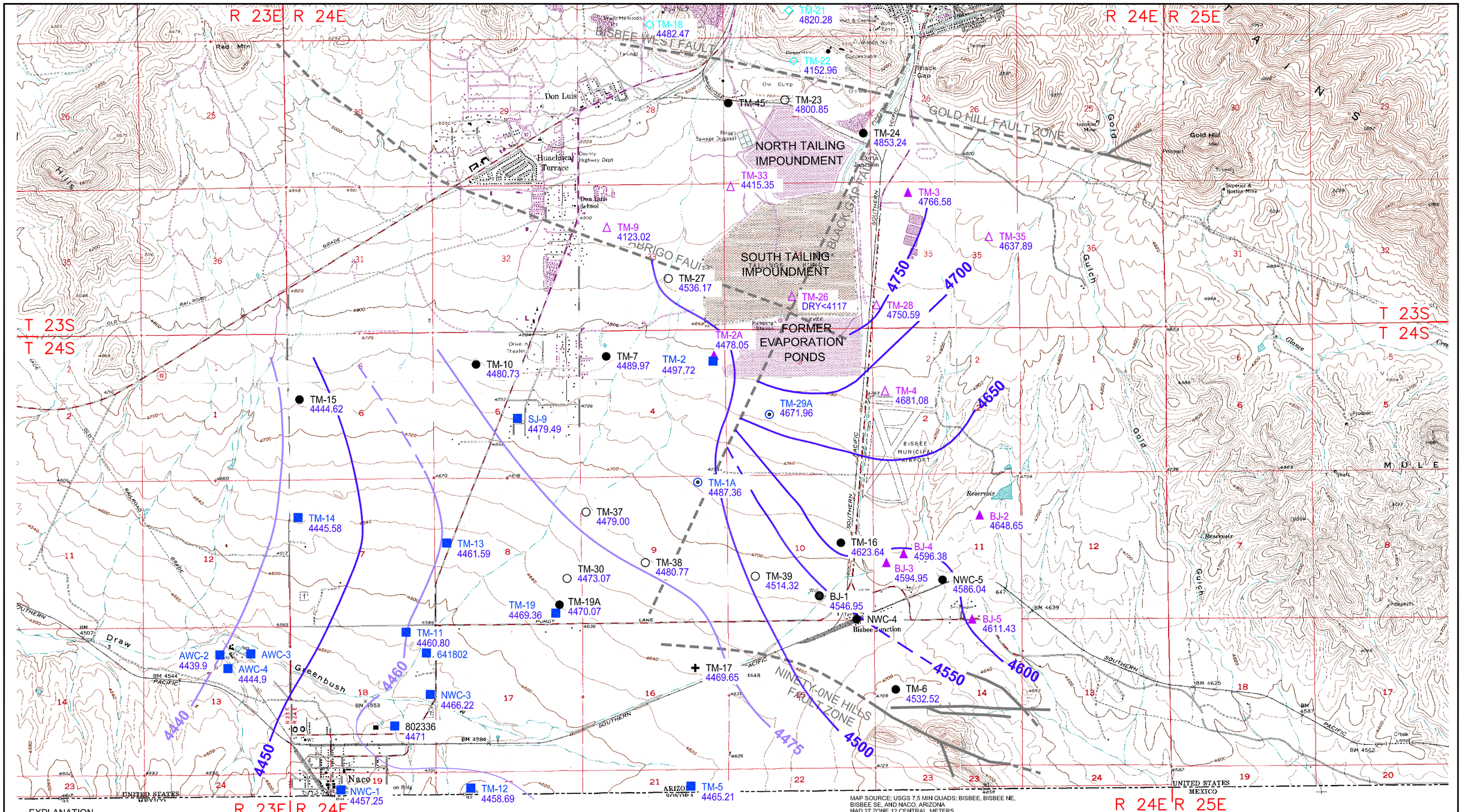


HYDRO GEO CHEM, INC.

BMO-2008-13M TEMPORARY WELL DATA
920 TO 940 FT BLS

Approved	Date	Author	Date	File Name	Figure
RKZ	2/18/09	RKZ	2/18/09	FIGURE 11	11

H:\872000\Task 2.3 Well Installation\BMO-13\temp well data\BMO-13M TW Data.xls: Figure 11



EXPLANATION

- BASIN FILL
- MORITA FORMATION
- GLANCE CONGLOMERATE
- PALEOZOIC SEDIMENTS
- MIXED, BASIN FILL & MORITA FORMATION
- MURAL LIMESTONE
- TM-1 4443.2 WELL ID / WATER ELEVATION (FT AMSL)
- WATER CONTOUR LINE (DASHED WHERE INFERRED)
- INTERMEDIATE WATER CONTOUR LINE (DASHED WHERE INFERRED)
- FAULT (DASHED WHERE INFERRED) FROM SET 1998c
- OPEN SYMBOL DENOTES ABANDONED WELL AS OF 2007

0 1/2 1 MILE

0 2000 4000 6000 FEET

N

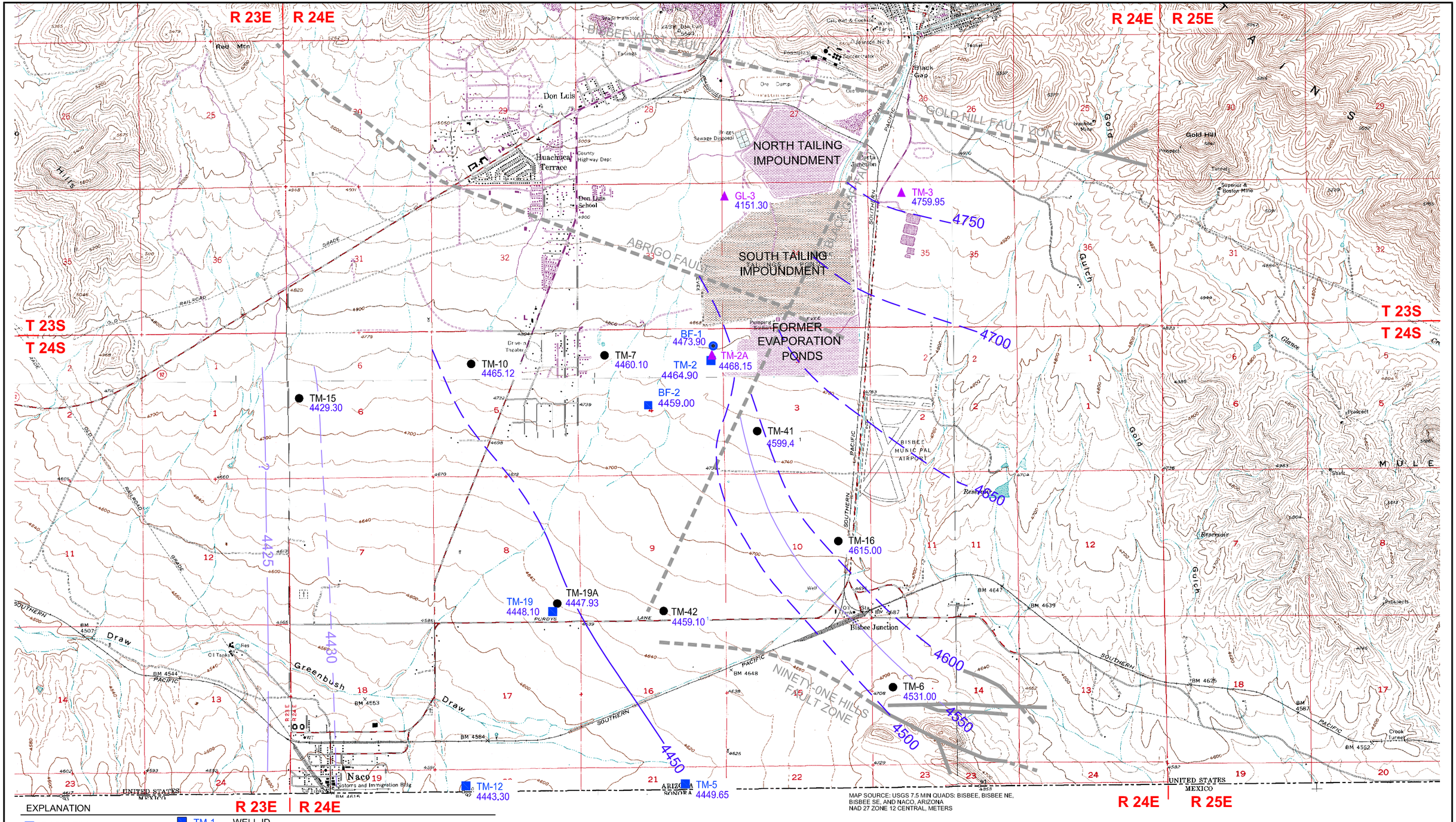
MAP SOURCE: USGS 7.5 MIN QUADS: BISBEE, BISBEE NE, BISBEE SE, AND NACO, ARIZONA
NAD 27 ZONE 12 CENTRAL, METERS

NOTE: WATER LEVELS NOT UPDATED WITH 2008 RE-SURVEY

HYDRO GEO CHEM, INC.

WATER LEVEL MAP 1989
CONCENTRATOR TAILING STORAGE AREA AND VICINITY
BISBEE, ARIZONA

Approved	Date	Author	Date	File Name	Figure
JRN	04/23/09	AMC	04/23/09	8720167A	12



EXPLANATION

- BASIN FILL
- MORITA FORMATION
- GLANCE CONGLOMERATE
- PALEOZOIC SEDIMENTS
- MIXED, BASIN FILL & MORITA FORMATION

TM-1 4443.2 WELL ID, WATER ELEVATION (FT AMSL)

WATER CONTOUR LINE (DASHED WHERE INFERRED)

INTERMEDIATE WATER CONTOUR LINE (DASHED WHERE INFERRED)

FAULT (DASHED WHERE INFERRED) FROM SET 1998c

[1] WATER LEVELS FROM TM-41 & TM-42 ARE FROM 1997

0 1/2 1 MILE

0 2000 4000 6000 FEET

N

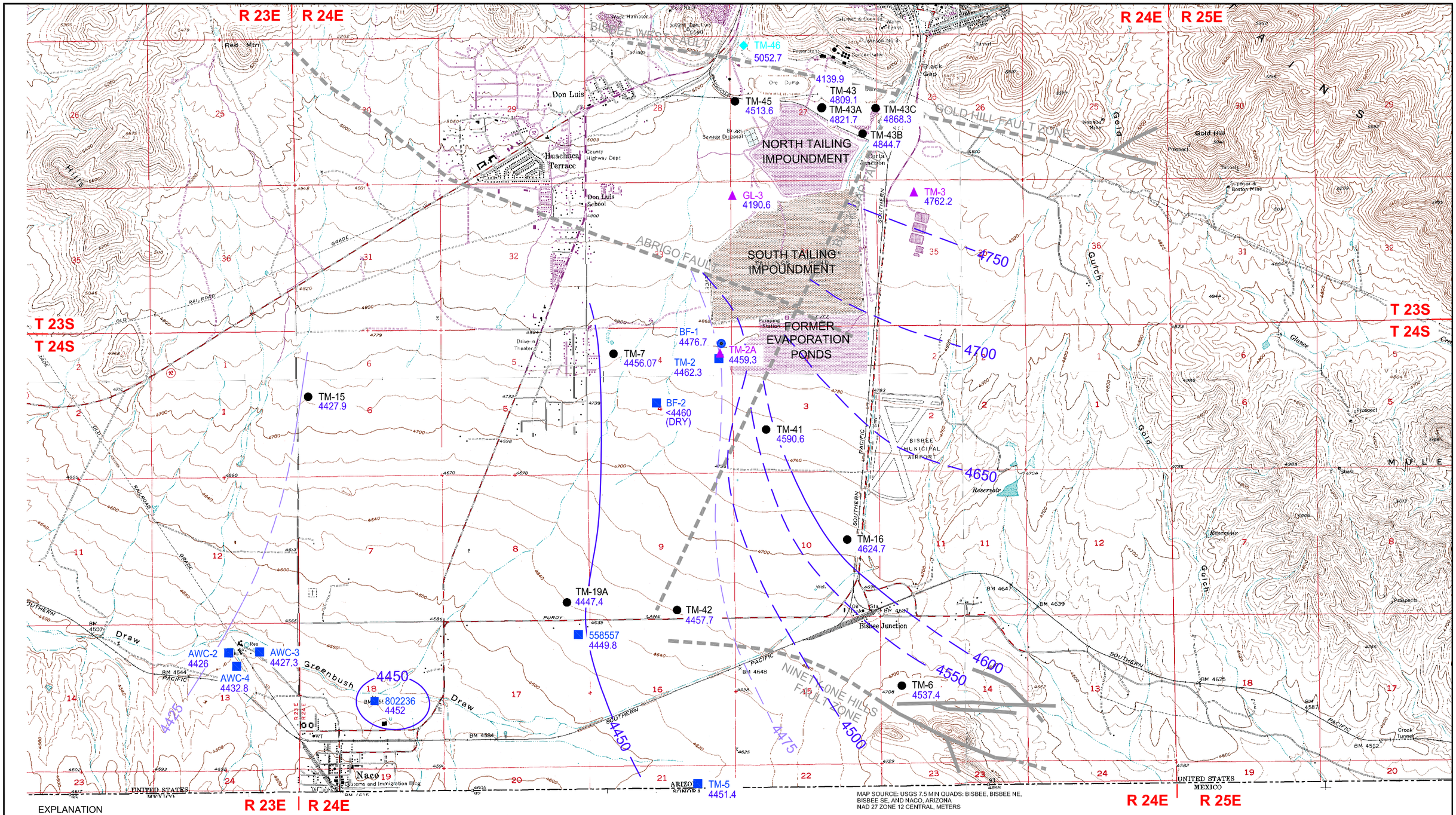
MAP SOURCE: USGS 7.5 MIN QUADS: BISBEE, BISBEE NE, BISBEE SE, AND NACO, ARIZONA
NAD 27 ZONE 12 CENTRAL, METERS

NOTE: WATER LEVELS NOT UPDATED WITH 2008 RE-SURVEY

HYDRO GEO CHEM, INC.

WATER LEVEL MAP 1996
CONCENTRATOR TAILING STORAGE AREA AND VICINITY
BISBEE, ARIZONA

Approved	Date	Author	Date	File Name	Figure
KSW	04/23/09	AMC	04/23/09	8720168A	13



EXPLANATION

- BASIN FILL
- MORITA FORMATION
- GLANCE CONGLOMERATE
- PALEOZOIC SEDIMENTS
- MIXED, BASIN FILL & MORITA FORMATION
- MURAL LIMESTONE
- TM-1 4443.2 — WELL ID, WATER ELEVATION (FT AMSL)
- WATER CONTOUR LINE (DASHED WHERE INFERRED)
- INTERMEDIATE WATER CONTOUR LINE (DASHED WHERE INFERRED)
- FAULT (DASHED WHERE INFERRED) FROM SET 1998c

0 1/2 1 MILE

0 2000 4000 6000 FEET

N

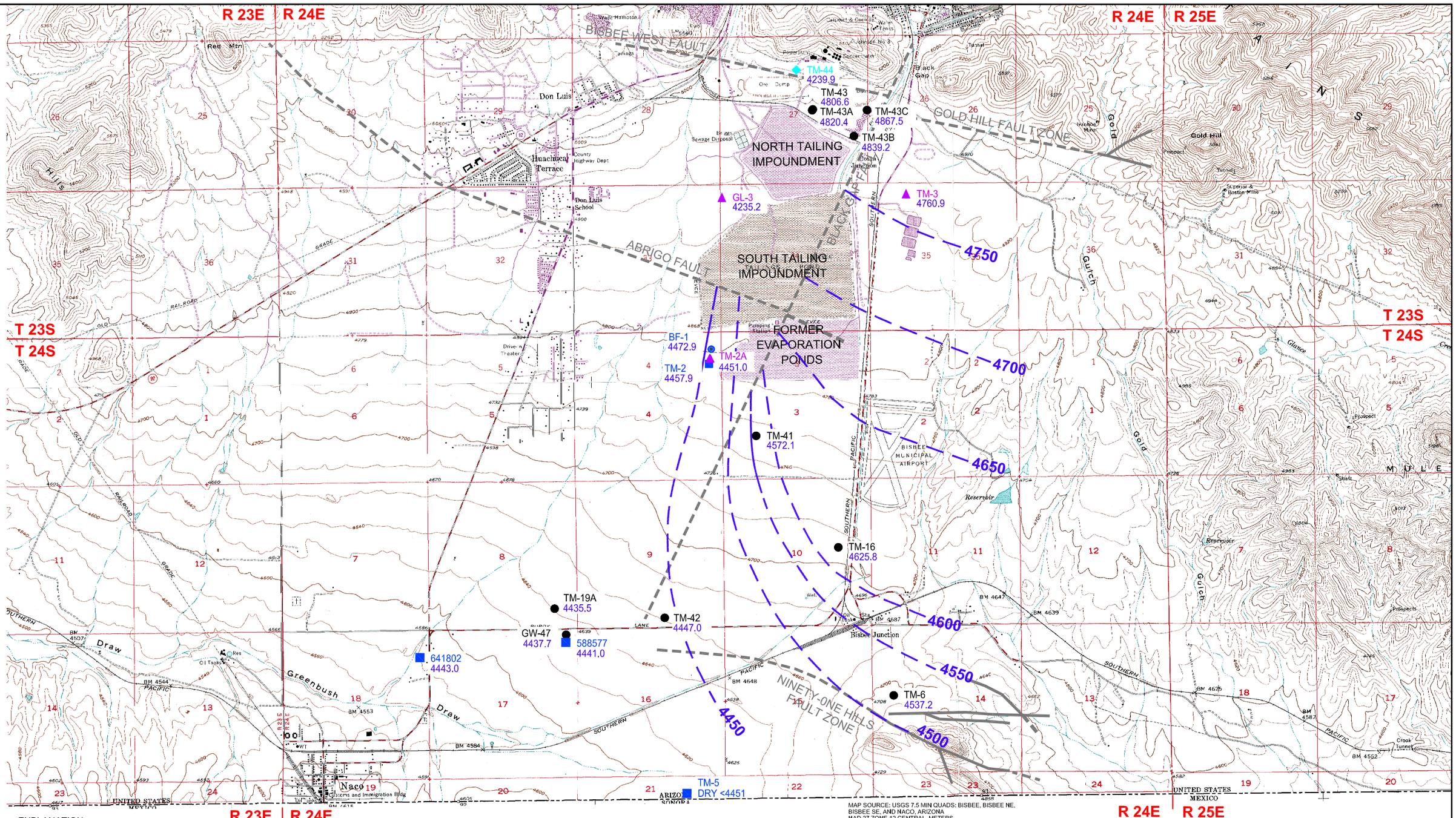
MAP SOURCE: USGS 7.5 MIN QUADS: BISBEE, BISBEE NE, BISBEE SE, AND NACO, ARIZONA
NAD 27 ZONE 12 CENTRAL, METERS

NOTE: WATER LEVELS NOT UPDATED WITH 2008 RE-SURVEY

HYDRO GEO CHEM, INC.

WATER LEVEL MAP 1999
CONCENTRATOR TAILING STORAGE AREA AND VICINITY
BISBEE, ARIZONA

Approved	Date	Author	Date	File Name	Figure
JRN	04/23/09	AMC	04/23/09	8720169A	14



EXPLANATION

- BASIN FILL
- MORITA FORMATION
- GLANCE CONGLOMERATE
- PALEOZOIC SEDIMENTS
- MIXED, BASIN FILL & MORITA FORMATION
- TM-1 4443.2 WELL ID, WATER ELEVATION (FT AMSL)
- WATER CONTOUR LINE (DASHED WHERE INFERRED)
- FAULT (DASHED WHERE INFERRED) FROM SET 1998c

0 1/2 1 MILE

0 2000 4000 6000 FEET

N

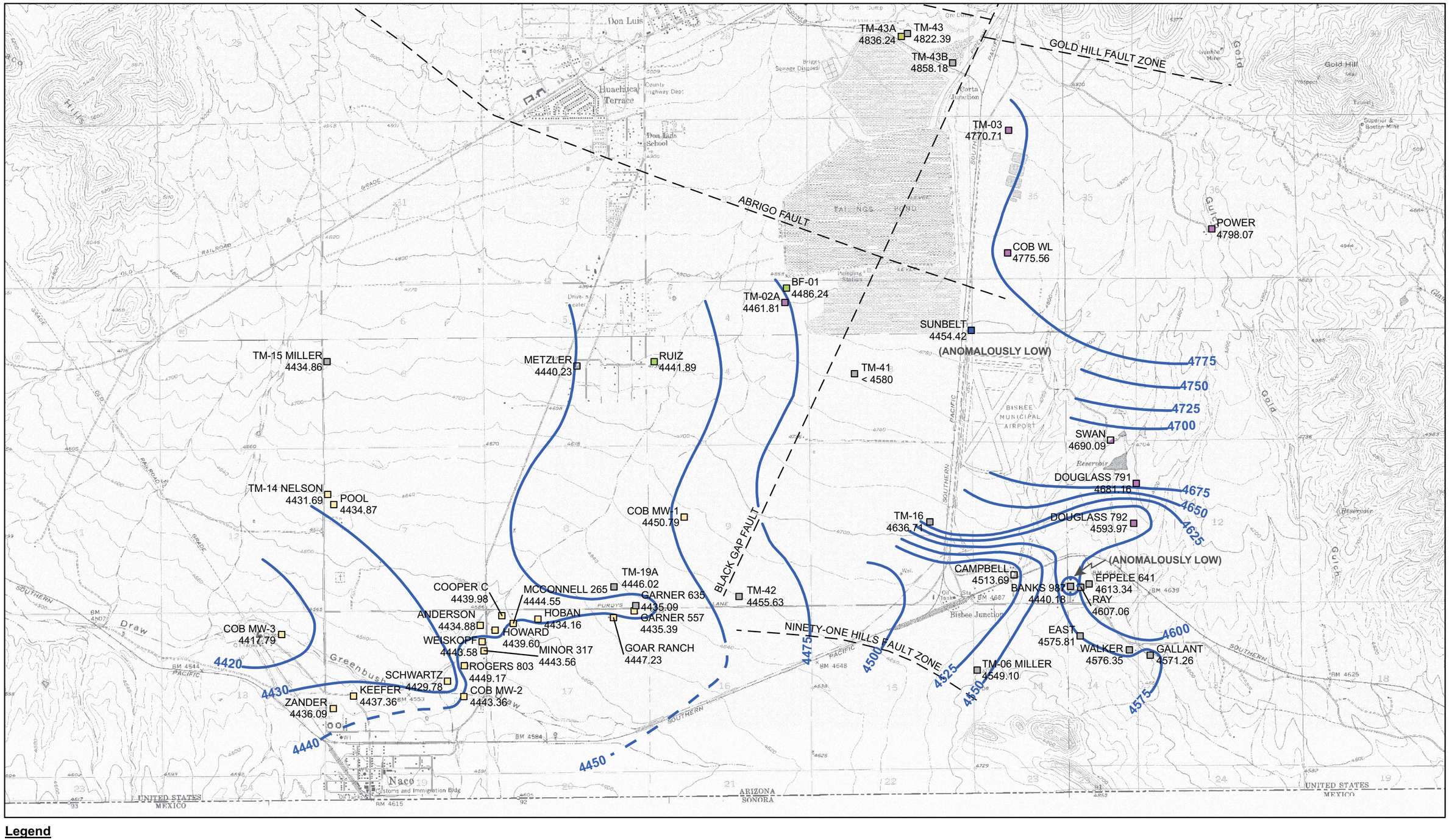
MAP SOURCE: USGS 7.5 MIN QUADS: BISBEE, BISBEE NE, BISBEE SE, AND NACO, ARIZONA
NAD 27 ZONE 12 CENTRAL, METERS

NOTE: WATER LEVELS NOT UPDATED WITH 2008 RE-SURVEY

HYDRO GEO CHEM, INC.

WATER LEVEL MAP SEPTEMBER 2005
CONCENTRATOR TAILING STORAGE AREA AND VICINITY
BISBEE, ARIZONA

Approved	Date	Author	Date	File Name	Figure
JRN	04/23/09	AMC	04/23/09	8720170A	15



Legend

- ZANDER 4436.09 — Well ID, Groundwater Elevation (ft amsl)
- Faults
- Groundwater Contours

Screened Formation

- Basin Fill
- Basin Fill and Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group - Estimated
- Undifferentiated Bisbee Group and Glance Conglomerate
- Glance Conglomerate
- Glance Conglomerate-Estimated

Undifferentiated Bisbee Group: Cintura, Mural Limestone, and Morita Formations

0 1500 3000 Feet

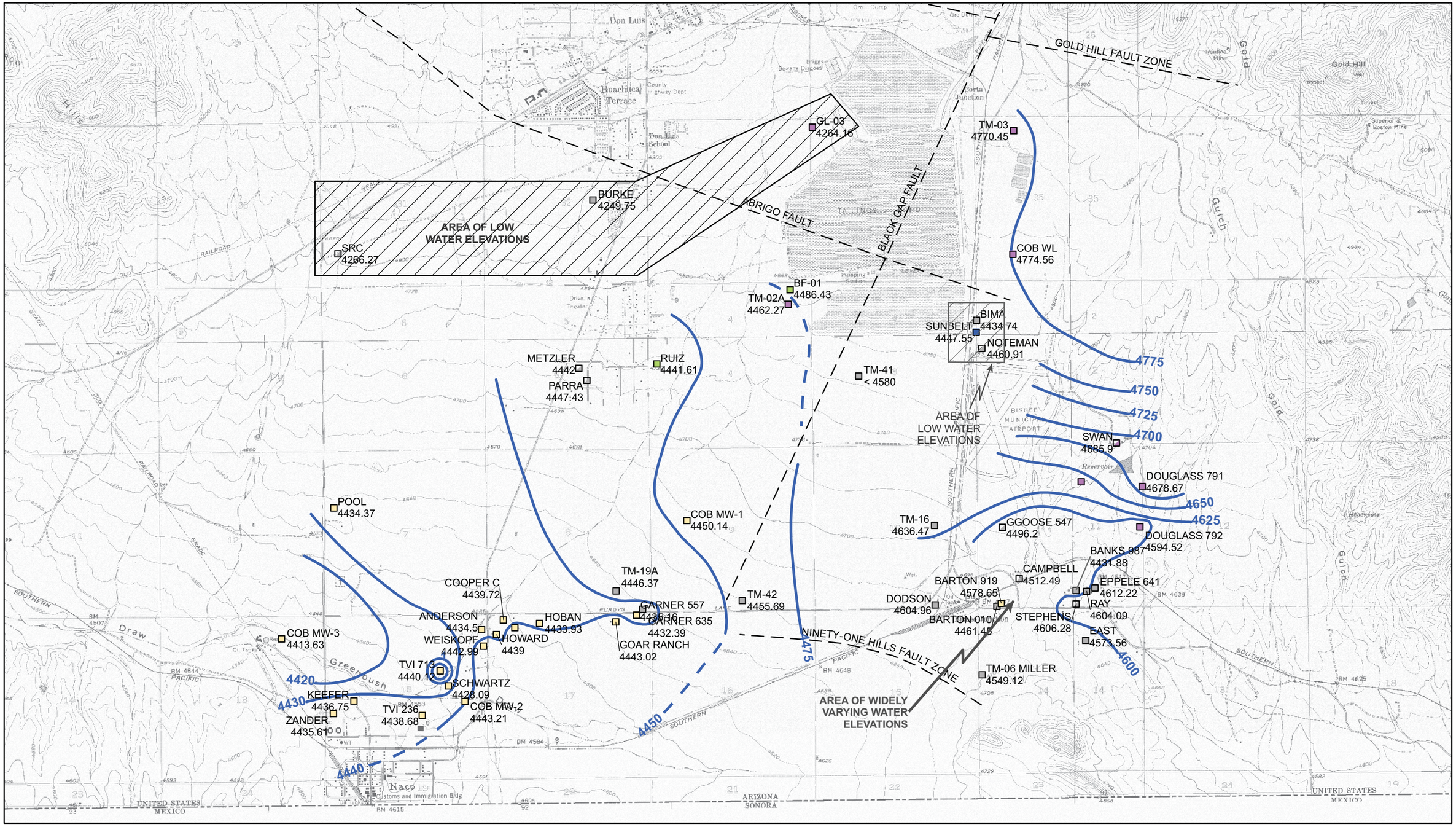
PROJECTION: UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

GROUNDWATER ELEVATIONS FOR FIRST QUARTER 2008

Approved	Date	Author	Date	File Name	Figure
DRS	04/23/09	AMC	04/23/09	8720225G	16



Legend

- ZANDER 4435.61 — Well ID; Groundwater Elevation (ft amsl)
- Faults
- Groundwater Contours

Screened Formation
- Basin Fill
- Basin Fill and Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group - Estimated
- Undifferentiated Bisbee Group and Glance Conglomerate
- Glance Conglomerate
- Glance Conglomerate-Estimated

Undifferentiated Bisbee Group: Cintura, Mural Limestone, and Morita Formations

0 1500 3000 Feet

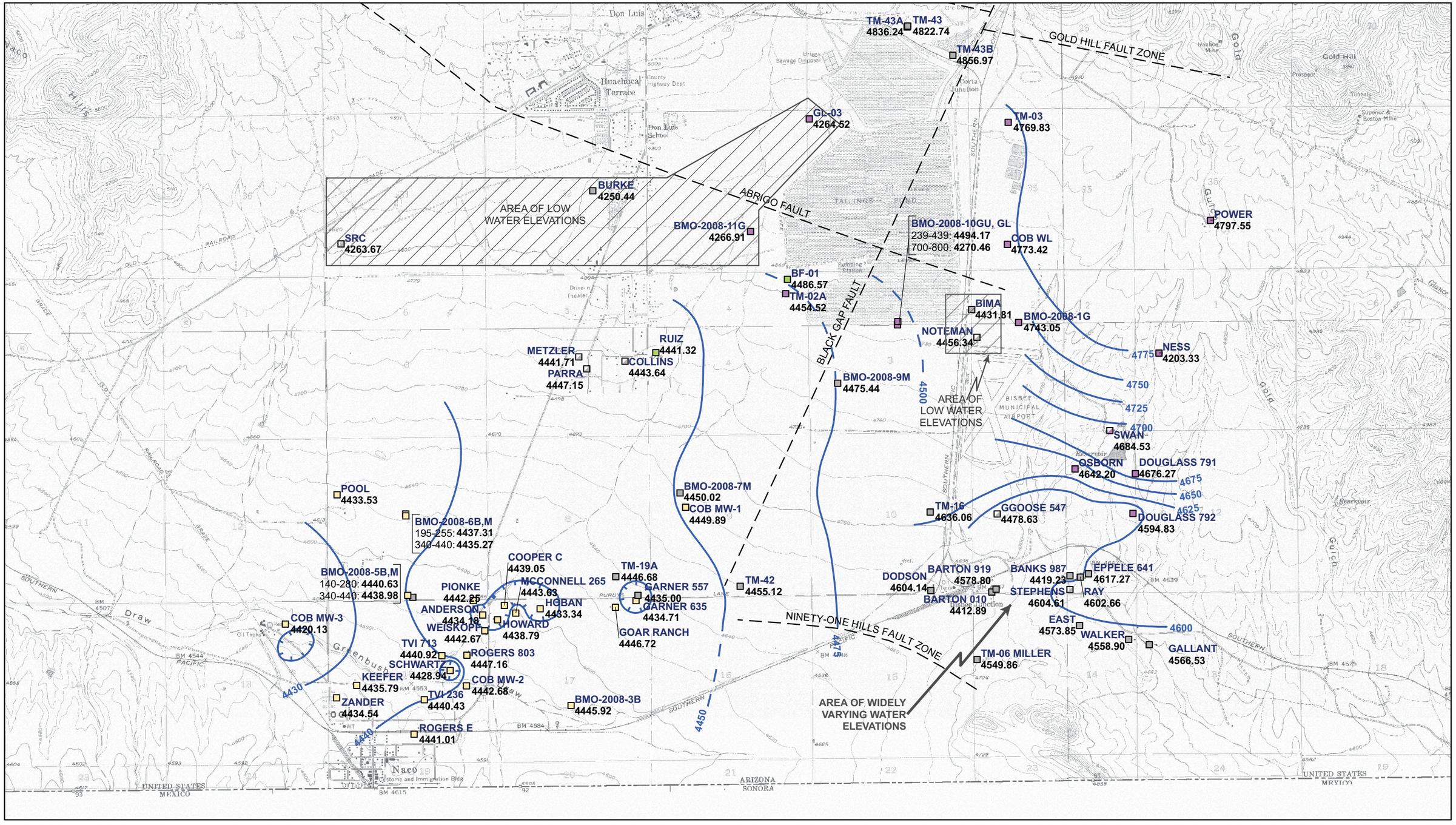
PROJECTION: UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

GROUNDWATER ELEVATIONS FOR SECOND QUARTER 2008

Approved	Date	Author	Date	File Name	Figure
DRS	04/23/09	AMC	04/23/09	8720226G	17



Legend

- TVI-713 — Well ID
- 4440.92 — Groundwater Elevation (ft amsl)

Co-located Wells

- Well ID
- Screen (ft bgs): Water Elevation (ft amsl)

- Groundwater Elevation Contours (dashed where inferred)
- Groundwater Depression
- Faults (inferred)

Screened Formation

- Basin Fill
- Basin Fill and Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group - Estimated
- Glance Conglomerate
- Glance Conglomerate-Estimated

Undifferentiated Bisbee Group: Cintura, Mural Limestone, and Morita Formations

PROJECTION: UTM Zone 12N NAD83

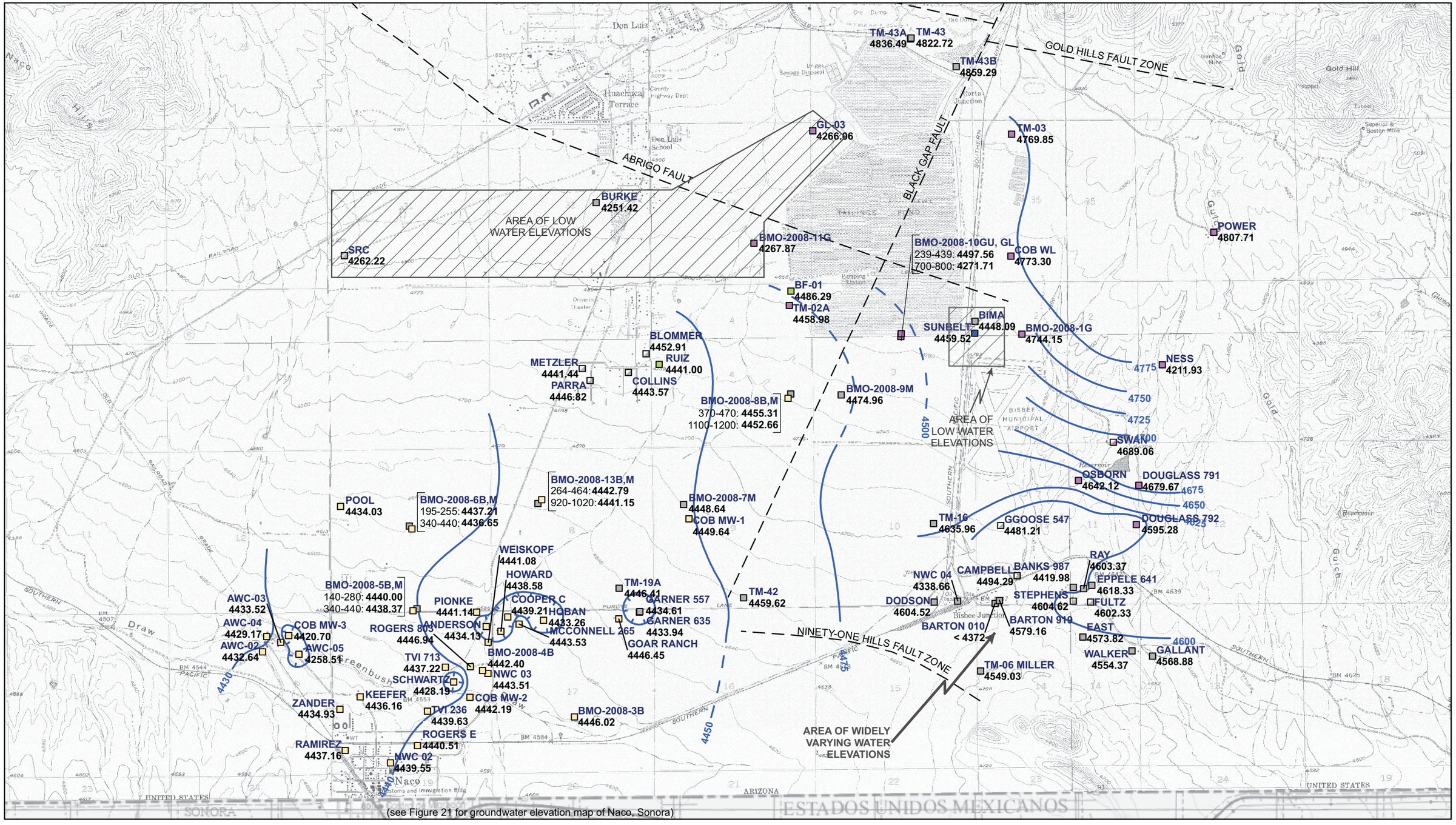
0 1500 3000 Feet

N

HYDRO GEO CHEM, INC.

GROUNDWATER ELEVATIONS FOR THIRD QUARTER 2008

Approved	Date	Author	Date	File Name	Figure
DRS	04/23/09	AMC	04/23/09	8720227G	18



(see Figure 21 for groundwater elevation map of Naco, Sonora)

Legend

- TVI-713 Well ID
- 4440.92 Groundwater Elevation (ft amsl)

Co-located Wells

- Well ID
- Screen (ft bgs): Water Elevation (ft amsl)

Groundwater Elevation Contours (dashed where inferred)

Groundwater Depression

Faults (inferred)

Undifferentiated Bisbee Group: Cintura, Mural Limestone, and Morita Formations

Screened Formation

- Basin Fill
- Basin Fill and Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group - Estimated
- Undifferentiated Bisbee Group and Glance Conglomerate
- Glance Conglomerate
- Glance Conglomerate-Estimated

0 1500 3000 Feet

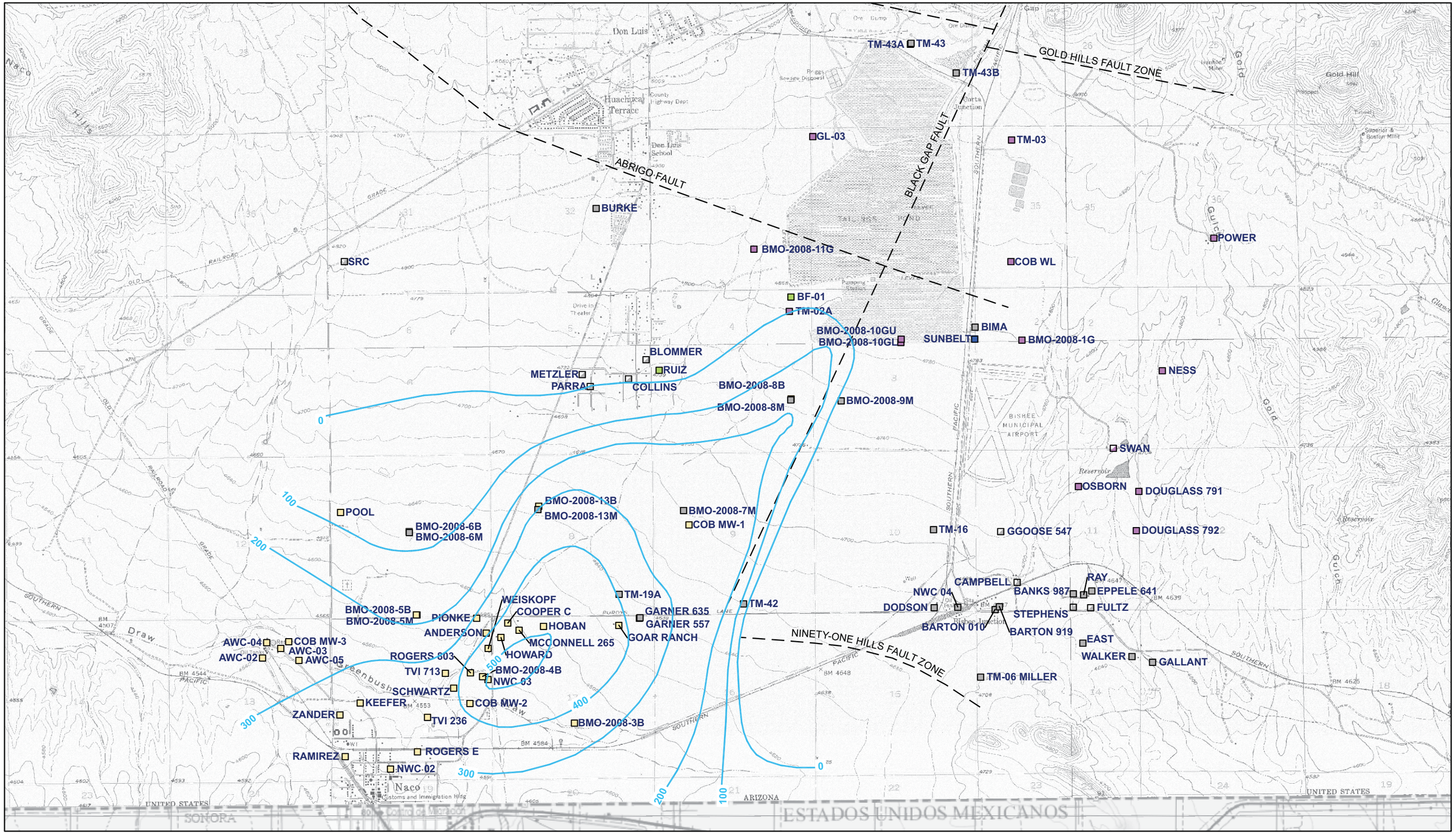
PROJECTION: UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

GROUNDWATER ELEVATIONS FOR FOURTH QUARTER 2008

Approved	Date	Author	Date	File Name	Figure
DRS	04/23/09	AMC	04/23/09	8720229G	19



Legend

- TVI-713 Well ID
- Basin Fill Thickness Contours
- Faults (inferred)

Screened Formation

- Basin Fill
- Basin Fill and Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group - Estimated
- Undifferentiated Bisbee Group and Glance Conglomerate
- Glance Conglomerate
- Glance Conglomerate-Estimated

0 1500 3000 Feet

Undifferentiated Bisbee Group: Cintura, Mural Limestone, and Morita Formations

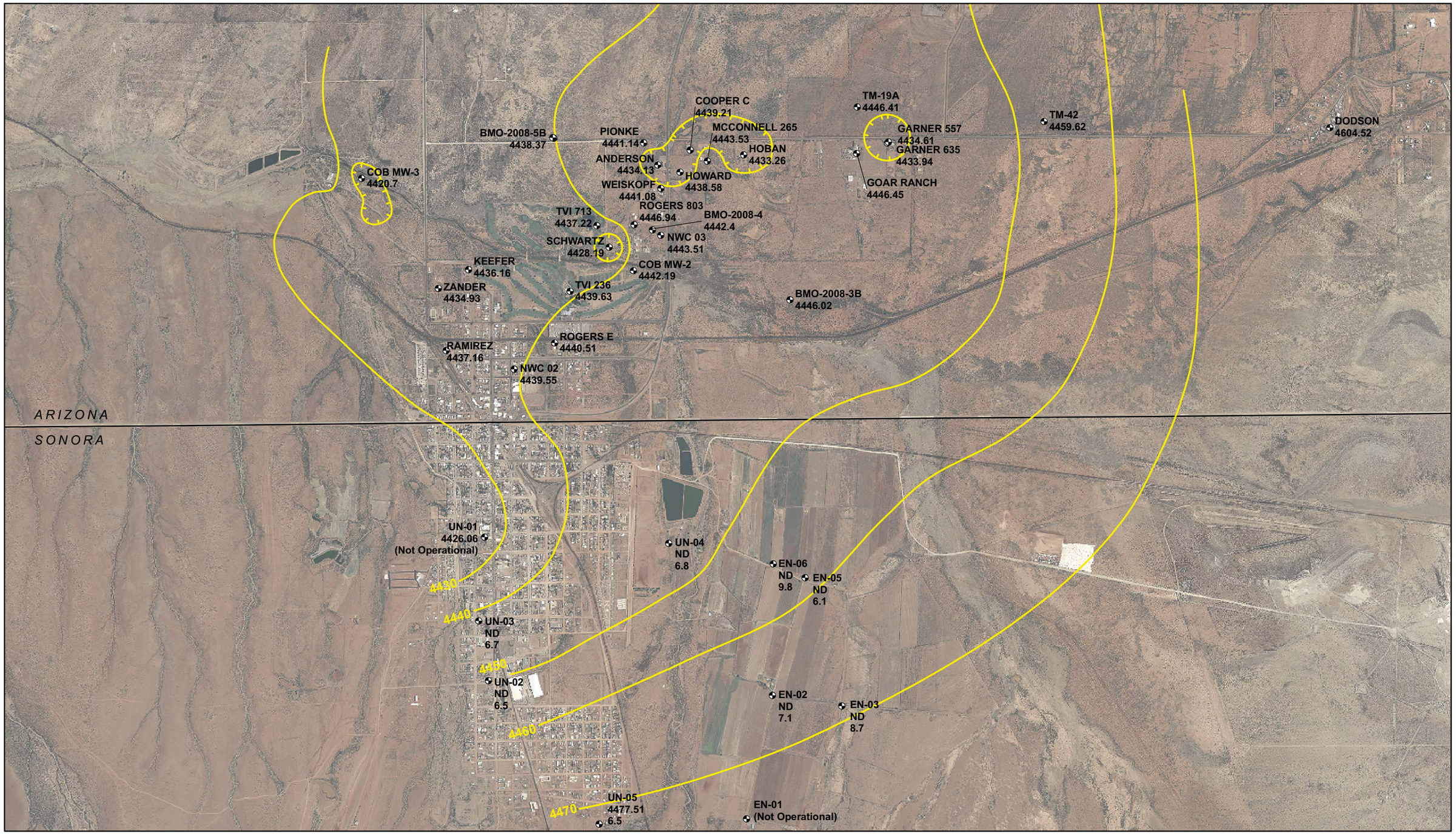
PROJECTION: UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

SATURATED THICKNESS OF BASIN FILL (BASED ON FOURTH QUARTER 2008 WATER ELEVATIONS)

Approved	Date	Author	Date	File Name	Figure
KSW	04/27/09	AMC	04/27/09	8720230G	20



Legend

TVI-713 Well ID
4440.92 Groundwater Elevation (feet above mean sea level)
10 Sulfate Concentration (milligrams per liter)
Groundwater Contours

ND = No Data, no sounding tube

EN = Ejido Naco
UN = Urbano Naco

0 1000 2000 Feet

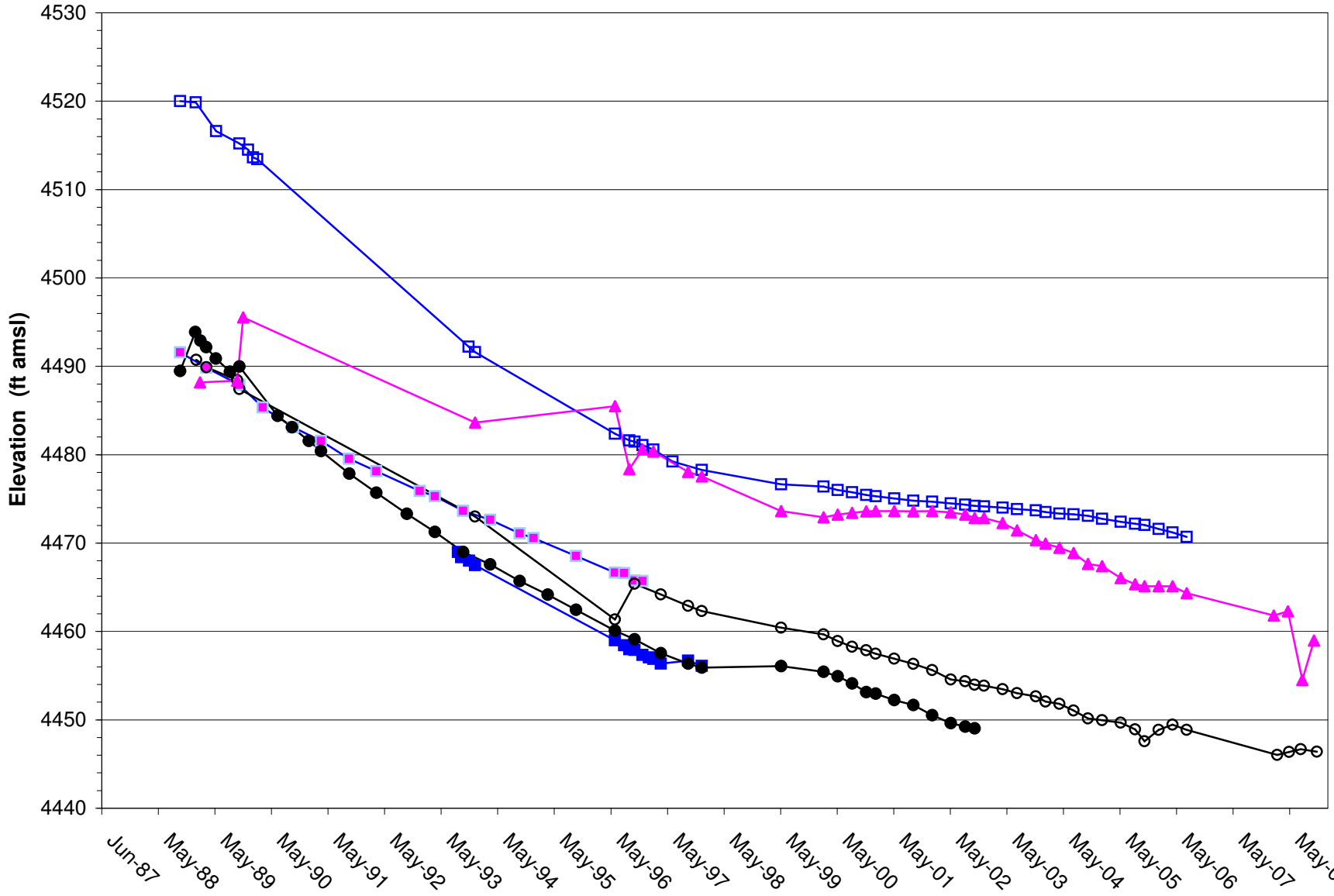
PROJECTION:
UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

SULFATE CONCENTRATIONS AND GROUNDWATER ELEVATIONS FOR NACO, SONORA OCTOBER 2008

Approved	Date	Author	Date	File Name	Figure
DRS	04/23/09	AMC	04/23/09	8720231G	21



EXPLANATION

- TM-02, Basin Fill
- TM-19, Basin Fill
- BF-02, Basin Fill
- TM-07, Undifferentiated Bisbee Group
- TM-19A, Undifferentiated Bisbee Group
- TM-02A, Glance Conglomerate

HYDRO GEO CHEM, INC.

HYDROGRAPHS FOR BF-02, TM-02, TM-02A, TM-07, TM-19, AND TM-19A

Approved	Date	Author	Date	File Name	Figure
JRN	2/10/09	SJS	2/10/09	FIGURE 22	22

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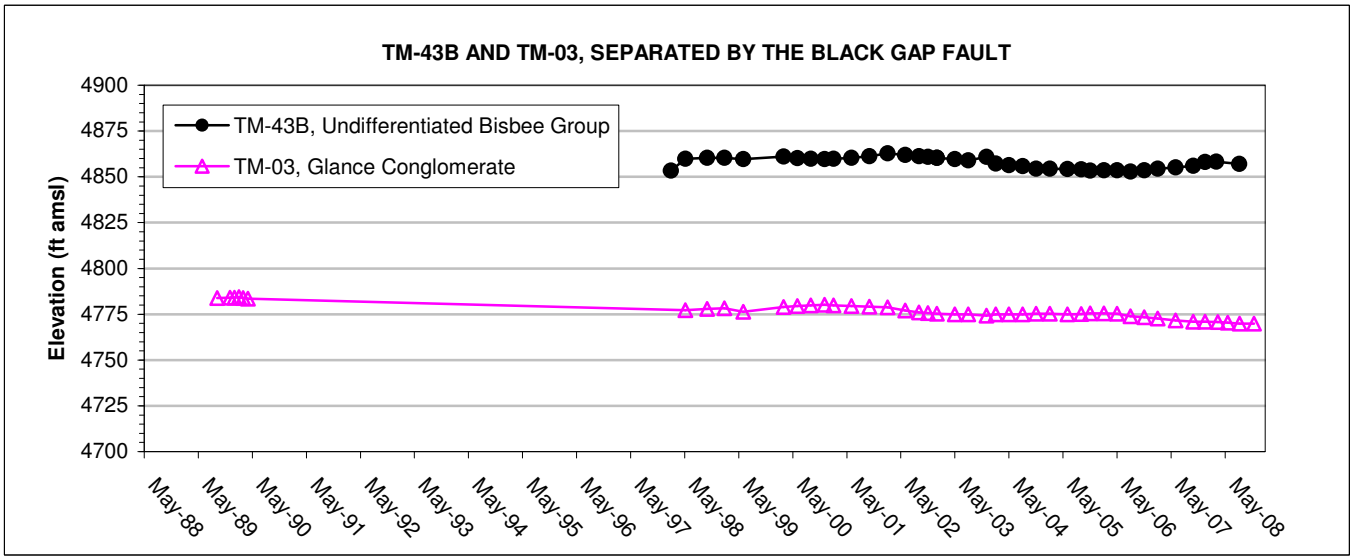

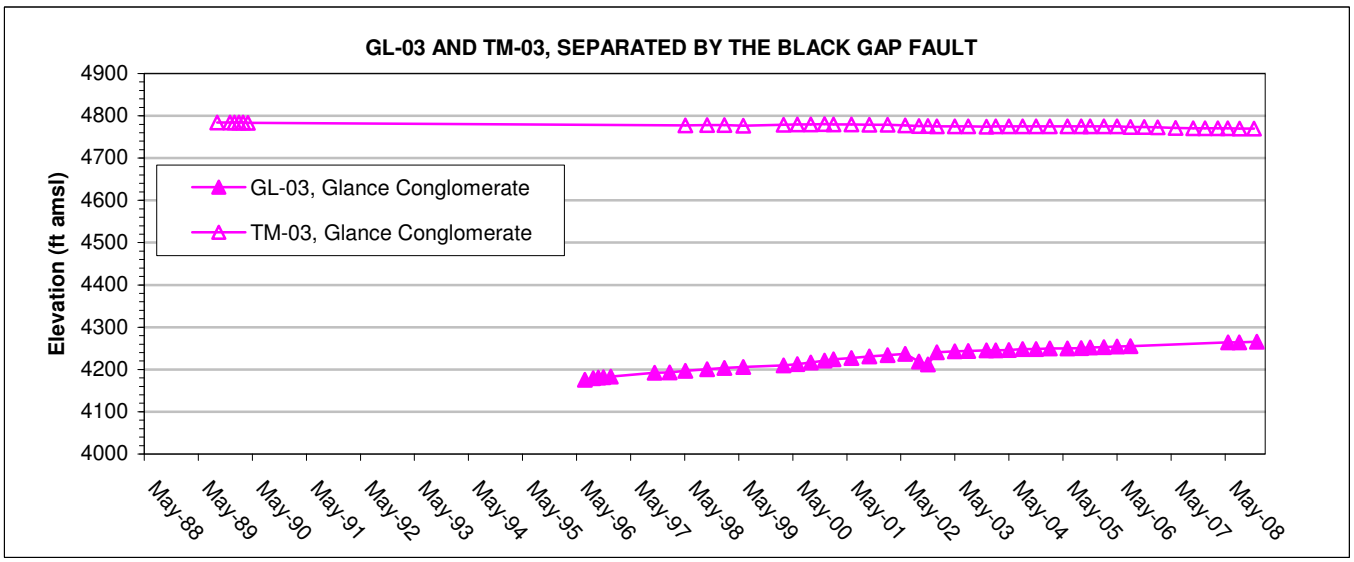

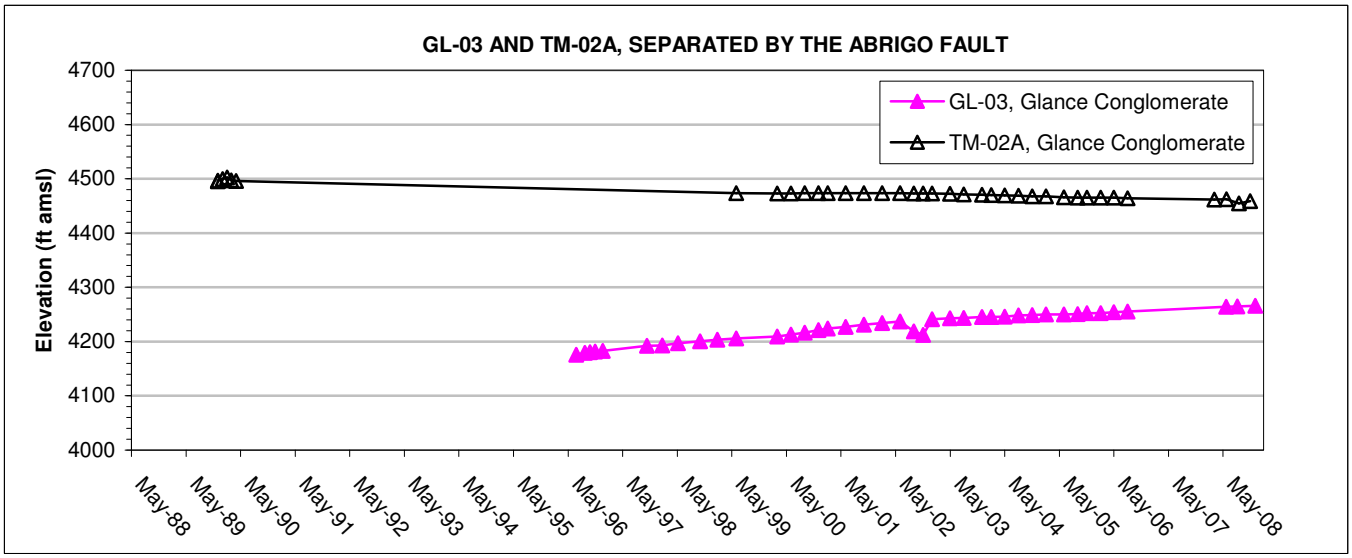

HYDRO GEO CHEM, INC.

HYDROGRAPHS OF MONITORING WELLS SEPARATED BY THE BLACK GAP AND ABRIGO FAULTS

Approved	Date	Author	Date	File Name	Figure
JRN	2/11/09	SJS	2/11/09	FIGURE 23	23

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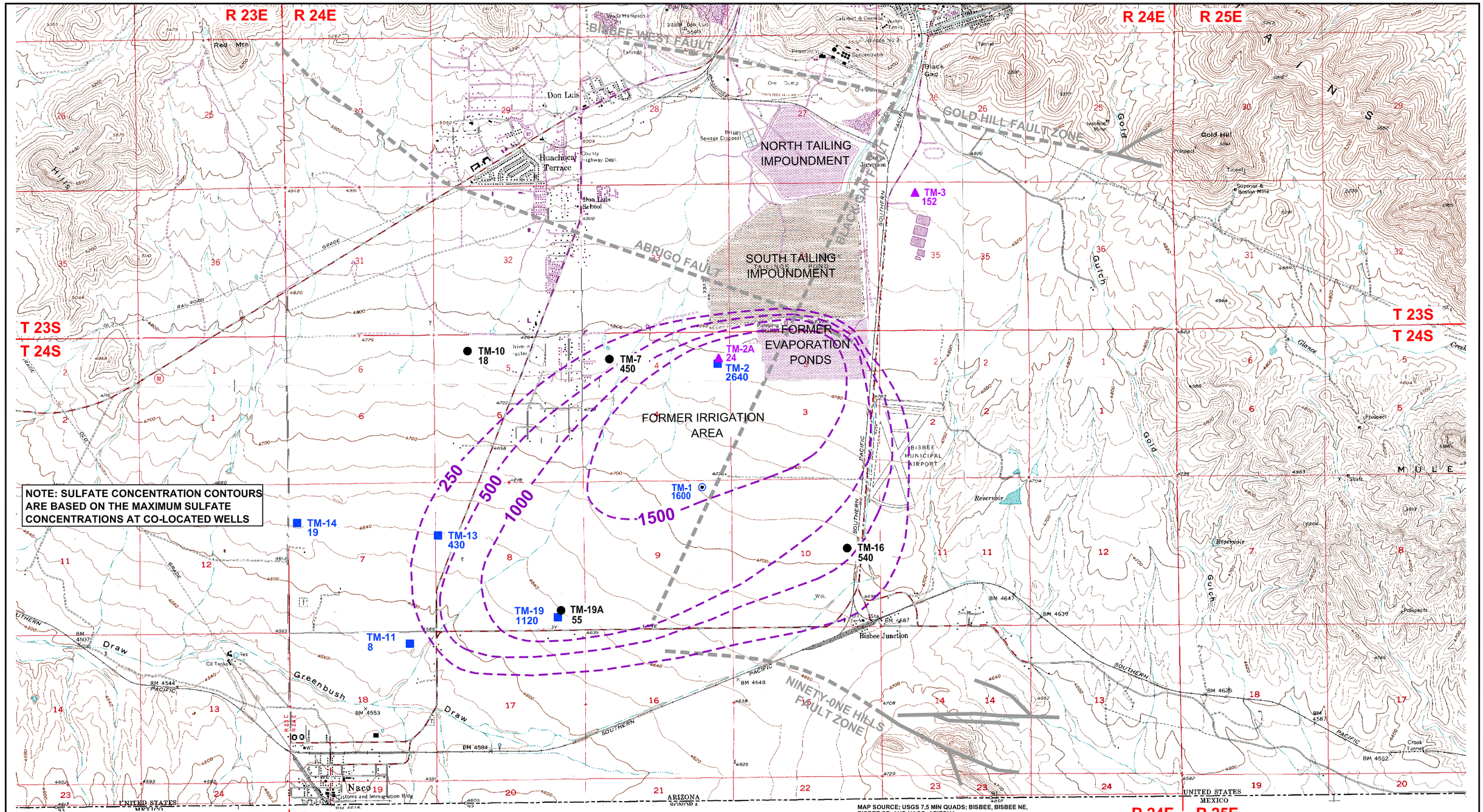


NOTE: SULFATE CONCENTRATION CONTOURS ARE BASED ON THE MAXIMUM SULFATE CONCENTRATIONS AT CO-LOCATED WELLS

MAP SOURCE: USGS 7.5 MIN QUADS: BISBEE, BISBEE NE, BISBEE SE, AND NACO, ARIZONA
NAD 27 ZONE 12 CENTRAL, METERS

EXPLANATION

- BASIN FILL
- MORITA FORMATION
- GLANCE CONGLOMERATE
- MIXED, BASIN FILL AND MORITA FORMATION
- FAULT (DASHED WHERE INFERRED) FROM SET 1998c
- SULFATE CONCENTRATION ISOLINE
- TM-19 1120.0 — WELL ID, SULFATE CONCENTRATION

OPEN SYMBOL DENOTES ABANDONED WELL AS OF 2007

0 1/2 1 MILE

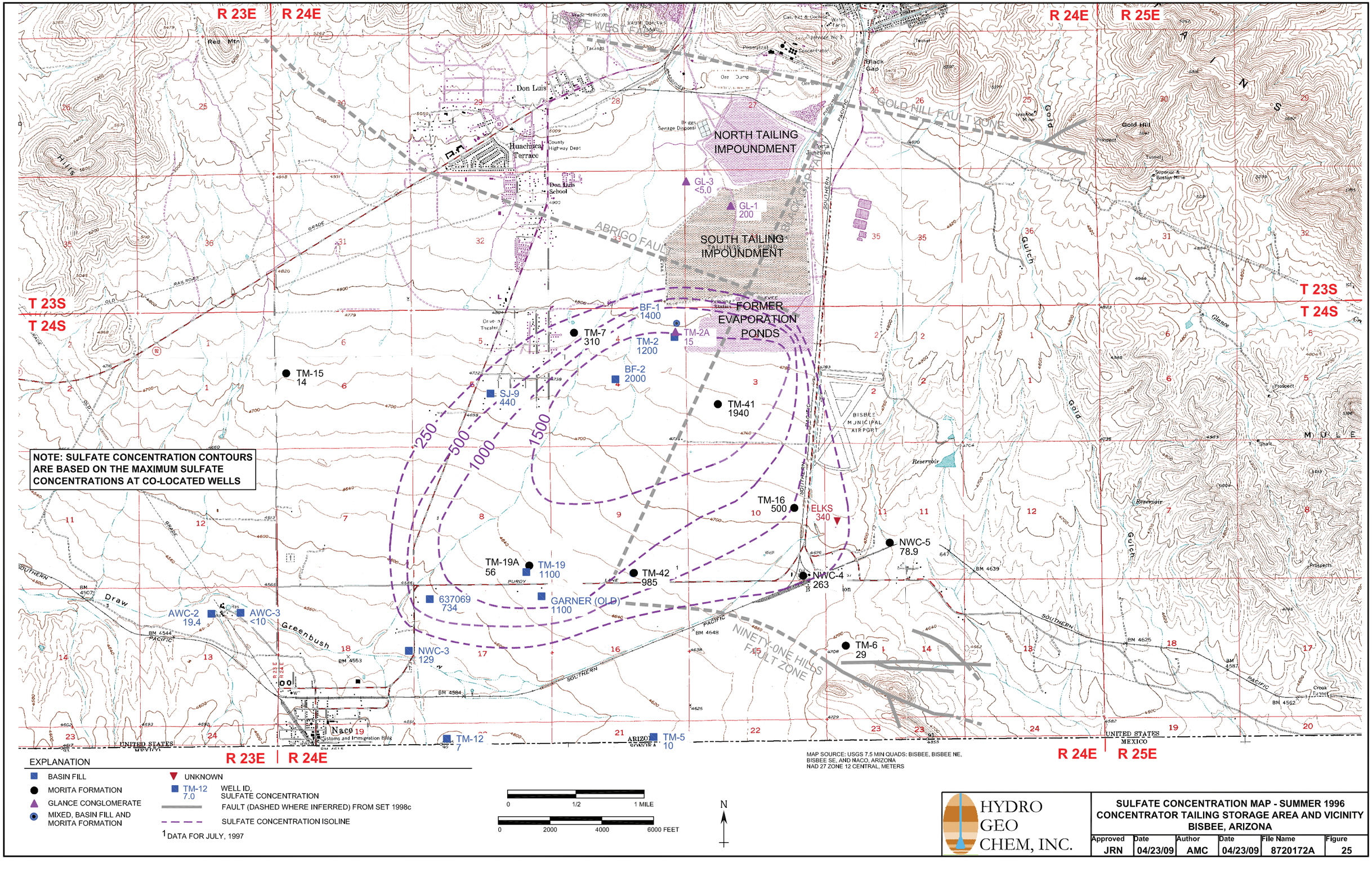
0 2000 4000 6000 FEET

N

HYDRO GEO CHEM, INC.

SULFATE CONCENTRATION MAP - JULY 1989
CONCENTRATOR TAILING STORAGE AREA AND VICINITY
BISBEE, ARIZONA

Approved	Date	Author	Date	File Name	Figure
JRN	04/23/09	AMC	04/23/09	8720171A	24



EXPLANATION

- BASIN FILL
- MORITA FORMATION
- GLANCE CONGLOMERATE
- MIXED, BASIN FILL AND MORITA FORMATION
- UNKNOWN
- TM-12 7.0 — WELL ID, SULFATE CONCENTRATION
- FAULT (DASHED WHERE INFERRED) FROM SET 1998c
- SULFATE CONCENTRATION ISOLINE

[1] DATA FOR JULY, 1997

0 1/2 1 MILE

0 2000 4000 6000 FEET

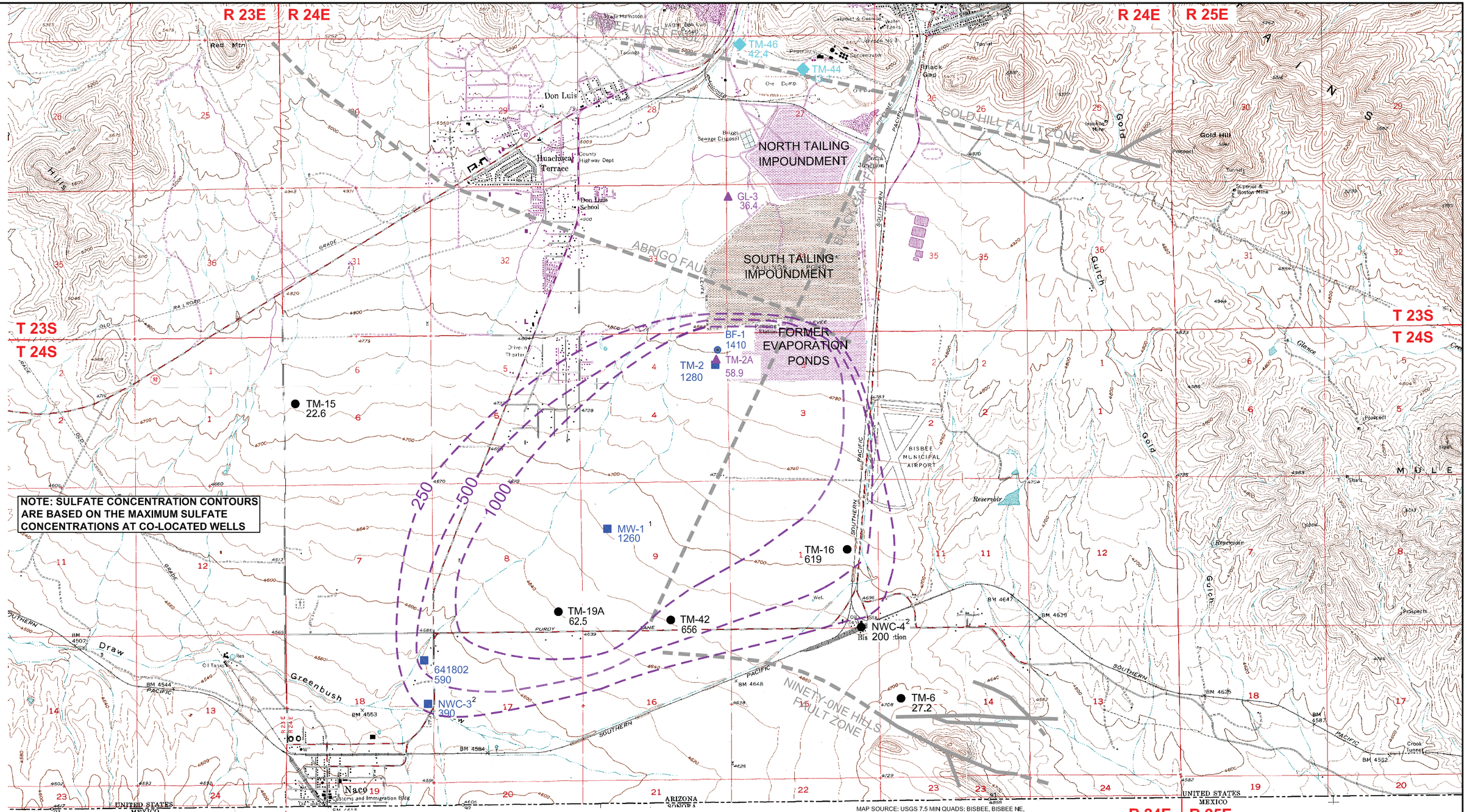
N

MAP SOURCE: USGS 7.5 MIN QUADS: BISBEE, BISBEE NE, BISBEE SE, AND NACO, ARIZONA
NAD 27 ZONE 12 CENTRAL, METERS

HYDRO GEO CHEM, INC.

SULFATE CONCENTRATION MAP - SUMMER 1996
CONCENTRATOR TAILING STORAGE AREA AND VICINITY
BISBEE, ARIZONA

Approved	Date	Author	Date	File Name	Figure
JRN	04/23/09	AMC	04/23/09	8720172A	25



NOTE: SULFATE CONCENTRATION CONTOURS ARE BASED ON THE MAXIMUM SULFATE CONCENTRATIONS AT CO-LOCATED WELLS

EXPLANATION

- BASIN FILL
- MORITA FORMATION
- GLANCE CONGLOMERATE
- PALEOZOIC SEDIMENTS
- MIXED, BASIN FILL AND MORITA FORMATION
- FAULT (DASHED WHERE INFERRED) FROM SET 1998c
- SULFATE CONCENTRATION ISOLINE
- MW-1 1260 WELL ID, SULFATE CONCENTRATION

[1] SULFATE CONCENTRATION FROM APRIL 2006
[2] MOST RECENT 2005 CONCENTRATION IS PLOTTED

0 1/2 1 MILE

0 2000 4000 6000 FEET

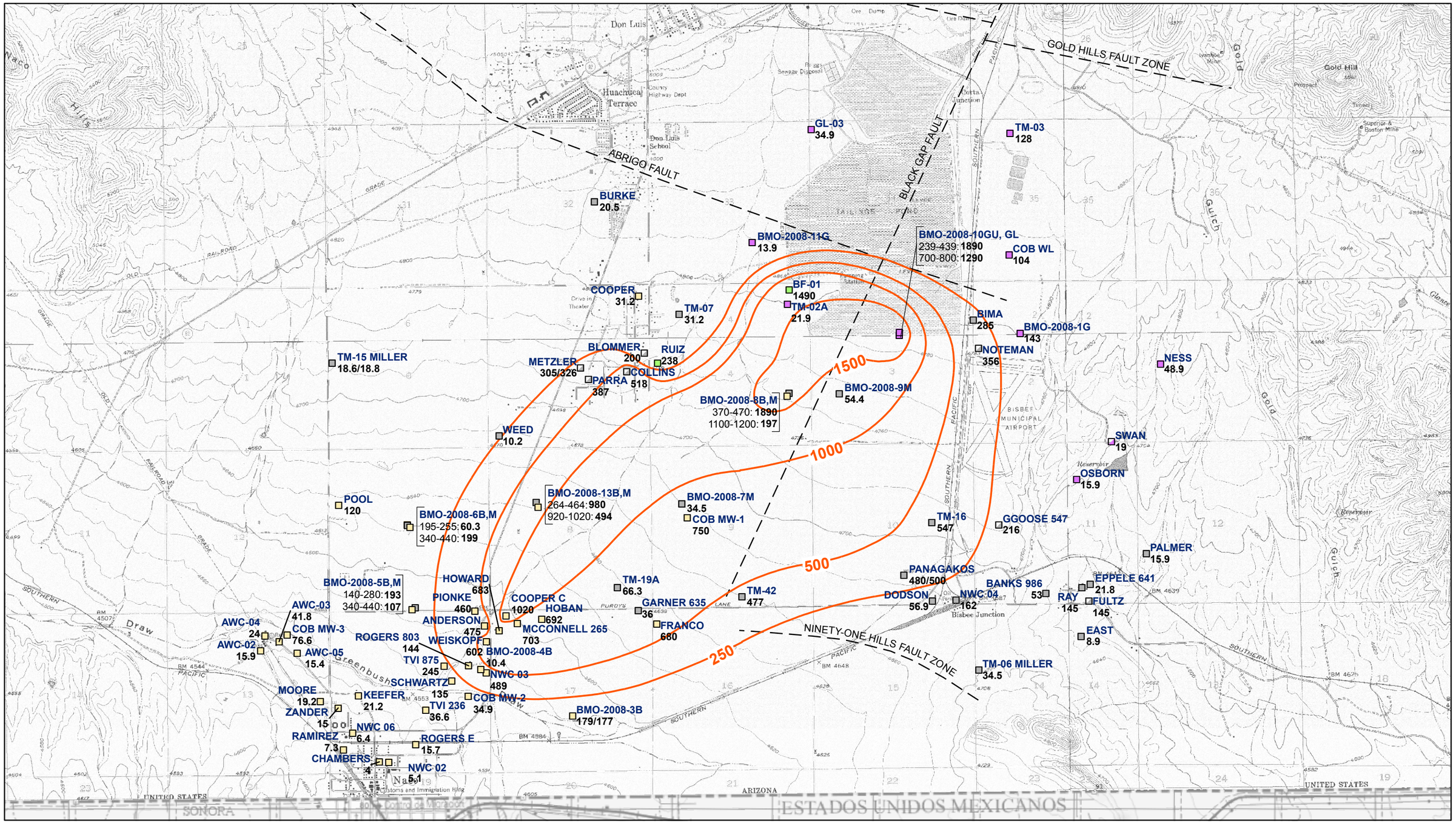
N

MAP SOURCE: USGS 7.5 MIN QUADS: BISBEE, BISBEE NE, BISBEE SE, AND NACO, ARIZONA
NAD 27 ZONE 12 CENTRAL, METERS

HYDRO GEO CHEM, INC.

SULFATE CONCENTRATION MAP - AUG. THROUGH NOV. 2005
CONCENTRATOR TAILING STORAGE AREA AND VICINITY
BISBEE, ARIZONA

Approved	Date	Author	Date	File Name	Figure
JRN	04/23/09	AMC	04/23/09	8720173A	26



Legend

- TM-19A / 66.3 — Well ID / Sulfate Concentration (mg/L)
- 250 — Sulfate Isoline (mg/L)
- Faults (inferred)

Co-located Wells: Well ID; Screen (ft bgs): Sulfate Concentration (mg/L) (Duplicate results separated by "/")

Screened Formation
- Basin Fill
- Basin Fill and Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group - Estimated
- Glance Conglomerate
- Glance Conglomerate-Estimated

Undifferentiated Bisbee Group: Cintura, Mural Limestone, and Morita Formations

(see Figure 21 for sulfate concentration map of Naco, Sonora)

PROJECTION: UTM Zone 12N NAD83

0 1500 3000 Feet

N

HYDRO GEO CHEM, INC.

SULFATE CONCENTRATIONS FOR FOURTH QUARTER 2008

Approved	Date	Author	Date	File Name	Figure
DRS	04/27/09	AMC	04/27/09	8720232G	27

R23E R24E

R24E R25E

T23S T24S

T23S T24S

GL-03

TM-03

BURKE

BMO-2008-11G

COOPER

BF-01

TM-02A

TM-07

BIMA

BMO-2008-1G

BMO-2008-10GU
BMO-2008-10GL

NOTEMAN

BLOMMER

RUIZ

METZLER

PARRA

TM-15 MILLER

NESS

BMO-2008-8B
BMO-2008-8M

BMO-2008-9M

WEED

SWAN

TM-08 SWAN

OSBORN

POOL

BMO-2008-13B
BMO-2008-13M

BMO-2008-7M

BMO-2008-6B
BMO-2008-6M

TM-16

GGOOSE 547

PALMER

PANAGAKOS

TM-19A

TM-42

BANKS 986

RAY

EPPELE 641

DODSON

NWC 04

FULTZ

BMO-2008-5B
BMO-2008-5M

PIONKE

COOPER C

HOBAN

GARNER 635

ANDERSON

FRANCO

HOWARD

MCCONNELL 265

EAST

AWC 04

AWC 03

AWC 02

AWC 05

WEISKOPF

ROGERS 803

TVI 875

BMO-2008-4B

NWC 03

TM-06 MILLER

SCHWARTZ

KEEFER

MOORE

ZANDER

TVI 236

BMO-2008-3B

NWC 06

ROGERS E

RAMIREZ

CHAMBERS

NWC 02

Naco

UNITED STATES

SONORA

ARIZONA

ESTADOS UNIDOS MEXICANOS

UNITED STATES

Legend

- MOORE Well Location and ID
- 2008 - 250 mg/L Sulfate Isoline
- 2005 - 250 mg/L Sulfate Isoline
- 1996 - 250 mg/L Sulfate Isoline

Screened Formation

- Basin Fill
- Basin Fill and Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group - Estimated
- Glance Conglomerate
- Glance Conglomerate-Estimated

0 1500 3000 Feet

Undifferentiated Bisbee Group: Cintura, Mural Limestone, and Morita Formations

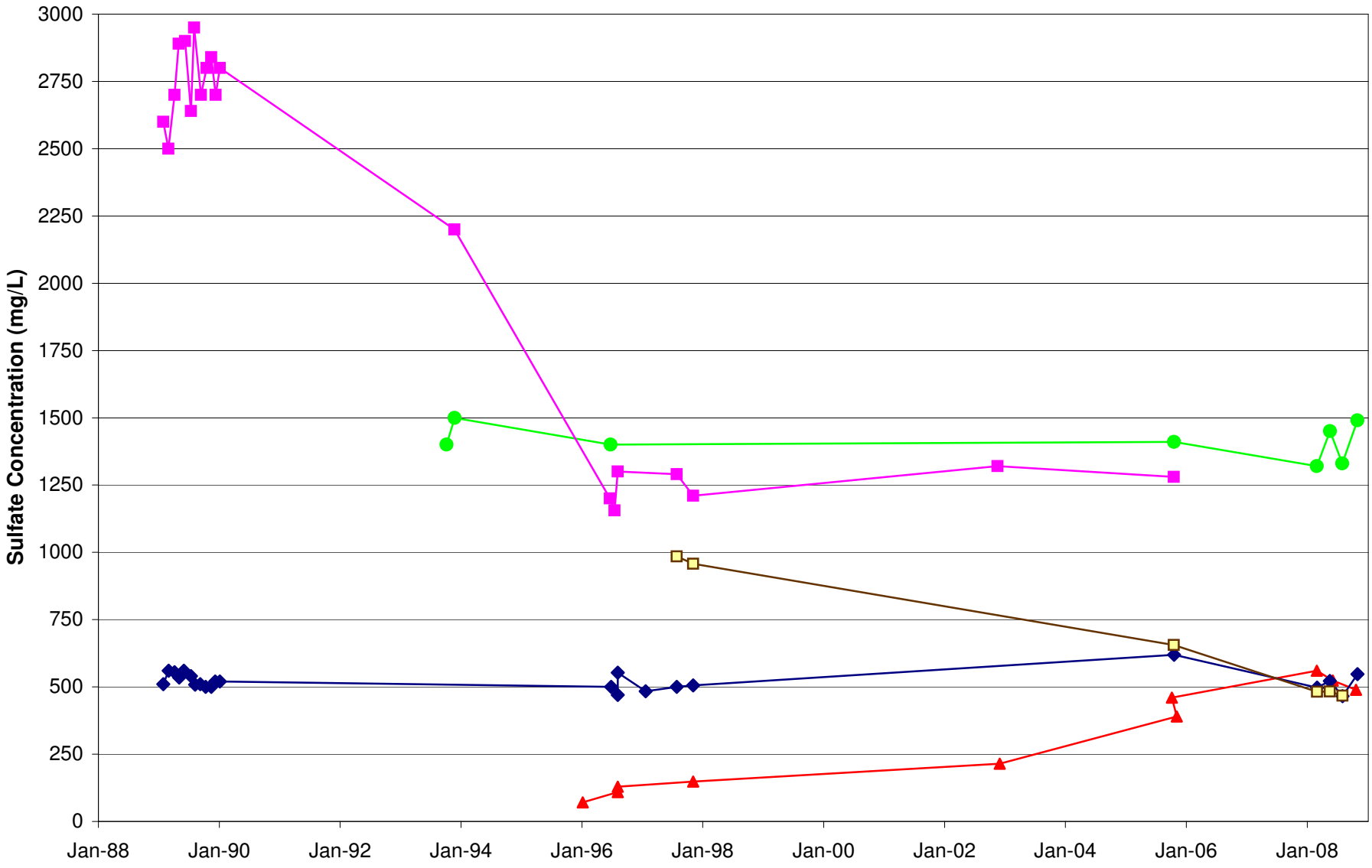
PROJECTION: UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

COMPARISON OF 1996, 2005, AND 2008 SULFATE PLUME BOUNDARIES

Approved	Date	Author	Date	File Name	Figure
SS	04/23/09	AMC	04/23/09	8720233G	28



EXPLANATION

- BF-01 Basin Fill and Morita Formation
- NWC-03 Basin Fill
- NWC-04 Undifferentiated Bisbee Group
- TM-02 Basin Fill
- TM-16 Undifferentiated Bisbee Group
- TM-42 Undifferentiated Bisbee Group

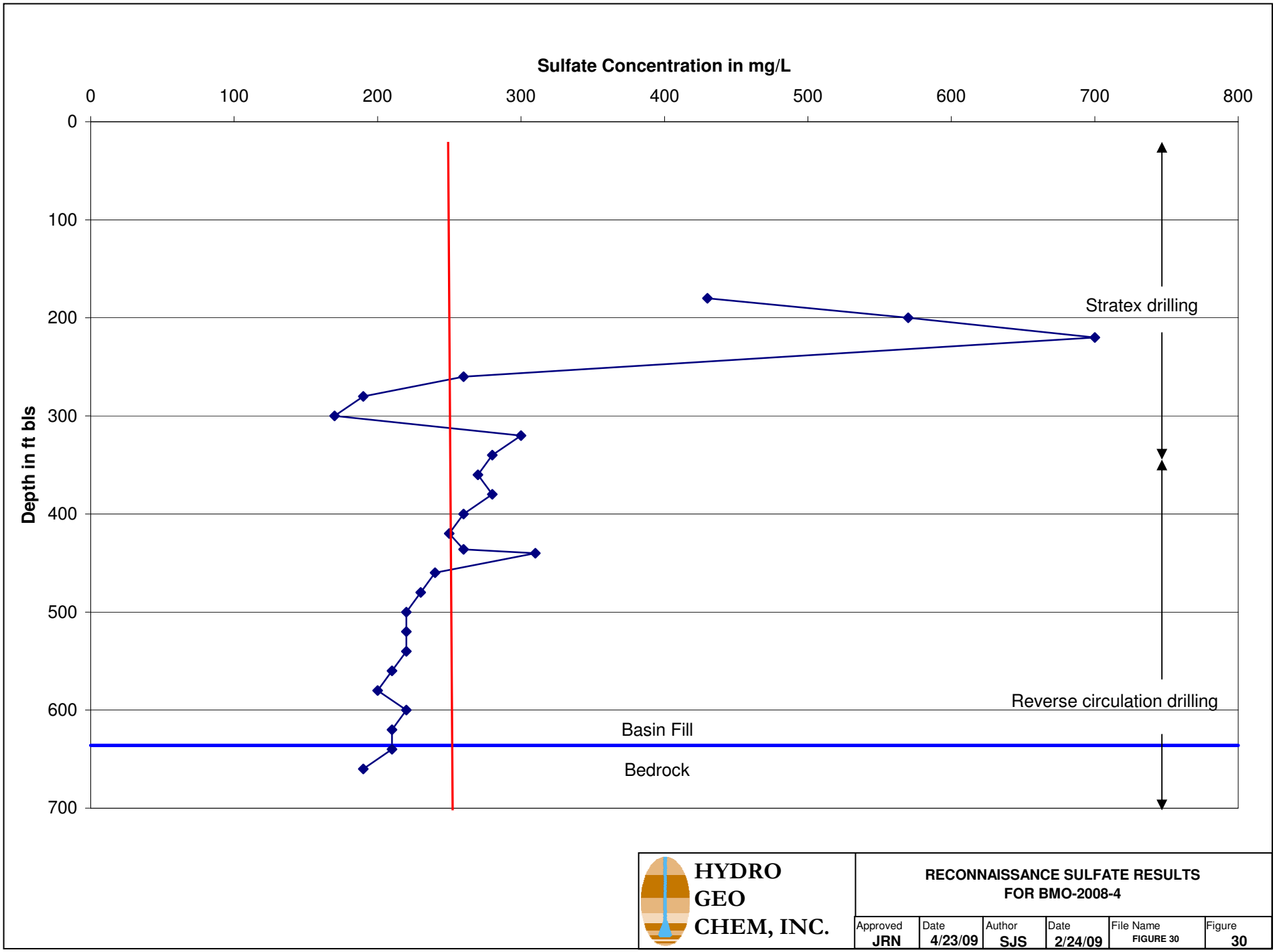
Note: August 6, 1996 TM-02 value of 523 mg/L not shown

HYDRO GEO CHEM, INC.

SULFATE CONCENTRATIONS IN WELLS BF-01, NWC-03, NWC-04, TM-02, TM-16, and TM-42

Approved	Date	Author	Date	File Name	Figure
SJS	2/10/09	RAM	2/10/09	FIGURE 29	29

H:\872000\Task 4 ACR\figures\ Figure 29.xls: F29

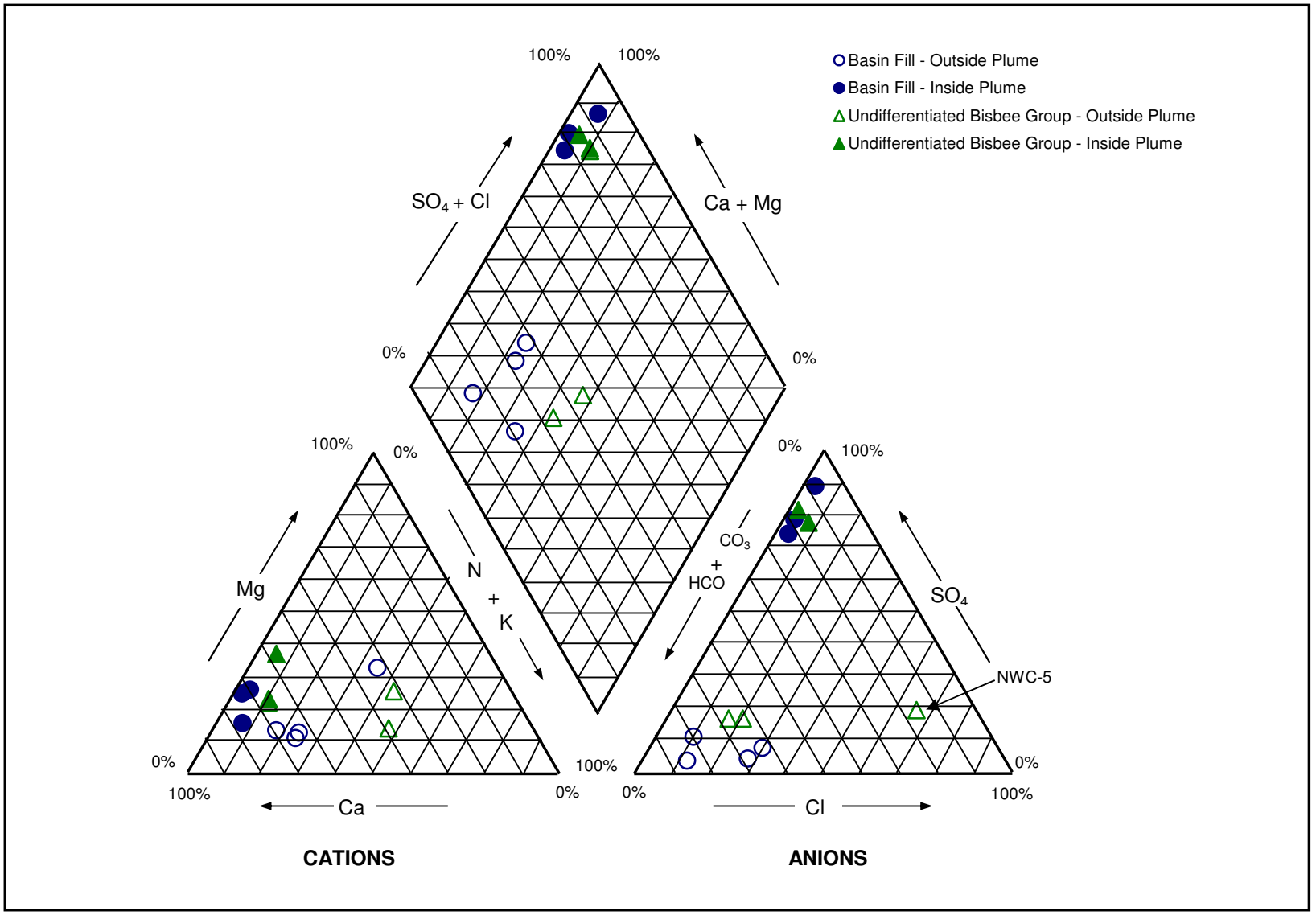


HYDRO GEO CHEM, INC.

RECONNAISSANCE SULFATE RESULTS FOR BMO-2008-4

Approved	Date	Author	Date	File Name	Figure
JRN	4/23/09	SJS	2/24/09	FIGURE 30	30

H:\872000\Task 4 ACR\figures\Figure 30.xls: BMO-4 Sulfate F30

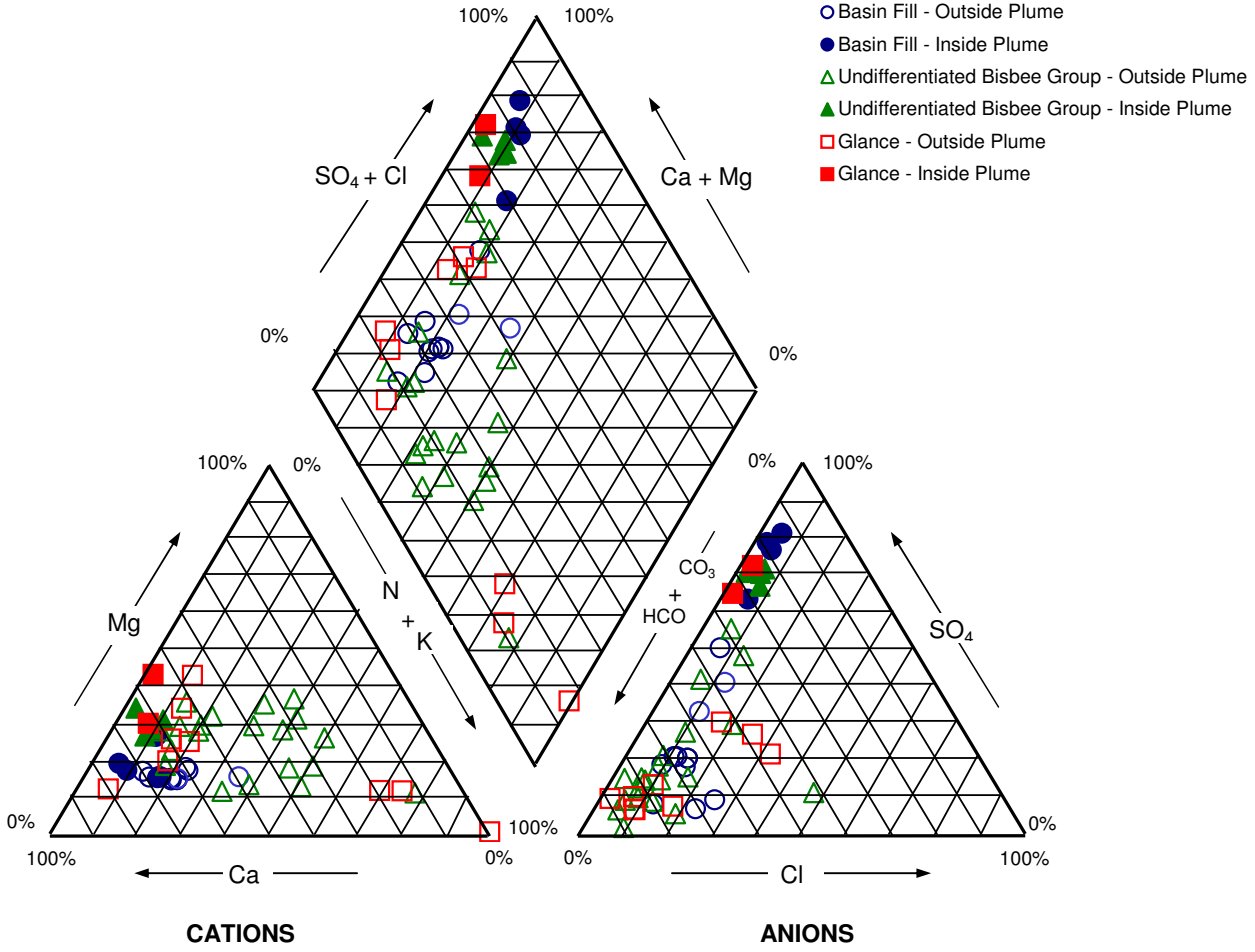


HYDRO GEO CHEM, INC.

PIPER DIAGRAM FOR 1996 DATA

Approved	Date	Author	Date	File Name	Figure
SJS	03/02/09	SJS	2/24/09	PIPER GRAPH	31

H:\872000\Task 4 ACR\figures\Figure 31.xlk: piper graph

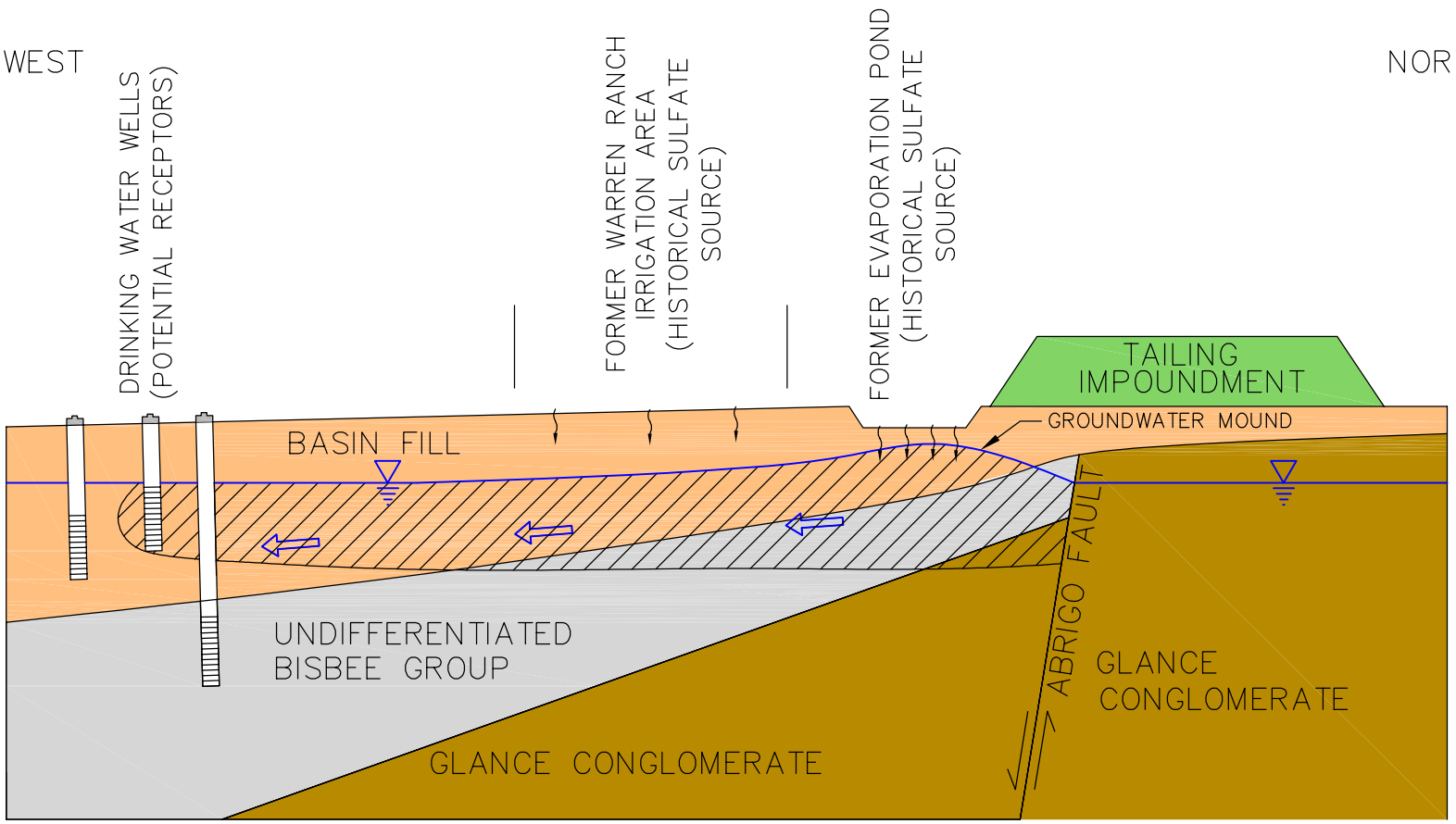


HYDRO GEO CHEM, INC.

PIPER DIAGRAM FOR 2008 DATA

Approved	Date	Author	Date	File Name	Figure
SJS	03/02/09	SJS	2/24/09	PIPER GRAPH	32

H:\872000\Task 4 ACR\figures\Figure 32.xlk: piper graph



LEGEND

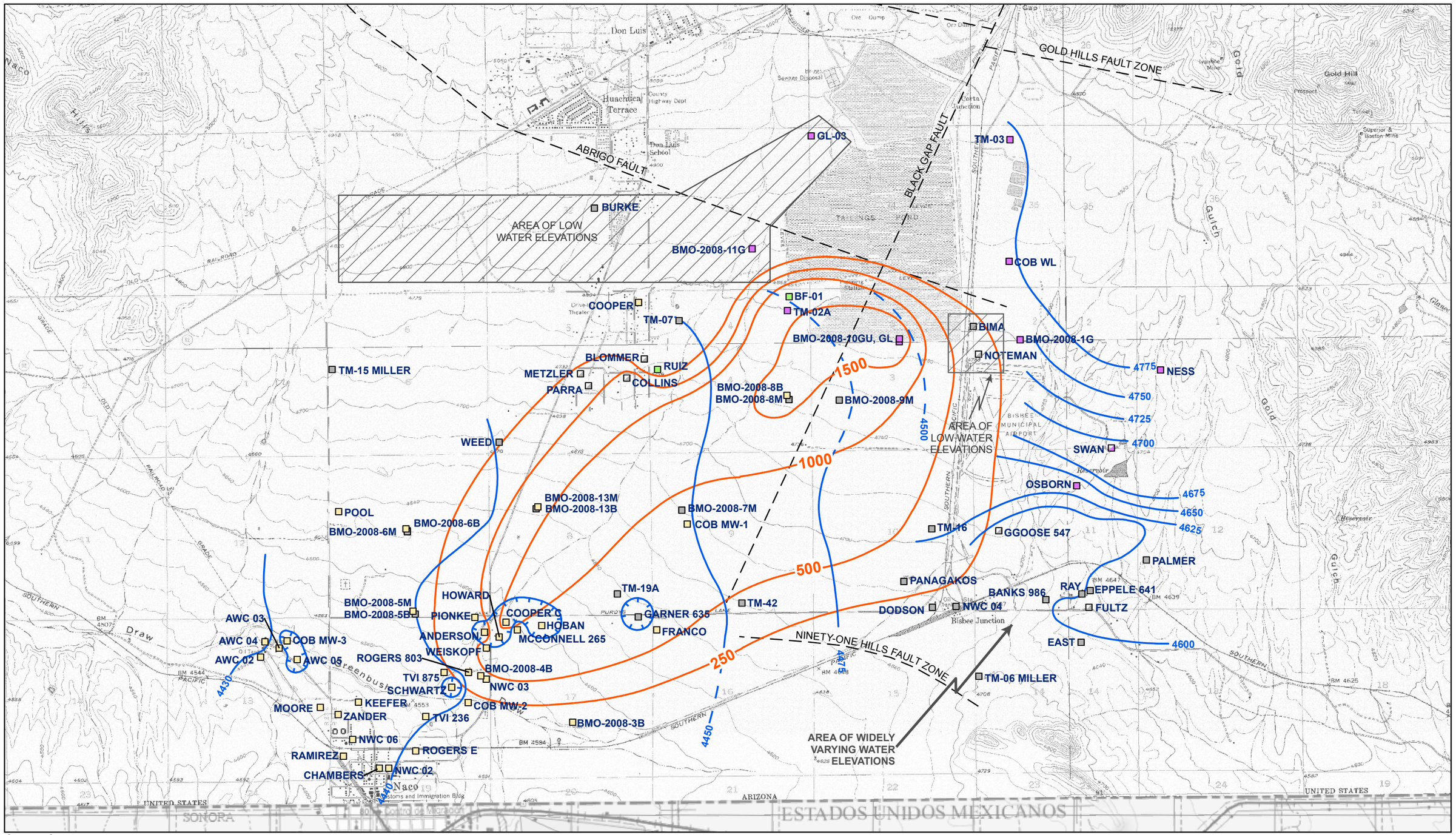
- WATER TABLE
- SULFATE–BEARING SEEPAGE THROUGH VADOSE ZONE
- GROUNDWATER FLOW DIRECTION (MIGRATION PATHWAY)
- SULFATE – BEARING GROUNDWATER
- WELL
- SCREENED INTERVAL

N.T.S.

HYDRO GEO CHEM, INC.

SCHEMATIC DIAGRAM OF CONCEPTUAL SITE MODEL FOR HISTORICAL SULFATE SOURCES

Approved	Date	Author	Date	File Name	Figure
JRN	04/27/09	AMC	04/27/09	8720174A	33



Legend

- TM-19A Well ID
- 250 Sulfate Isoline (mg/L)
- Faults (inferred)
- 4500 Groundwater Elevation Contour (ft amsl) (dashed where inferred)

Screened Formation

- Basin Fill
- Basin Fill and Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group - Estimated
- Glance Conglomerate
- Glance Conglomerate-Estimated

(see Figure 21 for sulfate concentration map of Naco, Sonora)

0 1500 3000 Feet

PROJECTION: UTM Zone 12N NAD83

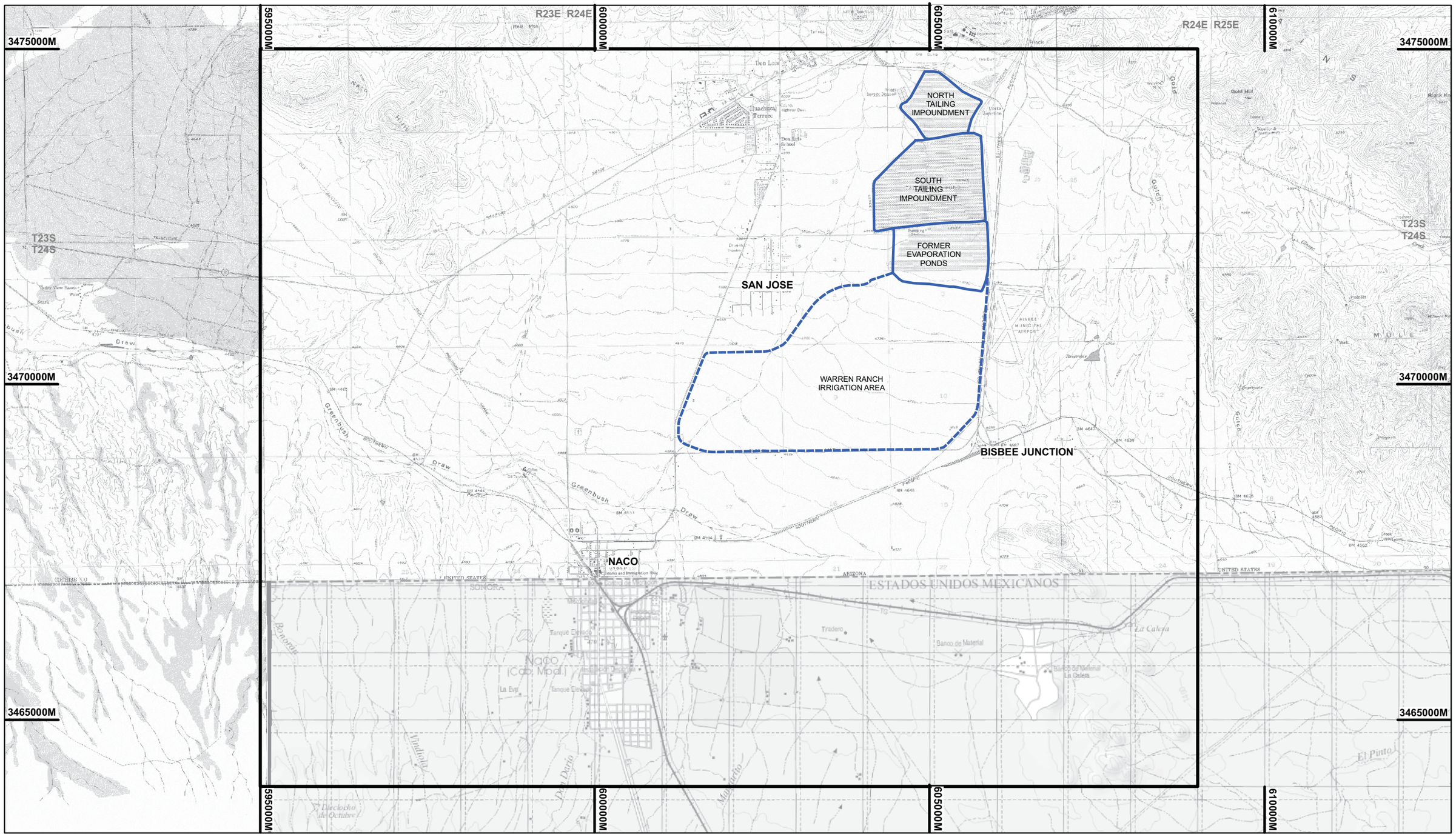
Undifferentiated Bisbee Group: Cintura, Mural Limestone, and Morita Formations

N

HYDRO GEO CHEM, INC.

SULFATE CONCENTRATIONS AND GROUNDWATER ELEVATIONS FOR FOURTH QUARTER 2008

Approved	Date	Author	Date	File Name	Figure
DRS	04/27/09	AMC	04/27/09	8720234G	34



Legend

- CTSA Facility
- Warren Ranch Irrigation Area
- Numerical Model Extent

0 2250 4500Feet

PROJECTION:
UTM Zone 12 NAD 83

N

HYDRO GEO CHEM, INC.

RSET MODEL EXTENT

Approved	Date	Author	Date	File Name	Figure
NWH	04/24/09	AMC	04/24/09	8720235G	35

3475000M

595000M

R23E R24E

600000M

605000M

R24E R25E

610000M

3475000M

T23S
T24S

SAN JOSE

BISBEE JUNCTION

3470000M

NACO

3465000M

595000M

600000M

605000M

610000M

3465000M

Legend

Model grid

Numerical Model Extent

0 2000 4000 Feet

PROJECTION:
UTM Zone 12 NAD 83

N

HYDRO GEO CHEM, INC.

RSET MODEL DISCRETIZATION

Approved	Date	Author	Date	File Name	Figure
NWH	04/24/09	AMC	04/24/09	8720236G	36

3475000M R23E R24E 3475000M

595000M 600000M 605000M

T23S T24S

3470000M 3470000M

3465000M 3465000M

595000M 600000M 605000M

SAN JOSE

BISBEE JUNCTION

NACO

BOTTOM OF BASIN FILL

TOP OF GLANCE CONGLOMERATE

Legend

- Numerical Model Extent
- CTSA Facility
- Warren Ranch Irrigation Area
- Top of Glance Conglomerate - 100 ft Contour Intervals
- Bottom of Basin Fill - 50 ft Contour Intervals

0 2500 5000 Feet

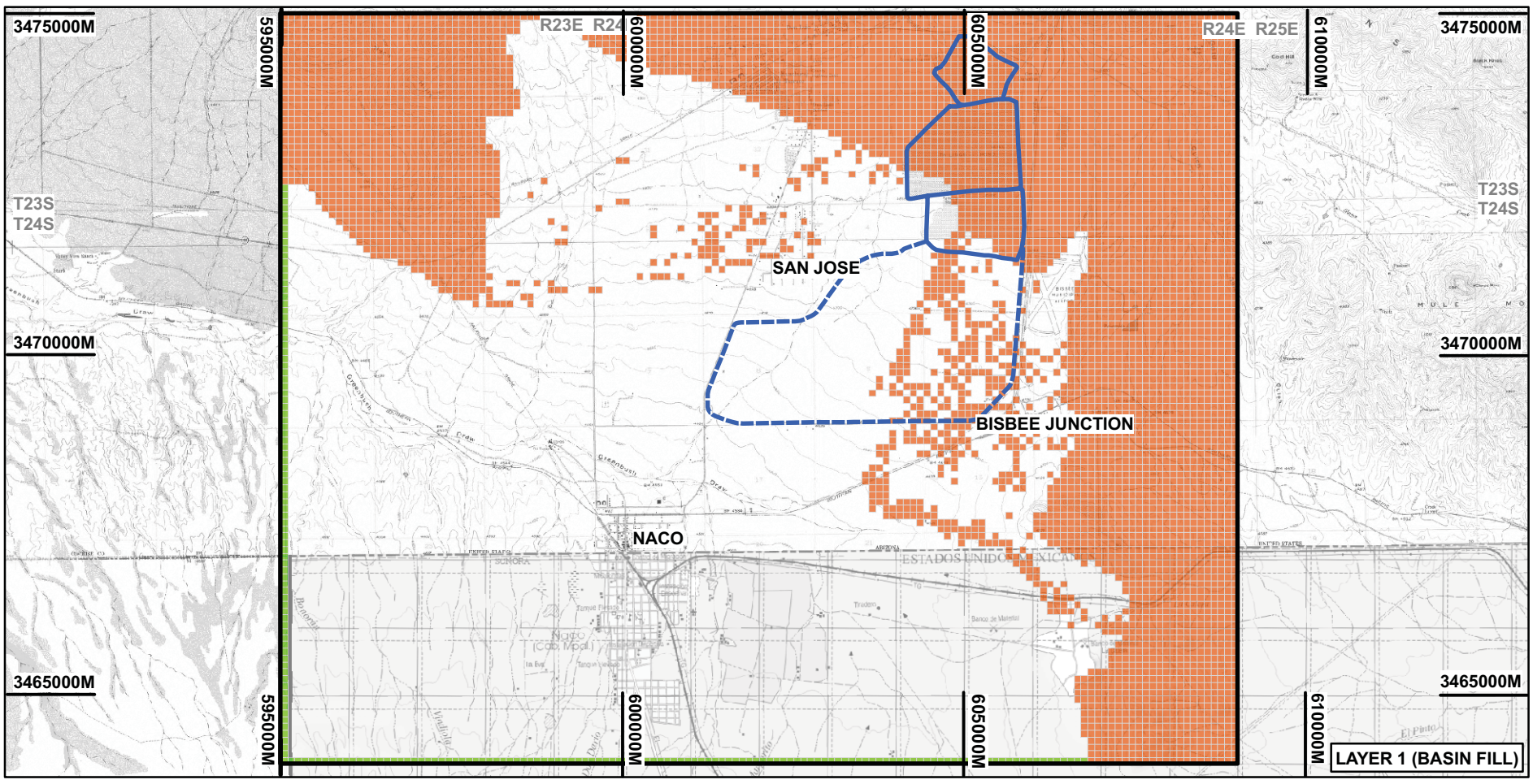
PROJECTION:
UTM Zone 12 NAD 83

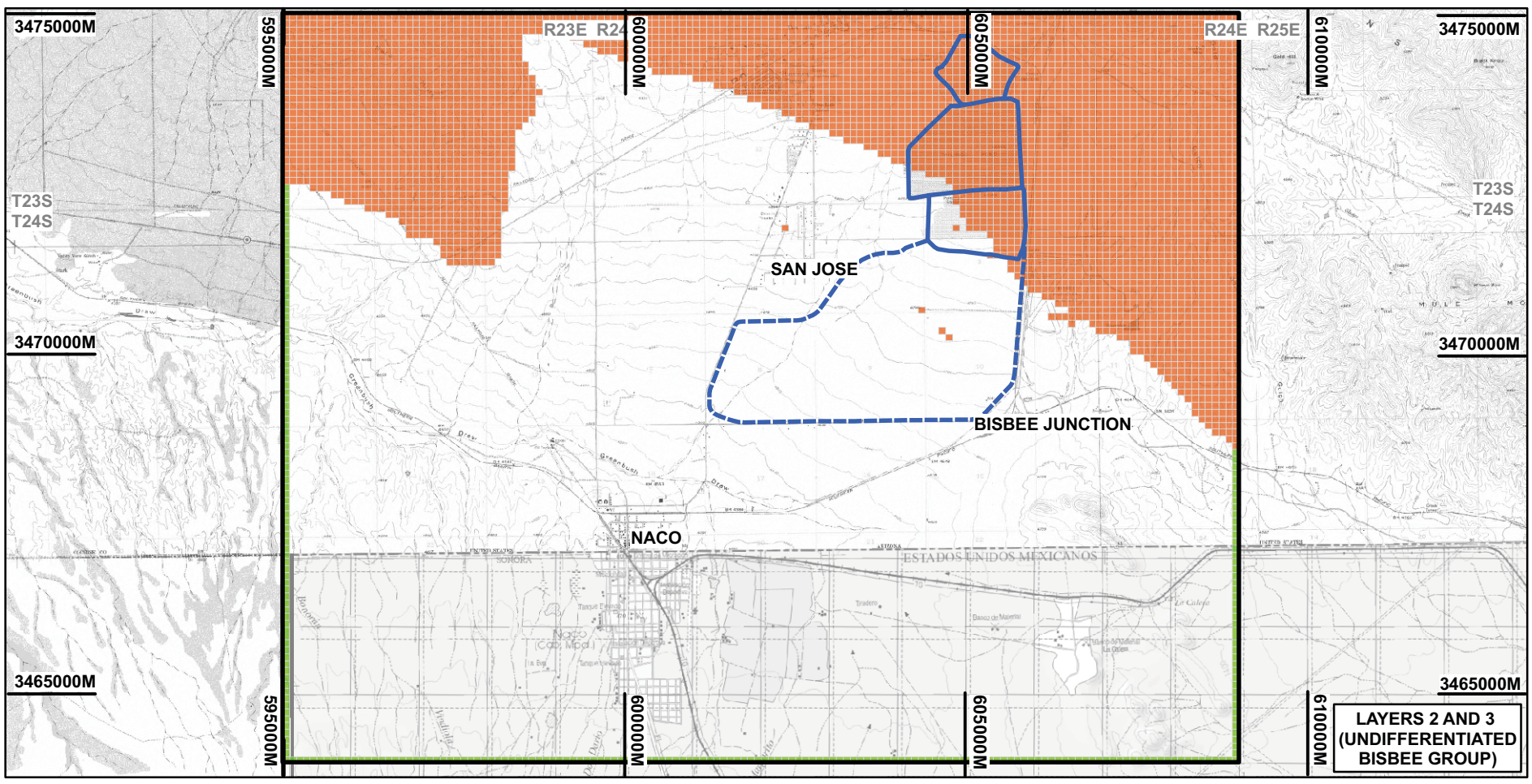
N

HYDRO GEO CHEM, INC.

BEDROCK SURFACE CONTOURS

Approved	Date	Author	Date	File Name	Figure
NWH	04/27/09	AMC	04/27/09	8720237G	37





Legend

- Numerical Model Extent
- Specified Head Boundary
- No Flow Boundary
- CTSA Facility
- Warren Ranch Irrigation Area

0 3750 7500 Feet

PROJECTION:
UTM Zone 12 NAD 83

N

HYDRO GEO CHEM, INC.

SPECIFIED HEAD AND NO FLOW BOUNDARY LOCATIONS

Approved	Date	Author	Date	File Name	Figure
NWH	04/27/09	AMC	04/27/09	8720238G	38

3475000M
595000M
R23E R24E
600000M
605000M
R24E R25E
610000M
3475000M
T23S
T24S
T23S
T24S
SAN JOSE
BISBEE JUNCTION
NACO
3470000M
3470000M
3465000M
3465000M
595000M
600000M
605000M
610000M

Legend
- CTSA Facility
- Warren Ranch Irrigation Area
- Numerical Model Extent

Recharge Zones
- Natural Recharge - High
- Natural Recharge - Low
- Former Evaporation Pond - West
- Warren Ranch Irrigation Area - West
- Warren WWTF Lagoons
- TVI Golf Course - Original
- TVI Golf Course - Expansion
- Naco, Sonora WWTF Lagoons
- El Oasis Irrigation - Original
- Former Evaporation Pond - East
- Warren Ranch Irrigation Area - East
- Elevated Concentration Zone - West
- Elevated Concentration Zone - East
- El Oasis - Expansion
- San Jose WWTF Discharge to Greenbush Draw
- San Jose WWTF Lagoons

0 2000 4000 Feet

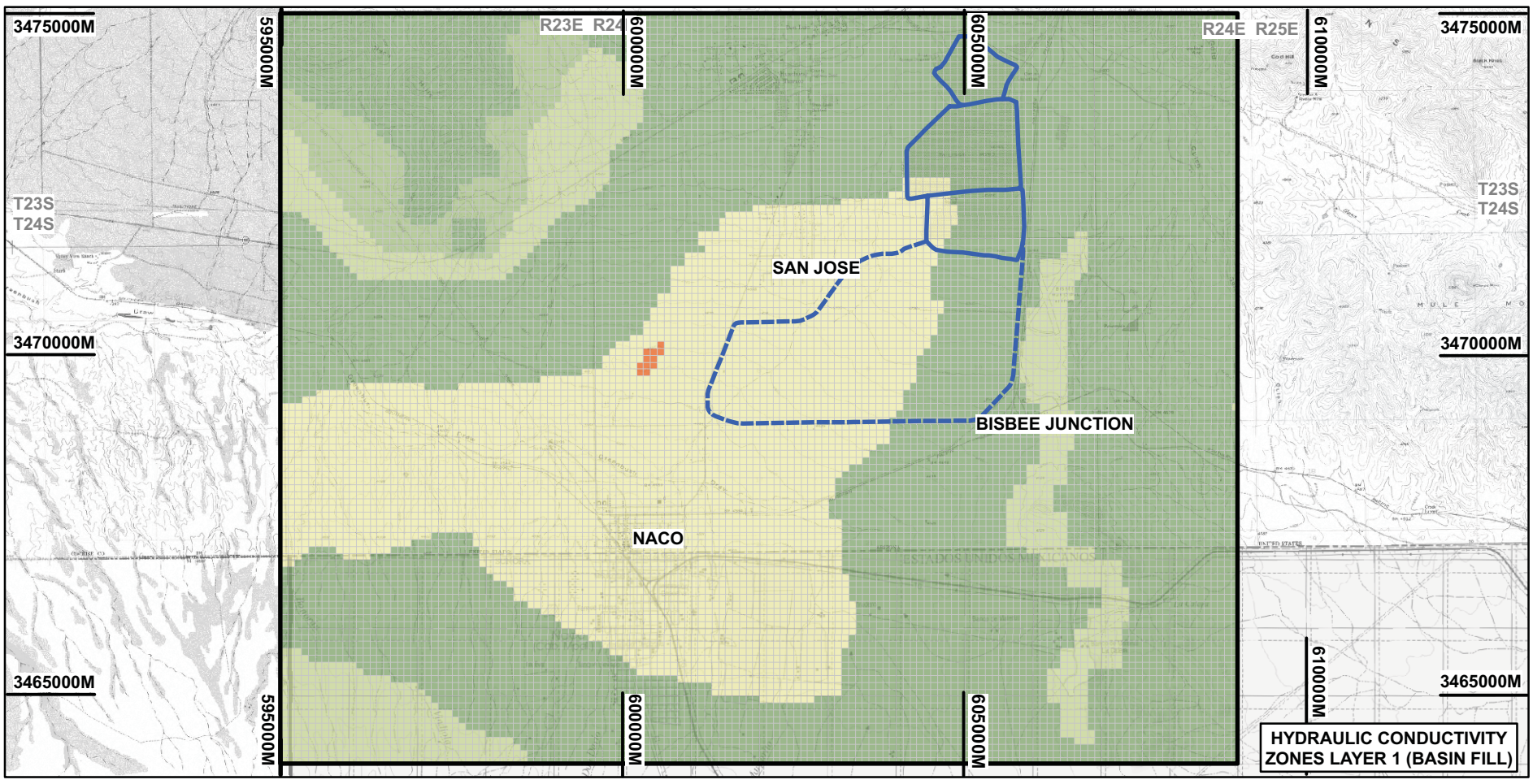
PROJECTION:
UTM Zone 12 NAD 83

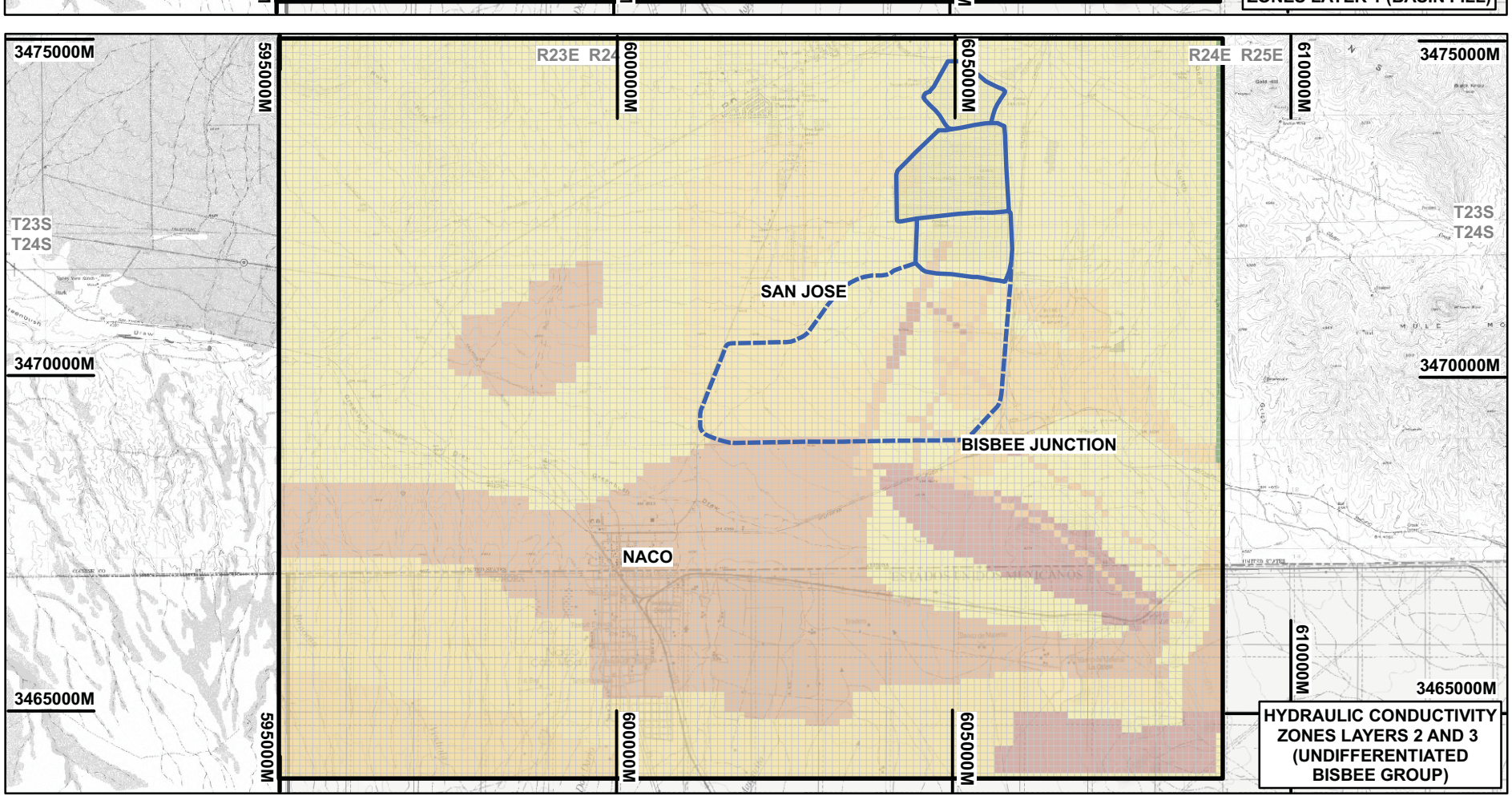
N

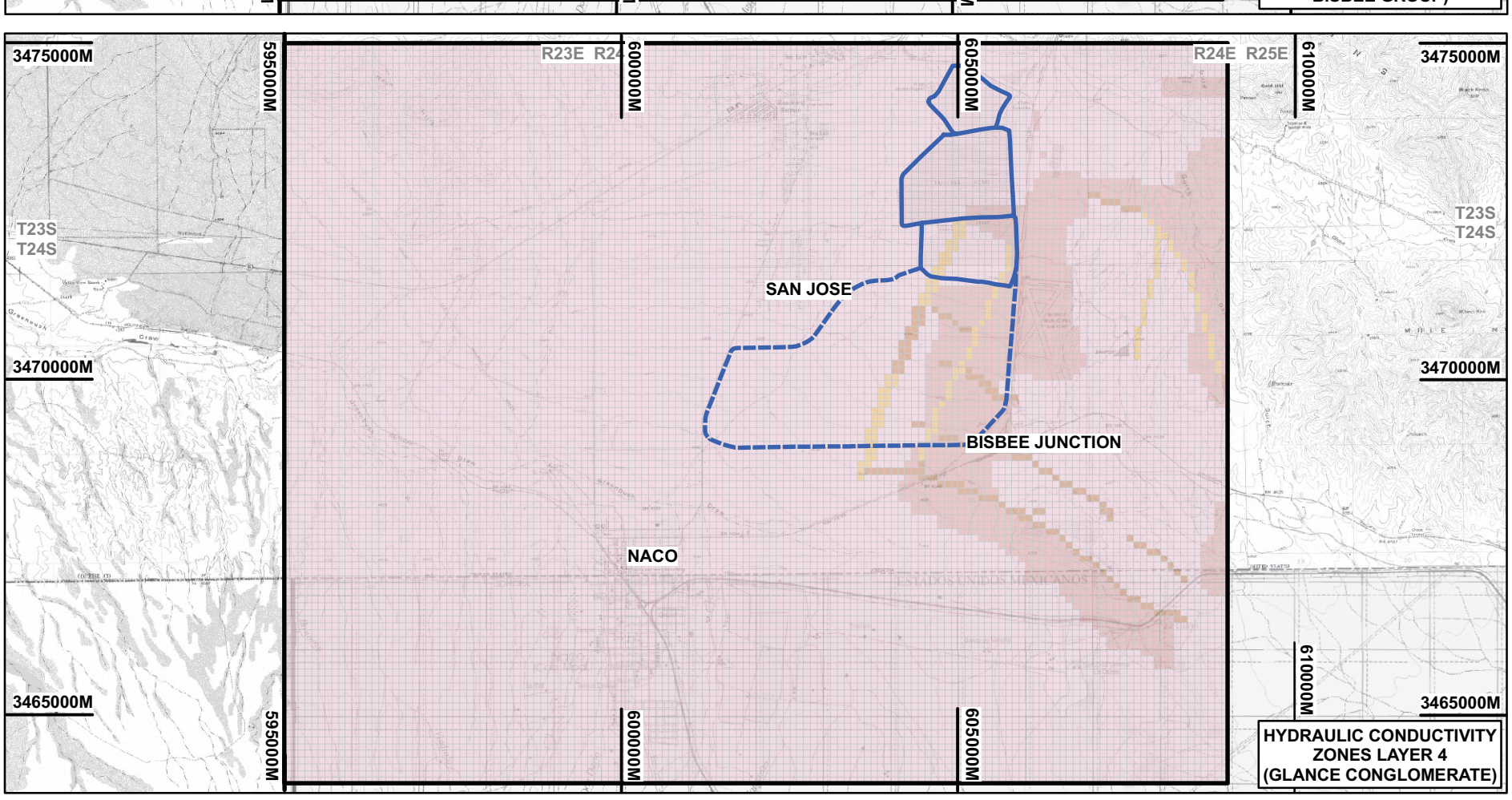
HYDRO GEO CHEM, INC.

RECHARGE ZONES USED IN RSET MODEL

Approved	Date	Author	Date	File Name	Figure
NWH	04/24/09	AMC	04/24/09	8720239G	39







Legend

- Numerical Model Extent
- CTSA Facility
- Warren Ranch Irrigation Area

Zone

1 2 3 4 5 6 7 8 9 10 11 12 13 15

0 3500 7000 Feet

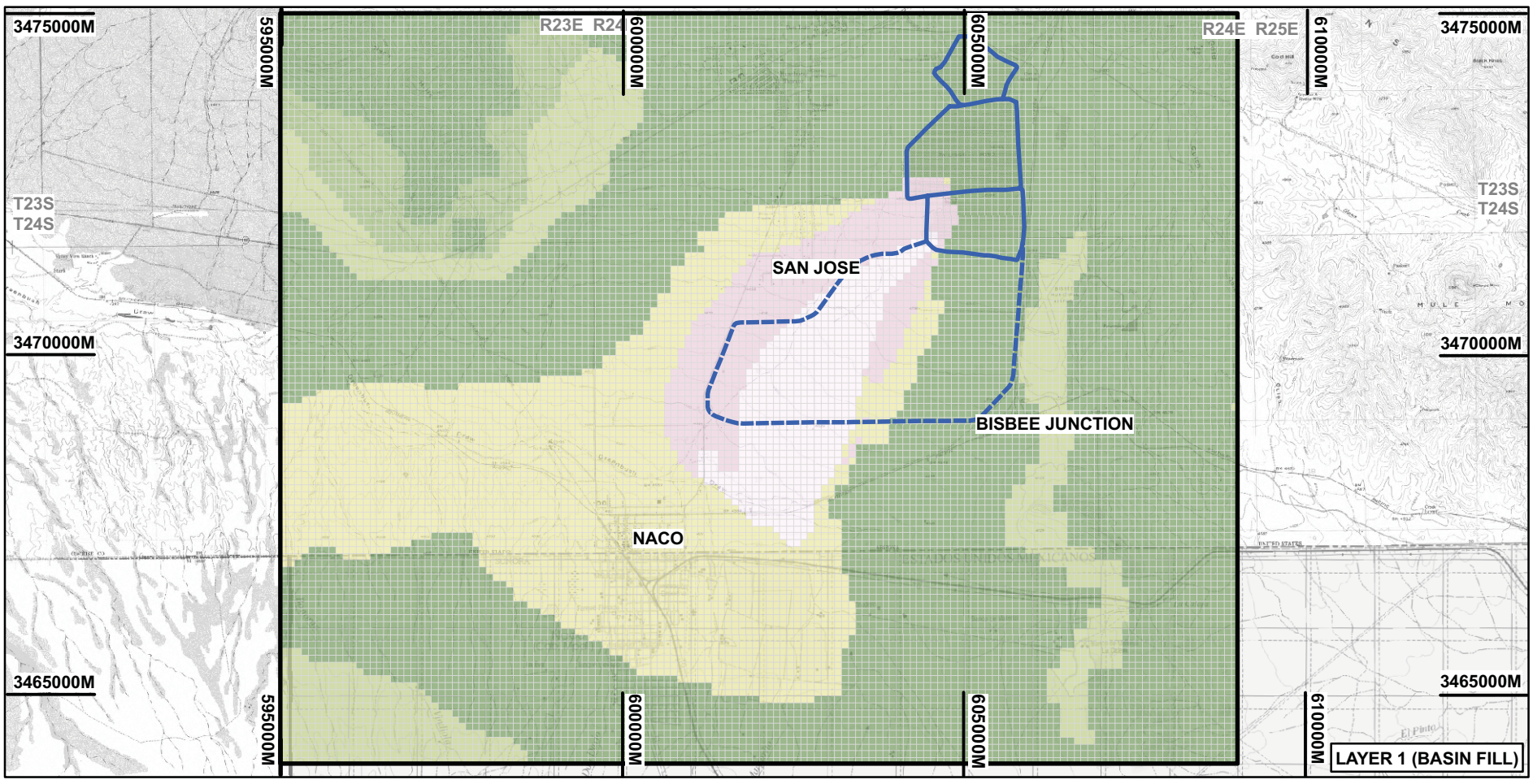
PROJECTION: UTM Zone 12 NAD 83

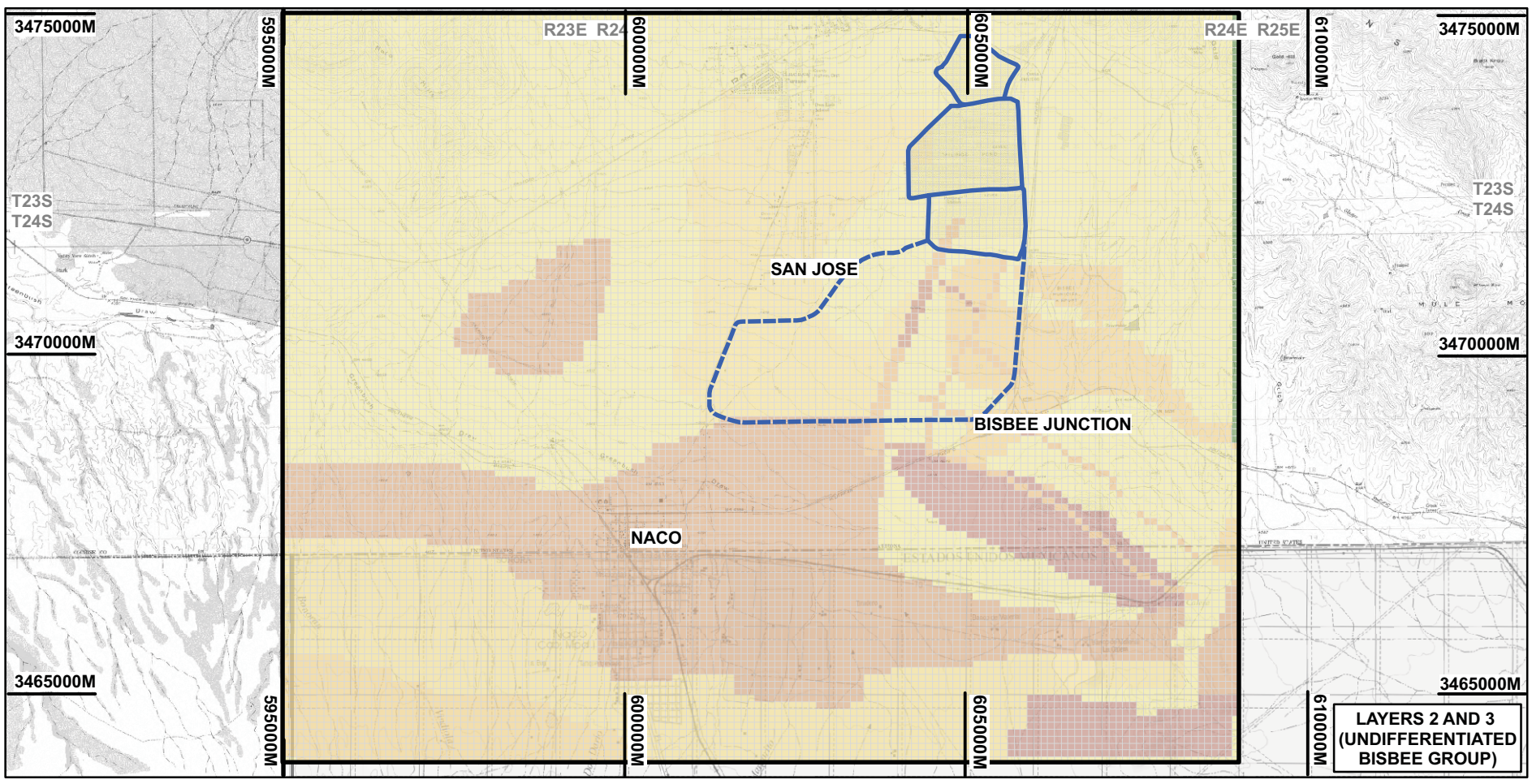
N

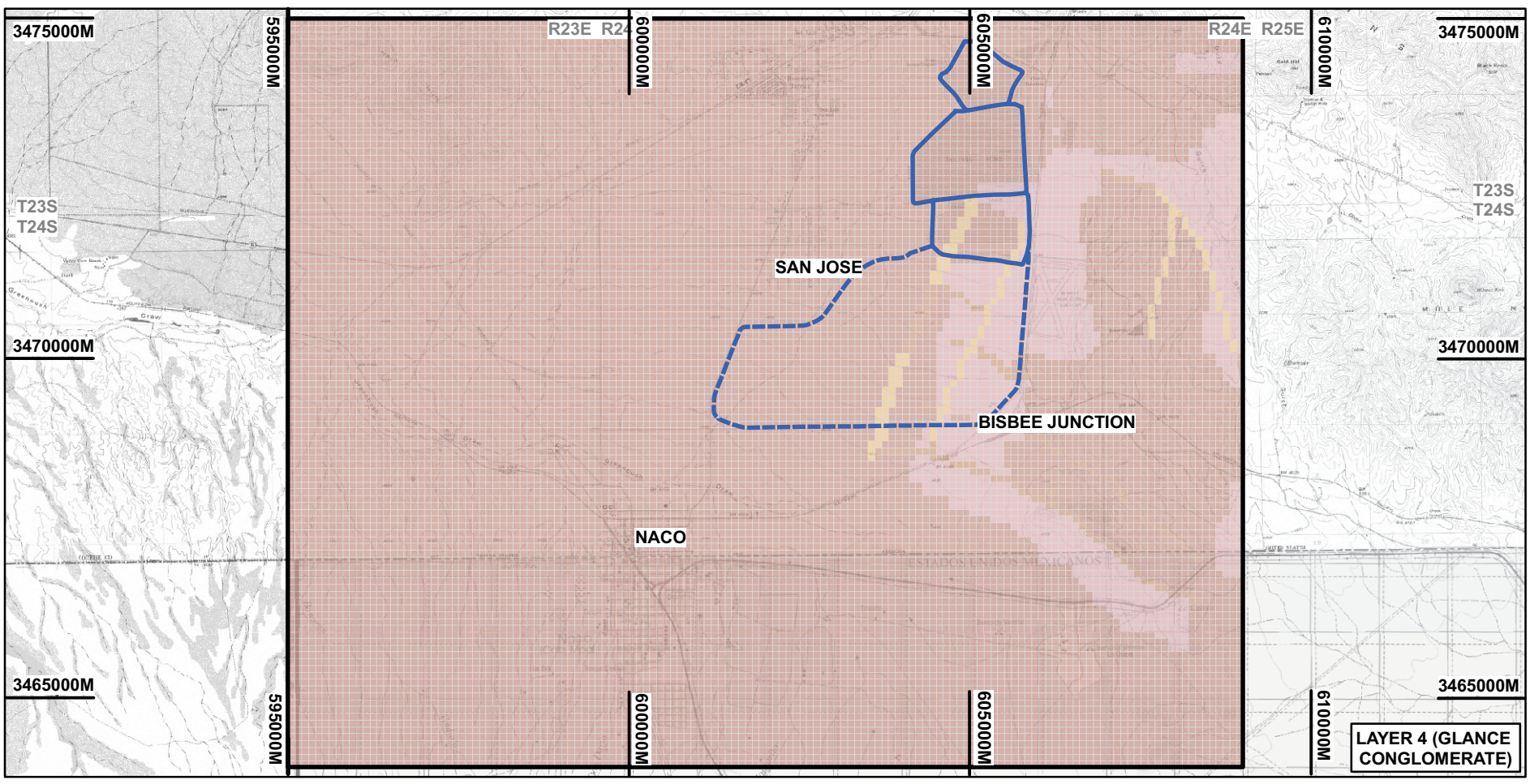
HYDRO GEO CHEM, INC.

HYDRAULIC CONDUCTIVITY ZONES LAYERS 1 THROUGH 4

Approved	Date	Author	Date	File Name	Figure
NWH	04/27/09	AMC	04/27/09	8720240G	40







Legend

- Numerical Model Extent
- CTSA Facility
- Warren Ranch Irrigation Area

Zone

1 2 3 4 5 6 7 8 9 10 11 12 14 15

0 3750 7500 Feet

PROJECTION:
UTM Zone 12 NAD 83

N

HYDRO GEO CHEM, INC.

STORAGE COEFFICIENT, SPECIFIC YIELD AND POROSITY ZONES LAYERS 1 THROUGH 4

Approved	Date	Author	Date	File Name	Figure
NWH	04/27/09	AMC	04/27/09	8720241G	41

3475000M
3470000M
3465000M
595000M
600000M
605000M
610000M
R23E R24
R24E R25E
T23S
T24S
SAN JOSE
BISBEE JUNCTION
NACO
LAYER 1 (BASIN FILL)

LAYERS 2 AND 3 (UNDIFFERENTIATED BISBEE GROUP)

LAYER 4 (GLANCE CONGLOMERATE)

Legend

- Numerical Model Extent
- CTSA Facility
- Warren Ranch Irrigation Area

Zone: 1 2 3 4 5 6 7 8 9 10

0 3750 7500 Feet

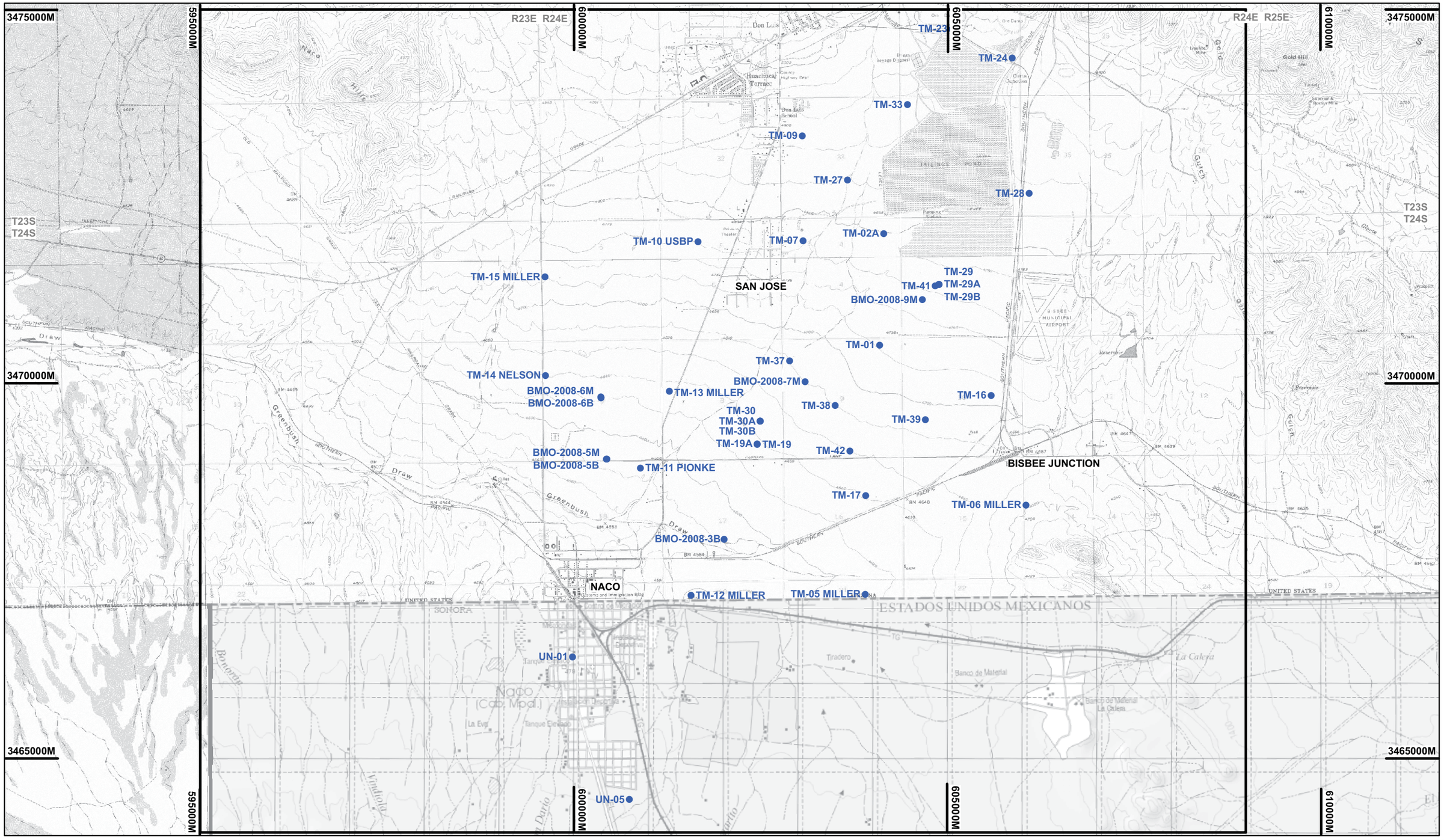
PROJECTION: UTM Zone 12 NAD 83

N

HYDRO GEO CHEM, INC.

DISPERSIVITY ZONES IN LAYERS 1 THROUGH 4

Approved	Date	Author	Date	File Name	Figure
NWH	04/27/09	AMC	04/27/09	8720242G	42



Legend

- Well ID
- Numerical Model Extent

0 2000 4000 Feet

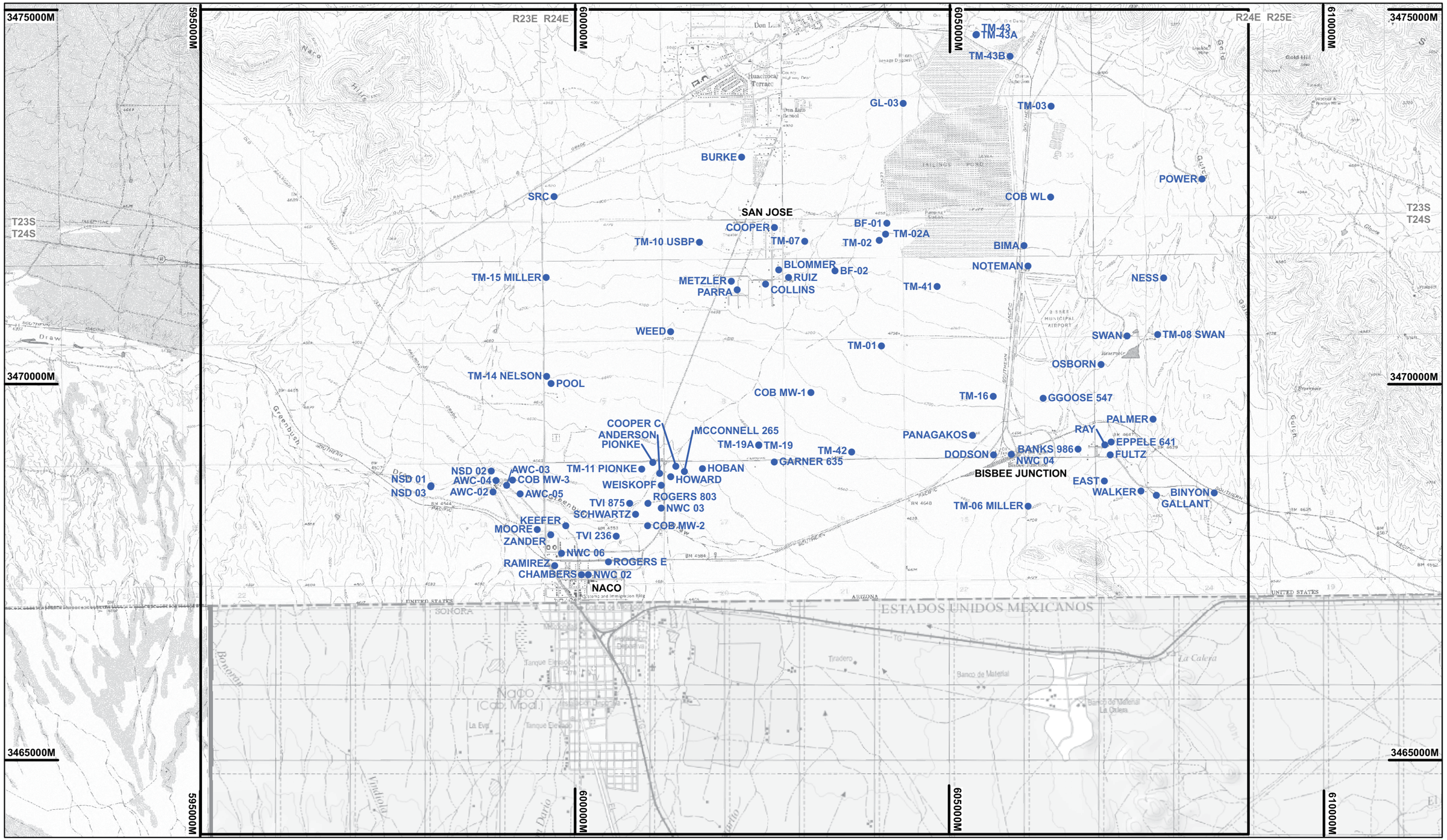
PROJECTION:
UTM Zone 12 NAD 83

N

HYDRO GEO CHEM, INC.

GROUNDWATER LEVEL TARGET LOCATIONS

Approved	Date	Author	Date	File Name	Figure
NWH	04/24/09	AMC	04/24/09	8720243G	43



Legend

- Well ID
- Numerical Model Extent

0 2000 4000 Feet

PROJECTION:
UTM Zone 12 NAD 83

N

HYDRO GEO CHEM, INC.

SULFATE CONCENTRATION TARGET LOCATIONS

Approved	Date	Author	Date	File Name	Figure
NWH	04/24/09	AMC	04/24/09	8720244G	44

3475000M
595000M
600000M
605000M
610000M
3470000M
3465000M
T23S
T24S
R23E R24E
R24E R25E
4390
4400
4410
4420
4430
4440
4450
4460
4470
4480
4490
4500
BF-01
4486.29
RUIZ
4441.00
BMO-2008-8B
4455.31
BMO-2008-13B
4442.79
COB MW-1
4449.64
POOL
4434.03
BMO-2008-6B
4437.21
ANDERSON
4434.13
COOPER C
4439.21
PIONKE
4441.14
MCCONNELL 265
4443.53
GARNER 557
4434.61
HOBAN
4433.26
HOWARD
4438.58
GOAR RANCH
4446.45
AWC-03
4433.52
AWC-04
4429.17
AWC-02
4432.64
COB MW-3
4420.70
AWC-05
4258.51
BMO-2008-5B
4440.00
ROGERS 803
4446.94
TVI 713
4437.22
KEEFER
4436.16
SCHWARTZ
4428.19
WEISKOPF
4441.08
NWC 03
4443.51
ZANDER
4434.93
TVI 236
4439.63
BMO-2008-3B
4446.02
BMO-2008-4B
4442.40
RAMIREZ
4437.16
NWC 02
4439.55
COB MW-2
4442.19
ROGERS E
4440.51
UN-01
4426.06
UN-05
4477.51
Don Luis
Huachuca Terrace
Don Luis School
TAILINGS POND
Gold Hill
Bisbee Junction
ESTADOS UNIDOS MEXICANOS
UNITED STATES
SONORA
ARIZONA
Naco
La Calera
Banco de Material
Tanque Elevado
Tanque Elev.
Draw
Gulch
Reservoir
Greenbush
SOUTHERN PACIFIC
RAILROAD
BISBEE MUNICIPAL AIRPORT

Legend

- CTSA Facility
- Warren Ranch Irrigation Area
- Simulated Groundwater Isolines - Layer 1
- Numerical Model Extent

Screened Formation
- Basin Fill
- Basin Fill and Undifferentiated Bisbee Group

Well ID and Information
- COB MW-1 — Well ID
- 4449.64 — Water Elevation (ft amsl)

0 2000 4000Feet

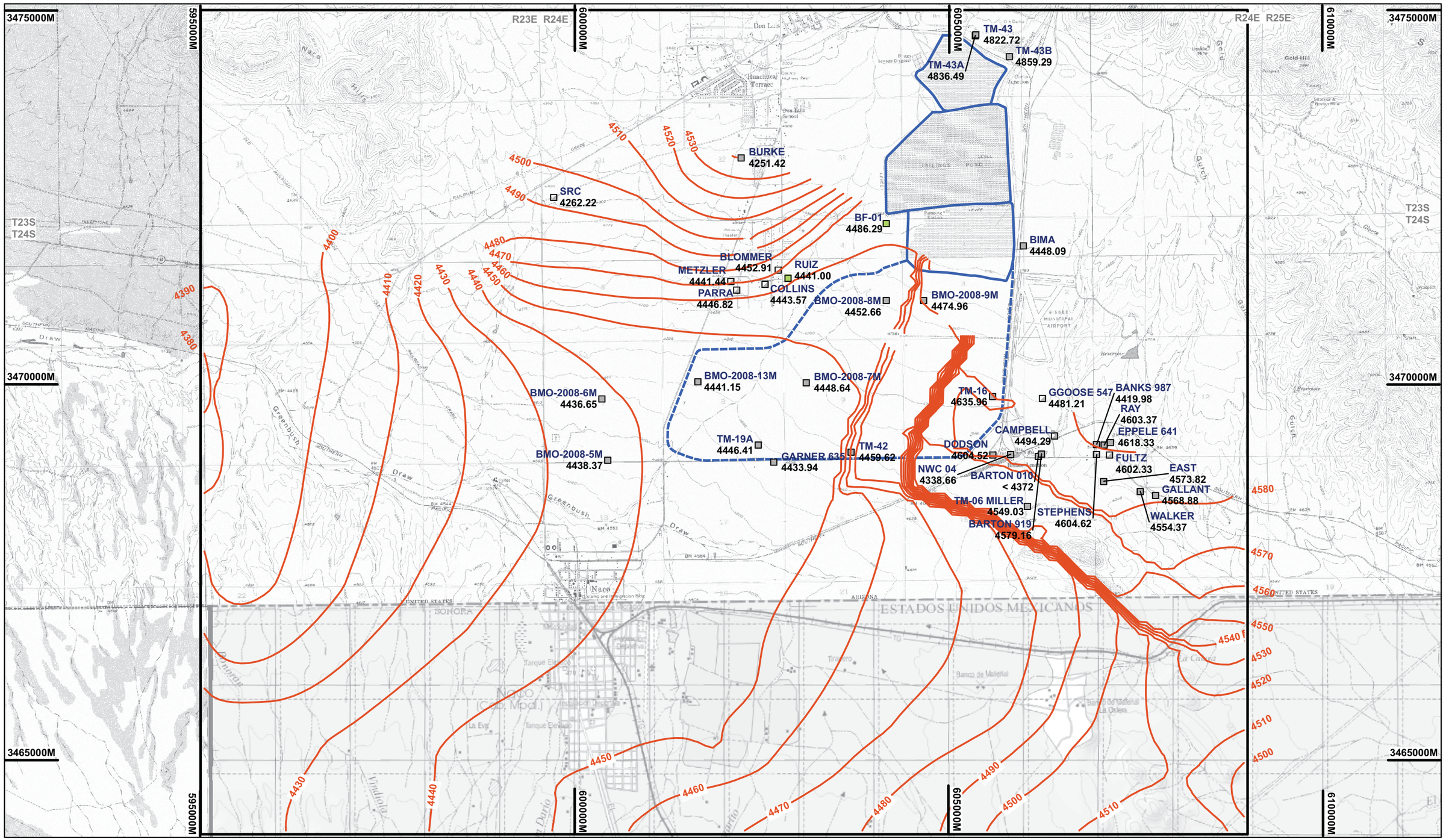
PROJECTION:
UTM Zone 12 NAD 83

N

HYDRO GEO CHEM, INC.

SIMULATED LAYER 1 GROUNDWATER LEVELS WITH MEASURED VALUES FOR FOURTH QUARTER 2008

Approved	Date	Author	Date	File Name	Figure
NWH	04/24/09	AMC	04/24/09	8720245G	45



Legend

- CTSA Facility
- Warren Ranch Irrigation Area
- Simulated Groundwater Isolines - Layer 2
- Numerical Model Extent

Screened Formation

- Basin Fill and Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group - Estimated

Well ID and Information

BURKE — Well ID
4251.42 — Water Elevation (ft amsl)

0 2000 4000 Feet

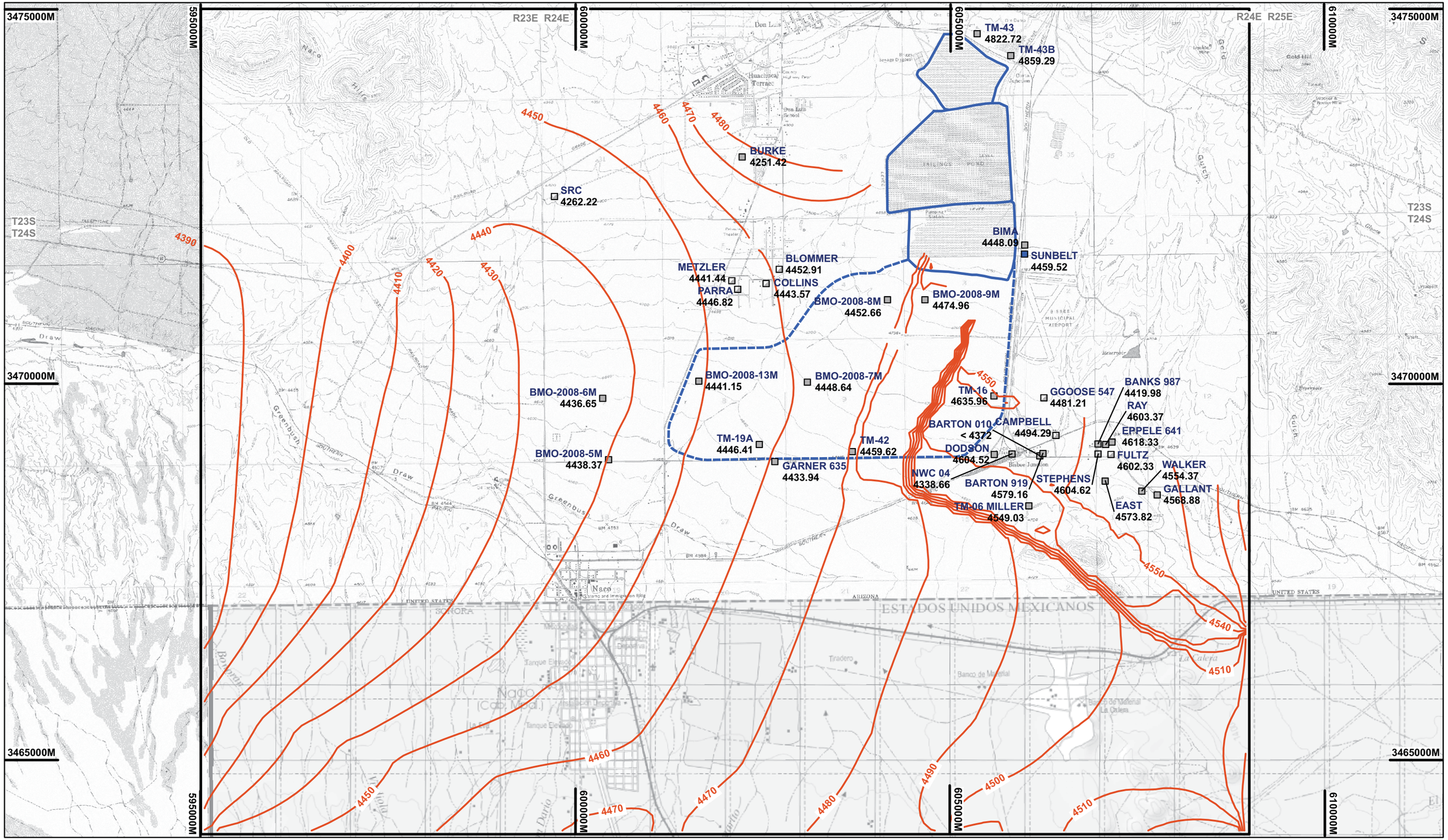
PROJECTION:
UTM Zone 12 NAD 83

N

HYDRO GEO CHEM, INC.

SIMULATED LAYER 2 GROUNDWATER LEVELS WITH MEASURED VALUES FOR FOURTH QUARTER 2008

Approved	Date	Author	Date	File Name	Figure
NWH	04/24/09	AMC	04/24/09	8720246G	46



Legend

- CTSA Facility
- Warren Ranch Irrigation Area
- Simulated Groundwater Isolines - Layer 3
- Numerical Model Extent

Screened Formation
- Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group - Estimated
- Undifferentiated Bisbee Group and Glance Conglomerate

Well ID and Information
- TM-42 Well ID
- 4459.62 Water Elevation (ft amsl)

0 2000 4000Feet

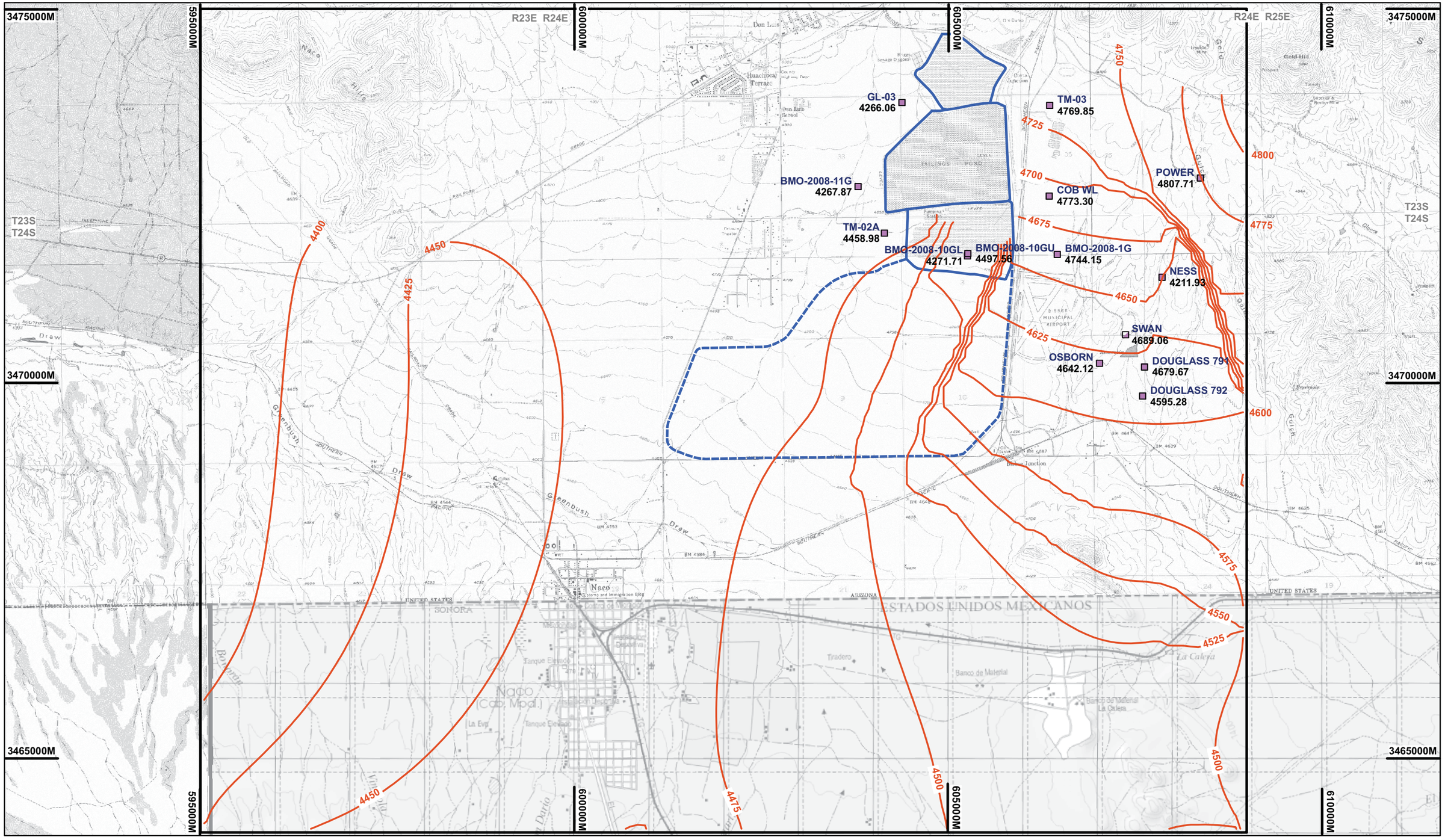
PROJECTION:
UTM Zone 12 NAD 83

N

HYDRO GEO CHEM, INC.

SIMULATED LAYER 3 GROUNDWATER LEVELS WITH MEASURED VALUES FOR FOURTH QUARTER 2008

Approved	Date	Author	Date	File Name	Figure
NWH	04/24/09	AMC	04/24/09	8720247G	47



Legend

- CTSA Facility
- Warren Ranch Irrigation Area
- Simulated Groundwater Isolines - Layer 4
- Numerical Model Extent

Screened Formation
- Glance Conglomerate
- Glance Conglomerate-Estimated

Well ID and Information
- **SWAN** Well ID
- **4689.06** Water Elevation (ft amsl)

0 2000 4000 Feet

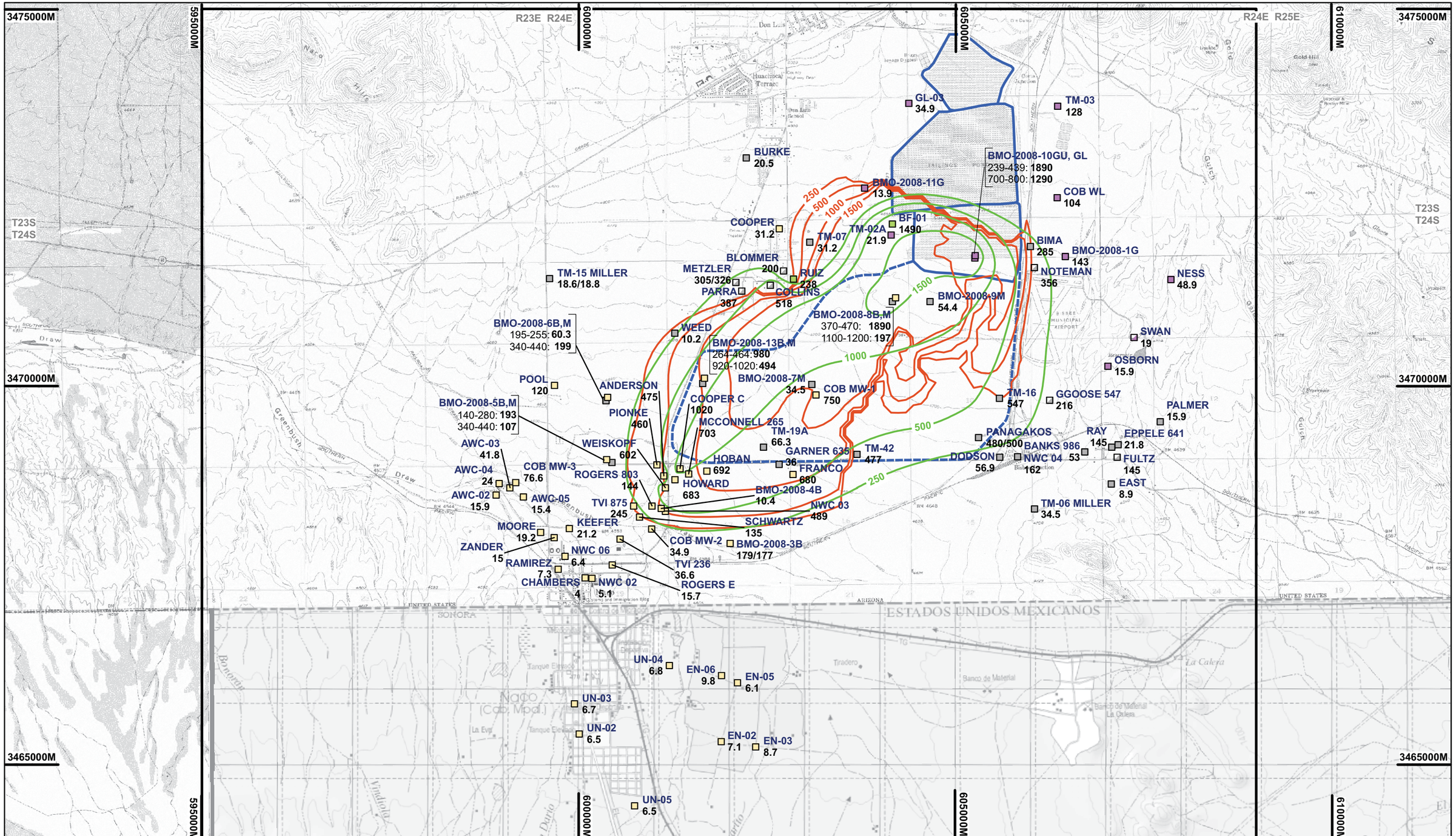
PROJECTION:
UTM Zone 12 NAD 83

N

HYDRO GEO CHEM, INC.

SIMULATED LAYER 4 GROUNDWATER LEVELS WITH MEASURED VALUES FOR FOURTH QUARTER 2008

Approved	Date	Author	Date	File Name	Figure
NWH	04/24/09	AMC	04/24/09	8720248G	48



Legend

- CTSA Facility
- Warren Ranch Irrigation Area
- Simulated Sulfate Concentration Isolines
- Measured 4th Quarter 2008 Sulfate Concentration Isolines
- Numerical Model Extent

Screened Formation

- Basin Fill
- Basin Fill and Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group - Estimated
- Glance Conglomerate
- Glance Conglomerate-Estimated

Co-located Wells

- Well ID
- Screen (ft bgs): Sulfate Concentration (mg/L)

0 2000 4000 Feet

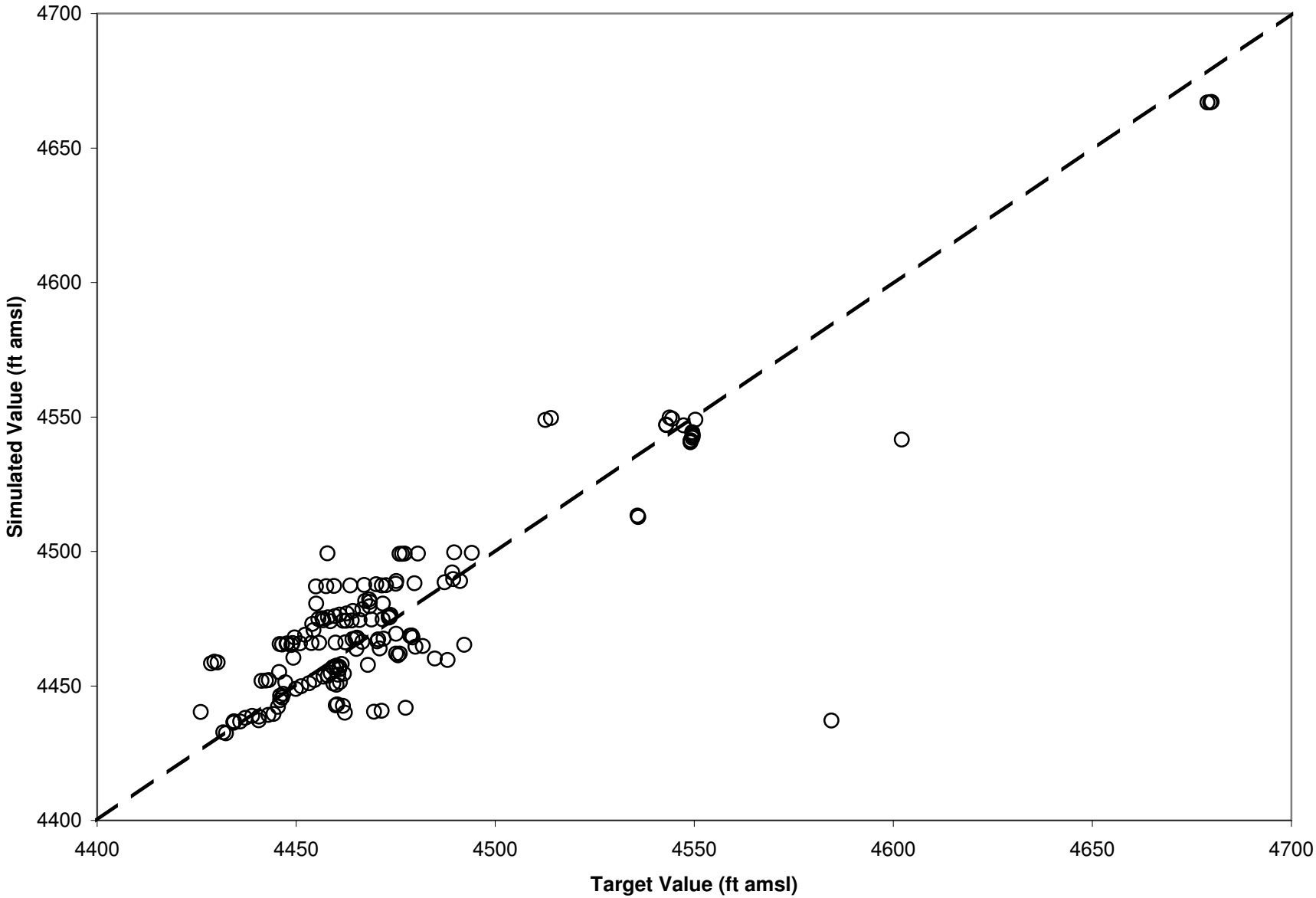
PROJECTION: UTM Zone 12 NAD 83

N

HYDRO GEO CHEM, INC.

MAXIMUM SIMULATED SULFATE CONCENTRATION CONTOURS WITH MEASURED VALUES FOR FOURTH QUARTER 2008

Approved	Date	Author	Date	File Name	Figure
NWH	04/24/09	AMC	04/24/09	8720249G	49

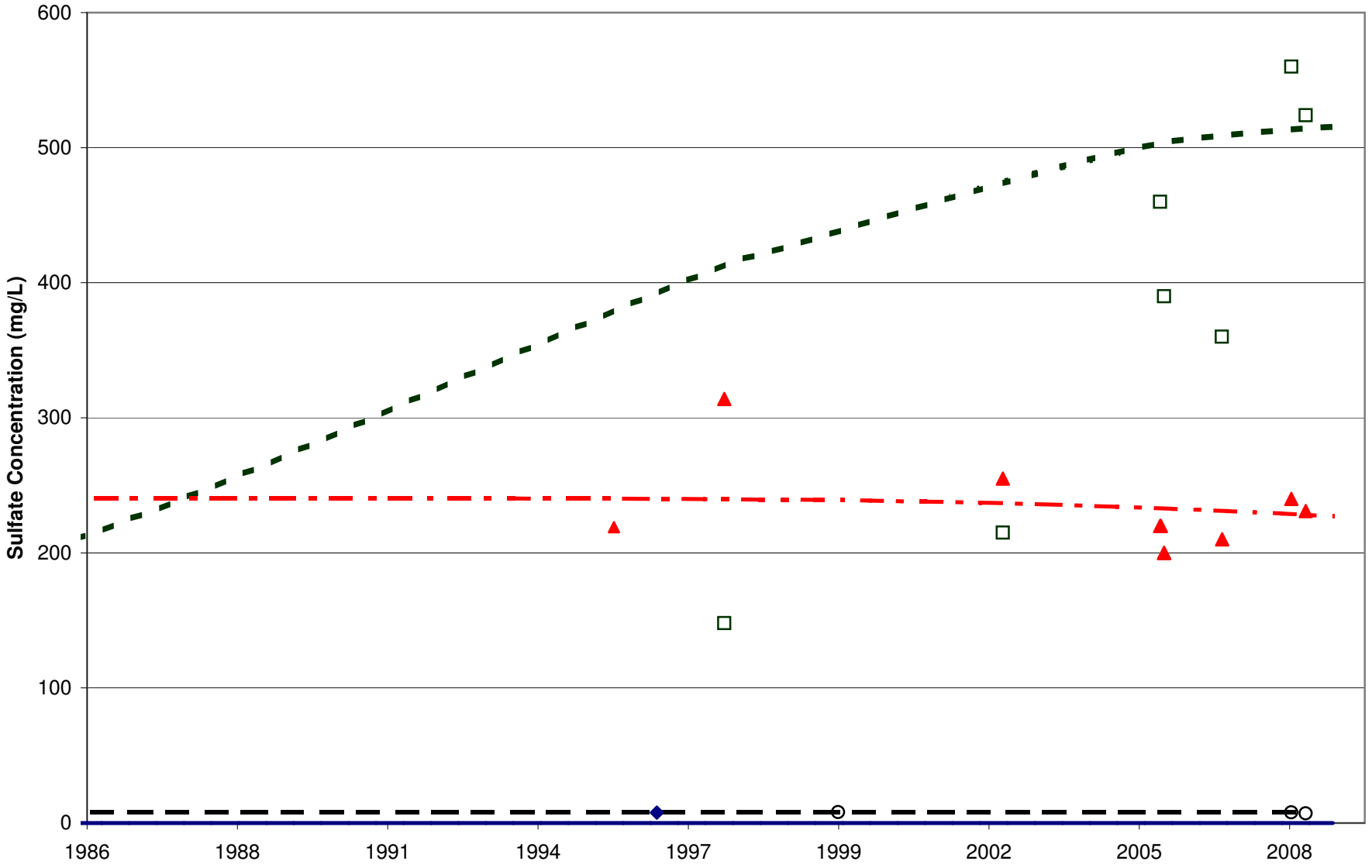


HYDRO GEO CHEM, INC.

SIMULATED VERSUS MEASURED GROUNDWATER LEVELS AT TARGET LOCATIONS

Approved	Date	Author	Date	File Name	Figure
NWH	3/3/09	NWH	3/3/09	SIM VS MEAS	50

H:\872000\Task 3 Numerical Model\Modeling Report\Bisbee Model Report Tables_Figs.xls: F50 SimvsMeas

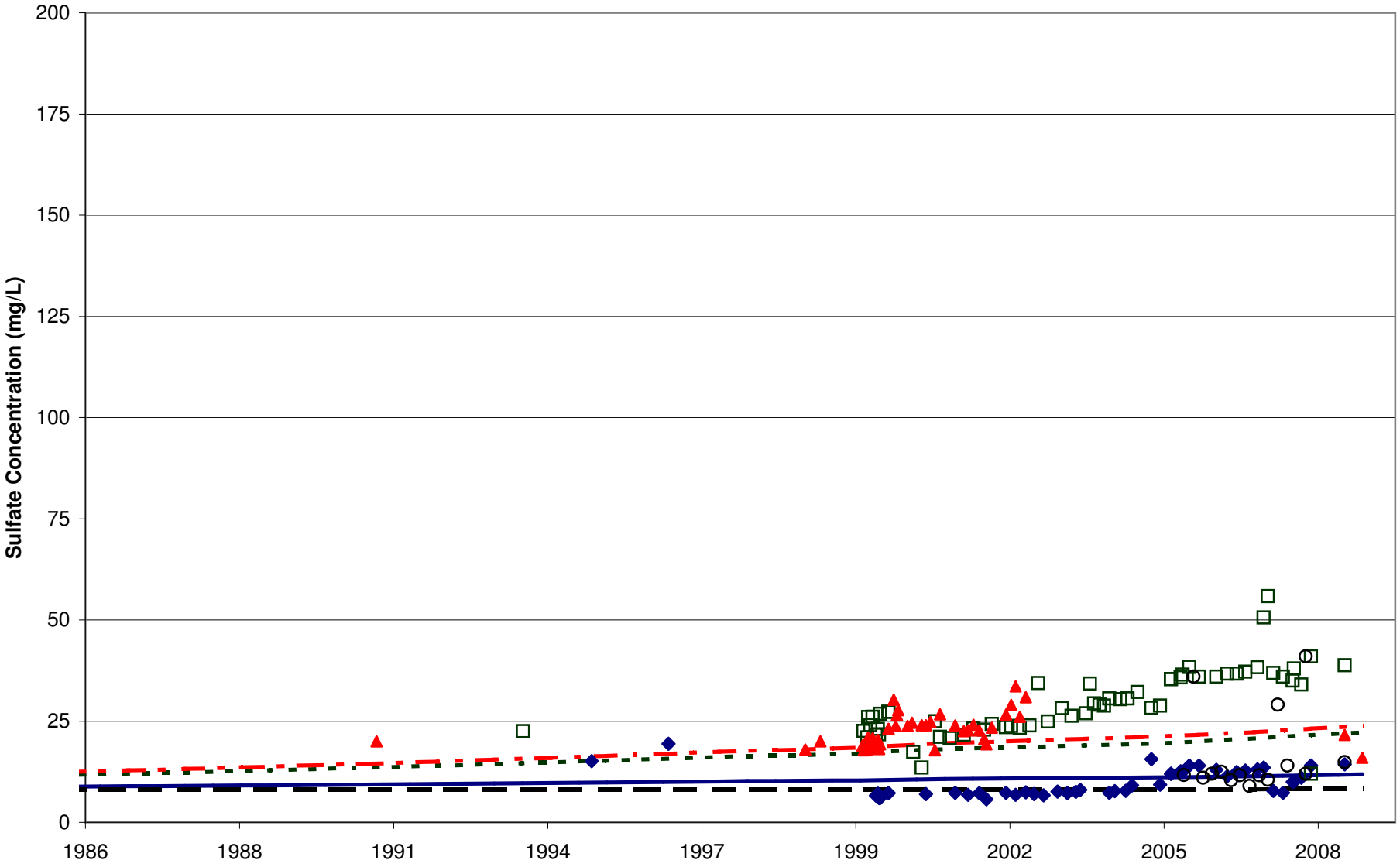


HYDRO GEO CHEM, INC.

SIMULATED AND MEASURED SULFATE CONCENTRATIONS IN NWC WELLS

Approved	Date	Author	Date	File Name	Figure
NWH	3/3/09	NWH	3/3/09	NWC CONCS	51

H:\872000\Task 3 Numerical Model\Modeling Report\Bisbee Model Report Tables_Figs.xls: F51 NWC Concs

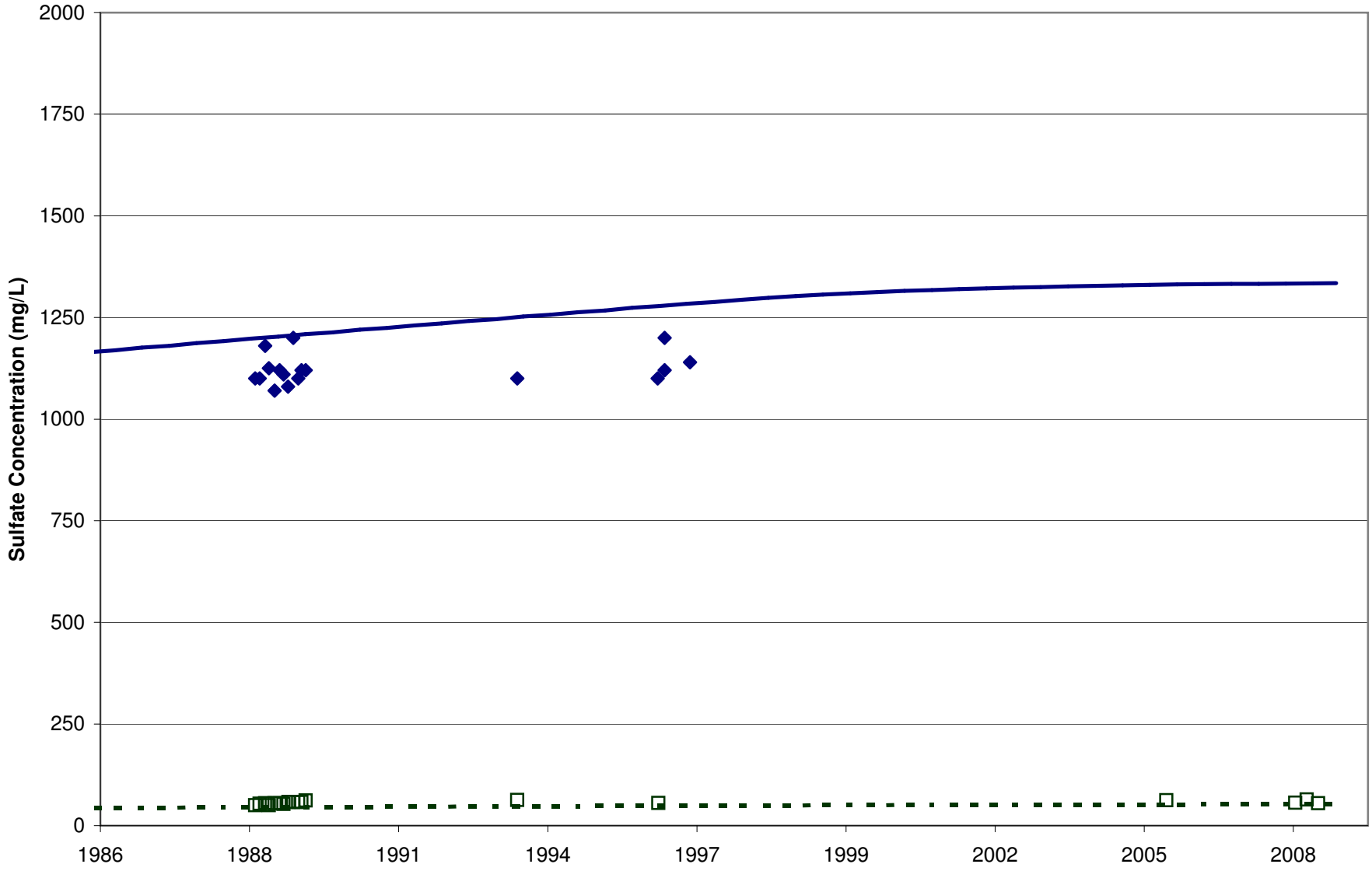


HYDRO GEO CHEM, INC.

SIMULATED AND MEASURED SULFATE CONCENTRATION IN AWC WELLS

Approved	Date	Author	Date	File Name	Figure
NWH	3/3/09	NWH	3/3/09	AWC CONCS	52

H:\872000\Task 3 Numerical Model\Modeling Report\Bisbee Model Report Tables_Figs.xls: F52 AWC Concs



HYDRO GEO CHEM, INC.

SIMULATED AND MEASURED SULFATE CONCENTRATIONS IN TM-19 AND TM-19A

Approved	Date	Author	Date	File Name	Figure
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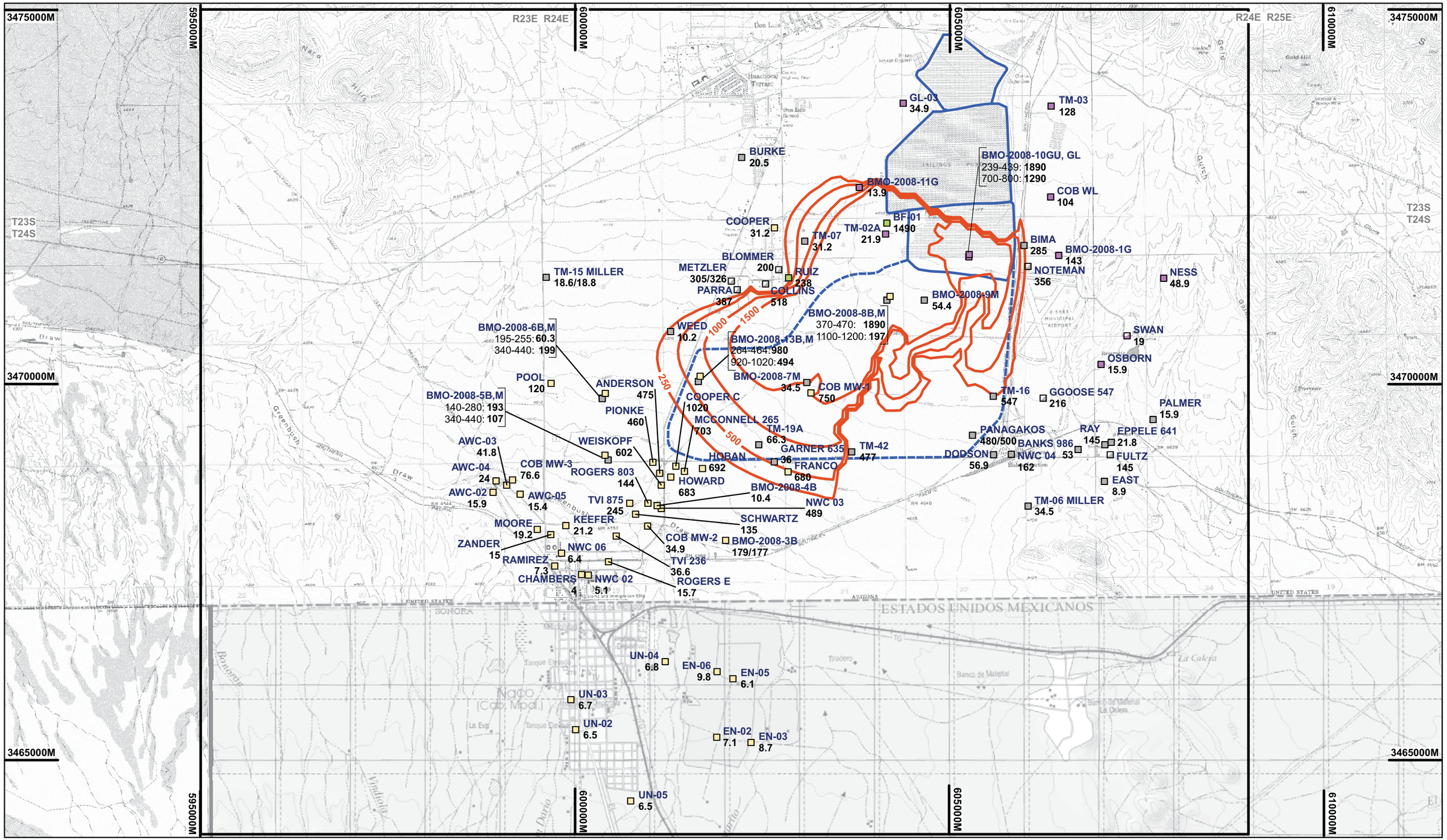
H:\872000\Task 3 Numerical Model\Modeling Report\Bisbee Model Report Tables_Figs.xls: F53 TM Concs



HYDRO GEO CHEM, INC.

SIMULATED SULFATE PLUME FOR 2008 WITH 250 mg/L SULFATE CONCENTRATION IN WARREN RANCH IRRIGATION AREA RECHARGE AND WITHOUT LOWER EFFECTIVE POROSITY ZONE

Approved	Date	Author	Date	File Name	Figure
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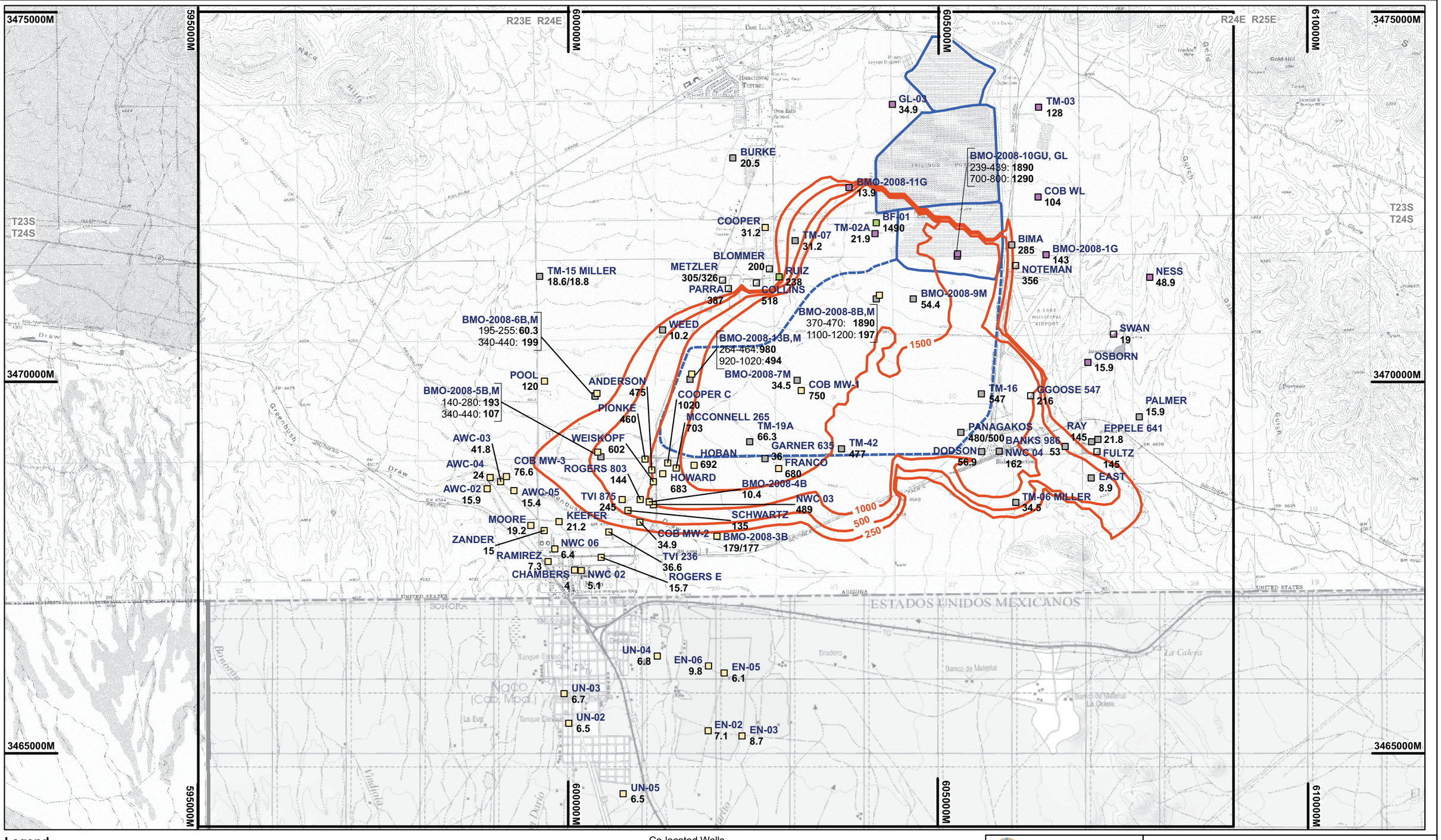


Legend

- CTSA Facility
- Warren Ranch Irrigation Area
- Simulated Sulfate Plume Isolines
- Numerical Model Extent

Screened Formation

- Basin Fill
- Basin Fill and Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group - Estimated
- Glance Conglomerate
- Glance Conglomerate-Estimated

Co-located Wells

- Well ID
- Screen (ft bgs): Sulfate Concentration (mg/L)

0 2000 4000Feet

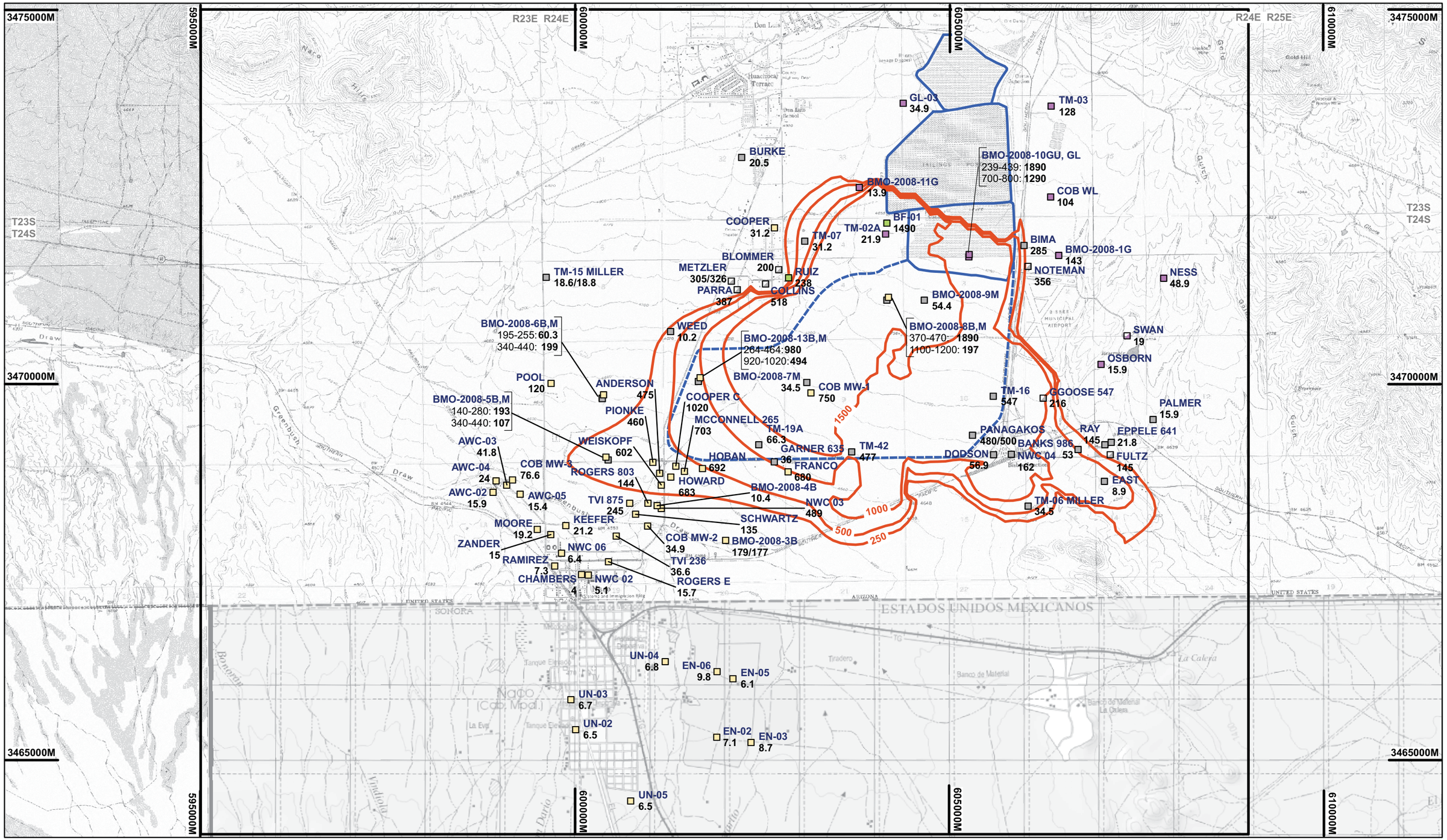
PROJECTION: UTM Zone 12 NAD 83

N

HYDRO GEO CHEM, INC.

SIMULATED SULFATE PLUME FOR 2008 WITH 1,500 mg/L SULFATE CONCENTRATION IN WARREN RANCH RECHARGE AND WITH LOWER EFFECTIVE POROSITY ZONE

Approved	Date	Author	Date	File Name	Figure
NWH	04/27/09	AMC	04/27/09	8720251G	55



Legend

- CTSA Facility
- Warren Ranch Irrigation Area
- Simulated Sulfate Plume Isolines
- Numerical Model Extent

Screened Formation

- Basin Fill
- Basin Fill and Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group
- Undifferentiated Bisbee Group - Estimated
- Glance Conglomerate
- Glance Conglomerate-Estimated

Co-located Wells
Well ID
Screen (ft bgs): Sulfate Concentration (mg/L)

0 2000 4000Feet

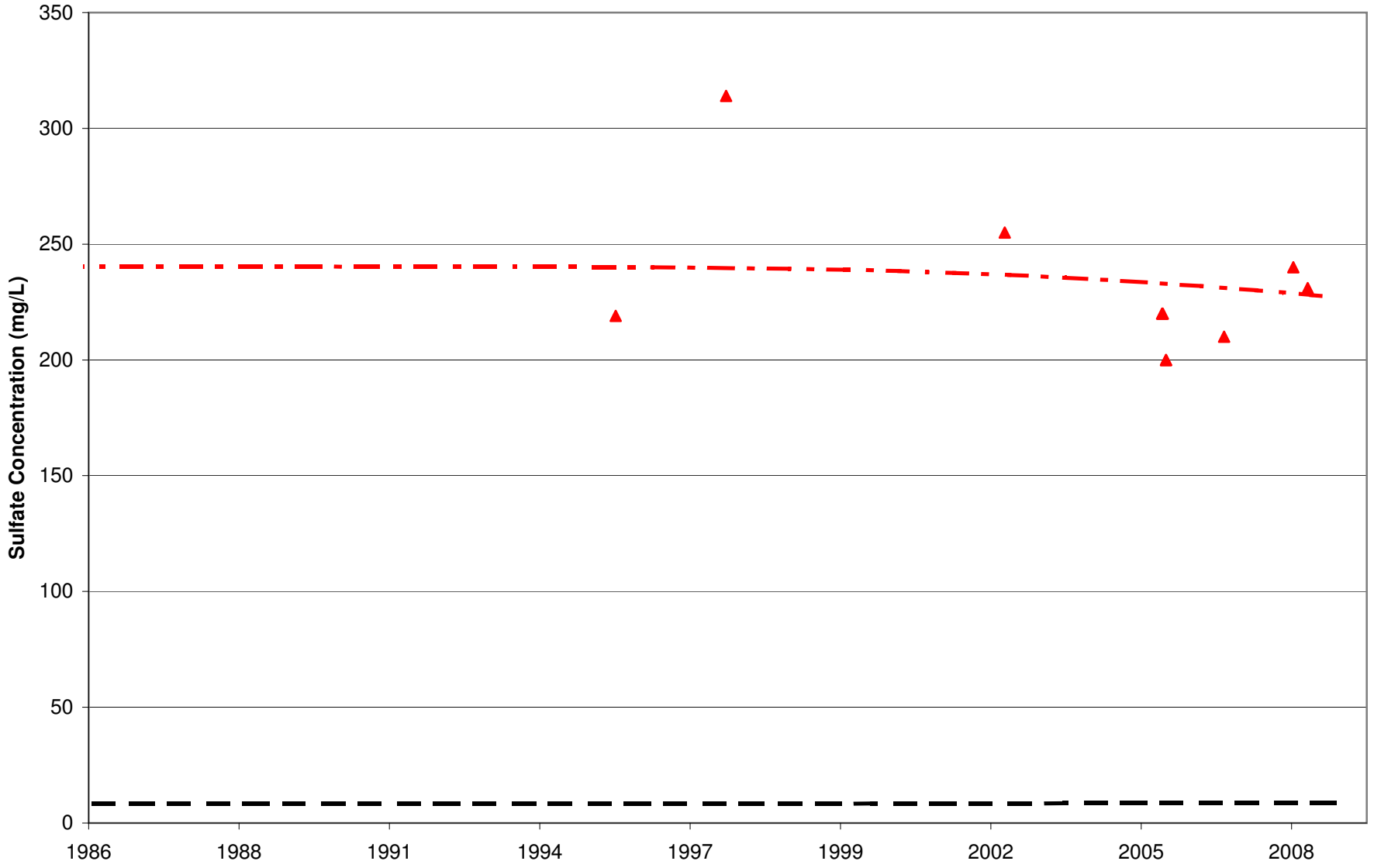
PROJECTION: UTM Zone 12 NAD 83

N

HYDRO GEO CHEM, INC.

SIMULATED SULFATE PLUME FOR 2008 WITH 1,500 mg/L SULFATE CONCENTRATION IN WARREN RANCH IRRIGATION AREA RECHARGE AND WITHOUT LOWER EFFECTIVE POROSITY ZONE

Approved	Date	Author	Date	File Name	Figure
NWH	04/27/09	AMC	04/27/09	8720252G	56



HYDRO GEO CHEM, INC.

SENSITIVITY OF SIMULATED CONCENTRATIONS AT NWC-04 TO RECHARGE IN WARREN RANCH EAST OF THE BLACK GAP FAULT

Approved	Date	Author	Date	File Name	Figure
NWH	3/18/09	NWH	3/18/09	NWC -4 SENS	57

H:\872000\Task 3 Numerical Model\Modeling Report\Bisbee Model Report Tables_Figs.xls: F57 NWC4 Sens

APPENDIX A

PRIOR REPORTS SUMBITTED TO ADEQ FOR MITIGATION ORDER ON CONSENT DOCKET NO. P-121-07

FIRST AND SECOND QUARTERS 2008
GROUNDWATER MONITORING REPORT
TASK 2.2 OF AQUIFER CHARACTERIZATION PLAN
MITIGATION ORDER ON CONSENT DOCKET NO. P-121-07
COCHISE COUNTY, ARIZONA

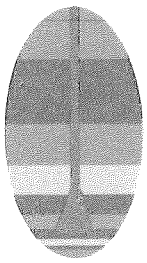
Prepared for:

FREEPORT-MCMORAN
COPPER QUEEN BRANCH
36 West Highway 92
Bisbee, Arizona 85603

Prepared by:

HYDRO GEO CHEM, INC.
51 West Wetmore Road, Suite 101
Tucson, Arizona 85705
(520) 293-1500

July 30, 2008



HYDRO GEO CHEM, INC.

Environmental Science & Technology

FIRST AND SECOND QUARTERS 2008
GROUNDWATER MONITORING REPORT
TASK 2.2 OF AQUIFER CHARACTERIZATION PLAN
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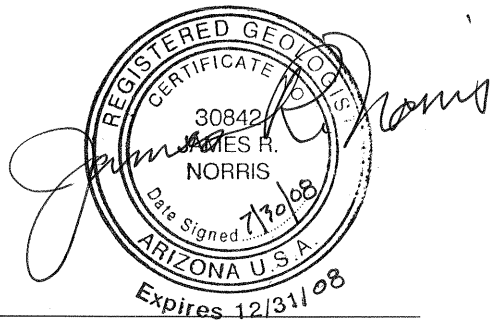
Bisbee, Arizona 85603

Approved by:



James R. Norris
Arizona Registered Geologist No. 30842

Prepared by:

Daniel R. Simpson
Senior Hydrogeologist

July 30, 2008

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B Second Quarter 2008 Data Verification Report
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D Analytical Reports from ACZ Laboratories, Inc.
E Hydro Geo Chem, Inc. Groundwater Sampling Forms

1. INTRODUCTION

This data report provides the results of groundwater monitoring conducted in the first and second quarters of 2008 in the vicinity of the Freeport-McMoRan Copper Queen Branch (CQB) pursuant to the Mitigation Order on Consent Docket No. P-121-07 (MO). Groundwater monitoring was conducted by CQB pursuant to Task 2.2 of the Work Plan (Hydro Geo Chem, Inc. [HGC], 2008a) to characterize sulfate in the vicinity of the Concentrator Tailing Storage Area (CTSA). Pursuant to the MO, the Work Plan was submitted to Arizona Department of Environmental Quality (ADEQ) on December 17, 2007 (ADEQ, 2007). CQB initiated water sampling prior to work plan approval while ADEQ was commenting on the Work Plan and CQB was responding to their comments. Although groundwater monitoring was started in February 2008, reporting was suspended pending completion of discussions with ADEQ and revisions to the Work Plan. Revision 1 of the Work Plan was submitted to ADEQ on July 3, 2008 and stipulated reporting of groundwater monitoring results for the first and second quarters of 2008 in a single report. HGC prepared this groundwater monitoring report on behalf of CQB.

1.1 Scope of Groundwater Monitoring

The scope of the groundwater monitoring program is described in Section 3.3.2 of the Work Plan (HGC, 2008a). Groundwater monitoring for Task 2.2 consists of water elevation measurement and collection of groundwater samples from wells in the vicinity of the CTSA.

During the second quarter 2008, three measuring point elevation surveys were completed for wells that had a measurable water level. Gilbert Technical Services, Inc. (GTS) conducted the initial well survey, and Arizona Land Specialists, Inc. (ALS) conducted the two following surveys. Copies of the survey reports completed by GTS and ALS are included as Appendices B.1 and B.2, respectively.

1.1.1 Groundwater Monitoring for Task 2.2

The Work Plan identifies two purposes for the groundwater monitoring program required in Task 2.2: regional monitoring and plume monitoring. Regional monitoring is set on a semi-annual basis during the first and third quarters of 2008 to characterize regional hydrologic conditions and any seasonality in water elevations. Samples for regional monitoring are analyzed for a suite of major element constituents to characterize general water quality conditions in addition to sulfate.

Plume monitoring is conducted quarterly at wells that are proximal to the sulfate plume in order to track the plume's location in the aquifer. Samples for plume monitoring are analyzed for sulfate only. This report presents the results of regional and plume monitoring conducted during the first and second quarters of 2008.

Table 1 lists wells identified in the Work Plan for quarterly and semi-annual monitoring, their availability for sampling in the first and second quarters of 2008, and their sampling status. Also included in Table 1 are wells that were sampled and analyzed for sulfate during the well inventory investigation (HGC, 2008b) and wells added to the plume and regional monitoring program due to accessibility and favorable location. Figure 1 presents a generalized geology map of the study area and well locations where data were collected during this reporting period.

Pursuant to the Work Plan, HGC and CQB contacted owners of wells identified for sampling in the Work Plan in order to obtain access for sampling. Overall, the response of well

owners was favorable and allowed inspection and sampling of most identified wells. As described in Table 1, not all owners responded to the request for sampling and not all wells were suitable for sampling and water level measurements. In many cases, alternate wells were identified in lieu of wells that were unsuitable for sampling.

Analytical data for monitoring during the first and second quarters of 2008 were obtained from three sources: HGC, Arizona Water Company (AWC), and Naco Sanitary District (NSD). In the first and second quarters of 2008, HGC collected groundwater samples at wells identified in Table 1 of the Work Plan, at potential drinking water supply wells identified by the well inventory investigation, and at wells identified by the well inventory for monthly sulfate analysis for evaluation of potential interim action. AWC provided data for groundwater samples collected from their wells during the first and second quarters 2008 and NSD provided data for groundwater samples collected from their wells during the first quarter of 2008 for inclusion in this report.

Groundwater sampling and analysis methods used by HGC are described in the Quality Assurance Project Plan (QAPP) contained in Appendix F of the Work Plan (HGC, 2008a). Results of groundwater monitoring for Task 2.2 are presented in Section 2.

2. GROUNDWATER MONITORING RESULTS

2.1 Results of Monitoring for Task 2.2

Analytical results and groundwater elevation data for the first and second quarters of 2008 are tabulated in Table 2 and Table 3, respectively. Figures 2 and 3 show the concentrations of dissolved sulfate in the wells sampled in the first and second quarters of 2008, respectively. Figures 4 and 5 show groundwater elevations in the first and second quarters of 2008, respectively. Groundwater elevations were calculated using the depth to water measurements made under static (nonpumping) conditions for all wells shown. Tables 2 and 3 include results for sulfate monitoring at drinking water supply well by the wells identified inventory (HGC, 2008b).

2.2 Quality Assurance/Quality Control Review

Pursuant to Section 6.4 of the QAPP, data verification reports were prepared for quality assurance and quality control purposes. The data verification report for data collected by HGC during the first quarter of 2008 is included in Appendix A. Appendices B and C provide data verification reports for samples collected by HGC during the second quarter of 2008.

Analytical laboratory reports for samples collected by HGC in the first and second quarters of 2008 are provided in portable document format on the compact disc in Appendix D. Copies of groundwater sampling forms for samples collected by HGC are in Appendix E.

As determined by the analytical data verification review, all data for samples collected in the first and second quarters of 2008 by HGC are of acceptable quality for use in the aquifer characterization being conducted pursuant to the Work Plan.

3. DISCUSSION

This data report provides the results of groundwater monitoring conducted in the vicinity of the CTSA for the first and second quarters of 2008. The purpose of the groundwater monitoring was twofold: (1) to delineate the location of the sulfate plume and (2) to characterize the sulfate concentration and groundwater elevation in the regional aquifer.

During the first quarter 2008, groundwater samples were collected from 68 plume and regional area wells and depth to water measurements were collected at 46 wells as presented in Table 1. During the second quarter 2008, groundwater samples were collected from 61 plume area wells and depth to water measurements were collected at 54 wells.

Groundwater samples and water level measurements were not collected from all the wells identified in the Work Plan for a variety of reasons, including owner limitations on access, unsuitable well construction, inability to contact the owner, obstruction in well, or a well no longer existing. The specific reason(s) for not sampling these wells are provided in Table 1. In some cases, alternate wells were identified and sampled as described in Table 1. Overall, groundwater monitoring conducted during the first and second quarters of 2008 is deemed to have met the objectives of identifying the location of the sulfate plume from CTSA and providing water quality and potentiometric data in the vicinity of the CTSA.

3.1 Hydrogeologic Setting

Water quality samples have been collected from wells completed in three principal water-bearing units in the area: basin fill, Morita Formation, and Glance Conglomerate. Figure 1 shows that the Morita Formation and Glance Conglomerate outcrop on the east side of the study area. The Morita Formation consists of red to buff siltstone and sandstone. The Glance Conglomerate is a polymictic conglomerate with a silty to sandy matrix. The Morita Formation and Glance Conglomerate are indurated bedrock. The basin fill unconformably overlies the bedrock units and consists of unconsolidated sand and gravel except in zones of cemented caliche. The bedrock units are believed to be transected by at least two faults; the northeast trending Black Gap fault and the northwest trending Abrigo fault. East of the Black Gap fault the basin fill is largely unsaturated and groundwater occurs in the Morita Formation and Glance Conglomerate. West of the Black Gap fault the basin fill is saturated and comprises a key aquifer overlying the Morita Formation and Glance Conglomerate. The results of monitoring need to be considered in the context of the hydrogeologic setting of the study area to interpret the apparent spatial distribution of sulfate and the patterns of groundwater elevation. Table 4 provides the well completion depth, screen interval, and screened lithology data for study area wells.

3.2 Sulfate Distribution

The results of groundwater monitoring show the lateral and vertical extent of the sulfate plume in the study area as defined by the 250 mg/L sulfate concentration contour. The distribution of sulfate can appear complex in plan maps because the sulfate plume is three

dimensional and plume water can be underlain or overlain by groundwater with lower sulfate concentrations. For this reason, some wells in the apparent footprint of the plume can display low sulfate concentrations relative to nearby wells constructed at higher elevation that are within the plume. The lateral and vertical distributions of sulfate are discussed below.

3.2.1 Lateral Distribution of Sulfate

Figures 2 and 3 are contour maps showing the areal distribution of sulfate in the first and second quarters 2008, respectively. The sulfate concentration contours on Figures 2 and 3 are inferred based on the maximum sulfate concentration at locations where closely spaced wells display different concentrations. As discussed in Section 3.2.2, low concentrations of sulfate occur in shallow and deep wells above and below the plume. Thus, the lateral extent of the plume is not the same at all depths.

Based on the sulfate concentration data the sulfate plume extends to the southwest from the vicinity of the former evaporation pond to the vicinity of Naco and to the south to the vicinity of Bisbee Junction. The groundwater monitoring data indicate that the sulfate plume extends over an area of approximately 2.8 miles by 3.6 miles and is confined primarily to the basin fill and Morita Formation. West of the Black Gap fault the sulfate plume is contained primarily within the basin fill. East of the fault, where the basin fill is largely unsaturated, the sulfate plume is within the Morita Formation and possibly Glance Conglomerate.

3.2.2 Vertical Distribution of Sulfate

Evaluation of the vertical distribution of sulfate is based on sampling data for wells located in close proximity but completed at different elevations in the aquifer or in different aquifer units. Two patterns are observed with respect to the vertical distribution of sulfate. First, some wells completed in the uppermost few tens of feet of the basin fill aquifer have lower concentrations than wells completed at deeper portions of the basin fill. Second, the sulfate plume in certain areas is observed to be underlain by groundwater with lower concentrations of sulfate. Examples of the vertical distribution of sulfate are discussed below.

In the first quarter 2008, sulfate appears to be stratified in the vicinity of wells POOL and TM-14 NELSON screened at different depths in basin fill on the west end of the study area. POOL was completed at a total depth of 313 feet below ground surface (ft bgs) and screened from 213 to 300 ft bgs while TM-14 NELSON was completed at 215 ft bgs and screened from 165 to 215 ft bgs. Thus, the POOL sample represents groundwater approximately 100 feet deeper in the basin fill than the TM-14 NELSON sample. At the time of sampling, TM-14 NELSON represented groundwater from the upper several feet of the basin fill aquifer. Sulfate concentrations in POOL and TM-14 NELSON were 134 mg/L and 32.9 mg/L, respectively, in the first quarter of 2008 (Figure 2). These data indicate that sulfate concentrations were stratified with the higher concentration at greater depths in the basin fill at this location. This pattern of sulfate distribution could not be verified in the second quarter of 2008 because TM-14 NELSON was dry.

Sulfate stratification between the basin fill and the Morita Formation along Purdy Lane near Naco is displayed between wells FRANCO, GARNER 557, and HOBAN screened in basin fill and nearby wells GARNER 635 and TM-19A screened in Morita Formation. Sulfate concentrations in the basin fill wells FRANCO, GARNER 557, and HOBAN were 670 mg/L, 123 mg/L, and 510 mg/L, respectively, in the first quarter of 2008 (Figure 2). Sulfate concentrations in Morita Formation wells GARNER 635 and TM-19A were 37.8 mg/L and 56.1 mg/L, respectively. These data indicate that the underlying Morita Formation exhibits sulfate concentrations approximately an order of magnitude lower than concentrations in the basin fill at that location. A similar relationship was observed in the second quarter of 2008 (Figure 3).

Stratification of sulfate is also present in wells BF-01 and TM-02A west of the former evaporation pond. Well BF-01 is completed to a depth of 400 ft bgs and is screened across the basin fill, Morita Formation, and Glance Conglomerate, although the water levels in the first and second quarters of 2008 indicate that the basin fill is probably unsaturated. BF-01 had sulfate concentrations of 1320 mg/L and 1450 mg/L in the first and second quarters 2008, respectively. Well TM-02A is located approximately 500 feet south of BF-01 and is screened from 825 to 925 ft bgs in the Morita Formation and Glance Conglomerate. TM-02A had sulfate concentrations of 12.3 mg/L and 14.7 mg/L in the first and second quarters 2008, respectively. The sulfate concentrations in the Glance Conglomerate at TM-02A are approximately two orders of magnitude lower than those in the overlying Morita Formation and Glance Conglomerate at that location.

3.3 Groundwater Elevation

Groundwater elevations for the first quarter and second quarter 2008 are shown on Figures 4 and 5, respectively. In the second quarter of 2008 a larger number of water level measurements were collected over a larger area than in the first quarter because of the progress made identifying well owners and gaining access to various properties between the first and second quarters.

In general, groundwater elevations decrease from north to south east of the Black Gap fault in the region between the Bisbee airport and Bisbee Junction, and from east to west across the central portion of the study area west of the Black Gap fault. Comparison of the first quarter 2008 water elevations with those observed in the second quarter (Table 3) indicates no substantive difference in groundwater elevations and only minor differences in the apparent groundwater flow directions indicated by water level data. Thus, the water level measurements were repeatable between the two sampling events.

The water level relationships are relatively complex due to the multiple hydrostratigraphic units monitored and the complicated structural geology of the area. The apparent hydraulic gradient is steeper east of the Black Gap fault where groundwater is in bedrock units of the Morita Formation and Glance Conglomerate than is the hydraulic gradient west of the fault where groundwater is in basin fill. The higher hydraulic gradient is probably due to a lower average hydraulic conductivity in the bedrock compared to basin fill. The apparent groundwater flow direction east of the Black Gap fault is southerly to the vicinity of Bisbee Junction and then westerly. Convergent groundwater flow is suggested by the V-shaped

contours pointed in the upgradient direction in the vicinity of Bisbee Junction. West of the Black Gap fault, the apparent hydraulic gradient is shallower than east of the fault and the apparent groundwater flow direction is westerly. In the vicinity of Naco, the hydraulic gradient appears to steepen and there is a suggestion of convergent groundwater flow beneath Greenbush Draw.

The relationship between water levels east and west of the Black Gap fault is uncertain due to the different apparent hydraulic gradients and groundwater flow directions, the variability of water level data east of the Black Gap fault, and the scarcity of monitoring points between Bisbee Junction and the Black Gap fault. The variability of water levels east of the Black Gap fault is indicated by the large differences in water elevation (sometimes up to several hundred feet) between wells in relatively close proximity to one another. This variability in water elevation is particularly evident in the Bisbee Junction area in the second quarter of 2008 and in the area of the SUNBELT well east of the former evaporation pond in the first and second quarters. The variability of water elevations east of the Black Gap fault indicates that the hydraulic properties of the bedrock are heterogeneous and that certain portions of the bedrock may not be hydraulically connected. The heterogeneity in hydraulic properties in bedrock is probably due to the restriction of groundwater flow to permeable features such as permeable beds, bedding planes, or fracture systems which are not uniformly distributed throughout the area.

Anomalous water elevations are also observed west of the Black Gap fault at the SRC and BURKE wells in the northwest portion of the study area. According to well driller logs,

wells SRC and BURKE are screened in a shale bedrock at depths greater than 600 ft bgs. The water level in SRC and BURKE are anomalously low compared to the levels in wells that appear to be in basin fill and/or Morita Formation one mile to the south. The existing data suggest that the SRC and BURKE wells are within a hydrostratigraphic unit with a poor hydraulic connection to the aquifers to the south.

Although complex, the water level data provide important information on the direction and magnitude of hydraulic gradients which control the direction and movement of the sulfate plume. The results also display the effects of aquifer heterogeneities that need to be accounted for in the site conceptual model. This discussion of water level data is preliminary and will be verified by ongoing monitoring and augmented with data being collected by other Work Plan tasks.

4. REFERENCES

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HGC. 2008b. Well Inventory Report, Task 1 of Aquifer Characterization Plan for Mitigation Order on Consent No. P-121-07, Cochise County, Arizona. July 28, 2008.

TABLES

TABLE 1
Summary of Groundwater Monitoring For First and Second Quarters 2008

Well Name	ADWR 55 Registry No.	Owner	Monitoring Purpose	Casing or Well Depth (feet)	Q1-2008 Monitoring		Q2-2008 Monitoring		Status
					Water Level Measured?	Water Quality Sample Collected?	Water Level Measured?	Water Quality Sample Collected?	
WELLS FOR QUARTERLY MONITORING									
AWC 03	616585	Arizona Water Company	Plume	269	ND	YES	YES	YES	Q1 and Q2 2008 Water quality data provided by Arizona Water Company
AWC 05	590620	Arizona Water Company	Plume	1183	ND	YES	YES	YES	Q1 and Q2 2008 Water quality data provided by Arizona Water Company
BF-01	539783	CQB	Plume	400	YES	YES	YES	YES	Water quality samples collected in March and May 2008
BIMA	577927	Bisbee Municipal Airport	Plume	465	NO	YES	YES	YES	Water quality samples collected in February and May 2008; unable to collect water level Q1 2008 due to obstruction
BULLARD	602134	Bullard	Plume	300	NO	NO	NO	NO	Well not operational, unable to collect water levels due to obstruction
BURKE	212268	Burke	Plume	781	NO	YES	YES	YES	Water quality sample collected in February and April 2008; unable to collect water level Q1 2008 because depth to water greater than 500 feet
COB MW-1	903992	City of Bisbee	Plume	420	YES	YES	YES	YES	Water quality samples collected in February and May 2008
COB MW-2	903984	City of Bisbee	Plume	170	YES	YES	YES	YES	Water quality samples collected in February and May 2008
COB WL	593116	City of Bisbee	Plume	150	YES	YES	YES	YES	Water quality samples collected in February and May 2008
COOPER	623564	Cooper, Teresa	Plume	325	NO	YES	NO	YES	Water quality samples collected in February and May 2008, no access to well casing for water level measurements
COOPER C	637069	Cooper, Charles	Plume	220	YES	YES	YES	YES	Water quality samples collected in March and May 2008
CROWLEY	510298	Crowley	Plume	788	NO	NO	NO	NO	Dry
DODSON	644927	Dodson	Plume	200	NO	YES	YES	YES	Water quality samples collected in February and May 2008; unable to collect water level Q1 08 because sounder diameter too large for access port
GARNER 557	558557	Garner	Plume	300	YES	YES	YES	NO	Water quality sample collected in February 2008; well identified for water level measurements only
GARNER 635 [1]	587635	Garner	Plume	680	YES	YES	YES	YES	Water quality samples collected in February and May 2008
GGOOSE 546	628546	Galloping Goose Properties	Plume	800	NO	NO	NO	NO	Well not operational, unable to obtain water levels due to obstruction
GGOOSE 547	628547	Galloping Goose Properties	Plume	800	NO	NO	YES	YES	Generator power provided to collect water quality sample in May 2008; no access to well casing for water level measurement Q1 2008
GL-03	539782	CQB	Plume	820	NO	YES	YES	YES	Water quality samples collected in March and May 2008, unable to collect water level Q1 2008 because depth to water greater than 500 feet
GREGG	630852	Gregg	Plume	ND	NO	NO	NO	NO	Dry
HULL 584	606854	Hull	Plume	25	NO	NO	NO	NO	Unable to locate well
MILLER 340	641340	Miller	Plume	200	NO	NO	NO	NO	Dry
MILLER 341	641341	Miller	Plume	100	NO	NO	NO	NO	Dry
NWC 02R	562944	Naco Water Company	Plume	312	ND	ND	ND	ND	Naco Water Company has agreed to provide data but was unable to do so by the time of report preparation
NWC 03R	203321	Naco Water Company	Plume	312	ND	ND	ND	ND	Naco Water Company has agreed to provide data but was unable to do so by the time of report preparation
NWC 04 CAP	627685	Naco Water Company	Plume	379	NO	NO	NO	NO	Well Capped
NWC 05	627696	Naco Water Company [2]	Plume	175	ND	ND	ND	ND	No data
OSBORN	643436	Osborn	Plume	150	NO	YES	YES	YES	Water quality samples collected in March and May 2008; unable to collect water level Q1 08 due to obstruction
PARRA	576415	Parra	Plume	355	NO	YES	YES	YES	Water quality samples collected in February and May 2008; unable to collect water level Q1 2008 due to obstruction
ROGERS 803	641803	Rogers, Ernest D	Plume	140	YES	YES	NO	YES	Water quality samples collected in February and May 2008; unable to collect Q2 2008 water levels due to obstruction
TM-02	522573	CQB	Plume	640	NO	NO	NO	NO	Pump intake above water level; unable to collect water levels due to obstruction
TM-02A	522574	CQB	Plume	925	YES	YES	YES	YES	Water quality samples collected in February and May 2008
TM-03	522575	CQB	Plume	200	YES	NO	YES	YES	Pump repairs completed Q2 2008; water quality sample collected in May 2008
TM-06 MILLER	522695	Miller	Plume	200	YES	YES	YES	YES	Water quality samples collected in February and May 2008
TM-07	522576	CQB	Plume	350	NO	YES	NO	YES	Water quality samples collected in March and May 2008, unable to obtain water level measurements due to obstruction
TM-10 USBP	522696	U.S. Border Patrol	Plume	290	NO	NO	NO	NO	Owner declined participation
TM-11 PIONKE	522815	Pionke	Plume	160	NO	NO	NO	NO	Dry
TM-13 MILLER	522698	Miller	Plume	200	NO	NO	NO	NO	Dry

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Well Name	ADWR 55 Registry No.	Owner	Monitoring Purpose	Casing or Well Depth (feet)	Q1-2008 Monitoring		Q2-2008 Monitoring		Status
					Water Level Measured?	Water Quality Sample Collected?	Water Level Measured?	Water Quality Sample Collected?	
TM-16	522578	CQB	Plume	115	YES	YES	YES	YES	Water quality samples collected in February and May 2008
TM-17	522700	CQB	Plume	200	NO	NO	NO	NO	Dry
TM-19	522580	CQB	Plume	700	NO	NO	NO	NO	Dry
TM-19A	522581	CQB	Plume	210	YES	YES	YES	YES	Water quality samples collected in February and May 2008
TM-41	562555	CQB	Plume	210	NO	NO	NO	NO	Dry <4580 ft amsl
TM-42	562554	CQB	Plume	250	YES	YES	YES	YES	Water quality samples collected in February and May 2008
TVI 875	568875	Turquoise Valley, Inc.	Plume	330	NO	YES	NO	YES	Water quality samples collected in February and May 2008, no access to well casing for water level measurements
WEED	544535	Weed	Plume	320	NO	YES	NO	YES	Water quality samples collected in February and May 2008, no access to well casing for water level measurements
WEISKOPF	641802	Weiskopf	Plume	200	YES	YES	YES	YES	Water quality samples collected in February and May 2008
WELLS FOR SEMIANNUAL MONITORING									
COB WL ABND	570012	City of Bisbee	Regional	148	NO	NO	NO	NO	Well Abandoned
CONNOR	516399	Connor	Regional	220	NO	NO	NO	NO	Well Abandoned
EAST	599796	East	Regional	125	YES	YES	YES	YES	Water quality samples collected in February and May 2008
GALLANT	502527	Gallant	Regional	190	YES	YES	NO	NO	Water quality sample collected in February 2008
MILLER 342	641342	Miller	Regional	200	NO	NO	NO	NO	Dry
NSD 02	527587	Naco Sanitary District	Regional	120	NO	YES	NO	ND	Q1 2008 Water quality data provided by Naco Sanitary District
NSD 03	527586	Naco Sanitary District	Regional	100	NO	YES	NO	ND	Q1 2008 Water quality data provided by Naco Sanitary District
NWC 01	627682	Naco Water Company [2]	Regional	215	ND	ND	ND	ND	No data
NWC 06	575700	Naco Water Company	Regional	410	ND	ND	ND	ND	Naco Water Company has agreed to provide data but was unable to do so by the time of report preparation
PALMER 819	578819	Palmer	Regional	220	NO	YES	NO	YES	Water quality samples collected in February and May 2008, no access to well casing for water level measurements
POWER	624535	Power	Regional	100	YES	YES	NO	NO	Water quality sample collected in February 2008
TM-05 MILLER	522694	Miller	Regional	160	NO	NO	NO	NO	Dry
TM-08 SWAN	522817	Swan	Regional	817	NO	YES	NO	YES	Water quality samples collected in February and May 2008, unable to collect water level measurements because depth to water greater than 500 feet
TM-12 MILLER	522697	Miller	Regional	175	NO	NO	NO	NO	Dry
TM-14 NELSON	522816	Nelson	Regional	215	YES	YES	NO	NO	Water quality sample collected in February 2008; well dry Q2 2008
TM-15 MILLER	522699	Miller	Regional	325	YES	YES	YES	YES	Water quality samples collected in February and May 2008
TM-43	564729	CQB	Regional	830	YES	YES	NO	NO	Water quality sample collected in March 2008
TM-43A	564726	CQB	Regional	215	YES	YES	NO	NO	Water quality sample collected in March 2008
TM-43B	565004	CQB	Regional	215	YES	YES	NO	NO	Water quality sample collected in March 2008
TM-45	564728	CQB	Regional	520	NO	NO	NO	NO	Dry
WALKER	200393	Walker	Regional	120	YES	YES	NO	NO	Water quality sample collected in February 2008
ADDITIONAL WELLS SAMPLED FOR Q1-08 AND Q2-08 MONITORING THAT WERE NOT IDENTIFIED IN THE WORK PLAN									
ANDERSON	613396	Anderson	Well Inventory	236	YES	YES	YES	YES	Water quality samples collected in February and May 2008
AWC 02	616586	Arizona Water Company	Plume	330	ND	YES	YES	YES	Q1 and Q2 2008 Water quality data provided by Arizona Water Company
AWC 04	616584	Arizona Water Company	Plume	250	ND	YES	YES	YES	Q1 and Q2 2008 Water quality data provided by Arizona Water Company
BANKS 986	647986	Banks	Well Inventory	435	NO	YES	NO	YES	Water quality samples collected in February and May 2008; unable to collect water level measurements due to obstruction
BANKS 987	647987	Banks	Well Inventory	339	YES	NO	YES	YES	Well identified for water level measurements only
BARTON 010	085010	Barton	Plume	300	NO	NO	YES	NO	Well not operational; identified Q2 2008 for water level measurements only
BARTON 919	644919	Barton	Plume	130	NO	NO	YES	NO	Well not operational; identified in Q2 2008 for water level measurements only

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Well Name	ADWR 55 Registry No.	Owner	Monitoring Purpose	Casing or Well Depth (feet)	Q1-2008 Monitoring		Q2-2008 Monitoring		Status
					Water Level Measured?	Water Quality Sample Collected?	Water Level Measured?	Water Quality Sample Collected?	
BLOMMER	633472	Blommer	Well Inventory	380	NO	YES	NO	YES	Water quality samples collected in February and May 2008; unable to collect water level measurements due to obstruction
CAMPBELL	215509	Campbell	Well Inventory	350	YES	YES	YES	NO	Water quality sample collected in February 2008; Well identified for water level measurements only
CHAMBERS	629807	Chambers	Well Inventory	245	NO	YES	NO	YES	Water quality samples collected in February and May 2008; no access to well casing for water level measurements
COB MW-3	906823	City of Bisbee	Plume	269	YES	YES	YES	YES	Water quality samples collected in February and May 2008
DOUGLASS 791	592791	Douglass	Well Inventory	200	YES	NO	YES	NO	Well not operational; identified for water level measurements only
DOUGLASS 792	529792	Douglass	Well Inventory	200	YES	NO	YES	NO	Well not operational; identified for water level measurements only
ENGLUND	565260	Englund	Well Inventory	320	YES	YES	YES	YES	Water quality samples collected in February and May 2008
EPPELE 641	805641	Eppele	Well Inventory	265	YES	YES	YES	YES	Water quality samples collected in February and May 2008
FRANCO	500101	Franco	Well Inventory	200	NO	YES	NO	YES	Water quality samples collected in February and May 2008; unable to collect water level measurements due to obstruction
FULTZ	212447	Fultz	Well Inventory	300	NO	YES	NO	YES	Water quality samples collected in February and May 2008; unable to collect water levels because sounder diameter too large for access port
GOAR RANCH	610695	Goar	Well Inventory	250	YES	NO	YES	NO	Well identified for water level measurement only
HOBAN	805290	Hoban	Well Inventory	316	YES	YES	YES	YES	Water quality samples collected in February and May 2008
HOWARD	NR	Howard	Well Inventory	200	YES	YES	YES	YES	Water quality samples collected in February and May 2008
KEEFER	209744	Keefer	Well Inventory	245	YES	YES	YES	YES	Water quality samples collected in February and May 2008
MCCONNELL 265	539265	McConnell	Well Inventory	216	YES	YES	YES	YES	Water quality samples collected in February and May 2008
METZLER	35-71891	Metzler	Well Inventory	351	YES	YES	YES	YES	Water quality samples collected in February and May 2008
MINOR 317	063317	Minor	Well Inventory	155	YES	NO	NO	NO	Water level collected in February 2008 when property managed by real estate company; new owner declined participation
MOORE	538847	Moore	Well Inventory	220	NO	YES	NO	YES	Water quality samples collected in February and May 2008; unable to collect water levels because sounder diameter too large for access port
NOTEMAN	212483	Noteman	Well Inventory	400	NO	YES	YES	YES	Water quality samples collected in February and May 2008; no access to well casing Q1 2008 for water level measurement
NWC 04	627685	Naco Water Company	Well Inventory	379	ND	ND	ND	ND	Naco Water Company has agreed to provide data but was unable to do so by the time of report preparation
PANAGAKOS	35-76413	Panagakos	Well Inventory	200	-	-	NO	YES	Well identified in Q2 2008; water quality sample collected in April 2008; no access to well casing for water level measurements
PIONKE	613395	Pionke	Well Inventory	300	NO	YES	NO	YES	Water quality samples collected in February and May 2008; no access to well casing for water level measurements
POOL	509518	Pool	Well Inventory	313	YES	YES	YES	YES	Water quality samples collected in February and May 2008
RAMIREZ	216425	Ramirez	Well Inventory	300	NO	YES	NO	YES	Water quality samples collected in February and May 2008; no access to well casing for water level measurements
RAY	803772	Ray	Well Inventory	100	YES	YES	YES	YES	Water quality samples collected in February and May 2008
ROGERS E	216018	Rogers, Ernest M	Well Inventory	290	NO	YES	NO	YES	Water quality samples collected in February and May 2008; unable to collect water level measurements due to obstruction
RUIZ	531770	Ruiz	Well Inventory	312	YES	YES	YES	YES	Water quality samples collected in February and May 2008
SCHWARTZ	210865	Schwartz	Well Inventory	305	YES	YES	YES	YES	Water quality samples collected in February and May 2008
SRC	211345	Specialty Restaurants Corporation, Inc.	Regional	965	NO	NO	YES	YES	Well uncapped Q2 2008; water quality sample collected in April 2008
STEPHENS	808560	Stephens	Well Inventory	NR	-	-	YES	NO	Well identified Q2 2008 for water level measurement only
SUNBELT	201531	Sunbelt Marketing, Inc.	Plume	380	YES	NO	YES	NO	Well not operational, identified for water level measurements only
SWAN	NR	Swan	Well Inventory	NR	YES	YES	YES	YES	Water quality samples collected in February and May 2008
TVI 236	802236	Turquoise Valley, Inc.	Plume	222	NO	YES	NO	YES	Water quality sample collected in February 2008, unable to collect water level measurement Q2 2008 because pump was running
TVI 713	567713	Turquoise Valley, Inc.	Well Inventory	200	NO	NO	YES	NO	Well identified Q2 2008 for water level measurements only
ZANDER	205126	Zander	Well Inventory	280	YES	YES	YES	YES	Water quality samples collected in February and May 2008

TABLE 2
Analytical Results for First and Second Quarter 2008 Grounwater Monitoring

Well Name	ADWR 55 Registry No.	Sample Date	Field pH (SU)	Field SC (µS/cm)	Field Temp (deg C)	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrite as N, dissolved	Nitrate/Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved	Potassium, dissolved	Sodium, dissolved	Total Alkalinity	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Residue, Filterable (TDS) @ 180ºC	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
WELLS SAMPLED FOR QUARTERLY MONITORING																									
AWC 03	616585	01/07/08	-	-	-	41	14	-	2.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		03/03/08	-	-	-	38	14	-	2.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/05/08	-	-	-	37.3	12.2	-	2.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 05	590620	02/04/08	-	-	-	13	15	-	1.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		04/07/08	-	-	-	14	14	-	1.94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		06/02/08	-	-	-	14.3	15.6	-	1.86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BF 01	539783	03/04/08	6.46	2745	21.9	1320	30.4	<0.1	0.92	<0.01	0.92	621.0	100.0	4.5	60.2	610	610	<2	<2	2850	2510	1.14	40.8	42.0	1.4
		05/23/08	6.41	2698	18.3	1450	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA	577927	02/06/08	6.69	1335	22.2	210	105.0	0.1	6.80	<0.01	6.80	224.0	48.4	12.4	65.9	510	510	<2	<2	980	1000	0.98	18.0	18.4	1.1
		04/25/08 [1]	6.37	1521	23.1	190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/13/08	6.58	1489	22.7	195	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BURKE	212268	02/07/08	7.17	411	23.0	29.5	31.8	0.3	1.83	<0.01	1.83	62.3	22.8	2.8	26.0	212	212	<2	<2	360	311	1.16	5.9	6.2	2.5
		04/22/08	7.13	423	27.0	26	11	0.2	2.9	<0.01	2.9	52.1	22.0	2.3	16.9	191.0	191.0	<2	<2	260	-	-	-	-	-
COB MW-1	903992	02/22/08	6.93	1401	21.2	720	19.8	0.3	2.33	<0.01	2.33	257.0	64.5	7.7	56.5	217	206	11	<2	1360	1270	1.07	20.2	20.8	1.5
		05/20/08	6.88	2050	22.0	980	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB MW-2	903984	02/22/08	7.28	417	20.2	41	19.4	0.3	6.49	<0.01	6.49	66.4	9.0	2.1	25.5	168	156	12	<2	340	298	1.14	5.2	5.2	0.0
		05/20/08	7.32	490	21.2	40.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB WL	593116	02/22/08	6.99	919	20.6	90	106.0	0.3	3.91	<0.01	3.91	128.0	34.3	7.2	47.8	280	269	11	<2	650	603	1.08	10.8	11.5	3.1
		05/20/08	7.30	1053	21.9	98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COOPER	623564	02/14/08	7.02	1892	20.8	33	17.5	0.3	2.82	<0.01	2.82	47.9	13.8	2.2	25.3	163	154	9	<2	270	254	1.06	4.6	4.7	1.1
		05/14/08	8.08	419	22.1	34.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COOPER C	637069	03/20/08	6.93	2081	21.3	990	49.0	<0.1	3.09	0.01	3.10	393.0	59.8	6.0	45.0	229	229	<2	<2	1810	1690	1.07	27.0	26.7	0.6
		05/05/08	6.78	2139	22.4	990	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DODSON	644927	02/20/08	7.61	857	17.3	54	129.0	0.3	10.70	<0.01	10.70	111.0	37.5	12.3	41.2	266	252	14	<2	590	598	0.99	10.8	10.8	0.0
		05/12/08	7.11	1118	21.1	34.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GARNER 557	558557	02/21/08	6.70	822	20.9	123	14.3	0.2	1.70	<0.01	1.70	62.2	10.2	2.5	58.1	184	171	13	<2	420	394	1.07	6.7	6.5	-1.5
GARNER 635	587635	02/04/08	7.61	479	22.7	37.8	13.7	0.2	1.68	0.01	1.69	39.2	8.2	2.8	65.0	182	182	<2	<2	290	284	1.02	4.9	5.5	5.8
		05/05/08	7.26	468	24.9	35.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GGOOSE 547	628547	05/21/08	7.08	856	22.7	199	37.1	0.1	7.14	<0.01	7.14	113.0	32.9	5.5	25.6	194	194	<2	<2	600	561	1.07	9.6	9.6	0.0
GL-03	539782	03/04/08	7.43	417	25.7	20.3	20.3	<0.1	0.75	0.02	0.77	46.7	22.8	2.6	18.7	192	192	<2	<2	260	250	1.04	4.8	5.1	3.0
		05/22/08	7.06	647	25.3	43.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OSBORN	643436	02/25/08	7.35	508	22.4	16.4	18.2	0.3	3.76	<0.01	3.76	84.4	15.4	4.3	25.2	275	246	29	<2	370	357	1.04	6.6	6.7	0.8
		05/13/08	7.22	576	22.2	17.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PARRA	576415	02/11/08	7.08	1067	21.8	360	33.4	0.1	4.17	<0.01	< 0.04	178.0	50.4	4.4	31.6	177	177	<2	<2	880	783	1.12	12.3	14.5	8.2
		05/15/08	7.10	1200	21.8	405	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS 803	641803	02/07/08	7.52	455	19.8	138	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		03/20/08 [1]	7.45	601	18.6	125	13.2	0.2	4.69	0.02	4.71	94.0	11.7	3.0	26.6	148	148	<2	<2	410	383	1.07	6.3	6.9	4.5
		04/21/08 [1]	7.32	552	21.4	128	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/08/08	7.14	622	21.2	141	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-02A	522574	03/04/08	8.67	302	22.6	12.3	8.6	0.3	<0.02	0.02	0.02	12.6	5.8	2.2	58.0	155	146	9	<2	190	196	0.97	3.6	3.7	1.4
		05/23/08	7.75	321	22.9	14.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-03	522575	05/20/08	7.51	778	22.2	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-06 MILLER	522695	02/27/08	7.44	457	19.6	13.9	7.1	0.3	0.96	<0.01	0.96	42.2	19.0	1.7	54.3	218	218	<2	<2	310	274	1.13	4.9	6.1	10.9
		05/20/08	7.50	506	20.7	32.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-07	522576	03/06/08	7.54	726	20.8	22.5	9.0	0.2	3.04	<0.01	3.04	49	15.8	2.0	22.6	142	133	9	<2	220	223	0.10	3.7	4.7	11.9
		05/22/08	6.96	385	20.1	22.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-16	522578	03/05/08	7.17	1351	20.6	497	28.9	<0.1	6.80	<0.01	6.90	225	51.7	13.4	30.7	205	205	<2	<2	1030	1000	1.03	15.8	17.2	4.2
		05/22/08	7.05	1304	20.5	522	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-19A	522581	03/06/08	8.02	240	22.2	56.1	15.4	0.1	0.26	<0.01	0.26	37.9	11.6	3.0	57.7	138	119	19	<2	280	273	1.03	4.3	5.4	11.3
		05/22/08	7.36	501	24.0	64.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-42	562554	03/05/08	7.10	1342	20.8	482	27.0	0.2	6.55	<0.01	6.55	185	55.8	10.4	37.9	186	186	<2	<2	980	939	1.04	15.1	15.8	2.3
		05/22/08	7.05	1270	21.4	483	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TVI 875	568875	02/21/08	7.28	739	21.1	244	20.1	0.2	2.99	<0.01	2.99	120.0	16.1	2.9	41.1	172	161	11	<2	630	565	1.12	9.3	9.2	-0.5
		05/07/08	7.09	833	21.2	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WEED	544535	02/14/08	7.74	323	21.7	11.1	9.0	-	1.72	<0.02	1.72	35.6	14.5	2.2	30.0	168	162	5	<2	230	212	1.08	3.9	4.3	4.9
		05/15/08	7.22	365	22.7	12.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WEISKOPF	641802	02/15/08	7.48	1072	20.0	500	33.1	0.2	4.74	<0.01	4.74	218	31.4	4.3	35.7	177	177	<2	<2	1010	950	1.06	15.3	15.2	-0.3
		05/07/08	7.10	1251	21.8	483	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Well Name	ADWR 55 Registry No.	Sample Date	Field pH (SU)	Field SC (µS/cm)	Field Temp (deg C)	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrite as N, dissolved	Nitrate/Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved	Potassium, dissolved	Sodium, dissolved	Total Alkalinity	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Residue, Filterable (TDS) @ 180ºC	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
WELLS SAMPLED FOR SEMIANNUAL MONITORING																									
EAST	599796	02/08/08	7.45	423	19.9	10.6	31.2	0.4	6.3	<0.01	6.3	59.9	24.3	2.5	31.6	227	227	<2	<2	320	325	0.98	6.1	6.4	2.4
		05/14/08	7.31	595	20.9	14.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GALLANT	502527	02/11/08	7.46	604	20.2	17.9	12.7	0.2	3.0	<0.01	3.04	106.0	15.9	4.3	25.6	344	344	<2	<2	400	402	1.0	7.8	7.8	0.0
NSD 02	527587	02/05/08	ND	ND	ND	43	52.5	0.201	<1.0	<0.01	<1.0	-	-	-	-	-	-	-	-	388	-	-	-	-	-
NSD 03	527586	02/05/08	ND	ND	ND	70.7	14.1	0.186	3.2	<0.01	3.2	-	-	-	-	-	-	-	-	396	-	-	-	-	-
PALMER 819	578819	02/14/08	7.91	435	17.5	15.9	11.3	0.4	2.13	<0.01	2.13	31.9	27.1	5.4	50.1	251	235	15	< 2	300	308	1.0	5.8	6.1	2.5
		05/13/08	7.92	508	22.9	16.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
POWER	624535	02/12/08	7.11	428	18.9	16	6.1	0.1	7.00	<0.01	7.00	95	7.6	3.8	7.4	242	242	<2	< 2	310	312	0.99	5.8	5.8	0.0
TM-08 SWAN	522817	02/13/08	7.63	511	25.2	12.6	32.1	0.3	5.3	<0.01	5.3	43.4	21.4	4.9	35.5	204	204	<2	< 2	310	296	1.1	5.6	5.6	0.0
		05/14/08	7.44	480	24.4	12.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-14 NELSON	522816	02/08/08	7.64	319	21.6	32.9	12.5	0.3	1.82	<0.01	1.82	56.1	10.0	2.8	23.6	166	166	<2	<2	250	246	1.02	4.5	4.7	2.2
TM-15 MILLER	522699	02/27/08	7.66	344	21.9	14	7.1	0.4	1.56	<0.01	1.56	32.9	18.0	2.0	32.4	183	181	2	<2	220	224	0.98	4.2	4.6	4.5
		05/23/08	7.54	371	22.1	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-43	564729	03/03/08	6.17	2788	19.9	1420	31.0	<0.2	0.99	<0.01	0.99	570	181.0	4.5	42.1	713	713	<2	<2	3000	2680	1.12	45.0	45.0	0.3
TM-43A	564726	03/03/08	8.57	341	21.0	2.1	7.7	0.3	0.04	<0.01	0.04	10.1	5.7	2.2	79.4	217	197	20	<2	250	246	1.02	4.6	4.5	-1.1
TM-43B	565004	03/03/08	6.79	514	20.6	0.7	5.0	<0.1	0.05	0.01	0.06	54.6	23.8	2.9	47.9	338	338	<2	<2	350	338	1.04	6.9	6.8	-0.7
WALKER	200393	02/13/08	7.05	650	20.2	20	4.0	0.2	2.26	<0.01	2.26	117	14.4	3.6	14.3	355	355	<2	<2	440	396	1.11	7.8	7.7	-0.6
ADDITIONAL WELLS SAMPLED THAT WERE NOT IDENTIFIED IN WORKPLAN																									
ANDERSON	613396	03/20/08	7.25	1176	21.1	431	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/05/08	7.03	1231	21.8	452	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 02	616586	01/07/08	-	-	-	14	14	-	2.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		03/03/08	-	-	-	16	16	-	2.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/05/08	-	-	-	13.3	15.9	-	2.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 04	616584	02/04/08	-	-	-	18	40	-	2.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		04/07/08	-	-	-	18	45	-	2.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		06/02/08	-	-	-	14.3	48	-	2.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BANKS 986	647986	02/27/08	7.53	980	21.8	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/12/08	7.40	1021	22.1	65.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	02/05/08	7.43	714	20.2	206	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		04/21/08 [1]	7.06	753	21.9	201	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/15/08	7.16	845	22.2	211	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CAMPBELL	215509	02/05/08	7.87	823	18.3	211	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHAMBERS	629807	03/06/08	7.73	408	17.8	7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/05/08	7.15	421	22.1	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB MW-3	906823	02/28/08	7.39	416	21.0	57.8	16.2	0.2	2.0	<0.01	2.0	62.2	8.9	2.2	25.5	159	159	<2	<2	300	277	1.1	5.0	5.0	0.0
		05/20/08	7.56	473	22.3	35.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ENGLUND	565260	02/12/08	6.88	1470	21.6	520	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/29/08	7.01	1459	22.0	520	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPPELE 641	805641	03/11/08	7.98	646	21.4	21.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/12/08	7.21	667	21.7	24.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRANCO	500101	02/06/08	7.47	1301	19.6	670	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/05/08	6.93	1557	23.1	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ	212447	02/27/08	6.76	1827	21.1	152	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		04/21/08 [1]	6.74	1739	22	137	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/14/08	6.88	1532	22.3	131	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOBAN	805290	02/27/08	6.93	1359	22.1	510	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/07/08	6.88	1532	22.3	670	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOWARD	NR	03/04/08	7.06	1280	20.4	571	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/08/08	6.95	1494	21.0	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KEEFER	209744	02/06/08	7.70	378	19.0	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/06/08	7.19	512	20.3	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MCCONNELL 265	539265	02/20/08	7.21	1435	21.1	720	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/06/08	6.77	1668	21.6	737	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
METZLER	35-71891	03/05/08	7.27	1055	21.6	317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/15/08	7.12	1051	22.8	329	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOORE	538847	02/20/08	7.69	362	22.2	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/08/08	7.09	432	22.4	7.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NOTEMAN	212483	02/05/08	6.70	1317	19.9	310	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/13/08	6.67	1445	23.0	272	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 2
Analytical Results for First and Second Quarter 2008 Grounwater Monitoring

Well Name	ADWR 55 Registry No.	Sample Date	Field pH (SU)	Field SC (µS/cm)	Field Temp (deg C)	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrite as N, dissolved	Nitrate/Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved	Potassium, dissolved	Sodium, dissolved	Total Alkalinity	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Residue, Filterable (TDS) @ 180ºC	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
PANAGAKOS	35-76413	04/21/08	6.80	1228	20.5	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIONKE	613395	02/06/08	7.53	910	19.9	394	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/07/08	7.08	1100	21.4	391	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
POOL	509518	02/20/08	7.95	497	20.9	134	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/19/08	7.40	585	22.2	122	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAMIREZ	216425	02/04/08	7.47	408	21.7	7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/06/08	7.19	405	22.7	8.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY	803772	02/15/08	7.30	1540	19.1	159	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		04/21/08 [1]	6.92	1418	21.3	125	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/13/08	7.05	448	20.9	123	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS E	216018	02/04/08	7.40	435	21.0	4.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/07/08	7.18	415	22.2	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RUIZ	531770	02/05/08	7.73	445	18.2	263	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/15/08	7.23	965	25.9	265	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	02/08/08	7.52	506	21.5	158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		04/21/08 [1]	7.23	563	21.7	122	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/19/08	7.38	629	22.4	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SRC	211345	04/23/08	7.57	380	25.8	19.0	10.0	0.2	3.61	<0.01	3.61	25.8	16.3	2.1	48.2	174	174	<2	<2	230	-	-	-	-	-
SWAN	NR	02/13/08	7.28	467	20.7	24.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/14/08	7.24	479	21.2	23.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TVI 236	802236	03/20/08	7.48	488	20.0	31.3	26.0	0.1	3.90	0.03	3.93	70.5	9.3	1.9	25.6	178	178	<2	<2	310	289	1.07	5.2	5.4	1.9
		05/07/08	7.13	494	20.4	32.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZANDER	205126	02/04/08	7.24	392	19.7	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		05/06/08	7.26	404	21.2	6.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

All units are in milligrams per liter (mg/l) unless otherwise noted
deg C = degrees Celsius
meq/l = milliequivalent per liter
NR = No Record
- = Not Analyzed
ND = No Data
SC = Specific Conductance
SU = Standard Units
TDS = Total Dissolved Solids
µS/cm = microsiemens per centimeter
35-70000 = ADWR 35 Database
[1] Verified drinking water supply well, sample collected for sulfate trend analysis for interim action evaluation

TABLE 3
Groundwater Elevation Data for First and Second Quarter 2008

Well Name	ADWR 55 Registry No.	UTM North	UTM East	Date	Measuring Point Elevation [1] (ft amsl)	Depth To Water (feet)	Groundwater Elevation (ft amsl)
ANDERSON	613396	3468816.065	601134.729	03/20/08	4580.34	145.46	4434.88
				05/05/08	4580.34	145.84	4434.50
AWC 02	616586	3468565.912	598890.636	4/8/2008 [2]	4541	116.00	4425.00
AWC 03	616585	3468659.579	599016.359	4/8/2008 [2]	4531	112.00	4419.00
AWC 04	616584	3468695.167	598999.705	4/8/2008 [2]	4531	108.00	4423.00
AWC 05	590620	3468526.313	599277.560	4/8/2008 [2]	4548	284.00	4264.00
BARTON 010	085010	3469047.469	606201.084	05/12/08	4688.95	227.50	4461.45
BARTON 919	644919	3469076.689	606243.850	05/12/08	4692.36	113.71	4578.65
BANKS 987	647987	3469206.175	606981.921	02/27/08	4648.18	208.00	4440.18
				05/12/08	4648.18	216.30	4431.88
BF-01	539783	3472151.593	604169.077	03/04/08	4835.23	348.99	4486.24
				05/23/08	4835.23	348.80	4486.43
BIMA	577927	3471852.804	606001.245	05/13/08	4802.05	367.31	4434.74
BURKE	212268	3473029.816	602230.087	04/22/08	4856.30	606.55	4249.75
CAMPBELL	215509	3469320.340	606420.836	02/05/08	4694.29	180.60	4513.69
				05/13/08	4694.29	181.80	4512.49
COB MW-1	903992	3469889.889	603153.259	02/22/08	4683.26	232.47	4450.79
				05/20/08	4683.26	233.12	4450.14
COB MW-2	903984	3468114.836	600973.257	02/22/08	4566.21	122.85	4443.36
				05/20/08	4566.21	123.00	4443.21
COB MW-3	906823	3468726.000	599169.225	02/28/08	4538.63	120.84	4417.79
				05/20/08	4538.63	125.00	4413.63
COB WL	593116	3472502.012	606357.506	02/22/08	4832.06	56.50	4775.56
				05/20/08	4832.06	57.50	4774.56
COOPER C	637069	3468913.011	601349.987	03/04/08	4595.06	155.08	4439.98
				05/05/08	4595.06	155.34	4439.72
DODSON	644927	3469063.772	605594.560	05/12/08	4686.34	81.38	4604.96
DOUGLASS 791	592791	3470222.677	607632.993	02/13/08	4703.27	22.11	4681.16
				05/13/08	4703.27	24.60	4678.67
DOUGLASS 792	592792	3469829.115	607607.541	02/13/08	4681.73	87.76	4593.97
				05/13/08	4681.73	87.21	4594.52
EAST	599796	3468712.215	607076.365	02/08/08	4626.01	50.20	4575.81
				05/14/08	4626.01	52.45	4573.56
ENGLUND	565260	3471341.335	602551.286	02/12/08	4733.72	289.47	4444.25
				05/29/08	4733.72	288.53	4445.19

TABLE 3
Groundwater Elevation Data for First and Second Quarter 2008

Well Name	ADWR 55 Registry No.	UTM North	UTM East	Date	Measuring Point Elevation [1] (ft amsl)	Depth To Water (feet)	Groundwater Elevation (ft amsl)
EPPELE 641	805641	3469229.942	607165.354	03/11/08	4642.86	29.52	4613.34
				05/12/08	4642.86	30.64	4612.22
GALLANT	502527	3468524.363	607769.640	02/11/08	4599.58	28.32	4571.26
GARNER 557	558557	3468962.415	602659.240	02/21/08	4626.44	191.05	4435.39
				05/05/08	4626.44	191.28	4435.16
GARNER 635	587635	3468967.902	602665.352	02/04/08	4628.29	193.20	4435.09
				05/05/08	4628.29	195.90	4432.39
GGOOSE 547	628547	3469820.260	606256.657	05/21/08	4717.11	220.91	4496.20
GL-03	539782	3472738.941	608379.424	05/22/08	4840.37	660.15	4180.22
GOAR RANCH	610695	3468892.471	602454.751	02/21/08	4631.13	183.90	4447.23
				05/05/08	4631.13	188.11	4443.02
HOBAN	805290	3468880.329	601705.848	02/27/08	4597.21	163.05	4434.16
				05/07/08	4597.21	163.28	4433.93
HOWARD	NR	3468768.622	601281.936	03/04/08	4589.70	150.10	4439.60
				05/08/08	4589.70	150.70	4439.00
KEEFER	209744	3468119.015	599879.175	02/06/08	4572.03	134.67	4437.36
				05/06/08	4572.03	135.28	4436.75
MCCONNELL 265	539265	3468840.139	601463.094	02/20/08	4600.70	156.15	4444.55
				05/06/08	4600.70	156.40	4444.30
METZLER	35-71891	3471381.176	602091.308	03/05/08	4728.53	288.30	4440.23
				05/15/08	4728.53	286.53	4442.00
MINOR 317	633317	3468568.043	601172.150	02/12/08	4578.86	135.30	4443.56
NOTEMAN	212483	3471576.400	606053.800	05/13/08	4800.68	339.77	4460.91
OSBORN	643436	3470270.548	607031.823	05/13/08	4711.95	68.65	4643.30
PARRA	576415	3471263.549	602170.716	05/15/08	4727.21	279.78	4447.43
POOL	509518	3470013.823	599683.603	02/20/08	4639.09	204.22	4434.87
				05/19/08	4639.09	204.72	4434.37
POWER	624535	3472738.941	608379.424	02/12/08	4840.37	42.30	4798.07
RAY	803772	3469195.147	607083.422	02/15/08	4647.91	40.85	4607.06
				05/13/08	4647.91	43.82	4604.09
ROGERS 803	641803	3468417.386	600977.690	02/07/08	4579.02	129.85	4449.17
RUIZ	531770	3471424.219	602857.357	02/05/08	4735.18	293.29	4441.89

TABLE 3
Groundwater Elevation Data for First and Second Quarter 2008

Well Name	ADWR 55 Registry No.	UTM North	UTM East	Date	Measuring Point Elevation [1] (ft amsl)	Depth To Water (feet)	Groundwater Elevation (ft amsl)
				05/15/08	4735.18	293.57	4441.61
SCHWARTZ	210865	3468268.057	600811.529	02/08/08	4551.58	121.80	4429.78
				05/19/08	4551.58	123.49	4428.09
SRC	211345	3472505.400	599723.300	04/23/08	4807.37	541.10	4266.27
STEPHENS	808560	3469072.799	606981.766	05/13/08	4651.22	44.94	4606.28
SUNBELT	201531	3471735.149	605998.250	02/06/08	4806.52	352.10	4454.42
				05/15/08	4806.52	358.97	4447.55
SWAN	NR	3470648.298	607378.547	02/13/08	4716.59	26.50	4690.09
				05/14/08	4716.59	30.69	4685.90
TM-02A	522574	3472008.794	604152.059	03/04/08	4808.43	346.62	4461.81
				05/23/08	4808.43	346.16	4462.27
TM-03	522575	3473711.046	606366.130	03/12/08	4897.85	127.14	4770.71
				05/20/08	4897.85	127.40	4770.45
TM-06 MILLER	522695	3468376.658	606055.975	02/26/08	4707.88	158.78	4549.10
				05/20/08	4707.88	158.76	4549.12
TM-14 NELSON	522816	3470111.613	599624.302	02/08/08	4643.48	211.79	4431.69
TM-15 MILLER	522699	3471427.504	599617.331	02/27/08	4729.26	294.90	4434.36
TM-16	522578	3469842.199	605588.075	03/05/08	4717.71	81.00	4636.71
				05/22/08	4717.71	81.24	4636.47
TM-19A	522581	3469197.426	602458.710	03/06/08	4645.87	199.85	4446.02
				05/22/08	4645.87	199.50	4446.37
TM-42	562554	3469104.903	603698.271	03/05/08	4666.67	211.04	4455.63
				05/22/08	4666.67	210.98	4455.69
TM-43	564729	3474670.811	605365.062	03/03/08	4971.44	149.05	4822.39
TM-43A	564726	3474661.168	605358.451	03/03/08	4969.95	133.71	4836.24
TM-43B	565004	3474379.892	605814.018	03/03/08	4922.18	64.00	4858.18
TVI 236	802236	3467978.431	600552.215	05/07/08	4561.98	123.30	4438.68
TVI 713	567713	3468412.946	600729.095	05/07/08	4567.22	127.10	4440.12
WALKER	200393	3468577.472	607564.689	02/13/08	4601.55	25.20	4576.35
WEISKOPF	641802	3468658.855	601154.951	02/15/08	4586.89	143.31	4443.58
				05/07/08	4586.89	143.90	4442.99
ZANDER	205126	3467998.486	599678.880	02/04/08	4580.94	144.85	4436.09
				05/06/08	4580.94	145.33	4435.61

[1] Survey Source: Hydro Geo Chem, Inc.; measuring point = top of well casing

[2] Based on digital elevation model (DEM) AWC, Responces to City of Bisbee's Aquifer Protection Permit P-100983 and AZPDES Permit No. AZ0025275 (2006)

ft amsl = feet above mean sea level

UTM = Universal Transverse Mercator Zone 12 Band R

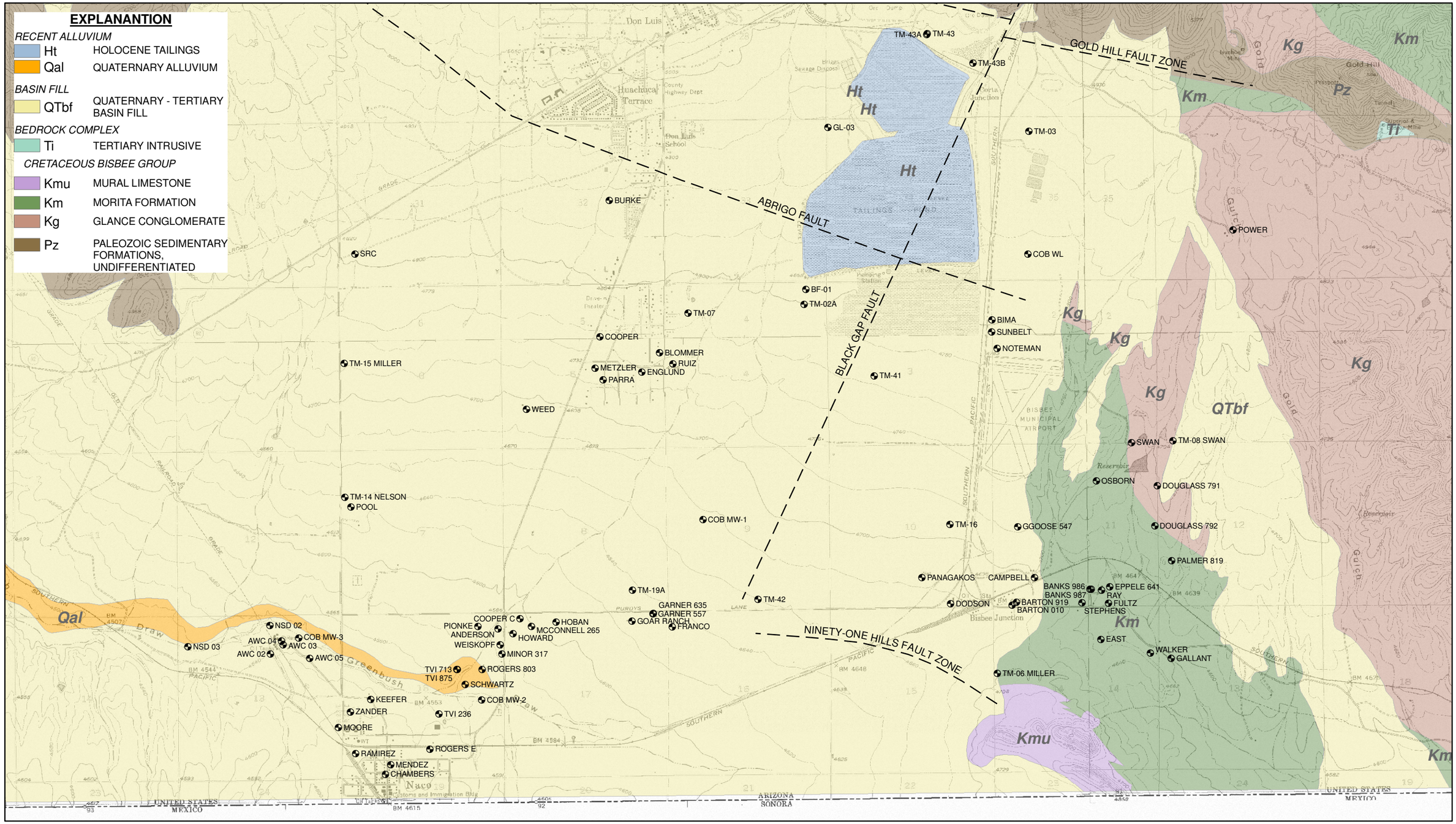
TABLE 4
Well Completion Depth, Screen Interval, and Screened Lithology

Well Name	ADWR 55 Registry No.	Top of Casing Elevation (ft amsl)	Total Depth (ft bgs)	Screen Interval (ft bgs)	Screened Formation Lithology	Depth to Morita Formation (ft bgs)	Depth to Glance Conglomerate (ft bgs)	Comments
ANDERSON	613396	4580.34	236	ND	QTbf	NA	NA	No Log
AWC 02	616585	4541 [1]	330	100-215	QTbf	NA	NA	Geologic Log
AWC 03	616585	4538 [1]	269	83-269	QTbf	NA	NA	Geologic Log
AWC 04	590620	4531 [1]	250	ND	QTbf	NA	NA	Geologic Log
AWC 05	590620	4548 [1]	1183	163-603 623-1163	Km / Volcanics	400	No Glance	Geologic Log
BANKS 986	647986	ND	445	ND	Km [3]	31	NA	No Log
BANKS 987	647987	4648.18	339	ND	Km [3]	ND	NA	No Log
BARTON 010	085010	4688.95	300	180-300	Km [3, 4]	ND	NA	Geologic Log
BARTON 919	644919	4692.36	130	ND	QTbf [3]	NA	NA	Geologic Log
BF-01	539783	4835.23	400	325-385	QTbf / Km / Kg	350	380	Geologic Log
BIMA	577927	4802.05	465	345-465	Km [3, 4]	ND	ND	Red Rock, Red Shale
BLOMMER	633472	4735.61	380	ND	Km [2]	245	NA	No Log
BULLARD	602134	4730 [3]	300	215-300	QTbf	NA	NA	No Log
BURKE	212268	4856.30	781	661-781	Km	150	NA	Red shale
CAMPBELL	215509	4694.29	350	20-350	Km [2, 3]	ND	NA	No Log
CHAMBERS	629807	ND	245	ND	QTbf	NA	NA	No Log
COB MW-1	903992	4883.26	420	350-410	QTbf	NA	NA	Geologic Log
COB MW-2	903984	4566.21	170	92-152	QTbf	NA	NA	Geologic Log
COB MW-3	906823	4538.63	269	83-269	QTbf	NA	NA	Geologic Log
COB WL	593116	4832.06	150	90-150	Kg [3, 4]	No Morita	36	Geologic Log
COOPER	623564	ND	325	ND	QTbf	NA	NA	No Log
COOPER C	637069	4595.06	220	ND	QTbf	NA	NA	No Log
DODSON	644927	4686.34	200	ND	Km	ND	NA	No Log
DOUGLASS 791	592791	4703.27	200	0-200	Kg [3, 4]	No Morita	4	Conglomerate
DOUGLASS 792	529792	4681.73	200	0-200	Kg [3, 4]	No Morita	4	Conglomerate
EAST	599796	4626.01	125	85-125	Km [3]	20	NA	Geologic Log
ENGLUND	565260	4733.72	320	260-320	Km [2]	ND	NA	Conglomerate
EPPELE 641	805641	4642.86	265	ND	Km [3]	ND	NA	Geologic Log
FRANCO	500101	4620.51 [3]	200	180-200	QTbf	NA	NA	Geologic Log
FULTZ	212447	ND	300	200-300	Km [3, 4]	10	NA	Sand, Volcanic
GALLANT	502527	4599.58	190	40-60 80-140	Km [3, 4]	5	NA	Brown and Red Sandstone
GARNER 557	558557	4626.44	300	180-300	QTbf	NA	NA	Geologic Log
GARNER 635	587635	4628.29	680	580-660	Km	540	NA	Geologic Log
GGOOSE 546	628546	4700.51 [3]	800	ND	Km [2]	ND	ND	No Log
GGOOSE 547	628547	4717.11	800	ND	Km [2]	ND	ND	No Log
GL-03	539782	4924.31	820	780-820	Kg [4]	No Morita	175	Geologic Log
GOAR RANCH	610695	4631.13	250	ND	QTbf	NA	NA	No Log
HOBAN	805290	4597.21	316	ND	QTbf	NA	NA	No Log
HOWARD	NR	4589.7	200	ND	QTbf	NA	NA	No ADWR Record
KEEFER	209744	4572.03	245	185-245	QTbf	NA	NA	Geologic Log
MCCONNELL 265	539265	4600.7	216	174-216	QTbf	NA	NA	Geologic Log
METZLER	35-71891	4728.53	351	245-345	Km [2]	ND	NA	No Log
MINOR 317	063317	4578.86	155	ND	QTbf	NA	NA	No Log
MOORE	538847	ND	220	180-220	QTbf	NA	NA	Geologic Log
NOTEMAN	212483	4800.68	400	0-400	Km [2]	ND	ND	No Log
NSD 02	527587	4527 [5]	120	75-115	QTbf	NA	NA	Geologic Log
NSD 03	527586	4515 [5]	100	55-95	QTbf	NA	NA	Geologic Log
NWC 01	627682	ND	215	ND	QTbf	NA	NA	Geologic Log
NWC 02R	562944	4590 [1]	312	212-312	QTbf	NA	NA	Geologic Log
NWC 03R	203321	ND	312	252-312	QTbf	NA	NA	Geologic Log
NWC 04	627685	4685 [1]	379	322-462	Km	NA	NA	Geologic Log
NWC 05	627696	4687.71 [1]	175	ND	QTbf	NA	NA	Geologic Log
NWC 06	575700	ND	410	180-340	QTbf	NA	NA	Geologic Log
OSBORN	643436	4711.95	150	122-258	Kg	150	NA	Geologic Log
PALMER 819	578819	ND	220	122-258	Km [3, 4]	80	NA	Geologic Log
PANAGAKOS	35-76413	ND	200	141-200	Km [3, 4]	NA	NA	Geologic Log
PARRA	576415	4727.21	355	255-355	Km [2]	ND	NA	Gravel, Rock, Sand, Clay
PIONKE	613395	ND	300	ND	QTbf	NA	NA	No Log
POOL	509518	4639.09	313	213-300	QTbf	NA	NA	Geologic Log
POWER	624535	4840.37	100	60-99	Kg [3]	ND	ND	No Log
RAMIREZ	216425	ND	300	250-300	QTbf	NA	NA	No Log
RAY	803772	4647.91	100	ND	Km [3]	ND	NA	No Log
ROGERS 803	641803	4579.02	140	230-290	QTbf [2]	NA	NA	No Log
ROGERS E	216018	ND	290	240-285	QTbf [2]	NA	NA	Brown Rock
RUIZ	531770	4735.18	312	252-312	QTbf / Km	265	NA	Redish Brown Sedimentary
SCHWARTZ	210865	4551.58	305	260-305	QTbf	NA	NA	Geologic Log
SRC	211345	4810.12	965	845-965	Km [2]	500	NA	Red Shale
STEPHENS	808560	4651.22	NR	ND	Km [2]	ND	ND	No ADWR Record
SUNBELT	201531	4806.52	380	300-380	Km / Kg [2]	2	320	Red Clay and Conglomerate
SWAN	NR	4716.59	150	38-110	Kg [2]	ND	ND	No ADWR Record
TM-02A	522574	4808.43	925	825-925	Kg [3]	345	680	Geologic Log
TM-03	522575	4897.85	200	150-200	Kg	NA	32	Geologic Log
TM-05 MILLER	522694	4598.06 [3]	160	120-160	QTbf [4, 5]	NA	NA	Geologic Log
TM-06 MILLER	522695	4707.88	200	150-200	Km [4, 5]	15	NA	Geologic Log
TM-07	522576	4768.93 [3]	350	259-349	Km [4, 5]	195	NA	Geologic Log
TM-08 SWAN	522817	4725.44	817	757-817	Kg [3]	No Morita	60	Geologic Log
TM-11 PIONKE	522815	4573.1 [3]	160	99-159	QTbf [4, 5]	NA	NA	Geologic Log
TM-12 MILLER	522697	4589.44 [3]	175	121-171	QTbf [4, 5]	NA	NA	Geologic Log
TM-13 MILLER	522698	4617.29 [3]	200	140-200	QTbf [4, 5]	NA	NA	Geologic Log
TM-14 NELSON	522816	4643.48	215	165-215	QTbf [4, 5]	NA	NA	Geologic Log
TM-15 MILLER	522699	4729.26	325	260-320	Km [4, 5]	220	NA	Geologic Log
TM-16	522578	4717.71	115	65-115	Km [3, 4, 5]	40	NA	Geologic Log
TM-19A	522581	4645.87	210	585-695	Km [3, 4]	535	NA	Geologic Log
TM-41	562555	4774.58	210	145-200	Km [4]	95	NA	Geologic Log
TM-42	562554	4666.67	250	180-240	Km [4]	65	NA	Geologic Log
TM-43	564729	4971.44	830	720-800	Km [4]	170	NA	Geologic Log
TM-43A	564726	4969.95	215	130-190	QTbf / Km [4]	150	NA	Geologic Log
TM-43B	565004	4922.18	215	150-190	Km [4]	80	NA	Geologic Log
TVI 236	802236	4561.98	222	ND	QTbf	NA	NA	No Log
TVI 713	567713	4567.22	200	80-144	QTbf [2]	NA	NA	Geologic Log
TVI 875	568875	ND	330	166-320	QTbf	NA	NA	Geologic Log
WALKER	200393	4601.55	120	80-100	Km [3, 4]	18	NA	Geologic Log
WEED	544535	4675 [3]	320	280-320	Km / Kg	270	317	Geologic Log
WEISKOPF	641802	4586.89	200	ND	QTbf [2]	NA	NA	No Log
ZANDER	205126	4580.94	280	220-260	QTbf	NA	NA	Geologic Log

ADWR = Arizona Department of Water Resources
ft amsl = feet above mean sea level
ft bgs = feet below ground surface
QTbf = Quaternary-Tertiary basin fill
Km = Cretaceous Morita Formation
Kg = Cretaceous Glance Conglomerate
ND = No Data
NA = Not Applicable
NR = No Record
35-70000 = ADWR 35 Database

[1] Based on USGS topographic map
[2] Formation estimated based on well completion depth and lithology of nearby wells
[3] Based on Well Depth and Geology Map, Hayes and Landis (1964)
[4] Based on Well Drillers Report to ADWR (1994)
[5] Based on Geologic Log in Phelps Dodge, Aquifer Protection Permit Application, Cochise County, Arizona. (1990)

FIGURES



Legend

- Well Location and Identification
- Faults

PROJECTION:
UTM Zone 12N NAD83

1 inch equals 3,000 feet

0 1000 2000 3000

N

HYDRO GEO CHEM, INC.

GENERALIZED GEOLOGY AND WELL LOCATIONS

Approved	Date	Author	Date	File Name	Figure
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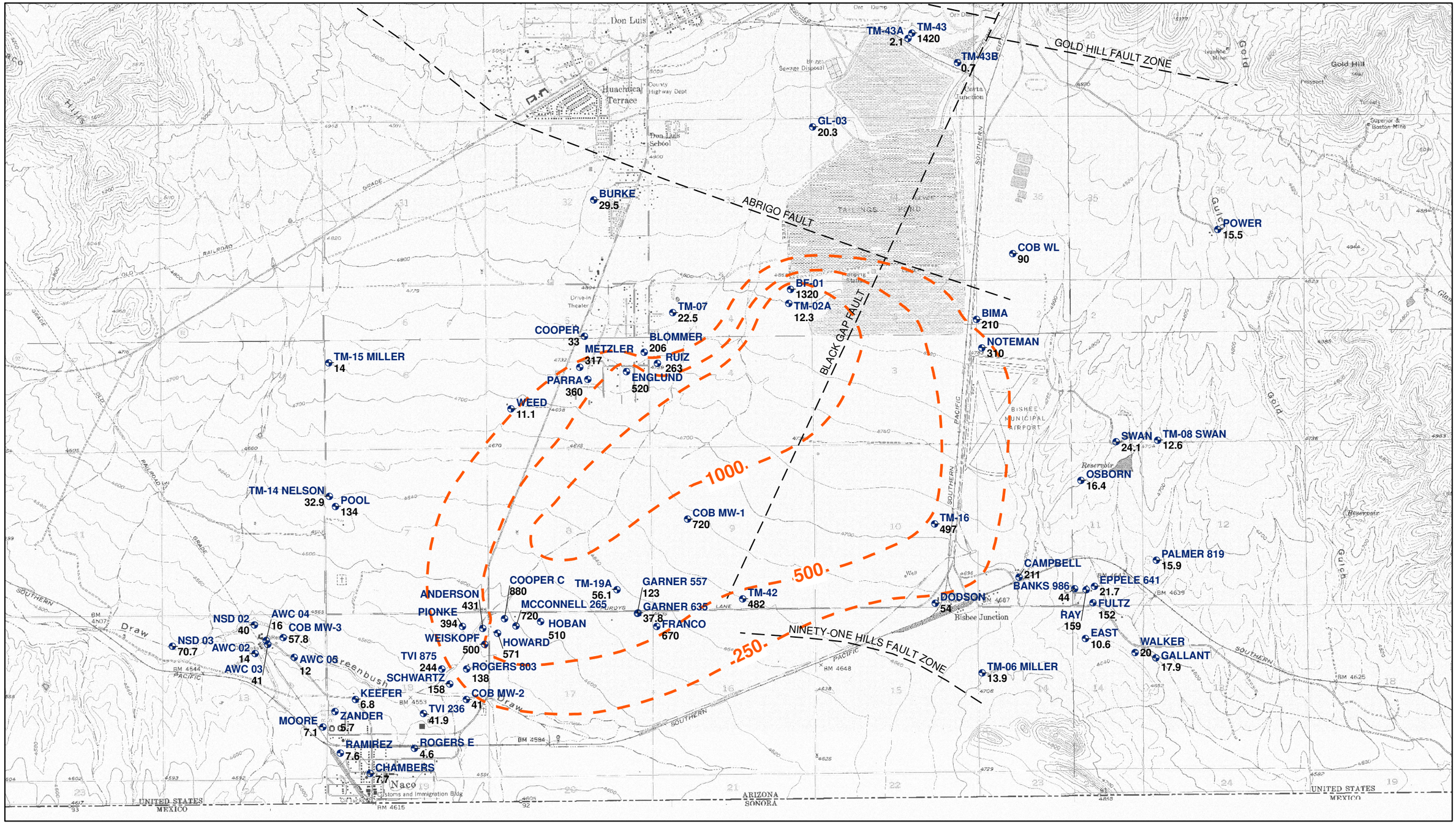


Legend

TM-19A — Well ID

56.1 — Sulfate Concentration (mg/L)

250 — Sulfate Isoline (mg/L)

Faults

1 inch equals 3,000 feet

0 1000 2000 3000

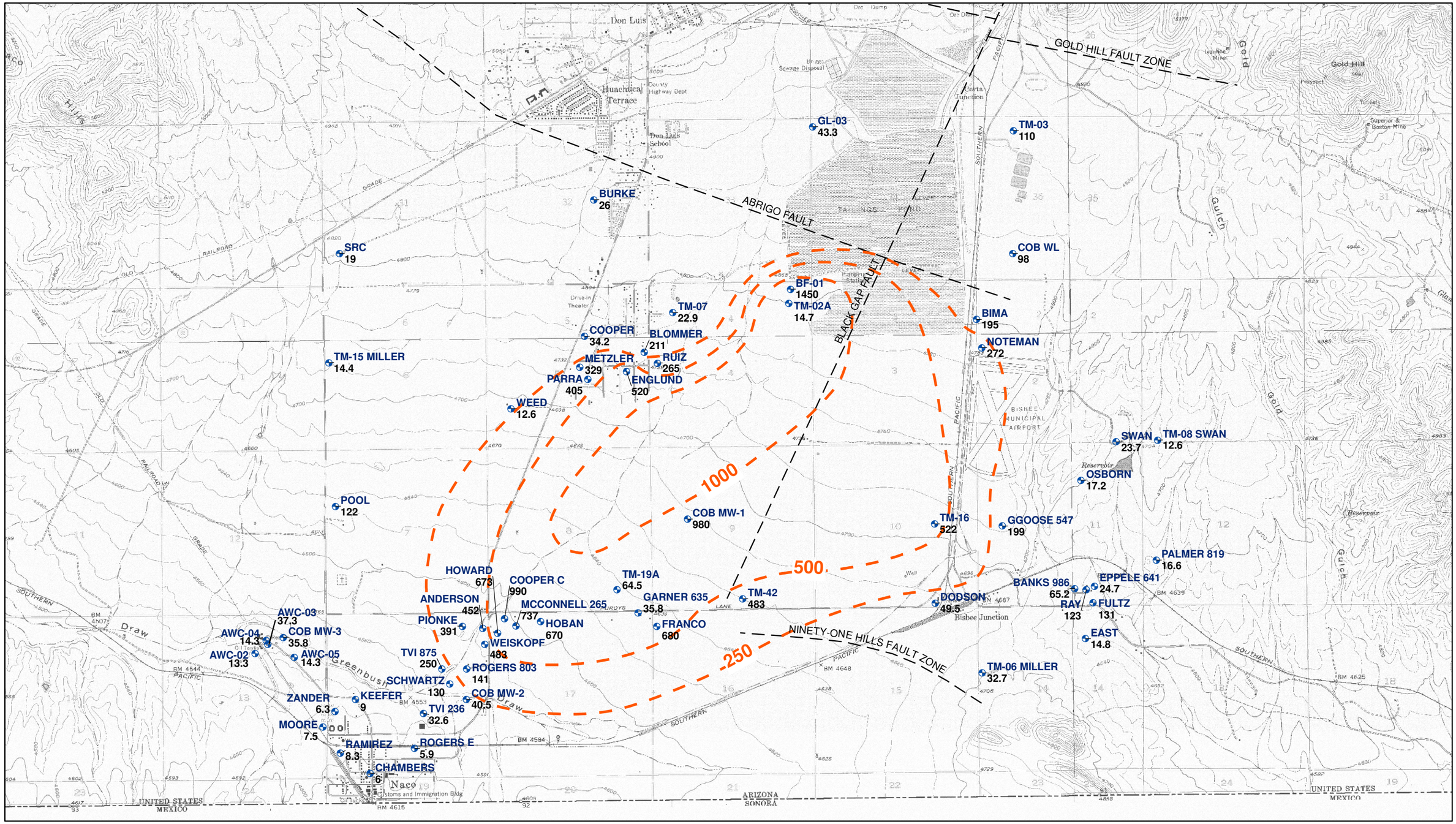
PROJECTION:
UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

SULFATE CONCENTRATIONS FOR FIRST QUARTER 2008

Approved	Date	Author	Date	File Name	Figure
DRS	07/28/08	RAM	07/28/08	8720075G	2



Legend

TM-19A — Well ID

56.1 — Sulfate Concentration (mg/L)

250 — Sulfate Isoline (mg/L)

— — — Faults

1 inch equals 3,000 feet

0 1000 2000 3000

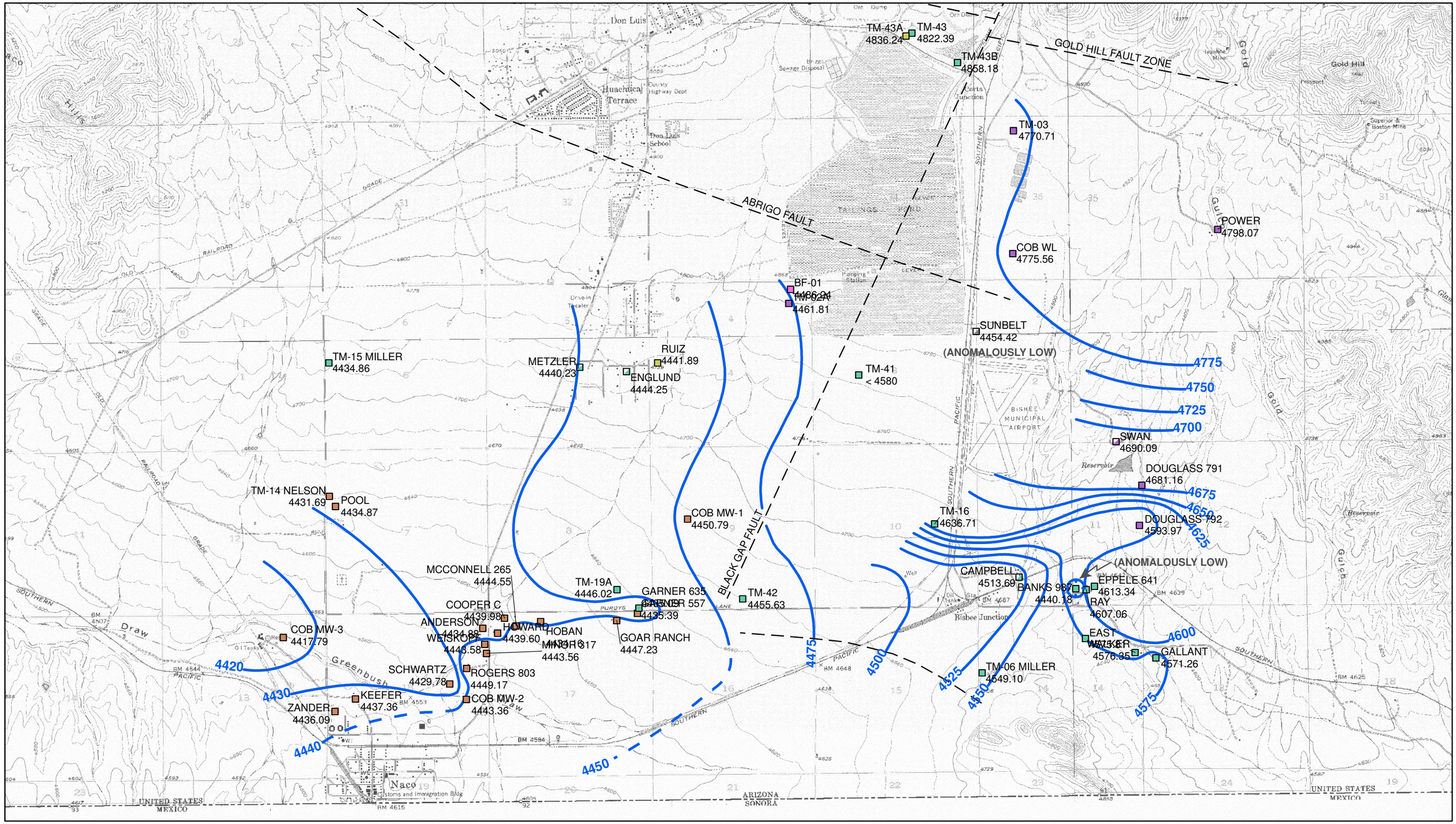
PROJECTION:
UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

SULFATE CONCENTRATIONS FOR SECOND QUARTER 2008

Approved	Date	Author	Date	File Name	Figure
DRS	07/28/08	RAM	07/28/08	8720081G	3



Legend

- ZANDER 4436.09 Groundwater Elevation (ft amsl)
- Faults
- Groundwater Contours

Screened Formation
- Basin Fill
- Morita Formation
- Glance Conglomerate
- Morita Formation- Estimated
- Glance Conglomerate-Estimated
- Basin Fill and Morita Formation
- Basin Fill, Morita Formation and Glance Conglomerate
- Morita Formation and Glance Conglomerate- Estimated

1 inch equals 3,000 feet

0 1000 2000 3000

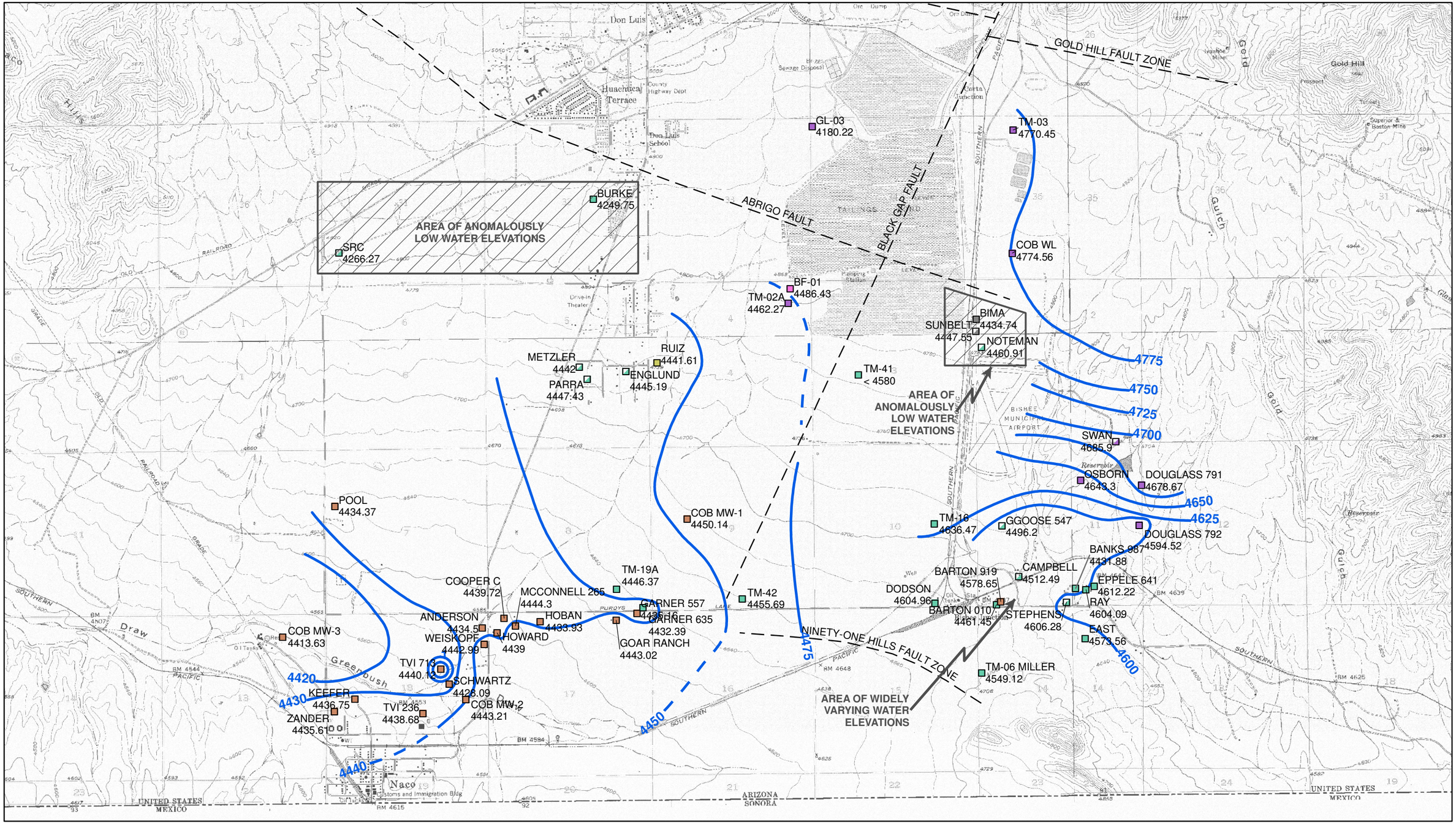
PROJECTION: UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

GROUNDWATER ELEVATIONS FOR FIRST QUARTER 2008

Approved	Date	Author	Date	File Name	Figure
DRS	07/15/08	RAM	07/15/08	8720077G	4



Legend

ZANDER 4435.61 Well ID Groundwater Elevation (ft amsl)

Faults

Groundwater Contours

Screened Formation

- Basin Fill
- Morita Formation
- Glance Conglomerate
- Morita Formation- Estimated
- Glance Conglomerate-Estimated
- Basin Fill and Morita Formation
- Basin Fill, Morita Formation and Glance Conglomerate
- Morita Formation and Glance Conglomerate- Estimated

0 1000 2000 3000

PROJECTION: UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

GROUNDWATER ELEVATIONS FOR SECOND QUARTER 2008

Approved	Date	Author	Date	File Name	Figure
DRS	07/25/08	RAM	07/25/08	8720082G	5

APPENDIX A

FIRST QUARTER 2008
DATA VERIFICATION REPORT

APPENDIX A

FIRST QUARTER 2008
DATA VERIFICATION REPORT

Prepared for:

FREEPORT-MCMORAN
COPPER QUEEN BRANCH
36 West Highway 92
Bisbee, Arizona 85603

Prepared by:

HYDRO GEO CHEM, INC.
51 West Wetmore Road
Tucson, Arizona 85705
(520) 293-1500

July 30, 2008

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A.2 Relative Percent Difference (RPD) of Duplicate Field Samples

1. INTRODUCTION

This report summarizes the data verification review of groundwater samples collected and analyzed during the first quarter 2008 (Q1-2008) by Hydro Geo Chem, Inc. (HGC) pursuant to Mitigation Order on Consent Docket No. P-121-07 (MO) (ADEQ, 2007). HGC collected groundwater samples from wells identified in Table 1 of the Work Plan (HGC, 2008a) and groundwater samples collected as part of the well inventory investigation (HGC, 2008b). All analytical results for groundwater samples collected for this project during the first quarter of 2008 were provided to HGC by Arizona Water Company (AWC), Naco Sanitary District (NSD), or ACZ Laboratories, Inc. (ACZ) for preparation of the First and Second Quarters 2008 Groundwater Monitoring Report. Data verification for samples collected and analyzed by others entities and reported by HGC is not provided in this report.

Quality assurance (QA) and quality control (QC) procedures are specified in the *Quality Assurance Project Plan for Aquifer Characterization Plan* (QAPP) (Appendix F of HGC, 2008a) for field sampling, chain-of-custody (COC) documentation, laboratory analysis, and reporting. This report reviews field sampling for samples collected by HGC. Additionally, sample handling and laboratory QA/QC data are evaluated according to the data quality indicators (DQIs) given in the QAPP.

Appendix D of the main text of this report contains laboratory reports for Q1-2008 samples collected by HGC including COC forms, laboratory correspondence, QC summaries, data qualifiers, and any case narratives. The Q1-2008 analytical results for all 71 samples

collected by HGC are contained in 36 reports having the ACZ Project numbers identified in Table A.1.

The results of the internal QA/QC tests performed by ACZ are presented with the laboratory reports included in Appendix D. Based on the results of surrogate spike recoveries, matrix spike/recovery and matrix spike duplicate tests, ACZ did not advise HGC of any modifications that should be made regarding the usability and data validation status of the laboratory test results.

2. HGC FIELD OPERATIONS

Field operations for this project consisted of the following for all monitoring wells sampled by HGC:

- Static water level measurement,
- Well purging,
- Collection of water quality field parameters (pH, specific conductance [SC] in microsiemens per centimeter [µS/cm], and temperature in degrees Celsius [°C]),
- Collection of groundwater samples for water quality analysis,
- Collection of groundwater quality assurance and quality control samples, and
- Equipment decontamination.

Documentation of the field activities was evaluated for quality assurance and has been deemed to have met the documentation requirements stated in the QAPP.

2.1 Water Level Monitoring

Static water level measurements were attempted at each well that was sampled and at all wells where water level monitoring was conducted by HGC. Water levels were measured while the well pump was off however, it was not always possible to ascertain from the well owners how long the pump had been off. Before measuring the water level at each well, the battery on the water level indicator was checked and the sensitivity level was adjusted, if necessary. Each measurement was collected and verified by measuring the depth to water multiple times in order to obtain a consistent reading and accurate measurement.

2.2 Groundwater Sampling

During this monitoring period groundwater samples were collected from wells designated for sampling in the semi-annual regional monitoring schedule and well inventory tasks of the Work Plan. More detailed information regarding the wells sampled for water quality and water level measurements is listed in Table 1 of the main text.

2.2.1 Pre-Sampling Field Activities

On each day of sampling, the pH[1] and SC[2] probes were calibrated. In addition, the water level indicator was checked for a signal, which indicates a working meter and sufficient battery strength. On each day where sampling extended for more than half a day, a mid-day calibration check was performed on the pH and SC probes to ensure their accurate measurement.

In addition to calibrating the instruments each day, measures were taken to 1) properly decontaminate field equipment, 2) ensure the appropriate storage and transport temperature of the samples, and 3) document activities related to the collection of groundwater samples as part of this project. These objectives were met by 1) replenishing or obtaining supplies of deionized water and ice daily, 2) use of the proper preservative and sample collection containers, 3) properly packing the samples on ice during field activities, 4) using de-ionized water to properly decontaminate field equipment prior to the start of sampling each day and after sampling at each

[1] Field pH meter was calibrated using a two point calibration and pH buffers 4 and 7
[2] Field SC meter was calibrated using a standard stock solution of 1413 µS/cm

well, and 5) obtaining the appropriate field notebook in order to document field activities related to the groundwater monitoring program.

2.2.2 Well Purging, Field Measurements, and Sample Collection

Ideally, three wetted casing volumes were purged from each well prior to sampling. However, when three casing volumes could not be purged, this information was noted on the groundwater sampling form (Appendix E) at each well for which this was the case. Purge water was discharged to the ground surface.

Field measurements were collected at varying intervals during well purging at each well where a water quality sample was collected. Field parameters were monitored until a consistent measurement was obtained.

During this monitoring period, filtered and unfiltered groundwater samples were collected for analysis from 65 plume monitor wells. Groundwater for filtered and unfiltered samples was collected using a single container to collect an initial sample for separation into bottles for filtered and unfiltered analyses. After collecting the initial sample, the unfiltered sample was collected by pouring a 500-milliliter (mL) aliquot of the initial sample into a non-preserved bottle for alkalinity analysis. Then each filtered sample was collected by filtering the remaining portion of the initial sample into a 250 mL bottle using a clean filtration apparatus and one unused, disposable 0.45-micron filter. All bottles were provided by ACZ. Bottles were

checked for the correct preservative and maintained in a clean and secure work area, until used in the field.

2.2.3 Post-Sampling Field Activities

Post sampling field activities consisted of equipment decontamination, sample storage, and sample shipping. Field equipment that comes into contact with the sample was decontaminated using a small amount of Alconox® detergent and de-ionized water. After washing, the equipment was rinsed thoroughly with de-ionized water.

After sample collection, samples from each well were placed into a plastic bag and stored on ice until they could be packed securely for shipping to ACZ. In addition, each set of samples collected from each well was individually bagged (without ice) to prevent the label from getting soaked with water and rubbing off or becoming illegible.

3. SAMPLE HANDLING

All samples collected by HGC were shipped to ACZ for analysis. COC documentation accompanied all samples submitted and included the sample name, collection date and time. COCs contained in laboratory reports included the date and time the samples were received by ACZ. As noted on the analytical data reports from ACZ, all of the sample bottles were received intact, properly preserved, and in good condition.

The temperatures of the following five shipping containers (identified by their laboratory login numbers) exceeded 4 °C upon receipt at the laboratory.

ACZ Project ID	Sample Collection Date	Sample Relinquished Date	Sample Received Date by ACZ	Temperature Upon Receipt (°C)
L67668	02/13/08	02/13/08	02/14/08	6.8
L67713	02/15/08	02/15/08	02/16/08	4.3
L67714	02/15/08	02/15/08	02/16/08	4.3
L67837	02/22/08	02/22/08	02/25/08	12.1
L67843	02/25/08	02/25/08	02/26/08	5.5

As noted in the above table, the samples were shipped the same day of sample collection, and the time between sample collection and receipt of samples by ACZ ranged from one to three days. This temperature exceedance is not considered to have a significant impact on the analytical results pertaining to the sulfate analysis for these samples.

4. LABORATORY QUALITY CONTROL

As specified in the QAPP, laboratory QC was maintained for all analysis through proper licensure, the use of approved analytical methods, QC measurements, appropriate turn-around-time for analysis (timeliness), method detection limits (MDLs), and practical quantitation limits (PQLs). Each of these controls is discussed in the following subsections.

The review of laboratory QC included a review to identify any qualified data and an assessment to determine their significance. Additionally, the laboratory QC summaries were reviewed to verify that results met QA criteria.

4.1 Licensure

ACZ is licensed with the Arizona Department of Health Services (license number AZ0102) and is accredited in accordance with the National Environmental Laboratory Accreditation Conference.

4.2 Analytical Methods

The following list identifies the approved U.S. Environmental Protection Agency (EPA) methods that meet the requirements stated in section 5.3 of the QAPP regarding target methods and target MDLs:

- EPA 375.4 (Turbidimetric): sulfate
- EPA 300.0 (Ion-Chromatography [IC]): sulfate, chloride, fluoride
- EPA 200.7 (Inductively Coupled Plasma [ICP]): calcium, magnesium, potassium, sodium
- EPA 353.2 (Automated Cadmium Reduction [ACR]): nitrate/nitrite
- SM2320B (Titration): alkalinity
- EPA 160.1 (Gravimetric): total dissolved solids
- SM4500 SO4-D (Gravimetric): sulfate

Two of these methods, IC (EPA 300.0) and ICP (EPA 200.7), involve direct injection of the sample into the analytical instrument, which does not require the analysis of preparation blanks. The other methods listed are classical wet chemistry techniques that require the use of preparation blanks under the ACZ quality assurance plan and the QAPP.

4.3 Method Detection Limits (MDLs) and Practical Quantification Limits (PQLs)

The MDLs and PQLs of the analytical methods used by ACZ are shown in the following table. The MDLs for analyses of samples were equal to or less than the target MDLs identified in the QAPP.

Method	MDL (mg/L)	PQL (mg/L)	Target MDL[1] (mg/L)
EPA 300.0 (SO4)	0.5	3	10
EPA 375.4	1	5	10
SM4500 SO4-D	10	50	10
EPA 200.7 (Ca and Mg)	0.2	1	0.2
EPA 200.7 (K and Na)	0.3	2	0.3
SM2320B	2	20	2
EPA 300.0 (Cl)	0.5	5	1
EPA 300.0 (F)	0.1	0.5	0.1
EPA 352.2	0.02	0.1	0.02
EPA 160.1	10	20	10

mglL = milligrams per liter
[1] Target MDL from Table F.2 of QAPP
SM = Standard Method

4.4 Timeliness

Holding times were derived from the EPA methods utilized and were calculated beginning from the time of sample collection. The majority of samples submitted to the laboratory were analyzed within their recommended method specific holding time except for nitrate/nitrite as N and nitrite analyses in the following: Samples collected on February 12, 2008 (PARRA and GALLANT), were qualified with an "HE" flag, indicating analysis performed past the holding time because sample was received with less than half the holding time remaining. Samples collected on February 22, 2008 (COB MW-1, COB MW-2, COB WL, DUP022208, and FB022208) were qualified with an "H3" flag, indicating that the samples were received and analyzed past holding time. One sample collected on February 14, 2008 (WEED) was qualified with "H1" and "HC" flags, indicating that the sample and confirmatory analysis was performed past holding times. Samples (ROGERS 803, TVI 236, and COOPER C), collected on March 20,

were 2008 were qualified with a "HC" flag, indicating that the initial analysis for TDS was within the holding time. However, reanalysis was past holding time for both nitrate/nitrite as N and nitrite is 48 hours from collection to analysis. No data were rejected on the basis of the holding time exceedances and were accepted as usable.

4.5 Quality Control Measurements

The following QC samples were prepared and analyzed:

- Preparation blanks, calibration blanks, and calibration verification standards
- Analytical spikes and analytical spike duplicates
- Laboratory control samples
- Laboratory duplicate samples
- Field blank samples

4.5.1 Preparation Blanks, Calibration Blanks, and Calibration Verification Standards

Preparation blanks were run with each group of samples submitted for alkalinity and TDS analysis. All preparation blanks were prepared from analyte-free water and treated as routine samples. Analytical results of all of the preparation blanks showed that no target analytes were detected at the indicated MDL.

Results from the analyses of the initial calibration blanks and initial calibration verification standards conducted by EPA Methods 300.0, 375.4, 200.7, and 353.2 also were reviewed. The results of each initial calibration blank analyzed showed no detections of the target analyte. All analytical results for the initial calibration verification standards and laboratory fortified blanks that were analyzed showed percent recoveries that were within the acceptance criteria specified by the ACZ QA plan and the QAPP.

4.5.2 Analytical Spikes and Analytical Spike Duplicates

Analytical spike and spike duplicate samples were analyzed for the following EPA Methods: 300.0, 375.4, 200.7, and 353.2. Spike recoveries for most analytes were within the range of acceptability based on the acceptance criteria set by ACZ. Instances in which analytical spike recoveries were either high, low, or unusable were qualified with an "M1", "M2", or "M3" flag, respectively. In each case the method control sample recoveries were acceptable. Although some analytical spikes and analytical spike duplicates were outside the acceptance limits and qualified with an "MA" flag, these recoveries are not considered to affect the overall accuracy of the dataset because the Relative Percent Difference (RPD) was within the acceptance limits.

4.5.3 Laboratory Control Samples

Laboratory control samples were run for each group of samples submitted for alkalinity and total dissolved solids. Recoveries for all laboratory control samples were within the acceptance criteria specified by ACZ.

4.5.4 Laboratory Duplicate Samples

Analyses of laboratory duplicate samples were also reviewed as part of this quality data verification report. Field duplicate samples are discussed in Section 5.1. The RPDs for most laboratory duplicate samples were within 20 percent, which is the tolerance range set by the laboratory. In many instances, the data were qualified with an "RA" flag indicating that the RPD was not used for data validation because the sample concentration was less than ten times the MDL, which is too low for accurate evaluation according to ACZ. In all cases where the RPD could be calculated, the results met QA criteria and demonstrate an appropriate level of precision in laboratory analysis of these samples.

4.5.5 Field Blank Samples

During the first quarter of 2008, three field blank samples were collected using unfiltered deionized water (FB020808, FB022208, and FB030608). Samples were collected in the field and submitted along with other samples to evaluate the potential for contaminant introduction

under field conditions. As required by Section 4.2.1.5 of the QAPP, a minimum of one field blank sample was collected for every twenty samples. Analytical results from all field blank samples submitted showed no detections. Revision 1 of the Work Plan, submitted on July 3, 2008 now includes the collection of one equipment blank sample for every 20 samples from decontaminated equipment.

5. DATA QUALITY INDICATORS

The QAPP provides several DQIs for assessing the overall quality of the data. These DQIs include the following:

- Precision
- Bias
- Accuracy
- Representativeness
- Comparability
- Completeness
- Sensitivity

Each of these DQIs is discussed below in relation to the Q1-2008 groundwater sampling and analysis conducted by HGC.

5.1 Precision

Precision indicates how well a measurement can be reproduced. Precision is quantified by calculating the RPD between duplicate samples. For the purposes of QA/QC, precision was quantified by calculating the RPDs between duplicates among the following groups of duplicate samples:

- Laboratory duplicate samples
- Field duplicate samples

As discussed in Sections 4.5.2 and 4.5.4, there were no exceedances of RPD QA criteria for any laboratory duplicates. During this monitoring period, a total of three field duplicate samples (DUP020808, DUP022208, and DUP030608) were collected by HGC for filtered and

unfiltered analysis. The collection of three duplicate samples meets the QA/QC goal of collecting one duplicate sample for every twenty groundwater samples collected, as stated in Section 4.2.1.5 of the QAPP.

Results for the three duplicate field samples collected are provided in the Table A.2. The range of RPD values was between zero and 10.42 percent all within the 20 percent acceptance criteria for field duplicates, as stated in Section 3.3.1 of the QAPP. Overall, the DQI for precision is deemed to be met.

5.2 Bias

Bias is a systematic distortion of measurements causing consistent errors in one direction. Bias is managed in this data set by the consistent application of standardized sample collection and analysis procedures.

5.3 Accuracy

Accuracy is a measure of the agreement of a measurement to a known value and is measured using the recoveries from laboratory control samples. As discussed in Sections 4.5.1, 4.5.2, and 4.5.3 respectively, there were no significant exceedances of the recovery QA criteria for any of the calibration standards, analytical spikes, or laboratory control standards. Based on

this information, the overall accuracy of the data is judged sufficient for the purpose of aquifer characterization.

5.4 Representativeness

All samples were taken from locations specified in the Work Plan (HGC, 2008a) using sampling procedures specified in the QAPP. Therefore, the samples are judged to provide a good representation of groundwater quality at the sampled locations. The analytical data are judged to be representative of groundwater conditions because the analyses used standard procedures and methods that met QA/QC guidelines of the QAPP.

5.5 Comparability

All samples were collected using standardized procedures (HGC, 2008a) and were analyzed by ACZ using standardized methods. Insofar as standardized sample collection and analytical methods are adhered to, the sample results should be comparable.

5.6 Completeness

All samples collected were subsequently analyzed and reported by ACZ are judged to satisfy the QA/QC criteria for this project and are deemed usable for aquifer characterization. Thus, the completeness of analytical results is 100 percent.

5.7 Sensitivity

The analytical methods used to analyze the samples meet the MDL requirements specified in Table F.2 of the QAPP. Therefore, the analytical sensitivity is considered acceptable for use in aquifer characterization.

5.8 Auxiliary Data Quality Indicators

Auxiliary DQIs are indicators that, although not mentioned in the QAPP, are useful for assessing the reliability of the laboratory analyses. These auxiliary DQIs include the laboratory measured cation-anion balance and the ratio between measured and calculated TDS. Each of these auxiliary indicators is discussed below.

5.8.1 Cation-Anion Balance

The concentration in milliequivalents per liter (meq/L) of cations and of anions in groundwater should theoretically be approximately the same. Therefore, the balance between anions and cations is one measure of the overall quality of the laboratory measurements. The cation-anion balance can be expressed as the difference between the milliequivalents of cations and the milliequivalents of anions divided by the sum of the milliequivalents of both cations and anions. When computed in this manner, a cation-anion balance of 5 percent is considered good (Scott Habermahl, ACZ project manager, personal communication). The cation-anion balance

for all samples is presented in Table 2 and was below 5 percent for all samples except for the samples listed below. Overall, the cation-anion balance for all samples does not indicate any analytical errors. Cation-anion balances outside of 5 percent may indicate the presence of other ions not included in the analysis and ion balance.

Well and Sample ID	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
GARNER 635	4.9	5.5	5.8
PARRA	12.3	14.5	8.2
TM-06 MILLER	4.9	6.1	10.9
TM-07	3.7	4.7	11.9
TM-19A	4.3	5.4	11.3

meq/L = milliequivalents per liter

5.8.2 TDS Ratio

The ratio between the measured and computed concentration of TDS is also an indicator of the overall quality of the sample analyses. A TDS ratio between 0.8 and 1.2 is considered good (Scott Habermahl, ACZ project manager, personal communication). The ratios for all samples are presented in Table 2 and fall inside the acceptance criteria specified by ACZ. Overall, the low TDS ratios for all samples indicate no apparent analytical errors.

6. REFERENCES

Arizona Department of Environmental Quality. 2007. Mitigation Order on Consent, Docket No. P-121-07, In the Matter of: Phelps Dodge Corporation, Copper Queen Branch, located at 36 West Highway 92, Bisbee, Arizona, ADEQ Identification Number 100531. November 14, 2007.

Hydro Geo Chem, Inc. (HGC). 2008a. Revision 1, Work Plan to Characterize and Mitigate Sulfate with Respect to Drinking Water Supplies in the Vicinity of the Concentrator Tailing Storage Area, Cochise County, Arizona. July 3, 2008.

HGC. 2008b. Well Inventory Report, Task 1 of Aquifer Characterization Plan for Mitigation Order on Consent No. P-121-07, Cochise County, Arizona. July 28, 2008.

TABLES

TABLE A.1
ACZ PROJECT ID AND ASSOCIATED WELLS

ACZ Project ID	Wells Reported
Number of wells sampled: 62 *Number of duplicate samples collected: 3* *Number of field blank samples collected: 3*	
L67529	ROGERS E, RAMIREZ, ZANDER
L67530	GARNER 635
L67560	RUIZ, BLOMMER, NOTEMAN, CAMPBELL
L67573	KEEFER, FRANCO, PIONKE
L67574	BIMA
L67599	ROGERS 803
L67600	BURKE
L67605	EAST, TM-14 NELSON, DUP020808, FB020808
L67606	SCHWARTZ
L67648	ENGLUND
L67649	POWER, GALLANT, PARRA
L67668	WALKER, SWAN, TM-08 SWAN
L67684	WEED
L67685	COOPER, PALMER 819
L67713	RAY
L67714	WEISKOPF
L67789	DODSON
L67790	MOORE, MCCONNELL 265, POOL
L67812	TVI 875, GARNER 557
L67817	TVI 236
L67837	COB MW-1, COB MW-2, COB W L, DUP022208, FB022208
L67843	OSBORN
L67881	TM-06 MILLER, TM-15 MILLER
L67882	BANKS 986, FULTZ, HOBAN
L67911	COB MW-3
L67953	TM-43, TM43A, TM-43B
L67989	COOPER C
L67990	BF-01, GL-03, TM-02A
L68019	TM-16, TM-42
L68020	HOWARD, METZLER
L68038	TM-19A, TM-07
L68039	CHAMBERS, DUP030608, FB030608
L68145	EPPELE 641
L68296	ROGERS 803, TVI 236, COOPER C [All Extended Parameters]
L68297	ANDERSON

TABLE A.2
RELATIVE PERCENT DIFFERENCE (RPD) OF DUPLICATE FIELD SAMPLES

Well and Sample ID	TM-14 NELSON			COB MW-2			CHAMBERS		
ACZ Project ID	L67605	L67605		L67837	L67837		L68039	L68039	
Parameter	Field Sample (mg/L)	Duplicate (mg/L)	RPD (%)	Field Sample (mg/L)	Duplicate (mg/L)	RPD (%)	Field Sample (mg/L)	Duplicate (mg/L)	RPD (%)
Calcium	56.1	55.4	1.26	66.4	65.7	1.06	NA	NA	*
Magnesium	10.0	10.0	0.00	9	8.9	1.12	NA	NA	*
Potassium	2.8	2.9	3.51	2.1	2.1	0.00	NA	NA	*
Sodium	23.6	23.7	0.42	25.5	25.2	1.18	NA	NA	*
Bicarbonate as CaO_3	166	165	0.60	156	156	0.00	NA	NA	*
Carbonate as $CaCO_3$	<2	<2	*	12	12	0.00	NA	NA	*
Hydroxide as $CaCO_3$	<2	<2	*	<2	<2	*	NA	NA	*
Total Alkalinity	166	165	0.60	168	169	0.59	NA	NA	*
Sum of Anions	4.5	4.4	2.25	5.2	5.2	0.00	NA	NA	*
Sum of Cations	4.7	4.7	0.00	5.2	5.1	1.94	NA	NA	*
Chloride	12.5	12.6	0.80	19.4	19.3	0.52	NA	NA	*
Fluoride	0.3	0.3	0.00	0.3	0.3	0.00	NA	NA	*
Nitrate	1.82	1.88	3.24	6.49	6.53	0.61	NA	NA	*
Nitrite	<0.01	<0.01	*	<0.01	<0.01	*	NA	NA	*
Nitrate/Nitrite	1.82	2.02	10.42	6.49	6.53	0.61	NA	NA	*
TDS	250	250	0.00	340	350	2.90	NA	NA	*
TDS calculated	246	245	0.41	298	297	0.34	NA	NA	*
TDS Ratio	1.02	1.02	0.00	1.14	1.11	2.67	NA	NA	*
Sulfate, dissolved	32.9	32.9	0.00	41	41	0.00	7.7	7.7	0.00

ACZ = ACZ Laboratories, Inc.
mg/L = milligrams per liter
* RPD was not used for data validation; sample concentration too low for accurate evaluation (<10x MDL)
NA = Not Analyzed

APPENDIX B

SECOND QUARTER 2008
DATA VERIFICATION REPORT

APPENDIX B

SECOND QUARTER 2008
DATA VERIFICATION REPORT

Prepared for:

FREEPORT-MCMORAN
COPPER QUEEN BRANCH
36 West Highway 92
Bisbee, Arizona 85603

Prepared by:

HYDRO GEO CHEM, INC.
51 West Wetmore Road
Tucson, Arizona 85705
(520) 293-1500

July 30, 2008

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B.2 Arizona Land Specialists Well Survey Report

1. INTRODUCTION

This report summarizes the data verification review of groundwater samples collected and analyzed during the second quarter 2008 (Q2-2008) by Hydro Geo Chem, Inc. (HGC) pursuant to Mitigation Order on Consent Docket No. P-121-07 (MO) (ADEQ, 2007). HGC collected groundwater samples from wells identified in Table 1 of the Work Plan (HGC, 2008a) and groundwater samples collected as part of the well inventory investigation (HGC, 2008b). All analytical results for groundwater samples collected for this project during the second quarter of 2008 were provided to HGC by ACZ Laboratories, Inc. (ACZ) for preparation of the First and Second Quarters 2008 Groundwater Monitoring Report.

Quality assurance (QA) and quality control (QC) procedures are specified in the *Quality Assurance Project Plan for Aquifer Characterization Plan* (QAPP) (Appendix F of HGC, 2008a) for field sampling, chain-of-custody (COC) documentation, laboratory analysis, and reporting. This report reviews field sampling for samples collected by HGC. Additionally, sample handling and laboratory QA/QC data are evaluated according to the data quality indicators (DQIs) given in the QAPP.

Appendix D of the main text of this report contains laboratory reports for Q2-2008 samples collected by HGC including COC forms, laboratory correspondence, QC summaries, data qualifiers, and any case narratives. The Q2-2008 analytical results for all 63 samples collected by HGC and are contained in 10 reports having the ACZ Project numbers identified in Table B.1.

The results of the internal QA/QC tests performed by ACZ are presented with the laboratory reports included in Appendix C. Based on the results of surrogate spike recoveries, matrix spike/recovery and matrix spike duplicate tests, ACZ did not advise HGC of any modifications that should be made regarding the usability and data validation status of the laboratory test results.

2. HGC FIELD OPERATIONS

Field operations for this project consisted of the following for all monitoring wells sampled by HGC:

- Static water level measurement,
- Well purging,
- Collection of water quality field parameters (pH, specific conductance [SC] in microsiemens per centimeter [µS/cm], and temperature in degrees Celsius [°C]),
- Collection of groundwater samples for water quality analysis,
- Collection of groundwater quality assurance and quality control samples, and
- Equipment decontamination.

Documentation of field activities was evaluated for quality assurance and has been deemed to have met the documentation requirements stated in the QAPP.

2.1 Water Level Monitoring

Static water level measurements were attempted at each well that was sampled and at all wells where water level monitoring was conducted by HGC. Water levels were measured while the well pump was off however, it was not always possible to ascertain from the well owners how long the pump had been off. Before measuring the water level at each well, the battery on the water level indicator was checked and the sensitivity level was adjusted, if necessary. Each measurement was collected and verified by measuring the depth to water multiple times in order to obtain a consistent reading and accurate measurement.

2.2 Groundwater Sampling

During this monitoring period groundwater samples were collected from wells designated for sampling in the quarterly monitoring schedule of the Work Plan. In addition, wells identified during the well inventory investigation (HGC, 2008b) were sampled. More detailed information regarding the wells sampled for water quality and water level measurements is listed in Table 1 of the main text.

2.2.1 Pre-Sampling Field Activities

On each day of sampling, the pH[1] and SC[2] probes were calibrated. In addition, the water level indicator was checked for a signal, which indicates a working meter and sufficient battery strength. On each day where sampling extended for more than half a day, a mid-day calibration check was performed on the pH and SC probes to ensure their accurate measurement.

In addition to calibrating the instruments each day, measures were taken to 1) properly decontaminate field equipment, 2) ensure the appropriate storage and transport temperature of the samples, and 3) document activities related to the collection of groundwater samples as part of this project. These objectives were met by 1) replenishing or obtaining supplies of deionized water and ice daily, 2) use of the proper preservative and sample collection containers, 3) properly packing the samples on ice during field activities, 4) using de-ionized water to properly

[1] Field pH meter was calibrated using a two point calibration and pH buffers 4 and 7
[2] Field SC meter was calibrated using a standard stock solution of 1413 µS/cm

decontaminate field equipment prior to the start of sampling each day and after sampling at each well, and 5) obtaining the appropriate field notebook in order to document field activities related to the groundwater monitoring program.

2.2.2 Well Purging, Field Measurements, and Sample Collection

Ideally, three wetted casing volumes were purged from each well prior to sampling. However, when three casing volumes could not be purged, this information was noted on the groundwater sampling form (Appendix E) at each well for which this was the case. Purge water was discharged to the ground surface.

Field measurements were collected at varying intervals during well purging at each well where a water quality sample was collected. Field parameters were monitored until a consistent measurement was obtained.

During this monitoring period, filtered groundwater samples were collected for 57 plume monitor wells. Groundwater samples were collected by filtering the sample using a clean filtration apparatus and one unused, disposable 0.45-micron filter. All bottles were provided by ACZ. Bottles were checked for the correct preservative and maintained in a clean and secure work area, until used in the field.

2.2.3 Post-Sampling Field Activities

Post sampling field activities consisted of equipment decontamination, sample storage, and sample shipping. Field equipment that comes into contact with the sample was decontaminated using a small amount of Alconox® detergent and de-ionized water. After washing, the equipment was rinsed thoroughly with de-ionized water.

After sample collection, samples from each well were placed into a plastic bag and stored on ice until they could be packed securely for shipping to ACZ. In addition, each set of samples collected from each well was individually bagged (without ice) to prevent the label from getting soaked with water and rubbing off or becoming illegible.

2.3 Well Surveys

During the second quarter 2008, three measuring point elevation surveys were completed for wells that had a measurable water level. The initial well survey was conducted by Gilbert Technical Services, Inc. (GTS) and Arizona Land Specialists, Inc. (ALS) conducted the two following surveys. These data are shown in Tables 2 and 3 of the main report. Copies of the survey reports completed by GTS and ALS are included as Appendix B.1 and B.2, respectively.

3. SAMPLE HANDLING

All samples collected by HGC were shipped to ACZ for analysis. COC documentation accompanied all samples submitted and included the sample name, collection date and time. COCs contained in laboratory reports included the date and time the samples were received by ACZ. As noted on the analytical data reports from ACZ, all of the sample bottles were received intact, properly preserved, and in good condition.

The temperatures of the following two shipping containers (identified by their laboratory login numbers) exceeded 4 °C upon receipt at the laboratory.

ACZ Project ID	Sample Collection Date	Sample Relinquished Date	Sample Received Date by ACZ	Temperature Upon Receipt (°C)
L68893	04/23/08	04/24/08	04/25/08	4.6
L69570	05/29/08	05/29/08	05/30/08	5.7

As noted in the above table, the samples were shipped within one day of collection, and the time between sample collection and receipt of samples by ACZ ranged from one to two days. This temperature exceedance is not considered to have a significant impact on the analytical results pertaining to the sulfate analysis for these samples.

4. LABORATORY QUALITY CONTROL

As specified in the QAPP, laboratory QC was maintained for all analysis through proper licensure, the use of approved analytical methods, QC measurements, appropriate turn-around-time for analysis (timeliness), method detection limits (MDLs), and practical quantitation limits (PQLs). Each of these controls is discussed in the following subsections.

The review of laboratory QC included a review to identify any qualified data and an assessment to determine their significance. Additionally, the laboratory QC summaries were reviewed to verify that results met QA criteria.

4.1 Licensure

ACZ is licensed with the Arizona Department of Health Services (license number AZ0102) and is accredited in accordance with the National Environmental Laboratory Accreditation Conference.

4.2 Analytical Methods

The following list identifies the methods used for sulfate analysis during this monitoring period:

- U.S. Environmental Protection Agency (EPA) 300.0 (Ion-Chromatography)
- EPA 375.5 (Turbidimetric)

4.3 Method Detection Limits (MDLs) and Practical Quantification Limits (PQLs)

The MDLs and PQLs of the analytical methods used by ACZ are shown in the following table. The MDLs for analyses of samples were equal to or less than the target MDLs identified in the QAPP.

Method	MDL (mg/L)	PQL (mg/L)	Target MDL[1] (mg/L)
EPA 300.0	0.5	3	10
EPA 375.4	1	5	10

mg/L = milligrams per liter
[1] Target MDL from Table F.2 of QAPP

4.4 Timeliness

Holding time was derived from the EPA methods utilized and were calculated beginning from the time of sample collection. The majority of samples submitted to the laboratory were analyzed within their recommended method specific holding time for sulfate analysis except in the following: One sample collected on May 6, 2008 (RAMIREZ) was qualified with an "HC" flag, indicating initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.

4.5 Quality Control Measurements

The following QC samples were prepared and analyzed:

- Calibration blanks and calibration verification standards
- Analytical spikes and analytical spike duplicates
- Laboratory control samples
- Laboratory duplicate samples
- Field blank samples

4.5.1 Calibration Blanks and Calibration Verification Standards

Results from the analyses of the initial calibration blanks and initial calibration verification standards conducted by EPA Methods 300.0 and 375.4 also were reviewed. The results of each initial calibration blank analyzed showed no detections of the target analyte. All analytical results for the initial calibration verification standards and laboratory fortified blanks that were analyzed showed percent recoveries that were within the acceptance criteria specified by the ACZ QA plan and the QAPP.

4.5.2 Analytical Spikes and Analytical Spike Duplicates

Analytical spike and spike duplicate samples were analyzed for all sulfate samples that were analyzed using EPA Methods 300.0 and 375.4. Spike recoveries for most analyses were between 90 and 110 percent. Instances in which analytical spike recoveries were either high or low were qualified with an "M1" or "M2" flag, respectively. One analytical spike sample was flagged "M3" indicating the matrix spike recovery was unusable since analyte concentration in the sample was disproportionate to the spike level recovery of associated control sample. However, in each case the method control sample recoveries were acceptable.

4.5.3 Laboratory Control Samples

Laboratory control samples were run for each group of samples submitted for sulfate analysis using the gravimetric method of analysis. Recoveries for all laboratory control samples were within the acceptance criteria specified by ACZ.

4.5.4 Laboratory Duplicate Samples

Analyses of laboratory duplicate samples were also reviewed as part of this quality data verification report. Field duplicate samples are discussed in Section 5.1. The relative percent difference (RPDs) for most laboratory duplicate samples were within 20 percent, which is the

tolerance range set by the laboratory. In many instances, the data were qualified with an "RA" flag indicating that the RPD was not used for data validation because the sample concentration was less than ten times the MDL, which is too low for accurate evaluation according to ACZ. In all cases where the RPD could be calculated, the results met QA criteria and demonstrate an appropriate level of precision in laboratory analysis of these samples.

4.5.5 Field Blank Samples

During the second quarter of 2008, a total of four field blank samples were collected (FB051208, FB052908, EQB051208, and EQB052908). Two field blank samples containing unfiltered de-ionized water and two equipment blanks containing filtered de-ionized water. Samples were collected in the field and submitted along with other samples to evaluate the potential for contaminant introduction under field conditions. As required by revised Section 4.2.1.5 of the QAPP, a minimum of one field blank sample was collected every time an equipment blank sample was collected at a rate of one in every twenty samples. Analytical results from field blank samples FB052908 and EQB052908 showed no detections. However, field blank samples FB051208 and EQB051208 reported sulfate at 1.0 mg/L and 0.7 mg/L, respectively. Both samples were qualified with a "B" flag, indicating the analyte concentration was detected at a value between the MDL and PQL. The low level detections of sulfate are not considered significant given the concentration of this constituent in the sample.

5. DATA QUALITY INDICATORS

The QAPP provides several DQIs for assessing the overall quality of the data. These DQIs include the following:

- Precision
- Bias
- Accuracy
- Representativeness
- Comparability
- Completeness
- Sensitivity

Each of these DQIs is discussed below in relation to the Q2-2008 groundwater sampling and analysis conducted by HGC.

5.1 Precision

Precision indicates how well a measurement can be reproduced. Precision is quantified by calculating the relative percent difference (RPD) between duplicate samples. For the purposes of QA/QC, precision was quantified by calculating the RPDs between duplicates among the following groups of duplicate samples:

- Laboratory duplicate samples
- Field duplicate samples

As discussed in Sections 4.5.2 and 4.5.4, there were no exceedances of RPD QA criteria for any laboratory duplicates. During this monitoring period, a total of two field duplicate

samples were collected for filtered sulfate analysis (DUP051208, and DUP052908). The collection of two duplicate samples meets the QA/QC goal of collecting one duplicate sample for every twenty groundwater samples collected, as stated in Section 4.2.1.5 of the QAPP.

Results for the two duplicate field samples collected are provided in the table below. The range of RPD values was between 0.31 and 5.61 percent. As discussed in section 2.5.4 there were no exceedance of RPD QA criteria for any laboratory duplicates, and the DQI for precision is deemed to be met.

Well ID	Duplicate Sample ID	ACZ Project Number	Sulfate Field Sample (mg/L)	Sulfate Duplicate Sample (mg/L)	RPD (%)
BANKS 986	DUP051208	L69231	65.2	65.4	0.31
ENGLUND	DUP052908	L69570	520	550	5.61

mg/L = milligrams per liter
RPD = Relative Percent Difference

5.2 Bias

Bias is a systematic distortion of measurements causing consistent errors in one direction. Bias is managed in this data set by the consistent application of standardized sample collection and analysis procedures.

5.3 Accuracy

Accuracy is a measure of the agreement of a measurement to a known value and is measured using the recoveries from laboratory control samples. As discussed in Sections 4.5.1, 4.5.2, and 4.5.3 respectively, there were no significant exceedances of the recovery QA criteria for any of the calibration standards, analytical spikes, or laboratory control standards. Based on this information, the overall accuracy of the data is judged sufficient for the purpose of aquifer characterization.

5.4 Representativeness

All samples were taken from locations specified in the Work Plan (HGC, 2008a) using sampling procedures specified in the QAPP. Therefore, the samples are judged to provide a good representation of groundwater quality at the sample locations. The analytical data are judged to be representative of groundwater conditions because the analyses used standard procedures and methods that met QA/QC guidelines of the QAPP.

5.5 Comparability

All samples were collected using standardized procedures (HGC, 2008a) and were analyzed by ACZ using standardized methods. Insofar as standardized sample collection and analytical methods are adhered to, the sample results should be comparable.

5.6 Completeness

All samples collected were subsequently analyzed and reported by ACZ are judged to satisfy the QA/QC criteria for this project and are deemed usable for aquifer characterization. Thus, the completeness of analytical results is 100 percent.

5.7 Sensitivity

The analytical methods used to analyze the samples meet the MDL requirements specified in Table F.2 of the QAPP. Therefore, the analytical sensitivity is considered acceptable for use in aquifer characterization.

6. REFERENCES

Arizona Department of Environmental Quality. 2007. Mitigation Order on Consent, Docket No. P-121-07, In the Matter of: Phelps Dodge Corporation, Copper Queen Branch, located at 36 West Highway 92, Bisbee, Arizona, ADEQ Identification Number 100531. November 14, 2007.

Arizona Land Specialist, Inc. 2008. Freeport Well Survey Report. April 25, 2008.

Gilbert Technical Services, Inc. 2008. Survey Report. June 2, 2008.

Hydro Geo Chem, Inc. (HGC). 2008a. Revision 1, Work Plan to Characterize and Mitigate Sulfate with Respect to Drinking Water Supplies in the Vicinity of the Concentrator Tailing Storage Area, Cochise County, Arizona. July 3, 2008.

HGC. 2008b. Well Inventory Report, Task 1 of Aquifer Characterization Plan for Mitigation Order on Consent No. P-121-07, Cochise County, Arizona. July 28, 2008.

TABLE

TABLE B.1
ACZ PROJECT ID AND ASSOCIATED WELLS

ACZ Project ID	Wells Reported
Number of wells sampled: 57 *Number of duplicate samples collected: 2* *Number of field blank samples collected: 2* *Number of equipment blank samples collected: 2*	
L68800	PANAGAKOS
L68834	BURKE
L68893	SRC
L69063	CHAMBERS, ANDERSON, COOPER C, FRANCO, GARNER 635, KEEFER, ZANDER, RAMIREZ MCCONNELL 265
L69145	TVI 236, TVI 875, HOBAN, PIONKE, WEISKOPF, ROGERS E, ROGERS 803, MOORE, HOWARD
L69231	EPPELE 641, BANKS 986, DODSON, RAY, NOTEMAN, BIMA, PALMER 819, TM08 SWAN, SWAN, EAST, FULTZ, COOPER, OSBORN, DUP051208, EQB051208, FB051208
L69259	WEED, METZLER, RUIZ, BLOMMER, PARRA
L69397	POOL, SCHWARTZ, COB MW-1, COB MW-2, COB MW-3, COB WL, TM-03, TM-06 MILLER, GGOOSE 547
L69449	TM-07, TM-19A, TM-42, TM-16, GL-03, BF-01, TM-02A, TM-15 MILLER
L69570	ENGLUND, DUP052908, EQB 052908, FB052908

APPENDIX B.1

GILBERT TECHNICAL SERVICES, INC WELL SURVEY REPORT

GTS/Gilbert Technical Services, Inc.

1601 S. Paseo San Luis, Suite 203 ~ Sierra Vista, Arizona 85635
Office: 520.458.5730 ~ Fax: 520.458.5739 ~ E-mail: gts@theriver.com

Coordinate System/Projection: Universal Transverse Mercator, Zone 12 Band R
Horizontal Datum: NAD83 Unit: Metric
Vertical Datum: NAVD88 Unit: US Survey Foot

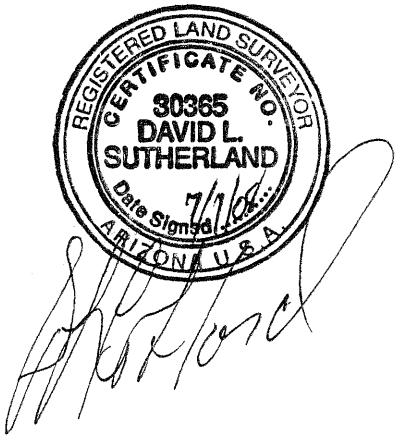
Point #	UTMN	UTME	Elevation	Description
1	3473292.3	601929.3	4895.74	AMARILLAS
5000	3471427.182	599617.574	4729.50	TM-15 MILLER
5003	3470111.613	599624.302	4643.48	TM-14 NELSON
5006	3467998.486	599678.880	4580.94	ZANDER
5009	3468119.015	599879.175	4572.03	KEEFER
5012	3468840.139	601463.094	4600.70	MCCONNELL 265
5015	3471263.549	602170.716	4727.21	PARRA
5018	3470013.823	599683.603	4639.09	POOL
5021	3468658.855	601154.951	4586.89	WEISKOPF
5024	3468114.836	600973.257	4566.21	COB MW-2
5030	3471576.400	606053.800	4800.68	NOTEMAN
5033	3471735.149	605998.250	4806.52	SUNBELT
5036	3470648.298	607378.547	4716.59	SWAN
5042	3469320.340	606420.836	4694.29	CAMPBELL
5045	3468712.215	607076.365	4626.01	EAST
5048	3468577.472	607564.689	4601.55	WALKER
5051	3468524.363	607769.640	4599.58	GALLANT
5054	3469206.175	606981.921	4648.18	BANKS 987
5057	3469195.147	607083.422	4647.91	RAY
5060	3468916.278	602217.331	4617.27	GOAR
5066	3468880.329	601705.848	4597.21	HOBAN
5073	3468268.057	600811.529	4551.58	SCHWARTZ
5079	3472738.941	608379.424	4840.37	POWER
5082	3472502.012	606357.506	4832.06	COB WARREN LAGOON
5088	3470222.677	607632.993	4703.27	DOUGLASS 791
5091	3469829.115	607607.541	4681.73	DOUGLASS 792
5094	3469889.700	603153.700	4680.36	COB MW-1
5097	3468913.011	601349.987	4595.06	COOPER C
5100	3468816.065	601134.729	4580.34	ANDERSON
5104	3468768.622	601281.936	4589.70	HOWARD
5107	3468486.607	601173.053	4582.75	MINOR 316
5114	3469229.942	607165.354	4642.86	EPPELE 641
5117	3471381.176	602091.308	4728.53	METZLER
5120	3471341.335	602551.286	4733.72	ENGLUND
5123	3471424.219	602857.357	4735.18	RUIZ
5126	3473029.816	602230.087	4856.30	BURKE
5129	3472502.400	599723.300	4807.37	SRC
5132	3468568.043	601172.150	4578.86	MINOR 317
5135	3469820.260	606256.657	4717.11	GGOOSE 547
5139	3468417.386	600977.690	4579.02	ROGERS 803
5140	3468967.902	602665.352	4628.29	GARNER 635
5142	3468962.415	602659.240	4626.44	GARNER 557



APPENDIX B.2

ARIZONA LAND SPECIALISTS, INC. WELL SURVEY REPORT

ARIZONA LAND SPECIALISTS - FREEPORT CQB WELL SURVEY				
ALS POINT #	DESCRIPTION	ELEVATION (FEET) NAVD 88	UTM N	UTM E
500	cp tn twn base	5195.17	3476437.833	604954.627
501	cp501	4996.50	3474702.449	604695.348
502	cp502	4951.79	3473820.833	601554.678
503	cp503	4630.48	3468894.585	602452.106
504	cp504	4630.48	3468893.983	602444.052
6900	TINTOWN (PID CF0397)	5070.12	3475060.983	604074.441
6901	RECORDS (CCLDP)	5088.01	3477526.103	605370.569
6902	AMARILLAS (PID DG9433)	4895.67	3473292.330	601929.297
6903	AVANT (CCLDP)	4857.26	3472267.450	607587.441
6904	TM-43A	4969.95	3474661.168	605358.451
6906	TM-43	4971.44	3474670.811	605365.062
6908	TM-43B	4922.18	3474379.892	605814.018
6910	GL-03	4924.31	3473747.943	604386.940
6912	BF-01	4835.23	3472151.593	604169.077
6914	TM-02A	4808.43	3472008.794	604152.059
6916	TM-03	4897.85	3473711.046	606366.130
6918	TM-16	4717.71	3469842.199	605588.075
6920	TM-42	4666.67	3469104.903	603698.271
6922	TM-19A	4645.87	3469197.426	602458.710
6924	PD BASE	5591.13	3477133.309	604148.435
6926	SRC	4810.12	3472503.260	599722.475
6928	TM-15 MILLER	4729.26	3471427.504	599617.331
6930	COB MW-1	4683.26	3469889.889	603153.259
6933	TM-06 MILLER	4707.88	3468376.658	606055.975
6934	BIMA	4802.05	3471852.804	606001.245
6936	GOAR RANCH	4631.13	3468892.471	602454.751
6937	TM-41	4774.58	3471305.648	604839.634
6938	TM-08 SWAN	4725.44	3470666.775	607787.041
6939	BARTON 919	4692.36	3469076.689	606243.850
6940	BARTON 010	4688.95	3469047.469	606201.084
6941	STEPHENS	4651.22	3469072.799	606981.766
6942	TVI 713	4567.22	3468412.946	600729.095
6943	OSBORN	4711.95	3470270.548	607031.823
6944	COB MW-3	4538.63	3468726.057	599169.255
6945	DODSON	4686.34	3469063.772	605594.560
6946	TVI 236	4561.98	3467978.431	600552.215



APPENDIX C

SECOND QUARTER 2008
DATA VERIFICATION REPORT - EXTENDED PARAMETERS

APPENDIX C

SECOND QUARTER 2008
DATA VERIFICATION REPORT - EXTENDED PARAMETERS

Prepared for:

FREEPORT-MCMORAN
COPPER QUEEN BRANCH
36 West Highway 92
Bisbee, Arizona 85603

Prepared by:

HYDRO GEO CHEM, INC.
51 West Wetmore Road
Tucson, Arizona 85705
(520) 293-1500

July 30, 2008

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1. INTRODUCTION

This report summarizes the data verification review of groundwater samples collected and analyzed for extended parameters[1] from three wells during the second quarter 2008 (Q2-2008) by Hydro Geo Chem, Inc. (HGC) pursuant to Mitigation Order on Consent Docket No. P-121-07 (MO) (ADEQ, 2007). Wells BURKE and GGOOSE 547 were identified for quarterly plume monitoring, and well SRC was discovered during the well inventory investigation. The BURKE and SRC wells have no pumps and GGOOSE 547 had its power disconnected. In addition, SRC well was capped. During Q2 2008 arrangements were made with the well owners to use a pump rig to collect groundwater samples from BURKE and SRC and to provide three-phase power to GGOOSE 547. Analytical results for groundwater samples collected from these wells were provided to HGC by ACZ Laboratories, Inc. (ACZ) for preparation of the First and Second Quarters 2008 Groundwater Monitoring Report.

Quality assurance (QA) and quality control (QC) procedures are specified in the *Quality Assurance Project Plan for Aquifer Characterization Plan* (QAPP) (Appendix F of HGC, 2008) for field sampling, chain-of-custody (COC) documentation, laboratory analysis, and reporting. This report does not review field sampling or sample handling for samples collected from these three wells since this information is evaluated in Appendix A of the main text. Laboratory QA/QC data for water quality samples submitted for wells BURKE, SRC, and GGOOSE 547 are evaluated according to the data quality indicators (DQIs) given in the QAPP.

Appendix D of the main text of this report contains laboratory reports for Q2-2008 samples collected by HGC including COC forms, laboratory correspondence, QC summaries, data qualifiers, and any case narratives. The analytical results for samples collected as part of this data verification report pertain to three samples collected by HGC and are contained in three reports having the following ACZ Project numbers:

ACZ Project ID	Wells Reported
L67668	BURKE
L67713	SRC
L67843	GGOOSE 547

The results of the internal QA/QC tests performed by ACZ are presented with the laboratory reports included in Appendix D. Based on the results of surrogate spike recoveries, matrix spike/recovery and matrix spike duplicate tests, ACZ did not advise HGC of any modifications that should be made regarding the usability and data validation status of the laboratory test results.

[1] Extended parameters consist of the following analytes: calcium, magnesium, sodium, potassium, alkalinity, total dissolved solids, chloride, fluoride, nitrate, and nitrite.

2. LABORATORY QUALITY CONTROL

As specified in the QAPP, laboratory QC was maintained for all analysis through proper licensure, the use of approved analytical methods, QC measurements, appropriate turn-around-time for analysis (timeliness), method detection limits (MDLs), and practical quantitation limits (PQLs). Each of these controls is discussed in the following subsections.

The review of laboratory QC included a review to identify any qualified data and an assessment to determine their significance. Additionally, the laboratory QC summaries were reviewed to verify that results met QA criteria.

2.1 Licensure

ACZ is licensed with the Arizona Department of Health Services (license number AZ0102) and is accredited in accordance with the National Environmental Laboratory Accreditation Conference.

2.2 Analytical Methods

The following list identifies the approved U.S. Environmental Protection Agency (EPA) methods that meet the requirements stated in section 5.3 of the QAPP regarding target methods and target MDLs:

- EPA 375.4 (Turbidimetric): sulfate
- EPA 300.0 (Ion-Chromatography [IC]): sulfate, chloride, fluoride
- EPA 200.7 (Inductively Coupled Plasma [ICP]): calcium, magnesium, potassium, sodium
- EPA 353.2 (Automated Cadmium Reduction [ACR]): nitrate/nitrite
- SM2320B (Titration): alkalinity
- EPA 160.1 (Gravimetric): total dissolved solids
- SM4500 SO4-D (Gravimetric): sulfate

Two of these methods, IC (EPA 300.0) and ICP (EPA 200.7), involve direct injection of the sample into the analytical instrument, which does not require the analysis of preparation blanks. The other methods listed are classical wet chemistry techniques that require the use of preparation blanks under the ACZ quality assurance plan and the QAPP.

2.3 Method Detection Limits (MDLs) and Practical Quantification Limits (PQLs)

The MDLs and PQLs of the analytical methods used by ACZ are shown in the following table. The MDLs for analyses of samples were equal to or less than the target MDLs identified in the QAPP.

Method	MDL (mg/L)	PQL (mg/L)	Target MDL[1] (mg/L)
EPA 300.0 (SO4)	0.5	3	10
EPA 375.4	1	5	10
SM4500 SO4-D	10	50	10
EPA 200.7 (Ca and Mg)	0.2	1	0.2
EPA 200.7 (K and Na)	0.3	2	0.3
SM2320B	2	20	2
EPA 300.0 (Cl)	0.5	5	1
EPA 300.0 (F)	0.1	0.5	0.1
EPA 352.2	0.02	0.1	0.02
EPA 160.1	10	20	10

mglL = milligrams per liter
[1] Target MDL from Table F.2 of QAPP
SM = Standard Method

2.4 Timeliness

Holding times were derived from the EPA methods utilized and were calculated beginning from the time of samples collection. The majority of samples submitted to the laboratory during Q2 2008 were analyzed within their recommended method specific holding time except for nitrate/nitrite as N and nitrite analyses in the following: Sample SRC collected on April 23, 2008 was qualified with an "HE" flag, indicating analysis performed past the

holding time because the sample was received with less than half the holding time remaining. Sample BURKE collected on April 22, 2008 was qualified with a "HC" flag, indicating that the initial analysis for TDS was within the holding time. However, reanalysis was past holding time, which was required due to a QC failure during the initial analysis. No data were rejected on the basis of the holding time exceedances and were accepted as usable.

2.5 Quality Control Measurements

The following QC samples were prepared and analyzed:

- Preparation blanks, calibration blanks, and calibration verification standards
- Analytical spikes and analytical spike duplicates
- Laboratory control samples
- Laboratory duplicate samples
- Field blank samples

2.5.1 Preparation Blanks, Calibration Blanks, and Calibration Verification Standards

Preparation blanks were run with each group of samples submitted for alkalinity and TDS analysis. All preparation blanks were prepared from analyte-free water and treated as routine samples. Analytical results of all of the preparation blanks showed that no target analytes were detected at the indicated MDL.

Results from the analyses of the initial calibration blanks and initial calibration verification standards conducted by EPA Methods 300.0, 375.4, 200.7, and 353.2 also were reviewed. The results of each initial calibration blank analyzed showed no detections of the target analyte. All analytical results for the initial calibration verification standards and laboratory fortified blanks that were analyzed showed percent recoveries that were within the acceptance criteria specified by the ACZ QA plan and the QAPP.

2.5.2 Analytical Spikes and Analytical Spike Duplicates

Analytical spike and spike duplicate samples were analyzed for the following EPA Methods: 300.0, 375.4, 200.7, and 353.2. Spike recoveries for most analytes were within the range of acceptability based on the acceptance criteria set by ACZ. Instances in which analytical spike recoveries were either low or where the spiked sample required a dilution were qualified with an "M2" or "M4" flag, respectively. In each case the method control sample recoveries were acceptable. Although some analytical spikes and analytical spike duplicates were outside the acceptance limits and qualified with an "MA" flag, these recoveries are not considered to affect the overall accuracy of the dataset because the Relative Percent Difference (RPD) was within the acceptance limits.

2.5.3 Laboratory Control Samples

Laboratory control samples were run for each group of samples submitted for alkalinity and total dissolved solids. Recoveries for all laboratory control samples were within the acceptance criteria specified by ACZ.

2.5.4 Laboratory Duplicate Samples

Analyses of laboratory duplicate samples were also reviewed as part of this data verification report. Field duplicate samples are discussed in Section 5.1. The RPDs for most laboratory duplicate samples were within 20 percent, which is the tolerance range set by the laboratory. In many instances, the data were qualified with an "RA" flag indicating that the RPD was not used for data validation because the sample concentration was less than ten times the MDL, which is too low for accurate evaluation according to ACZ. In all cases where the RPD could be calculated, the results met QA criteria and demonstrate an appropriate level of precision in laboratory analysis of these samples.

2.5.5 Field Blank Samples

Field blanks for analysis of the extended parameters analyzed were not submitted. Field blanks were submitted for analysis of sulfate and are discussed in Section 4.5.5 of Appendix B.

3. DATA QUALITY INDICATORS

The QAPP provides several DQIs for assessing the overall quality of the data. These DQIs include the following:

- Precision
- Bias
- Accuracy
- Representativeness
- Comparability
- Completeness
- Sensitivity

Each of these DQIs is discussed below in relation to the Q2-2008 groundwater sampling and analysis conducted by HGC.

3.1 Precision

Precision indicates how well a measurement can be reproduced. Precision is quantified by calculating the RPD between duplicate samples. For the purposes of QA/QC, precision was quantified by calculating the RPDs between laboratory duplicates for each parameter analyzed. As discussed in Section 2.5.4, there were no exceedances of RPD QA criteria for any laboratory duplicates and the DQI for precision is deemed to be met.

3.2 Bias

Bias is a systematic distortion of measurements causing consistent errors in one direction. Bias is managed in this data set by the consistent application of standardized sample collection and analysis procedures.

3.3 Accuracy

Accuracy is a measure of the agreement of a measurement to a known value and is measured using the recoveries from laboratory control samples. As discussed in Sections 2.5.1, 2.5.2, and 2.5.3 respectively, there were no significant exceedances of the recovery QA criteria for any of the calibration standards, analytical spikes, or laboratory control standards. Based on this information, the overall accuracy of the data is judged sufficient for the purpose of aquifer characterization.

3.4 Representativeness

All samples were taken from locations specified in the Work Plan (HGC, 2008) using sampling procedures specified in the QAPP. Therefore, the samples are judged to provide a good representation of groundwater quality at the locations. The analytical data are judged to be representative of groundwater conditions because the analyses used standard procedures and methods that met QA/QC guidelines of the QAPP.

3.5 Comparability

All samples were collected using standardized procedures (HGC, 2008) and were analyzed by ACZ using standardized methods. Insofar as standardized sample collection and analytical methods are adhered to, the sample results should be comparable.

3.6 Completeness

All samples collected were subsequently analyzed and reported by ACZ are judged to satisfy the QA/QC criteria for this project and are deemed usable for aquifer characterization. Thus, the completeness of analytical results is 100 percent.

3.7 Sensitivity

The analytical methods used to analyze the samples meet the MDL requirements specified in Table F.2 of the QAPP. Therefore, the analytical sensitivity is considered acceptable for use in aquifer characterization.

4. REFERENCES

Arizona Department of Environmental Quality. 2007. Mitigation Order on Consent, Docket No. P-121-07, In the Matter of: Phelps Dodge Corporation, Copper Queen Branch, located at 36 West Highway 92, Bisbee, Arizona, ADEQ Identification Number 100531. November 14, 2007.

Hydro Geo Chem, Inc. 2008. Revision 1, Work Plan to Characterize and Mitigate Sulfate with Respect to Drinking Water Supplies in the Vicinity of the Concentrator Tailing Storage Area, Cochise County, Arizona. July 3, 2008.

APPENDIX D

ANALYTICAL REPORTS FROM ACZ LABORATORIES, INC.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

February 19, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67529

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 05, 2008. This project has been assigned to ACZ's project number, L67529. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67529. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 19, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: ROGERSE

ACZ Sample ID: ***L67529-01***
Date Sampled: *02/04/08 09:40*
Date Received: *02/05/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	4.6		*	mg/L	0.5	3	02/09/08 19:38	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: RAMIREZ

ACZ Sample ID: ***L67529-02***
Date Sampled: *02/04/08 11:00*
Date Received: *02/05/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	7.6		*	mg/L	0.5	3	02/09/08 20:32	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: ZANDER

ACZ Sample ID: ***L67529-03***
Date Sampled: *02/04/08 15:00*
Date Received: *02/05/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	5.7		*	mg/L	0.5	3	02/09/08 20:50	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67529***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240236													
WG240236ICV	ICV	02/09/08 14:30	WI080128-8	50.1		51.88	mg/L	103.6	90	110			
WG240236ICB	ICB	02/09/08 14:48				U	mg/L		-1.5	1.5			
L67529-01AS	AS	02/09/08 19:56	WI080128-9	30	4.6	33.74	mg/L	97.1	90	110			
L67529-01DUP	DUP	02/09/08 20:14			4.6	4.59	mg/L				0.2	20	RA
WG240236ICV1	ICV	02/11/08 18:09	WI080128-8	50.1		51.63	mg/L	103.1	90	110			
WG240236ICB1	ICB	02/11/08 18:27				U	mg/L		-1.5	1.5			
WG240236LFB	LFB	02/11/08 18:45	WI080128-9					106.2	90	110			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67529***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67529-01	WG240236	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67529-02	WG240236	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67529-03	WG240236	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67529***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67529
Date Received: 2/5/2008
Received By:
Date Printed: 2/5/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5428	3.6	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67529
Date Received: 2/5/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67529-01	ROGERSE									X		
L67529-02	RAMIREZ									X		
L67529-03	ZANDER									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67529

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: DAN SIMPSON
Company: HYDRO GEO CHEM INC
E-mail: DANS@HGCINC.COM
Address: 51 W. WETMORE Rd
TUCSON AZ 85705
Telephone: (520) 293-1500 X133

Copy of Report to:

Name: JIM NORRIS
Company: HGC
E-mail: JIMN@HGCINC.COM
Telephone: (520) 293-1500 x112

Invoice to:

Name: JIM NORRIS
Company: HYDRO GEO CHEM
E-mail: JIMN@HGCINC.COM
Address: 51 W. WETMORE RD
TUCSON AZ 85705
Telephone (520) 293 1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ✓ / NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: 504-IC
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: MARK ARNESON
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	504-I							
ROGERSE	02/04/2008 0940	GW	1	✓							
RAMIREZ	02/04/2008 1100	GW	1	✓							
ZANDER	02/04/2008 1500	GW	1	✓							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	1604: 2/4/08		2-5-08 10:73

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Revised Analytical Report

Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road, Suite 101
Tucson, AZ 85705

March 4, 2008

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67530

Dan Simpson:

Enclosed are revised analytical reports for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 05, 2008 and reported on February 19, 2008. Refer to the case narrative for an explanation of the changes. This project was assigned to ACZ's project number, L67530. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67530. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all the requirements of NELAC.

This report should be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 19, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years. Please notify your Project Manager if you have other needs.

If you have any questions, please contact your Project Manager or Customer Service Representative.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

Hydro Geo Chem, Inc.

March 04, 2008

Project ID: 872001.0
ACZ Project ID: L67530

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 1 ground water sample from Hydro Geo Chem, Inc. on February 5, 2008. The sample was received in good condition. Upon receipt, the sample custodian removed the sample from the cooler, inspected the contents, and logged the sample into ACZ's computerized Laboratory Information Management System (LIMS). The sample was assigned ACZ LIMS project number L67530. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

This sample was analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. This project has been revised to include an analysis for Fluoride which was originally missed.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: GARNER635

ACZ Sample ID: ***L67530-01***
Date Sampled: *02/04/08 12:10*
Date Received: *02/05/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	39.2			mg/L	0.2	1	02/11/08 22:14	wfg
Magnesium, dissolved	M200.7 ICP	8.2			mg/L	0.2	1	02/11/08 22:14	wfg
Potassium, dissolved	M200.7 ICP	2.8		*	mg/L	0.3	2	02/11/08 22:14	wfg
Sodium, dissolved	M200.7 ICP	65.0		*	mg/L	0.3	2	02/11/08 22:14	wfg

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		182			mg/L	2	20	02/06/08 0:00	lcp
Carbonate as CaCO3			U		mg/L	2	20	02/06/08 0:00	lcp
Hydroxide as CaCO3			U		mg/L	2	20	02/06/08 0:00	lcp
Total Alkalinity		182			mg/L	2	20	02/06/08 0:00	lcp
Cation-Anion Balance	Calculation								
Cation-Anion Balance		5.8			%			03/03/08 0:00	calc
Sum of Anions		4.9			meq/L	0.1	0.5	03/03/08 0:00	calc
Sum of Cations		5.5			meq/L	0.1	0.5	03/03/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	13.7			mg/L	0.5	3	02/09/08 21:08	aml
Fluoride	SM4500F-C	0.2	B	*	mg/L	0.1	0.5	02/28/08 11:26	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.68			mg/L	0.02	0.1	03/03/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.69		*	mg/L	0.02	0.1	02/05/08 18:29	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.01	B	*	mg/L	0.01	0.05	02/05/08 18:29	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	290			mg/L	10	20	02/06/08 15:02	lcp
Sulfate	300.0 - Ion Chromatography	37.8		*	mg/L	0.5	3	02/09/08 21:08	aml
TDS (calculated)	Calculation	284			mg/L	10	50	03/03/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.02						03/03/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67530***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240091													
WG240091PBW1	PBW	02/06/08 14:09				U	mg/L		-20	20			
WG240091LCSW2	LCSW	02/06/08 14:20	WC080131-1	820		811.3	mg/L	98.9	90	110			
L67534-01DUP	DUP	02/06/08 17:01			490	497	mg/L				1.4	20	
WG240091PBW2	PBW	02/06/08 17:07				U	mg/L		-20	20			
WG240091LCSW5	LCSW	02/06/08 17:20	WC080131-1	820		815.1	mg/L	99.4	90	110			
WG240091LCSW8	LCSW	02/06/08 18:29	WC080131-1	820		810.5	mg/L	98.8	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240225													
WG240225ICV	ICV	02/11/08 19:57	II080115-3	100		98.37	mg/L	98.4	95	105			
WG240225ICB	ICB	02/11/08 20:01				U	mg/L		-0.6	0.6			
WG240225LFB	LFB	02/11/08 20:17	II080125-1	67.97008		71.81	mg/L	105.6	85	115			
L67521-02AS	AS	02/11/08 21:24	II080125-1	67.97008	10	83.24	mg/L	107.8	85	115			
L67521-02ASD	ASD	02/11/08 21:28	II080125-1	67.97008	10	83.83	mg/L	108.6	85	115	0.71	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240236													
WG240236ICV	ICV	02/09/08 14:30	WI080128-8	19.98		20.48	mg/L	102.5	90	110			
WG240236ICB	ICB	02/09/08 14:48				U	mg/L		-1.5	1.5			
WG240236LFB	LFB	02/09/08 15:06	WI080128-9	30		31.21	mg/L	104	90	110			
L67529-01AS	AS	02/09/08 19:56	WI080128-9	30	23.2	52.44	mg/L	97.5	90	110			
L67529-01DUP	DUP	02/09/08 20:14			23.2	23.51	mg/L				1.3	20	
WG240236ICV1	ICV	02/11/08 18:09	WI080128-8	19.98		20.65	mg/L	103.4	90	110			
WG240236ICB1	ICB	02/11/08 18:27				U	mg/L		-1.5	1.5			

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240886													
WG240886ICV	ICV	02/28/08 11:14	WC080227-1	2		1.97	mg/L	98.5	90	110			
WG240886ICB	ICB	02/28/08 11:19				U	mg/L		-0.3	0.3			
WG240886LFB1	LFB	02/28/08 11:24	WC080226-1	5		5.24	mg/L	104.8	90	110			
L67530-01AS	AS	02/28/08 11:29	WC080226-1	5	.2	6.26	mg/L	121.2	90	110			M1
L67530-01DUP	DUP	02/28/08 11:31			.2	.21	mg/L				4.9	20	RA
WG240886LFB2	LFB	02/28/08 12:51	WC080226-1	5		4.93	mg/L	98.6	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240225													
WG240225ICV	ICV	02/11/08 19:57	II080115-3	100		100.71	mg/L	100.7	95	105			
WG240225ICB	ICB	02/11/08 20:01				U	mg/L		-0.6	0.6			
WG240225LFB	LFB	02/11/08 20:17	II080125-1	54.96908		59.26	mg/L	107.8	85	115			
L67521-02AS	AS	02/11/08 21:24	II080125-1	54.96908	1.9	62.77	mg/L	110.7	85	115			
L67521-02ASD	ASD	02/11/08 21:28	II080125-1	54.96908	1.9	63.98	mg/L	112.9	85	115	1.91	20	

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67530***

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240054													
WG240054ICV	ICV	02/05/08 18:18	WI071212-1	2.416		2.401	mg/L	99.4	90	110			
WG240054ICB	ICB	02/05/08 18:19				U	mg/L		-0.06	0.06			
WG240054LFB	LFB	02/05/08 18:23	WI070911-4	2		1.961	mg/L	98.1	90	110			
L67496-01AS	AS	02/05/08 18:26	WI070911-4	2	.12	2.118	mg/L	99.9	90	110			
L67526-01DUP	DUP	02/05/08 18:28			.07	.069	mg/L				1.4	20	RA

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240054													
WG240054ICV	ICV	02/05/08 18:18	WI071212-1	.609		.633	mg/L	103.9	90	110			
WG240054ICB	ICB	02/05/08 18:19				U	mg/L		-0.03	0.03			
WG240054LFB	LFB	02/05/08 18:23	WI070911-4	1		1.028	mg/L	102.8	90	110			
L67496-01AS	AS	02/05/08 18:26	WI070911-4	1	.02	1.024	mg/L	100.4	90	110			
L67526-01DUP	DUP	02/05/08 18:28			U	U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240225													
WG240225ICV	ICV	02/11/08 19:57	II080115-3	20		21.05	mg/L	105.3	95	105			
WG240225ICB	ICB	02/11/08 20:01				U	mg/L		-0.9	0.9			
WG240225LFB	LFB	02/11/08 20:17	II080125-1	99.76186		112.8	mg/L	113.1	85	115			
L67521-02AS	AS	02/11/08 21:24	II080125-1	99.76186	.9	118	mg/L	117.4	85	115			M1
L67521-02ASD	ASD	02/11/08 21:28	II080125-1	99.76186	.9	120.95	mg/L	120.3	85	115	2.47	20	M1

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240101													
WG240101PBW	PBW	02/06/08 15:00				U	mg/L		-20	20			
WG240101LCSW	LCSW	02/06/08 15:01	PCN28840	260		272	mg/L	104.6	80	120			
L67537-02DUP	DUP	02/06/08 15:15			620	614	mg/L				1	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240225													
WG240225ICV	ICV	02/11/08 19:57	II080115-3	100		104.05	mg/L	104.1	95	105			
WG240225ICV	ICV	02/11/08 19:57	II080115-3	100		101.7	mg/L	101.7	95	105			
WG240225ICB	ICB	02/11/08 20:01				U	mg/L		-6	6			
WG240225ICB	ICB	02/11/08 20:01				U	mg/L		-0.9	0.9			
WG240225LFB	LFB	02/11/08 20:17	II080125-1	98.21624		108.7	mg/L	110.7	85	115			
WG240225LFB	LFB	02/11/08 20:17	II080125-1	98.21624		110.3	mg/L	112.3	85	115			
L67521-02AS	AS	02/11/08 21:24	II080125-1	98.21624	3.4	115.1	mg/L	113.7	85	115			
L67521-02ASD	ASD	02/11/08 21:28	II080125-1	98.21624	3.4	118.17	mg/L	116.9	85	115	2.63	20	MA

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67530***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240236													
WG240236ICV	ICV	02/09/08 14:30	WI080128-8	50.1		51.88	mg/L	103.6	90	110			
WG240236ICB	ICB	02/09/08 14:48				U	mg/L		-1.5	1.5			
L67529-01AS	AS	02/09/08 19:56	WI080128-9	30	4.6	33.74	mg/L	97.1	90	110			
L67529-01DUP	DUP	02/09/08 20:14			4.6	4.59	mg/L				0.2	20	RA
WG240236ICV1	ICV	02/11/08 18:09	WI080128-8	50.1		51.63	mg/L	103.1	90	110			
WG240236ICB1	ICB	02/11/08 18:27				U	mg/L		-1.5	1.5			
WG240236LFB	LFB	02/11/08 18:45	WI080128-9					106.2	90	110			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67530***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67530-01	WG240225	Potassium, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Sodium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG240886	Fluoride	SM4500F-C	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240054	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240236	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67530***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67530
Date Received: 2/5/2008
Received By:
Date Printed: 2/5/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5428	3.6	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67530
Date Received: 2/5/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67530-01	GARNER635		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67530

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc.
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd. Tucson, AZ 85705
Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Address: 51 W. Wetmore Rd Tucson, AZ 85737
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ca Na Mg K	TDS $SO_4^{=}$ NO_3^- Cl^- F^-	Alk						
GARNER635	2/4/08: 1210	GW	3	X	X	X						

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	2/4/08: 1604	WPL	2/05/08 10:33

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

February 20, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67573

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 07, 2008. This project has been assigned to ACZ's project number, L67573. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67573. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 20, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: KEEFER

ACZ Sample ID: ***L67573-01***
Date Sampled: *02/06/08 09:00*
Date Received: *02/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	6.8		*	mg/L	0.5	3	02/09/08 23:32	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: FRANCO

ACZ Sample ID: ***L67573-02***
Date Sampled: *02/06/08 11:36*
Date Received: *02/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	670			mg/L	10	50	02/15/08 12:41	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: PIONKE

ACZ Sample ID: ***L67573-03***
Date Sampled: *02/06/08 10:17*
Date Received: *02/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	394			mg/L	5	30	02/15/08 13:36	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67573***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240236													
WG240236ICV	ICV	02/09/08 14:30	WI080128-8	50.1		51.88	mg/L	103.6	90	110			
WG240236ICB	ICB	02/09/08 14:48				U	mg/L		-1.5	1.5			
L67529-01AS	AS	02/09/08 19:56	WI080128-9	30	4.6	33.74	mg/L	97.1	90	110			
L67529-01DUP	DUP	02/09/08 20:14			4.6	4.59	mg/L				0.2	20	RA
WG240236ICV1	ICV	02/11/08 18:09	WI080128-8	50.1		51.63	mg/L	103.1	90	110			
WG240236ICB1	ICB	02/11/08 18:27				U	mg/L		-1.5	1.5			
WG240236LFB	LFB	02/11/08 18:45	WI080128-9					106.2	90	110			
WG240303													
WG240303ICV	ICV	02/13/08 13:23	WI080128-8	50.1		51.45	mg/L	102.7	90	110			
WG240303ICB	ICB	02/13/08 13:41				U	mg/L		-1.5	1.5			
WG240303LFB	LFB	02/13/08 13:59	WI080128-9	30		29.94	mg/L	99.8	90	110			
WG240303ICV1	ICV	02/15/08 12:05	WI080128-8	50.1		46.41	mg/L	92.6	90	110			
WG240303ICB1	ICB	02/15/08 12:23				.63	mg/L		-1.5	1.5			
L67573-02AS	AS	02/15/08 12:59	WI080128-9	600	670	1293	mg/L	103.8	90	110			
L67573-02DUP	DUP	02/15/08 13:18			670	627	mg/L				6.6	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67573***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67573-01	WG240236	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67573***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
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Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67573
Date Received: 2/7/2008
Received By:
Date Printed: 2/7/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5451	0.2	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67573
Date Received: 2/7/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67573-01	KEEFER									X		
L67573-02	FRANCO									X		
L67573-03	PIONKE									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67573

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc.
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd Tucson AZ 85705
Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: Hydro Geo Chem Inc
E-mail: jimn@hgcinc.com
Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: Hydro Geo Chem Inc.
E-mail: jimn@hgcinc.com
Address: 51 W. Wetmore Rd Tucson AZ 85737
Telephone: (520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES X / NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: SO4-IC
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	1 SO4							
KEEFER	2-6-08:0900	GW	1	X							
FRANKO	2-6-08:1136	GW	1	X							
PIONKE	2-6-08:1017	GW	1	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	1634: 2-6-08	WRL	2-7-08 10:43

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Revised Analytical Report

Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road, Suite 101
Tucson, AZ 85705

March 4, 2008

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67574

Dan Simpson:

Enclosed are revised analytical reports for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 07, 2008 and reported on February 20, 2008. Refer to the case narrative for an explanation of the changes. This project was assigned to ACZ's project number, L67574. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67574. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all the requirements of NELAC.

This report should be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 20, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years. Please notify your Project Manager if you have other needs.

If you have any questions, please contact your Project Manager or Customer Service Representative.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Hydro Geo Chem, Inc.

March 04, 2008

Project ID: 872001.0
ACZ Project ID: L67574

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 2 ground water samples from Hydro Geo Chem, Inc. on February 7, 2008. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L67574. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. This project has been revised to include an analysis for Fluoride which was originally missed.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: BIMA

ACZ Sample ID: ***L67574-01***
Date Sampled: *02/06/08 15:50*
Date Received: *02/07/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	224			mg/L	0.2	1	02/12/08 2:40	wfg
Magnesium, dissolved	M200.7 ICP	48.4			mg/L	0.2	1	02/12/08 2:40	wfg
Potassium, dissolved	M200.7 ICP	12.4			mg/L	0.3	2	02/12/08 2:40	wfg
Sodium, dissolved	M200.7 ICP	65.9			mg/L	0.3	2	02/12/08 2:40	wfg

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		510			mg/L	2	20	02/14/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	02/14/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/14/08 0:00	jlf
Total Alkalinity		510		*	mg/L	2	20	02/14/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.1			%			03/03/08 0:00	calc
Sum of Anions		18.0			meq/L	0.1	0.5	03/03/08 0:00	calc
Sum of Cations		18.4			meq/L	0.1	0.5	03/03/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	105			mg/L	3	10	02/15/08 13:54	aml
Fluoride	SM4500F-C	0.1	B	*	mg/L	0.1	0.5	02/28/08 11:34	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	6.8			mg/L	0.1	0.5	03/03/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	6.8			mg/L	0.1	0.5	02/07/08 18:31	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/07/08 18:16	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	980			mg/L	10	20	02/13/08 15:47	cas
Sulfate	300.0 - Ion Chromatography	210			mg/L	3	10	02/15/08 13:54	aml
TDS (calculated)	Calculation	1000			mg/L	10	50	03/03/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.98						03/03/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: SUNBELT

ACZ Sample ID: ***L67574-02***
Date Sampled: *02/06/08 14:25*
Date Received: *02/07/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	56.6			mg/L	0.2	1	02/12/08 2:44	wfg
Magnesium, dissolved	M200.7 ICP	7.9			mg/L	0.2	1	02/12/08 2:44	wfg
Potassium, dissolved	M200.7 ICP	2.4			mg/L	0.3	2	02/12/08 2:44	wfg
Sodium, dissolved	M200.7 ICP	40.7			mg/L	0.3	2	02/12/08 2:44	wfg

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		183			mg/L	2	20	02/14/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	02/14/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/14/08 0:00	jlf
Total Alkalinity		183		*	mg/L	2	20	02/14/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.0			%			03/03/08 0:00	calc
Sum of Anions		5.2			meq/L	0.1	0.5	03/03/08 0:00	calc
Sum of Cations		5.3			meq/L	0.1	0.5	03/03/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	34.2			mg/L	0.5	3	02/13/08 15:48	aml
Fluoride	SM4500F-C	0.8		*	mg/L	0.1	0.5	02/28/08 11:37	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.02			mg/L	0.02	0.1	03/03/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.02			mg/L	0.02	0.1	02/07/08 18:19	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/07/08 18:19	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	270			mg/L	10	20	02/13/08 15:48	cas
Sulfate	300.0 - Ion Chromatography	18.7			mg/L	0.5	3	02/13/08 15:48	aml
TDS (calculated)	Calculation	280			mg/L	10	50	03/03/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.96						03/03/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67574***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240436													
WG240436PBW1	PBW	02/14/08 16:49				25.4	mg/L		-20	20			B4 B7
WG240436LCSW2	LCSW	02/14/08 17:01	WC080131-1	820		850.9	mg/L	103.8	90	110			
L67612-01DUP	DUP	02/14/08 18:19			39	36.3	mg/L				7.2	20	
WG240436PBW2	PBW	02/14/08 20:47				U	mg/L		-20	20			
WG240436LCSW5	LCSW	02/14/08 20:58	WC080131-1	820		854.8	mg/L	104.2	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240286													
WG240286ICV	ICV	02/12/08 1:38	II080115-3	100		98.94	mg/L	98.9	95	105			
WG240286ICB	ICB	02/12/08 1:42				U	mg/L		-0.6	0.6			
WG240286LFB	LFB	02/12/08 1:58	II080209-4	67.97008		68.63	mg/L	101	85	115			
L67490-01AS	AS	02/12/08 2:11	II080209-4	67.97008	63.3	131.1	mg/L	99.7	85	115			
L67490-01ASD	ASD	02/12/08 2:15	II080209-4	67.97008	63.3	130.44	mg/L	98.8	85	115	0.5	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240303													
WG240303ICV	ICV	02/13/08 13:23	WI080128-8	19.98		20.4	mg/L	102.1	90	110			
WG240303ICB	ICB	02/13/08 13:41				U	mg/L		-1.5	1.5			
WG240303LFB	LFB	02/13/08 13:59	WI080128-9	30		30	mg/L	100	90	110			
L67573-02AS	AS	02/13/08 14:35	WI080128-9	30	22.3	51.85	mg/L	98.5	90	110			
L67573-02DUP	DUP	02/13/08 14:53			22.3	22.38	mg/L				0.4	20	
WG240303ICV1	ICV	02/15/08 12:05	WI080128-8	19.98		18.41	mg/L	92.1	90	110			
WG240303ICB1	ICB	02/15/08 12:23				U	mg/L		-1.5	1.5			

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240886													
WG240886ICV	ICV	02/28/08 11:14	WC080227-1	2		1.97	mg/L	98.5	90	110			
WG240886ICB	ICB	02/28/08 11:19				U	mg/L		-0.3	0.3			
WG240886LFB1	LFB	02/28/08 11:24	WC080226-1	5		5.24	mg/L	104.8	90	110			
L67530-01AS	AS	02/28/08 11:29	WC080226-1	5	.2	6.26	mg/L	121.2	90	110			M1
L67530-01DUP	DUP	02/28/08 11:31			.2	.21	mg/L				4.9	20	RA
WG240886LFB2	LFB	02/28/08 12:51	WC080226-1	5		4.93	mg/L	98.6	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240286													
WG240286ICV	ICV	02/12/08 1:38	II080115-3	100		101.87	mg/L	101.9	95	105			
WG240286ICB	ICB	02/12/08 1:42				U	mg/L		-0.6	0.6			
WG240286LFB	LFB	02/12/08 1:58	II080209-4	54.96908		55.97	mg/L	101.8	85	115			
L67490-01AS	AS	02/12/08 2:11	II080209-4	54.96908	30.9	87.98	mg/L	103.8	85	115			
L67490-01ASD	ASD	02/12/08 2:15	II080209-4	54.96908	30.9	87.52	mg/L	103	85	115	0.52	20	

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67574***

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240178													
WG240178ICV	ICV	02/07/08 18:09	WI071212-1	2.416		2.477	mg/L	102.5	90	110			
WG240178ICB	ICB	02/07/08 18:10				U	mg/L		-0.06	0.06			
WG240178LFB	LFB	02/07/08 18:15	WI070911-4	2		2.03	mg/L	101.5	90	110			
L67574-02DUP	DUP	02/07/08 18:20			2.02	2.049	mg/L				1.4	20	
L67574-01AS	AS	02/07/08 18:33	WI070911-4	10	6.8	17.7	mg/L	109	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240178													
WG240178ICV	ICV	02/07/08 18:09	WI071212-1	.609		.615	mg/L	101	90	110			
WG240178ICB	ICB	02/07/08 18:10				U	mg/L		-0.03	0.03			
WG240178LFB	LFB	02/07/08 18:15	WI070911-4	1		1.01	mg/L	101	90	110			
L67574-01AS	AS	02/07/08 18:18	WI070911-4	1	U	.994	mg/L	99.4	90	110			
L67574-02DUP	DUP	02/07/08 18:20			U	U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240286													
WG240286ICV	ICV	02/12/08 1:38	II080115-3	20		20.81	mg/L	104.1	95	105			
WG240286ICB	ICB	02/12/08 1:42				U	mg/L		-0.9	0.9			
WG240286LFB	LFB	02/12/08 1:58	II080209-4	99.76186		103.27	mg/L	103.5	85	115			
L67490-01AS	AS	02/12/08 2:11	II080209-4	99.76186	4.8	114.3	mg/L	109.8	85	115			
L67490-01ASD	ASD	02/12/08 2:15	II080209-4	99.76186	4.8	113.45	mg/L	108.9	85	115	0.75	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240388													
WG240388PBW	PBW	02/13/08 15:45				U	mg/L		-20	20			
WG240388LCSW	LCSW	02/13/08 15:46	PCN28840	260		288	mg/L	110.8	80	120			
L67637-01DUP	DUP	02/13/08 16:00			3440	3536	mg/L				2.8	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240286													
WG240286ICV	ICV	02/12/08 1:38	II080115-3	100		103.13	mg/L	103.1	95	105			
WG240286ICB	ICB	02/12/08 1:42				U	mg/L		-0.9	0.9			
WG240286LFB	LFB	02/12/08 1:58	II080209-4	98.21624		101.41	mg/L	103.3	85	115			
L67490-01AS	AS	02/12/08 2:11	II080209-4	98.21624	97.8	200.73	mg/L	104.8	85	115			
L67490-01ASD	ASD	02/12/08 2:15	II080209-4	98.21624	97.8	199.08	mg/L	103.1	85	115	0.83	20	

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67574***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240303													
WG240303ICV	ICV	02/13/08 13:23	WI080128-8	50.1		51.45	mg/L	102.7	90	110			
WG240303ICB	ICB	02/13/08 13:41				U	mg/L		-1.5	1.5			
WG240303LFB	LFB	02/13/08 13:59	WI080128-9	30		29.94	mg/L	99.8	90	110			
WG240303ICV1	ICV	02/15/08 12:05	WI080128-8	50.1		46.41	mg/L	92.6	90	110			
WG240303ICB1	ICB	02/15/08 12:23				.63	mg/L		-1.5	1.5			
L67573-02AS	AS	02/15/08 12:59	WI080128-9	600	670	1293	mg/L	103.8	90	110			
L67573-02DUP	DUP	02/15/08 13:18			670	627	mg/L				6.6	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67574***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67574-01	WG240886	Fluoride	SM4500F-C	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240178	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240436	Total Alkalinity	SM2320B - Titration	B7	Target analyte detected in prep / method blank at or above acceptance limit. Sample value is > 10X the concentration in the method blank.
L67574-02	WG240886	Fluoride	SM4500F-C	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240178	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240436	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67574***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67574
Date Received: 2/7/2008
Received By:
Date Printed: 2/8/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5451	0.2	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

Labels were switched at login. Samples IDs were changed in seedback to match the labels on the bottles, because analyses were in progress. Client IDs are backwards from COC

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67574
Date Received: 2/7/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67574-01	BIMA		Y									
L67574-02	SUNBELT		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67574

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: DAN SIMPSON
Company: HYDRO GEO CHEM
E-mail: DANJ@HGCINC.COM
Address: 51 WEST WETMORE RD #101 TUCSON AZ 85705
Telephone: (520) 293 1500 X133

Copy of Report to:

Name: JIM NORRIS
Company: HYDRO GEO CHEM
E-mail: JIMN@HGCINC.COM
Telephone: (520) 293 1500 X 112

Invoice to:

Name: JIM NORRIS
Company: HYDRO GEO CHEM
E-mail: ~~JIMNORRIS~~ JIMN@HGCINC.COM
Address: 51 WEST WETMORE RD TUCSON AZ 85705
Telephone: (520) 293 1500 X 133

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ✓ NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: ALI PANDAMUZ
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ca-Mg-Na-K	TDS SO4-- NO2-NO3-Cl-F	ALK					
SUNBELT	02/06/2008 1425	GW	3	✓	✓	✓					
BIMA	02/06/2008 1550	GW	3	✓	✓	✓					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
[signature]	02/06/2008 1635	HPL	2-7-08 10:40

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

February 20, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67599

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 08, 2008. This project has been assigned to ACZ's project number, L67599. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67599. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 20, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: ROGERS

ACZ Sample ID: ***L67599-01***
Date Sampled: *02/07/08 14:20*
Date Received: *02/08/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	138			mg/L	1	5	02/15/08 14:12	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67599***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240303													
WG240303ICV	ICV	02/13/08 13:23	WI080128-8	50.1		51.45	mg/L	102.7	90	110			
WG240303ICB	ICB	02/13/08 13:41				U	mg/L		-1.5	1.5			
WG240303LFB	LFB	02/13/08 13:59	WI080128-9	30		29.94	mg/L	99.8	90	110			
WG240303ICV1	ICV	02/15/08 12:05	WI080128-8	50.1		46.41	mg/L	92.6	90	110			
WG240303ICB1	ICB	02/15/08 12:23				.63	mg/L		-1.5	1.5			
L67573-02AS	AS	02/15/08 12:59	WI080128-9	600	670	1293	mg/L	103.8	90	110			
L67573-02DUP	DUP	02/15/08 13:18			670	627	mg/L				6.6	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67599***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67599***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67599
Date Received: 2/8/2008
Received By:
Date Printed: 2/8/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5455	0.3	16

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67599
Date Received: 2/8/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67599-01	ROGERS									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67599

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: DAN SIMPSON
Company: HYDRO GEO CHEM
E-mail: DANS@HGCINC.COM
Address: 51 W. WETMORE RD #101
TUCSON AZ 85705
Telephone: (520) 293-1500 X133

Copy of Report to:

Name: JIM NORRIS
Company: HYDRO GEO CHEM
E-mail: JIMN@HGCINC.COM
Telephone: (520) 293-1500 X112

Invoice to:

Name: JIM NORRIS
Company: HYDRO GEO CHEM
E-mail: JIMN@HGCINC.COM
Address: 51 W. WETMORE RD #101
TUCSON AZ 85705
Telephone: (520) 293-1500 X112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: SO4--
Project/PO #: 872601.0
Reporting state for compliance testing: AZ
Sampler's Name: ALI PENDAMALI
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO4--							
ROGERS	02/07/2008 1420	GW	1	✓							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	02/08/08 1420		2.8.08 10:29

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 06, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67600

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 08, 2008. This project has been assigned to ACZ's project number, L67600. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67600. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 06, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: BURKE

ACZ Sample ID: ***L67600-01***
Date Sampled: *02/07/08 12:40*
Date Received: *02/08/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	62.3			mg/L	0.2	1	02/12/08 2:48	wfg
Magnesium, dissolved	M200.7 ICP	22.8			mg/L	0.2	1	02/12/08 2:48	wfg
Potassium, dissolved	M200.7 ICP	2.8			mg/L	0.3	2	02/12/08 2:48	wfg
Sodium, dissolved	M200.7 ICP	26.0			mg/L	0.3	2	02/12/08 2:48	wfg

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		212			mg/L	2	20	02/08/08 0:00	lcp
Carbonate as CaCO3			U		mg/L	2	20	02/08/08 0:00	lcp
Hydroxide as CaCO3			U		mg/L	2	20	02/08/08 0:00	lcp
Total Alkalinity		212		*	mg/L	2	20	02/08/08 0:00	lcp
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.5			%			03/06/08 0:00	calc
Sum of Anions		5.9			meq/L	0.1	0.5	03/06/08 0:00	calc
Sum of Cations		6.2			meq/L	0.1	0.5	03/06/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	31.8			mg/L	0.5	3	02/13/08 17:36	aml
Fluoride	SM4500F-C	0.3	B	*	mg/L	0.1	0.5	02/28/08 11:39	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.83			mg/L	0.02	0.1	03/06/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.83		*	mg/L	0.02	0.1	02/08/08 21:56	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/08/08 21:56	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	360			mg/L	10	20	02/12/08 10:48	cas
Sulfate	300.0 - Ion Chromatography	29.5			mg/L	0.5	3	02/13/08 17:36	aml
TDS (calculated)	Calculation	311			mg/L	10	50	03/06/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.16						03/06/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67600***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240221													
WG240221PBW1	PBW	02/08/08 16:46				2.1	mg/L		-20	20			
WG240221LCSW2	LCSW	02/08/08 16:58	WC080131-1	820		830.2	mg/L	101.2	90	110			
WG240221PBW2	PBW	02/08/08 19:45				U	mg/L		-20	20			
WG240221LCSW5	LCSW	02/08/08 19:56	WC080131-1	820		810.1	mg/L	98.8	90	110			
WG240221PBW3	PBW	02/08/08 23:07				U	mg/L		-20	20			
WG240221LCSW8	LCSW	02/08/08 23:19	WC080131-1	820		812.8	mg/L	99.1	90	110			
L67601-05DUP	DUP	02/09/08 0:38			U	U	mg/L				0	20	RA
WG240221LCSW11	LCSW	02/09/08 0:50	WC080131-1	820		826.5	mg/L	100.8	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240286													
WG240286ICV	ICV	02/12/08 1:38	II080115-3	100		98.94	mg/L	98.9	95	105			
WG240286ICB	ICB	02/12/08 1:42				U	mg/L		-0.6	0.6			
WG240286LFB	LFB	02/12/08 1:58	II080209-4	67.97008		68.63	mg/L	101	85	115			
L67490-01AS	AS	02/12/08 2:11	II080209-4	67.97008	63.3	131.1	mg/L	99.7	85	115			
L67490-01ASD	ASD	02/12/08 2:15	II080209-4	67.97008	63.3	130.44	mg/L	98.8	85	115	0.5	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240303													
WG240303ICV	ICV	02/13/08 13:23	WI080128-8	19.98		20.4	mg/L	102.1	90	110			
WG240303ICB	ICB	02/13/08 13:41				U	mg/L		-1.5	1.5			
WG240303LFB	LFB	02/13/08 13:59	WI080128-9	30		30	mg/L	100	90	110			
L67573-02AS	AS	02/13/08 14:35	WI080128-9	30	22.3	51.85	mg/L	98.5	90	110			
L67573-02DUP	DUP	02/13/08 14:53			22.3	22.38	mg/L				0.4	20	
WG240303ICV1	ICV	02/15/08 12:05	WI080128-8	19.98		18.41	mg/L	92.1	90	110			
WG240303ICB1	ICB	02/15/08 12:23				U	mg/L		-1.5	1.5			

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240886													
WG240886ICV	ICV	02/28/08 11:14	WC080227-1	2		1.97	mg/L	98.5	90	110			
WG240886ICB	ICB	02/28/08 11:19				U	mg/L		-0.3	0.3			
WG240886LFB1	LFB	02/28/08 11:24	WC080226-1	5		5.24	mg/L	104.8	90	110			
L67530-01AS	AS	02/28/08 11:29	WC080226-1	5	.2	6.26	mg/L	121.2	90	110			M1
L67530-01DUP	DUP	02/28/08 11:31			.2	.21	mg/L				4.9	20	RA
WG240886LFB2	LFB	02/28/08 12:51	WC080226-1	5		4.93	mg/L	98.6	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240286													
WG240286ICV	ICV	02/12/08 1:38	II080115-3	100		101.87	mg/L	101.9	95	105			
WG240286ICB	ICB	02/12/08 1:42				U	mg/L		-0.6	0.6			
WG240286LFB	LFB	02/12/08 1:58	II080209-4	54.96908		55.97	mg/L	101.8	85	115			
L67490-01AS	AS	02/12/08 2:11	II080209-4	54.96908	30.9	87.98	mg/L	103.8	85	115			
L67490-01ASD	ASD	02/12/08 2:15	II080209-4	54.96908	30.9	87.52	mg/L	103	85	115	0.52	20	

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67600***

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240234													
WG240234ICV	ICV	02/08/08 21:43	WI071212-1	2.416		2.43	mg/L	100.6	90	110			
WG240234ICB	ICB	02/08/08 21:44				U	mg/L		-0.06	0.06			
WG240234LFB	LFB	02/08/08 21:48	WI070911-4	2		1.987	mg/L	99.4	90	110			
L67594-01AS	AS	02/08/08 21:51	WI070911-4	2	.15	2.059	mg/L	95.5	90	110			
L67594-02DUP	DUP	02/08/08 21:53				U	mg/L				0	20	RA

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240234													
WG240234ICV	ICV	02/08/08 21:43	WI071212-1	.609		.618	mg/L	101.5	90	110			
WG240234ICB	ICB	02/08/08 21:44				U	mg/L		-0.03	0.03			
WG240234LFB	LFB	02/08/08 21:48	WI070911-4	1		.991	mg/L	99.1	90	110			
L67594-01AS	AS	02/08/08 21:51	WI070911-4	1		.972	mg/L	97.2	90	110			
L67594-02DUP	DUP	02/08/08 21:53			.01	.013	mg/L				26.1	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240286													
WG240286ICV	ICV	02/12/08 1:38	II080115-3	20		20.81	mg/L	104.1	95	105			
WG240286ICB	ICB	02/12/08 1:42				U	mg/L		-0.9	0.9			
WG240286LFB	LFB	02/12/08 1:58	II080209-4	99.76186		103.27	mg/L	103.5	85	115			
L67490-01AS	AS	02/12/08 2:11	II080209-4	99.76186	4.8	114.3	mg/L	109.8	85	115			
L67490-01ASD	ASD	02/12/08 2:15	II080209-4	99.76186	4.8	113.45	mg/L	108.9	85	115	0.75	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240314													
WG240314PBW	PBW	02/12/08 10:45				U	mg/L		-20	20			
WG240314LCSW	LCSW	02/12/08 10:46	PCN28840	260		288	mg/L	110.8	80	120			
L67612-01DUP	DUP	02/12/08 11:00			140	140	mg/L				0	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240286													
WG240286ICV	ICV	02/12/08 1:38	II080115-3	100		103.13	mg/L	103.1	95	105			
WG240286ICB	ICB	02/12/08 1:42				U	mg/L		-0.9	0.9			
WG240286LFB	LFB	02/12/08 1:58	II080209-4	98.21624		101.41	mg/L	103.3	85	115			
L67490-01AS	AS	02/12/08 2:11	II080209-4	98.21624	97.8	200.73	mg/L	104.8	85	115			
L67490-01ASD	ASD	02/12/08 2:15	II080209-4	98.21624	97.8	199.08	mg/L	103.1	85	115	0.83	20	

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67600***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240303													
WG240303ICV	ICV	02/13/08 13:23	WI080128-8	50.1		51.45	mg/L	102.7	90	110			
WG240303ICB	ICB	02/13/08 13:41				U	mg/L		-1.5	1.5			
WG240303LFB	LFB	02/13/08 13:59	WI080128-9	30		29.94	mg/L	99.8	90	110			
WG240303ICV1	ICV	02/15/08 12:05	WI080128-8	50.1		46.41	mg/L	92.6	90	110			
WG240303ICB1	ICB	02/15/08 12:23				.63	mg/L		-1.5	1.5			
L67573-02AS	AS	02/15/08 12:59	WI080128-9	600	670	1293	mg/L	103.8	90	110			
L67573-02DUP	DUP	02/15/08 13:18			670	627	mg/L				6.6	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67600***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67600-01	WG240886	Fluoride	SM4500F-C	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240234	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240221	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67600***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67600
Date Received: 2/8/2008
Received By:
Date Printed: 2/8/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5455	0.3	16

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67600
Date Received: 2/8/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67600-01	BURKE		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67600

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: DAN SIMPSON
Company: HYDRO GEO CHEM
E-mail: DANS@HGCINC.COM
Address: 51 W. WETMORE RD #101 TUCSON AZ 85705
Telephone: (520) 293 1500 X133

Copy of Report to:

Name: JIM NORRIS
Company: HYDRO GEO CHEM
E-mail: JIMN@HGCINC.COM
Telephone: (520) 293 1500 X112

Invoice to:

Name: JIM NORRIS
Company: HYDRO GEO CHEM
E-mail: JIMN@HGCINC.COM
Address: 51 W. WETMORE RD #101 TUCSON AZ 85705
Telephone: (520) 293 1500 X112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: ALI PANDAMOUZ
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ca-Na Mg K	TDS SO4 NO2 NO3 CL F	ALK					
BURKE	02/07/2008 1240	GW	3	✓	✓	✓					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
ALI PANDAMOUZ	02/07/2008 1640	MS	2.8.08 10:29

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 03, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67605

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 09, 2008. This project has been assigned to ACZ's project number, L67605. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67605. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 03, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: EAST

ACZ Sample ID: ***L67605-01***
Date Sampled: *02/08/08 09:00*
Date Received: *02/09/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	59.9			mg/L	0.2	1	02/12/08 3:29	wfg
Magnesium, dissolved	M200.7 ICP	24.3			mg/L	0.2	1	02/12/08 3:29	wfg
Potassium, dissolved	M200.7 ICP	2.5			mg/L	0.3	2	02/12/08 3:29	wfg
Sodium, dissolved	M200.7 ICP	31.6			mg/L	0.3	2	02/12/08 3:29	wfg

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		227			mg/L	2	20	02/14/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	02/14/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/14/08 0:00	jlf
Total Alkalinity		227		*	mg/L	2	20	02/14/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.4			%			03/03/08 0:00	calc
Sum of Anions		6.1			meq/L	0.1	0.5	03/03/08 0:00	calc
Sum of Cations		6.4			meq/L	0.1	0.5	03/03/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	31.2			mg/L	0.5	3	02/13/08 17:54	aml
Fluoride	SM4500F-C	0.4	B	*	mg/L	0.1	0.5	02/28/08 11:42	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	6.3			mg/L	0.1	0.5	03/03/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	6.3			mg/L	0.1	0.5	02/09/08 16:21	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/09/08 16:14	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	320			mg/L	10	20	02/15/08 16:03	cas
Sulfate	300.0 - Ion Chromatography	10.6			mg/L	0.5	3	02/13/08 17:54	aml
TDS (calculated)	Calculation	325			mg/L	10	50	03/03/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.98						03/03/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: TM-14

ACZ Sample ID: ***L67605-02***
Date Sampled: *02/08/08 11:25*
Date Received: *02/09/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	56.1			mg/L	0.2	1	02/12/08 3:33	wfg
Magnesium, dissolved	M200.7 ICP	10.0			mg/L	0.2	1	02/12/08 3:33	wfg
Potassium, dissolved	M200.7 ICP	2.8			mg/L	0.3	2	02/12/08 3:33	wfg
Sodium, dissolved	M200.7 ICP	23.6			mg/L	0.3	2	02/12/08 3:33	wfg

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		166			mg/L	2	20	02/14/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	02/14/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/14/08 0:00	jlf
Total Alkalinity		166		*	mg/L	2	20	02/14/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.2			%			03/03/08 0:00	calc
Sum of Anions		4.5			meq/L	0.1	0.5	03/03/08 0:00	calc
Sum of Cations		4.7			meq/L	0.1	0.5	03/03/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	12.5			mg/L	0.5	3	02/13/08 18:12	aml
Fluoride	SM4500F-C	0.3	B	*	mg/L	0.1	0.5	02/28/08 11:45	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.82			mg/L	0.02	0.1	03/03/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.82			mg/L	0.02	0.1	02/09/08 16:16	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/09/08 16:16	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	250			mg/L	10	20	02/15/08 16:05	cas
Sulfate	300.0 - Ion Chromatography	32.9			mg/L	0.5	3	02/13/08 18:12	aml
TDS (calculated)	Calculation	246			mg/L	10	50	03/03/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.02						03/03/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: DUP020808

ACZ Sample ID: ***L67605-03***
Date Sampled: *02/08/08 00:00*
Date Received: *02/09/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	55.4			mg/L	0.2	1	02/12/08 3:38	wfg
Magnesium, dissolved	M200.7 ICP	10.0			mg/L	0.2	1	02/12/08 3:38	wfg
Potassium, dissolved	M200.7 ICP	2.9			mg/L	0.3	2	02/12/08 3:38	wfg
Sodium, dissolved	M200.7 ICP	23.7			mg/L	0.3	2	02/12/08 3:38	wfg

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		165			mg/L	2	20	02/14/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	02/14/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/14/08 0:00	jlf
Total Alkalinity		165		*	mg/L	2	20	02/14/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.3			%			03/03/08 0:00	calc
Sum of Anions		4.4			meq/L	0.1	0.5	03/03/08 0:00	calc
Sum of Cations		4.7			meq/L	0.1	0.5	03/03/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	12.6			mg/L	0.5	3	02/13/08 18:30	aml
Fluoride	SM4500F-C	0.3	B	*	mg/L	0.1	0.5	02/28/08 11:47	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.88			mg/L	0.02	0.1	03/03/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.88			mg/L	0.02	0.1	02/09/08 16:19	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/09/08 16:19	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	250			mg/L	10	20	02/15/08 16:06	cas
Sulfate	300.0 - Ion Chromatography	32.9			mg/L	0.5	3	02/13/08 18:30	aml
TDS (calculated)	Calculation	245			mg/L	10	50	03/03/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.02						03/03/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: FB020808

ACZ Sample ID: ***L67605-04***
Date Sampled: *02/08/08 00:00*
Date Received: *02/09/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP		U		mg/L	0.2	1	02/12/08 3:42	wfg
Magnesium, dissolved	M200.7 ICP		U		mg/L	0.2	1	02/12/08 3:42	wfg
Potassium, dissolved	M200.7 ICP		U		mg/L	0.3	2	02/12/08 3:42	wfg
Sodium, dissolved	M200.7 ICP		U		mg/L	0.3	2	02/12/08 3:42	wfg

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3			U		mg/L	2	20	02/14/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	02/14/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/14/08 0:00	jlf
Total Alkalinity			U	*	mg/L	2	20	02/14/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		n/a			%			03/03/08 0:00	calc
Sum of Anions		N/A			meq/L	0.1	0.5	03/03/08 0:00	calc
Sum of Cations			U		meq/L	0.1	0.5	03/03/08 0:00	calc
Chloride	M300.0 - Ion Chromatography		U		mg/L	0.5	3	02/13/08 19:27	aml
Fluoride	SM4500F-C		U	*	mg/L	0.1	0.5	02/28/08 11:59	cas
Lab Filtration	SM 3030 B			*				02/11/08 10:50	wpl
Lab Filtration & Acidification	SM 3030 B			*				02/11/08 10:10	wpl
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2		U		mg/L	0.02	0.1	03/03/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U		mg/L	0.02	0.1	02/09/08 16:20	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/09/08 16:20	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C		U		mg/L	10	20	02/15/08 16:07	cas
Sulfate	300.0 - Ion Chromatography		U		mg/L	0.5	3	02/13/08 19:27	aml
TDS (calculated)	Calculation		U		mg/L	10	50	03/03/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	n/a						03/03/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67605***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240436													
WG240436PBW1	PBW	02/14/08 16:49				25.4	mg/L		-20	20			B4 BF
WG240436LCSW2	LCSW	02/14/08 17:01	WC080131-1	820		850.9	mg/L	103.8	90	110			
L67612-01DUP	DUP	02/14/08 18:19			39	36.3	mg/L				7.2	20	
WG240436PBW2	PBW	02/14/08 20:47				U	mg/L		-20	20			
WG240436LCSW5	LCSW	02/14/08 20:58	WC080131-1	820		854.8	mg/L	104.2	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240286													
WG240286ICV	ICV	02/12/08 1:38	II080115-3	100		98.94	mg/L	98.9	95	105			
WG240286ICB	ICB	02/12/08 1:42				U	mg/L		-0.6	0.6			
WG240286LFB	LFB	02/12/08 1:58	II080209-4	67.97008		68.63	mg/L	101	85	115			
L67601-02AS	AS	02/12/08 3:00	II080209-4	67.97008	17.9	87.36	mg/L	102.2	85	115			
L67601-02ASD	ASD	02/12/08 3:04	II080209-4	67.97008	17.9	88.42	mg/L	103.8	85	115	1.21	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240303													
WG240303ICV	ICV	02/13/08 13:23	WI080128-8	19.98		20.4	mg/L	102.1	90	110			
WG240303ICB	ICB	02/13/08 13:41				U	mg/L		-1.5	1.5			
WG240303LFB	LFB	02/13/08 13:59	WI080128-9	30		30	mg/L	100	90	110			
L67573-02AS	AS	02/13/08 14:35	WI080128-9	30	22.3	51.85	mg/L	98.5	90	110			
L67573-02DUP	DUP	02/13/08 14:53			22.3	22.38	mg/L				0.4	20	
L67605-03AS	AS	02/13/08 18:49	WI080128-9	30	12.6	41.8	mg/L	97.3	90	110			
L67605-03DUP	DUP	02/13/08 19:09			12.6	12.55	mg/L				0.4	20	
WG240303ICV1	ICV	02/15/08 12:05	WI080128-8	19.98		18.41	mg/L	92.1	90	110			
WG240303ICB1	ICB	02/15/08 12:23				U	mg/L		-1.5	1.5			

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240886													
WG240886ICV	ICV	02/28/08 11:14	WC080227-1	2		1.97	mg/L	98.5	90	110			
WG240886ICB	ICB	02/28/08 11:19				U	mg/L		-0.3	0.3			
WG240886LFB1	LFB	02/28/08 11:24	WC080226-1	5		5.24	mg/L	104.8	90	110			
L67530-01AS	AS	02/28/08 11:29	WC080226-1	5	.2	6.26	mg/L	121.2	90	110			M1
L67530-01DUP	DUP	02/28/08 11:31			.2	.21	mg/L				4.9	20	RA
WG240886LFB2	LFB	02/28/08 12:51	WC080226-1	5		4.93	mg/L	98.6	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240286													
WG240286ICV	ICV	02/12/08 1:38	II080115-3	100		101.87	mg/L	101.9	95	105			
WG240286ICB	ICB	02/12/08 1:42				U	mg/L		-0.6	0.6			
WG240286LFB	LFB	02/12/08 1:58	II080209-4	54.96908		55.97	mg/L	101.8	85	115			
L67601-02AS	AS	02/12/08 3:00	II080209-4	54.96908	3.5	61.27	mg/L	105.1	85	115			
L67601-02ASD	ASD	02/12/08 3:04	II080209-4	54.96908	3.5	61.99	mg/L	106.4	85	115	1.17	20	

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67605***

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240244													
WG240244ICV	ICV	02/09/08 16:07	WI071212-1	2.416		2.448	mg/L	101.3	90	110			
WG240244ICB	ICB	02/09/08 16:08				U	mg/L		-0.06	0.06			
WG240244LFB	LFB	02/09/08 16:12	WI070911-4	2		2.027	mg/L	101.4	90	110			
L67605-02DUP	DUP	02/09/08 16:17			1.82	1.823	mg/L				0.2	20	
L67605-01AS	AS	02/09/08 16:26	WI070911-4	10	6.3	16.38	mg/L	100.8	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240244													
WG240244ICV	ICV	02/09/08 16:07	WI071212-1	.609		.62	mg/L	101.8	90	110			
WG240244ICB	ICB	02/09/08 16:08				U	mg/L		-0.03	0.03			
WG240244LFB	LFB	02/09/08 16:12	WI070911-4	1		1.023	mg/L	102.3	90	110			
L67605-01AS	AS	02/09/08 16:15	WI070911-4	1	U	.999	mg/L	99.9	90	110			
L67605-02DUP	DUP	02/09/08 16:17			U	U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240286													
WG240286ICV	ICV	02/12/08 1:38	II080115-3	20		20.81	mg/L	104.1	95	105			
WG240286ICB	ICB	02/12/08 1:42				U	mg/L		-0.9	0.9			
WG240286LFB	LFB	02/12/08 1:58	II080209-4	99.76186		103.27	mg/L	103.5	85	115			
L67601-02AS	AS	02/12/08 3:00	II080209-4	99.76186	1.2	108.54	mg/L	107.6	85	115			
L67601-02ASD	ASD	02/12/08 3:04	II080209-4	99.76186	1.2	110.31	mg/L	109.4	85	115	1.62	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240485													
WG240485PBW	PBW	02/15/08 16:00				U	mg/L		-20	20			
WG240485LCSW	LCSW	02/15/08 16:01	PCN28840	260		274	mg/L	105.4	80	120			
L67633-04DUP	DUP	02/15/08 16:15			9070	9164	mg/L				1	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240286													
WG240286ICV	ICV	02/12/08 1:38	II080115-3	100		103.13	mg/L	103.1	95	105			
WG240286ICB	ICB	02/12/08 1:42				U	mg/L		-0.9	0.9			
WG240286LFB	LFB	02/12/08 1:58	II080209-4	98.21624		101.41	mg/L	103.3	85	115			
L67601-02AS	AS	02/12/08 3:00	II080209-4	98.21624	4.6	109.57	mg/L	106.9	85	115			
L67601-02ASD	ASD	02/12/08 3:04	II080209-4	98.21624	4.6	110.8	mg/L	108.1	85	115	1.12	20	

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67605***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240303													
WG240303ICV	ICV	02/13/08 13:23	WI080128-8	50.1		51.45	mg/L	102.7	90	110			
WG240303ICB	ICB	02/13/08 13:41				U	mg/L		-1.5	1.5			
WG240303LFB	LFB	02/13/08 13:59	WI080128-9	30		29.94	mg/L	99.8	90	110			
L67605-03AS	AS	02/13/08 18:49	WI080128-9	30	32.9	61.17	mg/L	94.2	90	110			
L67605-03DUP	DUP	02/13/08 19:09			32.9	32.87	mg/L				0.1	20	
WG240303ICV1	ICV	02/15/08 12:05	WI080128-8	50.1		46.41	mg/L	92.6	90	110			
WG240303ICB1	ICB	02/15/08 12:23				.63	mg/L		-1.5	1.5			
L67573-02AS	AS	02/15/08 12:59	WI080128-9	600	670	1293	mg/L	103.8	90	110			
L67573-02DUP	DUP	02/15/08 13:18			670	627	mg/L				6.6	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67605***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67605-01	WG240886	Fluoride	SM4500F-C	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240244	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240436	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.
L67605-02	WG240886	Fluoride	SM4500F-C	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240244	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240436	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.
L67605-03	WG240886	Fluoride	SM4500F-C	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240244	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240436	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.
L67605-04	WG240886	Fluoride	SM4500F-C	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240244	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240436	Total Alkalinity	SM2320B - Titration	BF	Target analyte in prep / method blank at or above the acceptance criteria. Target analyte was not detected in the sample [< MDL].

Hydro Geo Chem, Inc. ACZ Project ID: ***L67605***

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Lab Filtration	SM 3030 B
Lab Filtration & Acidification	SM 3030 B

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67605
Date Received: 2/9/2008
Received By:
Date Printed: 2/9/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
2004	1.4	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

For sample#4 had to pour off a green and a white from the raw.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67605
Date Received: 2/9/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67605-01	EAST		Y									
L67605-02	TM-14		Y									
L67605-03	DUP020808		Y									
L67605-04	FB020808									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67605

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd Tucson AZ 85705
Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc
E-mail: jimn@hgcinc
Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc.
E-mail: Jimn@hgcinc.com
Address: 51 W. Wetmore Rd Tucson AZ 85705
Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ca Na Mg K	TDS SO4 NO3-NO2-Cl-F	Alk					
EAST	02/08/2008 0800	GW	3	✓	✓	✓					
TM-14	02/08/2008 1125	GW	3	✓	✓	✓					
DUP020808	02/08/2008	GW	3	✓	✓	✓					
FB020808	02/08/2008	GW	1	✓	✓	✓					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
[signature]	02/08/08 1430	MS	2.9.08 11:50

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

February 29, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67668

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 14, 2008. This project has been assigned to ACZ's project number, L67668. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67668. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 29, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

Hydro Geo Chem, Inc.

February 29, 2008

Project ID: 872001.0
ACZ Project ID: L67668

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 3 ground water samples from Hydro Geo Chem, Inc. on February 14, 2008. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L67668. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Samples were received outside the EPA recommended temperature of 0-6 degrees C.

Holding Times

Any analyses not performed within EPA recommended holding times have been qualified with an "H" flag.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: WALKER

ACZ Sample ID: ***L67668-01***
Date Sampled: *02/13/08 10:55*
Date Received: *02/14/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	117		*	mg/L	0.2	1	02/14/08 20:03	aeh/erf
Magnesium, dissolved	M200.7 ICP	14.4		*	mg/L	0.2	1	02/14/08 20:03	aeh/erf
Potassium, dissolved	M200.7 ICP	3.6			mg/L	0.3	2	02/14/08 20:03	aeh/erf
Sodium, dissolved	M200.7 ICP	14.3			mg/L	0.3	2	02/14/08 20:03	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		355			mg/L	2	20	02/18/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	02/18/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/18/08 0:00	jlf
Total Alkalinity		355			mg/L	2	20	02/18/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-0.6			%			02/29/08 0:00	calc
Sum of Anions		7.8			meq/L	0.1	0.5	02/29/08 0:00	calc
Sum of Cations		7.7			meq/L	0.1	0.5	02/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	4.0			mg/L	0.5	3	02/20/08 20:40	aml/ccp
Fluoride	SM4500F-C	0.2	B	*	mg/L	0.1	0.5	02/28/08 12:16	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.26			mg/L	0.02	0.1	02/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.26		*	mg/L	0.02	0.1	02/14/08 20:51	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/14/08 20:51	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	440			mg/L	10	20	02/16/08 13:41	cas
Sulfate	300.0 - Ion Chromatography	20.0			mg/L	0.5	3	02/20/08 20:40	aml/ccp
TDS (calculated)	Calculation	396			mg/L	10	50	02/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.11						02/29/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: SWAN-OLD

ACZ Sample ID: ***L67668-02***
Date Sampled: *02/13/08 13:15*
Date Received: *02/14/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	77.5		*	mg/L	0.2	1	02/14/08 20:07	aeh/erf
Magnesium, dissolved	M200.7 ICP	11.1		*	mg/L	0.2	1	02/14/08 20:07	aeh/erf
Potassium, dissolved	M200.7 ICP	3.3			mg/L	0.3	2	02/14/08 20:07	aeh/erf
Sodium, dissolved	M200.7 ICP	14.1			mg/L	0.3	2	02/14/08 20:07	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		213			mg/L	2	20	02/18/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	02/18/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/18/08 0:00	jlf
Total Alkalinity		213			mg/L	2	20	02/18/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		0.0			%			02/29/08 0:00	calc
Sum of Anions		5.4			meq/L	0.1	0.5	02/29/08 0:00	calc
Sum of Cations		5.4			meq/L	0.1	0.5	02/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	10.3			mg/L	0.5	3	02/20/08 20:58	aml/ccp
Fluoride	SM4500F-C	0.3	B	*	mg/L	0.1	0.5	02/28/08 12:18	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	5.51			mg/L	0.06	0.3	02/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	5.51		*	mg/L	0.06	0.3	02/14/08 21:01	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/14/08 20:52	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	320			mg/L	10	20	02/16/08 13:43	cas
Sulfate	300.0 - Ion Chromatography	24.1			mg/L	0.5	3	02/20/08 20:58	aml/ccp
TDS (calculated)	Calculation	293			mg/L	10	50	02/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.09						02/29/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: SWAN-NEW-TM-8

ACZ Sample ID: ***L67668-03***
Date Sampled: *02/13/08 14:05*
Date Received: *02/14/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	43.4		*	mg/L	0.2	1	02/14/08 20:11	aeh/erf
Magnesium, dissolved	M200.7 ICP	21.4		*	mg/L	0.2	1	02/14/08 20:11	aeh/erf
Potassium, dissolved	M200.7 ICP	4.9			mg/L	0.3	2	02/14/08 20:11	aeh/erf
Sodium, dissolved	M200.7 ICP	35.5			mg/L	0.3	2	02/14/08 20:11	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		204			mg/L	2	20	02/18/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	02/18/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/18/08 0:00	jlf
Total Alkalinity		204			mg/L	2	20	02/18/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		0.0			%			02/29/08 0:00	calc
Sum of Anions		5.6			meq/L	0.1	0.5	02/29/08 0:00	calc
Sum of Cations		5.6			meq/L	0.1	0.5	02/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	32.1		*	mg/L	0.5	3	02/20/08 21:16	aml/ccp
Fluoride	SM4500F-C	0.3	B	*	mg/L	0.1	0.5	02/28/08 12:21	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	5.30			mg/L	0.06	0.3	02/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	5.30		*	mg/L	0.06	0.3	02/14/08 21:02	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/14/08 20:54	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	310			mg/L	10	20	02/16/08 13:44	cas
Sulfate	300.0 - Ion Chromatography	12.6		*	mg/L	0.5	3	02/20/08 21:16	aml/ccp
TDS (calculated)	Calculation	296			mg/L	10	50	02/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.05						02/29/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67668***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240540													
WG240540PBW1	PBW	02/18/08 16:27				U	mg/L		-20	20			
WG240540LCSW2	LCSW	02/18/08 16:38	WC080131-1	820		831.6	mg/L	101.4	90	110			
WG240540PBW2	PBW	02/18/08 19:16				U	mg/L		-20	20			
WG240540LCSW5	LCSW	02/18/08 19:28	WC080131-1	820		857.9	mg/L	104.6	90	110			
L67670-03DUP	DUP	02/18/08 20:45			194	197.7	mg/L				1.9	20	
WG240540PBW3	PBW	02/18/08 23:03				U	mg/L		-20	20			
WG240540LCSW8	LCSW	02/18/08 23:15	WC080131-1	820		867.2	mg/L	105.8	90	110			
WG240540PBW5	PBW	02/19/08 11:41				U	mg/L		-20	20			
WG240540LCSW14	LCSW	02/19/08 11:53	WC080131-1	820		832	mg/L	101.5	90	110			
WG240540LCSW17	LCSW	02/19/08 15:01	WC080131-1	820		882.6	mg/L	107.6	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240430													
WG240430ICV	ICV	02/14/08 18:03	II080115-3	100		96.65	mg/L	96.7	95	105			
WG240430ICB	ICB	02/14/08 18:07				U	mg/L		-0.6	0.6			
WG240430LFB	LFB	02/14/08 18:24	II080209-4	67.97008		69.26	mg/L	101.9	85	115			
L67666-01AS	AS	02/14/08 19:34	II080209-4	67.97008	469	511.15	mg/L	62	85	115			M3
L67666-01ASD	ASD	02/14/08 19:38	II080209-4	67.97008	469	517.32	mg/L	71.1	85	115	1.2	20	M3

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240628													
WG240628ICV	ICV	02/20/08 16:08	WI080220-1	19.98		20.1	mg/L	100.6	90	110			
WG240628ICB	ICB	02/20/08 16:26				U	mg/L		-1.5	1.5			
WG240628LFB	LFB	02/20/08 16:44	WI080128-9	30		29.95	mg/L	99.8	90	110			
L67648-01AS	AS	02/20/08 18:33	WI080128-9	30	27.9	56.16	mg/L	94.2	90	110			
L67648-01DUP	DUP	02/20/08 18:51			27.9	27.89	mg/L				0	20	
L67668-03AS	AS	02/20/08 21:34	WI080213-1	50	32.1	58.57	mg/L	52.9	90	110			M2
L67668-03DUP	DUP	02/20/08 21:52			32.1	32.13	mg/L				0.1	20	

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240886													
WG240886ICV	ICV	02/28/08 11:14	WC080227-1	2		1.97	mg/L	98.5	90	110			
WG240886ICB	ICB	02/28/08 11:19				U	mg/L		-0.3	0.3			
WG240886LFB1	LFB	02/28/08 11:24	WC080226-1	5		5.24	mg/L	104.8	90	110			
L67649-03AS	AS	02/28/08 12:10	WC080226-1	5	.1	5.29	mg/L	103.8	90	110			
L67649-03DUP	DUP	02/28/08 12:13			.1	.13	mg/L				26.1	20	RA
WG240886LFB2	LFB	02/28/08 12:51	WC080226-1	5		4.93	mg/L	98.6	90	110			

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67668***

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240430													
WG240430ICV	ICV	02/14/08 18:03	II080115-3	100		100.17	mg/L	100.2	95	105			
WG240430ICB	ICB	02/14/08 18:07				U	mg/L		-0.6	0.6			
WG240430LFB	LFB	02/14/08 18:24	II080209-4	54.96908		58.01	mg/L	105.5	85	115			
L67666-01AS	AS	02/14/08 19:34	II080209-4	54.96908	354	401.3	mg/L	86	85	115			
L67666-01ASD	ASD	02/14/08 19:38	II080209-4	54.96908	354	398.29	mg/L	80.6	85	115	0.75	20	M3

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240451													
WG240451ICV	ICV	02/14/08 20:40	WI071212-1	2.416		2.395	mg/L	99.1	90	110			
WG240451ICB	ICB	02/14/08 20:41				U	mg/L		-0.06	0.06			
WG240451LFB	LFB	02/14/08 20:45	WI070911-4	2		2.035	mg/L	101.8	90	110			
L67667-01AS	AS	02/14/08 20:47	WI070911-4	2	U	2.135	mg/L	106.8	90	110			
L67667-02DUP	DUP	02/14/08 20:50			U	U	mg/L				0	20	RA

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240451													
WG240451ICV	ICV	02/14/08 20:40	WI071212-1	.609		.618	mg/L	101.5	90	110			
WG240451ICB	ICB	02/14/08 20:41				U	mg/L		-0.03	0.03			
WG240451LFB	LFB	02/14/08 20:45	WI070911-4	1		1.065	mg/L	106.5	90	110			
L67667-01AS	AS	02/14/08 20:47	WI070911-4	1	U	1.118	mg/L	111.8	90	110			M1
L67667-02DUP	DUP	02/14/08 20:50			U	U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240430													
WG240430ICV	ICV	02/14/08 18:03	II080115-3	20		19.81	mg/L	99.1	95	105			
WG240430ICB	ICB	02/14/08 18:07				U	mg/L		-0.9	0.9			
WG240430LFB	LFB	02/14/08 18:24	II080209-4	99.76186		103.99	mg/L	104.2	85	115			
L67666-01AS	AS	02/14/08 19:34	II080209-4	99.76186	18.5	126.71	mg/L	108.5	85	115			
L67666-01ASD	ASD	02/14/08 19:38	II080209-4	99.76186	18.5	122.91	mg/L	104.7	85	115	3.04	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240504													
WG240504PBW	PBW	02/16/08 13:30				U	mg/L		-20	20			
WG240504LCSW	LCSW	02/16/08 13:31	PCN28840	260		306	mg/L	117.7	80	120			
L67668-03DUP	DUP	02/16/08 13:45			310	308	mg/L				0.6	20	

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67668***

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240430													
WG240430ICV	ICV	02/14/08 18:03	II080115-3	100		98.07	mg/L	98.1	95	105			
WG240430ICB	ICB	02/14/08 18:07				U	mg/L		-0.9	0.9			
WG240430LFB	LFB	02/14/08 18:24	II080209-4	98.21624		101.78	mg/L	103.6	85	115			
L67666-01AS	AS	02/14/08 19:34	II080209-4	98.21624	144	244.55	mg/L	102.4	85	115			
L67666-01ASD	ASD	02/14/08 19:38	II080209-4	98.21624	144	236.82	mg/L	94.5	85	115	3.21	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240628													
WG240628ICV	ICV	02/20/08 16:08	WI080220-1	50.1		50.64	mg/L	101.1	90	110			
WG240628ICB	ICB	02/20/08 16:26				U	mg/L		-1.5	1.5			
WG240628LFB	LFB	02/20/08 16:44	WI080128-9	30		30.49	mg/L	101.6	90	110			
L67668-03AS	AS	02/20/08 21:34	WI080213-1	50	12.6	39.09	mg/L	53	90	110			M2
L67668-03DUP	DUP	02/20/08 21:52			12.6	12.58	mg/L				0.2	20	
WG240628ICV1	ICV	02/21/08 11:56	WI080220-1	50.1		50.19	mg/L	100.2	90	110			
WG240628ICB1	ICB	02/21/08 12:14				U	mg/L		-1.5	1.5			
L67648-01AS	AS	02/21/08 12:50	WI080128-9	600	520	1146	mg/L	104.3	90	110			
L67648-01DUP	DUP	02/21/08 13:08			520	486	mg/L				6.8	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67668***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67668-01	WG240430	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Magnesium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG240886	Fluoride	SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240451	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67668-02	WG240430	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Magnesium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG240886	Fluoride	SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240451	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67668-03	WG240430	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Magnesium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG240628	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG240886	Fluoride	SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240451	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240628	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67668***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
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Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67668
Date Received: 2/14/2008
Received By:
Date Printed: 2/14/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
2115	6.8	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67668
Date Received: 2/14/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67668-01	WALKER		Y									
L67668-02	SWAN-OLD		Y									
L67668-03	SWAN-NEW-TM-8		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67668

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem (HGC)
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd
Tucson AZ 85705
Telephone: (520) 293 1500 x 133

Copy of Report to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Telephone: (520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Address: as above
Telephone: (520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES: X NO:
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB - GW
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: Kim Wilson + Ali Pandamouz
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ca, Na, Mg, K	TDS SO4 NO2 NO3 Cl F	ALK					
WALKER	2/13/08 10:55	GW	✓	✓	✓	✓					
SWAN - OLD	2/13/08 13:15	GW	✓	✓	✓	✓					
SWAN - NEW - TM-8	2/13/08 14:05	GW	✓	✓	✓	✓					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Kim Wilson	16:30 2/13/08	WPL	2-14-08 10:58

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

February 29, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67649

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 13, 2008. This project has been assigned to ACZ's project number, L67649. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67649. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 29, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: PARRA

ACZ Sample ID: ***L67649-01***
Date Sampled: *02/11/08 13:30*
Date Received: *02/13/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	178			mg/L	0.2	1	02/13/08 21:46	erf
Magnesium, dissolved	M200.7 ICP	50.4			mg/L	0.2	1	02/13/08 21:46	erf
Potassium, dissolved	M200.7 ICP	4.4			mg/L	0.3	2	02/13/08 21:46	erf
Sodium, dissolved	M200.7 ICP	31.6		*	mg/L	0.3	2	02/13/08 21:46	erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		177			mg/L	2	20	02/15/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	02/15/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/15/08 0:00	jlf
Total Alkalinity		177			mg/L	2	20	02/15/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		8.2			%			02/29/08 0:00	calc
Sum of Anions		12.3			meq/L	0.1	0.5	02/29/08 0:00	calc
Sum of Cations		14.5			meq/L	0.1	0.5	02/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	33.4			mg/L	0.5	3	02/20/08 19:09	aml/ccp
Fluoride	SM4500F-C	0.1	B	*	mg/L	0.1	0.5	02/28/08 12:02	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	4.17			mg/L	0.04	0.2	02/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	4.17	H	*	mg/L	0.04	0.2	02/13/08 17:43	aml/pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		HU	*	mg/L	0.01	0.05	02/13/08 18:27	aml/pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	880			mg/L	10	20	02/13/08 16:05	cas
Sulfate	300.0 - Ion Chromatography	360			mg/L	10	50	02/21/08 13:26	aml/ccp
TDS (calculated)	Calculation	783			mg/L	10	50	02/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.12						02/29/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: GALLANT

ACZ Sample ID: ***L67649-02***
Date Sampled: *02/11/08 15:40*
Date Received: *02/13/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	106			mg/L	0.2	1	02/13/08 21:50	erf
Magnesium, dissolved	M200.7 ICP	15.9			mg/L	0.2	1	02/13/08 21:50	erf
Potassium, dissolved	M200.7 ICP	4.3			mg/L	0.3	2	02/13/08 21:50	erf
Sodium, dissolved	M200.7 ICP	25.6		*	mg/L	0.3	2	02/13/08 21:50	erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		344			mg/L	2	20	02/18/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	02/18/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/18/08 0:00	jlf
Total Alkalinity		344			mg/L	2	20	02/18/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		0.0			%			02/29/08 0:00	calc
Sum of Anions		7.8			meq/L	0.1	0.5	02/29/08 0:00	calc
Sum of Cations		7.8			meq/L	0.1	0.5	02/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	12.7			mg/L	0.5	3	02/20/08 19:27	aml/ccp
Fluoride	SM4500F-C	0.2	B	*	mg/L	0.1	0.5	02/28/08 12:05	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	3.04			mg/L	0.02	0.1	02/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	3.04	H	*	mg/L	0.02	0.1	02/13/08 17:44	aml/pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		HU	*	mg/L	0.01	0.05	02/13/08 17:44	aml/pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	400			mg/L	10	20	02/13/08 16:07	cas
Sulfate	300.0 - Ion Chromatography	17.9			mg/L	0.5	3	02/20/08 19:27	aml/ccp
TDS (calculated)	Calculation	402			mg/L	10	50	02/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.00						02/29/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: POWER

ACZ Sample ID: ***L67649-03***
Date Sampled: *02/12/08 09:20*
Date Received: *02/13/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	95.0			mg/L	0.2	1	02/13/08 21:54	erf
Magnesium, dissolved	M200.7 ICP	7.6			mg/L	0.2	1	02/13/08 21:54	erf
Potassium, dissolved	M200.7 ICP	3.8			mg/L	0.3	2	02/13/08 21:54	erf
Sodium, dissolved	M200.7 ICP	7.4			mg/L	0.3	2	02/14/08 16:23	erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		242			mg/L	2	20	02/18/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	02/18/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/18/08 0:00	jlf
Total Alkalinity		242			mg/L	2	20	02/18/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		0.0			%			02/29/08 0:00	calc
Sum of Anions		5.8			meq/L	0.1	0.5	02/29/08 0:00	calc
Sum of Cations		5.8			meq/L	0.1	0.5	02/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	6.1			mg/L	0.5	3	02/20/08 20:22	aml/ccp
Fluoride	SM4500F-C	0.1	B	*	mg/L	0.1	0.5	02/28/08 12:08	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	7.0			mg/L	0.1	0.5	02/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	7.0		*	mg/L	0.1	0.5	02/13/08 17:46	aml/pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/13/08 18:28	aml/pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	310			mg/L	10	20	02/13/08 16:08	cas
Sulfate	300.0 - Ion Chromatography	15.5			mg/L	0.5	3	02/20/08 20:22	aml/ccp
TDS (calculated)	Calculation	312			mg/L	10	50	02/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.99						02/29/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67649***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240436													
WG240436PBW2	PBW	02/14/08 20:47				U	mg/L		-20	20			
WG240436LCSW5	LCSW	02/14/08 20:58	WC080131-1	820		854.8	mg/L	104.2	90	110			
L67649-01DUP	DUP	02/15/08 9:01			177	197.6	mg/L				11	20	
WG240540													
WG240540PBW1	PBW	02/18/08 16:27				U	mg/L		-20	20			
WG240540LCSW2	LCSW	02/18/08 16:38	WC080131-1	820		831.6	mg/L	101.4	90	110			
L67660-03DUP	DUP	02/18/08 18:08			164	155.4	mg/L				5.4	20	
WG240540PBW2	PBW	02/18/08 19:16				U	mg/L		-20	20			
WG240540LCSW5	LCSW	02/18/08 19:28	WC080131-1	820		857.9	mg/L	104.6	90	110			
WG240540PBW3	PBW	02/18/08 23:03				U	mg/L		-20	20			
WG240540LCSW8	LCSW	02/18/08 23:15	WC080131-1	820		867.2	mg/L	105.8	90	110			
WG240540PBW5	PBW	02/19/08 11:41				U	mg/L		-20	20			
WG240540LCSW14	LCSW	02/19/08 11:53	WC080131-1	820		832	mg/L	101.5	90	110			
WG240540LCSW17	LCSW	02/19/08 15:01	WC080131-1	820		882.6	mg/L	107.6	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240401													
WG240401ICV	ICV	02/13/08 20:17	II080115-3	100		101.22	mg/L	101.2	95	105			
WG240401ICB	ICB	02/13/08 20:21				U	mg/L		-0.6	0.6			
WG240401LFB	LFB	02/13/08 20:35	II080209-4	67.97008		70.32	mg/L	103.5	85	115			
L67643-01AS	AS	02/13/08 21:35	II080209-4	67.97008	.3	69.52	mg/L	101.8	85	115			
L67643-01ASD	ASD	02/13/08 21:39	II080209-4	67.97008	.3	70.37	mg/L	103.1	85	115	1.22	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240628													
WG240628ICV	ICV	02/20/08 16:08	WI080220-1	19.98		20.1	mg/L	100.6	90	110			
WG240628ICB	ICB	02/20/08 16:26				U	mg/L		-1.5	1.5			
WG240628LFB	LFB	02/20/08 16:44	WI080128-9	30		29.95	mg/L	99.8	90	110			
L67648-01AS	AS	02/20/08 18:33	WI080128-9	30	27.9	56.16	mg/L	94.2	90	110			
L67648-01DUP	DUP	02/20/08 18:51			27.9	27.89	mg/L				0	20	

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240886													
WG240886ICV	ICV	02/28/08 11:14	WC080227-1	2		1.97	mg/L	98.5	90	110			
WG240886ICB	ICB	02/28/08 11:19				U	mg/L		-0.3	0.3			
WG240886LFB1	LFB	02/28/08 11:24	WC080226-1	5		5.24	mg/L	104.8	90	110			
L67530-01AS	AS	02/28/08 11:29	WC080226-1	5	.2	6.26	mg/L	121.2	90	110			M1
L67530-01DUP	DUP	02/28/08 11:31			.2	.21	mg/L				4.9	20	RA
L67649-03AS	AS	02/28/08 12:10	WC080226-1	5	.1	5.29	mg/L	103.8	90	110			
L67649-03DUP	DUP	02/28/08 12:13			.1	.13	mg/L				26.1	20	RA
WG240886LFB2	LFB	02/28/08 12:51	WC080226-1	5		4.93	mg/L	98.6	90	110			

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67649***

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240401													
WG240401ICV	ICV	02/13/08 20:17	II080115-3	100		102.17	mg/L	102.2	95	105			
WG240401ICB	ICB	02/13/08 20:21				U	mg/L		-0.6	0.6			
WG240401LFB	LFB	02/13/08 20:35	II080209-4	54.96908		57.27	mg/L	104.2	85	115			
L67643-01AS	AS	02/13/08 21:35	II080209-4	54.96908	U	56.48	mg/L	102.7	85	115			
L67643-01ASD	ASD	02/13/08 21:39	II080209-4	54.96908	U	57.29	mg/L	104.2	85	115	1.42	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240387													
WG240387ICV	ICV	02/13/08 16:53	WI071212-1	2.416		2.435	mg/L	100.8	90	110			
WG240387ICB	ICB	02/13/08 16:55				U	mg/L		-0.06	0.06			
WG240387LFB	LFB	02/13/08 17:00	WI070911-4	2		2.057	mg/L	102.9	90	110			
L67611-01AS	AS	02/13/08 17:02	WI070911-4	2	.52	2.387	mg/L	93.4	90	110			
L67611-02DUP	DUP	02/13/08 17:05			U	U	mg/L				0	20	RA
L67652-02AS	AS	02/13/08 17:49	WI070911-4	2	.24	2.159	mg/L	96	90	110			
L67652-03DUP	DUP	02/13/08 17:52			.07	.075	mg/L				6.9	20	RA

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240387													
WG240387ICV	ICV	02/13/08 16:53	WI071212-1	.609		.606	mg/L	99.5	90	110			
WG240387ICB	ICB	02/13/08 16:55				U	mg/L		-0.03	0.03			
WG240387LFB	LFB	02/13/08 17:00	WI070911-4	1		1.017	mg/L	101.7	90	110			
L67611-01AS	AS	02/13/08 17:02	WI070911-4	1	U	.931	mg/L	93.1	90	110			
L67611-02DUP	DUP	02/13/08 17:05			U	U	mg/L				0	20	RA
L67652-02AS	AS	02/13/08 17:49	WI070911-4	1		.942	mg/L	94.2	90	110			
L67652-03DUP	DUP	02/13/08 17:52				U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240401													
WG240401ICV	ICV	02/13/08 20:17	II080115-3	20		20.31	mg/L	101.6	95	105			
WG240401ICB	ICB	02/13/08 20:21				U	mg/L		-0.9	0.9			
WG240401LFB	LFB	02/13/08 20:35	II080209-4	99.76186		102.86	mg/L	103.1	85	115			
L67643-01AS	AS	02/13/08 21:35	II080209-4	99.76186	.7	102.86	mg/L	102.4	85	115			
L67643-01ASD	ASD	02/13/08 21:39	II080209-4	99.76186	.7	104.98	mg/L	104.5	85	115	2.04	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240388													
WG240388PBW	PBW	02/13/08 15:45				U	mg/L		-20	20			
WG240388LCSW	LCSW	02/13/08 15:46	PCN28840	260		288	mg/L	110.8	80	120			
L67654-01DUP	DUP	02/13/08 16:14			4390	4312	mg/L				1.8	20	

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67649***

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240401													
WG240401ICV	ICV	02/13/08 20:17	II080115-3	100		98.7	mg/L	98.7	95	105			
WG240401ICV	ICV	02/13/08 20:17	II080115-3	100		101.24	mg/L	101.2	95	105			
WG240401ICB	ICB	02/13/08 20:21				U	mg/L		-6	6			
WG240401ICB	ICB	02/13/08 20:21				U	mg/L		-0.9	0.9			
WG240401LFB	LFB	02/13/08 20:35	II080209-4	98.21624		100.71	mg/L	102.5	85	115			
WG240401LFB	LFB	02/13/08 20:35	II080209-4	98.21624		98.6	mg/L	100.4	85	115			
L67643-01AS	AS	02/13/08 21:35	II080209-4	98.21624	U	101.14	mg/L	101	85	115			
L67643-01ASD	ASD	02/13/08 21:39	II080209-4	98.21624	U	102.39	mg/L	102.3	85	115	2.35	20	
WG240420													
WG240420ICV	ICV	02/14/08 14:47	II080115-3	100		98.5	mg/L	98.5	95	105			
WG240420ICV	ICV	02/14/08 14:47	II080115-3	100		99.1	mg/L	99.1	95	105			
WG240420ICB	ICB	02/14/08 14:50				U	mg/L		-0.9	0.9			
WG240420LFB	LFB	02/14/08 15:04	II080209-4	98.21624		101.4	mg/L	103.2	85	115			
WG240420LFB	LFB	02/14/08 15:04	II080209-4	98.21624		101.69	mg/L	103.5	85	115			
L67643-01AS	AS	02/14/08 16:13	II080209-4	98.21624	.4	105.66	mg/L	107.2	85	115			
L67643-01ASD	ASD	02/14/08 16:16	II080209-4	98.21624	.4	105.83	mg/L	107.3	85	115	0.16	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240628													
WG240628ICV	ICV	02/20/08 16:08	WI080220-1	50.1		50.64	mg/L	101.1	90	110			
WG240628ICB	ICB	02/20/08 16:26				U	mg/L		-1.5	1.5			
WG240628LFB	LFB	02/20/08 16:44	WI080128-9	30		30.49	mg/L	101.6	90	110			
WG240628ICV1	ICV	02/21/08 11:56	WI080220-1	50.1		50.19	mg/L	100.2	90	110			
WG240628ICB1	ICB	02/21/08 12:14				U	mg/L		-1.5	1.5			
L67648-01AS	AS	02/21/08 12:50	WI080128-9	600	520	1146	mg/L	104.3	90	110			
L67648-01DUP	DUP	02/21/08 13:08			520	486	mg/L				6.8	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67649***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67649-01	WG240401	Sodium, dissolved	M200.7 ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
	WG240886	Fluoride	SM4500F-C	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240387	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67649-02	WG240401	Sodium, dissolved	M200.7 ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
	WG240886	Fluoride	SM4500F-C	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240387	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67649-03	WG240886	Fluoride	SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240387	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67649***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67649
Date Received: 2/13/2008
Received By:
Date Printed: 2/13/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5477	1.5	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67649
Date Received: 2/13/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67649-01	PARRA		Y									
L67649-02	GALLANT		Y									
L67649-03	POWER		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

L67649

CHAIN of CUSTODY

Report to:

Name: DAN SIMPSON	Address: 51 W. Wetmore Rd. Tucson AZ 85705
Company: HYDRO GEO CHEM Inc	
E-mail: dans@hgcinc.com	Telephone: (520) 293-1500 x 133

Copy of Report to:

Name: Jim Norris	E-mail: jimn@hgcinc.com
Company: Hydro Geo Chem Inc	Telephone: (520) 293-1500 x 112

Invoice to:

Name: Jim Norris	Address: 51 W. Wetmore Rd Tucson AZ 85705
Company: Hydro Geo Chem Inc	
E-mail: jimn@hgcinc.com	Telephone: (520) 293-1500 x 112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES: X NO:

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW

Project/PO #: 872001.6

Reporting state for compliance testing: AZ

Sampler's Name: Kim Wilson

Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ca Na Mg K	TDS SO4 NO3 Cl F	Alk					
PARRA	2/11/08 13:30	GW	3	✓	✓	✓					
GALLANT	2/11/08 15:40	GW	3	✓	✓	✓					
POWER	2/12/08 9:20	GW	3	✓	✓	✓					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Kim Wilson	2/12/08 16:35	KW LRC	2-13-08 11:12

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

February 27, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 87201.0
ACZ Project ID: L67648

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 13, 2008. This project has been assigned to ACZ's project number, L67648. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67648. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 27, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 87201.0
Sample ID: ENGLUND

ACZ Sample ID: ***L67648-01***
Date Sampled: *02/12/08 13:35*
Date Received: *02/13/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	520			mg/L	10	50	02/21/08 12:32	aml/ccp

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 87201.0

ACZ Project ID: ***L67648***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240628													
WG240628ICV	ICV	02/20/08 16:08	WI080220-1	50.1		50.64	mg/L	101.1	90	110			
WG240628ICB	ICB	02/20/08 16:26				U	mg/L		-1.5	1.5			
WG240628LFB	LFB	02/20/08 16:44	WI080128-9	30		30.49	mg/L	101.6	90	110			
WG240628ICV1	ICV	02/21/08 11:56	WI080220-1	50.1		50.19	mg/L	100.2	90	110			
WG240628ICB1	ICB	02/21/08 12:14				U	mg/L		-1.5	1.5			
L67648-01AS	AS	02/21/08 12:50	WI080128-9	600	520	1146	mg/L	104.3	90	110			
L67648-01DUP	DUP	02/21/08 13:08			520	486	mg/L				6.8	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67648***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67648***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
87201.0

ACZ Project ID: L67648
Date Received: 2/13/2008
Received By:
Date Printed: 2/13/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5477	1.5	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
87201.0

ACZ Project ID: L67648
Date Received: 2/13/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67648-01	ENGLUND									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

L67648

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd
Tucson AZ 85705
Telephone: (520) 293-1500 x 133

Copy of Report to:

Name: Jim Norris
Company: Hydro Geo Chem Inc
E-mail: jimn@hgcinc.com
Telephone: (520) 293-1500 x 112

Invoice to:

Name: Jim Norris
Company: HGC Inc
E-mail: jimn@hgcinc.com
Address: 51 W. Wetmore Rd
Tucson AZ 85705
Telephone: (520) 293-1500 x 112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES: X NO:

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCAB - GW
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: Kim Wilson / Ali Pandamouz
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO4							
ENGLUND	2/12/08 13:35	GW	1	✓							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Kim Wilson	2/12/08 16:35	[signature]	2-13-08 11:12

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

February 27, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67606

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 09, 2008. This project has been assigned to ACZ's project number, L67606. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67606. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 27, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: SCHWARTZ

ACZ Sample ID: ***L67606-01***
Date Sampled: *02/08/08 10:30*
Date Received: *02/09/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	158			mg/L	1	5	02/15/08 14:30	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67606***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240303													
WG240303ICV	ICV	02/13/08 13:23	WI080128-8	50.1		51.45	mg/L	102.7	90	110			
WG240303ICB	ICB	02/13/08 13:41				U	mg/L		-1.5	1.5			
WG240303LFB	LFB	02/13/08 13:59	WI080128-9	30		29.94	mg/L	99.8	90	110			
L67605-03AS	AS	02/13/08 18:49	WI080128-9	30	32.9	61.17	mg/L	94.2	90	110			
L67605-03DUP	DUP	02/13/08 19:09			32.9	32.87	mg/L				0.1	20	
WG240303ICV1	ICV	02/15/08 12:05	WI080128-8	50.1		46.41	mg/L	92.6	90	110			
WG240303ICB1	ICB	02/15/08 12:23				.63	mg/L		-1.5	1.5			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67606***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67606***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67606
Date Received: 2/9/2008
Received By:
Date Printed: 2/9/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
2004	1.4	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67606
Date Received: 2/9/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67606-01	SCHWARTZ									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67606

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: DAN SIMPSON
Company: HYDRO GEO CHEM
E-mail: dans@hgcinc.com
Address: 31 W WETMORE RD #101
TUCSON, AZ, 85705
Telephone: (520) 293-1500 X133

Copy of Report to:

Name: JIM NORRIS
Company: HYDROGEO CHEM
E-mail: JIMN@hgcinc.com
Telephone: (520) 293-1500 X112

Invoice to:

Name: JIM NORRIS
Company: HYDRO GEO CHEM
E-mail: JIMN@hgcinc.com
Address: 51 W. WETMORE RD
#TUCSON AZ 85705
Telephone: (520) 293-1500 X112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ✓ NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: SOY-- IC
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: ALI PANDAMOUZ
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SOY-IC
SCHWARTZ	02/08/2008 1030	GW	1	✓

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
[signature]	02/08/08 1430	[signature]	2.9.08 11:58

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

February 29, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872002.2
ACZ Project ID: L67685

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 15, 2008. This project has been assigned to ACZ's project number, L67685. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67685. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 29, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: COOPER

ACZ Sample ID: ***L67685-01***
Date Sampled: *02/14/08 10:00*
Date Received: *02/15/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	47.9			mg/L	0.2	1	02/18/08 19:45	aeh/erf
Magnesium, dissolved	M200.7 ICP	13.8			mg/L	0.2	1	02/18/08 19:45	aeh/erf
Potassium, dissolved	M200.7 ICP	2.2			mg/L	0.3	2	02/18/08 19:45	aeh/erf
Sodium, dissolved	M200.7 ICP	25.3			mg/L	0.3	2	02/18/08 19:45	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		154			mg/L	2	20	02/19/08 0:00	jlf
Carbonate as CaCO3		9	B		mg/L	2	20	02/19/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/19/08 0:00	jlf
Total Alkalinity		163		*	mg/L	2	20	02/19/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.1			%			02/29/08 0:00	calc
Sum of Anions		4.6			meq/L	0.1	0.5	02/29/08 0:00	calc
Sum of Cations		4.7			meq/L	0.1	0.5	02/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	17.5		*	mg/L	0.5	3	02/20/08 22:29	aml/ccp
Fluoride	SM4500F-C	0.3	B	*	mg/L	0.1	0.5	02/28/08 12:23	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.82			mg/L	0.02	0.1	02/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.82		*	mg/L	0.02	0.1	02/15/08 18:59	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/15/08 18:59	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	270			mg/L	10	20	02/20/08 9:58	ear
Sulfate	300.0 - Ion Chromatography	33.0		*	mg/L	0.5	3	02/20/08 22:29	aml/ccp
TDS (calculated)	Calculation	254			mg/L	10	50	02/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.06						02/29/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: PALMER 819

ACZ Sample ID: ***L67685-02***
Date Sampled: *02/14/08 13:50*
Date Received: *02/15/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	31.9			mg/L	0.2	1	02/19/08 22:22	aeh/erf
Magnesium, dissolved	M200.7 ICP	27.1			mg/L	0.2	1	02/19/08 22:22	aeh/erf
Potassium, dissolved	M200.7 ICP	5.4			mg/L	0.3	2	02/19/08 22:22	aeh/erf
Sodium, dissolved	M200.7 ICP	50.1			mg/L	0.3	2	02/19/08 22:22	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		235			mg/L	2	20	02/19/08 0:00	jlf
Carbonate as CaCO3		15	B		mg/L	2	20	02/19/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/19/08 0:00	jlf
Total Alkalinity		251		*	mg/L	2	20	02/19/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.5			%			02/29/08 0:00	calc
Sum of Anions		5.8			meq/L	0.1	0.5	02/29/08 0:00	calc
Sum of Cations		6.1			meq/L	0.1	0.5	02/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	11.3		*	mg/L	0.5	3	02/20/08 22:47	aml/ccp
Fluoride	SM4500F-C	0.4	B	*	mg/L	0.1	0.5	02/28/08 12:35	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.13			mg/L	0.02	0.1	02/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.13		*	mg/L	0.02	0.1	02/15/08 19:04	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/15/08 19:04	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	300			mg/L	10	20	02/20/08 10:00	ear
Sulfate	300.0 - Ion Chromatography	15.9		*	mg/L	0.5	3	02/20/08 22:47	aml/ccp
TDS (calculated)	Calculation	308			mg/L	10	50	02/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.97						02/29/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67685***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240540													
WG240540PBW1	PBW	02/18/08 16:27				U	mg/L		-20	20			
WG240540LCSW2	LCSW	02/18/08 16:38	WC080131-1	820		831.6	mg/L	101.4	90	110			
WG240540PBW2	PBW	02/18/08 19:16				U	mg/L		-20	20			
WG240540LCSW5	LCSW	02/18/08 19:28	WC080131-1	820		857.9	mg/L	104.6	90	110			
WG240540PBW3	PBW	02/18/08 23:03				U	mg/L		-20	20			
WG240540LCSW8	LCSW	02/18/08 23:15	WC080131-1	820		867.2	mg/L	105.8	90	110			
WG240540PBW4	PBW	02/19/08 8:33				29.5	mg/L		-20	20			B4
WG240540LCSW11	LCSW	02/19/08 8:45	WC080131-1	820		856	mg/L	104.4	90	110			
L67689-01DUP	DUP	02/19/08 10:19			508	507.8	mg/L				0	20	
WG240540PBW5	PBW	02/19/08 11:41				U	mg/L		-20	20			
WG240540LCSW14	LCSW	02/19/08 11:53	WC080131-1	820		832	mg/L	101.5	90	110			
WG240540LCSW17	LCSW	02/19/08 15:01	WC080131-1	820		882.6	mg/L	107.6	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240487													
WG240487ICV	ICV	02/18/08 18:30	II080115-3	100		94.57	mg/L	94.6	95	105			
WG240487ICB	ICB	02/18/08 18:34				U	mg/L		-0.6	0.6			
WG240487LFB	LFB	02/18/08 18:50	II080214-5	67.97008		66.94	mg/L	98.5	85	115			
L67670-03AS	AS	02/18/08 19:26	II080214-5	67.97008	68.1	132.12	mg/L	94.2	85	115			
L67670-03ASD	ASD	02/18/08 19:29	II080214-5	67.97008	68.1	132.19	mg/L	94.3	85	115	0.05	20	
WG240577													
WG240577ICV	ICV	02/19/08 21:25	II080115-3	100		96.13	mg/L	96.1	95	105			
WG240577ICB	ICB	02/19/08 21:29				U	mg/L		-0.6	0.6			
WG240577LFB	LFB	02/19/08 21:44	II080214-5	67.97008		69.65	mg/L	102.5	85	115			
L67670-03AS	AS	02/19/08 21:55	II080214-5	67.97008	71.8	138.32	mg/L	97.9	85	115			
L67670-03ASD	ASD	02/19/08 21:59	II080214-5	67.97008	71.8	137.81	mg/L	97.1	85	115	0.37	20	
L67685-02AS	AS	02/19/08 22:26	II080214-5	67.97008	31.9	99.1	mg/L	98.9	85	115			
L67685-02ASD	ASD	02/19/08 22:29	II080214-5	67.97008	31.9	98.06	mg/L	97.3	85	115	1.05	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240628													
WG240628ICV	ICV	02/20/08 16:08	WI080220-1	19.98		20.1	mg/L	100.6	90	110			
WG240628ICB	ICB	02/20/08 16:26				U	mg/L		-1.5	1.5			
WG240628LFB	LFB	02/20/08 16:44	WI080128-9	30		29.95	mg/L	99.8	90	110			
L67668-03AS	AS	02/20/08 21:34	WI080213-1	50	32.1	58.57	mg/L	52.9	90	110			M2
L67668-03DUP	DUP	02/20/08 21:52			32.1	32.13	mg/L				0.1	20	

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67685***

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240886													
WG240886ICV	ICV	02/28/08 11:14	WC080227-1	2		1.97	mg/L	98.5	90	110			
WG240886ICB	ICB	02/28/08 11:19				U	mg/L		-0.3	0.3			
WG240886LFB1	LFB	02/28/08 11:24	WC080226-1	5		5.24	mg/L	104.8	90	110			
L67649-03AS	AS	02/28/08 12:10	WC080226-1	5	.1	5.29	mg/L	103.8	90	110			
L67649-03DUP	DUP	02/28/08 12:13			.1	.13	mg/L				26.1	20	RA
WG240886LFB2	LFB	02/28/08 12:51	WC080226-1	5		4.93	mg/L	98.6	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240487													
WG240487ICV	ICV	02/18/08 18:30	II080115-3	100		96.43	mg/L	96.4	95	105			
WG240487ICB	ICB	02/18/08 18:34				U	mg/L		-0.6	0.6			
WG240487LFB	LFB	02/18/08 18:50	II080214-5	54.96908		54.86	mg/L	99.8	85	115			
L67670-03AS	AS	02/18/08 19:26	II080214-5	54.96908	7.2	63.33	mg/L	102.1	85	115			
L67670-03ASD	ASD	02/18/08 19:29	II080214-5	54.96908	7.2	64.09	mg/L	103.5	85	115	1.19	20	
WG240577													
WG240577ICV	ICV	02/19/08 21:25	II080115-3	100		98.02	mg/L	98	95	105			
WG240577ICB	ICB	02/19/08 21:29				U	mg/L		-0.6	0.6			
WG240577LFB	LFB	02/19/08 21:44	II080214-5	54.96908		56.43	mg/L	102.7	85	115			
L67670-03AS	AS	02/19/08 21:55	II080214-5	54.96908	7.6	66.62	mg/L	107.4	85	115			
L67670-03ASD	ASD	02/19/08 21:59	II080214-5	54.96908	7.6	66.86	mg/L	107.8	85	115	0.36	20	
L67685-02AS	AS	02/19/08 22:26	II080214-5	54.96908	27.1	83.15	mg/L	102	85	115			
L67685-02ASD	ASD	02/19/08 22:29	II080214-5	54.96908	27.1	82.29	mg/L	100.4	85	115	1.04	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240496													
WG240496ICV	ICV	02/15/08 18:46	WI071212-1	2.416		2.435	mg/L	100.8	90	110			
WG240496ICB	ICB	02/15/08 18:47				U	mg/L		-0.06	0.06			
WG240496LFB	LFB	02/15/08 18:51	WI070911-4	2		1.942	mg/L	97.1	90	110			
L67680-01AS	AS	02/15/08 18:53	WI070911-4	2	.21	2.256	mg/L	102.3	90	110			
L67681-01DUP	DUP	02/15/08 18:56			.09	.088	mg/L				2.2	20	RA

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240496													
WG240496ICV	ICV	02/15/08 18:46	WI071212-1	.609		.621	mg/L	102	90	110			
WG240496ICB	ICB	02/15/08 18:47				U	mg/L		-0.03	0.03			
WG240496LFB	LFB	02/15/08 18:51	WI070911-4	1		.98	mg/L	98	90	110			
L67680-01AS	AS	02/15/08 18:53	WI070911-4	1		1.001	mg/L	100.1	90	110			
L67681-01DUP	DUP	02/15/08 18:56			U	U	mg/L				0	20	RA

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67685***

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240487													
WG240487ICV	ICV	02/18/08 18:30	II080115-3	20		20.46	mg/L	102.3	95	105			
WG240487ICB	ICB	02/18/08 18:34				U	mg/L		-0.9	0.9			
WG240487LFB	LFB	02/18/08 18:50	II080214-5	99.76186		104.25	mg/L	104.5	85	115			
L67670-03AS	AS	02/18/08 19:26	II080214-5	99.76186	1.6	109.56	mg/L	108.2	85	115			
L67670-03ASD	ASD	02/18/08 19:29	II080214-5	99.76186	1.6	111.26	mg/L	109.9	85	115	1.54	20	
WG240577													
WG240577ICV	ICV	02/19/08 21:25	II080115-3	20		19.86	mg/L	99.3	95	105			
WG240577ICB	ICB	02/19/08 21:29				U	mg/L		-0.9	0.9			
WG240577LFB	LFB	02/19/08 21:44	II080214-5	99.76186		103.96	mg/L	104.2	85	115			
L67670-03AS	AS	02/19/08 21:55	II080214-5	99.76186	1.6	112.98	mg/L	111.6	85	115			
L67670-03ASD	ASD	02/19/08 21:59	II080214-5	99.76186	1.6	113.47	mg/L	112.1	85	115	0.43	20	
L67685-02AS	AS	02/19/08 22:26	II080214-5	99.76186	5.4	114.93	mg/L	109.8	85	115			
L67685-02ASD	ASD	02/19/08 22:29	II080214-5	99.76186	5.4	113.98	mg/L	108.8	85	115	0.83	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240612													
WG240612PBW	PBW	02/20/08 9:50				U	mg/L		-20	20			
WG240612LCSW	LCSW	02/20/08 9:51	PCN28840	260		284	mg/L	109.2	80	120			
L67708-01DUP	DUP	02/20/08 10:10			380	390	mg/L				2.6	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240487													
WG240487ICV	ICV	02/18/08 18:30	II080115-3	100		100.82	mg/L	100.8	95	105			
WG240487ICV	ICV	02/18/08 18:30	II080115-3	100		96.7	mg/L	96.7	95	105			
WG240487ICB	ICB	02/18/08 18:34				U	mg/L		-0.9	0.9			
WG240487LFB	LFB	02/18/08 18:50	II080214-5	98.21624		101.59	mg/L	103.4	85	115			
WG240487LFB	LFB	02/18/08 18:50	II080214-5	98.21624		98.3	mg/L	100.1	85	115			
L67670-03AS	AS	02/18/08 19:26	II080214-5	98.21624	13.4	116.19	mg/L	104.7	85	115			
L67670-03ASD	ASD	02/18/08 19:29	II080214-5	98.21624	13.4	117.31	mg/L	105.8	85	115	0.96	20	
WG240577													
WG240577ICV	ICV	02/19/08 21:25	II080115-3	100		99.03	mg/L	99	95	105			
WG240577ICV	ICV	02/19/08 21:25	II080115-3	100		97.1	mg/L	97.1	95	105			
WG240577ICB	ICB	02/19/08 21:29				U	mg/L		-0.9	0.9			
WG240577ICB	ICB	02/19/08 21:29				U	mg/L		-6	6			
WG240577LFB	LFB	02/19/08 21:44	II080214-5	98.21624		100.7	mg/L	102.5	85	115			
WG240577LFB	LFB	02/19/08 21:44	II080214-5	98.21624		100.92	mg/L	102.8	85	115			
L67670-03AS	AS	02/19/08 21:55	II080214-5	98.21624	13.7	120.52	mg/L	108.8	85	115			
L67670-03ASD	ASD	02/19/08 21:59	II080214-5	98.21624	13.7	120.81	mg/L	109.1	85	115	0.24	20	
L67685-02AS	AS	02/19/08 22:26	II080214-5	98.21624	50.1	151.43	mg/L	103.2	85	115			
L67685-02ASD	ASD	02/19/08 22:29	II080214-5	98.21624	50.1	150.1	mg/L	101.8	85	115	0.88	20	

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67685***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240628													
WG240628ICV	ICV	02/20/08 16:08	WI080220-1	50.1		50.64	mg/L	101.1	90	110			
WG240628ICB	ICB	02/20/08 16:26				U	mg/L		-1.5	1.5			
WG240628LFB	LFB	02/20/08 16:44	WI080128-9	30		30.49	mg/L	101.6	90	110			
L67668-03AS	AS	02/20/08 21:34	WI080213-1	50	12.6	39.09	mg/L	53	90	110			M2
L67668-03DUP	DUP	02/20/08 21:52			12.6	12.58	mg/L				0.2	20	
WG240628ICV1	ICV	02/21/08 11:56	WI080220-1	50.1		50.19	mg/L	100.2	90	110			
WG240628ICB1	ICB	02/21/08 12:14				U	mg/L		-1.5	1.5			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67685***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67685-01	WG240628	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG240886	Fluoride	SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240496	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240628	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG240540	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.
L67685-02	WG240628	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG240886	Fluoride	SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240496	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240628	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG240540	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.

ACZ Laboratories, Inc.
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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67685***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
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Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67685
Date Received: 2/15/2008
Received By:
Date Printed: 2/15/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
1996	1.8	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67685
Date Received: 2/15/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67685-01	COOPER		Y									
L67685-02	PALMER 819		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67685

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd
Company: Hydro Geo Chem (HGC)	Tucson AZ 85705
E-mail: dans@hgcinc.com	Telephone: (520) 293-1500 x 133

Copy of Report to:

Name: Jim Norris	E-mail: jimn@hgcinc.com
Company: HGC	Telephone: (520) 293-1500 x 112

Invoice to:

Name: Jim Norris	Address: above
Company: HGC	
E-mail: jimn@hgcinc.com	Telephone: above

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB - GW

Project/PO #: 872002.2

Reporting state for compliance testing: AZ

Sampler's Name: KW + AP

Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ca Na Mg K	TDS $SO_4^{=}$ NO_2^- NO_3^- Cl^- F^-	ALK					
COOPER	2/14/08 10:00	GW	3	✓	✓	✓							
PALMER 819	2/14/08 13:50	GW	3	✓	✓	✓							

Matrix | SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Kevin Wilson	2/14/08 16:30	[illegible]	2-15-08 11:34

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 10, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872002.2
ACZ Project ID: L67789

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 21, 2008. This project has been assigned to ACZ's project number, L67789. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67789. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 10, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: DODSON

ACZ Sample ID: ***L67789-01***
Date Sampled: *02/20/08 11:50*
Date Received: *02/21/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	111			mg/L	0.2	1	02/22/08 18:19	aeh/erf
Magnesium, dissolved	M200.7 ICP	37.5			mg/L	0.2	1	02/22/08 18:19	aeh/erf
Potassium, dissolved	M200.7 ICP	12.3			mg/L	0.3	2	02/25/08 15:14	aeh/erf
Sodium, dissolved	M200.7 ICP	41.2			mg/L	0.3	2	02/25/08 15:14	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		252			mg/L	2	20	02/26/08 0:00	jlf
Carbonate as CaCO3		14	B		mg/L	2	20	02/26/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/26/08 0:00	jlf
Total Alkalinity		266			mg/L	2	20	02/26/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		0.0			%			03/07/08 0:00	calc
Sum of Anions		10.8			meq/L	0.1	0.5	03/07/08 0:00	calc
Sum of Cations		10.8			meq/L	0.1	0.5	03/07/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	129		*	mg/L	1	5	03/06/08 21:52	aml/ccp
Fluoride	SM4500F-C	0.3	B	*	mg/L	0.1	0.5	02/28/08 15:06	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	10.7			mg/L	0.1	0.5	03/07/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	10.7			mg/L	0.1	0.5	02/21/08 21:22	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/21/08 20:57	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	590			mg/L	10	20	02/27/08 11:48	cas
Sulfate	300.0 - Ion Chromatography	54		*	mg/L	1	5	03/06/08 21:52	aml/ccp
TDS (calculated)	Calculation	598			mg/L	10	50	03/07/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.99						03/07/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67789***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240781													
WG240781PBW2	PBW	02/25/08 15:18				U	mg/L		-20	20			
WG240781LCSW5	LCSW	02/25/08 15:30	WC080131-1	820		860.2	mg/L	104.9	90	110			
WG240781PBW3	PBW	02/25/08 18:42				U	mg/L		-20	20			
WG240781LCSW8	LCSW	02/25/08 18:54	WC080131-1	820		870.7	mg/L	106.2	90	110			
WG240781PBW4	PBW	02/25/08 22:14				U	mg/L		-20	20			
WG240781LCSW11	LCSW	02/25/08 22:28	WC080131-1	820		884.8	mg/L	107.9	90	110			
L67820-03DUP	DUP	02/26/08 8:57			639	694.9	mg/L				8.4	20	
WG240781LCSW14	LCSW	02/26/08 9:10	WC080131-1	820		882.2	mg/L	107.6	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240749													
WG240749ICV	ICV	02/22/08 17:26	II080115-3	100		96.63	mg/L	96.6	95	105			
WG240749ICB	ICB	02/22/08 17:30				U	mg/L		-0.6	0.6			
WG240749LFB	LFB	02/22/08 17:45	II080214-5	67.97008		67.7	mg/L	99.6	85	115			
L67784-01AS	AS	02/22/08 17:53	II080214-5	67.97008	141	201.17	mg/L	88.5	85	115			
L67784-01ASD	ASD	02/22/08 17:56	II080214-5	67.97008	141	201.28	mg/L	88.7	85	115	0.05	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	19.98		20.32	mg/L	101.7	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG240853LFB	LFB	03/06/08 15:32	WI080128-9	30		29.36	mg/L	97.9	90	110			
L67781-05AS	AS	03/06/08 21:16	WI080306-2	30	U	30.39	mg/L	101.3	90	110			
L67781-05DUP	DUP	03/06/08 21:34			U	U	mg/L				0	20	RA

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240886													
WG240886ICV	ICV	02/28/08 11:14	WC080227-1	2		1.97	mg/L	98.5	90	110			
WG240886ICB	ICB	02/28/08 11:19				U	mg/L		-0.3	0.3			
WG240886LFB1	LFB	02/28/08 11:24	WC080226-1	5		5.24	mg/L	104.8	90	110			
WG240886LFB2	LFB	02/28/08 12:51	WC080226-1	5		4.93	mg/L	98.6	90	110			
L67779-08AS	AS	02/28/08 14:09	WC080226-1	5	U	4.81	mg/L	96.2	90	110			
L67779-08DUP	DUP	02/28/08 14:16			U	U	mg/L				0	20	RA

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240749													
WG240749ICV	ICV	02/22/08 17:26	II080115-3	100		99.42	mg/L	99.4	95	105			
WG240749ICB	ICB	02/22/08 17:30				U	mg/L		-0.6	0.6			
WG240749LFB	LFB	02/22/08 17:45	II080214-5	54.96908		55.35	mg/L	100.7	85	115			
L67784-01AS	AS	02/22/08 17:53	II080214-5	54.96908	28.4	83.37	mg/L	100	85	115			
L67784-01ASD	ASD	02/22/08 17:56	II080214-5	54.96908	28.4	83.86	mg/L	100.9	85	115	0.59	20	

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67789***

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240705													
WG240705ICV	ICV	02/21/08 19:55	WI071212-1	2.416		2.435	mg/L	100.8	90	110			
WG240705ICB	ICB	02/21/08 19:57				U	mg/L		-0.06	0.06			
WG240705LFB1	LFB	02/21/08 20:01	WI070911-4	2		1.968	mg/L	98.4	90	110			
WG240705LFB2	LFB	02/21/08 20:40	WI070911-4	2		1.902	mg/L	95.1	90	110			
L67779-11DUP	DUP	02/21/08 20:49			1.06	1.046	mg/L				1.3	20	
L67779-10AS	AS	02/21/08 21:21	WI070911-4	2	.16	2.119	mg/L	98	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240705													
WG240705ICV	ICV	02/21/08 19:55	WI071212-1	.609		.626	mg/L	102.8	90	110			
WG240705ICB	ICB	02/21/08 19:57				U	mg/L		-0.03	0.03			
WG240705LFB1	LFB	02/21/08 20:01	WI070911-4	1		1.023	mg/L	102.3	90	110			
WG240705LFB2	LFB	02/21/08 20:40	WI070911-4	1		1.035	mg/L	103.5	90	110			
L67779-11DUP	DUP	02/21/08 20:49			.05	.051	mg/L				2	20	RA
L67779-10AS	AS	02/21/08 21:21	WI070911-4	1	U	1.041	mg/L	104.1	90	110			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240797													
WG240797ICV	ICV	02/25/08 14:33	II080115-3	20		19.95	mg/L	99.8	95	105			
WG240797ICB	ICB	02/25/08 14:37				U	mg/L		-0.9	0.9			
WG240797LFB	LFB	02/25/08 14:49	II080214-5	99.76186		101.04	mg/L	101.3	85	115			
L67741-01AS	AS	02/25/08 14:55	II080214-5	99.76186	27.5	131.58	mg/L	104.3	85	115			
L67741-01ASD	ASD	02/25/08 14:59	II080214-5	99.76186	27.5	131.58	mg/L	104.3	85	115	0	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240892													
WG240892PBW	PBW	02/27/08 11:45				U	mg/L		-20	20			
WG240892LCSW	LCSW	02/27/08 11:46	PCN28838	260		276	mg/L	106.2	80	120			
L67798-03DUP	DUP	02/27/08 12:00			1570	1584	mg/L				0.9	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240797													
WG240797ICV	ICV	02/25/08 14:33	II080115-3	100		97.3	mg/L	97.3	95	105			
WG240797ICV	ICV	02/25/08 14:33	II080115-3	100		99.41	mg/L	99.4	95	105			
WG240797ICB	ICB	02/25/08 14:37				U	mg/L		-6	6			
WG240797ICB	ICB	02/25/08 14:37				U	mg/L		-0.9	0.9			
WG240797LFB	LFB	02/25/08 14:49	II080214-5	98.21624		101.64	mg/L	103.5	85	115			
WG240797LFB	LFB	02/25/08 14:49	II080214-5	98.21624		99.1	mg/L	100.9	85	115			
L67741-01AS	AS	02/25/08 14:55	II080214-5	98.21624	134	229.68	mg/L	104.5	85	115			
L67741-01AS	AS	02/25/08 14:55	II080214-5	98.21624	134	223.8	mg/L	98.6	85	115			
L67741-01ASD	ASD	02/25/08 14:59	II080214-5	98.21624	134	224.7	mg/L	99.5	85	115	0.4	20	
L67741-01ASD	ASD	02/25/08 14:59	II080214-5	98.21624	134	231.17	mg/L	106.1	85	115	0.4	20	

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67789***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	50.1		50.51	mg/L	100.8	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG240853LFB	LFB	03/06/08 15:32	WI080128-9	30		30.26	mg/L	100.9	90	110			
L67781-05AS	AS	03/06/08 21:16	WI080306-2	30	U	29.59	mg/L	98.6	90	110			
L67781-05DUP	DUP	03/06/08 21:34			U	U	mg/L				0	20	RA

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67789***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67789-01	WG241202	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240886	Fluoride	SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240705	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241202	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67789***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67789
Date Received: 2/21/2008
Received By:
Date Printed: 2/21/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5539	3.8	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67789
Date Received: 2/21/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67789-01	DODSON		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L67789

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc.
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd. Tucson, AZ 85705
Telephone: 520) 293-1500 X132

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Telephone: 520) 293-1500 x 112

Invoice to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Address: 51 W. Wetmore Rd. Tucson, AZ 85705
Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES X / NO

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 8720022
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ca Na Mg K	TDS, SO4, NO3-N, Cl, F	Alk						
DODSON	2/20/08: 1150	GW	3	X	X	X						

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	2/20/08: 1615		2-21-08 11:3

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

February 29, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872002.2
ACZ Project ID: L67714

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 16, 2008. This project has been assigned to ACZ's project number, L67714. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67714. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 29, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: WEISKOPF

ACZ Sample ID: ***L67714-01***
Date Sampled: *02/15/08 08:40*
Date Received: *02/16/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	218		*	mg/L	0.2	1	02/20/08 1:48	aeh/wfg
Magnesium, dissolved	M200.7 ICP	31.4		*	mg/L	0.2	1	02/20/08 1:48	aeh/wfg
Potassium, dissolved	M200.7 ICP	4.3			mg/L	0.3	2	02/20/08 1:48	aeh/wfg
Sodium, dissolved	M200.7 ICP	35.7		*	mg/L	0.3	2	02/20/08 1:48	aeh/wfg

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		177			mg/L	2	20	02/28/08 0:00	cas
Carbonate as CaCO3			U		mg/L	2	20	02/28/08 0:00	cas
Hydroxide as CaCO3			U		mg/L	2	20	02/28/08 0:00	cas
Total Alkalinity		177		*	mg/L	2	20	02/28/08 0:00	cas
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-0.3			%			02/29/08 13:34	calc
Sum of Anions		15.3			meq/L	0.1	0.5	02/29/08 13:34	calc
Sum of Cations		15.2			meq/L	0.1	0.5	02/29/08 13:34	calc
Chloride	M300.0 - Ion Chromatography	33.1		*	mg/L	0.5	3	02/21/08 1:12	aml/ccp
Fluoride	SM4500F-C	0.2	B	*	mg/L	0.1	0.5	02/28/08 12:49	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	4.74			mg/L	0.06	0.3	02/29/08 13:34	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	4.74			mg/L	0.06	0.3	02/16/08 17:30	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/16/08 17:13	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	1010		*	mg/L	10	20	02/21/08 10:40	ear
Sulfate	300.0 - Ion Chromatography	500		*	mg/L	5	30	02/21/08 14:20	aml/ccp
TDS (calculated)	Calculation	950			mg/L	10	50	02/29/08 13:34	calc
TDS (ratio - measured/calculated)	Calculation	1.06						02/29/08 13:34	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67714***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240956													
WG240956PBW1	PBW	02/28/08 16:33				25.6	mg/L		-20	20			B4
WG240956LCSW2	LCSW	02/28/08 16:45	WC080131-1	820		822	mg/L	100.2	90	110			
L67721-05DUP	DUP	02/28/08 18:40			1260	1253.1	mg/L				0.5	20	
WG240956PBW2	PBW	02/28/08 20:11				U	mg/L		-20	20			
WG240956LCSW5	LCSW	02/28/08 20:24	WC080131-1	820		824.2	mg/L	100.5	90	110			
WG240956PBW3	PBW	02/28/08 23:13				U	mg/L		-20	20			
WG240956LCSW8	LCSW	02/28/08 23:25	WC080131-1	820		826.4	mg/L	100.8	90	110			
WG240956LCSW11	LCSW	02/29/08 1:11	WC080131-1	820		832	mg/L	101.5	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240529													
WG240529ICV	ICV	02/19/08 23:43	II080115-3	100		96.83	mg/L	96.8	95	105			
WG240529ICB	ICB	02/19/08 23:46				U	mg/L		-0.6	0.6			
WG240529LFB	LFB	02/20/08 0:02	II080214-5	67.97008		68.62	mg/L	101	85	115			
L67710-08AS	AS	02/20/08 1:02	II080214-5	67.97008	519	520.24	mg/L	1.8	85	115			M3
L67710-08ASD	ASD	02/20/08 1:06	II080214-5	67.97008	519	537.39	mg/L	27.1	85	115	3.24	20	M3

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240628													
WG240628ICV	ICV	02/20/08 16:08	WI080220-1	19.98		20.1	mg/L	100.6	90	110			
WG240628ICB	ICB	02/20/08 16:26				U	mg/L		-1.5	1.5			
WG240628LFB	LFB	02/20/08 16:44	WI080128-9	30		29.95	mg/L	99.8	90	110			
L67668-03AS	AS	02/20/08 21:34	WI080213-1	50	32.1	58.57	mg/L	52.9	90	110			M2
L67668-03DUP	DUP	02/20/08 21:52			32.1	32.13	mg/L				0.1	20	

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240886													
WG240886ICV	ICV	02/28/08 11:14	WC080227-1	2		1.97	mg/L	98.5	90	110			
WG240886ICB	ICB	02/28/08 11:19				U	mg/L		-0.3	0.3			
WG240886LFB1	LFB	02/28/08 11:24	WC080226-1	5		5.24	mg/L	104.8	90	110			
L67649-03AS	AS	02/28/08 12:10	WC080226-1	5	.1	5.29	mg/L	103.8	90	110			
L67649-03DUP	DUP	02/28/08 12:13			.1	.13	mg/L				26.1	20	RA
WG240886LFB2	LFB	02/28/08 12:51	WC080226-1	5		4.93	mg/L	98.6	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240529													
WG240529ICV	ICV	02/19/08 23:43	II080115-3	100		99.29	mg/L	99.3	95	105			
WG240529ICB	ICB	02/19/08 23:46				U	mg/L		-0.6	0.6			
WG240529LFB	LFB	02/20/08 0:02	II080214-5	54.96908		56.2	mg/L	102.2	85	115			
L67710-08AS	AS	02/20/08 1:02	II080214-5	54.96908	328	346.22	mg/L	33.1	85	115			M3
L67710-08ASD	ASD	02/20/08 1:06	II080214-5	54.96908	328	361.7	mg/L	61.3	85	115	4.37	20	M3

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67714***

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240509													
WG240509ICV	ICV	02/16/08 16:54	WI071212-1	2.416		2.404	mg/L	99.5	90	110			
WG240509ICB	ICB	02/16/08 16:55				U	mg/L		-0.06	0.06			
WG240509LFB	LFB	02/16/08 16:59	WI070911-4	2		1.938	mg/L	96.9	90	110			
L67710-07AS	AS	02/16/08 17:01	WI070911-4	2	.77	2.761	mg/L	99.6	90	110			
L67710-08DUP	DUP	02/16/08 17:04			2.32	2.336	mg/L				0.7	20	

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240509													
WG240509ICV	ICV	02/16/08 16:54	WI071212-1	.609		.622	mg/L	102.1	90	110			
WG240509ICB	ICB	02/16/08 16:55				U	mg/L		-0.03	0.03			
WG240509LFB	LFB	02/16/08 16:59	WI070911-4	1		.997	mg/L	99.7	90	110			
L67710-07AS	AS	02/16/08 17:01	WI070911-4	1	U	1.002	mg/L	100.2	90	110			
L67710-08DUP	DUP	02/16/08 17:04			U	U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240529													
WG240529ICV	ICV	02/19/08 23:43	II080115-3	20		20.61	mg/L	103.1	95	105			
WG240529ICB	ICB	02/19/08 23:46				U	mg/L		-0.9	0.9			
WG240529LFB	LFB	02/20/08 0:02	II080214-5	99.76186		105.63	mg/L	105.9	85	115			
L67710-08AS	AS	02/20/08 1:02	II080214-5	99.76186	7.4	115.1	mg/L	108	85	115			
L67710-08ASD	ASD	02/20/08 1:06	II080214-5	99.76186	7.4	121.2	mg/L	114.1	85	115	5.16	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240653													
WG240653PBW	PBW	02/21/08 10:25				U	mg/L		-20	20			
WG240653LCSW	LCSW	02/21/08 10:26	PCN28840	260		286	mg/L	110	80	120			
L67723-03DUP	DUP	02/21/08 10:48			40	48	mg/L				18.2	20	RA

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240529													
WG240529ICV	ICV	02/19/08 23:43	II080115-3	100		99.8	mg/L	99.8	95	105			
WG240529ICV	ICV	02/19/08 23:43	II080115-3	100		102.57	mg/L	102.6	95	105			
WG240529ICB	ICB	02/19/08 23:46				U	mg/L		-0.9	0.9			
WG240529LFB	LFB	02/20/08 0:02	II080214-5	98.21624		103.79	mg/L	105.7	85	115			
WG240529LFB	LFB	02/20/08 0:02	II080214-5	98.21624		102.3	mg/L	104.2	85	115			
L67710-08AS	AS	02/20/08 1:02	II080214-5	98.21624	251	325.39	mg/L	75.7	85	115			MA
L67710-08ASD	ASD	02/20/08 1:06	II080214-5	98.21624	251	343.21	mg/L	93.9	85	115	5.33	20	

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67714***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240628													
WG240628ICV	ICV	02/20/08 16:08	WI080220-1	50.1		50.64	mg/L	101.1	90	110			
WG240628ICB	ICB	02/20/08 16:26				U	mg/L		-1.5	1.5			
WG240628LFB	LFB	02/20/08 16:44	WI080128-9	30		30.49	mg/L	101.6	90	110			
L67668-03AS	AS	02/20/08 21:34	WI080213-1	50	12.6	39.09	mg/L	53	90	110			M2
L67668-03DUP	DUP	02/20/08 21:52			12.6	12.58	mg/L				0.2	20	
WG240628ICV1	ICV	02/21/08 11:56	WI080220-1	50.1		50.19	mg/L	100.2	90	110			
WG240628ICB1	ICB	02/21/08 12:14				U	mg/L		-1.5	1.5			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67714***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67714-01	WG240529	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Magnesium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Sodium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG240628	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG240886	Fluoride	SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240509	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240653	Residue, Filterable (TDS) @180C	160.1 / SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240628	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG240956	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67714***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67714
Date Received: 2/16/2008
Received By:
Date Printed: 2/16/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5500	4.3	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67714
Date Received: 2/16/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67714-01	WEISKOPF		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67714

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc (HGC)
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd
Tucson AZ 85705
Telephone: (520) 293-1500 x 133

Copy of Report to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Telephone: (520) 293-1500 x 112

Invoice to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Address: above
Telephone: above

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

YES: X
NO:

PROJECT INFORMATION

Quote #: FM CQB - GW
Project/PO #: 872002.2
Reporting state for compliance testing: AZ
Sampler's Name: AP + KW
Are any samples NRC licensable material?

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Na, Ca, Mg, K	TDS SO_4^{2-} NO_2^- NO_3^- F^- Cl^-	ALK					
WEISKOPF	2/15/08 8:40	GW	3	✓	✓	✓					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Kim Wilson	2/15/08 13:45	MS	2-16-08 11:30

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

February 27, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67713

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 16, 2008. This project has been assigned to ACZ's project number, L67713. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67713. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 27, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: RAY

ACZ Sample ID: ***L67713-01***
Date Sampled: *02/15/08 10:30*
Date Received: *02/16/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	159		*	mg/L	3	10	02/21/08 14:02	aml/ccp

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67713***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240628													
WG240628ICV	ICV	02/20/08 16:08	WI080220-1	50.1		50.64	mg/L	101.1	90	110			
WG240628ICB	ICB	02/20/08 16:26				U	mg/L		-1.5	1.5			
WG240628LFB	LFB	02/20/08 16:44	WI080128-9	30		30.49	mg/L	101.6	90	110			
L67668-03AS	AS	02/20/08 21:34	WI080213-1	50	12.6	39.09	mg/L	53	90	110			M2
L67668-03DUP	DUP	02/20/08 21:52			12.6	12.58	mg/L				0.2	20	
WG240628ICV1	ICV	02/21/08 11:56	WI080220-1	50.1		50.19	mg/L	100.2	90	110			
WG240628ICB1	ICB	02/21/08 12:14				U	mg/L		-1.5	1.5			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67713***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67713-01	WG240628	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67713***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67713
Date Received: 2/16/2008
Received By:
Date Printed: 2/16/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5500	4.3	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67713
Date Received: 2/16/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67713-01	RAY									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67713

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem (HGC)
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd
Tucson AZ 85705
Telephone: (520) 293-1500 x 133

Copy of Report to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Telephone: (520) [redacted] 293-1500 x 112

Invoice to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Address: above
Telephone: (520) 293-1500 x 112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

YES: X
NO:

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: KW + AP
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO_4							
RAY	2/15/08 10:30	GW	1	✓							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Kim Wilson	2/15/08 13:45	[illegible]	2.16.08 11:36

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 10, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67790

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 21, 2008. This project has been assigned to ACZ's project number, L67790. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67790. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 10, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Tony Antalek has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: MOORE

ACZ Sample ID: ***L67790-01***
Date Sampled: *02/20/08 10:45*
Date Received: *02/21/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	7.1		*	mg/L	0.5	3	03/06/08 22:46	aml/ccp

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: MCCONNELL265

ACZ Sample ID: ***L67790-02***
Date Sampled: *02/20/08 13:50*
Date Received: *02/21/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	720		*	mg/L	30	100	03/06/08 23:04	aml/ccp

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: POOL

ACZ Sample ID: ***L67790-03***
Date Sampled: *02/20/08 14:50*
Date Received: *02/21/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	134		*	mg/L	1	5	03/06/08 23:23	aml/ccp

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67790***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	50.1		50.51	mg/L	100.8	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG240853LFB	LFB	03/06/08 15:32	WI080128-9	30		30.26	mg/L	100.9	90	110			
L67781-05AS	AS	03/06/08 21:16	WI080306-2	30	U	29.59	mg/L	98.6	90	110			
L67781-05DUP	DUP	03/06/08 21:34			U	U	mg/L				0	20	RA

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67790***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67790-01	WG241202	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67790-02	WG241202	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67790-03	WG241202	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67790***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67790
Date Received: 2/21/2008
Received By:
Date Printed: 2/21/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5539	3.8	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67790
Date Received: 2/21/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67790-01	MOORE									X		
L67790-02	MCCONNELL265									X		
L67790-03	POOL									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L67790

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd
Company: Hydro Geo Chem Inc.	Tucson AZ 85705
E-mail: dans@hgcinc.com	Telephone: (520) 293-1500 x133

Copy of Report to:

Name: Jim Norris	E-mail: jimn@hgcinc.com
Company: HGC Inc.	Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris	Address: 51 W. Wetmore Rd.
Company: HGC Inc.	Tucson AZ 85705
E-mail: jimn@hgcinc.com	Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: 504-IC

Project/PO #: 872001.0

Reporting state for compliance testing: AZ

Sampler's Name: Mark Arneson

Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO_4^-							
MOORE	2/20/08: 1045	GW	1	X							
MCCONNELL 265	2/20/08: 1350	GW	1	X							
POOL	2/20/08: 1450	GW	1	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
[signature]	2/20/08: 1615	[signature]	2-21-08 11:31

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 18, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872002.2
ACZ Project ID: L67953

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on March 04, 2008. This project has been assigned to ACZ's project number, L67953. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67953. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 18, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: TM-43

ACZ Sample ID: ***L67953-01***
Date Sampled: *03/03/08 12:35*
Date Received: *03/04/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	570			mg/L	0.2	1	03/05/08 15:14	erf
Magnesium, dissolved	M200.7 ICP	181			mg/L	0.2	1	03/05/08 15:14	erf
Potassium, dissolved	M200.7 ICP	4.5			mg/L	0.3	2	03/07/08 12:37	aeh/erf
Sodium, dissolved	M200.7 ICP	42.1			mg/L	0.3	2	03/05/08 15:14	erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		713			mg/L	2	20	03/04/08 0:00	jlfr
Carbonate as CaCO3			U		mg/L	2	20	03/04/08 0:00	jlfr
Hydroxide as CaCO3			U		mg/L	2	20	03/04/08 0:00	jlfr
Total Alkalinity		713			mg/L	2	20	03/04/08 0:00	jlfr
Cation-Anion Balance	Calculation								
Cation-Anion Balance		0.3			%			03/18/08 0:00	calc
Sum of Anions		45.0			meq/L	0.1	0.5	03/18/08 0:00	calc
Sum of Cations		45.3			meq/L	0.1	0.5	03/18/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	31		*	mg/L	1	5	03/11/08 23:54	aml/ccp
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.2	1	03/11/08 23:54	aml/ccp
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.99			mg/L	0.02	0.1	03/18/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.99		*	mg/L	0.02	0.1	03/04/08 19:18	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	03/04/08 19:18	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	3000		*	mg/L	10	20	03/05/08 11:22	cas
Sulfate	300.0 - Ion Chromatography	1420			mg/L	30	100	03/10/08 19:37	aml
TDS (calculated)	Calculation	2680			mg/L	10	50	03/18/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.12						03/18/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: TM-43A

ACZ Sample ID: ***L67953-02***
Date Sampled: *03/03/08 13:05*
Date Received: *03/04/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	10.1			mg/L	0.2	1	03/05/08 15:17	erf
Magnesium, dissolved	M200.7 ICP	5.7			mg/L	0.2	1	03/05/08 15:17	erf
Potassium, dissolved	M200.7 ICP	2.2			mg/L	0.3	2	03/07/08 12:41	aeh/erf
Sodium, dissolved	M200.7 ICP	79.4			mg/L	0.3	2	03/05/08 15:17	erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		197			mg/L	2	20	03/05/08 0:00	jlfr
Carbonate as CaCO3		20			mg/L	2	20	03/05/08 0:00	jlfr
Hydroxide as CaCO3			U		mg/L	2	20	03/05/08 0:00	jlfr
Total Alkalinity		217			mg/L	2	20	03/05/08 0:00	jlfr
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-1.1			%			03/18/08 0:00	calc
Sum of Anions		4.6			meq/L	0.1	0.5	03/18/08 0:00	calc
Sum of Cations		4.5			meq/L	0.1	0.5	03/18/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	7.7			mg/L	0.5	3	03/10/08 19:55	aml
Fluoride	M300.0 - Ion Chromatography	0.3	B	*	mg/L	0.1	0.5	03/10/08 19:55	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.04	B		mg/L	0.02	0.1	03/18/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.04	B	*	mg/L	0.02	0.1	03/04/08 19:19	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	03/04/08 19:19	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	250			mg/L	10	20	03/06/08 13:51	ear
Sulfate	300.0 - Ion Chromatography	2.1	B		mg/L	0.5	3	03/10/08 19:55	aml
TDS (calculated)	Calculation	246			mg/L	10	50	03/18/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.02						03/18/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: TM-43B

ACZ Sample ID: ***L67953-03***
Date Sampled: *03/03/08 15:49*
Date Received: *03/04/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	54.6			mg/L	0.2	1	03/05/08 15:20	erf
Magnesium, dissolved	M200.7 ICP	23.8			mg/L	0.2	1	03/05/08 15:20	erf
Potassium, dissolved	M200.7 ICP	2.9			mg/L	0.3	2	03/07/08 12:51	aeh/erf
Sodium, dissolved	M200.7 ICP	47.9			mg/L	0.3	2	03/05/08 15:20	erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		338			mg/L	2	20	03/05/08 0:00	jlfr
Carbonate as CaCO3			U		mg/L	2	20	03/05/08 0:00	jlfr
Hydroxide as CaCO3			U		mg/L	2	20	03/05/08 0:00	jlfr
Total Alkalinity		338			mg/L	2	20	03/05/08 0:00	jlfr
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-0.7			%			03/18/08 0:00	calc
Sum of Anions		6.9			meq/L	0.1	0.5	03/18/08 0:00	calc
Sum of Cations		6.8			meq/L	0.1	0.5	03/18/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	5.0			mg/L	0.5	3	03/10/08 20:13	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	03/10/08 20:13	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.05	B		mg/L	0.02	0.1	03/18/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.06	B	*	mg/L	0.02	0.1	03/04/08 19:20	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.01	B	*	mg/L	0.01	0.05	03/04/08 19:20	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	350			mg/L	10	20	03/06/08 13:53	ear
Sulfate	300.0 - Ion Chromatography	0.7	B		mg/L	0.5	3	03/10/08 20:13	aml
TDS (calculated)	Calculation	338			mg/L	10	50	03/18/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.04						03/18/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67953***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241115													
WG241115PBW1	PBW	03/04/08 17:29				U	mg/L		-20	20			
WG241115LCSW2	LCSW	03/04/08 17:42	WC080131-1	820		866.9	mg/L	105.7	90	110			
WG241115PBW2	PBW	03/04/08 20:01				U	mg/L		-20	20			
WG241115LCSW5	LCSW	03/04/08 20:13	WC080131-1	820		866.3	mg/L	105.6	90	110			
WG241115PBW3	PBW	03/04/08 23:02				U	mg/L		-20	20			
WG241115LCSW8	LCSW	03/04/08 23:14	WC080131-1	820		847.8	mg/L	103.4	90	110			
L67954-03DUP	DUP	03/05/08 0:49			532	537.3	mg/L				1	20	
WG241115LCSW11	LCSW	03/05/08 1:55	WC080131-1	820		872.8	mg/L	106.4	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241145													
WG241145ICV	ICV	03/05/08 14:08	II080115-3	100		103.2	mg/L	103.2	95	105			
WG241145ICB	ICB	03/05/08 14:12				U	mg/L		-0.6	0.6			
WG241145LFB	LFB	03/05/08 14:25	II080214-5	67.97008		71.56	mg/L	105.3	85	115			
L67953-03AS	AS	03/05/08 15:24	II080214-5	67.97008	54.6	126.17	mg/L	105.3	85	115			
L67953-03ASD	ASD	03/05/08 15:27	II080214-5	67.97008	54.6	126.62	mg/L	106	85	115	0.36	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	19.98		20.32	mg/L	101.7	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241250													
WG241250ICV	ICV	03/07/08 13:17	WI080220-1	19.98		20.24	mg/L	101.3	90	110			
WG241250ICB	ICB	03/07/08 13:35				U	mg/L		-1.5	1.5			
WG241250LFB	LFB	03/07/08 13:53	WI080306-2	30		29.36	mg/L	97.9	90	110			
WG241250ICV1	ICV	03/10/08 15:05	WI080220-1	19.98		20.03	mg/L	100.3	90	110			
WG241250ICB1	ICB	03/10/08 15:23				U	mg/L		-1.5	1.5			
L67881-01AS	AS	03/10/08 17:12	WI080306-2	30	7.1	37.78	mg/L	102.3	90	110			
L67881-01DUP	DUP	03/10/08 17:30			7.1	7.04	mg/L				0.8	20	
WG241373													
WG241373ICV	ICV	03/11/08 23:00	WI080220-1	19.98		20.35	mg/L	101.9	90	110			
WG241373ICB	ICB	03/11/08 23:18				U	mg/L		-1.5	1.5			
WG241373LFB	LFB	03/11/08 23:36	WI080306-2	30		28.34	mg/L	94.5	90	110			
L67956-01AS	AS	03/12/08 0:30	WI080306-2	30	26.9	54.66	mg/L	92.5	90	110			
L67956-01DUP	DUP	03/12/08 0:48			26.9	26.83	mg/L				0.3	20	
WG241373ICV1	ICV	03/12/08 15:51	WI080220-1	19.98		20.29	mg/L	101.6	90	110			
WG241373ICB1	ICB	03/12/08 16:09				U	mg/L		-1.5	1.5			

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67953***

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241250													
WG241250ICV	ICV	03/07/08 13:17	WI080220-1	4		4.07	mg/L	101.8	90	110			
WG241250ICB	ICB	03/07/08 13:35				U	mg/L		-0.3	0.3			
WG241250LFB	LFB	03/07/08 13:53	WI080306-2	1.5		1.56	mg/L	104	90	110			
L67881-01AS	AS	03/07/08 18:43	WI080306-2	1.5	.3	2.31	mg/L	134	90	110			M1
L67881-01DUP	DUP	03/07/08 19:01			.3	.79	mg/L				89.9	20	RA
WG241250ICV1	ICV	03/10/08 15:05	WI080220-1	4		3.91	mg/L	97.8	90	110			
WG241250ICB1	ICB	03/10/08 15:23				U	mg/L		-0.3	0.3			
WG241373													
WG241373ICV	ICV	03/11/08 23:00	WI080220-1	4		4.03	mg/L	100.8	90	110			
WG241373ICB	ICB	03/11/08 23:18				U	mg/L		-0.3	0.3			
WG241373LFB	LFB	03/11/08 23:36	WI080306-2	1.5		1.39	mg/L	92.7	90	110			
L67956-01AS	AS	03/12/08 0:30	WI080306-2	1.5	.2	1.55	mg/L	90	90	110			
L67956-01DUP	DUP	03/12/08 0:48			.2	.23	mg/L				14	20	RA
WG241373ICV1	ICV	03/12/08 15:51	WI080220-1	4		3.94	mg/L	98.5	90	110			
WG241373ICB1	ICB	03/12/08 16:09				U	mg/L		-0.3	0.3			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241145													
WG241145ICV	ICV	03/05/08 14:08	II080115-3	100		104.95	mg/L	105	95	105			
WG241145ICB	ICB	03/05/08 14:12				U	mg/L		-0.6	0.6			
WG241145LFB	LFB	03/05/08 14:25	II080214-5	54.96908		58.26	mg/L	106	85	115			
L67953-03AS	AS	03/05/08 15:24	II080214-5	54.96908	23.8	82.67	mg/L	107.1	85	115			
L67953-03ASD	ASD	03/05/08 15:27	II080214-5	54.96908	23.8	83.03	mg/L	107.8	85	115	0.43	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241124													
WG241124ICV	ICV	03/04/08 18:57	WI071212-1	2.416		2.319	mg/L	96	90	110			
WG241124ICB	ICB	03/04/08 18:59				U	mg/L		-0.06	0.06			
WG241124LFB	LFB	03/04/08 19:02	WI070911-4	2		1.985	mg/L	99.3	90	110			
L67925-02DUP	DUP	03/04/08 19:07			.07	.088	mg/L				22.8	20	RA
WG241124ICV1	ICV	03/04/08 19:39	WI071212-1	2.416		2.272	mg/L	94	90	110			
WG241124ICB1	ICB	03/04/08 19:41				U	mg/L		-0.06	0.06			
L67925-01AS	AS	03/04/08 19:43	WI070911-4	10	6	16.43	mg/L	104.3	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241124													
WG241124ICV	ICV	03/04/08 18:57	WI071212-1	.609		.565	mg/L	92.8	90	110			
WG241124ICB	ICB	03/04/08 18:59				U	mg/L		-0.03	0.03			
WG241124LFB	LFB	03/04/08 19:02	WI070911-4	1		.996	mg/L	99.6	90	110			
L67925-01AS	AS	03/04/08 19:05	WI070911-4	1	.05	1.053	mg/L	100.3	90	110			
L67925-02DUP	DUP	03/04/08 19:07			.01	.015	mg/L				40	20	RA
WG241124ICV1	ICV	03/04/08 19:39	WI071212-1	.609		.57	mg/L	93.6	90	110			
WG241124ICB1	ICB	03/04/08 19:41				U	mg/L		-0.03	0.03			

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67953***

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241247													
WG241247LFB	LFB	03/07/08 11:51	II080214-5	99.76186		106.78	mg/L	107	85	115			
L67916-03AS	AS	03/07/08 12:04	II080214-5	99.76186	3.1	114.67	mg/L	111.8	85	115			
L67916-03ASD	ASD	03/07/08 12:08	II080214-5	99.76186	3.1	113.86	mg/L	111	85	115	0.71	20	
L67953-02AS	AS	03/07/08 12:44	II080214-5	99.76186	2.2	113.84	mg/L	111.9	85	115			
L67953-02ASD	ASD	03/07/08 12:47	II080214-5	99.76186	2.2	113.7	mg/L	111.8	85	115	0.12	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241141													
WG241141PBW	PBW	03/05/08 11:00				U	mg/L		-20	20			
WG241141LCSW	LCSW	03/05/08 11:01	PCN28838	260		286	mg/L	110	80	120			
L67957-03DUP	DUP	03/05/08 11:29			U	U	mg/L				0	20	RA
WG241216													
WG241216PBW	PBW	03/06/08 13:48				U	mg/L		-20	20			
WG241216LCSW	LCSW	03/06/08 13:49	PCN28838	260		284	mg/L	109.2	80	120			
L67978-02DUP	DUP	03/06/08 14:10			180	170	mg/L				5.7	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241145													
WG241145ICV	ICV	03/05/08 14:08	II080115-3	100		103.35	mg/L	103.4	95	105			
WG241145ICB	ICB	03/05/08 14:12				U	mg/L		-0.9	0.9			
WG241145LFB	LFB	03/05/08 14:25	II080214-5	98.21624		101.7	mg/L	103.5	85	115			
L67953-03AS	AS	03/05/08 15:24	II080214-5	98.21624	47.9	147.32	mg/L	101.2	85	115			
L67953-03ASD	ASD	03/05/08 15:27	II080214-5	98.21624	47.9	147.49	mg/L	101.4	85	115	0.12	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	50.1		50.51	mg/L	100.8	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241250													
WG241250ICV	ICV	03/07/08 13:17	WI080220-1	50.1		51.6	mg/L	103	90	110			
WG241250ICB	ICB	03/07/08 13:35				U	mg/L		-1.5	1.5			
WG241250LFB	LFB	03/07/08 13:53	WI080306-2	30		30.95	mg/L	103.2	90	110			
WG241250ICV1	ICV	03/10/08 15:05	WI080220-1	50.1		50.62	mg/L	101	90	110			
WG241250ICB1	ICB	03/10/08 15:23				.77	mg/L		-1.5	1.5			
L67881-01AS	AS	03/10/08 17:12	WI080306-2	30	13.9	43.35	mg/L	98.2	90	110			
L67881-01DUP	DUP	03/10/08 17:30			13.9	13.79	mg/L				0.8	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67953***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67953-01	WG241373	Chloride	M300.0 - Ion Chromatography	DH	Sample required dilution due to high TDS and/or EC value.
		Fluoride	M300.0 - Ion Chromatography	DH	Sample required dilution due to high TDS and/or EC value.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241124	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241141	Residue, Filterable (TDS) @180C	160.1 / SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67953-02	WG241250	Fluoride	M300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241124	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67953-03	WG241250	Fluoride	M300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241124	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67953***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67953
Date Received: 3/4/2008
Received By:
Date Printed: 3/4/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5588	3.1	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67953
Date Received: 3/4/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67953-01	TM-43		Y									
L67953-02	TM-43A		Y									
L67953-03	TM-43B		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67953

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd
Company: Hydro Geo Chem Inc.	Tucson AZ 85705
E-mail: dans@hgcinc.com	Telephone: 520) 293-1500 X133

Copy of Report to:

Name: Jim Norris	E-mail: jimn@hgcinc.com
Company: HGC Inc.	Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris	Address: 51 West Wetmore Rd.
Company: HGC Inc.	Tucson AZ 85705
E-mail: jimn@hgcinc.com	Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 872002.2
Reporting state for compliance testing: AZ
Sampler's Name: M. Arneson
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Mg Ca Na K	TDS SO4 NO3 Cl F	Alk					
TM-43	3/3/08: 1235	GW	3	X	X	X					
TM-43A	3/3/08: 1305	GW	3	X	X	X					
TM-43B	3/3/08: 1549	GW	3	X	X	X					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	3/3/08: 16:35	WR	3-4-08 10:50

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 13, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872002.2
ACZ Project ID: L67911

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 29, 2008. This project has been assigned to ACZ's project number, L67911. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67911. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 13, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: MW-3-COB

ACZ Sample ID: ***L67911-01***
Date Sampled: *02/28/08 11:10*
Date Received: *02/29/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	62.2			mg/L	0.2	1	03/03/08 20:09	aeh/erf
Magnesium, dissolved	M200.7 ICP	8.9			mg/L	0.2	1	03/03/08 20:09	aeh/erf
Potassium, dissolved	M200.7 ICP	2.2			mg/L	0.3	2	03/03/08 20:09	aeh/erf
Sodium, dissolved	M200.7 ICP	25.5		*	mg/L	0.3	2	03/03/08 20:09	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		159			mg/L	2	20	03/04/08 0:00	jlfr
Carbonate as CaCO3			U		mg/L	2	20	03/04/08 0:00	jlfr
Hydroxide as CaCO3			U		mg/L	2	20	03/04/08 0:00	jlfr
Total Alkalinity		159			mg/L	2	20	03/04/08 0:00	jlfr
Cation-Anion Balance	Calculation								
Cation-Anion Balance		0.0			%			03/13/08 12:40	calc
Sum of Anions		5.0			meq/L	0.1	0.5	03/13/08 12:40	calc
Sum of Cations		5.0			meq/L	0.1	0.5	03/13/08 12:40	calc
Chloride	M300.0 - Ion Chromatography	16.2			mg/L	0.5	3	03/10/08 19:19	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	03/10/08 19:19	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.98			mg/L	0.02	0.1	03/13/08 12:40	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.98			mg/L	0.02	0.1	02/29/08 18:15	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/29/08 18:15	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	300			mg/L	10	20	03/04/08 10:51	cas
Sulfate	300.0 - Ion Chromatography	57.8			mg/L	0.5	3	03/10/08 19:19	aml
TDS (calculated)	Calculation	277			mg/L	10	50	03/13/08 12:40	calc
TDS (ratio - measured/calculated)	Calculation	1.08						03/13/08 12:40	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67911***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241115													
WG241115PBW1	PBW	03/04/08 17:29				U	mg/L		-20	20			
WG241115LCSW2	LCSW	03/04/08 17:42	WC080131-1	820		866.9	mg/L	105.7	90	110			
WG241115PBW2	PBW	03/04/08 20:01				U	mg/L		-20	20			
WG241115LCSW5	LCSW	03/04/08 20:13	WC080131-1	820		866.3	mg/L	105.6	90	110			
L67931-01DUP	DUP	03/04/08 21:40			150	149.6	mg/L				0.3	20	
WG241115PBW3	PBW	03/04/08 23:02				U	mg/L		-20	20			
WG241115LCSW8	LCSW	03/04/08 23:14	WC080131-1	820		847.8	mg/L	103.4	90	110			
WG241115LCSW11	LCSW	03/05/08 1:55	WC080131-1	820		872.8	mg/L	106.4	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241047													
WG241047ICV	ICV	03/03/08 19:30	II080115-3	100		99.06	mg/L	99.1	95	105			
WG241047ICB	ICB	03/03/08 19:34				U	mg/L		-0.6	0.6			
WG241047LFB	LFB	03/03/08 19:46	II080214-5	67.97008		71.16	mg/L	104.7	85	115			
L67904-01AS	AS	03/03/08 19:53	II080214-5	67.97008	135	201.37	mg/L	97.6	85	115			
L67904-01ASD	ASD	03/03/08 19:56	II080214-5	67.97008	135	204.34	mg/L	102	85	115	1.46	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	19.98		20.32	mg/L	101.7	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241250													
WG241250ICV	ICV	03/07/08 13:17	WI080220-1	19.98		20.24	mg/L	101.3	90	110			
WG241250ICB	ICB	03/07/08 13:35				U	mg/L		-1.5	1.5			
WG241250LFB	LFB	03/07/08 13:53	WI080306-2	30		29.36	mg/L	97.9	90	110			
WG241250ICV1	ICV	03/10/08 15:05	WI080220-1	19.98		20.03	mg/L	100.3	90	110			
WG241250ICB1	ICB	03/10/08 15:23				U	mg/L		-1.5	1.5			
L67881-01AS	AS	03/10/08 17:12	WI080306-2	30	7.1	37.78	mg/L	102.3	90	110			
L67881-01DUP	DUP	03/10/08 17:30			7.1	7.04	mg/L				0.8	20	

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241250													
WG241250ICV	ICV	03/07/08 13:17	WI080220-1	4		4.07	mg/L	101.8	90	110			
WG241250ICB	ICB	03/07/08 13:35				U	mg/L		-0.3	0.3			
WG241250LFB	LFB	03/07/08 13:53	WI080306-2	1.5		1.56	mg/L	104	90	110			
L67881-01AS	AS	03/07/08 18:43	WI080306-2	1.5	.3	2.31	mg/L	134	90	110			M1
L67881-01DUP	DUP	03/07/08 19:01			.3	.79	mg/L				89.9	20	RA
WG241250ICV1	ICV	03/10/08 15:05	WI080220-1	4		3.91	mg/L	97.8	90	110			
WG241250ICB1	ICB	03/10/08 15:23				U	mg/L		-0.3	0.3			

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67911***

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241047													
WG241047ICV	ICV	03/03/08 19:30	II080115-3	100		100.36	mg/L	100.4	95	105			
WG241047ICB	ICB	03/03/08 19:34				U	mg/L		-0.6	0.6			
WG241047LFB	LFB	03/03/08 19:46	II080214-5	54.96908		58.49	mg/L	106.4	85	115			
L67904-01AS	AS	03/03/08 19:53	II080214-5	54.96908	58	116.91	mg/L	107.2	85	115			
L67904-01ASD	ASD	03/03/08 19:56	II080214-5	54.96908	58	118.7	mg/L	110.4	85	115	1.52	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241004													
WG241004ICV	ICV	02/29/08 18:02	WI071212-1	2.416		2.262	mg/L	93.6	90	110			
WG241004ICB	ICB	02/29/08 18:04				U	mg/L		-0.06	0.06			
WG241004LFB	LFB	02/29/08 18:07	WI070911-4	2		1.903	mg/L	95.2	90	110			
L67684-01AS	AS	02/29/08 18:10	WI070911-4	4	1.72	5.535	mg/L	95.4	90	110			
L67904-01DUP	DUP	02/29/08 18:12			2.95	2.946	mg/L				0.1	20	

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241004													
WG241004ICV	ICV	02/29/08 18:02	WI071212-1	.609		.593	mg/L	97.4	90	110			
WG241004ICB	ICB	02/29/08 18:04				U	mg/L		-0.03	0.03			
WG241004LFB	LFB	02/29/08 18:07	WI070911-4	1		.987	mg/L	98.7	90	110			
L67684-01AS	AS	02/29/08 18:10	WI070911-4	2	U	1.913	mg/L	95.7	90	110			
L67904-01DUP	DUP	02/29/08 18:12			.04	.043	mg/L				7.2	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241047													
WG241047ICV	ICV	03/03/08 19:30	II080115-3	20		20.06	mg/L	100.3	95	105			
WG241047ICB	ICB	03/03/08 19:34				U	mg/L		-0.9	0.9			
WG241047LFB	LFB	03/03/08 19:46	II080214-5	99.76186		104.01	mg/L	104.3	85	115			
L67904-01AS	AS	03/03/08 19:53	II080214-5	99.76186	4.4	113.26	mg/L	109.1	85	115			
L67904-01ASD	ASD	03/03/08 19:56	II080214-5	99.76186	4.4	115.05	mg/L	110.9	85	115	1.57	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241086													
WG241086PBW	PBW	03/04/08 10:45				U	mg/L		-20	20			
WG241086LCSW	LCSW	03/04/08 10:46	PCN28838	260		284	mg/L	109.2	80	120			
L67914-06DUP	DUP	03/04/08 11:00			170	172	mg/L				1.2	20	

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67911***

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241047													
WG241047ICV	ICV	03/03/08 19:30	II080115-3	100		99.53	mg/L	99.5	95	105			
WG241047ICV	ICV	03/03/08 19:30	II080115-3	100		98.8	mg/L	98.8	95	105			
WG241047ICB	ICB	03/03/08 19:34				U	mg/L		-6	6			
WG241047ICB	ICB	03/03/08 19:34				U	mg/L		-0.9	0.9			
WG241047LFB	LFB	03/03/08 19:46	II080214-5	98.21624		100	mg/L	101.8	85	115			
WG241047LFB	LFB	03/03/08 19:46	II080214-5	98.21624		102.09	mg/L	103.9	85	115			
L67904-01AS	AS	03/03/08 19:53	II080214-5	98.21624	663	750.4	mg/L	89	85	115			
L67904-01AS	AS	03/03/08 19:53	II080214-5	98.21624	663	500	mg/L	-166	85	115			M3
L67904-01ASD	ASD	03/03/08 19:56	II080214-5	98.21624	663	500	mg/L	-166	85	115	1.35	20	M3
L67904-01ASD	ASD	03/03/08 19:56	II080214-5	98.21624	663	760.6	mg/L	99.4	85	115	1.35	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	50.1		50.51	mg/L	100.8	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241250													
WG241250ICV	ICV	03/07/08 13:17	WI080220-1	50.1		51.6	mg/L	103	90	110			
WG241250ICB	ICB	03/07/08 13:35				U	mg/L		-1.5	1.5			
WG241250LFB	LFB	03/07/08 13:53	WI080306-2	30		30.95	mg/L	103.2	90	110			
WG241250ICV1	ICV	03/10/08 15:05	WI080220-1	50.1		50.62	mg/L	101	90	110			
WG241250ICB1	ICB	03/10/08 15:23				.77	mg/L		-1.5	1.5			
L67881-01AS	AS	03/10/08 17:12	WI080306-2	30	13.9	43.35	mg/L	98.2	90	110			
L67881-01DUP	DUP	03/10/08 17:30			13.9	13.79	mg/L				0.8	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67911***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67911-01	WG241047	Sodium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG241250	Fluoride	M300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241004	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67911***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67911
Date Received: 2/29/2008
Received By:
Date Printed: 2/29/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5578	2.1	16

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67911
Date Received: 2/29/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67911-01	MW-3-COB		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L67911

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc.
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd. Tucson, AZ 85705
Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.
E-mail: Jimn@hgcinc.com
Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc
E-mail: Jimn@hgcinc.com
Address: 51 W. Wetmore Rd Tucson AZ 85705
Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: ~~872002.2~~ FMCQB-GW
Project/PO #: 872002.2
Reporting state for compliance testing: AZ
Sampler's Name: M. Arneson
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ca Na Mg K	TDS $SO_4^{=}$ NO_2-NO_3 Cl^- F^-	Al K						
MW-3-COB	2/28/08 : 11:10	GW	3	X	X	X						

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	2/28/08: 1530		2-29-08 10:53

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 13, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.1
ACZ Project ID: L67882

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 28, 2008. This project has been assigned to ACZ's project number, L67882. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67882. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 13, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.1
Sample ID: FULTZ

ACZ Sample ID: ***L67882-01***
Date Sampled: *02/27/08 15:45*
Date Received: *02/28/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	152			mg/L	5	30	03/10/08 17:48	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.1
Sample ID: BANKS 986

ACZ Sample ID: ***L67882-02***
Date Sampled: *02/27/08 14:30*
Date Received: *02/28/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	44			mg/L	3	10	03/10/08 18:06	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.1
Sample ID: HOBAN

ACZ Sample ID: ***L67882-03***
Date Sampled: *02/27/08 12:15*
Date Received: *02/28/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	510			mg/L	10	50	03/10/08 18:24	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.1

ACZ Project ID: ***L67882***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	50.1		50.51	mg/L	100.8	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241250													
WG241250ICV	ICV	03/07/08 13:17	WI080220-1	50.1		51.6	mg/L	103	90	110			
WG241250ICB	ICB	03/07/08 13:35				U	mg/L		-1.5	1.5			
WG241250LFB	LFB	03/07/08 13:53	WI080306-2	30		30.95	mg/L	103.2	90	110			
WG241250ICV1	ICV	03/10/08 15:05	WI080220-1	50.1		50.62	mg/L	101	90	110			
WG241250ICB1	ICB	03/10/08 15:23				.77	mg/L		-1.5	1.5			
L67881-01AS	AS	03/10/08 17:12	WI080306-2	30	13.9	43.35	mg/L	98.2	90	110			
L67881-01DUP	DUP	03/10/08 17:30			13.9	13.79	mg/L				0.8	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67882***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67882***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.1

ACZ Project ID: L67882
Date Received: 2/28/2008
Received By:
Date Printed: 2/28/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
2100	2.3	16

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.1

ACZ Project ID: L67882
Date Received: 2/28/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67882-01	FULTZ									X		
L67882-02	BANKS									X		
L67882-03	HOBAN									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L67882

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd
Company: Hydro Geo Chem (HGC)	Tucson AZ 85705
E-mail: dans@hgcinc.com	Telephone: (520) 293-1500 x 133

Copy of Report to:

Name: Jim Norris	E-mail: jimn@hgcinc.com
Company: HGC	Telephone: (520) 293-1500 x 112

Invoice to:

Name: Jim Norris	Address: above
Company: HGC	
E-mail: jimn@hgcinc.com	Telephone: above

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW

Project/PO #: 872001.1

Reporting state for compliance testing: AZ

Sampler's Name: KWilson/M Ameson

Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO_4^-							
FULTZ	2/27/08 15:45	GW	1	✓							
BANKS	2/27/08 14:30	GW	1	✓							
HOBAN	2/27/08 12:15	GW	1	✓							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Kim Wilson	16:35	[signature]	2.28.08 11:01
	2/27/08		

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 13, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872002.0
ACZ Project ID: L67881

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 28, 2008. This project has been assigned to ACZ's project number, L67881. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67881. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 13, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.0
Sample ID: TM-6

ACZ Sample ID: ***L67881-01***
Date Sampled: *02/27/08 08:45*
Date Received: *02/28/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	42.2			mg/L	0.2	1	03/03/08 14:09	aeh/erf
Magnesium, dissolved	M200.7 ICP	19.0			mg/L	0.2	1	02/29/08 18:34	aeh/erf
Potassium, dissolved	M200.7 ICP	1.7	B		mg/L	0.3	2	02/29/08 18:34	aeh/erf
Sodium, dissolved	M200.7 ICP	54.3			mg/L	0.3	2	02/29/08 18:34	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		218			mg/L	2	20	03/04/08 0:00	jlfr
Carbonate as CaCO3			U		mg/L	2	20	03/04/08 0:00	jlfr
Hydroxide as CaCO3			U		mg/L	2	20	03/04/08 0:00	jlfr
Total Alkalinity		218			mg/L	2	20	03/04/08 0:00	jlfr
Cation-Anion Balance	Calculation								
Cation-Anion Balance		10.9			%			03/13/08 12:36	calc
Sum of Anions		4.9			meq/L	0.1	0.5	03/13/08 12:36	calc
Sum of Cations		6.1			meq/L	0.1	0.5	03/13/08 12:36	calc
Chloride	M300.0 - Ion Chromatography	7.1			mg/L	0.5	3	03/10/08 16:54	aml
Fluoride	M300.0 - Ion Chromatography	0.3	B	*	mg/L	0.1	0.5	03/07/08 18:25	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.96			mg/L	0.02	0.1	03/13/08 12:36	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.96			mg/L	0.02	0.1	02/28/08 18:22	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/28/08 18:22	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	310			mg/L	10	20	02/29/08 11:23	cas
Sulfate	300.0 - Ion Chromatography	13.9			mg/L	0.5	3	03/10/08 16:54	aml
TDS (calculated)	Calculation	274			mg/L	10	50	03/13/08 12:36	calc
TDS (ratio - measured/calculated)	Calculation	1.13						03/13/08 12:36	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.0
Sample ID: TM-15

ACZ Sample ID: ***L67881-02***
Date Sampled: *02/27/08 10:07*
Date Received: *02/28/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	32.9			mg/L	0.2	1	03/03/08 14:12	aeh/erf
Magnesium, dissolved	M200.7 ICP	18.0			mg/L	0.2	1	02/29/08 18:38	aeh/erf
Potassium, dissolved	M200.7 ICP	2.0			mg/L	0.3	2	02/29/08 18:38	aeh/erf
Sodium, dissolved	M200.7 ICP	32.4			mg/L	0.3	2	02/29/08 18:38	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		181			mg/L	2	20	03/04/08 0:00	jlfr
Carbonate as CaCO3		2	B		mg/L	2	20	03/04/08 0:00	jlfr
Hydroxide as CaCO3			U		mg/L	2	20	03/04/08 0:00	jlfr
Total Alkalinity		183			mg/L	2	20	03/04/08 0:00	jlfr
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.5			%			03/13/08 12:36	calc
Sum of Anions		4.2			meq/L	0.1	0.5	03/13/08 12:36	calc
Sum of Cations		4.6			meq/L	0.1	0.5	03/13/08 12:36	calc
Chloride	M300.0 - Ion Chromatography	7.1			mg/L	0.5	3	03/07/08 19:19	aml
Fluoride	M300.0 - Ion Chromatography	0.4	B		mg/L	0.1	0.5	03/07/08 19:19	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.56			mg/L	0.02	0.1	03/13/08 12:36	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.56			mg/L	0.02	0.1	02/28/08 18:25	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/28/08 18:25	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	220			mg/L	10	20	02/29/08 11:24	cas
Sulfate	300.0 - Ion Chromatography	14.0			mg/L	0.5	3	03/07/08 19:19	aml
TDS (calculated)	Calculation	224			mg/L	10	50	03/13/08 12:36	calc
TDS (ratio - measured/calculated)	Calculation	0.98						03/13/08 12:36	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872002.0

ACZ Project ID: ***L67881***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241115													
WG241115PBW1	PBW	03/04/08 17:29				U	mg/L		-20	20			
WG241115LCSW2	LCSW	03/04/08 17:42	WC080131-1	820		866.9	mg/L	105.7	90	110			
L67884-06DUP	DUP	03/04/08 18:38			58	57.7	mg/L				0.5	20	
WG241115PBW2	PBW	03/04/08 20:01				U	mg/L		-20	20			
WG241115LCSW5	LCSW	03/04/08 20:13	WC080131-1	820		866.3	mg/L	105.6	90	110			
WG241115PBW3	PBW	03/04/08 23:02				U	mg/L		-20	20			
WG241115LCSW8	LCSW	03/04/08 23:14	WC080131-1	820		847.8	mg/L	103.4	90	110			
WG241115LCSW11	LCSW	03/05/08 1:55	WC080131-1	820		872.8	mg/L	106.4	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241029													
WG241029ICV	ICV	03/03/08 12:54	II080115-3	100		99.25	mg/L	99.3	95	105			
WG241029ICB	ICB	03/03/08 12:57				U	mg/L		-0.6	0.6			
WG241029LFB	LFB	03/03/08 13:10	II080214-5	67.97008		71.99	mg/L	105.9	85	115			
L67879-01AS	AS	03/03/08 14:00	II080214-5	67.97008	39.7	110.37	mg/L	104	85	115			
L67879-01ASD	ASD	03/03/08 14:03	II080214-5	67.97008	39.7	110.88	mg/L	104.7	85	115	0.46	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	19.98		20.32	mg/L	101.7	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241250													
WG241250ICV	ICV	03/07/08 13:17	WI080220-1	19.98		20.24	mg/L	101.3	90	110			
WG241250ICB	ICB	03/07/08 13:35				U	mg/L		-1.5	1.5			
WG241250LFB	LFB	03/07/08 13:53	WI080306-2	30		29.36	mg/L	97.9	90	110			
WG241250ICV1	ICV	03/10/08 15:05	WI080220-1	19.98		20.03	mg/L	100.3	90	110			
WG241250ICB1	ICB	03/10/08 15:23				U	mg/L		-1.5	1.5			
L67881-01AS	AS	03/10/08 17:12	WI080306-2	30	7.1	37.78	mg/L	102.3	90	110			
L67881-01DUP	DUP	03/10/08 17:30			7.1	7.04	mg/L				0.8	20	

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241250													
WG241250ICV	ICV	03/07/08 13:17	WI080220-1	4		4.07	mg/L	101.8	90	110			
WG241250ICB	ICB	03/07/08 13:35				U	mg/L		-0.3	0.3			
WG241250LFB	LFB	03/07/08 13:53	WI080306-2	1.5		1.56	mg/L	104	90	110			
L67881-01AS	AS	03/07/08 18:43	WI080306-2	1.5	.3	2.31	mg/L	134	90	110			M1
L67881-01DUP	DUP	03/07/08 19:01			.3	.79	mg/L				89.9	20	RA
WG241250ICV1	ICV	03/10/08 15:05	WI080220-1	4		3.91	mg/L	97.8	90	110			
WG241250ICB1	ICB	03/10/08 15:23				U	mg/L		-0.3	0.3			

Hydro Geo Chem, Inc.
Project ID: 872002.0

ACZ Project ID: ***L67881***

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240989													
WG240989ICV	ICV	02/29/08 16:40	II080115-3	100		98.03	mg/L	98	95	105			
WG240989ICB	ICB	02/29/08 16:44				U	mg/L		-0.6	0.6			
WG240989LFB	LFB	02/29/08 16:59	II080214-5	54.96908		56.8	mg/L	103.3	85	115			
L67878-02AS	AS	02/29/08 18:00	II080214-5	54.96908	13.3	69.81	mg/L	102.8	85	115			
L67878-02ASD	ASD	02/29/08 18:04	II080214-5	54.96908	13.3	69.12	mg/L	101.5	85	115	0.99	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240966													
WG240966ICV	ICV	02/28/08 17:57	WI071212-1	2.416		2.406	mg/L	99.6	90	110			
WG240966ICB	ICB	02/28/08 17:58				U	mg/L		-0.06	0.06			
WG240966LFB	LFB	02/28/08 17:59	WI070911-4	2		2.005	mg/L	100.3	90	110			
L67881-01DUP	DUP	02/28/08 18:23			.96	1.003	mg/L				4.4	20	
L67874-08AS	AS	02/28/08 18:41	WI070911-4	40	25.9	68.2	mg/L	105.8	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240966													
WG240966ICV	ICV	02/28/08 17:57	WI071212-1	.609		.614	mg/L	100.8	90	110			
WG240966ICB	ICB	02/28/08 17:58				U	mg/L		-0.03	0.03			
WG240966LFB	LFB	02/28/08 17:59	WI070911-4	1		1.018	mg/L	101.8	90	110			
L67874-08AS	AS	02/28/08 18:21	WI070911-4	1	.07	1.088	mg/L	101.8	90	110			
L67881-01DUP	DUP	02/28/08 18:23			U	U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240989													
WG240989ICV	ICV	02/29/08 16:40	II080115-3	20		20.2	mg/L	101	95	105			
WG240989ICB	ICB	02/29/08 16:44				U	mg/L		-0.9	0.9			
WG240989LFB	LFB	02/29/08 16:59	II080214-5	99.76186		105.41	mg/L	105.7	85	115			
L67878-02AS	AS	02/29/08 18:00	II080214-5	99.76186	4.7	111.17	mg/L	106.7	85	115			
L67878-02ASD	ASD	02/29/08 18:04	II080214-5	99.76186	4.7	110.59	mg/L	106.1	85	115	0.52	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240990													
WG240990PBW	PBW	02/29/08 11:00				U	mg/L		-20	20			
WG240990LCSW	LCSW	02/29/08 11:01	PCN28838	260		294	mg/L	113.1	80	120			
L67883-03DUP	DUP	02/29/08 11:29			130	138	mg/L				6	20	

Hydro Geo Chem, Inc.
Project ID: 872002.0

ACZ Project ID: ***L67881***

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240989													
WG240989ICV	ICV	02/29/08 16:40	II080115-3	100		99.1	mg/L	99.1	95	105			
WG240989ICV	ICV	02/29/08 16:40	II080115-3	100		100.39	mg/L	100.4	95	105			
WG240989ICB	ICB	02/29/08 16:44				U	mg/L		-6	6			
WG240989ICB	ICB	02/29/08 16:44				U	mg/L		-0.9	0.9			
WG240989LFB	LFB	02/29/08 16:59	II080214-5	98.21624		102.9	mg/L	104.8	85	115			
WG240989LFB	LFB	02/29/08 16:59	II080214-5	98.21624		103.03	mg/L	104.9	85	115			
L67878-02AS	AS	02/29/08 18:00	II080214-5	98.21624	8.9	111.04	mg/L	104	85	115			
L67878-02ASD	ASD	02/29/08 18:04	II080214-5	98.21624	8.9	110.72	mg/L	103.7	85	115	0.29	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	50.1		50.51	mg/L	100.8	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241250													
WG241250ICV	ICV	03/07/08 13:17	WI080220-1	50.1		51.6	mg/L	103	90	110			
WG241250ICB	ICB	03/07/08 13:35				U	mg/L		-1.5	1.5			
WG241250LFB	LFB	03/07/08 13:53	WI080306-2	30		30.95	mg/L	103.2	90	110			
WG241250ICV1	ICV	03/10/08 15:05	WI080220-1	50.1		50.62	mg/L	101	90	110			
WG241250ICB1	ICB	03/10/08 15:23				.77	mg/L		-1.5	1.5			
L67881-01AS	AS	03/10/08 17:12	WI080306-2	30	13.9	43.35	mg/L	98.2	90	110			
L67881-01DUP	DUP	03/10/08 17:30			13.9	13.79	mg/L				0.8	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67881***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67881-01	WG241250	Fluoride	M300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240966	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67881-02	WG240966	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67881***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.0

ACZ Project ID: L67881
Date Received: 2/28/2008
Received By:
Date Printed: 2/28/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
2100	2.3	16

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.0

ACZ Project ID: L67881
Date Received: 2/28/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67881-01	TM-6		Y									
L67881-02	TM-15		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67881

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd
Company: Hydro Geo Chem (HGC)	Tucson AZ 85705
E-mail: dans@hgcinc.com	Telephone: (520) 293-1500 x 133

Copy of Report to:

Name: James Norris	E-mail: jimn@hgcinc.com
Company: HGC	Telephone: (520) 293-1500 x 112

Invoice to:

Name: James Norris	Address: 51 W. Wetmore Rd
Company: above	Tucson AZ 85705
E-mail: jimn@hgcinc.com	Telephone: (520) 293-1500 x 112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW

Project/PO #: 872002.0

Reporting state for compliance testing: AZ

Sampler's Name: MA + KW

Are any samples NRC licensable material?

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ca Na Mg K	TDS SO_4^- NO_2^- NO_3^- F^- Cl^-	Alk					
TM-6	2/27/08 8:45	GW		✓	✓	✓					
TM-15	2/27/08 10:07	GW		✓	✓	✓					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Kim Wilson	2/27/08 10:35	[signature]	2-28-08 11:01

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 07, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872002.2
ACZ Project ID: L67843

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 26, 2008. This project has been assigned to ACZ's project number, L67843. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67843. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 07, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Tony Antalek has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: OSBORN

ACZ Sample ID: ***L67843-01***
Date Sampled: *02/25/08 14:30*
Date Received: *02/26/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	84.4			mg/L	0.2	1	02/28/08 17:57	aeh/erf
Magnesium, dissolved	M200.7 ICP	15.4			mg/L	0.2	1	02/28/08 17:57	aeh/erf
Potassium, dissolved	M200.7 ICP	4.3			mg/L	0.3	2	02/28/08 17:57	aeh/erf
Sodium, dissolved	M200.7 ICP	25.2			mg/L	0.3	2	02/28/08 17:57	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		246			mg/L	2	20	02/28/08 0:00	ear/cas
Carbonate as CaCO3		29			mg/L	2	20	02/28/08 0:00	ear/cas
Hydroxide as CaCO3			U		mg/L	2	20	02/28/08 0:00	ear/cas
Total Alkalinity		275		*	mg/L	2	20	02/28/08 0:00	ear/cas
Cation-Anion Balance	Calculation								
Cation-Anion Balance		0.8			%			03/07/08 0:00	calc
Sum of Anions		6.6			meq/L	0.1	0.5	03/07/08 0:00	calc
Sum of Cations		6.7			meq/L	0.1	0.5	03/07/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	18.2		*	mg/L	0.5	3	03/01/08 0:52	aml
Fluoride	M300.0 - Ion Chromatography	0.3	B		mg/L	0.1	0.5	03/01/08 0:52	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	3.76			mg/L	0.02	0.1	03/07/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	3.76			mg/L	0.02	0.1	02/26/08 17:47	ccp
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/26/08 17:47	ccp
Residue, Filterable (TDS) @180C	160.1 / SM2540C	370			mg/L	10	20	02/28/08 11:01	cas
Sulfate	300.0 - Ion Chromatography	16.4			mg/L	0.5	3	03/01/08 0:52	aml
TDS (calculated)	Calculation	357			mg/L	10	50	03/07/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.04						03/07/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67843***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240850													
WG240850PBW2	PBW	02/27/08 20:27				U	mg/L		-20	20			
WG240850LCSW5	LCSW	02/27/08 20:40	WC080131-1	820		816.8	mg/L	99.6	90	110			
WG240850PBW3	PBW	02/27/08 23:55				U	mg/L		-20	20			
WG240850LCSW8	LCSW	02/28/08 0:08	WC080131-1	820		851.3	mg/L	103.8	90	110			
L67847-05DUP	DUP	02/28/08 3:10			U	U	mg/L				0	20	RA
WG240850LCSW11	LCSW	02/28/08 3:23	WC080131-1	820		869.4	mg/L	106	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240946													
WG240946ICV	ICV	02/28/08 16:42	II080115-3	100		96.11	mg/L	96.1	95	105			
WG240946ICB	ICB	02/28/08 16:46				U	mg/L		-0.6	0.6			
WG240946LFB	LFB	02/28/08 17:02	II080214-5	67.97008		69.29	mg/L	101.9	85	115			
L67772-01AS	AS	02/28/08 17:10	II080214-5	67.97008	7.1	74.3	mg/L	98.9	85	115			
L67772-01ASD	ASD	02/28/08 17:14	II080214-5	67.97008	7.1	76.93	mg/L	102.7	85	115	3.48	20	
L67851-01AS	AS	02/28/08 18:05	II080214-5	67.97008	.6	72.66	mg/L	106	85	115			
L67851-01ASD	ASD	02/28/08 18:09	II080214-5	67.97008	.6	71.49	mg/L	104.3	85	115	1.62	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240998													
WG240998ICV	ICV	02/29/08 21:50	WI080220-1	19.98		20.4	mg/L	102.1	90	110			
WG240998ICB	ICB	02/29/08 22:09				U	mg/L		-1.5	1.5			
WG240998LFB	LFB	02/29/08 22:27	WI080128-9	30		29.83	mg/L	99.4	90	110			
L67721-03DUP	DUP	02/29/08 23:03			22	21.7	mg/L				1.4	20	RA
L67837-02AS	AS	03/03/08 12:26	WI080128-9	150	106	256.1	mg/L	100.1	90	110			

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240998													
WG240998ICV	ICV	02/29/08 21:50	WI080220-1	4		3.94	mg/L	98.5	90	110			
WG240998ICB	ICB	02/29/08 22:09				U	mg/L		-0.3	0.3			
WG240998LFB	LFB	02/29/08 22:27	WI080128-9	1.5		1.44	mg/L	96	90	110			
L67721-03DUP	DUP	02/29/08 23:03			9.2	9.09	mg/L				1.2	20	
L67837-02AS	AS	02/29/08 23:39	WI080128-9	1.5	.1	1.58	mg/L	98.7	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240946													
WG240946ICV	ICV	02/28/08 16:42	II080115-3	100		96.42	mg/L	96.4	95	105			
WG240946ICB	ICB	02/28/08 16:46				U	mg/L		-0.6	0.6			
WG240946LFB	LFB	02/28/08 17:02	II080214-5	54.96908		56.19	mg/L	102.2	85	115			
L67772-01AS	AS	02/28/08 17:10	II080214-5	54.96908	10.7	63.74	mg/L	96.5	85	115			
L67772-01ASD	ASD	02/28/08 17:14	II080214-5	54.96908	10.7	66.92	mg/L	102.3	85	115	4.87	20	
L67851-01AS	AS	02/28/08 18:05	II080214-5	54.96908	U	57.9	mg/L	105.3	85	115			
L67851-01ASD	ASD	02/28/08 18:09	II080214-5	54.96908	U	57.28	mg/L	104.2	85	115	1.08	20	

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67843***

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240851													
WG240851ICV	ICV	02/26/08 17:23	WI071212-1	2.416		2.444	mg/L	101.2	90	110			
WG240851ICB	ICB	02/26/08 17:25				U	mg/L		-0.06	0.06			
WG240851LFB	LFB	02/26/08 17:28	WI070911-4	2		1.911	mg/L	95.6	90	110			
L67843-01DUP	DUP	02/26/08 17:49			3.76	3.741	mg/L				0.5	20	
L67843-01AS	AS	02/26/08 18:08	WI070911-4	10	3.5	13.58	mg/L	100.8	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240851													
WG240851ICV	ICV	02/26/08 17:23	WI071212-1	.609		.623	mg/L	102.3	90	110			
WG240851ICB	ICB	02/26/08 17:25				U	mg/L		-0.03	0.03			
WG240851LFB	LFB	02/26/08 17:28	WI070911-4	1		.967	mg/L	96.7	90	110			
L67843-01DUP	DUP	02/26/08 17:49			U	U	mg/L				0	20	RA
L67843-01AS	AS	02/26/08 17:50	WI070911-4	1	U	1.026	mg/L	102.6	90	110			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240946													
WG240946ICV	ICV	02/28/08 16:42	II080115-3	20		19.78	mg/L	98.9	95	105			
WG240946ICB	ICB	02/28/08 16:46				U	mg/L		-0.9	0.9			
WG240946LFB	LFB	02/28/08 17:02	II080214-5	99.76186		104.94	mg/L	105.2	85	115			
L67772-01AS	AS	02/28/08 17:10	II080214-5	99.76186	.9	107.94	mg/L	107.3	85	115			
L67772-01ASD	ASD	02/28/08 17:14	II080214-5	99.76186	.9	115.4	mg/L	114.8	85	115	6.68	20	
L67851-01AS	AS	02/28/08 18:05	II080214-5	99.76186	.6	108.52	mg/L	108.2	85	115			
L67851-01ASD	ASD	02/28/08 18:09	II080214-5	99.76186	.6	107.24	mg/L	106.9	85	115	1.19	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240937													
WG240937PBW	PBW	02/28/08 10:45				U	mg/L		-20	20			
WG240937LCSW	LCSW	02/28/08 10:46	PCN28838	260		292	mg/L	112.3	80	120			
L67871-01DUP	DUP	02/28/08 11:14			1150	1150	mg/L				0	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240946													
WG240946ICV	ICV	02/28/08 16:42	II080115-3	100		97.2	mg/L	97.2	95	105			
WG240946ICV	ICV	02/28/08 16:42	II080115-3	100		98.84	mg/L	98.8	95	105			
WG240946ICB	ICB	02/28/08 16:46				U	mg/L		-6	6			
WG240946ICB	ICB	02/28/08 16:46				U	mg/L		-0.9	0.9			
WG240946LFB	LFB	02/28/08 17:02	II080214-5	98.21624		103.59	mg/L	105.5	85	115			
WG240946LFB	LFB	02/28/08 17:02	II080214-5	98.21624		102.7	mg/L	104.6	85	115			
L67851-01AS	AS	02/28/08 18:05	II080214-5	98.21624	.4	104.97	mg/L	106.5	85	115			
L67851-01ASD	ASD	02/28/08 18:09	II080214-5	98.21624	.4	103.5	mg/L	105	85	115	1.41	20	

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67843***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240998													
WG240998ICV	ICV	02/29/08 21:50	WI080220-1	50.1		52.15	mg/L	104.1	90	110			
WG240998ICB	ICB	02/29/08 22:09				U	mg/L		-1.5	1.5			
WG240998LFB	LFB	02/29/08 22:27	WI080128-9	30		29.71	mg/L	99	90	110			
L67721-03DUP	DUP	02/29/08 23:03			39	37.6	mg/L				3.7	20	
L67837-02AS	AS	03/03/08 12:26	WI080128-9	150	90	238.9	mg/L	99.3	90	110			

ACZ Laboratories, Inc.
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Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67843***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67843-01	WG240998	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240851	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240850	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67843***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
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Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67843
Date Received: 2/26/2008
Received By:
Date Printed: 2/26/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5556	5.5	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
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Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67843
Date Received: 2/26/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67843-01	OSBORN		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67843

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem (HGC)
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd #101 Tucson AZ 85705
Telephone: (520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Telephone: (520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Address: above
Telephone: above

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 872002.7
Reporting state for compliance testing: AZ
Sampler's Name: KW + MA
Are any samples NRC licensable material?

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ca Na Mg K	TDS SO_4 NO_3 Cl F	Alk						
Osborn	2/25/08 14:30	GW	3	✓	✓	✓						

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Kim Wilson	2/28/08 4:30		2:26:08 10:12

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 07, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872002.2
ACZ Project ID: L67837

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 25, 2008. This project has been assigned to ACZ's project number, L67837. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67837. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 07, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Tony Antalek has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Case Narrative

Hydro Geo Chem, Inc.

March 07, 2008

Project ID: 872002.2
ACZ Project ID: L67837

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 5 ground water samples from Hydro Geo Chem, Inc. on February 25, 2008. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L67837. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses except those qualified with an ACZ 'H' flag were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. Client samples were received at a temperature outside of the acceptable range (See Sample Receipt Form).

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: COB-MW-1

ACZ Sample ID: ***L67837-01***
Date Sampled: *02/22/08 08:20*
Date Received: *02/25/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	257			mg/L	0.2	1	02/28/08 15:30	erf
Magnesium, dissolved	M200.7 ICP	64.5			mg/L	0.2	1	02/28/08 15:30	erf
Potassium, dissolved	M200.7 ICP	7.7			mg/L	0.3	2	02/28/08 15:30	erf
Sodium, dissolved	M200.7 ICP	56.5			mg/L	0.3	2	02/28/08 15:30	erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		206			mg/L	2	20	02/28/08 0:00	ear/cas
Carbonate as CaCO3		11	B		mg/L	2	20	02/28/08 0:00	ear/cas
Hydroxide as CaCO3			U		mg/L	2	20	02/28/08 0:00	ear/cas
Total Alkalinity		217			mg/L	2	20	02/28/08 0:00	ear/cas
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.5			%			03/07/08 0:00	calc
Sum of Anions		20.2			meq/L	0.1	0.5	03/07/08 0:00	calc
Sum of Cations		20.8			meq/L	0.1	0.5	03/07/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	19.8			mg/L	0.5	3	02/29/08 1:49	aml/ccp
Fluoride	SM4500F-C	0.3	B	*	mg/L	0.1	0.5	03/04/08 14:42	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.33			mg/L	0.02	0.1	03/07/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.33	H	*	mg/L	0.02	0.1	02/26/08 17:36	ccp
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.01	0.05	02/26/08 17:36	ccp
Residue, Filterable (TDS) @180C	160.1 / SM2540C	1360		*	mg/L	10	20	02/28/08 10:54	cas
Sulfate	300.0 - Ion Chromatography	720			mg/L	10	50	02/29/08 20:38	aml/ccp
TDS (calculated)	Calculation	1270			mg/L	10	50	03/07/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.07						03/07/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: WARREN LAGOON-COB

ACZ Sample ID: ***L67837-02***
Date Sampled: *02/22/08 09:10*
Date Received: *02/25/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	128			mg/L	0.2	1	02/28/08 15:42	erf
Magnesium, dissolved	M200.7 ICP	34.3			mg/L	0.2	1	02/28/08 15:42	erf
Potassium, dissolved	M200.7 ICP	7.2			mg/L	0.3	2	02/28/08 15:42	erf
Sodium, dissolved	M200.7 ICP	47.8			mg/L	0.3	2	02/28/08 15:42	erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		269			mg/L	2	20	02/28/08 0:00	ear/cas
Carbonate as CaCO3		11	B		mg/L	2	20	02/28/08 0:00	ear/cas
Hydroxide as CaCO3			U		mg/L	2	20	02/28/08 0:00	ear/cas
Total Alkalinity		280			mg/L	2	20	02/28/08 0:00	ear/cas
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.1			%			03/07/08 0:00	calc
Sum of Anions		10.8			meq/L	0.1	0.5	03/07/08 0:00	calc
Sum of Cations		11.5			meq/L	0.1	0.5	03/07/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	106		*	mg/L	3	10	03/03/08 12:09	aml
Fluoride	SM4500F-C	0.3	B	*	mg/L	0.1	0.5	03/04/08 14:45	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	3.91			mg/L	0.02	0.1	03/07/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	3.91	H	*	mg/L	0.02	0.1	02/26/08 17:37	ccp
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.01	0.05	02/26/08 17:37	ccp
Residue, Filterable (TDS) @180C	160.1 / SM2540C	650		*	mg/L	10	20	02/28/08 10:55	cas
Sulfate	300.0 - Ion Chromatography	90			mg/L	3	10	03/03/08 12:09	aml
TDS (calculated)	Calculation	603			mg/L	10	50	03/07/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.08						03/07/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: COB-MW-2

ACZ Sample ID: ***L67837-03***
Date Sampled: *02/22/08 10:00*
Date Received: *02/25/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	66.4			mg/L	0.2	1	02/28/08 15:46	erf
Magnesium, dissolved	M200.7 ICP	9.0			mg/L	0.2	1	02/28/08 15:46	erf
Potassium, dissolved	M200.7 ICP	2.1			mg/L	0.3	2	02/28/08 15:46	erf
Sodium, dissolved	M200.7 ICP	25.5			mg/L	0.3	2	02/28/08 15:46	erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		156			mg/L	2	20	02/28/08 0:00	ear/cas
Carbonate as CaCO3		12	B		mg/L	2	20	02/28/08 0:00	ear/cas
Hydroxide as CaCO3			U		mg/L	2	20	02/28/08 0:00	ear/cas
Total Alkalinity		168			mg/L	2	20	02/28/08 0:00	ear/cas
Cation-Anion Balance	Calculation								
Cation-Anion Balance		0.0			%			03/07/08 0:00	calc
Sum of Anions		5.2			meq/L	0.1	0.5	03/07/08 0:00	calc
Sum of Cations		5.2			meq/L	0.1	0.5	03/07/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	19.4		*	mg/L	0.5	3	02/29/08 23:57	aml
Fluoride	SM4500F-C	0.3	B	*	mg/L	0.1	0.5	03/04/08 14:50	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	6.49			mg/L	0.06	0.3	03/07/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	6.49	H	*	mg/L	0.06	0.3	02/26/08 18:03	ccp
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.01	0.05	02/26/08 17:44	ccp
Residue, Filterable (TDS) @180C	160.1 / SM2540C	340		*	mg/L	10	20	02/28/08 10:56	cas
Sulfate	300.0 - Ion Chromatography	41.0			mg/L	0.5	3	02/29/08 23:57	aml
TDS (calculated)	Calculation	298			mg/L	10	50	03/07/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.14						03/07/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: DUP022208

ACZ Sample ID: ***L67837-04***
Date Sampled: *02/22/08 00:00*
Date Received: *02/25/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	65.7			mg/L	0.2	1	02/28/08 15:58	erf
Magnesium, dissolved	M200.7 ICP	8.9			mg/L	0.2	1	02/28/08 15:58	erf
Potassium, dissolved	M200.7 ICP	2.1			mg/L	0.3	2	02/28/08 15:58	erf
Sodium, dissolved	M200.7 ICP	25.2			mg/L	0.3	2	02/28/08 15:58	erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		156			mg/L	2	20	02/28/08 0:00	ear/cas
Carbonate as CaCO3		12	B		mg/L	2	20	02/28/08 0:00	ear/cas
Hydroxide as CaCO3			U		mg/L	2	20	02/28/08 0:00	ear/cas
Total Alkalinity		169		*	mg/L	2	20	02/28/08 0:00	ear/cas
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-1.0			%			03/07/08 0:00	calc
Sum of Anions		5.2			meq/L	0.1	0.5	03/07/08 0:00	calc
Sum of Cations		5.1			meq/L	0.1	0.5	03/07/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	19.3		*	mg/L	0.5	3	03/01/08 0:15	aml
Fluoride	SM4500F-C	0.3	B	*	mg/L	0.1	0.5	03/04/08 14:54	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	6.53			mg/L	0.06	0.3	03/07/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	6.53	H	*	mg/L	0.06	0.3	02/26/08 18:05	ccp
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.01	0.05	02/26/08 17:45	ccp
Residue, Filterable (TDS) @180C	160.1 / SM2540C	330		*	mg/L	10	20	02/28/08 10:58	cas
Sulfate	300.0 - Ion Chromatography	41.0			mg/L	0.5	3	03/01/08 0:15	aml
TDS (calculated)	Calculation	297			mg/L	10	50	03/07/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.11						03/07/08 0:00	calc

Arizona license number: AZ0102

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: FB022208

ACZ Sample ID: ***L67837-05***
Date Sampled: *02/22/08 00:00*
Date Received: *02/25/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP		U		mg/L	0.2	1	02/28/08 16:02	erf
Magnesium, dissolved	M200.7 ICP		U		mg/L	0.2	1	02/28/08 16:02	erf
Potassium, dissolved	M200.7 ICP		U		mg/L	0.3	2	02/28/08 16:02	erf
Sodium, dissolved	M200.7 ICP	0.3	B		mg/L	0.3	2	02/28/08 16:02	erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3			U		mg/L	2	20	02/28/08 0:00	ear/cas
Carbonate as CaCO3			U		mg/L	2	20	02/28/08 0:00	ear/cas
Hydroxide as CaCO3			U		mg/L	2	20	02/28/08 0:00	ear/cas
Total Alkalinity			U	*	mg/L	2	20	02/28/08 0:00	ear/cas
Cation-Anion Balance	Calculation								
Cation-Anion Balance		n/a			%			03/07/08 0:00	calc
Sum of Anions			U		meq/L	0.1	0.5	03/07/08 0:00	calc
Sum of Cations			U		meq/L	0.1	0.5	03/07/08 0:00	calc
Chloride	M300.0 - Ion Chromatography		U	*	mg/L	0.5	3	03/01/08 0:34	aml
Fluoride	SM4500F-C		U	*	mg/L	1	5	03/04/08 15:01	cas
Lab Filtration	SM 3030 B			*				02/27/08 8:33	wpl
Lab Filtration & Acidification	SM 3030 B			*				02/27/08 7:55	wpl
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.03	B		mg/L	0.02	0.1	03/07/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.03	BH	*	mg/L	0.02	0.1	02/26/08 18:04	ccp
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.01	0.05	02/26/08 17:46	ccp
Residue, Filterable (TDS) @180C	160.1 / SM2540C	20	B	*	mg/L	10	20	02/28/08 10:59	cas
Sulfate	300.0 - Ion Chromatography		U		mg/L	0.5	3	03/01/08 0:34	aml
TDS (calculated)	Calculation		U		mg/L	10	50	03/07/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	n/a						03/07/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67837***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240850													
WG240850PBW2	PBW	02/27/08 20:27				U	mg/L		-20	20			
WG240850LCSW5	LCSW	02/27/08 20:40	WC080131-1	820		816.8	mg/L	99.6	90	110			
WG240850PBW3	PBW	02/27/08 23:55				U	mg/L		-20	20			
WG240850LCSW8	LCSW	02/28/08 0:08	WC080131-1	820		851.3	mg/L	103.8	90	110			
L67837-03DUP	DUP	02/28/08 1:51			168	168.7	mg/L				0.4	20	
L67847-05DUP	DUP	02/28/08 3:10			U	U	mg/L				0	20	RA
WG240850LCSW11	LCSW	02/28/08 3:23	WC080131-1	820		869.4	mg/L	106	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240944													
WG240944ICV1	ICV	02/28/08 13:59	II080115-3	100		98.01	mg/L	98	95	105			
WG240944ICB	ICB	02/28/08 14:03				U	mg/L		-0.6	0.6			
WG240944LFB	LFB	02/28/08 14:19	II080214-5	67.97008		69.14	mg/L	101.7	85	115			
L67837-03AS	AS	02/28/08 15:50	II080214-5	67.97008	66.4	130.76	mg/L	94.7	85	115			
L67837-03ASD	ASD	02/28/08 15:54	II080214-5	67.97008	66.4	133.18	mg/L	98.2	85	115	1.83	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240945													
WG240945ICV	ICV	02/28/08 17:58	WI080220-1	19.98		19.85	mg/L	99.3	90	110			
WG240945ICB	ICB	02/28/08 18:16				U	mg/L		-1.5	1.5			
WG240945LFB	LFB	02/28/08 18:34	WI080128-9	30		28.85	mg/L	96.2	90	110			
L67745-06AS	AS	02/28/08 23:24	WI080128-9	30	21.4	50.76	mg/L	97.9	90	110			
L67745-06DUP	DUP	02/28/08 23:42			21.4	21.49	mg/L				0.4	20	
WG240945ICV1	ICV	02/29/08 19:07	WI080220-1	19.98		20.3	mg/L	101.6	90	110			
WG240945ICB1	ICB	02/29/08 19:25				U	mg/L		-1.5	1.5			
WG240998													
WG240998ICV	ICV	02/29/08 21:50	WI080220-1	19.98		20.4	mg/L	102.1	90	110			
WG240998ICB	ICB	02/29/08 22:09				U	mg/L		-1.5	1.5			
WG240998LFB	LFB	02/29/08 22:27	WI080128-9	30		29.83	mg/L	99.4	90	110			
L67721-03DUP	DUP	02/29/08 23:03			22	21.7	mg/L				1.4	20	RA
L67837-02AS	AS	03/03/08 12:26	WI080128-9	150	106	256.1	mg/L	100.1	90	110			

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241077													
WG241077ICV	ICV	03/04/08 10:46	WC080227-1	2		2	mg/L	100	90	110			
WG241077ICB	ICB	03/04/08 10:53				U	mg/L		-0.3	0.3			
WG241077LFB1	LFB	03/04/08 10:58	WC080226-1	5		5.14	mg/L	102.8	90	110			
WG241077LFB2	LFB	03/04/08 12:32	WC080226-1	5		5.02	mg/L	100.4	90	110			
L67831-04AS	AS	03/04/08 14:19	WC080226-1	5	.3	5.52	mg/L	104.4	90	110			
L67831-04DUP	DUP	03/04/08 14:25			.3	.31	mg/L				3.3	20	RA

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ACZ Project ID: ***L67837***

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240944													
WG240944ICV1	ICV	02/28/08 13:59	II080115-3	100		99.99	mg/L	100	95	105			
WG240944ICB	ICB	02/28/08 14:03				U	mg/L		-0.6	0.6			
WG240944LFB	LFB	02/28/08 14:19	II080214-5	54.96908		57.01	mg/L	103.7	85	115			
L67837-03AS	AS	02/28/08 15:50	II080214-5	54.96908	9	64.27	mg/L	100.5	85	115			
L67837-03ASD	ASD	02/28/08 15:54	II080214-5	54.96908	9	65.86	mg/L	103.4	85	115	2.44	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240851													
WG240851ICV	ICV	02/26/08 17:23	WI071212-1	2.416		2.444	mg/L	101.2	90	110			
WG240851ICB	ICB	02/26/08 17:25				U	mg/L		-0.06	0.06			
WG240851LFB	LFB	02/26/08 17:28	WI070911-4	2		1.911	mg/L	95.6	90	110			
L67774-05DUP	DUP	02/26/08 17:35			.12	.119	mg/L				0.8	20	RA
L67684-01AS	AS	02/26/08 18:00	WI070911-4	2	1.82	3.684	mg/L	93.2	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240851													
WG240851ICV	ICV	02/26/08 17:23	WI071212-1	.609		.623	mg/L	102.3	90	110			
WG240851ICB	ICB	02/26/08 17:25				U	mg/L		-0.03	0.03			
WG240851LFB	LFB	02/26/08 17:28	WI070911-4	1		.967	mg/L	96.7	90	110			
L67684-01AS	AS	02/26/08 17:31	WI070911-4	1	U	.969	mg/L	96.9	90	110			
L67774-05DUP	DUP	02/26/08 17:54			.12	.115	mg/L				4.3	20	

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240944													
WG240944ICV1	ICV	02/28/08 13:59	II080115-3	20		20.55	mg/L	102.8	95	105			
WG240944ICB	ICB	02/28/08 14:03				U	mg/L		-0.9	0.9			
WG240944LFB	LFB	02/28/08 14:19	II080214-5	99.76186		106.11	mg/L	106.4	85	115			
L67837-03AS	AS	02/28/08 15:50	II080214-5	99.76186	2.1	106.21	mg/L	104.4	85	115			
L67837-03ASD	ASD	02/28/08 15:54	II080214-5	99.76186	2.1	109.14	mg/L	107.3	85	115	2.72	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240937													
WG240937PBW	PBW	02/28/08 10:45				U	mg/L		-20	20			
WG240937LCSW	LCSW	02/28/08 10:46	PCN28838	260		292	mg/L	112.3	80	120			
L67837-05DUP	DUP	02/28/08 11:00			20	U	mg/L				200	20	RA

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Project ID: 872002.2

ACZ Project ID: ***L67837***

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240944													
WG240944ICV1	ICV	02/28/08 13:59	II080115-3	100		101.56	mg/L	101.6	95	105			
WG240944ICB	ICB	02/28/08 14:03				U	mg/L		-0.9	0.9			
WG240944LFB	LFB	02/28/08 14:19	II080214-5	98.21624		103.41	mg/L	105.3	85	115			
L67837-03AS	AS	02/28/08 15:50	II080214-5	98.21624	25.5	123.85	mg/L	100.1	85	115			
L67837-03ASD	ASD	02/28/08 15:54	II080214-5	98.21624	25.5	126.72	mg/L	103.1	85	115	2.29	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240945													
WG240945ICV	ICV	02/28/08 17:58	WI080220-1	50.1		50.62	mg/L	101	90	110			
WG240945ICB	ICB	02/28/08 18:16				U	mg/L		-1.5	1.5			
WG240945LFB	LFB	02/28/08 18:34	WI080128-9	30		28.4	mg/L	94.7	90	110			
WG240945ICV1	ICV	02/29/08 19:07	WI080220-1	50.1		52.07	mg/L	103.9	90	110			
WG240945ICB1	ICB	02/29/08 19:25				U	mg/L		-1.5	1.5			
L67745-06AS	AS	02/29/08 20:02	WI080128-9	300	398	694	mg/L	98.7	90	110			
L67745-06DUP	DUP	02/29/08 20:20			398	398.4	mg/L				0.1	20	
WG240998													
WG240998ICV	ICV	02/29/08 21:50	WI080220-1	50.1		52.15	mg/L	104.1	90	110			
WG240998ICB	ICB	02/29/08 22:09				U	mg/L		-1.5	1.5			
WG240998LFB	LFB	02/29/08 22:27	WI080128-9	30		29.71	mg/L	99	90	110			
L67721-03DUP	DUP	02/29/08 23:03			39	37.6	mg/L				3.7	20	
L67837-02AS	AS	03/03/08 12:26	WI080128-9	150	90	238.9	mg/L	99.3	90	110			

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Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67837***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67837-01	WG241077	Fluoride	SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240851	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H3	Sample was received and analyzed past holding time.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H3	Sample was received and analyzed past holding time.
	WG240937	Residue, Filterable (TDS) @180C	160.1 / SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67837-02	WG240998	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241077	Fluoride	SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240851	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H3	Sample was received and analyzed past holding time.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H3	Sample was received and analyzed past holding time.
	WG240937	Residue, Filterable (TDS) @180C	160.1 / SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67837-03	WG240998	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241077	Fluoride	SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240851	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H3	Sample was received and analyzed past holding time.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H3	Sample was received and analyzed past holding time.
	WG240937	Residue, Filterable (TDS) @180C	160.1 / SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

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Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67837***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67837-04	WG240998	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241077	Fluoride	SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240851	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H3	Sample was received and analyzed past holding time.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H3	Sample was received and analyzed past holding time.
	WG240937	Residue, Filterable (TDS) @180C	160.1 / SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240850	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67837-05	WG240998	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241077	Fluoride	SM4500F-C	DJ	Sample dilution required due to insufficient sample.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240851	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H3	Sample was received and analyzed past holding time.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
			M353.2 - Automated Cadmium Reduction	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	H3	Sample was received and analyzed past holding time.
			M353.2 - Automated Cadmium Reduction	ZU	Analysis date/time preceeds filter date/time. A portion of sample was filtered and analyzed prior to the creation of a Filter workgroup.
	WG240937	Residue, Filterable (TDS) @180C	160.1 / SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240850	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc. ACZ Project ID: ***L67837***

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Lab Filtration	SM 3030 B
Lab Filtration & Acidification	SM 3030 B

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67837
Date Received: 2/25/2008
Received By:
Date Printed: 2/25/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?		X	
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

Some Holddates are past.

Contact (For any discrepancies, the client must be contacted)

The client was not contacted.

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
1840	12.1	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

Samples 4 & 5 have no times on containers or COC.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67837
Date Received: 2/25/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67837-01	COB-MW-1		Y									
L67837-02	WARREN LAGOON-COB		Y									
L67837-03	COB-MW-2		Y									
L67837-04	DUP022208		Y									
L67837-05	FB022208		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L67837

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc.
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd Tucson, AZ 85705
Telephone: (520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Address: 51 W. Wetmore Rd Tucson, AZ 85705
Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES X / NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 872002.2
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ca Na Mg K	TDS $SO_4^{=}$ NO_3^{-} Cl^{-} F^{-}	Alk					
COB-MW-1	2/22/08: 8:20	GW	3	x	x	x					
WARRENLAGOON-COB	2/22/08: 9:10	GW	3	x	x	x					
COB-MW-2	2/22/08: 10:00	GW	3	x	x	x					
DUP022208	2/22/08	GW	3	x	x	x					
FB022208	2/22/08	GW	1	x	x	x					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	2/22/08: 1340		2-25-08 1128

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 05, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67817

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 22, 2008. This project has been assigned to ACZ's project number, L67817. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67817. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 05, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: LAWSONTVI236

ACZ Sample ID: ***L67817-01***
Date Sampled: *02/21/08 09:50*
Date Received: *02/22/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	41.9			mg/L	0.5	3	02/29/08 0:19	aml/ccp

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67817***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240945													
WG240945ICV	ICV	02/28/08 17:58	WI080220-1	50.1		50.62	mg/L	101	90	110			
WG240945ICB	ICB	02/28/08 18:16				U	mg/L		-1.5	1.5			
WG240945LFB	LFB	02/28/08 18:34	WI080128-9	30		28.4	mg/L	94.7	90	110			
WG240945ICV1	ICV	02/29/08 19:07	WI080220-1	50.1		52.07	mg/L	103.9	90	110			
WG240945ICB1	ICB	02/29/08 19:25				U	mg/L		-1.5	1.5			
L67745-06AS	AS	02/29/08 20:02	WI080128-9	300	398	694	mg/L	98.7	90	110			
L67745-06DUP	DUP	02/29/08 20:20			398	398.4	mg/L				0.1	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67817***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67817***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67817
Date Received: 2/22/2008
Received By:
Date Printed: 2/22/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5542	1.1	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67817
Date Received: 2/22/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67817-01	LAWSONTVI									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L67817

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc.
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd
Tucson, AZ 85705
Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: Jimn@hgcinc.com/HGC Inc.
E-mail: Jimn@hgcinc.com
Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc.
E-mail: Jimn@hgcinc.com
Address: 51 W. Wetmore Rd.
Tucson, AZ 85705
Telephone: 520) 293-1500

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: 504-IC
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers		SO_4^-						
~~GOAR MA.~~											
LAWSONTVI	2/21/08 : 0950	GW	1		X						

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	2/21/08:1624	2:22-08	9:45

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 13, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67989

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on March 05, 2008. This project has been assigned to ACZ's project number, L67989. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67989. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 13, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: COOPER C

ACZ Sample ID: ***L67989-01***
Date Sampled: *03/04/08 09:00*
Date Received: *03/05/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	880			mg/L	10	50	03/10/08 20:31	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67989***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	50.1		50.51	mg/L	100.8	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241250													
WG241250ICV	ICV	03/07/08 13:17	WI080220-1	50.1		51.6	mg/L	103	90	110			
WG241250ICB	ICB	03/07/08 13:35				U	mg/L		-1.5	1.5			
WG241250LFB	LFB	03/07/08 13:53	WI080306-2	30		30.95	mg/L	103.2	90	110			
WG241250ICV1	ICV	03/10/08 15:05	WI080220-1	50.1		50.62	mg/L	101	90	110			
WG241250ICB1	ICB	03/10/08 15:23				.77	mg/L		-1.5	1.5			
L67881-01AS	AS	03/10/08 17:12	WI080306-2	30	13.9	43.35	mg/L	98.2	90	110			
L67881-01DUP	DUP	03/10/08 17:30			13.9	13.79	mg/L				0.8	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67989***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67989***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67989
Date Received: 3/5/2008
Received By:
Date Printed: 3/5/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5594	3.2	16

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67989
Date Received: 3/5/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67989-01	COOPER C									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67989

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd
Company: Hydro Geo Chem Inc.	Tucson, AZ 85705
E-mail: dans@hgcinc.com	Telephone: 520) 293-1500 x173

Copy of Report to:

Name: Jim Norris	E-mail: Jimn@hgcinc.com
Company: HGC Inc.	Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris	Address: 51 W. Wetmore Rd
Company: HGC Inc.	Tucson, AZ 85705
E-mail: Jimn@hgcinc.com	Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: SO4-IC

Project/PO #: 872001.0

Reporting state for compliance testing: AZ

Sampler's Name: Mark Arneson

Are any samples NRC licensable material? N/O

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	1 SO4								
COOPER C	3/4/08: 9:00	GW	1	X								

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	3/4/08: 1630	WPL	3-5-08 11:05

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 12, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L68039

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on March 07, 2008. This project has been assigned to ACZ's project number, L68039. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L68039. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 12, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: CHAMBERS

ACZ Sample ID: ***L68039-01***
Date Sampled: *03/06/08 09:50*
Date Received: *03/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	7.7			mg/L	0.5	3	03/11/08 21:29	aml/ccp

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: DUP030608

ACZ Sample ID: ***L68039-02***
Date Sampled: *03/06/08 00:00*
Date Received: *03/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	7.7			mg/L	0.5	3	03/11/08 21:47	aml/ccp

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: FB030608

ACZ Sample ID: ***L68039-03***
Date Sampled: *03/06/08 00:00*
Date Received: *03/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	0.9	B		mg/L	0.5	3	03/11/08 22:05	aml/ccp

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L68039***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	50.1		50.51	mg/L	100.8	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241326													
WG241326ICV	ICV	03/10/08 21:26	WI080220-1	50.1		51.43	mg/L	102.7	90	110			
WG241326ICB	ICB	03/10/08 21:44				U	mg/L		-1.5	1.5			
WG241326LFB	LFB	03/10/08 22:02	WI080306-2	30		32.41	mg/L	108	90	110			
WG241326ICV1	ICV	03/11/08 16:21	WI080220-1	50.1		50.87	mg/L	101.5	90	110			
WG241326ICB1	ICB	03/11/08 16:39				.91	mg/L		-1.5	1.5			
L68017-03AS	AS	03/11/08 18:28	WI080306-2	150	76	219.8	mg/L	95.9	90	110			
L68017-03DUP	DUP	03/11/08 18:46			76	73.7	mg/L				3.1	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L68039***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L68039***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L68039
Date Received: 3/7/2008
Received By:
Date Printed: 3/7/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5609	2	17

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L68039
Date Received: 3/7/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L68039-01	CHAMBERS									X		
L68039-02	DUP030608									X		
L68039-03	FB030608									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L68039

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc.
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd Tucson, AZ 85705
Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Address: 51 W. Wetmore Rd. Tucson, AZ 85705
Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: 504-IC
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO_4^{-}
CHAMBERS	3/6/08 : 9:50	GW	1	X
DUP030608	3/6/08	GW	1	X
FB030608	3/6/08	GW	1	X

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	3/6/08 : 1500	MB	3.7.08 10:03

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 20, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872002.2
ACZ Project ID: L68038

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on March 07, 2008. This project has been assigned to ACZ's project number, L68038. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L68038. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 20, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: TM-19A

ACZ Sample ID: ***L68038-01***
Date Sampled: *03/06/08 11:40*
Date Received: *03/07/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	37.9			mg/L	0.2	1	03/11/08 10:58	aeh/wfg
Magnesium, dissolved	M200.7 ICP	11.6			mg/L	0.2	1	03/11/08 10:58	aeh/wfg
Potassium, dissolved	M200.7 ICP	3.0		*	mg/L	0.3	2	03/11/08 10:58	aeh/wfg
Sodium, dissolved	M200.7 ICP	57.7			mg/L	0.3	2	03/11/08 10:58	aeh/wfg

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		119			mg/L	2	20	03/12/08 0:00	cas
Carbonate as CaCO3		19	B		mg/L	2	20	03/12/08 0:00	cas
Hydroxide as CaCO3			U		mg/L	2	20	03/12/08 0:00	cas
Total Alkalinity		138		*	mg/L	2	20	03/12/08 0:00	cas
Cation-Anion Balance	Calculation								
Cation-Anion Balance		11.3			%			03/20/08 0:00	calc
Sum of Anions		4.3			meq/L	0.1	0.5	03/20/08 0:00	calc
Sum of Cations		5.4			meq/L	0.1	0.5	03/20/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	15.4			mg/L	0.5	3	03/11/08 21:11	aml/ccp
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	03/11/08 21:11	aml/ccp
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.26			mg/L	0.02	0.1	03/20/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.26			mg/L	0.02	0.1	03/07/08 19:13	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	03/07/08 19:13	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	280			mg/L	10	20	03/13/08 13:32	cas
Sulfate	300.0 - Ion Chromatography	56.1			mg/L	0.5	3	03/11/08 21:11	aml/ccp
TDS (calculated)	Calculation	273			mg/L	10	50	03/20/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.03						03/20/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: TM-7

ACZ Sample ID: ***L68038-02***
Date Sampled: *03/06/08 13:50*
Date Received: *03/07/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	49.0			mg/L	0.2	1	03/11/08 11:01	aeh/wfg
Magnesium, dissolved	M200.7 ICP	15.8		*	mg/L	0.2	1	03/11/08 11:01	aeh/wfg
Potassium, dissolved	M200.7 ICP	2.0		*	mg/L	0.3	2	03/11/08 11:01	aeh/wfg
Sodium, dissolved	M200.7 ICP	22.6		*	mg/L	0.3	2	03/11/08 11:01	aeh/wfg

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		133			mg/L	2	20	03/12/08 0:00	cas
Carbonate as CaCO3		9	B		mg/L	2	20	03/12/08 0:00	cas
Hydroxide as CaCO3			U		mg/L	2	20	03/12/08 0:00	cas
Total Alkalinity		142		*	mg/L	2	20	03/12/08 0:00	cas
Cation-Anion Balance	Calculation								
Cation-Anion Balance		11.9			%			03/20/08 0:00	calc
Sum of Anions		3.7			meq/L	0.1	0.5	03/20/08 0:00	calc
Sum of Cations		4.7			meq/L	0.1	0.5	03/20/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	9.0			mg/L	0.5	3	03/12/08 2:19	aml/ccp
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	03/12/08 2:19	aml/ccp
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	3.04			mg/L	0.02	0.1	03/20/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	3.04			mg/L	0.02	0.1	03/07/08 19:19	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	03/07/08 19:19	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	220			mg/L	10	20	03/13/08 13:33	cas
Sulfate	300.0 - Ion Chromatography	22.5			mg/L	0.5	3	03/12/08 2:19	aml/ccp
TDS (calculated)	Calculation	223			mg/L	10	50	03/20/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.99						03/20/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L68038***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241427													
WG241427PBW1	PBW	03/12/08 16:53				28.1	mg/L		-20	20			B4
WG241427LCSW2	LCSW	03/12/08 17:03	WC080131-1	820		807.2	mg/L	98.4	90	110			
L68041-08DUP	DUP	03/12/08 19:14			89	100.9	mg/L				12.5	20	
WG241427PBW2	PBW	03/12/08 19:19				20.7	mg/L		-20	20			B4
WG241427LCSW5	LCSW	03/12/08 19:30	WC080131-1	820		797.4	mg/L	97.2	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241325													
WG241325ICV	ICV	03/11/08 9:55	II080115-3	100		97.33	mg/L	97.3	95	105			
WG241325ICB	ICB	03/11/08 9:58				U	mg/L		-0.6	0.6			
WG241325LFB	LFB	03/11/08 10:12	II080307-6	67.97008		73.52	mg/L	108.2	85	115			
L68019-01AS	AS	03/11/08 10:18	II080307-6	67.97008	225	283.12	mg/L	85.5	85	115			
L68019-01ASD	ASD	03/11/08 10:21	II080307-6	67.97008	225	286.85	mg/L	91	85	115	1.31	20	
L68038-02AS	AS	03/11/08 11:04	II080307-6	67.97008	49	123.78	mg/L	110	85	115			
L68038-02ASD	ASD	03/11/08 11:07	II080307-6	67.97008	49	126.88	mg/L	114.6	85	115	2.47	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	19.98		20.32	mg/L	101.7	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241326													
WG241326ICV	ICV	03/10/08 21:26	WI080220-1	19.98		20.34	mg/L	101.8	90	110			
WG241326ICB	ICB	03/10/08 21:44				U	mg/L		-1.5	1.5			
WG241326LFB	LFB	03/10/08 22:02	WI080306-2	30		31.43	mg/L	104.8	90	110			
L68017-03AS	AS	03/11/08 2:52	WI080306-2	30	9.3	37.31	mg/L	93.4	90	110			
L68017-03DUP	DUP	03/11/08 3:10			9.3	9.25	mg/L				0.5	20	
WG241326ICV1	ICV	03/11/08 16:21	WI080220-1	19.98		20.24	mg/L	101.3	90	110			
WG241326ICB1	ICB	03/11/08 16:39				U	mg/L		-1.5	1.5			
WG241373													
WG241373ICV	ICV	03/11/08 23:00	WI080220-1	19.98		20.35	mg/L	101.9	90	110			
WG241373ICB	ICB	03/11/08 23:18				U	mg/L		-1.5	1.5			
WG241373LFB	LFB	03/11/08 23:36	WI080306-2	30		28.34	mg/L	94.5	90	110			
L67956-01AS	AS	03/12/08 0:30	WI080306-2	30	26.9	54.66	mg/L	92.5	90	110			
L67956-01DUP	DUP	03/12/08 0:48			26.9	26.83	mg/L				0.3	20	
WG241373ICV1	ICV	03/12/08 15:51	WI080220-1	19.98		20.29	mg/L	101.6	90	110			
WG241373ICB1	ICB	03/12/08 16:09				U	mg/L		-1.5	1.5			

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L68038***

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241326													
WG241326ICV	ICV	03/10/08 21:26	WI080220-1	4		4.02	mg/L	100.5	90	110			
WG241326ICB	ICB	03/10/08 21:44				U	mg/L		-0.3	0.3			
WG241326LFB	LFB	03/10/08 22:02	WI080306-2	1.5		1.57	mg/L	104.7	90	110			
L68017-03AS	AS	03/11/08 2:52	WI080306-2	1.5	U	1.16	mg/L	77.3	90	110			M2
L68017-03DUP	DUP	03/11/08 3:10			U	U	mg/L				0	20	RA
WG241326ICV1	ICV	03/11/08 16:21	WI080220-1	4		3.92	mg/L	98	90	110			
WG241326ICB1	ICB	03/11/08 16:39				U	mg/L		-0.3	0.3			
WG241373													
WG241373ICV	ICV	03/11/08 23:00	WI080220-1	4		4.03	mg/L	100.8	90	110			
WG241373ICB	ICB	03/11/08 23:18				U	mg/L		-0.3	0.3			
WG241373LFB	LFB	03/11/08 23:36	WI080306-2	1.5		1.39	mg/L	92.7	90	110			
L67956-01AS	AS	03/12/08 0:30	WI080306-2	1.5	.2	1.55	mg/L	90	90	110			
L67956-01DUP	DUP	03/12/08 0:48			.2	.23	mg/L				14	20	RA
WG241373ICV1	ICV	03/12/08 15:51	WI080220-1	4		3.94	mg/L	98.5	90	110			
WG241373ICB1	ICB	03/12/08 16:09				U	mg/L		-0.3	0.3			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241325													
WG241325ICV	ICV	03/11/08 9:55	II080115-3	100		100.15	mg/L	100.2	95	105			
WG241325ICB	ICB	03/11/08 9:58				U	mg/L		-0.6	0.6			
WG241325LFB	LFB	03/11/08 10:12	II080307-6	49.96908		55.13	mg/L	110.3	85	115			
L68019-01AS	AS	03/11/08 10:18	II080307-6	49.96908	51.7	105.65	mg/L	108	85	115			
L68019-01ASD	ASD	03/11/08 10:21	II080307-6	49.96908	51.7	105.46	mg/L	107.6	85	115	0.18	20	
L68038-02AS	AS	03/11/08 11:04	II080307-6	49.96908	15.8	72.5	mg/L	113.5	85	115			
L68038-02ASD	ASD	03/11/08 11:07	II080307-6	49.96908	15.8	73.87	mg/L	116.2	85	115	1.87	20	MA

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241286													
WG241286ICV	ICV	03/07/08 19:01	WI071212-1	2.416		2.25	mg/L	93.1	90	110			
WG241286ICB	ICB	03/07/08 19:03				U	mg/L		-0.06	0.06			
WG241286LFB	LFB	03/07/08 19:06	WI070911-4	2		1.976	mg/L	98.8	90	110			
L68036-01AS	AS	03/07/08 19:12	WI070911-4	2	.37	2.396	mg/L	101.3	90	110			
L68038-01DUP	DUP	03/07/08 19:15			.26	.253	mg/L				2.7	20	

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241286													
WG241286ICV	ICV	03/07/08 19:01	WI071212-1	.609		.583	mg/L	95.7	90	110			
WG241286ICB	ICB	03/07/08 19:03				U	mg/L		-0.03	0.03			
WG241286LFB	LFB	03/07/08 19:06	WI070911-4	1		1.003	mg/L	100.3	90	110			
L68036-01AS	AS	03/07/08 19:12	WI070911-4	1		1.045	mg/L	104.5	90	110			
L68038-01DUP	DUP	03/07/08 19:15			U	U	mg/L				0	20	RA

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L68038***

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241325													
WG241325ICV	ICV	03/11/08 9:55	II080115-3	20		20.4	mg/L	102	95	105			
WG241325ICB	ICB	03/11/08 9:58				U	mg/L		-0.9	0.9			
WG241325LFB	LFB	03/11/08 10:12	II080307-6	99.76186		112.02	mg/L	112.3	85	115			
L68019-01AS	AS	03/11/08 10:18	II080307-6	99.76186	13.4	129.03	mg/L	115.9	85	115			MA
L68019-01ASD	ASD	03/11/08 10:21	II080307-6	99.76186	13.4	127.97	mg/L	114.8	85	115	0.82	20	
L68038-02AS	AS	03/11/08 11:04	II080307-6	99.76186	2	118.84	mg/L	117.1	85	115			M1
L68038-02ASD	ASD	03/11/08 11:07	II080307-6	99.76186	2	119.55	mg/L	117.8	85	115	0.6	20	M1

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241499													
WG241499PBW	PBW	03/13/08 13:30				U	mg/L		-20	20			
WG241499LCSW	LCSW	03/13/08 13:31	PCN28837	260		282	mg/L	108.5	80	120			
L68055-01DUP	DUP	03/13/08 13:45			3160	3076	mg/L				2.7	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241325													
WG241325ICV	ICV	03/11/08 9:55	II080115-3	100		101.49	mg/L	101.5	95	105			
WG241325ICV	ICV	03/11/08 9:55	II080115-3	100		99.2	mg/L	99.2	95	105			
WG241325ICB	ICB	03/11/08 9:58				U	mg/L		-6	6			
WG241325ICB	ICB	03/11/08 9:58				U	mg/L		-0.9	0.9			
WG241325LFB	LFB	03/11/08 10:12	II080307-6	98.21624		107.4	mg/L	109.4	85	115			
WG241325LFB	LFB	03/11/08 10:12	II080307-6	98.21624		109.7	mg/L	111.7	85	115			
L68019-01AS	AS	03/11/08 10:18	II080307-6	98.21624	30.7	142.67	mg/L	114	85	115			
L68019-01ASD	ASD	03/11/08 10:21	II080307-6	98.21624	30.7	141.24	mg/L	112.5	85	115	1.01	20	
L68038-02AS	AS	03/11/08 11:04	II080307-6	98.21624	22.6	135.87	mg/L	115.3	85	115			
L68038-02ASD	ASD	03/11/08 11:07	II080307-6	98.21624	22.6	137.09	mg/L	116.6	85	115	0.89	20	MA

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L68038***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	50.1		50.51	mg/L	100.8	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241326													
WG241326ICV	ICV	03/10/08 21:26	WI080220-1	50.1		51.43	mg/L	102.7	90	110			
WG241326ICB	ICB	03/10/08 21:44				U	mg/L		-1.5	1.5			
WG241326LFB	LFB	03/10/08 22:02	WI080306-2	30		32.41	mg/L	108	90	110			
WG241326ICV1	ICV	03/11/08 16:21	WI080220-1	50.1		50.87	mg/L	101.5	90	110			
WG241326ICB1	ICB	03/11/08 16:39				.91	mg/L		-1.5	1.5			
L68017-03AS	AS	03/11/08 18:28	WI080306-2	150	76	219.8	mg/L	95.9	90	110			
L68017-03DUP	DUP	03/11/08 18:46			76	73.7	mg/L				3.1	20	
WG241373													
WG241373ICV	ICV	03/11/08 23:00	WI080220-1	50.1		51.34	mg/L	102.5	90	110			
WG241373ICB	ICB	03/11/08 23:18				.93	mg/L		-1.5	1.5			
WG241373LFB	LFB	03/11/08 23:36	WI080306-2	30		29.1	mg/L	97	90	110			
WG241373ICV1	ICV	03/12/08 15:51	WI080220-1	50.1		51.49	mg/L	102.8	90	110			
WG241373ICB1	ICB	03/12/08 16:09				.92	mg/L		-1.5	1.5			
WG241373LFB	LFB	03/12/08 16:27	WI080306-2	30		31.99	mg/L	106.6	90	110			
L67956-01AS	AS	03/12/08 17:03	WI080306-2	600	890	1520	mg/L	105	90	110			
L67956-01DUP	DUP	03/12/08 17:21			890	882	mg/L				0.9	20	

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Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L68038***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68038-01	WG241325	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG241326	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241286	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241427	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.
L68038-02	WG241325	Magnesium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Potassium, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Sodium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG241373	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241286	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241427	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.

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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L68038***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L68038
Date Received: 3/7/2008
Received By:
Date Printed: 3/7/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?			
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5609	2	17

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L68038
Date Received: 3/7/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L68038-01	TM-19A		Y									
L68038-02	TM-7		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L68038

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc.
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd Tucson, AZ 85705
Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.
E-mail: Jimn@hgcinc.com
Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc.
E-mail: Jimn@hgcinc.com
Address: 51 W. Wetmore Rd Tucson, AZ 85705
Telephone: (520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 8720022
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Mg Ca Na K	TDS $SO_4^{=}$ NO_2^- NO_3^- Cl^- F^-	Alk					
TM-19A	3/6/08 : 1140	GW		X	X	X					
TM-7	3/6/08 : 1350	GW		X	X	X					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	3/6/08 : 1500		3-7-08 10:03

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 12, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L68020

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on March 06, 2008. This project has been assigned to ACZ's project number, L68020. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L68020. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 12, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: HOWARD

ACZ Sample ID: ***L68020-01***
Date Sampled: *03/04/08 18:10*
Date Received: *03/06/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	571			mg/L	5	30	03/11/08 20:35	aml/ccp

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: METZLER

ACZ Sample ID: ***L68020-02***
Date Sampled: *03/05/08 10:10*
Date Received: *03/06/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	317			mg/L	5	30	03/11/08 20:53	aml/ccp

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L68020***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	50.1		50.51	mg/L	100.8	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241326													
WG241326ICV	ICV	03/10/08 21:26	WI080220-1	50.1		51.43	mg/L	102.7	90	110			
WG241326ICB	ICB	03/10/08 21:44				U	mg/L		-1.5	1.5			
WG241326LFB	LFB	03/10/08 22:02	WI080306-2	30		32.41	mg/L	108	90	110			
WG241326ICV1	ICV	03/11/08 16:21	WI080220-1	50.1		50.87	mg/L	101.5	90	110			
WG241326ICB1	ICB	03/11/08 16:39				.91	mg/L		-1.5	1.5			
L68017-03AS	AS	03/11/08 18:28	WI080306-2	150	76	219.8	mg/L	95.9	90	110			
L68017-03DUP	DUP	03/11/08 18:46			76	73.7	mg/L				3.1	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L68020***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L68020***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L68020
Date Received: 3/6/2008
Received By:
Date Printed: 3/6/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
2111	1.6	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L68020
Date Received: 3/6/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L68020-01	HOWARD									X		
L68020-02	METZLER									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L68020

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro GeoChem Inc.
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd Tucson, AZ 85705
Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.
E-mail: Jimn@hgcinc.com
Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc
E-mail: Jimn@hgcinc.com
Address: 51 W. Wetmore Rd Tucson, AZ 85705
Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

YES: X
NO:

PROJECT INFORMATION

Quote #: SO4-TC
Project/PO #: 612001.0
Reporting state for compliance testing: AZ
Sampler's Name: [redacted]
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO4							
HOWARD	3/4/08: 1810	GW	1	X							
METZLER	3/5/08: 1010	GW	1	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
[redacted]	3/5/08: 1610	WL	3-6-08 10:41

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 21, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872002.2
ACZ Project ID: L68019

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on March 06, 2008. This project has been assigned to ACZ's project number, L68019. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L68019. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 21, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: TM-16

ACZ Sample ID: ***L68019-01***
Date Sampled: *03/05/08 13:20*
Date Received: *03/06/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	225			mg/L	0.2	1	03/11/08 10:15	aeh/wfg
Magnesium, dissolved	M200.7 ICP	51.7			mg/L	0.2	1	03/11/08 10:15	aeh/wfg
Potassium, dissolved	M200.7 ICP	13.4		*	mg/L	0.3	2	03/11/08 10:15	aeh/wfg
Sodium, dissolved	M200.7 ICP	30.7			mg/L	0.3	2	03/11/08 10:15	aeh/wfg

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		205			mg/L	2	20	03/07/08 0:00	ear/cas
Carbonate as CaCO3			U		mg/L	2	20	03/07/08 0:00	ear/cas
Hydroxide as CaCO3			U		mg/L	2	20	03/07/08 0:00	ear/cas
Total Alkalinity		205			mg/L	2	20	03/07/08 0:00	ear/cas
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.2			%			03/21/08 0:00	calc
Sum of Anions		15.8			meq/L	0.1	0.5	03/21/08 0:00	calc
Sum of Cations		17.2			meq/L	0.1	0.5	03/21/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	28.9			mg/L	0.5	3	03/11/08 3:46	aml/ccp
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	03/11/08 3:46	aml/ccp
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	6.8			mg/L	0.1	0.5	03/21/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	6.9			mg/L	0.1	0.5	03/06/08 18:54	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.01	B	*	mg/L	0.01	0.05	03/06/08 18:38	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	1030			mg/L	10	20	03/11/08 14:14	ear
Sulfate	300.0 - Ion Chromatography	497			mg/L	5	30	03/11/08 19:22	aml/ccp
TDS (calculated)	Calculation	1000			mg/L	10	50	03/21/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.03						03/21/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: TM-42

ACZ Sample ID: ***L68019-02***
Date Sampled: *03/05/08 14:40*
Date Received: *03/06/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	185			mg/L	0.2	1	03/13/08 12:49	aeh/erf
Magnesium, dissolved	M200.7 ICP	55.8			mg/L	0.2	1	03/13/08 12:49	aeh/erf
Potassium, dissolved	M200.7 ICP	10.4			mg/L	0.3	2	03/13/08 12:49	aeh/erf
Sodium, dissolved	M200.7 ICP	37.9			mg/L	0.3	2	03/13/08 12:49	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		186			mg/L	2	20	03/07/08 0:00	ear/cas
Carbonate as CaCO3			U		mg/L	2	20	03/07/08 0:00	ear/cas
Hydroxide as CaCO3			U		mg/L	2	20	03/07/08 0:00	ear/cas
Total Alkalinity		186			mg/L	2	20	03/07/08 0:00	ear/cas
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.3			%			03/21/08 0:00	calc
Sum of Anions		15.1			meq/L	0.1	0.5	03/21/08 0:00	calc
Sum of Cations		15.8			meq/L	0.1	0.5	03/21/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	27.0			mg/L	0.5	3	03/17/08 15:20	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	03/11/08 4:04	aml/ccp
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	6.55			mg/L	0.06	0.3	03/21/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	6.55			mg/L	0.06	0.3	03/06/08 18:56	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	03/06/08 18:41	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	980			mg/L	10	20	03/11/08 14:16	ear
Sulfate	300.0 - Ion Chromatography	482			mg/L	5	30	03/19/08 18:37	aml
TDS (calculated)	Calculation	939			mg/L	10	50	03/21/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.04						03/21/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L68019***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241225													
WG241225PBW2	PBW	03/06/08 19:30				U	mg/L		-20	20			
WG241225LCSW5	LCSW	03/06/08 19:43	WC080131-1	820		840.2	mg/L	102.5	90	110			
WG241225PBW3	PBW	03/06/08 22:18				U	mg/L		-20	20			
WG241225LCSW8	LCSW	03/06/08 22:31	WC080131-1	820		827	mg/L	100.9	90	110			
L68019-02DUP	DUP	03/07/08 2:21			186	177.6	mg/L				4.6	20	
WG241225LCSW11	LCSW	03/07/08 2:33	WC080131-1	820		777.3	mg/L	94.8	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241325													
WG241325ICV	ICV	03/11/08 9:55	II080115-3	100		97.33	mg/L	97.3	95	105			
WG241325ICB	ICB	03/11/08 9:58				U	mg/L		-0.6	0.6			
WG241325LFB	LFB	03/11/08 10:12	II080307-6	67.97008		73.52	mg/L	108.2	85	115			
L68019-01AS	AS	03/11/08 10:18	II080307-6	67.97008	225	283.12	mg/L	85.5	85	115			
L68019-01ASD	ASD	03/11/08 10:21	II080307-6	67.97008	225	286.85	mg/L	91	85	115	1.31	20	
WG241493													
WG241493ICV	ICV	03/13/08 12:29	II080115-3	100		101.12	mg/L	101.1	95	105			
WG241493ICB	ICB	03/13/08 12:33				U	mg/L		-0.6	0.6			
WG241493LFB	LFB	03/13/08 12:46	II080312-2	67.97008		68.03	mg/L	100.1	85	115			
L68060-01AS	AS	03/13/08 12:59	II080312-2	67.97008	42.9	109.4	mg/L	97.8	85	115			
L68060-01ASD	ASD	03/13/08 13:02	II080312-2	67.97008	42.9	109.14	mg/L	97.5	85	115	0.24	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	19.98		20.32	mg/L	101.7	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241326													
WG241326ICV	ICV	03/10/08 21:26	WI080220-1	19.98		20.34	mg/L	101.8	90	110			
WG241326ICB	ICB	03/10/08 21:44				U	mg/L		-1.5	1.5			
WG241326LFB	LFB	03/10/08 22:02	WI080306-2	30		31.43	mg/L	104.8	90	110			
L68017-03AS	AS	03/11/08 2:52	WI080306-2	30	18.6	37.31	mg/L	93.4	90	110			
L68017-03DUP	DUP	03/11/08 3:10			18.6	9.25	mg/L				0.5	20	
WG241326ICV1	ICV	03/11/08 16:21	WI080220-1	19.98		20.24	mg/L	101.3	90	110			
WG241326ICB1	ICB	03/11/08 16:39				U	mg/L		-1.5	1.5			
WG241583													
WG241583ICV	ICV	03/17/08 14:08	WI080220-1	19.98		18.97	mg/L	94.9	90	110			
WG241583ICB	ICB	03/17/08 14:26				U	mg/L		-1.5	1.5			
WG241583LFB	LFB	03/17/08 14:44	WI080306-2	30		28.26	mg/L	94.2	90	110			
L68019-02AS	AS	03/17/08 15:38	WI080306-2	30	27	54.45	mg/L	91.5	90	110			
L68019-02DUP	DUP	03/17/08 15:56			27	27.19	mg/L				0.7	20	

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L68019***

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241326													
WG241326ICV	ICV	03/10/08 21:26	WI080220-1	4		4.02	mg/L	100.5	90	110			
WG241326ICB	ICB	03/10/08 21:44				U	mg/L		-0.3	0.3			
WG241326LFB	LFB	03/10/08 22:02	WI080306-2	1.5		1.57	mg/L	104.7	90	110			
L68017-03AS	AS	03/11/08 2:52	WI080306-2	1.5	U	1.16	mg/L	77.3	90	110			M2
L68017-03DUP	DUP	03/11/08 3:10			U	U	mg/L				0	20	RA
WG241326ICV1	ICV	03/11/08 16:21	WI080220-1	4		3.92	mg/L	98	90	110			
WG241326ICB1	ICB	03/11/08 16:39				U	mg/L		-0.3	0.3			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241325													
WG241325ICV	ICV	03/11/08 9:55	II080115-3	100		100.15	mg/L	100.2	95	105			
WG241325ICB	ICB	03/11/08 9:58				U	mg/L		-0.6	0.6			
WG241325LFB	LFB	03/11/08 10:12	II080307-6	49.96908		55.13	mg/L	110.3	85	115			
L68019-01AS	AS	03/11/08 10:18	II080307-6	49.96908	51.7	105.65	mg/L	108	85	115			
L68019-01ASD	ASD	03/11/08 10:21	II080307-6	49.96908	51.7	105.46	mg/L	107.6	85	115	0.18	20	
WG241493													
WG241493ICV	ICV	03/13/08 12:29	II080115-3	100		102.8	mg/L	102.8	95	105			
WG241493ICB	ICB	03/13/08 12:33				U	mg/L		-0.6	0.6			
WG241493LFB	LFB	03/13/08 12:46	II080312-2	49.96908		50.63	mg/L	101.3	85	115			
L68060-01AS	AS	03/13/08 12:59	II080312-2	49.96908	1.3	54.23	mg/L	105.9	85	115			
L68060-01ASD	ASD	03/13/08 13:02	II080312-2	49.96908	1.3	53.93	mg/L	105.3	85	115	0.55	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241233													
WG241233ICV	ICV	03/06/08 18:13	WI071212-1	2.416		2.294	mg/L	95	90	110			
WG241233ICB	ICB	03/06/08 18:14				U	mg/L		-0.06	0.06			
WG241233LFB	LFB	03/06/08 18:18	WI070911-4	2		1.997	mg/L	99.9	90	110			
L68019-01AS	AS	03/06/08 18:55	WI070911-4	10	6.9	17.3	mg/L	104	90	110			
L68019-02DUP	DUP	03/06/08 18:58			6.55	6.555	mg/L				0.1	20	

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241233													
WG241233ICV	ICV	03/06/08 18:13	WI071212-1	.609		.6	mg/L	98.5	90	110			
WG241233ICB	ICB	03/06/08 18:14				.011	mg/L		-0.03	0.03			
WG241233LFB	LFB	03/06/08 18:18	WI070911-4	1		.997	mg/L	99.7	90	110			
L68019-01AS	AS	03/06/08 18:40	WI070911-4	1	.01	1.008	mg/L	99.8	90	110			
L68019-02DUP	DUP	03/06/08 18:42			U	U	mg/L				0	20	RA

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L68019***

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241325													
WG241325ICV	ICV	03/11/08 9:55	II080115-3	20		20.4	mg/L	102	95	105			
WG241325ICB	ICB	03/11/08 9:58				U	mg/L		-0.9	0.9			
WG241325LFB	LFB	03/11/08 10:12	II080307-6	99.76186		112.02	mg/L	112.3	85	115			
L68019-01AS	AS	03/11/08 10:18	II080307-6	99.76186	13.4	129.03	mg/L	115.9	85	115			MA
L68019-01ASD	ASD	03/11/08 10:21	II080307-6	99.76186	13.4	127.97	mg/L	114.8	85	115	0.82	20	
WG241493													
WG241493ICV	ICV	03/13/08 12:29	II080115-3	20		21.06	mg/L	105.3	95	105			
WG241493ICB	ICB	03/13/08 12:33				U	mg/L		-0.9	0.9			
WG241493LFB	LFB	03/13/08 12:46	II080312-2	99.76186		102.69	mg/L	102.9	85	115			
L68060-01AS	AS	03/13/08 12:59	II080312-2	99.76186	.4	108.65	mg/L	108.5	85	115			
L68060-01ASD	ASD	03/13/08 13:02	II080312-2	99.76186	.4	108.22	mg/L	108.1	85	115	0.4	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241381													
WG241381PBW	PBW	03/11/08 14:05				U	mg/L		-20	20			
WG241381LCSW	LCSW	03/11/08 14:07	PCN28837	260		294	mg/L	113.1	80	120			
L68037-02DUP	DUP	03/11/08 14:33			120	130	mg/L				8	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241325													
WG241325ICV	ICV	03/11/08 9:55	II080115-3	100		101.49	mg/L	101.5	95	105			
WG241325ICV	ICV	03/11/08 9:55	II080115-3	100		99.2	mg/L	99.2	95	105			
WG241325ICB	ICB	03/11/08 9:58				U	mg/L		-0.9	0.9			
WG241325ICB	ICB	03/11/08 9:58				U	mg/L		-6	6			
WG241325LFB	LFB	03/11/08 10:12	II080307-6	98.21624		107.4	mg/L	109.4	85	115			
WG241325LFB	LFB	03/11/08 10:12	II080307-6	98.21624		109.7	mg/L	111.7	85	115			
L68019-01AS	AS	03/11/08 10:18	II080307-6	98.21624	30.7	142.67	mg/L	114	85	115			
L68019-01ASD	ASD	03/11/08 10:21	II080307-6	98.21624	30.7	141.24	mg/L	112.5	85	115	1.01	20	
WG241493													
WG241493ICV	ICV	03/13/08 12:29	II080115-3	100		101.8	mg/L	101.8	95	105			
WG241493ICV	ICV	03/13/08 12:29	II080115-3	100		103.93	mg/L	103.9	95	105			
WG241493ICB	ICB	03/13/08 12:33				U	mg/L		-6	6			
WG241493ICB	ICB	03/13/08 12:33				U	mg/L		-0.9	0.9			
WG241493LFB	LFB	03/13/08 12:46	II080312-2	98.21624		98.3	mg/L	100.1	85	115			
WG241493LFB	LFB	03/13/08 12:46	II080312-2	98.21624		101.01	mg/L	102.8	85	115			
L68060-01AS	AS	03/13/08 12:59	II080312-2	98.21624	16.2	120.51	mg/L	106.2	85	115			
L68060-01ASD	ASD	03/13/08 13:02	II080312-2	98.21624	16.2	119.25	mg/L	104.9	85	115	1.05	20	

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L68019***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	50.1		50.51	mg/L	100.8	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241326													
WG241326ICV	ICV	03/10/08 21:26	WI080220-1	50.1		51.43	mg/L	102.7	90	110			
WG241326ICB	ICB	03/10/08 21:44				U	mg/L		-1.5	1.5			
WG241326LFB	LFB	03/10/08 22:02	WI080306-2	30		32.41	mg/L	108	90	110			
WG241326ICV1	ICV	03/11/08 16:21	WI080220-1	50.1		50.87	mg/L	101.5	90	110			
WG241326ICB1	ICB	03/11/08 16:39				.91	mg/L		-1.5	1.5			
L68017-03AS	AS	03/11/08 18:28	WI080306-2	150	152	219.8	mg/L	95.9	90	110			
L68017-03DUP	DUP	03/11/08 18:46			152	73.7	mg/L				3.1	20	
WG241583													
WG241583ICV1	ICV	03/19/08 17:24	WI080220-1	50.1		50.2	mg/L	100.2	90	110			
WG241583ICB1	ICB	03/19/08 17:43				U	mg/L		-1.5	1.5			
WG241583LFB2	LFB	03/19/08 18:01	WI080306-2	30		29.95	mg/L	99.8	90	110			
L68019-02AS	AS	03/19/08 18:55	WI080306-2	300	482	771.9	mg/L	96.6	90	110			
L68019-02DUP	DUP	03/19/08 19:13			482	453.5	mg/L				6.1	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L68019***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68019-01	WG241325	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG241326	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241233	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L68019-02	WG241326	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241233	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L68019***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L68019
Date Received: 3/6/2008
Received By:
Date Printed: 3/6/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
2111	1.6	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L68019
Date Received: 3/6/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L68019-01	TM-16		Y									
L68019-02	TM-42		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L68019

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd
Company: Hydro GeoChem Inc.	Tucson, AZ 85705
E-mail: dans@hgcinc.com	Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris	E-mail: jimn@hgcinc.com
Company: HGC Inc.	Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris	Address: 51 W. Wetmore Rd
Company: HGC Inc.	Tucson, AZ 85705
E-mail: jimn@hgcinc.com	Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES: X NO:

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW

Project/PO #: 872002.2

Reporting state for compliance testing: AZ

Sampler's Name: [redacted]

Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Mg Na Ca K	TDS $SO_4^{=}$ NO_3^{-} Cl^{-} F	AlK					
TM-16	[redacted] : 1320	GW	3	X	X	X					
TM-42	[redacted] : 1440	GW	3	X	X	X					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
[signature]	3/5/08: 1610	WSPL	3-6-08 10:41

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 13, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872002.2
ACZ Project ID: L67990

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on March 05, 2008. This project has been assigned to ACZ's project number, L67990. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67990. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 13, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: BF-1

ACZ Sample ID: ***L67990-01***
Date Sampled: *03/04/08 13:10*
Date Received: *03/05/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	621			mg/L	0.2	1	03/06/08 18:31	aeh/erf
Magnesium, dissolved	M200.7 ICP	100			mg/L	0.2	1	03/06/08 18:31	aeh/erf
Potassium, dissolved	M200.7 ICP	4.5			mg/L	0.3	2	03/06/08 18:31	aeh/erf
Sodium, dissolved	M200.7 ICP	60.2			mg/L	0.3	2	03/06/08 18:31	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		610			mg/L	2	20	03/06/08 0:00	ear/cas
Carbonate as CaCO3			U		mg/L	2	20	03/06/08 0:00	ear/cas
Hydroxide as CaCO3			U		mg/L	2	20	03/06/08 0:00	ear/cas
Total Alkalinity		610		*	mg/L	2	20	03/06/08 0:00	ear/cas
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.4			%			03/12/08 0:00	calc
Sum of Anions		40.8			meq/L	0.1	0.5	03/12/08 0:00	calc
Sum of Cations		42.0			meq/L	0.1	0.5	03/12/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	30.4			mg/L	0.5	3	03/11/08 0:27	aml/ccp
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	03/11/08 0:27	aml/ccp
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.92			mg/L	0.02	0.1	03/12/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.92			mg/L	0.02	0.1	03/05/08 19:40	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	03/05/08 19:40	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	2850			mg/L	10	20	03/07/08 9:19	cas
Sulfate	300.0 - Ion Chromatography	1320			mg/L	30	100	03/11/08 17:15	aml/ccp
TDS (calculated)	Calculation	2510			mg/L	10	50	03/12/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.14						03/12/08 0:00	calc

Arizona license number: AZ0102

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: GL-3

ACZ Sample ID: ***L67990-02***
Date Sampled: *03/04/08 11:55*
Date Received: *03/05/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	46.7			mg/L	0.2	1	03/06/08 18:35	aeh/erf
Magnesium, dissolved	M200.7 ICP	22.8			mg/L	0.2	1	03/06/08 18:35	aeh/erf
Potassium, dissolved	M200.7 ICP	2.6			mg/L	0.3	2	03/06/08 18:35	aeh/erf
Sodium, dissolved	M200.7 ICP	18.7			mg/L	0.3	2	03/06/08 18:35	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		192			mg/L	2	20	03/06/08 0:00	ear/cas
Carbonate as CaCO3			U		mg/L	2	20	03/06/08 0:00	ear/cas
Hydroxide as CaCO3			U		mg/L	2	20	03/06/08 0:00	ear/cas
Total Alkalinity		192		*	mg/L	2	20	03/06/08 0:00	ear/cas
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.0			%			03/12/08 0:00	calc
Sum of Anions		4.8			meq/L	0.1	0.5	03/12/08 0:00	calc
Sum of Cations		5.1			meq/L	0.1	0.5	03/12/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	20.3			mg/L	0.5	3	03/11/08 0:45	aml/ccp
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	03/11/08 0:45	aml/ccp
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.75			mg/L	0.02	0.1	03/12/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.77			mg/L	0.02	0.1	03/05/08 19:42	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.02	B	*	mg/L	0.01	0.05	03/05/08 19:42	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	260			mg/L	10	20	03/07/08 9:20	cas
Sulfate	300.0 - Ion Chromatography	20.3			mg/L	0.5	3	03/11/08 0:45	aml/ccp
TDS (calculated)	Calculation	250			mg/L	10	50	03/12/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.04						03/12/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: TM-2A

ACZ Sample ID: ***L67990-03***
Date Sampled: *03/04/08 14:25*
Date Received: *03/05/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	12.6			mg/L	0.2	1	03/06/08 18:39	aeh/erf
Magnesium, dissolved	M200.7 ICP	5.8			mg/L	0.2	1	03/06/08 18:39	aeh/erf
Potassium, dissolved	M200.7 ICP	2.2			mg/L	0.3	2	03/06/08 18:39	aeh/erf
Sodium, dissolved	M200.7 ICP	58.0			mg/L	0.3	2	03/06/08 18:39	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		146			mg/L	2	20	03/06/08 0:00	ear/cas
Carbonate as CaCO3		9	B		mg/L	2	20	03/06/08 0:00	ear/cas
Hydroxide as CaCO3			U		mg/L	2	20	03/06/08 0:00	ear/cas
Total Alkalinity		155		*	mg/L	2	20	03/06/08 0:00	ear/cas
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.4			%			03/12/08 0:00	calc
Sum of Anions		3.6			meq/L	0.1	0.5	03/12/08 0:00	calc
Sum of Cations		3.7			meq/L	0.1	0.5	03/12/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	8.6			mg/L	0.5	3	03/11/08 1:39	aml/ccp
Fluoride	M300.0 - Ion Chromatography	0.3	B	*	mg/L	0.1	0.5	03/11/08 1:39	aml/ccp
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2		U		mg/L	0.02	0.1	03/12/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.02	B		mg/L	0.02	0.1	03/05/08 19:45	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.02	B	*	mg/L	0.01	0.05	03/05/08 19:45	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	190			mg/L	10	20	03/07/08 9:22	cas
Sulfate	300.0 - Ion Chromatography	12.3			mg/L	0.5	3	03/11/08 1:39	aml/ccp
TDS (calculated)	Calculation	196			mg/L	10	50	03/12/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.97						03/12/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67990***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241225													
WG241225PBW2	PBW	03/06/08 19:30				U	mg/L		-20	20			
WG241225LCSW5	LCSW	03/06/08 19:43	WC080131-1	820		840.2	mg/L	102.5	90	110			
L67991-03DUP	DUP	03/06/08 21:12			8	7.6	mg/L				5.1	20	RA
WG241225PBW3	PBW	03/06/08 22:18				U	mg/L		-20	20			
WG241225LCSW8	LCSW	03/06/08 22:31	WC080131-1	820		827	mg/L	100.9	90	110			
WG241225LCSW11	LCSW	03/07/08 2:33	WC080131-1	820		777.3	mg/L	94.8	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241214													
WG241214ICV	ICV	03/06/08 16:38	II080115-3	100		98.6	mg/L	98.6	95	105			
WG241214ICB	ICB	03/06/08 16:41				U	mg/L		-0.6	0.6			
WG241214LFB	LFB	03/06/08 16:57	II080214-5	67.97008		70.38	mg/L	103.5	85	115			
L67978-04AS	AS	03/06/08 17:57	II080214-5	67.97008	4.8	76.89	mg/L	106.1	85	115			
L67978-04ASD	ASD	03/06/08 18:01	II080214-5	67.97008	4.8	76.73	mg/L	105.8	85	115	0.21	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	19.98		20.32	mg/L	101.7	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241326													
WG241326ICV	ICV	03/10/08 21:26	WI080220-1	19.98		20.34	mg/L	101.8	90	110			
WG241326ICB	ICB	03/10/08 21:44				U	mg/L		-1.5	1.5			
WG241326LFB	LFB	03/10/08 22:02	WI080306-2	30		31.43	mg/L	104.8	90	110			
L67954-01AS	AS	03/10/08 22:38	WI080306-2	600	480	1073	mg/L	98.8	90	110			
L67954-01DUP	DUP	03/10/08 22:56			480	481	mg/L				0.2	20	
WG241326ICV1	ICV	03/11/08 16:21	WI080220-1	19.98		20.24	mg/L	101.3	90	110			
WG241326ICB1	ICB	03/11/08 16:39				U	mg/L		-1.5	1.5			

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241326													
WG241326ICV	ICV	03/10/08 21:26	WI080220-1	4		4.02	mg/L	100.5	90	110			
WG241326ICB	ICB	03/10/08 21:44				U	mg/L		-0.3	0.3			
WG241326LFB	LFB	03/10/08 22:02	WI080306-2	1.5		1.57	mg/L	104.7	90	110			
L67954-01AS	AS	03/10/08 22:38	WI080306-2	30	U	31.7	mg/L	105.7	90	110			
L67954-01DUP	DUP	03/10/08 22:56			U	U	mg/L				0	20	RA
WG241326ICV1	ICV	03/11/08 16:21	WI080220-1	4		3.92	mg/L	98	90	110			
WG241326ICB1	ICB	03/11/08 16:39				U	mg/L		-0.3	0.3			

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67990***

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241214													
WG241214ICV	ICV	03/06/08 16:38	II080115-3	100		100.25	mg/L	100.3	95	105			
WG241214ICB	ICB	03/06/08 16:41				U	mg/L		-0.6	0.6			
WG241214LFB	LFB	03/06/08 16:57	II080214-5	54.96908		58.67	mg/L	106.7	85	115			
L67978-04AS	AS	03/06/08 17:57	II080214-5	54.96908	2	60.41	mg/L	106.3	85	115			
L67978-04ASD	ASD	03/06/08 18:01	II080214-5	54.96908	2	60.86	mg/L	107.1	85	115	0.74	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241168													
WG241168ICV	ICV	03/05/08 19:14	WI071212-1	2.416		2.32	mg/L	96	90	110			
WG241168ICB	ICB	03/05/08 19:16				U	mg/L		-0.06	0.06			
WG241168LFB	LFB	03/05/08 19:19	WI070911-4	2		2.015	mg/L	100.8	90	110			
L67990-01AS	AS	03/05/08 19:41	WI070911-4	2	.92	2.905	mg/L	99.3	90	110			
L67990-02DUP	DUP	03/05/08 19:43			.77	.771	mg/L				0.1	20	

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241168													
WG241168ICV	ICV	03/05/08 19:14	WI071212-1	.609		.576	mg/L	94.6	90	110			
WG241168ICB	ICB	03/05/08 19:16				.011	mg/L		-0.03	0.03			
WG241168LFB	LFB	03/05/08 19:19	WI070911-4	1		.997	mg/L	99.7	90	110			
L67990-01AS	AS	03/05/08 19:41	WI070911-4	1	U	1.018	mg/L	101.8	90	110			
L67990-02DUP	DUP	03/05/08 19:43			.02	.021	mg/L				4.9	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241214													
WG241214ICV	ICV	03/06/08 16:38	II080115-3	20		20.18	mg/L	100.9	95	105			
WG241214ICB	ICB	03/06/08 16:41				U	mg/L		-0.9	0.9			
WG241214LFB	LFB	03/06/08 16:57	II080214-5	99.76186		107.63	mg/L	107.9	85	115			
L67978-04AS	AS	03/06/08 17:57	II080214-5	99.76186	.6	107.06	mg/L	106.7	85	115			
L67978-04ASD	ASD	03/06/08 18:01	II080214-5	99.76186	.6	108.19	mg/L	107.8	85	115	1.05	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241240													
WG241240PBW	PBW	03/07/08 9:00				U	mg/L		-20	20			
WG241240LCSW	LCSW	03/07/08 9:01	PCN28837	260		268	mg/L	103.1	80	120			
L68017-04DUP	DUP	03/07/08 9:29			5190	5150	mg/L				0.8	20	

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67990***

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241214													
WG241214ICV	ICV	03/06/08 16:38	II080115-3	100		100.13	mg/L	100.1	95	105			
WG241214ICB	ICB	03/06/08 16:41				U	mg/L		-0.9	0.9			
WG241214LFB	LFB	03/06/08 16:57	II080214-5	98.21624		106.05	mg/L	108	85	115			
L67978-04AS	AS	03/06/08 17:57	II080214-5	98.21624	3.4	106.81	mg/L	105.3	85	115			
L67978-04ASD	ASD	03/06/08 18:01	II080214-5	98.21624	3.4	108.06	mg/L	106.6	85	115	1.16	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	50.1		50.51	mg/L	100.8	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241326													
WG241326ICV	ICV	03/10/08 21:26	WI080220-1	50.1		51.43	mg/L	102.7	90	110			
WG241326ICB	ICB	03/10/08 21:44				U	mg/L		-1.5	1.5			
WG241326LFB	LFB	03/10/08 22:02	WI080306-2	30		32.41	mg/L	108	90	110			
L67954-01AS	AS	03/10/08 22:38	WI080306-2	600	270	847	mg/L	96.2	90	110			
L67954-01DUP	DUP	03/10/08 22:56			270	275	mg/L				1.8	20	
WG241326ICV1	ICV	03/11/08 16:21	WI080220-1	50.1		50.87	mg/L	101.5	90	110			
WG241326ICB1	ICB	03/11/08 16:39				.91	mg/L		-1.5	1.5			

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Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67990***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67990-01	WG241326	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241168	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241225	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67990-02	WG241326	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241168	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241225	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67990-03	WG241326	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241168	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241225	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67990***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67990
Date Received: 3/5/2008
Received By:
Date Printed: 3/5/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5594	3.2	16

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67990
Date Received: 3/5/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67990-01	BF-1		Y									
L67990-02	GL-3		Y									
L67990-03	TM-2A		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67990

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc.
E-mail: dans@hgcinc.com
Address: 51 West Wetmore Rd
Tucson, AZ 85705
Telephone: (520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Address: 51 W. Wetmore Rd
Tucson, AZ 85705
Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES X / NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: EMCQB-GW
Project/PO #: 872002.2
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ca Mg Na K - TDS SO_4 NO_3 - Na - Cl - F	Alk					
BF-1	3/4/08 : 1310	GW	3	X	X	X				
GL-3	3/4/08 : 1155	GW	3	X	X	X				
TM-2A	3/4/08 : 1425	GW	3	X	X	X				

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
[signature]	3/4/08 : 1630	[signature]	3-5-08 11:05

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 21, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L68145

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on March 13, 2008. This project has been assigned to ACZ's project number, L68145. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L68145. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 21, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: EPPELE 641

ACZ Sample ID: ***L68145-01***
Date Sampled: *03/11/08 13:30*
Date Received: *03/13/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	21.7			mg/L	0.5	3	03/19/08 19:31	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic QC Summary

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L68145***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	50.1		50.51	mg/L	100.8	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241583													
WG241583ICV1	ICV	03/19/08 17:24	WI080220-1	50.1		50.2	mg/L	100.2	90	110			
WG241583ICB1	ICB	03/19/08 17:43				U	mg/L		-1.5	1.5			
WG241583LFB2	LFB	03/19/08 18:01	WI080306-2	30		29.95	mg/L	99.8	90	110			
L68019-02AS	AS	03/19/08 18:55	WI080306-2	300	482	771.9	mg/L	96.6	90	110			
L68019-02DUP	DUP	03/19/08 19:13			482	453.5	mg/L				6.1	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L68145***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L68145***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L68145
Date Received: 3/13/2008
Received By:
Date Printed: 3/13/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5651	1.2	19

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L68145
Date Received: 3/13/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L68145-01	EPPELE									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L68145

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd
Company: Hydro Geo Chem Inc.	Tucson, AZ 85705
E-mail: dans@hgcinc.	Telephone (520) 293-1500 x 133

Copy of Report to:

Name: Jim Norris	E-mail: jimn@hgcinc.com
Company: HGC Inc.	Telephone: 520 293-1500 x 112

Invoice to:

Name: Jim Norris	Address: 51 W. Wetmore Rd
Company: Hydro Geo Chem Inc.	Tucson, AZ 85705
E-mail: jimn@hgcinc.com	Telephone: (520) 293-1500 x 112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: 504-IC

Project/PO #: 872001.0

Reporting state for compliance testing: AZ

Sampler's Name: M. Arneson

Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO4 -
EPPELE	3-11-08:1330	GW	1	X

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	3-12-08:1350	WPC	3-13-08 10:5

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

April 08, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L68297

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on March 21, 2008. This project has been assigned to ACZ's project number, L68297. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L68297. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after May 08, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: ANDERSON

ACZ Sample ID: ***L68297-01***
Date Sampled: *03/20/08 11:35*
Date Received: *03/21/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	431			mg/L	8	40	04/05/08 18:34	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic QC Summary

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L68297***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG242493													
WG242493ICV	ICV	04/04/08 11:39	WI080318-6	50.1		50.15	mg/L	100.1	90	110			
WG242493ICB	ICB	04/04/08 11:57				U	mg/L		-1.5	1.5			
WG242493LFB	LFB	04/04/08 12:15	WI080306-2	30		29.44	mg/L	98.1	90	110			
L68295-01AS	AS	04/05/08 16:10	WI080306-2	150	123	275	mg/L	101.3	90	110			
L68295-01DUP	DUP	04/05/08 16:28			123	119.4	mg/L				3	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L68297***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L68297***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L68297
Date Received: 3/21/2008
Received By:
Date Printed: 3/21/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5711	0	21

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L68297
Date Received: 3/21/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L68297-01	ANDERSON									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L68297

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd Tucson, AZ 85705
Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Telephone: (520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Address: 51 W. Wetmore Rd. Tucson, AZ 85705
Telephone: (520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: SO4-TC
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO_4^-
ANDERSON	3/20/08 : 1135	GW	1	X

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	3/20/08 : 1615	[illegible]	3-21-08 10:38

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

April 08, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872002.2
ACZ Project ID: L68296

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on March 21, 2008. This project has been assigned to ACZ's project number, L68296. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L68296. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after May 08, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: ROGERS 803

ACZ Sample ID: ***L68296-01***
Date Sampled: *03/20/08 07:45*
Date Received: *03/21/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	94.0		*	mg/L	0.2	1	03/24/08 22:59	aeh/erf
Magnesium, dissolved	M200.7 ICP	11.7			mg/L	0.2	1	03/21/08 20:32	aeh/wfg
Potassium, dissolved	M200.7 ICP	3.0			mg/L	0.3	2	03/21/08 20:32	aeh/wfg
Sodium, dissolved	M200.7 ICP	26.6			mg/L	0.3	2	03/21/08 20:32	aeh/wfg

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		148			mg/L	2	20	03/24/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	03/24/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	03/24/08 0:00	jlf
Total Alkalinity		148			mg/L	2	20	03/24/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.5			%			04/08/08 14:30	calc
Sum of Anions		6.3			meq/L	0.1	0.5	04/08/08 14:30	calc
Sum of Cations		6.9			meq/L	0.1	0.5	04/08/08 14:30	calc
Chloride	M300.0 - Ion Chromatography	13.2			mg/L	0.5	3	03/26/08 19:04	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	04/01/08 21:49	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	4.69			mg/L	0.04	0.2	04/08/08 14:30	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	4.71			mg/L	0.04	0.2	03/21/08 21:49	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.02	B	*	mg/L	0.01	0.05	03/21/08 21:42	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	410	H	*	mg/L	10	20	04/01/08 15:22	jlf
Sulfate	300.0 - Ion Chromatography	125			mg/L	1	5	04/05/08 17:58	aml
TDS (calculated)	Calculation	383			mg/L	10	50	04/08/08 14:30	calc
TDS (ratio - measured/calculated)	Calculation	1.07						04/08/08 14:30	calc

Arizona license number: AZ0102

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: LAWSON TVI 236

ACZ Sample ID: ***L68296-02***
Date Sampled: *03/20/08 08:30*
Date Received: *03/21/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	70.5			mg/L	0.2	1	03/27/08 2:25	aeh
Magnesium, dissolved	M200.7 ICP	9.3			mg/L	0.2	1	03/27/08 2:25	aeh
Potassium, dissolved	M200.7 ICP	1.9	B		mg/L	0.3	2	03/27/08 2:25	aeh
Sodium, dissolved	M200.7 ICP	25.6			mg/L	0.3	2	03/27/08 2:25	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		178			mg/L	2	20	03/24/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	03/24/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	03/24/08 0:00	jlf
Total Alkalinity		178			mg/L	2	20	03/24/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.9			%			04/08/08 14:30	calc
Sum of Anions		5.2			meq/L	0.1	0.5	04/08/08 14:30	calc
Sum of Cations		5.4			meq/L	0.1	0.5	04/08/08 14:30	calc
Chloride	M300.0 - Ion Chromatography	26.0			mg/L	0.5	3	03/26/08 19:22	aml
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	04/01/08 22:05	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	3.90			mg/L	0.02	0.1	04/08/08 14:30	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	3.93			mg/L	0.02	0.1	03/21/08 21:43	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.03	B	*	mg/L	0.01	0.05	03/21/08 21:43	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	310	H	*	mg/L	10	20	04/01/08 15:23	jlf
Sulfate	300.0 - Ion Chromatography	31.3			mg/L	0.5	3	04/04/08 14:58	aml
TDS (calculated)	Calculation	289			mg/L	10	50	04/08/08 14:30	calc
TDS (ratio - measured/calculated)	Calculation	1.07						04/08/08 14:30	calc

Arizona license number: AZ0102

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: COOPER C

ACZ Sample ID: ***L68296-03***
Date Sampled: *03/20/08 13:15*
Date Received: *03/21/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	393			mg/L	0.2	1	03/27/08 2:43	aeh
Magnesium, dissolved	M200.7 ICP	59.8			mg/L	0.2	1	03/27/08 2:43	aeh
Potassium, dissolved	M200.7 ICP	6.0			mg/L	0.3	2	03/27/08 2:43	aeh
Sodium, dissolved	M200.7 ICP	45.0			mg/L	0.3	2	03/27/08 2:43	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		229			mg/L	2	20	03/24/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	03/24/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	03/24/08 0:00	jlf
Total Alkalinity		229			mg/L	2	20	03/24/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-0.6			%			04/08/08 14:30	calc
Sum of Anions		27.0			meq/L	0.1	0.5	04/08/08 14:30	calc
Sum of Cations		26.7			meq/L	0.1	0.5	04/08/08 14:30	calc
Chloride	M300.0 - Ion Chromatography	49.0			mg/L	0.5	3	03/26/08 20:16	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	04/01/08 22:59	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	3.09			mg/L	0.02	0.1	04/08/08 14:30	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	3.10			mg/L	0.02	0.1	03/21/08 21:48	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.01	B	*	mg/L	0.01	0.05	03/21/08 21:48	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	1810	H	*	mg/L	10	20	04/01/08 15:24	jlf
Sulfate	300.0 - Ion Chromatography	990			mg/L	10	50	04/05/08 18:16	aml
TDS (calculated)	Calculation	1690			mg/L	10	50	04/08/08 14:30	calc
TDS (ratio - measured/calculated)	Calculation	1.07						04/08/08 14:30	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L68296***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241912													
WG241912PBW1	PBW	03/24/08 11:23				2.3	mg/L		-20	20			
WG241912LCSW2	LCSW	03/24/08 11:36	WC080324-1	820		779.5	mg/L	95.1	90	110			
WG241912PBW2	PBW	03/24/08 13:55				U	mg/L		-20	20			
WG241912LCSW4	LCSW	03/24/08 14:07	WC080324-1	820		783.5	mg/L	95.5	90	110			
WG241912PBW3	PBW	03/24/08 18:01				U	mg/L		-20	20			
WG241912LCSW6	LCSW	03/24/08 18:13	WC080324-1	820		784.1	mg/L	95.6	90	110			
WG241912PBW4	PBW	03/24/08 21:12				U	mg/L		-20	20			
WG241912LCSW8	LCSW	03/24/08 21:25	WC080324-1	820		789.5	mg/L	96.3	90	110			
L68302-01DUP	DUP	03/24/08 23:50			586	588	mg/L				0.3	20	
WG241912LCSW10	LCSW	03/25/08 0:01	WC080324-1	820		790.7	mg/L	96.4	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241932													
WG241932ICV	ICV	03/24/08 20:57	II080115-3	100		96.59	mg/L	96.6	95	105			
WG241932ICB	ICB	03/24/08 21:00				U	mg/L		-0.6	0.6			
WG241932LFB	LFB	03/24/08 21:16	II080319-3	67.97008		70.63	mg/L	103.9	85	115			
L68273-06AS	AS	03/24/08 22:17	II080319-3	67.97008	508	578.49	mg/L	103.7	85	115			
L68273-06ASD	ASD	03/24/08 22:21	II080319-3	67.97008	508	559.01	mg/L	75	85	115	3.43	20	M3
WG242077													
WG242077ICV	ICV	03/27/08 1:54	II080115-3	100		95.53	mg/L	95.5	95	105			
WG242077ICB	ICB	03/27/08 1:58				U	mg/L		-0.6	0.6			
WG242077LFB	LFB	03/27/08 2:12	II080319-3	67.97008		69.6	mg/L	102.4	85	115			
L68296-02AS	AS	03/27/08 2:29	II080319-3	67.97008	70.5	134.18	mg/L	93.7	85	115			
L68296-02ASD	ASD	03/27/08 2:32	II080319-3	67.97008	70.5	137.04	mg/L	97.9	85	115	2.11	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	19.98		20.32	mg/L	101.7	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241917													
WG241917ICV	ICV	03/26/08 16:03	WI080318-6	19.98		20.06	mg/L	100.4	90	110			
WG241917ICB	ICB	03/26/08 16:21				U	mg/L		-1.5	1.5			
WG241917LFB	LFB	03/26/08 16:39	WI080306-2	30		31.21	mg/L	104	90	110			
L68295-01AS	AS	03/26/08 17:15	WI080306-2	30	8.5	37.34	mg/L	96.1	90	110			
L68295-01DUP	DUP	03/26/08 17:33			8.5	8.51	mg/L				0.1	20	
L68307-02AS	AS	03/26/08 21:29	WI080306-2	30	9.9	39.59	mg/L	99	90	110			
L68307-02DUP	DUP	03/26/08 21:47			9.9	9.91	mg/L				0.1	20	

Hydro Geo Chem, Inc.
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Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG242303													
WG242303ICV	ICV	04/01/08 15:11	WI080318-6	4		3.61	mg/L	90.3	90	110			
WG242303ICB	ICB	04/01/08 15:29				U	mg/L		-0.3	0.3			
WG242303LFB	LFB	04/01/08 15:47	WI080306-2	1.5		1.48	mg/L	98.7	90	110			
L68295-03AS	AS	04/01/08 20:37	WI080306-2	1.5	.7	2.13	mg/L	95.3	90	110			
L68295-03DUP	DUP	04/01/08 20:55			.7	.63	mg/L				10.5	20	RA

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241868													
WG241868ICV	ICV	03/21/08 18:16	II080115-3	100		96.01	mg/L	96	95	105			
WG241868ICB	ICB	03/21/08 18:20				U	mg/L		-0.6	0.6			
WG241868LFB	LFB	03/21/08 18:37	II080319-3	49.96908		50.41	mg/L	100.9	85	115			
L68273-06AS	AS	03/21/08 19:43	II080319-3	49.96908	23.3	73.75	mg/L	101	85	115			
L68273-06ASD	ASD	03/21/08 19:47	II080319-3	49.96908	23.3	75	mg/L	103.5	85	115	1.68	20	
WG242077													
WG242077ICV	ICV	03/27/08 1:54	II080115-3	100		98.91	mg/L	98.9	95	105			
WG242077ICB	ICB	03/27/08 1:58				U	mg/L		-0.6	0.6			
WG242077LFB	LFB	03/27/08 2:12	II080319-3	49.96908		52.19	mg/L	104.4	85	115			
L68296-02AS	AS	03/27/08 2:29	II080319-3	49.96908	9.3	61.43	mg/L	104.3	85	115			
L68296-02ASD	ASD	03/27/08 2:32	II080319-3	49.96908	9.3	61.51	mg/L	104.5	85	115	0.13	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241885													
WG241885ICV	ICV	03/21/08 21:29	WI080312-1	2.416		2.505	mg/L	103.7	90	110			
WG241885ICB	ICB	03/21/08 21:31				U	mg/L		-0.06	0.06			
WG241885LFB	LFB	03/21/08 21:36	WI080312-1	2		2.102	mg/L	105.1	90	110			
L68283-01AS	AS	03/21/08 21:38	WI080312-1	2	.53	2.588	mg/L	102.9	90	110			
L68290-01DUP	DUP	03/21/08 21:41			.95	.952	mg/L				0.2	20	

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241885													
WG241885ICV	ICV	03/21/08 21:29	WI080312-1	.609		.65	mg/L	106.7	90	110			
WG241885ICB	ICB	03/21/08 21:31				U	mg/L		-0.03	0.03			
WG241885LFB	LFB	03/21/08 21:36	WI080312-1	1		1.002	mg/L	100.2	90	110			
L68283-01AS	AS	03/21/08 21:38	WI080312-1	1	U	.971	mg/L	97.1	90	110			
L68290-01DUP	DUP	03/21/08 21:41			U	U	mg/L				0	20	RA

Hydro Geo Chem, Inc.
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Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241868													
WG241868ICV	ICV	03/21/08 18:16	II080115-3	20		19.52	mg/L	97.6	95	105			
WG241868ICB	ICB	03/21/08 18:20				U	mg/L		-0.9	0.9			
WG241868LFB	LFB	03/21/08 18:37	II080319-3	99.76186		102.15	mg/L	102.4	85	115			
L68273-06AS	AS	03/21/08 19:43	II080319-3	99.76186	46.5	152.51	mg/L	106.3	85	115			
L68273-06ASD	ASD	03/21/08 19:47	II080319-3	99.76186	46.5	155.27	mg/L	109	85	115	1.79	20	
WG242077													
WG242077ICV	ICV	03/27/08 1:54	II080115-3	20		20.06	mg/L	100.3	95	105			
WG242077ICB	ICB	03/27/08 1:58				U	mg/L		-0.9	0.9			
WG242077LFB	LFB	03/27/08 2:12	II080319-3	99.76186		104.04	mg/L	104.3	85	115			
L68296-02AS	AS	03/27/08 2:29	II080319-3	99.76186	1.9	108.14	mg/L	106.5	85	115			
L68296-02ASD	ASD	03/27/08 2:32	II080319-3	99.76186	1.9	107.36	mg/L	105.7	85	115	0.72	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG242307													
WG242307PBW	PBW	04/01/08 15:00				U	mg/L		-20	20			
WG242307LCSW	LCSW	04/01/08 15:01	PCN29265	260		268	mg/L	103.1	80	120			
L68308-02DUP	DUP	04/01/08 15:29			1190	1168	mg/L				1.9	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241868													
WG241868ICV	ICV	03/21/08 18:16	II080115-3	100		96.81	mg/L	96.8	95	105			
WG241868ICB	ICB	03/21/08 18:20				U	mg/L		-0.9	0.9			
WG241868LFB	LFB	03/21/08 18:37	II080319-3	98.21624		100.21	mg/L	102	85	115			
L68273-06AS	AS	03/21/08 19:43	II080319-3	98.21624	27.5	130.11	mg/L	104.5	85	115			
L68273-06ASD	ASD	03/21/08 19:47	II080319-3	98.21624	27.5	132.43	mg/L	106.8	85	115	1.77	20	
WG242077													
WG242077ICV	ICV	03/27/08 1:54	II080115-3	100		99.91	mg/L	99.9	95	105			
WG242077ICB	ICB	03/27/08 1:58				U	mg/L		-0.9	0.9			
WG242077LFB	LFB	03/27/08 2:12	II080319-3	98.21624		103.02	mg/L	104.9	85	115			
L68296-02AS	AS	03/27/08 2:29	II080319-3	98.21624	25.6	128.25	mg/L	104.5	85	115			
L68296-02ASD	ASD	03/27/08 2:32	II080319-3	98.21624	25.6	127.73	mg/L	104	85	115	0.41	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG242493													
WG242493ICV	ICV	04/04/08 11:39	WI080318-6	50.1		50.15	mg/L	100.1	90	110			
WG242493ICB	ICB	04/04/08 11:57				U	mg/L		-1.5	1.5			
WG242493LFB	LFB	04/04/08 12:15	WI080306-2	30		29.44	mg/L	98.1	90	110			
L68295-01AS	AS	04/05/08 16:10	WI080306-2	150	123	275	mg/L	101.3	90	110			
L68295-01DUP	DUP	04/05/08 16:28			123	119.4	mg/L				3	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L68296***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68296-01	WG241932	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG242303	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241885	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG242307	Residue, Filterable (TDS) @180C	160.1 / SM2540C	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.
L68296-02	WG242303	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241885	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG242307	Residue, Filterable (TDS) @180C	160.1 / SM2540C	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.
L68296-03	WG242303	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241885	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG242307	Residue, Filterable (TDS) @180C	160.1 / SM2540C	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L68296***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L68296
Date Received: 3/21/2008
Received By:
Date Printed: 3/21/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5711	0	21

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L68296
Date Received: 3/21/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L68296-01	ROGERS 803		Y									
L68296-02	LAWSON TVI 236		Y									
L68296-03	COOPER C		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L68296

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 West Wetmore Rd. Tucson AZ 85705
Company: Hydro GeoChem Inc.	
E-mail: dans@hgcinc.com	Telephone: (520) 293-1500 x133

Copy of Report to:

Name: Jim Norris	E-mail: jimn@hgcinc.com
Company: HGC Inc.	Telephone: (520) 293-1500 x112

Invoice to:

Name: Jim Norris	Address: 51 W. Wetmore Rd Tucson AZ 85705
Company: HGC Inc.	
E-mail: jimn@hgcinc.com	Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW

Project/PO #: 872002.2

Reporting state for compliance testing: AZ

Sampler's Name: M. Hineson

Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Mg Na Ca K / TDS $SO_4^{=}$ NO_2 NO_3 Cl^- F^-	Alk						
ROGERS 803	3/20/08 ; 7:45	GW	3	X	X	X					
LAWSON TVI236	3/20/08 ; 8:30	GW	3	X	X	X					
COOPER C	3/20/08 ; 13:15	GW	3	X	X	X					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	3/20/08: 1615	WRL	3-21-08 10:38

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

June 19, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872000 T2.2
ACZ Project ID: L69570

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on May 30, 2008. This project has been assigned to ACZ's project number, L69570. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L69570. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after July 19, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872000 T2.2
Sample ID: ENGLUND

ACZ Sample ID: ***L69570-01***
Date Sampled: *05/29/08 14:10*
Date Received: *05/30/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	520		*	mg/L	10	50	06/15/08 20:34	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872000 T2.2
Sample ID: DUP052908

ACZ Sample ID: ***L69570-02***
Date Sampled: *05/29/08 00:00*
Date Received: *05/30/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	550		*	mg/L	10	50	06/15/08 20:52	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872000 T2.2
Sample ID: FB052908

ACZ Sample ID: ***L69570-03***
Date Sampled: *05/29/08 00:00*
Date Received: *05/30/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography		U	*	mg/L	0.5	3	06/15/08 21:10	aml

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Hydro Geo Chem, Inc.
Project ID: 872000 T2.2
Sample ID: EQB052908

ACZ Sample ID: ***L69570-04***
Date Sampled: *05/29/08 00:00*
Date Received: *05/30/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography		U	*	mg/L	0.5	3	06/15/08 22:04	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872000 T2.2

ACZ Project ID: ***L69570***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG246357													
WG246357ICV	ICV	06/15/08 14:13	WI080521-1	50.1		50.64	mg/L	101.1	90	110			
WG246357ICB	ICB	06/15/08 14:32				U	mg/L		-1.5	1.5			
WG246357LFB	LFB	06/15/08 14:50	WI080521-3	30		32.63	mg/L	108.8	90	110			
L69541-06AS	AS	06/15/08 19:39	WI080521-3	30	21.9	47.39	mg/L	85	90	110			M2
L69541-06DUP	DUP	06/15/08 19:57			21.9	20.25	mg/L				7.8	20	
WG246357ICV1	ICV	06/16/08 16:08	WI080521-1	50.1		50.45	mg/L	100.7	90	110			
WG246357ICB1	ICB	06/16/08 16:26				.91	mg/L		-1.5	1.5			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L69570***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L69570-01	WG246357	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L69570-02	WG246357	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L69570-03	WG246357	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L69570-04	WG246357	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872000 T2.2

ACZ Project ID: L69570
Date Received: 5/30/2008
Received By:
Date Printed: 5/30/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6148	5.7	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872000 T2.2

ACZ Project ID: L69570
Date Received: 5/30/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L69570-01	ENGLUND									X		
L69570-02	DUP052908									X		
L69570-03	FB052908									X		
L69570-04	EQB052908									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L09540

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc.
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd. Tucson, AZ 85705
Telephone: (520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: Jimn@hgcinc.com HGC
E-mail: Jimn@hgcinc.com
Telephone: (520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc.
E-mail: Jimn@hgcinc.com
Address: 51 W. Wetmore Rd Tucson, AZ 85705
Telephone: (520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: SO4IC
Project/PO #: 8720000 T2.2
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO4							
ENGLUND	5-29-09 : 1410	GW	1	X							
DUP 052908	5-29-09 :	GW	1	X							
FB 052908	5-29-08	GW	1	X							
EQB 052908	5-29-08	GW	1	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	5-29-09 : 15:30	WK	5/30/08 10:31

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

February 19, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67560

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 06, 2008. This project has been assigned to ACZ's project number, L67560. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67560. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 19, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: RUIZ

ACZ Sample ID: ***L67560-01***
Date Sampled: *02/05/08 08:50*
Date Received: *02/06/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	263		*	mg/L	3	10	02/11/08 19:03	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: BLOMMER

ACZ Sample ID: ***L67560-02***
Date Sampled: *02/05/08 10:20*
Date Received: *02/06/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	206		*	mg/L	3	10	02/11/08 19:21	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: NOTEMAN

ACZ Sample ID: ***L67560-03***
Date Sampled: *02/05/08 12:15*
Date Received: *02/06/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	310		*	mg/L	10	50	02/11/08 19:39	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: MARTIN

ACZ Sample ID: ***L67560-04***
Date Sampled: *02/05/08 13:50*
Date Received: *02/06/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	1060		*	mg/L	50	300	02/11/08 19:57	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: CAMPBELL

ACZ Sample ID: ***L67560-05***
Date Sampled: *02/05/08 15:15*
Date Received: *02/06/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	211		*	mg/L	3	10	02/11/08 20:15	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67560***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240236													
WG240236ICV	ICV	02/09/08 14:30	WI080128-8	50.1		51.88	mg/L	103.6	90	110			
WG240236ICB	ICB	02/09/08 14:48				U	mg/L		-1.5	1.5			
L67529-01AS	AS	02/09/08 19:56	WI080128-9	30	4.6	33.74	mg/L	97.1	90	110			
L67529-01DUP	DUP	02/09/08 20:14			4.6	4.59	mg/L				0.2	20	RA
WG240236ICV1	ICV	02/11/08 18:09	WI080128-8	50.1		51.63	mg/L	103.1	90	110			
WG240236ICB1	ICB	02/11/08 18:27				U	mg/L		-1.5	1.5			
WG240236LFB	LFB	02/11/08 18:45	WI080128-9					106.2	90	110			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67560***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67560-01	WG240236	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67560-02	WG240236	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67560-03	WG240236	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67560-04	WG240236	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67560-05	WG240236	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67560***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67560
Date Received: 2/6/2008
Received By:
Date Printed: 2/6/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5435	0.3	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67560
Date Received: 2/6/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67560-01	RUIZ									X		
L67560-02	BLOMMER									X		
L67560-03	NOTEMAN									X		
L67560-04	MARTIN									X		
L67560-05	CAMPBELL									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67560

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: DAN SIMPSON
Company: HGC
E-mail: DANS@HGCINC.COM
Address: 51 WEST WETMORE ROAD SUIT 101 TUCSON AZ 85705
Telephone: (520) 293 1500 X133

Copy of Report to:

Name: JIM NORRIS
Company: HYDRO GEO CHEM
E-mail: JIMN@HGCINC.COM
Telephone: (520) 293 1500 X 112

Invoice to:

Name: JIM NORRIS
Company: HYDRO GEO CHEM
E-mail: JIMN@HGCINC.COM
Address: 51 W. WETMORE RD #101 293 1500 X 112
Telephone: (520) 293 1500 X 112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ✓ NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: SO4--IC
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: ALI PANDAMOUZ
Are any samples NRC licensable material?

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO4--							
RUIZ	02/05/2008-0850	GW		✓							
BLOMMER	02/05/2008-1020	GW		✓							
NOTEMAN	02/05/2008-1215	GW		✓							
MARTIN	02/05/2008-1350	GW		✓							
CAMPBELL	02/05/2008-1525	GW		✓							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Ali Pandamouz	02/05/2008-1640	[signature]	2-6-08 11:20

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 11, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67684

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 15, 2008. This project has been assigned to ACZ's project number, L67684. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67684. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 11, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

Hydro Geo Chem, Inc.

March 11, 2008

Project ID: 872001.0
ACZ Project ID: L67684

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 1 ground water sample from Hydro Geo Chem, Inc. on February 15, 2008. The sample was received in good condition. Upon receipt, the sample custodian removed the sample from the cooler, inspected the contents, and logged the sample into ACZ's computerized Laboratory Information Management System (LIMS). The sample was assigned ACZ LIMS project number L67684. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were not performed within EPA recommended holding times.

1. The TDS analysis was completed past the hold time of 7 days due to a login error. There will be no charge for the analysis.

Sample Analysis

This sample was analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: WEED

ACZ Sample ID: ***L67684-01***
Date Sampled: *02/14/08 15:10*
Date Received: *02/15/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	35.6		*	mg/L	0.2	1	02/27/08 12:47	aeh/erf
Magnesium, dissolved	M200.7 ICP	14.5		*	mg/L	0.2	1	02/27/08 12:47	aeh/erf
Potassium, dissolved	M200.7 ICP	2.2		*	mg/L	0.3	2	02/27/08 12:47	aeh/erf
Sodium, dissolved	M200.7 ICP	30.0		*	mg/L	0.3	2	02/27/08 12:47	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		162			mg/L	2	20	02/28/08 0:00	cas
Carbonate as CaCO3		5	B		mg/L	2	20	02/28/08 0:00	cas
Hydroxide as CaCO3			U		mg/L	2	20	02/28/08 0:00	cas
Total Alkalinity		168		*	mg/L	2	20	02/28/08 0:00	cas
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.9			%			03/10/08 0:00	calc
Sum of Anions		3.9			meq/L	0.1	0.5	03/10/08 0:00	calc
Sum of Cations		4.3			meq/L	0.1	0.5	03/10/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	9	B	*	mg/L	5	30	03/06/08 19:27	aml/ccp
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.72			mg/L	0.04	0.2	03/10/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.72	H	*	mg/L	0.04	0.2	02/29/08 18:09	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.02	0.1	02/29/08 18:09	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	230	H	*	mg/L	10	20	02/26/08 8:45	cas
Sulfate	300.0 - Ion Chromatography	11.1		*	mg/L	0.5	3	02/20/08 22:10	aml/ccp
TDS (calculated)	Calculation	212			mg/L	10	50	03/10/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.08						03/10/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67684***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240956													
WG240956PBW1	PBW	02/28/08 16:33				25.6	mg/L		-20	20			B4
WG240956LCSW2	LCSW	02/28/08 16:45	WC080131-1	820		822	mg/L	100.2	90	110			
L67721-05DUP	DUP	02/28/08 18:40			1260	1253.1	mg/L				0.5	20	
WG240956PBW2	PBW	02/28/08 20:11				U	mg/L		-20	20			
WG240956LCSW5	LCSW	02/28/08 20:24	WC080131-1	820		824.2	mg/L	100.5	90	110			
WG240956PBW3	PBW	02/28/08 23:13				U	mg/L		-20	20			
WG240956LCSW8	LCSW	02/28/08 23:25	WC080131-1	820		826.4	mg/L	100.8	90	110			
WG240956LCSW11	LCSW	02/29/08 1:11	WC080131-1	820		832	mg/L	101.5	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240847													
WG240847ICV	ICV	02/27/08 12:17	II080115-3	100		95.88	mg/L	95.9	95	105			
WG240847ICB	ICB	02/27/08 12:21				U	mg/L		-0.6	0.6			
WG240847LFB	LFB	02/27/08 12:34	II080214-5	67.97008		68.5	mg/L	100.8	85	115			
L67741-01AS	AS	02/27/08 12:54	II080214-5	339.8504	507	810.5	mg/L	89.3	85	115			
L67741-01ASD	ASD	02/27/08 13:03	II080214-5	339.8504	507	824	mg/L	93.3	85	115	1.65	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	19.98		20.32	mg/L	101.7	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG240853LFB	LFB	03/06/08 15:32	WI080128-9	30		29.36	mg/L	97.9	90	110			
L67673-03AS	AS	03/06/08 16:44	WI080306-2	30	16.4	44.77	mg/L	94.6	90	110			
L67673-03DUP	DUP	03/06/08 17:02			16.4	16.45	mg/L				0.3	20	

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240847													
WG240847ICV	ICV	02/27/08 12:17	II080115-3	100		97.91	mg/L	97.9	95	105			
WG240847ICB	ICB	02/27/08 12:21				U	mg/L		-0.6	0.6			
WG240847LFB	LFB	02/27/08 12:34	II080214-5	54.96908		56.29	mg/L	102.4	85	115			
L67741-01AS	AS	02/27/08 12:54	II080214-5	274.8454	429	687.3	mg/L	94	85	115			
L67741-01ASD	ASD	02/27/08 13:03	II080214-5	274.8454	429	689.1	mg/L	94.6	85	115	0.26	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241004													
WG241004ICV	ICV	02/29/08 18:02	WI071212-1	2.416		2.262	mg/L	93.6	90	110			
WG241004ICB	ICB	02/29/08 18:04				U	mg/L		-0.06	0.06			
WG241004LFB	LFB	02/29/08 18:07	WI070911-4	2		1.903	mg/L	95.2	90	110			
L67684-01AS	AS	02/29/08 18:10	WI070911-4	4	1.72	5.535	mg/L	95.4	90	110			
L67904-01DUP	DUP	02/29/08 18:12			2.95	2.946	mg/L				0.1	20	

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67684***

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241004													
WG241004ICV	ICV	02/29/08 18:02	WI071212-1	.609		.593	mg/L	97.4	90	110			
WG241004ICB	ICB	02/29/08 18:04				U	mg/L		-0.03	0.03			
WG241004LFB	LFB	02/29/08 18:07	WI070911-4	1		.987	mg/L	98.7	90	110			
L67684-01AS	AS	02/29/08 18:10	WI070911-4	2	U	1.913	mg/L	95.7	90	110			
L67904-01DUP	DUP	02/29/08 18:12			.04	.043	mg/L				7.2	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240847													
WG240847ICV	ICV	02/27/08 12:17	II080115-3	20		19.97	mg/L	99.9	95	105			
WG240847ICB	ICB	02/27/08 12:21				U	mg/L		-0.9	0.9			
WG240847LFB	LFB	02/27/08 12:34	II080214-5	99.76186		104.14	mg/L	104.4	85	115			
L67741-01AS	AS	02/27/08 12:54	II080214-5	498.8093	28	549.5	mg/L	104.5	85	115			
L67741-01ASD	ASD	02/27/08 13:03	II080214-5	498.8093	28	547.2	mg/L	104.1	85	115	0.42	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240825													
L67784-01DUP	DUP	02/26/08 9:11			720	726	mg/L				0.8	20	
WG240825LCSW	LCSW	02/26/08 9:42	PCN28838	260		294	mg/L	113.1	80	120			
WG240825PBW	PBW	02/26/08 9:45				U	mg/L		-20	20			

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240847													
WG240847ICV	ICV	02/27/08 12:17	II080115-3	100		99.05	mg/L	99.1	95	105			
WG240847ICB	ICB	02/27/08 12:21				U	mg/L		-0.9	0.9			
WG240847LFB	LFB	02/27/08 12:34	II080214-5	98.21624		102.19	mg/L	104	85	115			
L67741-01AS	AS	02/27/08 12:54	II080214-5	491.0812	133	639.5	mg/L	103.1	85	115			
L67741-01ASD	ASD	02/27/08 13:03	II080214-5	491.0812	133	635.6	mg/L	102.3	85	115	0.61	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240628													
WG240628ICV	ICV	02/20/08 16:08	WI080220-1	50.1		50.64	mg/L	101.1	90	110			
WG240628ICB	ICB	02/20/08 16:26				U	mg/L		-1.5	1.5			
WG240628LFB	LFB	02/20/08 16:44	WI080128-9	30		30.49	mg/L	101.6	90	110			
L67668-03AS	AS	02/20/08 21:34	WI080213-1	50	12.6	39.09	mg/L	53	90	110			M2
L67668-03DUP	DUP	02/20/08 21:52			12.6	12.58	mg/L				0.2	20	
WG240628ICV1	ICV	02/21/08 11:56	WI080220-1	50.1		50.19	mg/L	100.2	90	110			
WG240628ICB1	ICB	02/21/08 12:14				U	mg/L		-1.5	1.5			

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2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67684***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67684-01	WG240847	Calcium, dissolved	M200.7 ICP	QA	Sample container with preservation type specified by the method was not available for analysis. Alternate sample container was used.
		Magnesium, dissolved	M200.7 ICP	QA	Sample container with preservation type specified by the method was not available for analysis. Alternate sample container was used.
		Potassium, dissolved	M200.7 ICP	QA	Sample container with preservation type specified by the method was not available for analysis. Alternate sample container was used.
		Sodium, dissolved	M200.7 ICP	QA	Sample container with preservation type specified by the method was not available for analysis. Alternate sample container was used.
	WG241202	Chloride	M300.0 - Ion Chromatography	DJ	Sample dilution required due to insufficient sample.
	WG241004	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	C4	Confirmatory analysis was past holding time.
			M353.2 - Automated Cadmium Reduction	DJ	Sample dilution required due to insufficient sample.
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	C4	Confirmatory analysis was past holding time.
			M353.2 - Automated Cadmium Reduction	DJ	Sample dilution required due to insufficient sample.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240825	Residue, Filterable (TDS) @180C	160.1 / SM2540C	H1	Sample analysis performed past holding time.
	WG240628	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG240956	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.
			SM2320B - Titration	QA	Sample container with preservation type specified by the method was not available for analysis. Alternate sample container was used.

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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67684***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67684
Date Received: 2/15/2008
Received By:
Date Printed: 2/15/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
1996	1.8	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67684
Date Received: 2/15/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67684-01	HULL									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67684

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd
Company: Hydro Geo Chem (HGC)	Tucson AZ 85705
E-mail: dans@hgcinc.com	Telephone: (520) 293-1500 x133

Copy of Report to:

Name: Jim Norris	E-mail: jimn@hgcinc.com
Company: HGC	Telephone: (520) 293-1500 x 112

Invoice to:

Name: Jim Norris	Address: above
Company: HGC	
E-mail: jimn@hgcinc.com	Telephone: above

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW

Project/PO #: 872001.0

Reporting state for compliance testing: AZ

Sampler's Name: KW & AP

Are any samples NRC licensable material?

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO4								
~~HILL~~ WEED SW 3-11-08	2/14/08	GW	1	✓								

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Kim Wilson	2/14/08 16:30	[signature]	2-15-08 11:34

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 10, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872002.2
ACZ Project ID: L67812

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 22, 2008. This project has been assigned to ACZ's project number, L67812. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67812. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 10, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Tony Antalek has reviewed and approved this report.

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: LAWSONTVI875

ACZ Sample ID: ***L67812-01***
Date Sampled: *02/21/08 09:30*
Date Received: *02/22/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	120			mg/L	0.2	1	02/22/08 19:27	aeh/erf
Magnesium, dissolved	M200.7 ICP	16.1			mg/L	0.2	1	02/22/08 19:27	aeh/erf
Potassium, dissolved	M200.7 ICP	2.9			mg/L	0.3	2	02/25/08 16:10	aeh/erf
Sodium, dissolved	M200.7 ICP	41.1			mg/L	0.3	2	02/25/08 16:10	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		161			mg/L	2	20	02/26/08 0:00	jlf
Carbonate as CaCO3		11	B		mg/L	2	20	02/26/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/26/08 0:00	jlf
Total Alkalinity		172			mg/L	2	20	02/26/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-0.5			%			03/07/08 0:00	calc
Sum of Anions		9.3			meq/L	0.1	0.5	03/07/08 0:00	calc
Sum of Cations		9.2			meq/L	0.1	0.5	03/07/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	20.1		*	mg/L	0.5	3	03/06/08 23:41	aml/ccp
Fluoride	SM4500F-C	0.2	B	*	mg/L	0.1	0.5	02/29/08 12:14	jlf
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.99			mg/L	0.04	0.2	03/07/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.99		*	mg/L	0.04	0.2	02/22/08 20:42	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/22/08 21:39	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	630		*	mg/L	10	20	02/28/08 10:47	cas
Sulfate	300.0 - Ion Chromatography	244		*	mg/L	3	10	03/06/08 23:59	aml/ccp
TDS (calculated)	Calculation	565			mg/L	10	50	03/07/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.12						03/07/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: GARNER557

ACZ Sample ID: ***L67812-02***
Date Sampled: *02/21/08 13:10*
Date Received: *02/22/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	62.2			mg/L	0.2	1	02/22/08 19:31	aeh/erf
Magnesium, dissolved	M200.7 ICP	10.2			mg/L	0.2	1	02/22/08 19:31	aeh/erf
Potassium, dissolved	M200.7 ICP	2.5			mg/L	0.3	2	02/25/08 16:13	aeh/erf
Sodium, dissolved	M200.7 ICP	58.1			mg/L	0.3	2	02/25/08 16:13	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		171			mg/L	2	20	02/26/08 0:00	jlf
Carbonate as CaCO3		13	B		mg/L	2	20	02/26/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/26/08 0:00	jlf
Total Alkalinity		184			mg/L	2	20	02/26/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-1.5			%			03/07/08 0:00	calc
Sum of Anions		6.7			meq/L	0.1	0.5	03/07/08 0:00	calc
Sum of Cations		6.5			meq/L	0.1	0.5	03/07/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	14.3		*	mg/L	0.5	3	03/07/08 0:17	aml/ccp
Fluoride	SM4500F-C	0.2	B	*	mg/L	0.1	0.5	02/29/08 12:24	jlf
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.7			mg/L	0.2	1	03/07/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.7		*	mg/L	0.2	1	02/22/08 20:44	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/22/08 21:42	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	420		*	mg/L	10	20	02/28/08 10:48	cas
Sulfate	300.0 - Ion Chromatography	123		*	mg/L	1	5	03/07/08 0:35	aml/ccp
TDS (calculated)	Calculation	394			mg/L	10	50	03/07/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.07						03/07/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67812***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240781													
WG240781PBW2	PBW	02/25/08 15:18				U	mg/L		-20	20			
WG240781LCSW5	LCSW	02/25/08 15:30	WC080131-1	820		860.2	mg/L	104.9	90	110			
WG240781PBW3	PBW	02/25/08 18:42				U	mg/L		-20	20			
WG240781LCSW8	LCSW	02/25/08 18:54	WC080131-1	820		870.7	mg/L	106.2	90	110			
WG240781PBW4	PBW	02/25/08 22:14				U	mg/L		-20	20			
WG240781LCSW11	LCSW	02/25/08 22:28	WC080131-1	820		884.8	mg/L	107.9	90	110			
L67820-03DUP	DUP	02/26/08 8:57			639	694.9	mg/L				8.4	20	
WG240781LCSW14	LCSW	02/26/08 9:10	WC080131-1	820		882.2	mg/L	107.6	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240749													
WG240749ICV	ICV	02/22/08 17:26	II080115-3	100		96.63	mg/L	96.6	95	105			
WG240749ICB	ICB	02/22/08 17:30				U	mg/L		-0.6	0.6			
WG240749LFB	LFB	02/22/08 17:45	II080214-5	67.97008		67.7	mg/L	99.6	85	115			
L67798-02AS	AS	02/22/08 18:46	II080214-5	67.97008	.3	64.8	mg/L	94.9	85	115			
L67798-02ASD	ASD	02/22/08 18:49	II080214-5	67.97008	.3	65.88	mg/L	96.5	85	115	1.65	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	19.98		20.32	mg/L	101.7	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG240853LFB	LFB	03/06/08 15:32	WI080128-9	30		29.36	mg/L	97.9	90	110			
L67781-05AS	AS	03/06/08 21:16	WI080306-2	30	U	30.39	mg/L	101.3	90	110			
L67781-05DUP	DUP	03/06/08 21:34			U	U	mg/L				0	20	RA

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240977													
WG240977ICV	ICV	02/29/08 9:25	WC080227-1	2		2.04	mg/L	102	90	110			
WG240977ICB	ICB	02/29/08 9:32				U	mg/L		-0.3	0.3			
WG240977LFB1	LFB	02/29/08 9:48	WC080226-1	5		5.46	mg/L	109.2	90	110			
WG240977LFB2	LFB	02/29/08 11:16	WC080226-1	5		5.16	mg/L	103.2	90	110			
L67812-01AS	AS	02/29/08 12:17	WC080226-1	5	.2	5.56	mg/L	107.2	90	110			
L67812-01DUP	DUP	02/29/08 12:20			.2	.2	mg/L				0	20	RA

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240749													
WG240749ICV	ICV	02/22/08 17:26	II080115-3	100		99.42	mg/L	99.4	95	105			
WG240749ICB	ICB	02/22/08 17:30				U	mg/L		-0.6	0.6			
WG240749LFB	LFB	02/22/08 17:45	II080214-5	54.96908		55.35	mg/L	100.7	85	115			
L67798-02AS	AS	02/22/08 18:46	II080214-5	54.96908	U	51.42	mg/L	93.5	85	115			
L67798-02ASD	ASD	02/22/08 18:49	II080214-5	54.96908	U	51.82	mg/L	94.3	85	115	0.77	20	

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67812***

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240762													
WG240762ICV	ICV	02/22/08 19:40	WI071212-1	2.416		2.424	mg/L	100.3	90	110			
WG240762ICB	ICB	02/22/08 19:41				U	mg/L		-0.06	0.06			
WG240762LFB	LFB	02/22/08 19:46	WI070911-4	2		2.009	mg/L	100.5	90	110			
WG240762ICV1	ICV	02/22/08 20:32	WI071212-1	2.416		2.404	mg/L	99.5	90	110			
WG240762ICB1	ICB	02/22/08 20:33				U	mg/L		-0.06	0.06			
L67812-01AS	AS	02/22/08 20:43	WI070911-4	4	2.99	7.259	mg/L	106.7	90	110			
L67812-02DUP	DUP	02/22/08 20:45			1.7	1.77	mg/L				4	20	RA

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240762													
WG240762ICV	ICV	02/22/08 19:40	WI071212-1	.609		.625	mg/L	102.6	90	110			
WG240762ICB	ICB	02/22/08 19:41				U	mg/L		-0.03	0.03			
WG240762LFB	LFB	02/22/08 19:46	WI070911-4	1		1.023	mg/L	102.3	90	110			
WG240762ICV1	ICV	02/22/08 20:32	WI071212-1	.609		.627	mg/L	103	90	110			
WG240762ICB1	ICB	02/22/08 20:33				U	mg/L		-0.03	0.03			
WG240762ICV1	ICV	02/22/08 21:36	WI071212-1	.609		.635	mg/L	104.3	90	110			
WG240762ICB1	ICB	02/22/08 21:38				U	mg/L		-0.03	0.03			
L67812-01AS	AS	02/22/08 21:40	WI070911-4	1	U	1.025	mg/L	102.5	90	110			
L67812-02DUP	DUP	02/22/08 21:43			U	U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240797													
WG240797ICV	ICV	02/25/08 14:33	II080115-3	20		19.95	mg/L	99.8	95	105			
WG240797ICB	ICB	02/25/08 14:37				U	mg/L		-0.9	0.9			
WG240797LFB	LFB	02/25/08 14:49	II080214-5	99.76186		101.04	mg/L	101.3	85	115			
L67797-04AS	AS	02/25/08 15:36	II080214-5	99.76186	10.6	113.13	mg/L	102.8	85	115			
L67797-04ASD	ASD	02/25/08 15:39	II080214-5	99.76186	10.6	115.65	mg/L	105.3	85	115	2.2	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240937													
WG240937PBW	PBW	02/28/08 10:45				U	mg/L		-20	20			
WG240937LCSW	LCSW	02/28/08 10:46	PCN28838	260		292	mg/L	112.3	80	120			
L67837-05DUP	DUP	02/28/08 11:00			20	U	mg/L				200	20	RA

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67812***

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240797													
WG240797ICV	ICV	02/25/08 14:33	II080115-3	100		97.3	mg/L	97.3	95	105			
WG240797ICV	ICV	02/25/08 14:33	II080115-3	100		99.41	mg/L	99.4	95	105			
WG240797ICB	ICB	02/25/08 14:37				U	mg/L		-6	6			
WG240797ICB	ICB	02/25/08 14:37				U	mg/L		-0.9	0.9			
WG240797LFB	LFB	02/25/08 14:49	II080214-5	98.21624		101.64	mg/L	103.5	85	115			
WG240797LFB	LFB	02/25/08 14:49	II080214-5	98.21624		99.1	mg/L	100.9	85	115			
L67797-04AS	AS	02/25/08 15:36	II080214-5	98.21624	161	254.5	mg/L	95.2	85	115			
L67797-04AS	AS	02/25/08 15:36	II080214-5	98.21624	161	249.66	mg/L	90.3	85	115			
L67797-04ASD	ASD	02/25/08 15:39	II080214-5	98.21624	161	255.05	mg/L	95.8	85	115	1.56	20	
L67797-04ASD	ASD	02/25/08 15:39	II080214-5	98.21624	161	258.5	mg/L	99.3	85	115	1.56	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	50.1		50.51	mg/L	100.8	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG240853LFB	LFB	03/06/08 15:32	WI080128-9	30		30.26	mg/L	100.9	90	110			
L67781-05AS	AS	03/06/08 21:16	WI080306-2	30	U	29.59	mg/L	98.6	90	110			
L67781-05DUP	DUP	03/06/08 21:34			U	U	mg/L				0	20	RA

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67812***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67812-01	WG241202	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240977	Fluoride	SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240762	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240937	Residue, Filterable (TDS) @180C	160.1 / SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241202	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67812-02	WG241202	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240977	Fluoride	SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240762	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240937	Residue, Filterable (TDS) @180C	160.1 / SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241202	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67812***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67812
Date Received: 2/22/2008
Received By:
Date Printed: 2/22/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5542	1.1	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67812
Date Received: 2/22/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67812-01	LAWSONTVI875		Y									
L67812-02	GARNER557		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L67812

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: HydroGeo Chem Inc.
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd
Tucson, AZ 85705
Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Address: 51 W. Wetmore Rd.
Tucson AZ 85705
Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES X / NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 872002.2
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ca Na Mg K	TDS, $SO_4^{=}$, NO_3^-, Cl^-, F	Alk					
LAWSONTVI875	2/21/08; 0930	GW	3	X	X	X					
GARNER557	2/21/08; 1310	GW	3	X	X	X					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	2/21/08: 1624		2/22/08 9:45

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

APPENDIX E

HYDRO GEO CHEM, INC. GROUNDWATER SAMPLING FORMS

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Bill ID:	ANDERSON	Date:	3-20-08
ADWR No.	613396	Weather:	clear
Location:	3272 Naco Hwy S, Bisbee, AZ	Collected By:	MA

WELL DATA

Well Depth (ft bls):	236	Static Water Level (ft bmp):	145.46
Casing Diameter (in):	8"	Date/Time:	3-20-08 10:05
Well Use:	all domestic purposes	Point of Measurement:	TOC
3 Casing Volumes:	236x3 = 709	GPS:	12R 601134 utm 3468816
		Elevation:	4596

FIELD SAMPLING DATA

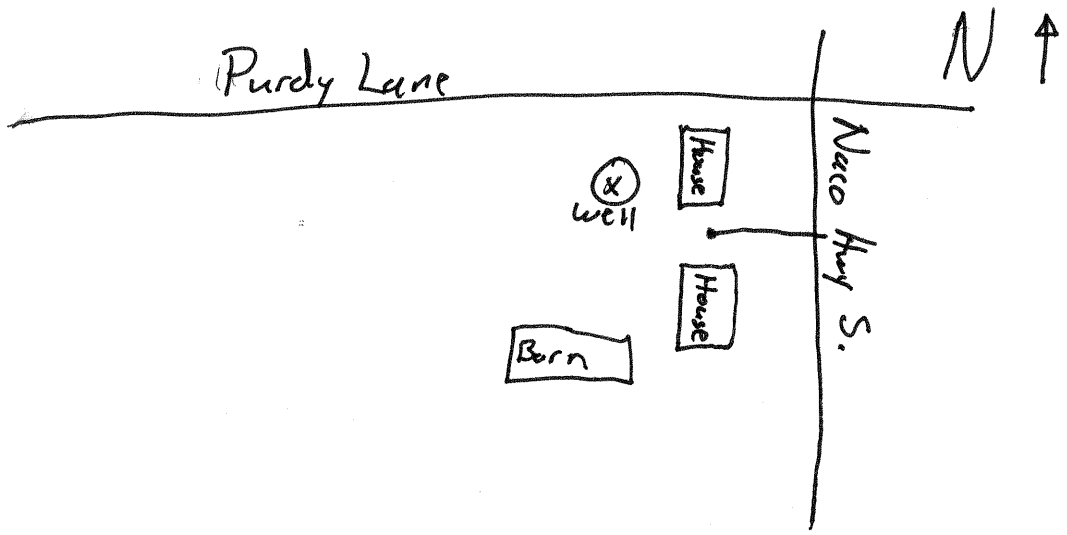
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1010	10	0	7.27	16.0	1154	clear	No	open bib at 1010
1015	"	50	7.25	20.5	1150	"	"	
1030	"	200	7.21	21.5	1176	"	"	
1045	"	350	7.24	21.6	1179	"	"	
1100	"	500	7.27	21.6	1180	"	"	
1115	"	650	7.24	21.2	1169	"	"	
1130	"	800	7.25	21.1	1176	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
ANDERSON	11:35	Plastic	250ml	1	300.0	None	Filtered

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	870001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
ell ID:	BANKS	Date:	2/27/08
ADWR No.	55 - 647986	Weather:	sunny
Location:	620 E Mulberry Lane	Collected By:	MA & KW

WELL DATA

Well Depth (ft bls):	435.8 (owner)	Static Water Level (ft bmp):	+22.97 ← unreliable cant get good reading obstructed
Casing Diameter (in):	6"	Date/Time:	2/27/08 13:21
Well Use:	domestic	Point of Measurement:	T.O.C
3 Casing Volumes:	1 casing 334 x 3 = 1002	GPS:	12R 0606982. UTM 3469205
		Elevation:	4654

FIELD SAMPLING DATA

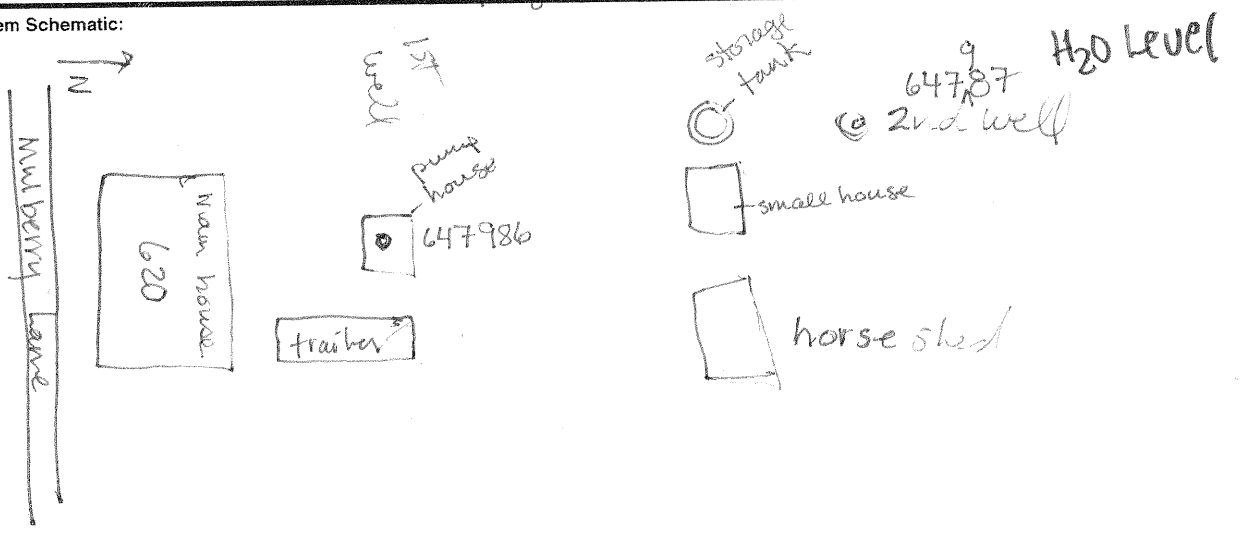
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
14:06	8	0	7.49	21.7	990	none	none	
14:10	8	32	7.51	21.7	991	"	"	
14:15	"	72	7.51	21.9	990	"	"	
14:20	"	122	7.53	21.8	986	"	"	
14:25	"	162	7.53	21.8	980	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
BANKS	14:30	plastic	250	1	300.0	N	filtered

Additional Comments: ADWR Reg. - Existing wells reports well depth @ 445' bls. 435.8' is written on pump house. Poss obstruction 143.9. Very dirty. We are using 208' WL from other well for purge time calculation. 2 households using this well

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	BF-1	Date:	03/04/08
ADWR No.	55- 539783	Weather:	Sunny
Location:	D. 23-24- 36bb	Collected By:	KW + MA

WELL DATA

Well Depth (ft bls):	400	Static Water Level (ft bmp):	348.99
Casing Diameter (in):	4"	Date/Time:	03/04/08 12:39
Well Use:	Monitoring	Point of Measurement:	T.O.C
3 Casing Volumes:	33 gal x 3 = 99	GPS:	12R 0604170 x 3472150 UTM
		Elevation:	4807

FIELD SAMPLING DATA

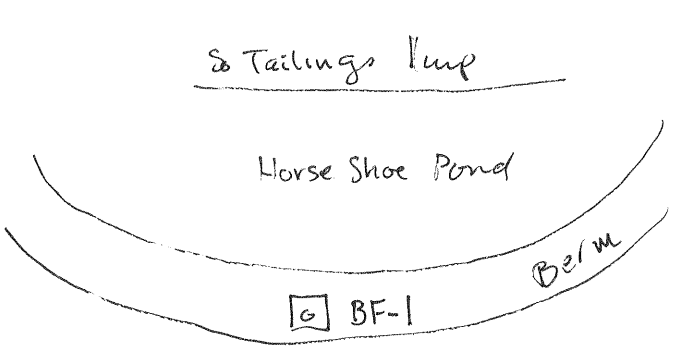
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
12:48	8	0	6.53	21.8	2730	slightly cldy	none	few dark seds + light
12:52	"	32	6.43	21.9	2728	"	"	colored suspended fines
12:54	ran out of water							
13:10	8	0	6.46	21.9	2745	"	none	brown flakes
			64					
	Total discharge = 64 gallons							

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
BF-1	13:10	plastic	250	3	300.0	Y/N /N	

Additional Comments: Well ran out of water after 8 minutes. Allowed to recharge 15 minutes, purge hose amount, then collect sample

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	55-577927	Date:	2-6-08
ADWR No.	BIMA	Weather:	CLEAR
Location:	Arizona St, Bisbee Junction	Collected By:	API MA

WELL DATA

Well Depth (ft bls):	460'	Static Water Level (ft bmp):	OBSTRUCTION AT 350ft.
Casing Diameter (in):	4"	Date/Time:	2-6-08 1500
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	ap 78 x 3 = 234	GPS: UTM:	3471859 12R 0606003
	234 ÷ 10 = 24 Min	Elevation:	4794

FIELD SAMPLING DATA

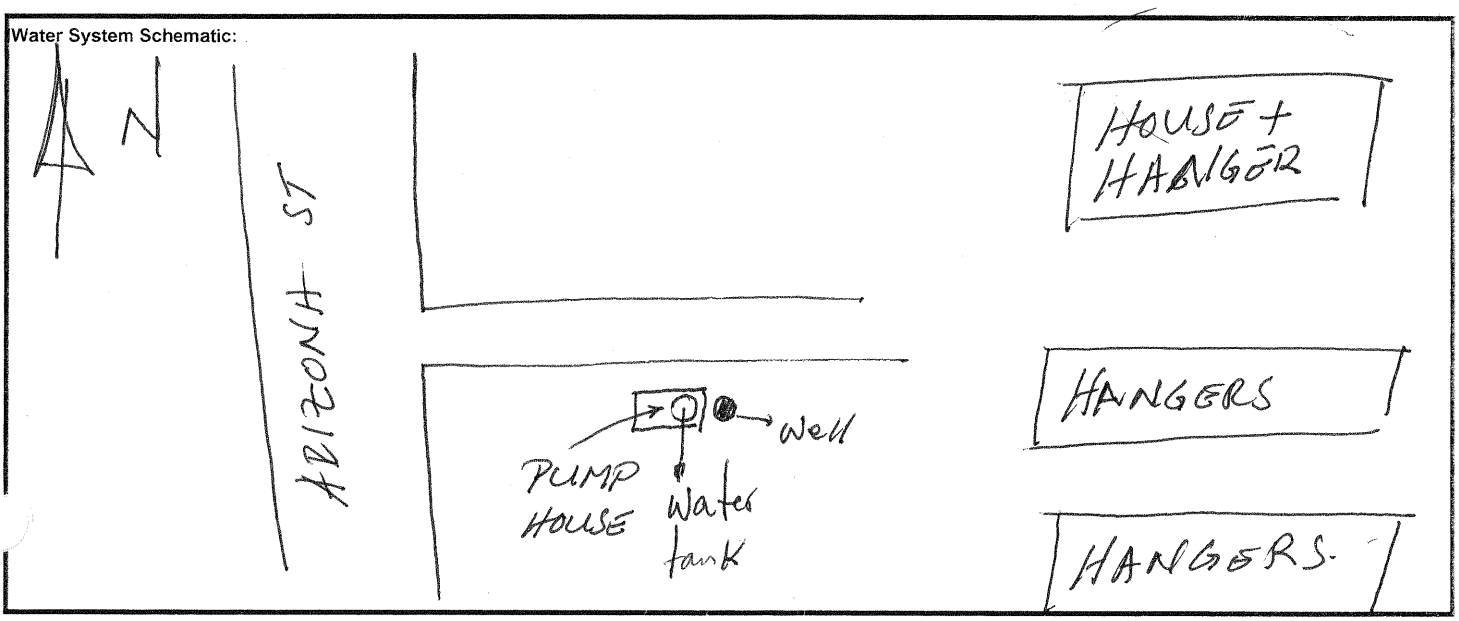
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1523	10		6.79	17.8	1330	CLEAR	N	—
1524	"		6.65	18.5	1335	"	"	—
1527	"		6.68	20.3	1342	"	"	—
1532	"		6.66	21.1	1324	"	"	—
1536	"		6.68	22.0	1342	"	"	—
1545	"		6.69	22.2	1335	"	"	—
	TOTAL DISCHARGE = 980 Gal.							

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
BIMA	1550	PLASTIC	125/250/500ml	3	300.0	Y/N/N	—
							—

Additional Comments: Mr. Sievold indicated well depth is 460' and well casing is 4"

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001-0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	BLOMMER	Date:	02/05/2008
ADWR No.	~~645536~~ 633472	Weather:	CLEAR
Location:	Barnett Rd San Jose	Collected By:	AP / MA

WELL DATA

Well Depth (ft bls):	350	Static Water Level (ft bmp):	Obstruction at 277'
Casing Diameter (in):	6"	Date/Time:	2-5-08 10:00
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	will purge for stabil.	GPS: UTM	347153 12 R 0602726
		Elevation:	4764 (ft)

FIELD SAMPLING DATA

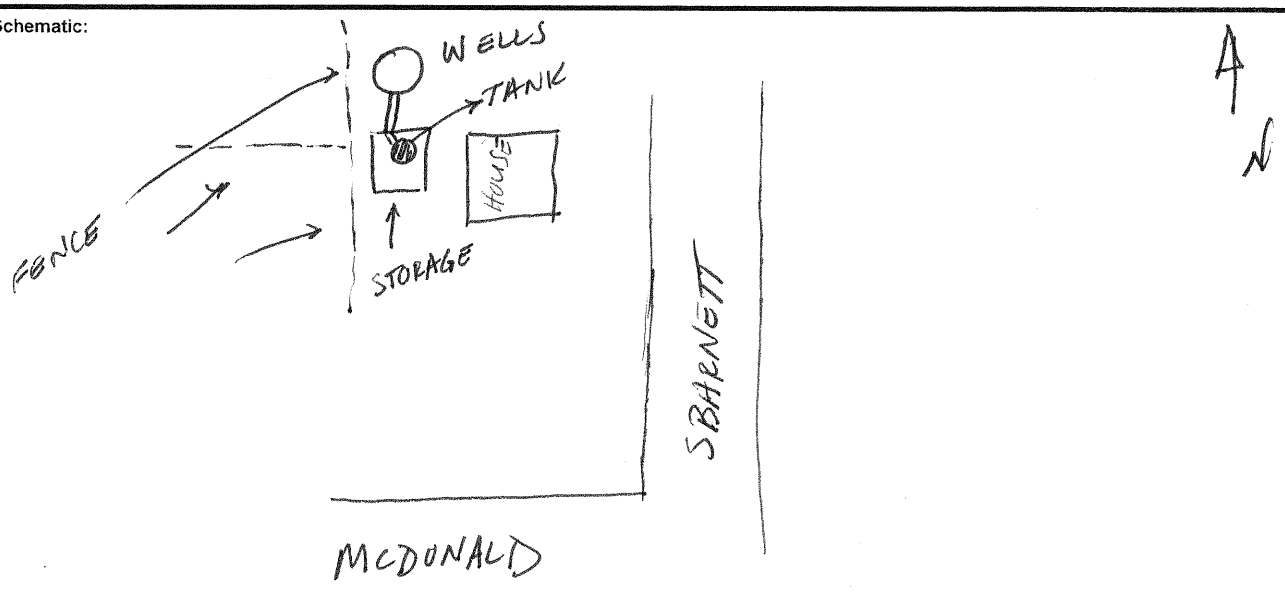
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1000	10		7.34	17.0	720	CLEAR	N	SOME SEDIMENT
1005	"		7.47	17.8	716	"	"	"
1010	"		7.45	20.2	717	"	"	"
1015	"		7.43	20.2	714	CLOUDY	N	BROWNISH and SEDIMENT
TOTAL DISCHARGE = 2006.								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
BLOMMER	1020	PLASTIC	250	1	300.0	N	—

Additional Comments: ONLY ONE WELL WAS FOUND ON THE PROPERTY AND IT WAS IDED AS "BLOMMER"

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	BULLARD	Date:	4-23-08
ADWR No.	55-602134	Weather:	Clear
Location:	EAST Hull Ranch Rd.	Collected By:	MB

WELL DATA

Well Depth (ft bls):	300	Static Water Level (ft bmp):	Obstructed at 258'
Casing Diameter (in):	6"	Date/Time:	4-23-08 11:45
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:		GPS:	12R 602133 3470982
		Elevation:	4655

FIELD SAMPLING DATA

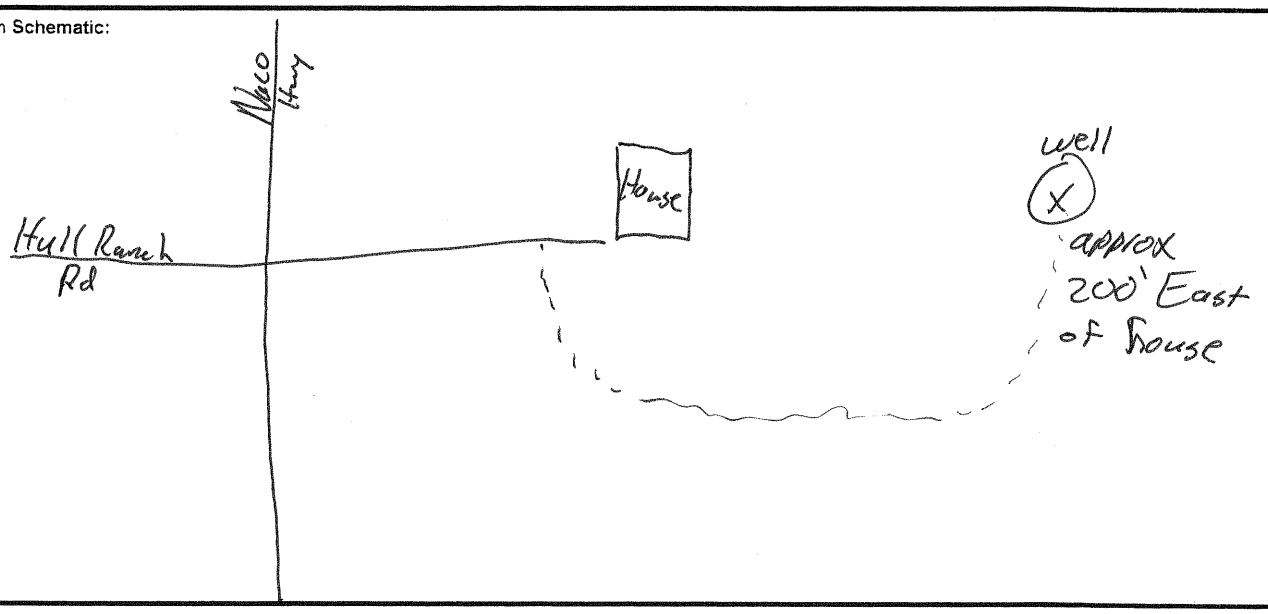
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: Well is not operational; H_2O LEVEL ONLY - OBSTRUCTION

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	BURKE	Date:	02/07/08
ADWR No.	212268	Weather:	CLEAR
Location:		Collected By:	AP/MHRA.

WELL DATA

Well Depth (ft bis):	780	Static Water Level (ft bmp):	~600ft
Casing Diameter (in):	6"	Date/Time:	02/07/08
Well Use:		Point of Measurement:	TOC
3 Casing Volumes:	Bailer	GPS: UTM:	3473031 12R 0602231
		Elevation:	4833

FIELD SAMPLING DATA

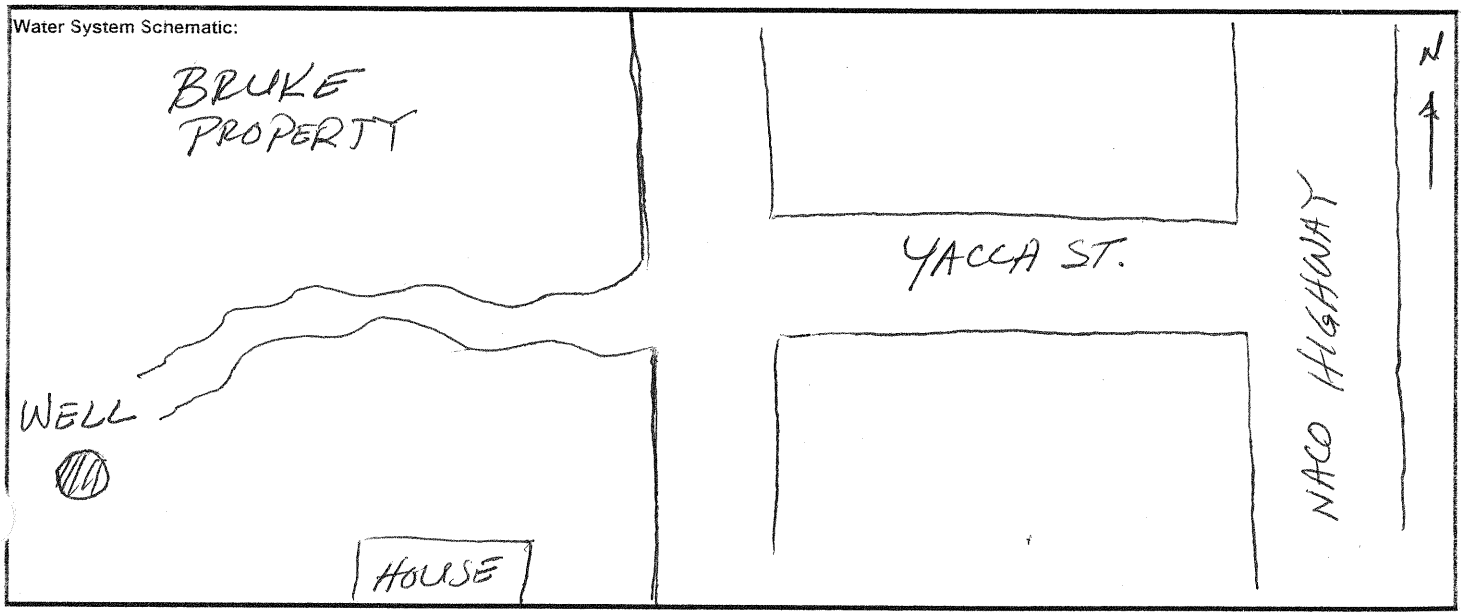
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1235	NA	—	7.17	23.0	411	CLEAR	N	COMPOSITE

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
BURKE	1240	PLASTIC	125/250	3	300.0	Y/N/N	
			500				

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	CAMPBELL	Date:	02/05/2008
ADWR No.	215509	Weather:	CLEAR
Location:		Collected By:	A/M

WELL DATA

Well Depth (ft bls):	NA	Static Water Level (ft bmp):	180.60
Casing Diameter (in):	5"	Date/Time:	02/05/2008
Well Use:	DOMESTIC	Point of Measurement:	TOC
3 Casing Volumes:	Bailer	GPS: UTM	3469322 R12 0606416
		Elevation:	4687

FIELD SAMPLING DATA

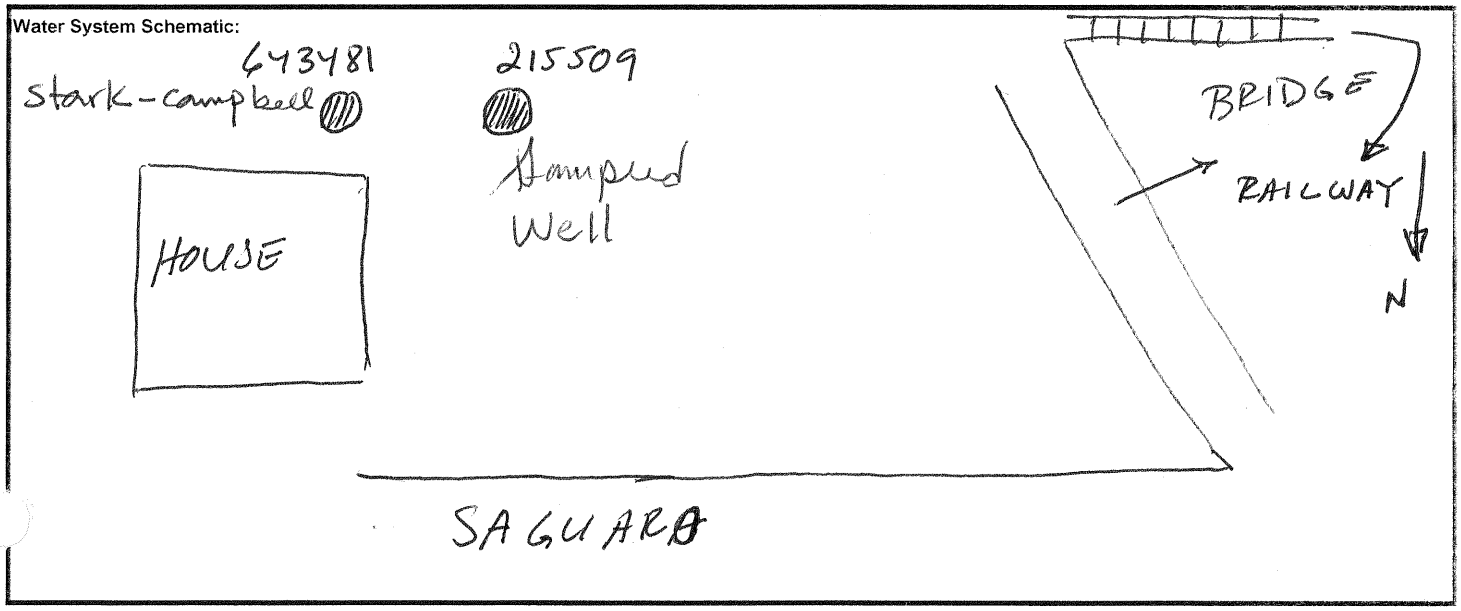
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1500	NA	—	7.87	18.3	823	BROWNISH	N	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
CAMPBELL	1515	PLASTIC	250	1	300.0	N	

Additional Comments: THIS WAS COLLECTED BY BAILER
THERE IS NO PUMP AT EITHER WELL

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	CHAMBERS	Date:	3-6-08
ADWR No.	55-629807	Weather:	sunny, cool
Location:	3792 S. Towner	Collected By:	KW + MA

WELL DATA

Well Depth (ft bls):	245	Static Water Level (ft bmp):	— unable to measure
Casing Diameter (in):	6	Date/Time:	due to well design
Well Use:	domestic	Point of Measurement:	—
3 Casing Volumes:	unknown	GPS:	UTM 3467385 x 0600024
		Elevation:	4592

FIELD SAMPLING DATA

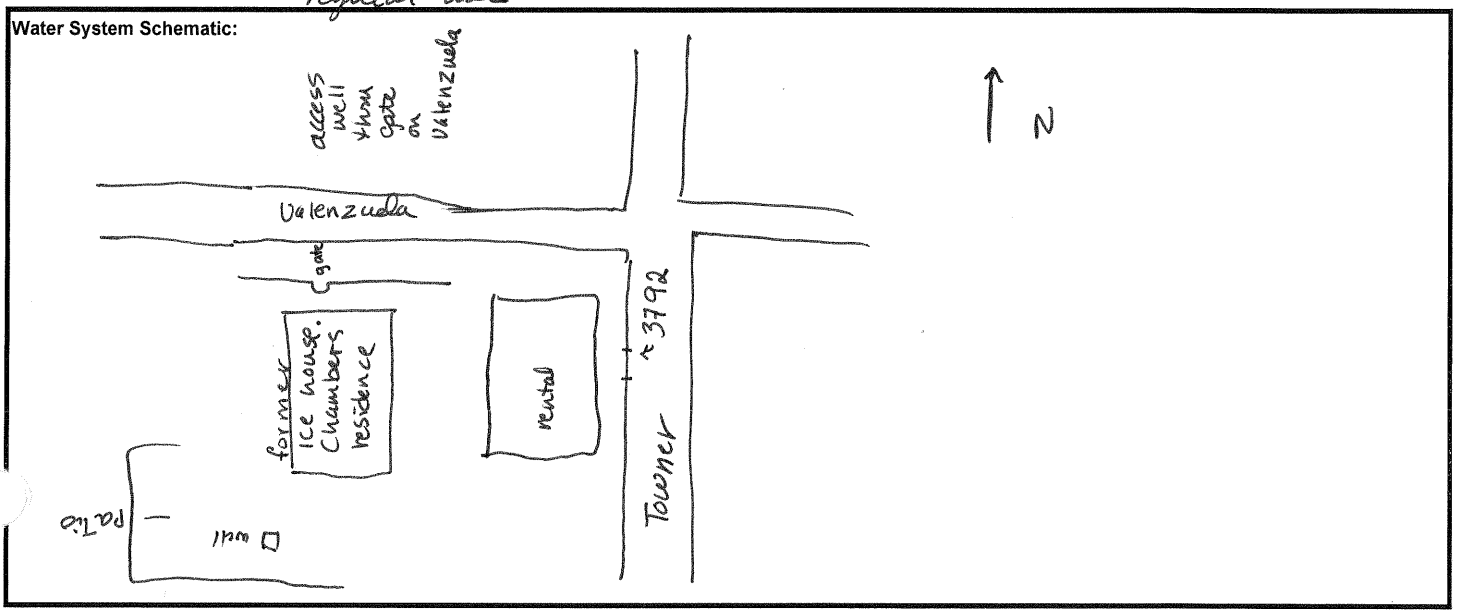
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
930	5	0	7.43	13.1	415	Non clear	None	
932	5	10	7.60	16.4	411	"	"	
937	5	35	7.70	17.4	408	"	"	
942	5	60	7.72	17.5	408	"	"	
947	5	85	7.73	17.8	408	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
CHAMBERS	0950	plastic	250	1	300.0	N	filtered
DUP030608	"	"	"	1	300.0	N	"

Additional Comments: FB030608 — former Sloan property. Old address before the big re-numbering was 221 D Street. D Street now is Towner. Purge for stability. Well in regular use

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	COB MW-1	Date:	2-22-08
ADWR No.	55903992	Weather:	Clear
Location:	Bob Kasan Place at 940 Purdy Ln Bisbee, AZ 85603	Collected By:	Arnesen / Thompson

WELL DATA

Well Depth (ft bls):	420'	Static Water Level (ft bmp):	232.47
Casing Diameter (in):	6"	Date/Time:	2-22-08 / 8:00
Well Use:	Industrial	Point of Measurement:	Top of Casing
3 Casing Volumes:	1469 gal.	GPS:	12R 0603155 UTM 3469888
		Elevation:	4701' amsl

FIELD SAMPLING DATA

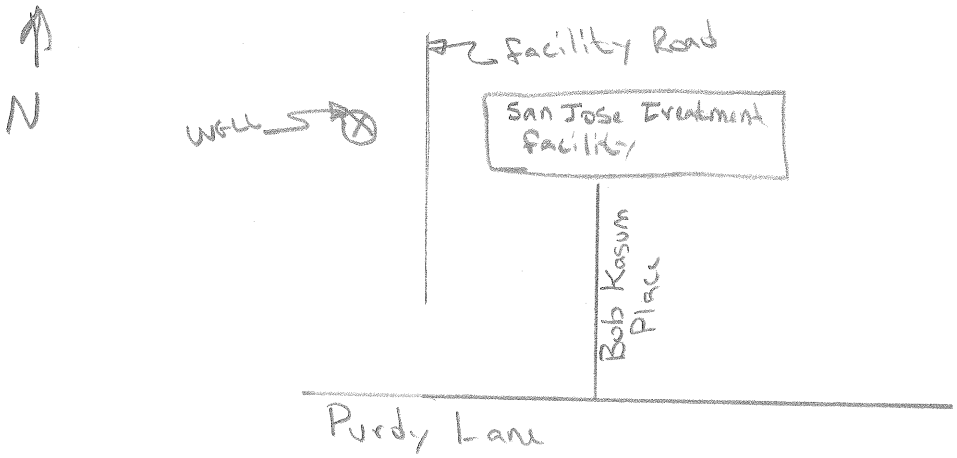
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
811	10	10	6.99	19.5	1412	Clear	None	810 open discharge valve
813	10	30	7.00	20.3	1388	↓	↓	
816	10	60	6.92	21.1	1392			
819	10	90	6.93	21.2	1401	↓	↓	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: Pump in Continuous operation for treatment plant water Supply. Calculated purge was not deemed necessary

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	COB-MW-2	Date:	2-22-08
ADWR No.	55-903484	Weather:	Clear
Location:	On Golf Course Property in field east of Golf Cart Road about 60' South of Green Bush Draw	Collected By:	Arneson / Thompson

WELL DATA

Well Depth (ft bls):	162	Static Water Level (ft bmp):	122.85
Casing Diameter (in):	4"	Date/Time:	2-22-08/933
Well Use:	Monitoring	Point of Measurement:	Top of Casing
3 Casing Volumes:	77 gal	GPS:	12R 0600975 UTM 3468117
		Elevation:	4545' AMSL

FIELD SAMPLING DATA

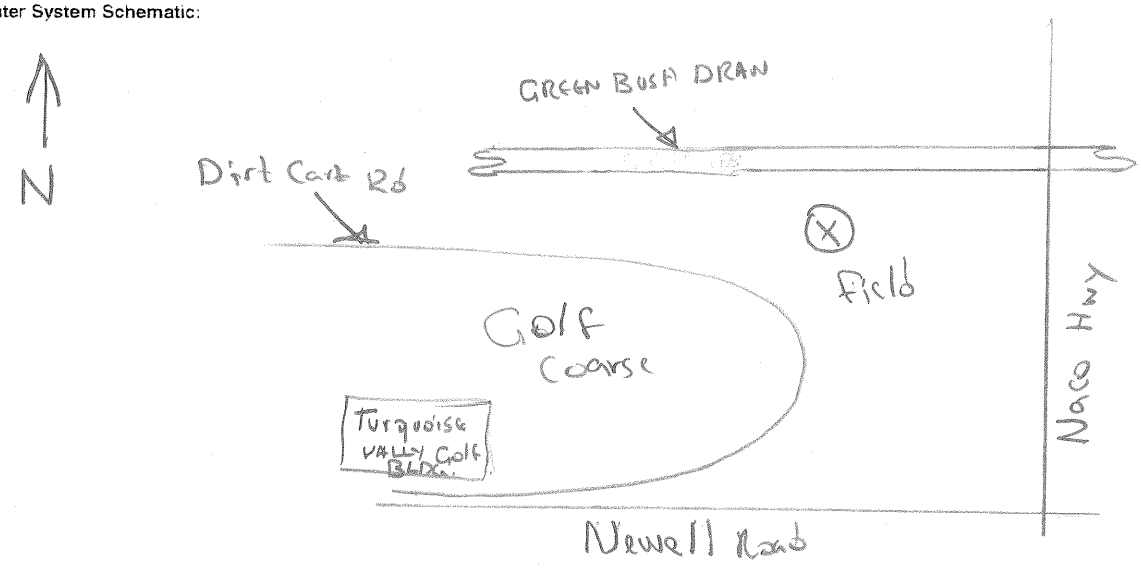
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
951	10	10	7.32	19.3	421	Clear	None	950 Pump on
956	10	60	7.30	20.1	413	↓	↓	
959	10	90	7.28	20.2	417	↓	↓	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
COB-MW-2	10:00	Plastic	125/250/250	3	300.0	NH_4O_2/Nonpreserved	Full suite
DUP022208	10:00	Plastic	125/250/250	3	300.0	"	Duplicate

Additional Comments: Duplicate Sample Collected at this site
Field blank FB022208

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	871002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	COB - MW-3	Date:	2/28/08
ADWR No.	906823	Weather:	Sunny
Location:	AZ Water Co. D-24-23-13 aac	Collected By:	KW + MA

WELL DATA

Well Depth (ft bls):	300 (Gaston)	Static Water Level (ft bmp):	120.84
Casing Diameter (in):	4	Date/Time:	2/28/08
Well Use:	monitoring	Point of Measurement:	T.O.C
3 Casing Volumes:	116 gal x 3 = 348 117 gal x 3 = 351	GPS:	12R 0599169 x UTM 3468726
		Elevation:	4530

FIELD SAMPLING DATA

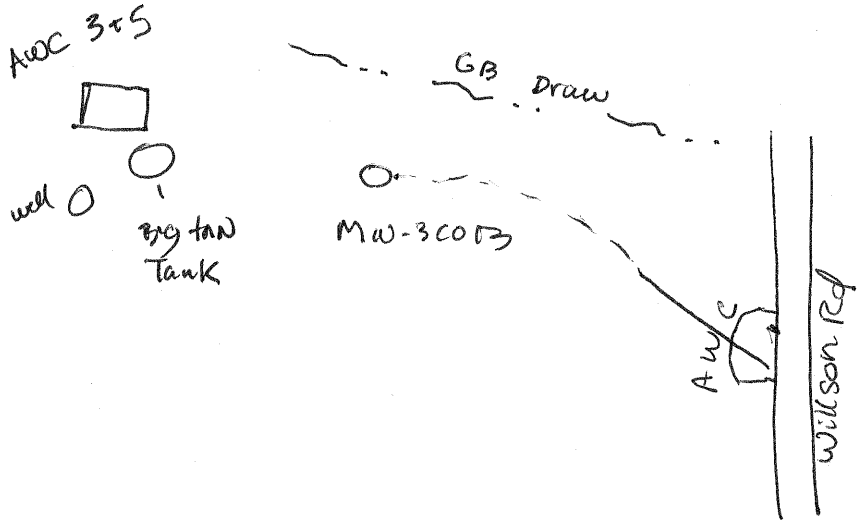
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
10:47	20	20	7.57	21.2	473	none/	none	Pump on 1046
10:51	"	100	7.43	21.0	420	" Clear	"	
10:54	"	160	7.39	21.1	420	"	"	
10:57	"	220	7.42	20.9	420	"	"	
11:00	"	280	7.38	21.1	417	"	"	
11:03	"	340	7.38	21.0	418	"	"	
11:06	"	400	7.39	21.0	416	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
MW-3 COB	11:10	plastic	125 250 250	3	300.0	Y/N/N	

Additional Comments: COB Sentinel well on AWC property. We were escorted by Gaston from SJWWTF

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872003.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	COB - WARREN LAGOON	Date:	2-22-08
ADWR No.	55-593116	Weather:	Clear
Location:	ABout 1/2 mile North of Airport. Then West ON COB Dirt access Road just Southof 4th retention Pond.	Collected By:	Arneson / Thompson

WELL DATA

Well Depth (ft bls):	150'	Static Water Level (ft bmp):	56.50
Casing Diameter (in):	4"	Date/Time:	2-22-08 / 844
Well Use:	Monitoring	Point of Measurement:	Top of Casing
3 Casing Volumes:	183 gal	GPS:	R12 D606356 UTM 3472504
		Elevation:	4847' AMSL

FIELD SAMPLING DATA

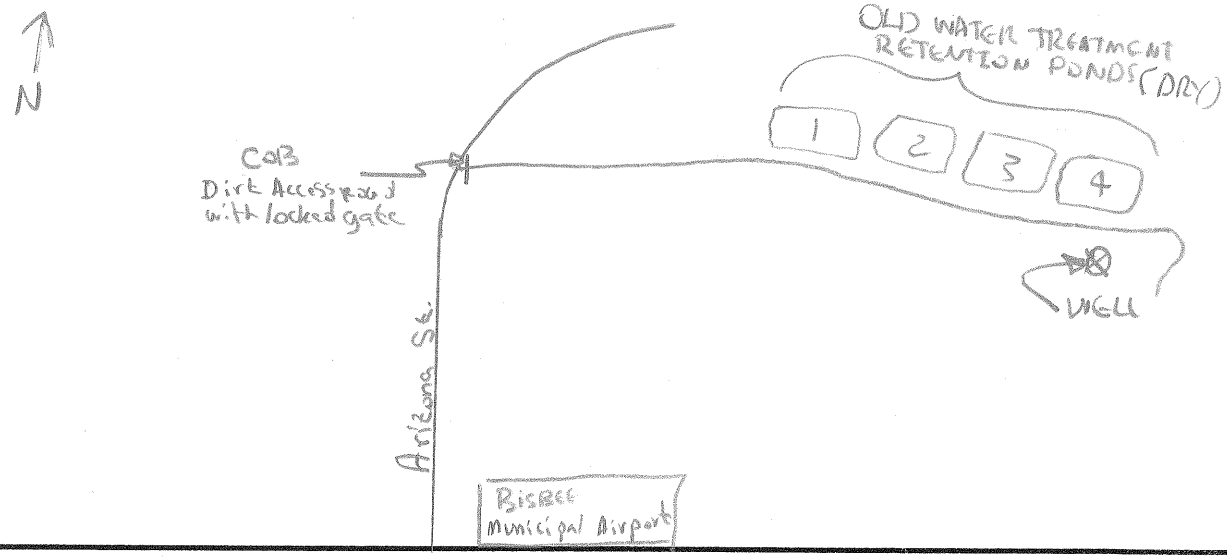
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
855	10	10	7.12	18.9	916	Clear	None	Pump on at 854
857	10	30	7.00	20.1	922	↓	↓	
902	10	80	6.98	20.6	921			
906	10	120	6.99	20.6	919			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
WARREN LAGOONCOB	910	Plastic	125/250/250	3	300.0	HNO3/Nonpreserved	

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	COOPER, Charles	Date:	03/04/08
ADWR No.	55-637069	Weather:	sunny, cool
Location:	1497 W. Purdy Lane	Collected By:	KW + MA

WELL DATA

Well Depth (ft bls):	220	Static Water Level (ft bmp):	155.08 bmp
Casing Diameter (in):	6	Date/Time:	03/04/08 8:03
Well Use:	domestic	Point of Measurement:	T.O.C.
3 Casing Volumes:	95.4x3=286	GPS:	12R 0601350 x UTM 3468915
		Elevation:	4607

FIELD SAMPLING DATA

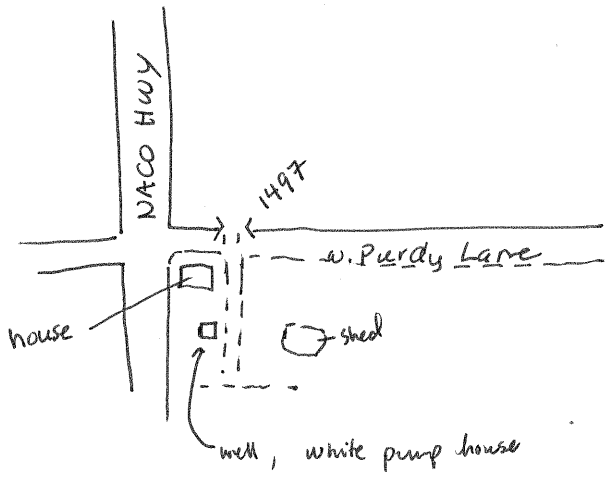
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
8:22	6	6	6.95	19.5	1902	clear	none	few light brown flakes
8:26	"	30	7.01	19.9	1914	"	"	very few flakes
8:30	"	54	7.02	19.9	1914	"	"	" " "
8:34	"	78	7.05	20.4	1908	"	"	" " "
8:41	"	120	7.05	20.0	1910	"	"	no more flakes
8:48	"	162	7.03	20.9	1909	"	"	"
8:55	"	204	7.02	20.8	1892	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
COOPER, C	9:00	plastic	250	1	300.0	N	filtered

Additional Comments: Family of 4, well is well used. When pump is on it pushes water into leaking u.g. pipe behind shed as well as hose. Discharge is therefore greater over all than 7gpm from bib

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000	Client:	FMI Sierrita Operations
Phase No.	2.2	Date:	3/20/08
Well ID:	COOPER C	Weather:	clear
ADWR No.	55-637069	Collected By:	MA

WELL DATA

Well Depth (ft bls):	220	Time:	12:29
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	154.93	GPS:	12R 601350 3468915
1 Casing Volume (gals):	94.5	Elevation:	4607
3 Casing Volumes (gals):	283.6 36 min purge		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1235	8	8	6.88	24.1	2055	clear	None	openbib@ 1234
1237	8	24	6.89	22.2	2065	↓	↓	
1241	8	56	6.92	21.7	2084			
1246	8	96	6.92	21.6	2086			
1251	8	136	6.92	21.5	2082			
1256	8	176	6.95	21.5	2086			
1301	8	216	6.92	21.4	2088			
1306	8	256	6.92	21.3	2080			
1311	8	296	6.93	21.3	2081	↓	↓	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
COOPER C	1315	Plastic	125/250ml	2	EPA 300.0	NO3/None	Filtered
COOPER C	1315	Plastic	250/~~500~~ ml	1	EPA 300.0	None	Unfiltered

Additional Comments: Resampled for Full Suite

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	COOPER, Teresa	Date:	2-14-08
ADWR No.	55- 623564	Weather:	windy, pt cloudy
Location:	2171 S. Naco Hwy San Jose	Collected By:	KW & AP

WELL DATA

Well Depth (ft bls):	325	Static Water Level (ft bmp):	unable to measure
Casing Diameter (in):	6"	Date/Time:	2-14-08
Well Use:	domestic	Point of Measurement:	—
3 Casing Volumes:		GPS:	UTM 3471687 12R 0602138
		Elevation:	4759

FIELD SAMPLING DATA

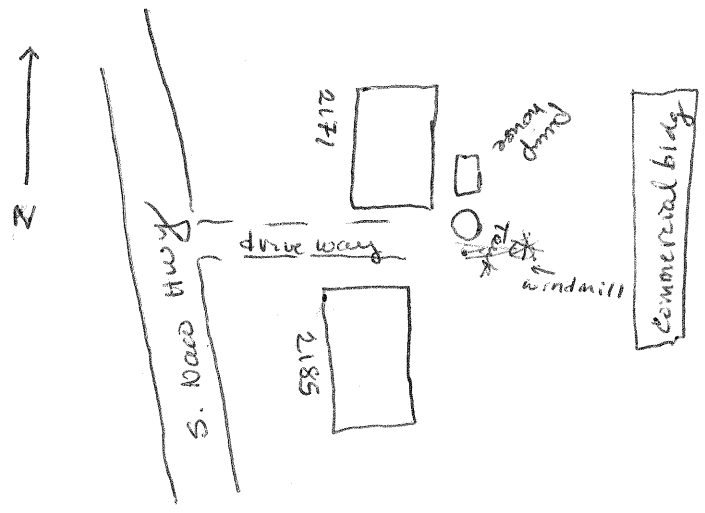
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
9:53	—	—	7.63	14.1	371	clear	none	composite spl
								few brown flakey sediments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
COOPER	10:00	plastic	5/1/1/50°	3	300.0	Y/N/N	composite

Additional Comments: NO access to take WL or sample from well head. Will take composite sample from storage tank. Pressure tank on/off every 5 minutes. 3 people + one commercial venture using this well

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
ell ID:	Dodson	Date:	2/28/08
ADWR No.	55-644927	Weather:	over cast, Windy
Location:	235 Purdy Lane Bisbee AZ 85603	Collected By:	Arneson / Thompson

WELL DATA

Well Depth (ft bls):	200' bls	Static Water Level (ft bmp):	78' bls measured on 06-2002
Casing Diameter (in):	6"	Date/Time:	2/28/08 / NA
Well Use:	Domestic Supply	Point of Measurement:	Top of Casing
3 Casing Volumes:	537 gal	GPS:	12R 0605799 UTM 3469065
		Elevation:	4664 AMSL

FIELD SAMPLING DATA

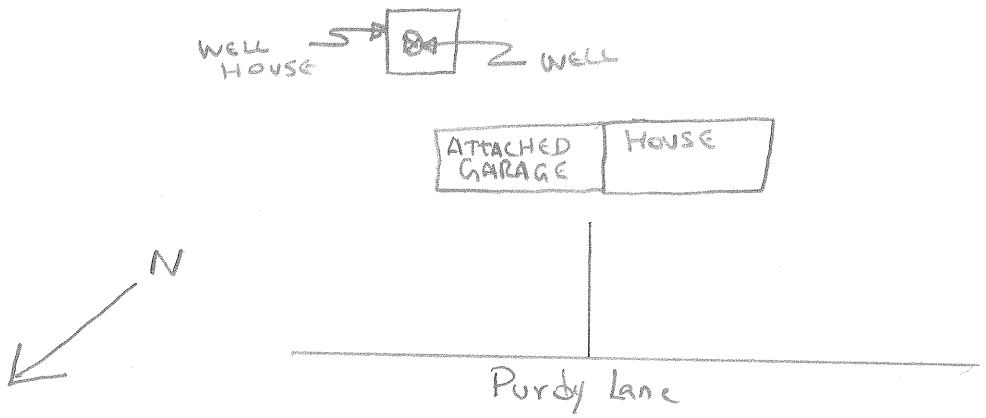
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1136	3	3	7.48	14.1	829	Clear	None	1135 opened hydrant
1140	3	15	7.56	17.6	860			
1144	3	27	7.60	18.1	858			
1147	3	36	7.61	17.3	857			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
DODSON	1150	Plastic	1L/250	3	300.0	HNO3 None	

Additional Comments: Could not sound well as probe was too large for access hole in well cap. → Purged well until Ph/EC and Temp Parameters Stabilized

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	DOUGLASS 791	Date:	2-13-08
ADWR No.	55- 592791	Weather:	Windy, pt. cloudy
Location:	D-24-24-12 bcb NW corner of 40 acre parcel	Collected By:	AP & KW

WELL DATA

Well Depth (ft bls):	200	Static Water Level (ft bmp):	22.11
Casing Diameter (in):	5"	Date/Time:	2-13-08 14:30
Well Use:	unused - future domestic	Point of Measurement:	TOC
3 Casing Volumes:		GPS:	UTM 3470226
		Elevation:	12R 0607629

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

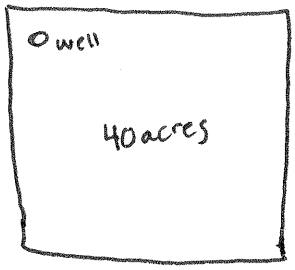
SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: Well not in use. Water level measured; no sample
No pump, no power. Undeveloped land. Future domestic well

Water System Schematic:

D-24-24-12 BCB



parcel 104-39-004E

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	DOUGLASS 792	Date:	2-13-08
ADWR No.	55-592792	Weather:	windy, partly cloudy
Location:	D-24-24-11dab NW corner of 35.97 acre parcel	Collected By:	AP + KW

WELL DATA

Well Depth (ft bis):	200'	Static Water Level (ft bmp):	87.76
Casing Diameter (in):	5"	Date/Time:	2-13-08
Well Use:	not in use	Point of Measurement:	T.O.C
3 Casing Volumes:		GPS:	UTM 3469831 12R 0607606
		Elevation:	4659

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

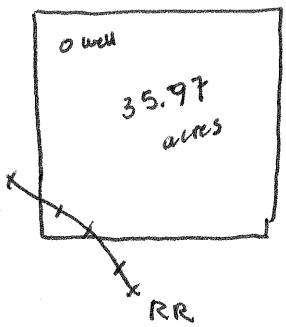
SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: Well currently not in use. Planned for future domestic use. Measured W.L. only; no sample. No pump, no power. Undeveloped land

Water System Schematic:

D-24-24-11dab



Parcel 101-39-004C

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	EAST	Date:	02/08/2008
ADWR No.	599796	Weather:	CLEAR
Location:	BISBEE JUNCTION	Collected By:	AP/MA

WELL DATA

Well Depth (ft bis):	125 (ft)	Static Water Level (ft bmp):	50.20
Casing Diameter (in):	6"	Date/Time:	02/08/2008
Well Use:		Point of Measurement:	TOC
3 Casing Volumes:	110 x 3 = 330 ÷ 15 = 22 min	GPS: UTM:	3468713 12R 0607076
		Elevation:	

FIELD SAMPLING DATA

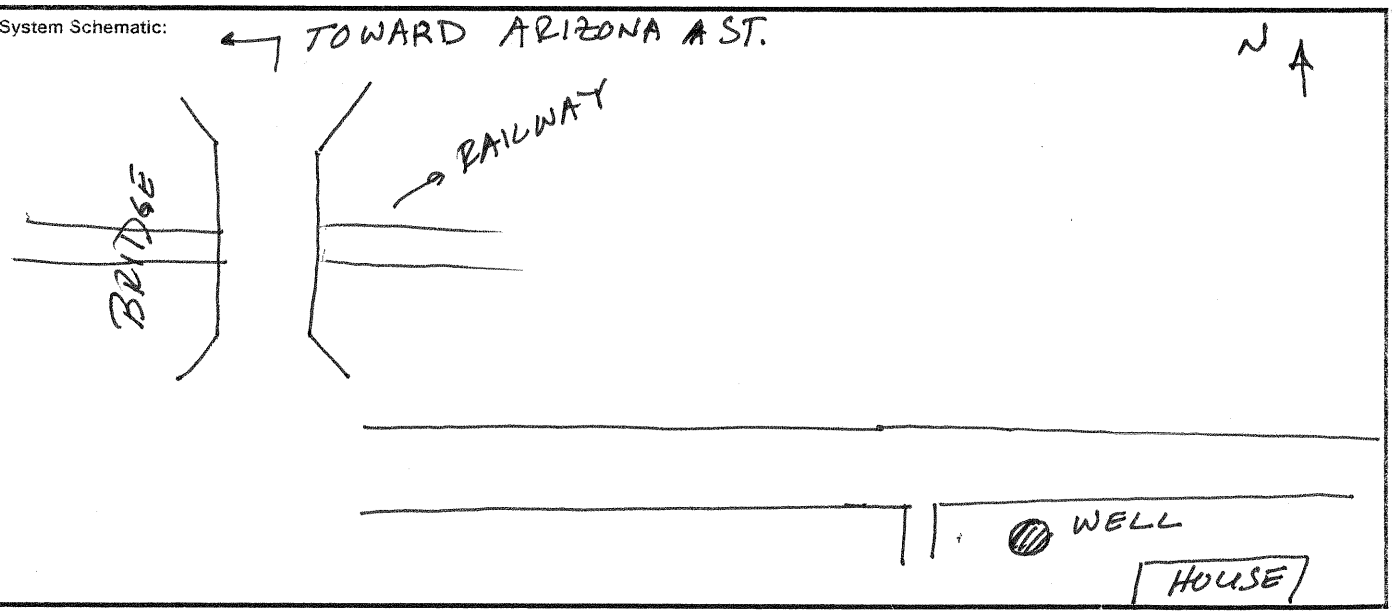
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
0839	15	15	7.07	17.4	562	CLEAR	N	
0841	"	45	7.27	19.1	423	"	"	
0845	"	105	7.42	19.6	416	"	"	
0848	"	150	7.46	19.8	420	"	"	
0856	"	180	7.45	19.9	423	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
EAST	0900	PLASTIC	125/250 500	3	300.0	Y/N/N	-

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	ENGLUND	Date:	02/12/08
ADWR No.	55-565260	Weather:	Sunny, warm
Location:	2331 Coleman Rd San Jose	Collected By:	KW - AP

WELL DATA

Well Depth (ft bls):	320	Static Water Level (ft bmp):	289.47
Casing Diameter (in):	4 1/2	Date/Time:	02/12/08 13:03
Well Use:	~~domestic~~ NDWSW	Point of Measurement:	T.O.C.
3 Casing Volumes:	25 x 3 = 75 7.5 min	GPS:	UTM 3471339 12R 0602548
		Elevation:	4735 ft amsl

FIELD SAMPLING DATA

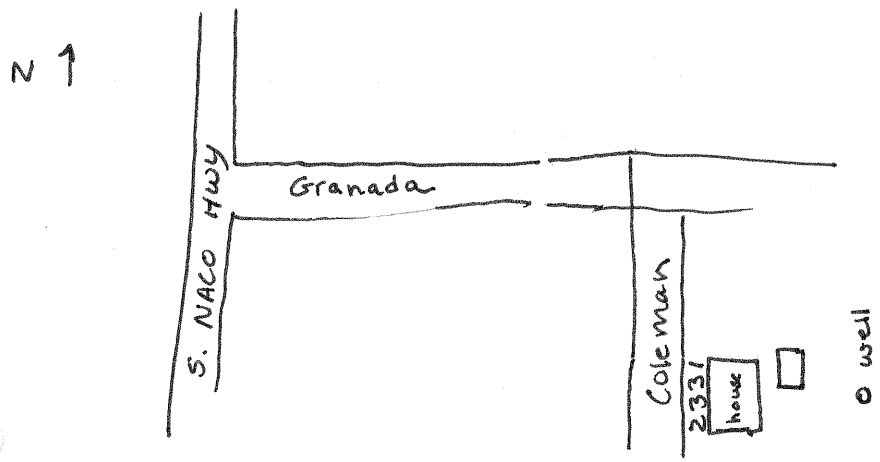
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
13.22	10		6.83	21.9	1488	none	none	few brown sediments
13.24	"		6.83	21.7	1470	"	"	few br + wh sediments
13.27	"		6.85	21.6	1469	"	"	trace br + wh seds
13.31	"		6.88	21.6	1467	"	"	"
		TOTAL DISCHARGE = 90 GLS.						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
ENGLUND	13:35	plastic	250	1	300.0	N	

Additional Comments: House for sale, well probably not used for awhile

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	55-905641-L	Date:	3-11-08
ADWR No.	EPPELE	Weather:	Clear, breezy
Location:	8 Mulberry Lane, Bisbee, AZ	Collected By:	MH.

WELL DATA

Well Depth (ft bis):	265	Static Water Level (ft bmp):	29.52
Casing Diameter (in):	8"	Date/Time:	3-11-08
Well Use:	Domestic drinking water / Irrigation	Point of Measurement:	TOC
3 Casing Volumes:	615 = 1 case vol.	GPS:	12R 0607159 UTM 3469230
3 casing Vol = 1845 gal = 205 min		Elevation:	4640

FIELD SAMPLING DATA

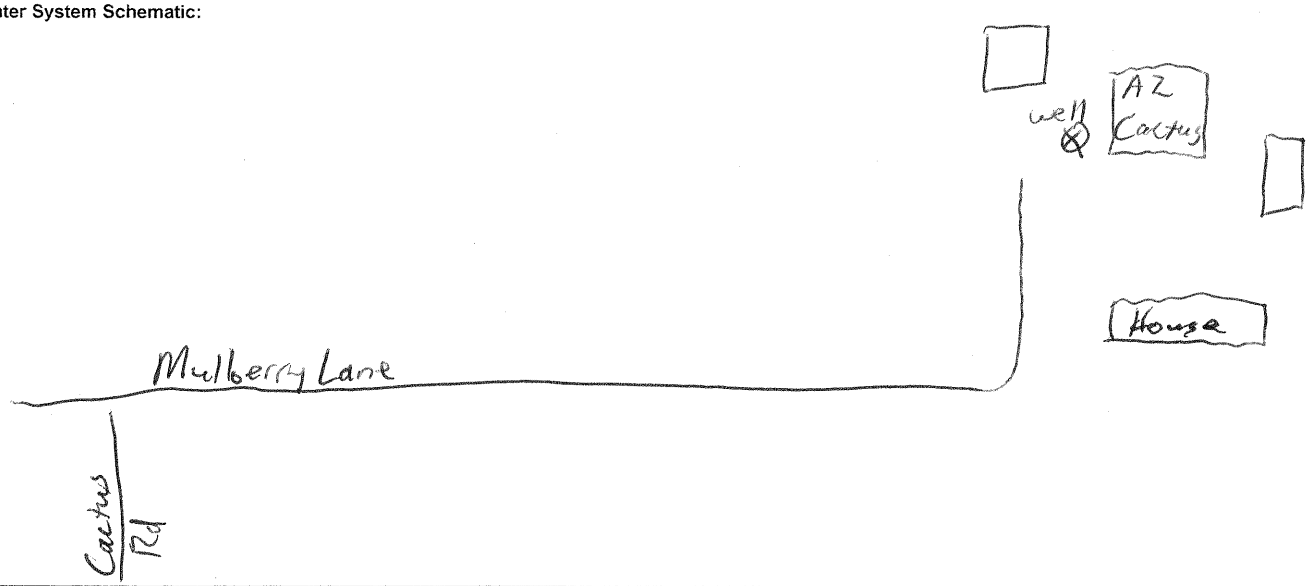
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1143	9	9	7.00	15.6	744	Clear	None	
1146	9	36	7.26	20.1	742			
1151	9	81	7.45	21.2	752			
1203	9	189	7.42	21.6	757			
1212	9	270	7.41	21.3	759			
1243	9	675	7.53	21.4	722			
1255	16	979	7.88	21.4	644	Slight tan	None	
1256	well pumped dry			~~~	Recovery			
1330			7.98	21.4	646			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
EPPELE 641	1330	Plastic	250ml	1	300.0	None	Filtered 50µ

Additional Comments: Difficult to determine casing dia. but is between 7" and 9"

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	EPPELE642	Date:	3-11-08
ADWR No.	55-805642	Weather:	Clear
Location:	8 Mulberry Lane Bisbee, AZ	Collected By:	MA

WELL DATA

Well Depth (ft bls):	40'	Static Water Level (ft bmp):	20' (1989)
Casing Diameter (in):		Date/Time:	3-11-08 / 1230
Well Use:	Irrigation	Point of Measurement:	
3 Casing Volumes:		GPS:	12R 0607158 UTM 3469173
		Elevation:	4618

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: This is a hand-dug well with old windmill retrofitted with a submersable pump but is disconnected and Ted Eppele stated in a phone conversation that this well is no longer in use. The well is covered and I was unable to measure depth to water.

Water System Schematic:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	EPPELE643	Date:	3-11-08
ADWR No.	55-805643	Weather:	Clear
Location:	8 Mulberry Lane Bisbee, AZ	Collected By:	MA

WELL DATA

Well Depth (ft bls):	165	Static Water Level (ft bmp):	30' (1989)
Casing Diameter (in):	unknown	Date/Time:	3-11-08 / 12:00
Well Use:	Domestic / Irrigation	Point of Measurement:	
3 Casing Volumes:		GPS:	12R 0607219 UTM 3469214
		Elevation:	4593

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: Well is non-operational and covered by wood flooring of the enclosure, pump wiring and plumbing are disconnected and TEO Eppele stated that this well is no longer in use during phone conversation.

Water System Schematic:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	FRANCO	Date:	02/06/2008
ADWR No.	500101	Weather:	CLEAR
Location:	3245 S. Franco Loop Bisbee, AZ	Collected By:	API MA

WELL DATA

Well Depth (ft bis):	200'	Static Water Level (ft bmp):	NA
Casing Diameter (in):	6"	Date/Time:	02/06/2008
Well Use:	DOMESTIC	Point of Measurement:	-
3 Casing Volumes:	59x3=177÷25=8 min	GPS: UTM	3468828 12R 0602851
		Elevation:	4619

FIELD SAMPLING DATA

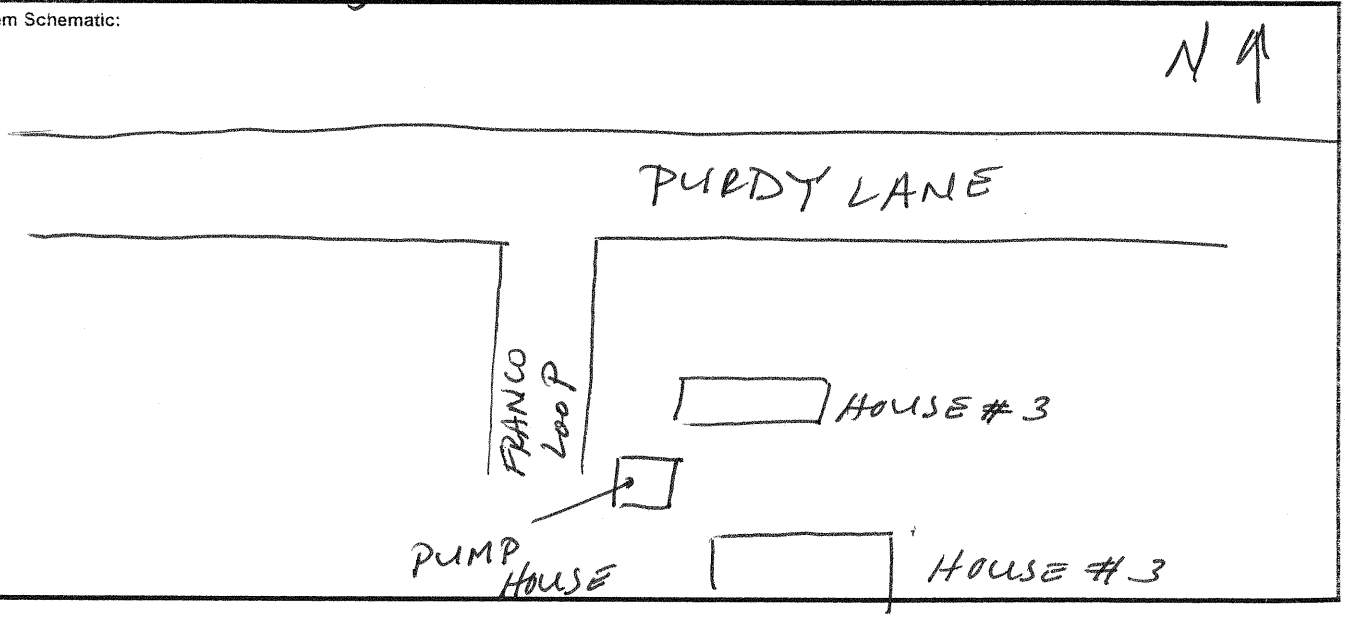
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1128	25		7.48	21.3	1306	~~CLEAR~~ MAR	N	—
1131	"		7.49	20.1	1300	CLEAR	"	—
1134	"		7.47	19.6	1301	"	"	—
TOTAL DISCHARGE = 2006.								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
FRANCO	1136	PLASTIC	250	1	300.0	N	

Additional Comments: DUE TO LACK OF A DIRECT OUTLET, A BIB FROM THE HOUSE #3 WAS USED - THE WATER IS USED BY FOUR HOUSES ON THIS PROPERTY. A piece of Rope is blocking hole for w/l measurements - Could not remove

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	FULTZ	Date:	2/27/08
ADWR No.	55- 212447	Weather:	Sunny
Location:	694 E Border Rd Bisbee Junction	Collected By:	KW & MA

WELL DATA

Well Depth (ft bls):	300	Static Water Level (ft bmp):	unable to measure - port hole too tight
Casing Diameter (in):	8	Date/Time:	2/27/08 —
Well Use:	domestic	Point of Measurement:	T.O.C
3 Casing Volumes:	460 gal = 1 casing x3 = 1379	GPS:	12R 0607151 x UTM 3469068
		Elevation:	4694

FIELD SAMPLING DATA

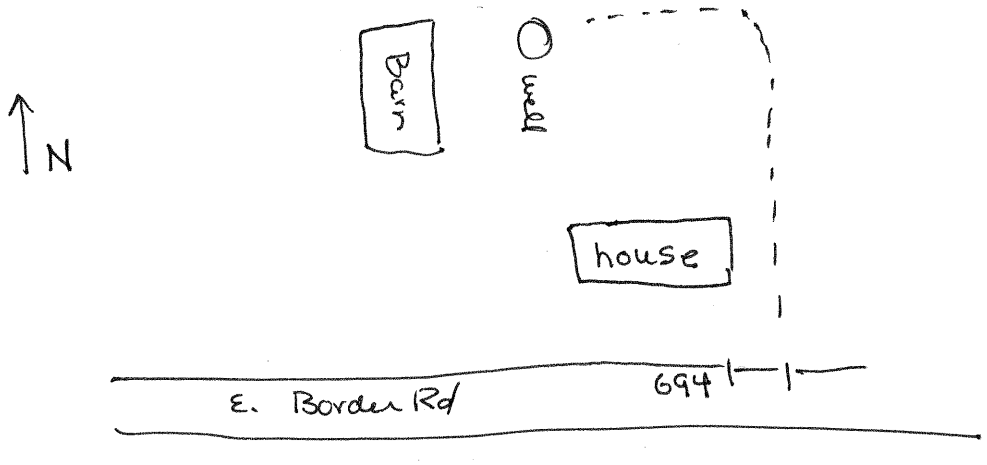
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
15:13	10gpm	10	6.73	18.7	1813	none	none	
15:18		60	6.76	20.6	1824	"	"	
15:23		110	6.78	21.3	1837	"	"	
15:28		160	6.80	21.8	1822	"	"	
15:33		210	6.81	21.7	1818	"	"	
15:38		260	7.03	21.2	1809	"	"	
15:42		310	6.76	21.2	1816	"	"	
15:45		340	6.76	21.1	1827	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
FULTZ	15:45	plastic	250	1	300.0	N	filtered

Additional Comments: 2nd GPS reading 12 R 0607151 . 2006 WL of 124' used for casing volume calculations. House is still connected to NWC. Well drilled in 2006 - used for animals irrigation + some human drinking

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0 / 872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	~~KW 55-502.5 KWT~~ GALLANT	Date:	2/11/08
ADWR No.	55-502527	Weather:	breezy, sunny
Location:	897 E Border RD BISBEE	Collected By:	KW & AP

WELL DATA

Well Depth (ft bls):	190 (ft)	Static Water Level (ft bmp):	28.32 ft bls
Casing Diameter (in):	4"	Date/Time:	2/11/08 14:58
Well Use:	DOMESTIC	Point of Measurement:	TOC
3 Casing Volumes:	~~238~~ X 3 = ~~714~~ 714 gal 714 ÷ 15 = 47.6 min	GPS:	UTM 3468534S 12R 060777D
		Elevation:	4597 / 4600 2nd reading

FIELD SAMPLING DATA

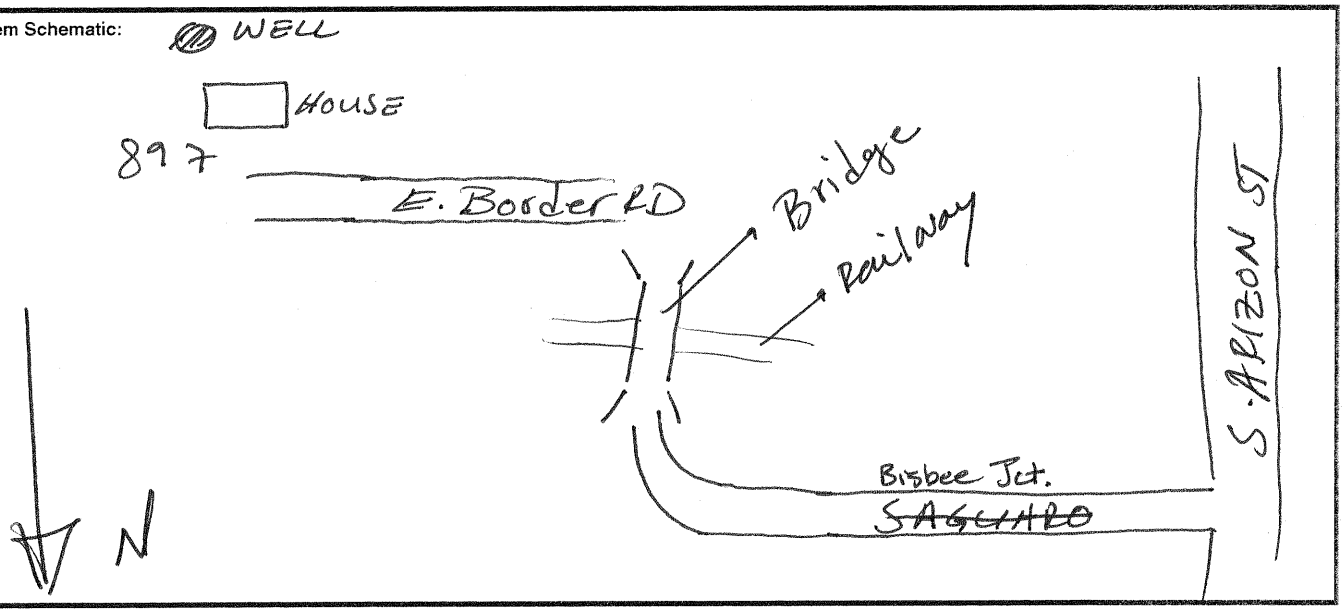
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
15:13	15		7.46	18.1	620	clear	none	few rust flakes
15:16	"		7.47	19.9	599	"	"	few rust, few white flakes
15:22	"		7.52	20.2	602	"	"	
15:27	"		7.49	20.4	606	"	"	few white flakes
15:32	"		7.47	20.3	599	"	"	very few white flakes
15:37	"		7.46	20.2	604	"	"	clear
		TOTAL DISCHARGE = 360 GLS						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
GALLANT	15:40	plastic	125/250/500	3	300.0	Y/N/N	—

Additional Comments: @ request of owner after parameters stable, took sample

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	GARNER 557	Date:	2-21-08
ADWR No.	55-558557	Weather:	Clear
Location:	1027 W Purdy Lane Bisbee, AZ 85603	Collected By:	Arnason / Thompson

WELL DATA

Well Depth (ft bis):	300'	Static Water Level (ft bmp):	191.05
Casing Diameter (in):	6"	Date/Time:	2-21-08 / 12:35
Well Use:	Domestic Supply	Point of Measurement:	Top of Casing
3 Casing Volumes:	480 gal.	GPS:	12R 602652 UTM 3468958
		Elevation:	4625' amsl

FIELD SAMPLING DATA

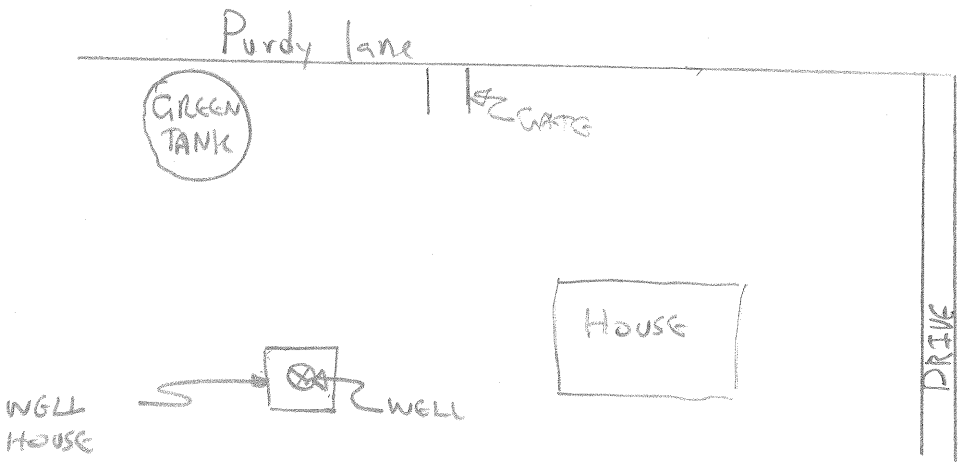
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1255	10	10	6.72	20.9	822	Clear	None	Pump on at 1254
1300	10	60	6.70	20.9	836	Clear	None	
1305								Pump Stopped

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
Garner 557	1310	Plastic	125/250	2		HNO_3/none	Filtered
"	1310	Plastic	250	1		None	UNfiltered

Additional Comments: Pump quit operating at 1305' Mechanical problem.

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	GARNER 635	Date:	02/04/2008
ADWR No.	55-587635	Weather:	CLOUDY - WINDY
Location:	1027 W. PURDY LANE BISBEE, AZ	Collected By:	AP/MA

WELL DATA

Well Depth (ft bls):	680	Static Water Level (ft bmp):	193.20
Casing Diameter (in):	12"	Date/Time:	02/04/2008
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	2960X3 = 8580 @ 20gpm	GPS: UTM:	3468972 12R 0602664
730 min purge		Elevation:	4616

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
11:45	20	100	7.71	18.1	473	CLEAR	NO	open b:b at 11:40
11:50	"	200	7.68	21.0	474	"	"	
11:55	"	300	7.70	21.3	478	"	"	
12:00	"	400	7.67	21.3	476	"	"	
12:05	"	500	7.61	22.7	479	"	"	
TOTAL DISCHARGE =						500 G.		

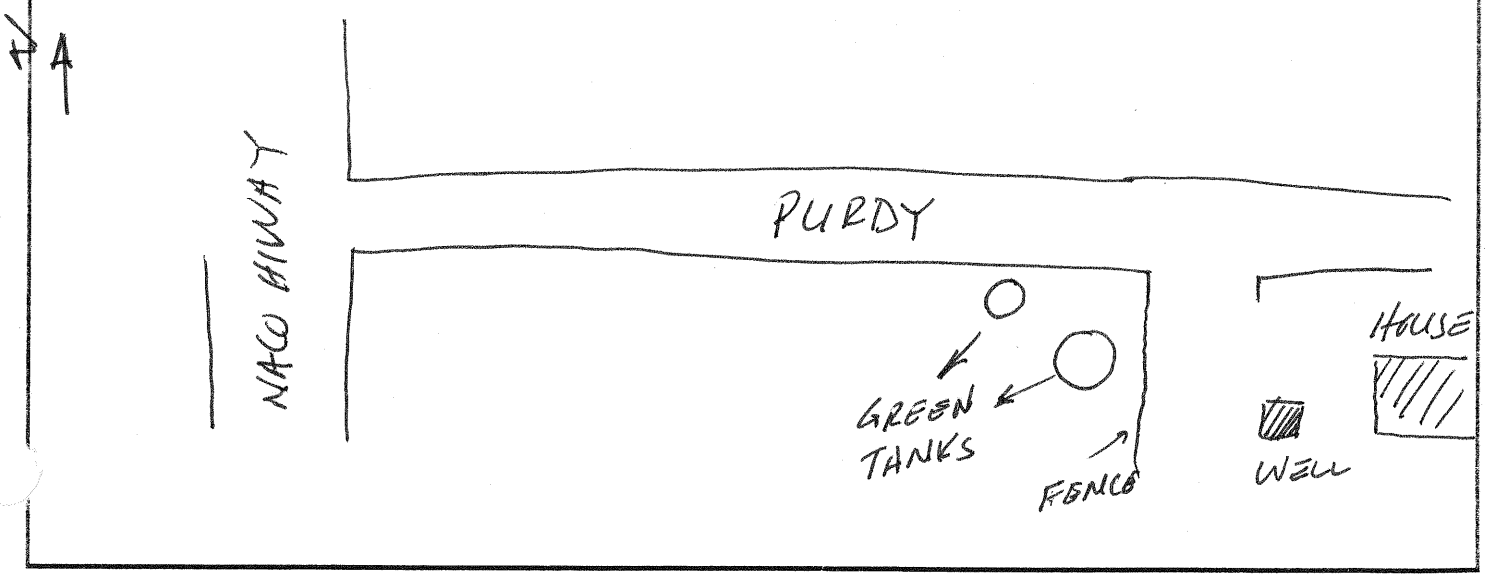
SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
GARNER635	1210	PLASTIC	125/250	1/1	300.0	T/N	
GARNER635	1210	PLASTIC	500	1	300.0	N	

Additional Comments:

* AKA GW-47

Water System Schematic:



HYDRO GEO CHEM. INC.

Groundwater Sampling Form

Project No.	87200 2.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	Galloping Goose 546	Date:	2/21/08
ADWR No.	55-628546	Weather:	Clear Windy
Location:	Galloping Goose Properties LLC Woodland Park CO	Collected By:	Not Collected / Arneson / Thompson

WELL DATA

Well Depth (ft bls):	600'	Static Water Level (ft bmp):	Could not Sound. Obstructed at 153' btoc
Casing Diameter (in):	6"	Date/Time:	2-21-08
Well Use:	Irrigation	Point of Measurement:	Top of Casing
3 Casing Volumes:	Not Sampled	GPS:	12R 0606095 UTM 3469738
		Elevation:	4678' AMSL

FIELD SAMPLING DATA

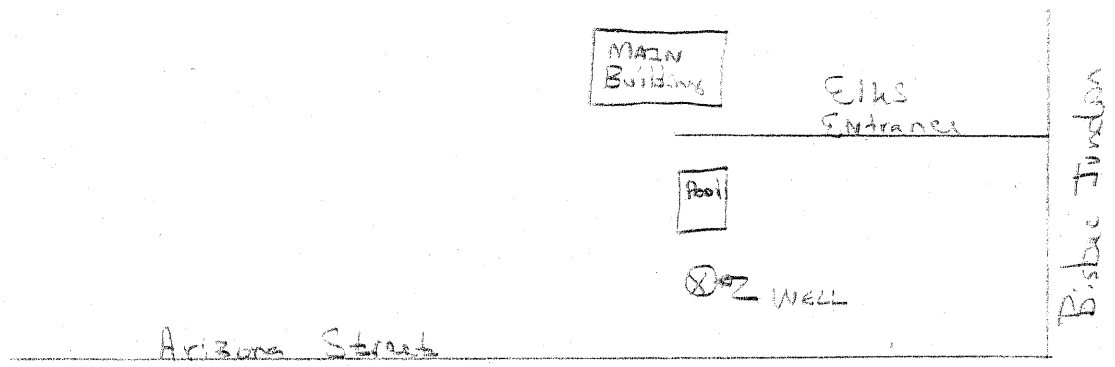
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: Well is equipped with a pump but power has been disconnected to facility

Water System Schematic:



HYDRO GEO CHEM. INC.

Groundwater Sampling Form

Project No.	872002a2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	~~ELKS~~ GGOOSE 547	Date:	2-21-09
ADWR No.	55-628547	Weather:	Clear / windy
Location:	BDCC ELKS No. 671 Drawer Bx, Bisbee, AZ 85603	Collected By:	Not collected Arnason / Thompson

WELL DATA

Well Depth (ft bls):	800	Static Water Level (ft bmp):	Not Measured - No Sounder access
Casing Diameter (in):	6"	Date/Time:	2-21-09
Well Use:	Supply	Point of Measurement:	
3 Casing Volumes:	Not Sampled	GPS:	12R 0606255 UTM 3469823
		Elevation:	4704' AMSL

FIELD SAMPLING DATA

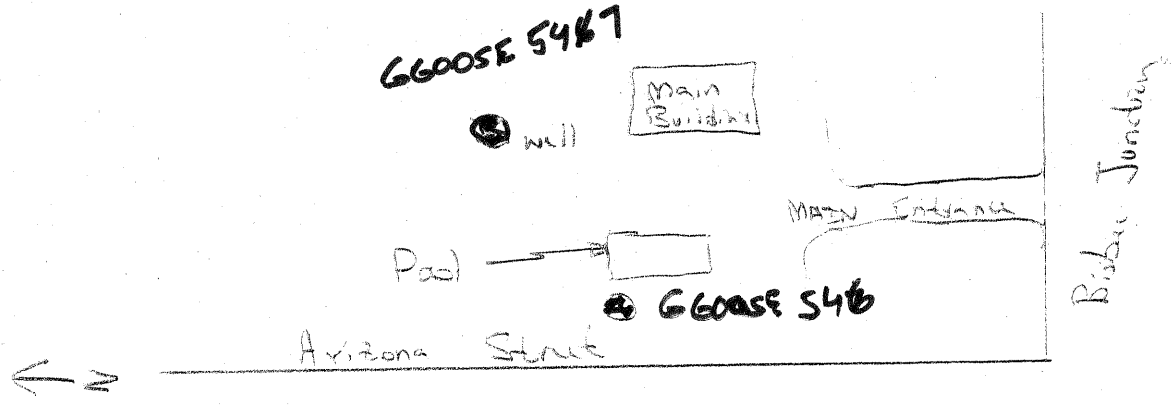
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: We were not able to sound well. No access point for sounder. Well is equipped with a pump but there is no power on site and we were therefore unable to collect a sample

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	GL-3	Date:	03/04/08
ADWR No.	55-539782	Weather:	sunny
Location:	D-23-24-34 bbb *	Collected By:	MA + KW

WELL DATA

Well Depth (ft bls):	825	Static Water Level (ft bmp):	> 500' bmp
Casing Diameter (in):	4"	Date/Time:	03/04/08 11:03 > 500
Well Use:	monitoring	Point of Measurement:	T.O.C.
3 Casing Volumes:	93 gal x 3 = 279	GPS:	12R 0604387 x 3473747
		Elevation:	4946

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
11:20	8	8	~~6.71~~ 8.20	20.1	457	clear	none	few fine black seds
11:27	8	64	7.72	24.4	201	"	"	" " " "
11:32	"	96	7.60	25.2	199	"	"	" " " "
11:39	"	152	7.36	25.7	368	"	"	very few fine flecks (black)
11:45	"	200	7.38	25.9	400	"	"	" " " " "
11:51	"	248	7.43	25.7	417	slightly brown	slight	" " " " "
11:55	starting to loose flow, drum to abt 3 gpm							
		250						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
GL-3	11:55	plastic	125 250 250	3	300.0	Y/N/N	

Additional Comments: Our sounder is only 500'. WL = > 500'. Screen is 780-820 acc. to well driller's report. 2005 WL = 683

* cadastrals written on box are sec 33 bca

Water System Schematic:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	GOAR	Date:	2-21-08
ADWR No.	55-610694	Weather:	cloudy
Location:	1185 W. Purdy Lane Bisbee, AZ 85603	Collected By:	MA/WT

WELL DATA

Well Depth (ft bls):	250	Static Water Level (ft bmp):	~~183.90' MA~~ No Access
Casing Diameter (in):	6"	Date/Time:	2-21-08/11:45
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	Not Sampled	GPS:	12R 0602216 UTM 3468913
		Elevation:	4588

FIELD SAMPLING DATA

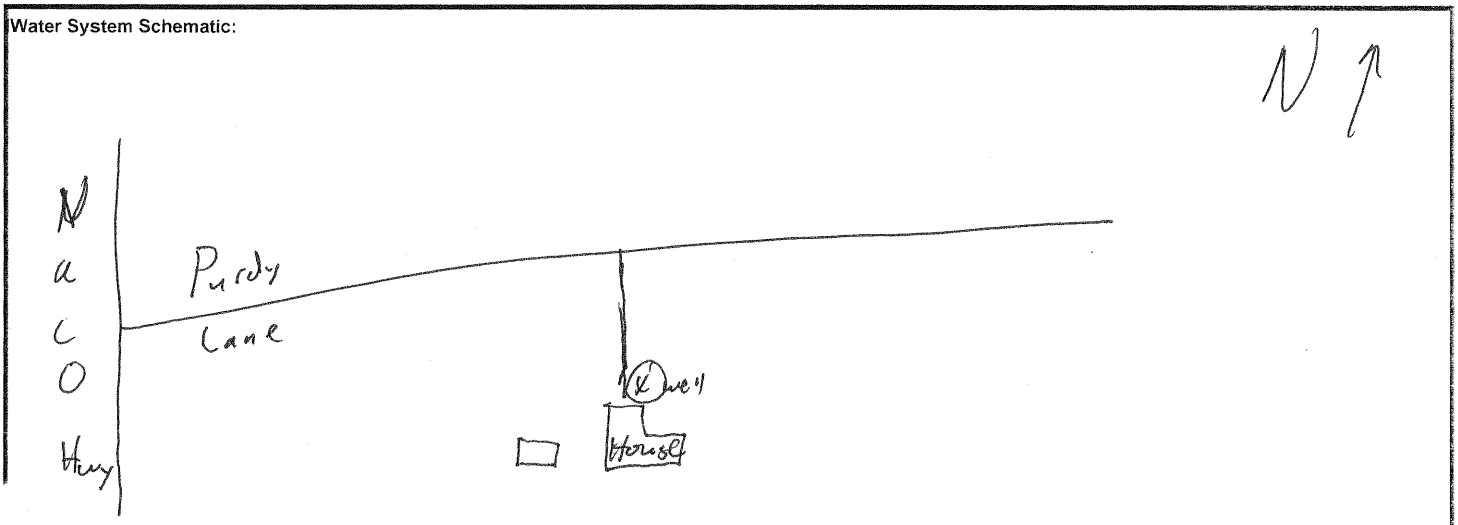
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: This well is not being used

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720010	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	GOAR RANCH	Date:	2-21-08
ADWR No.	55-610695	Weather:	Cloudy
Location:	W. Purdy Lane Bisbee, AZ 85603	Collected By:	MA/WT

WELL DATA

Well Depth (ft bls):	250	Static Water Level (ft bmp):	~~N~~ 183.90
Casing Diameter (in):	7"	Date/Time:	2-21-08/11:35
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	Not Sampled	GPS:	12R 0602449 UTM 3468891
		Elevation:	4596

FIELD SAMPLING DATA

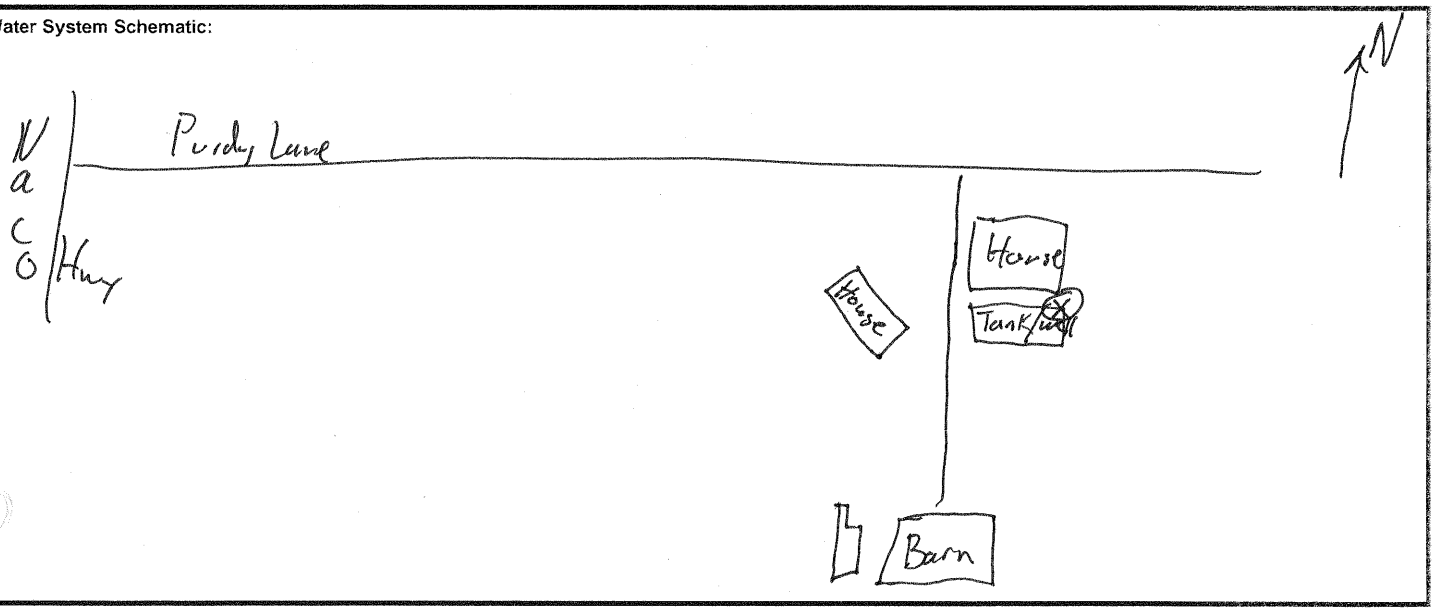
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: This well is not in use

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	GREGG (Former Jenny)	Date:	3/20/08
ADWR No.	570 W. Mulberry Lane	Weather:	clear
Location:	55-630852	Collected By:	MA

WELL DATA

Well Depth (ft bls):	126'	Static Water Level (ft bmp):	Dry
Casing Diameter (in):	8"	Date/Time:	3/20/08 1440
Well Use:	INACTIVE DOMESTIC	Point of Measurement:	TOC
3 Casing Volumes:	NA	GPS:	12R 0606870 3469216
		Elevation:	4648

FIELD SAMPLING DATA

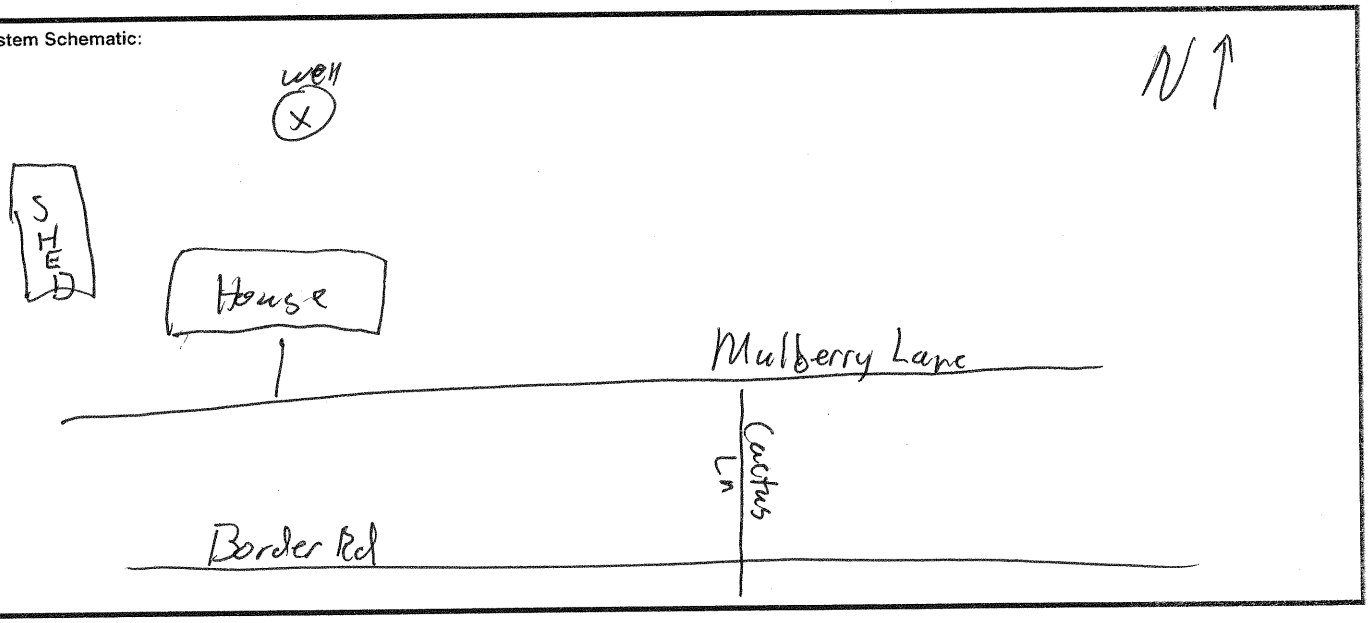
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: This well has no pump and is Dry

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	HECK	Date:	3-20-08
ADWR No.	507823	Weather:	CLEAR
Location:	2440 So. SUNSET ST. BISBEE, AZ 85603	Collected By:	MA

WELL DATA

Well Depth (ft bls):	313	Static Water Level (ft bmp):	OBSTRUCTION @ 232' btoc
Casing Diameter (in):	5"	Date/Time:	3/20/08 1800
Well Use:	INACTIVE DOMPSTIC	Point of Measurement:	TOC
3 Casing Volumes:	NA	GPS:	602054 3471115
		Elevation:	4726

FIELD SAMPLING DATA

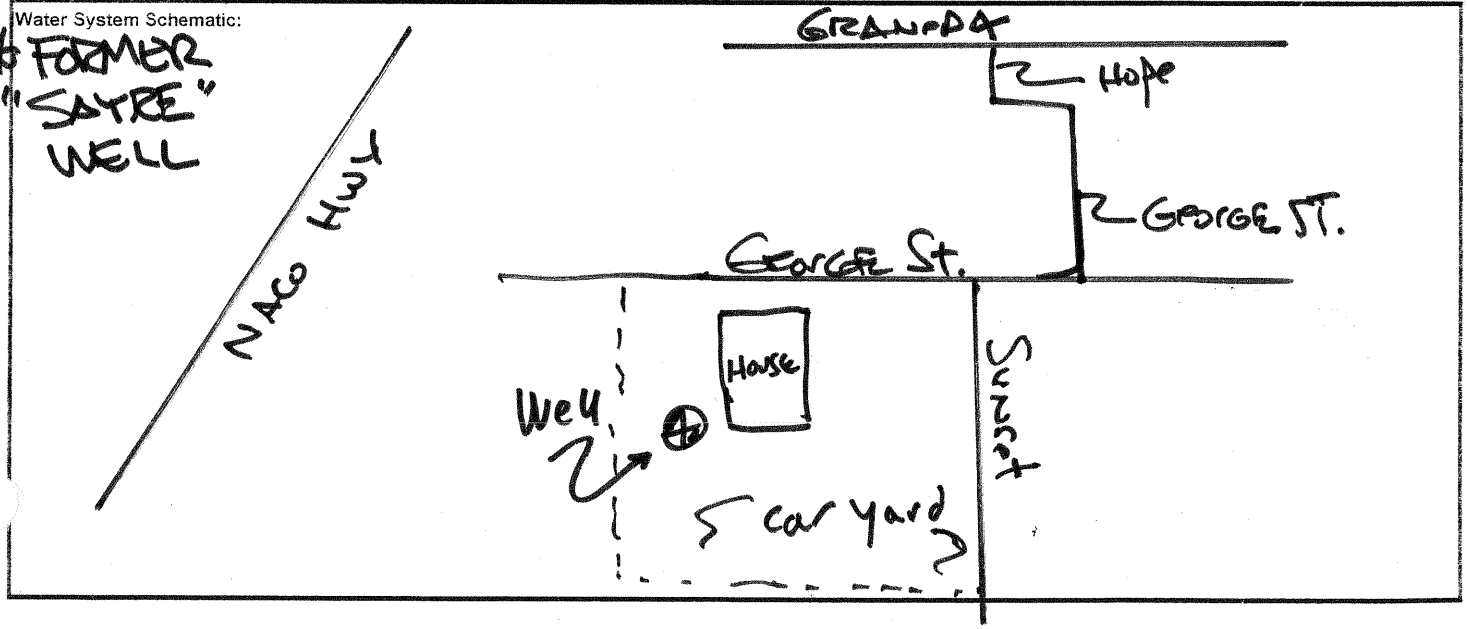
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: WELL NOT OPERATIONAL FOR YEARS ACCORDING TO OWNER: HAROLD HECK

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	HOBAN	Date:	2/27/08
ADWR No.	805290 805290	Weather:	sunny, breezy
Location:	1385 W. Purdy Lane	Collected By:	KW + MA

WELL DATA

Well Depth (ft bls):	316	Static Water Level (ft bmp):	163.05
Casing Diameter (in):	6	Date/Time:	2/27/08 11:09
Well Use:	domestic	Point of Measurement:	T.O.C.
3 Casing Volumes:	225gal x 3 = 675 gal	GPS:	WTM 346887 8 12R 0601706
	45 min	Elevation:	4588

FIELD SAMPLING DATA

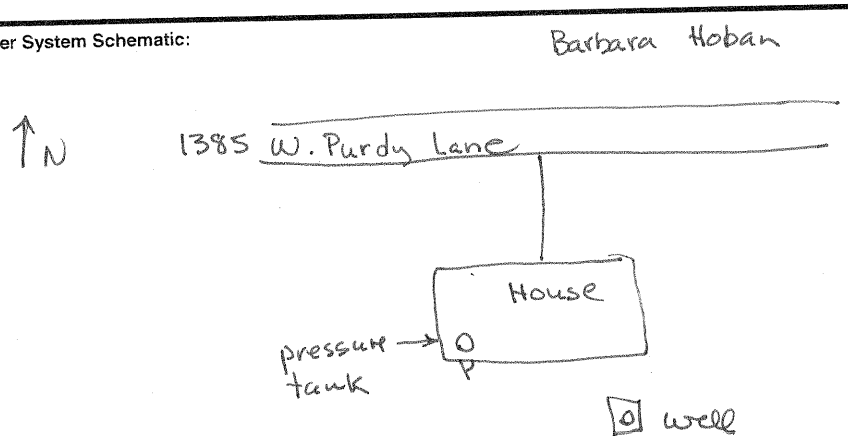
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
11:26	15	45	7.03	19.7	1317	clear	none	
11:31		120	7.00	21.4	1304	"	"	
11:36		195	6.99	21.7	1266	"	"	
11:41		270	7.03	21.5	1283	"	"	
11:46		345	6.98	21.9	1335	"	"	
11:51		420	7.00	21.9	1376	"	"	
11:56		495	6.92	22.2	1377	"	"	
12:01		570	6.94	22.1	1369	"	"	
12:06		645	6.93	22.2	1362	"	"	
12:11		720	6.93	22.1	1359			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
HOBAN	12:15	plastic	250	1	300.0	N	filtered

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	HOWARD	Date:	3-4-08
ADWR No.	No Record	Weather:	Sunny, Cool
Location:	3269 S. Naco Hwy	Collected By:	MA/KW

WELL DATA

Well Depth (ft bis):	est 200' per owner	Static Water Level (ft bmp):	150.10
Casing Diameter (in):	6"	Date/Time:	3-4-08
Well Use:	domestic	Point of Measurement:	TOC
3 Casing Volumes:	73.3 x 3 = 220	GPS:	601291 N 3468769 E
		Elevation:	4595

FIELD SAMPLING DATA

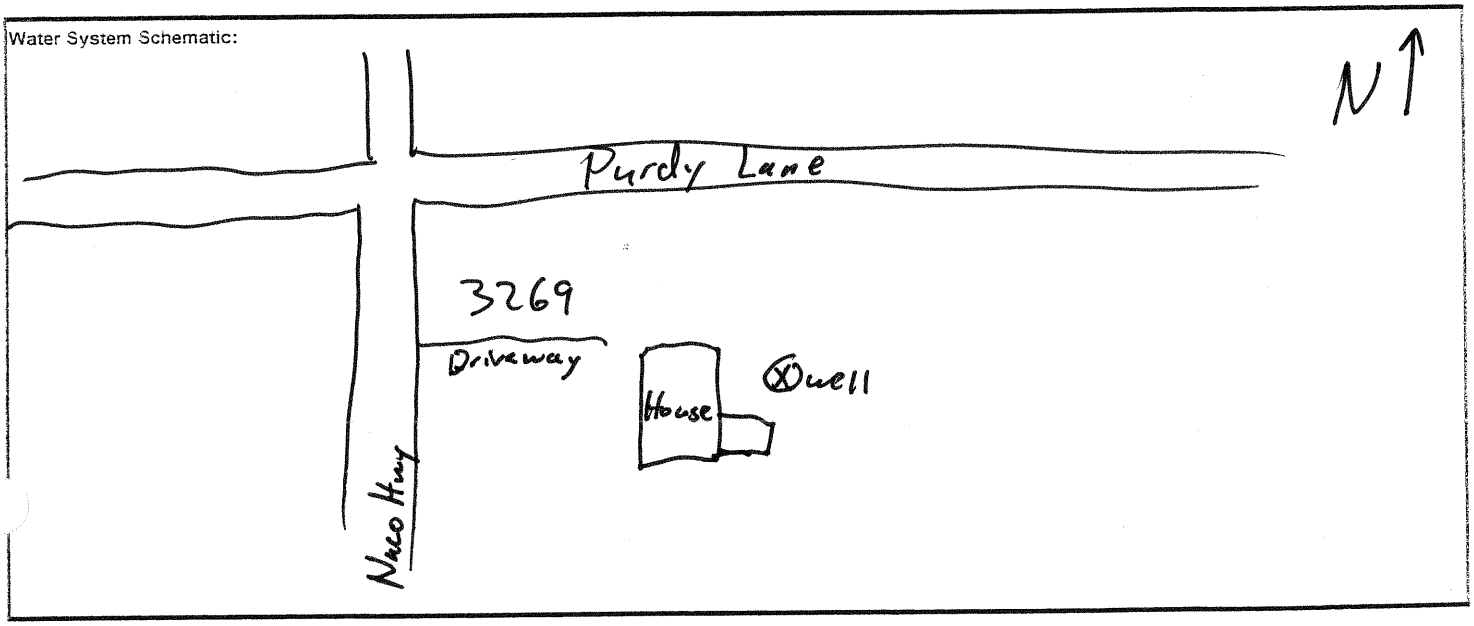
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
17:52	10	16	6.96	20.0	1258	Clear	No	
17:54	"	30	7.03	20.4	1199	"	"	
17:58	"	70	7.04	20.6	1267	"	"	
18:01	"	100	7.06	20.5	1288	"	"	
18:04	"	130	7.06	20.4	1280	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
HOWARD	18:10	Plastic	250	1	300.0	N	

Additional Comments: Receiving bottled water for drinking. Well is in regular use.

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	JALYN	Date:	2/12/08
ADWR No.	55 - 209737	Weather:	sunny
Location:	3273 Naco Hwy	Collected By:	KW - AP

WELL DATA

Well Depth (ft bls):	245	Static Water Level (ft bmp):	no W.L. due to obstruction @ 45'
Casing Diameter (in):	8	Date/Time:	2/12/08 10:50
Well Use:	unused, undev land; to be d.w. supply	Point of Measurement:	T.O.C
3 Casing Volumes:		GPS:	UTM 3468699 12R 0601449
		Elevation:	4527

FIELD SAMPLING DATA

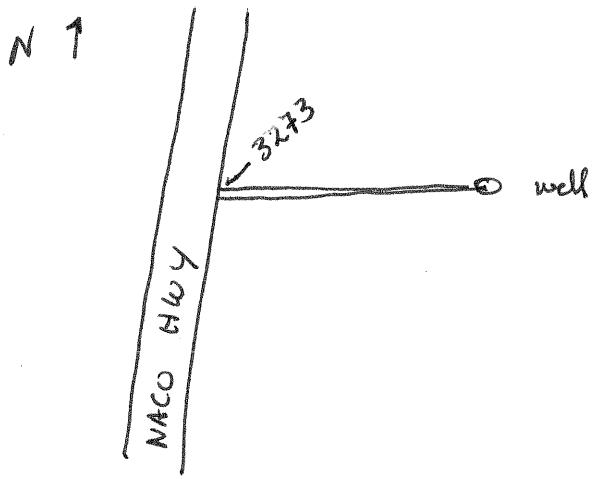
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: Well is on undeveloped land for sale by JALYN Associates. Will become drinking water supply well when land is developed. Well obstructed @ 45'.

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	~~209744~~ KEEFER	Date:	02/06/2008
ADWR No.	209744	Weather:	CLEAR
Location:	NACO, AZ	Collected By:	AP/MA

WELL DATA

Well Depth (ft bis):	250'	Static Water Level (ft bmp):	134.67
Casing Diameter (in):	NA	Date/Time:	02/06/2008
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	PURGED TILL STABILITY	GPS: UTM:	3468112 NR 0599881
		Elevation:	4567

FIELD SAMPLING DATA

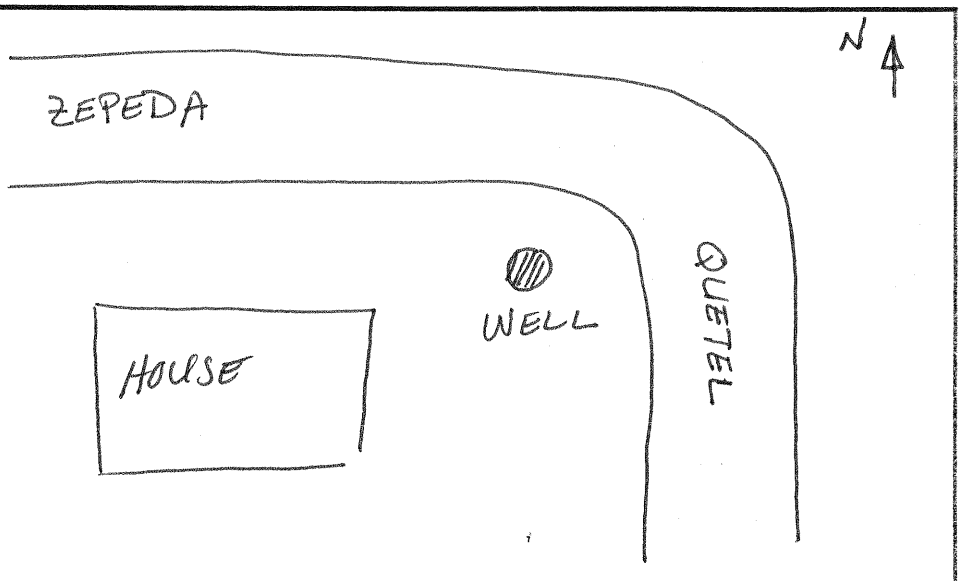
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
0946	14	14	6.75	12.5	396	Clear	None	open b.h at 845
0950	"	70	7.29	17.2	354	"	"	
0952	"		7.53	19.1	372	"	"	
0955	"		7.71	16.9	367	"	"	
0958	"		7.70	19.0	378	"	"	
							ap	
TOTAL		ap ~~GALL~~ DISCHARGE					= 288 G. 336	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
KEEFER	0900	Plastic	250	1	300.0	None	

Additional Comments: This is the only well on this property

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	MCCONNELL 265 Virgin	Date:	2/20/08
ADWR No.	55-539265	Weather:	Cloudy
Location:	1463 Purdy Lane Bisbee, AZ 85603	Collected By:	Ayrson / Thompson

WELL DATA

Well Depth (ft bls):	216	Static Water Level (ft bmp):	156.15
Casing Diameter (in):	6"	Date/Time:	2-20-08 / 13:15
Well Use:	Domestic (not currently in use)	Point of Measurement:	Top of Casing
3 Casing Volumes:	264 gal	GPS:	12R 0601463 UTM 3468844
		Elevation:	4604' AMSL

FIELD SAMPLING DATA

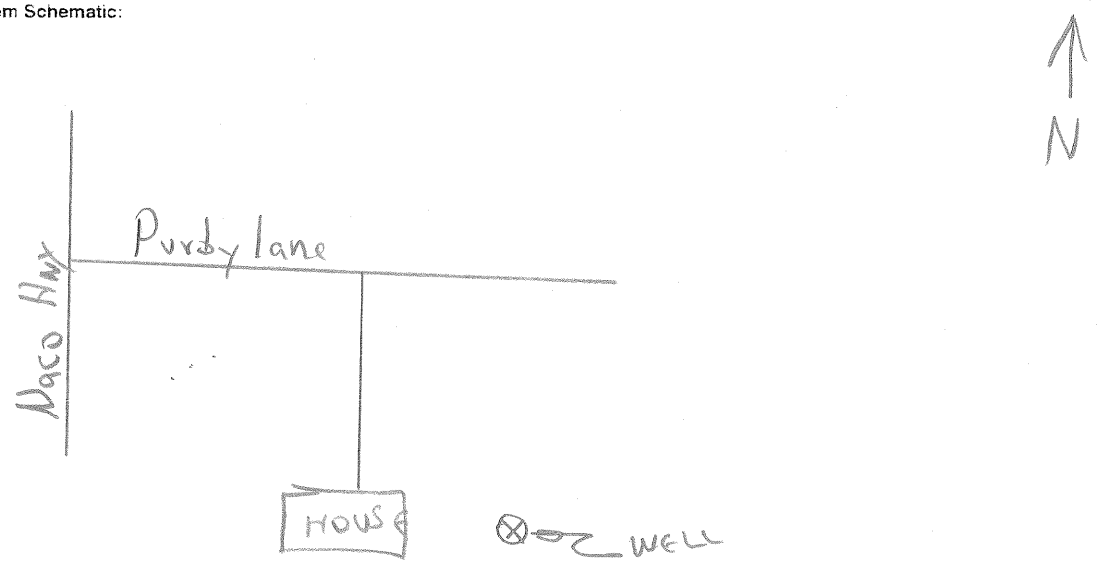
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1330	10	10	7.21	16.2	1424	Clear	None	ON at 1329
1333	10	40	7.26	19.7	1437	↓	↓	
1337	10	80	7.19	21.1	1435			
1343	10	140	7.21	21.1	1435	↓	↓	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
MCCONNELL 265	1350	Plastic	250	1	300.0	None	Filtered

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	McConnell 386 Russell	Date:	3/20/08
ADWR No.	55-590386	Weather:	clear
Location:	PURDY LANE, BISBEE	Collected By:	MA

WELL DATA

Well Depth (ft bls):	NO DATA *	Static Water Level (ft bmp):	NA
Casing Diameter (in):	NO DATA *	Date/Time:	3/20/08 1435
Well Use:	DOMESTIC	Point of Measurement:	
3 Casing Volumes:	NA	GPS:	12R 0601461 3468917
		Elevation:	4602

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

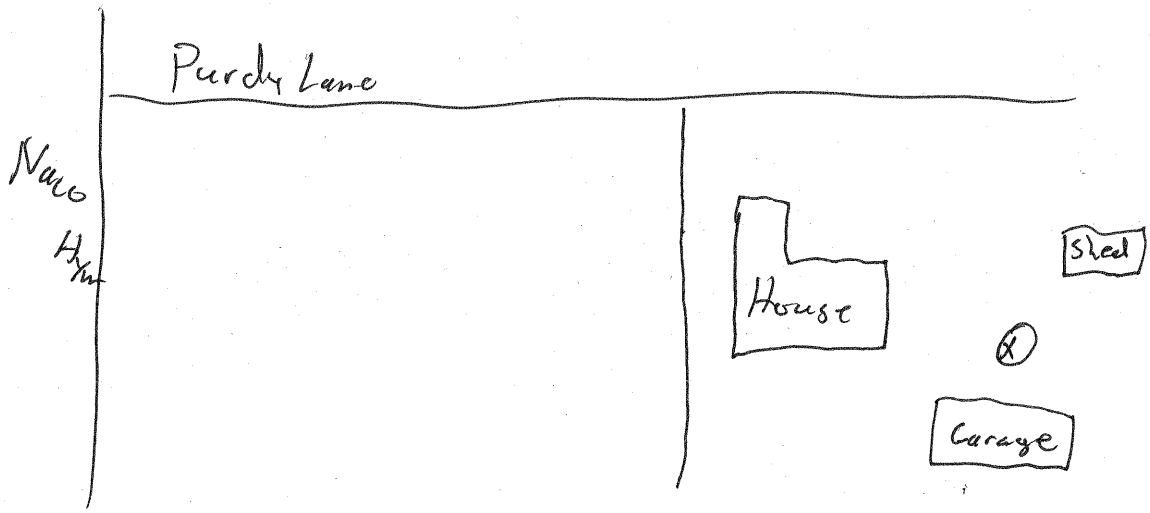
SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: This well is dismantled

* NO ADWR DRILLER INSTALLATION REPORT

Water System Schematic:



V. McConnell

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	MENDEZ	Date:	2/11/08
ADWR No.	55-650256	Weather:	breezy, sunny
Location:	3757 S. Towne ~~Send~~ NW NACO	Collected By:	AP/KW

WELL DATA

Well Depth (ft bls):	160	Static Water Level (ft bmp):	dry ~~160~~ap
Casing Diameter (in):	NA	Date/Time:	2/11/08 16:40
Well Use:	none, on city water	Point of Measurement:	—
3 Casing Volumes:	—	GPS: UTM:	3467478 12R 0600076
		Elevation:	4629(ft.)

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: Sent probe to 160 - no water

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	~~Olivarria~~ (Metzler)	Date:	03-05-08
ADWR No.	35-71891 no 55 reg #	Weather:	sunny breezy cool
Location:	2313 Sunflower St Bisbee (SJ area)	Collected By:	MA + KW

WELL DATA

Well Depth (ft bls):	351	Static Water Level (ft bmp):	288.30
Casing Diameter (in):	6	Date/Time:	03.05.08 9:10
Well Use:	domestic	Point of Measurement:	T.O.C
3 Casing Volumes:	92.5 gal x 3 = 277.6	GPS:	12R 0602094 WTM 3471380
yard is flooding - parameters stable		Elevation:	4733

FIELD SAMPLING DATA

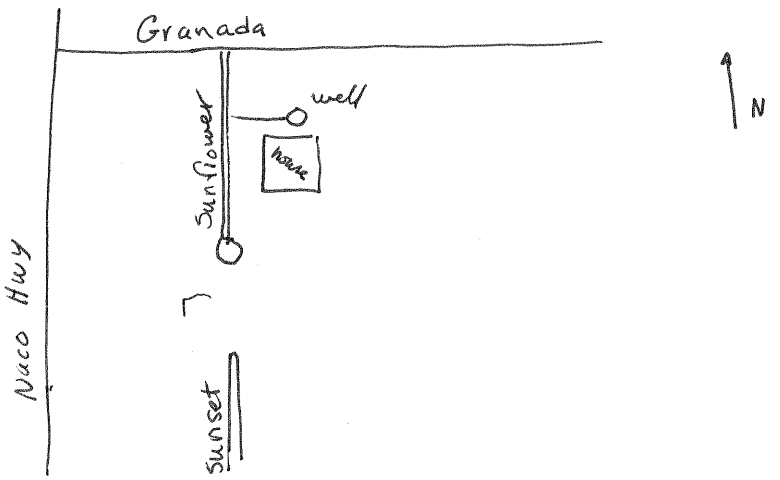
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
9:34	5	0	7.26	19.2	1046	clear	none	
9:39	"	25	7.25	21.0	1071	"	"	
9:44	"	50	7.26	21.5	1058	"	"	
9:49	"	75	7.25	21.9	1063	"	"	
9:54	"	100	7.27	21.5	1055	"	"	
9:59	"	125	7.26	21.7	1071	"	"	
10:04	"	150	7.27	21.6	1055			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
METZLER	10:10	plastic	250	1	300.0	N	

Additional Comments: D-24-24-5 dbb 35-71891 Metzler & Olivarria residence. Well used well by several family members. Parameters Stable, yard flooding

Water System Schematic:



Sunset + Sunflower do not connect to one another but are N-S extensions

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Freeport CQB

Project No.	8720000/2.2	Client:	~~PHELPS DODGE COPPER QUEEN BRANCH~~
Well ID:	MILLER 340	Date:	5-19-08
ADWR No.		Weather:	clear
Location:	3029 Miller Ranch Rd. Naco, AZ	Collected By:	MA

WELL DATA

Well Depth (ft bls):		Static Water Level (ft bmp):	
Casing Diameter (in):		Date/Time:	5-19-08 15:26
Well Use:		Point of Measurement:	NA
3 Casing Volumes:		GPS:	12R 600133 3469489
		Elevation:	4604

FIELD SAMPLING DATA

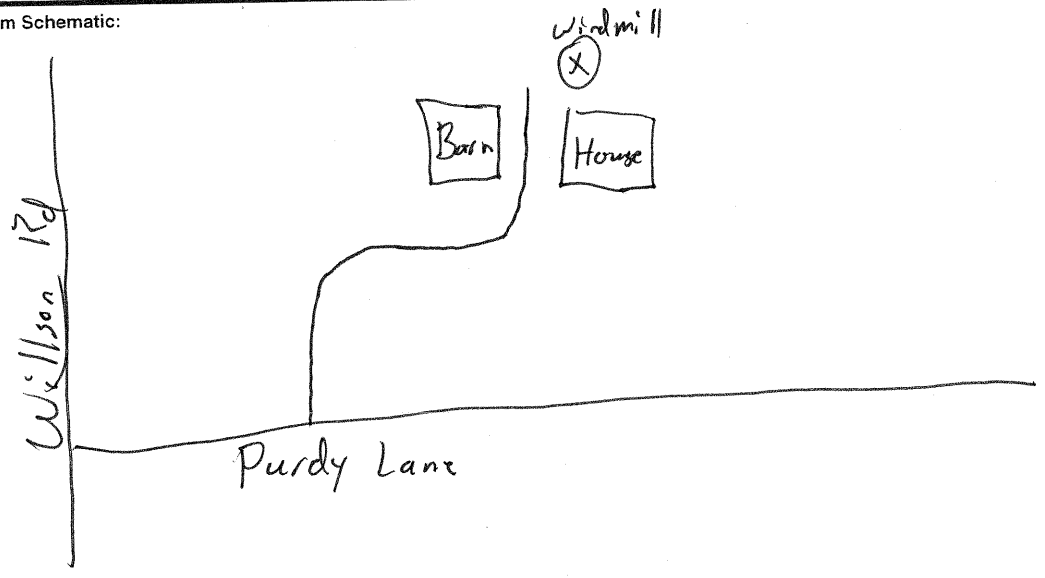
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: No Access for water level measure. This well is not operational
~~Monthly Sulfate Trend Analysis~~ NA

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	MILLER - 341	Date:	2/28/08
ADWR No.	641341	Weather:	sunny
Location:	D. 24-24-17 cda	Collected By:	KW + MA

WELL DATA

Well Depth (ft bls):	100 *	Static Water Level (ft bmp):	cannot access.
Casing Diameter (in):		Date/Time:	Mr Miller says it's dry
Well Use:	stock	Point of Measurement:	—
3 Casing Volumes:	—	GPS:	12R 0601878 x UTM 3467724
		Elevation:	4586

FIELD SAMPLING DATA

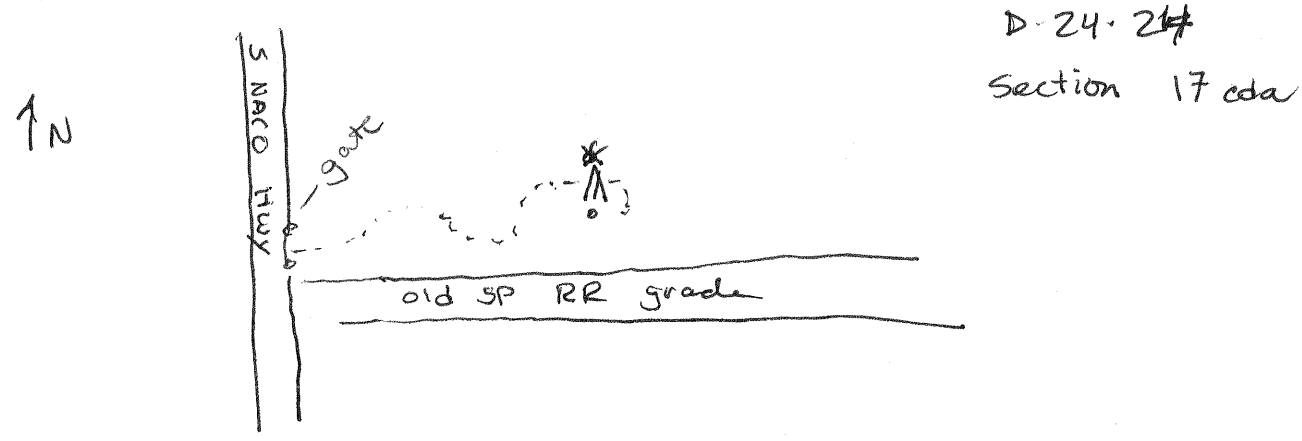
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
None							

Additional Comments: * Mr Miller thinks it's 90' instead of 100' maybe

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	PHELPS DODGE COPPER QUEEN BRANCH
ell ID:	MILLER 342	Date:	5-19-08
ADWR No.		Weather:	Clear
Location:		Collected By:	MA

WELL DATA

Well Depth (ft bls):		Static Water Level (ft bmp):	No Access
Casing Diameter (in):		Date/Time:	5-19-08 14:45
Well Use:		Point of Measurement:	
3 Casing Volumes:		GPS:	12R 604427 3467525
		Elevation:	4626

FIELD SAMPLING DATA

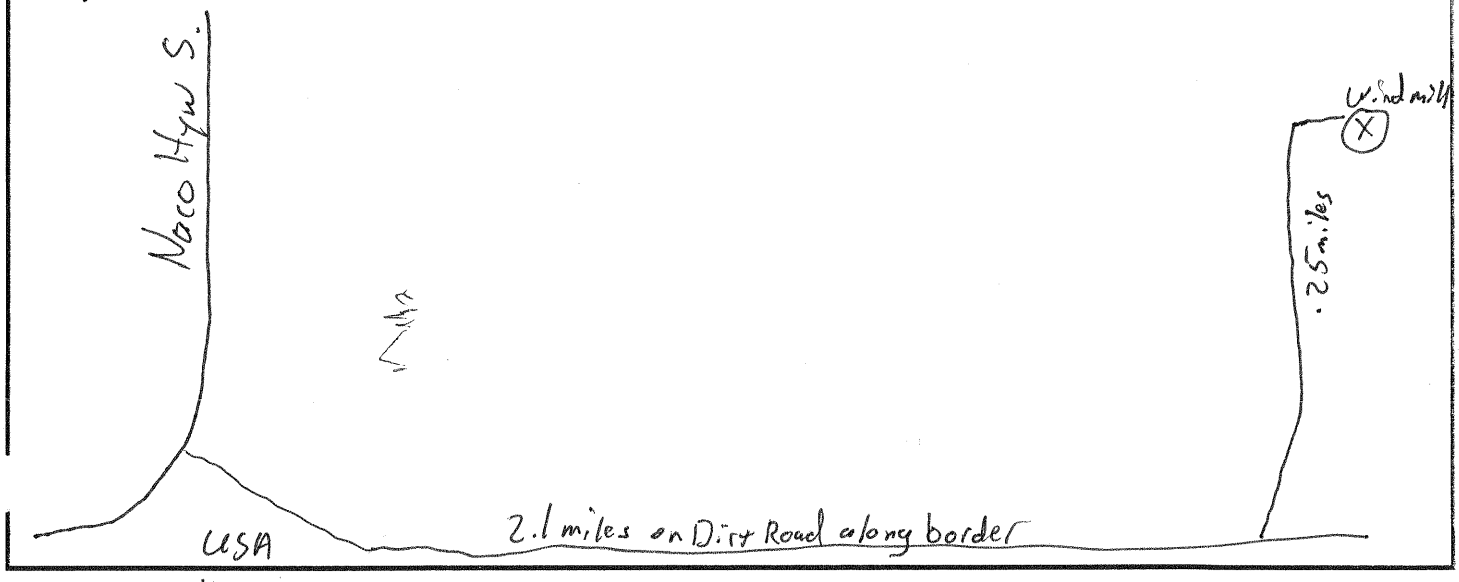
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: This well is not operational and has no access for water level measurement

Water System Schematic:



HYDRO GEO CHEM, INC. NOW 3/25/08 MINOR 316 / MINOR 317

Groundwater Sampling Form

Project No.	MINOR 8720001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	~~HALL~~ (South) D' Autremont	Date:	2/12/08
ADWR No.	55-633317 / 633316	Weather:	Sunny, warm
Location:	Intersection of Naco Hwy + D'Autremont Box # 322; just south of 3352 S. Naco Hwy	Collected By:	AP / KW

WELL DATA

Well Depth (ft bls):	155'	Static Water Level (ft bmp):	135.30
Casing Diameter (in):	6"	Date/Time:	2/12/08 11:30
Well Use:	UNUSED	Point of Measurement:	TOC
3 Casing Volumes:		GPS:	UTM 3468481 12R 0601171
		Elevation:	4569

FIELD SAMPLING DATA

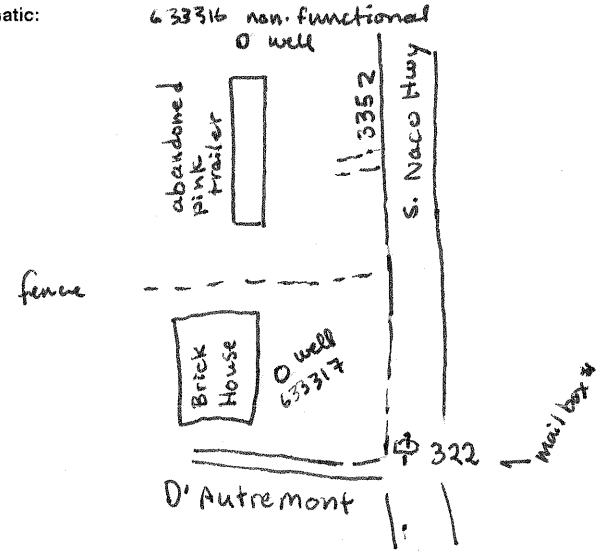
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: Attempted to obtain spc w/ bailer w/o success. Water is very dirty and maybe only a little in bottom of well.

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	Moore	Date:	2-20-08
ADWR No.	55-538847	Weather:	Clear
Location:	3606 Wilson Road Naco, AZ	Collected By:	Arneson / Thompson

WELL DATA

Well Depth (ft bls):	220	Static Water Level (ft bmp):	6/26/92 = 125' btoc (historic)
Casing Diameter (in):	6	Date/Time:	2-20-08 / N/A
Well Use:	Domestic Supply	Point of Measurement:	Top of Casing
3 Casing Volumes:	419 gallons	GPS:	12R 0549560 UTM 3467945
		Elevation:	4574 AMSL

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1023	6	6	7.18	21.6	371	Clear	None	Pump on at 1022
1024	6	1230	7.46	22.8	360	↓	↓	
1027	6	~~24~~	7.58	22.3	358			
1031	6	~~54~~ OK	7.65	22.2	363			
1035	6	~~78~~ OK	7.71	22.3	365			
1040	6	~~108~~ OK	7.69	22.2	362	↓	↓	

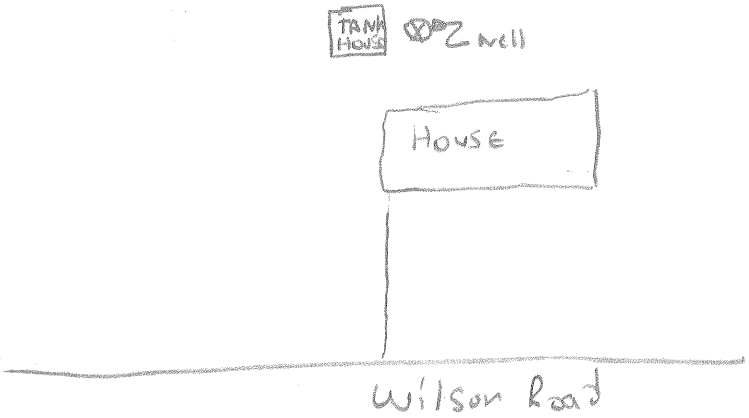
SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
Moore	1045	Plastic	250ml	1	300.0	None	

Additional Comments: Unable to Sound well, Sounder part to narrow. WL was taken in 1992 and posted on well control box

Water System Schematic:

Well is about 40' in back of main house



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	87 2001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	NOTEMAN	Date:	02/05/2008
ADWR No.	212483	Weather:	CLEAR
Location:	Arizona St., Bisbee Junction	Collected By:	AP/MA

WELL DATA

Well Depth (ft bls):	470	Static Water Level (ft bmp):	330 (12-30-07)
Casing Diameter (in):	5	Date/Time:	02/05/2008
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	143 X 3 = 429 G 429 ÷ 10 = 43 min	GPS: UTM:	3471575 12 R 0606045
		Elevation:	

FIELD SAMPLING DATA

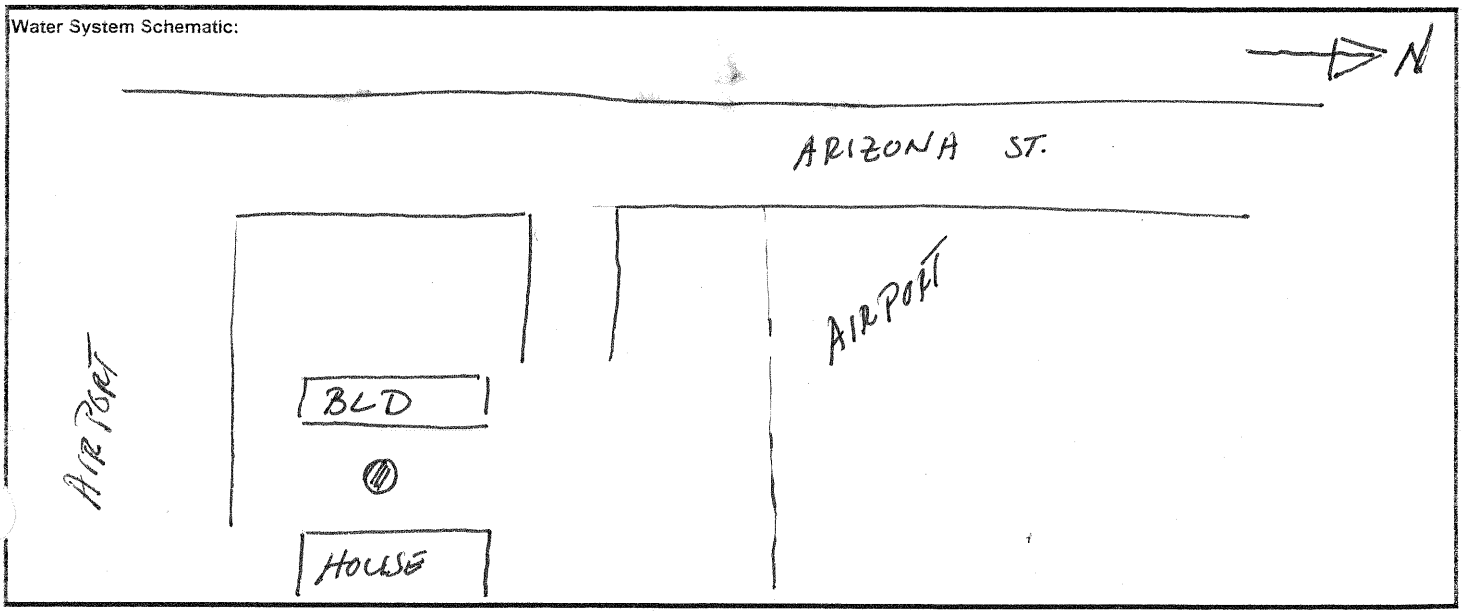
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1155	10		6.74	12.2	1311	CLEAR	N	—
1200	"		6.71	19.9	1323			
1205	"		6.70	18.9	1307			
1210	"		6.70	19.9	1317			
TOTAL DISCHARGE = 200 G.								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
NOTEMAN	1215	PLASTIC	250	1	300	N	

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	Osborn	Date:	02/25/08
ADWR No.	643436	Weather:	Sunny, windy
Location:	2429 S. Swan Rd Bb AZ	Collected By:	MA + KW

WELL DATA

Well Depth (ft bls):	258	Static Water Level (ft bmp):	obstructed @ 5.5'
Casing Diameter (in):	8	Date/Time:	02/25/07 14:05
Well Use:	domestic	Point of Measurement:	~~obstructed @ 5.5~~ TOC
3 Casing Volumes:	est 73 x 221	GPS:	UTM 347 0274 12R 0607030
		Elevation:	4712

FIELD SAMPLING DATA

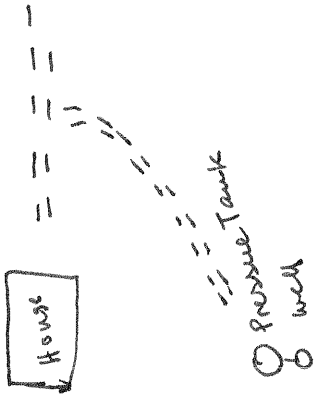
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
14:12	10	10	7.07	21.8	508	none	none	
14:15	10	40	7.31	22.2	506	"	"	
14:18	10	70	7.34	22.2	512	"	"	
14:21	10	100	7.34	22.5	510	"	"	
14:24	10	130	7.36	22.4	508	"	"	
14:27	10	160	7.35	22.4	508	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
OSBORNE	14.30	Plastic	125/250/250	3	300.0	Y/N/N	

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	PALMER	Date:	2-14-08
ADWR No.	55-578819	Weather:	windy + sunny
Location:	D-24-24-12 cbc off Beechcraft Rd	Collected By:	KW + AP

WELL DATA

Well Depth (ft bls):	220	Static Water Level (ft bmp):	cannot access
Casing Diameter (in):	6	Date/Time:	2-14-08 13:20
Well Use:	domestic	Point of Measurement:	—
3 Casing Volumes:	THE SAMPLE WAS TAKEN FROM THE TANK.	GPS:	UTM 3469485 12R 0607775
		Elevation:	4652

FIELD SAMPLING DATA

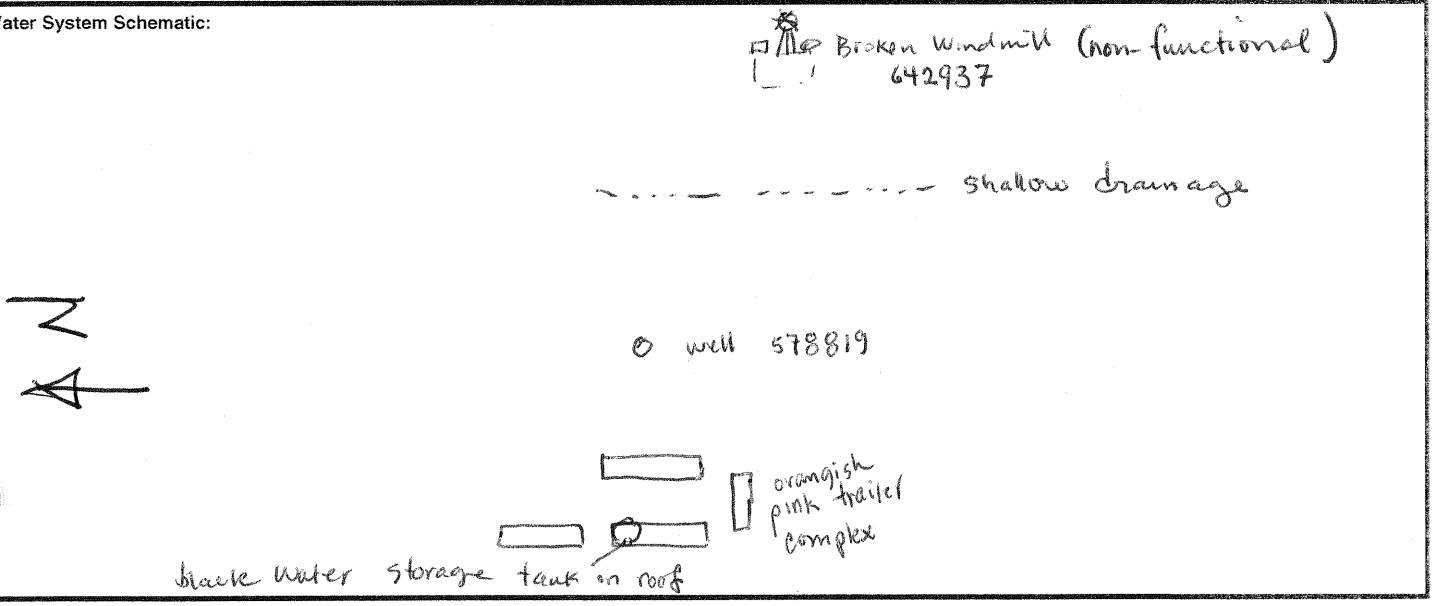
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
13:40	—	NA	7.91	17.5	435	none	none	composite spl

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
PALMER 819	13:50	plastic	125/250/500	3	300.0	Y/N/N	composite from tank

Additional Comments: Note we are running full suite on water from 578819 because 642937 stated to be regional GWM well is non-functional. 578819 may lie on or outside 1 mile radius based on topography

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	PANAGAKOS	Date:	4-21-08
ADWR No.	35-76413	Weather:	Clear
Location:	500 Purdy Lane	Collected By:	MA

WELL DATA

Well Depth (ft bls):	200'	Static Water Level (ft bmp):	No Access
Casing Diameter (in):	8"	Date/Time:	4-21-08 / 8:40
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	NA	GPS:	3469317 12R 0605307
		Elevation:	4694

FIELD SAMPLING DATA

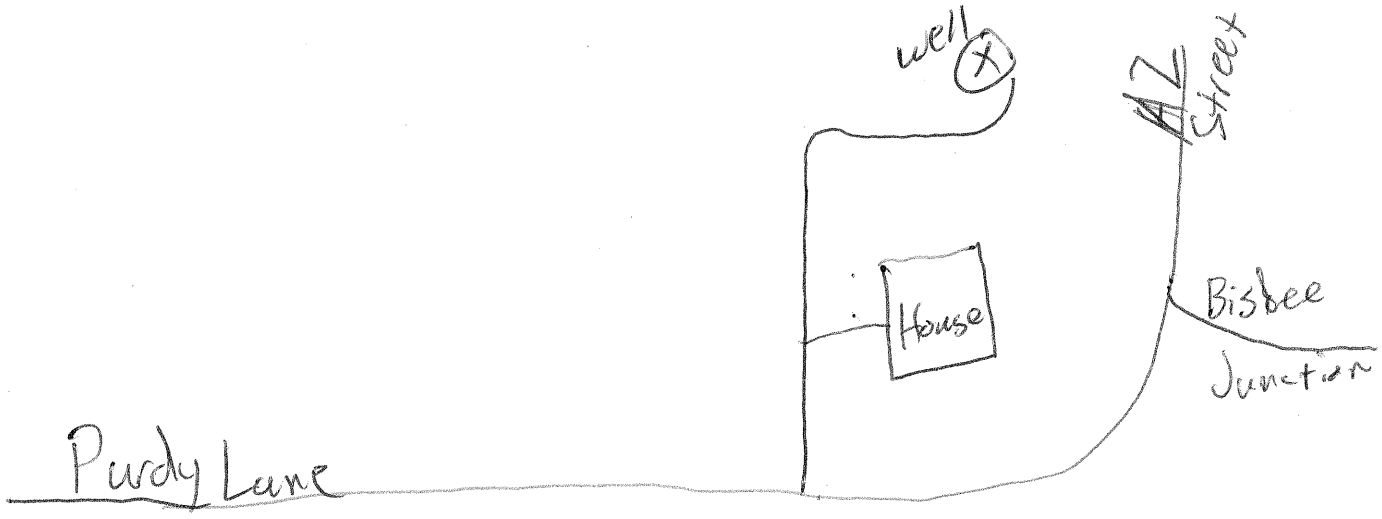
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
9:01	4gpm	4	6.73	20.5	1226	Clear	None	Open bib at 9:00
9:04	"	16	6.77	20.6	1235	"	"	Pump is on
9:07	"	28	6.79	20.5	1236	"	"	
9:10	"	40	6.79	20.5	1232	"	"	
9:13	"	52	6.80	20.5	1228	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
PANAGAKOS	9:15	Plastic	250ml	1	300.0	None	Filtered

Additional Comments: Pump cycled twice during purge, and was running upon arrival

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	PARRA	Date:	02/11/2008
ADWR No.	576415	Weather:	CLEAR
Location:	2356 S. HOPE, NACO HWY	Collected By:	AP / KW

WELL DATA

Well Depth (ft bls):	355'	Static Water Level (ft bmp):	263' from 1999
Casing Diameter (in):	6"	Date/Time:	02/11/2008
Well Use:	DOMESTIC	Point of Measurement:	TOC
3 Casing Volumes:	135X3 = 405 ÷ 10 = 40 min	GPS: UTM:	3471261 12 R 0602170
		Elevation:	4726(ft)

FIELD SAMPLING DATA

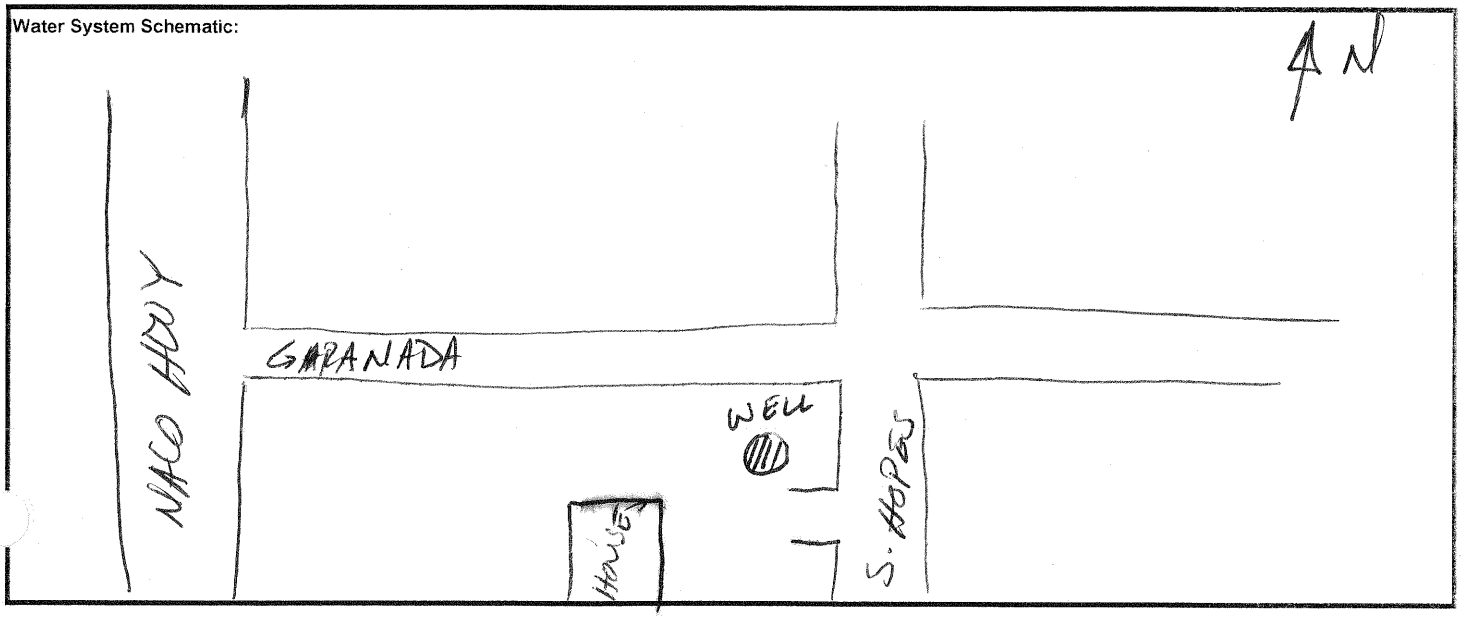
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1257	10		7.47	34.3	1090	CLEAR	N	
0102 pm	"		7.09	24.1	1063	"	"	
0107 pm	"		7.10	22.1	1063	"	"	
01:12 pm	"		7.12	21.6	1064	"	"	
01:17 PM	"		7.11	21.7	1062	"	"	
01:23 pm	"		7.08	21.8	1067	"	"	
	TOTAL DISCHARGE = 260							

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
PARRA	1330	PLASTIC	125/250 500	3	300.0	Y/N/N	N

Additional Comments: THE SAMPLES WERE COLLECTED AT 1330 DUE TO THE STABLE PARAMETERS AND THE PROPERTY WAS FLOATED.

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	PIONKE	Date:	02/05/2008
ADWR No.	613395	Weather:	CLEAR
Location:	1633 Purdy Lane Off Purdy Lane West of Naco Hwy	Collected By:	AP/MA

WELL DATA

Well Depth (ft bls):	330'	Static Water Level (ft bmp):	NA
Casing Diameter (in):	8"	Date/Time:	02/05/2008
Well Use:	DOMESTIC	Point of Measurement:	—
3 Casing Volumes:	PURGED TILL STABLE	GPS: UTM:	3468956 12R 0601048
		Elevation:	4592

FIELD SAMPLING DATA

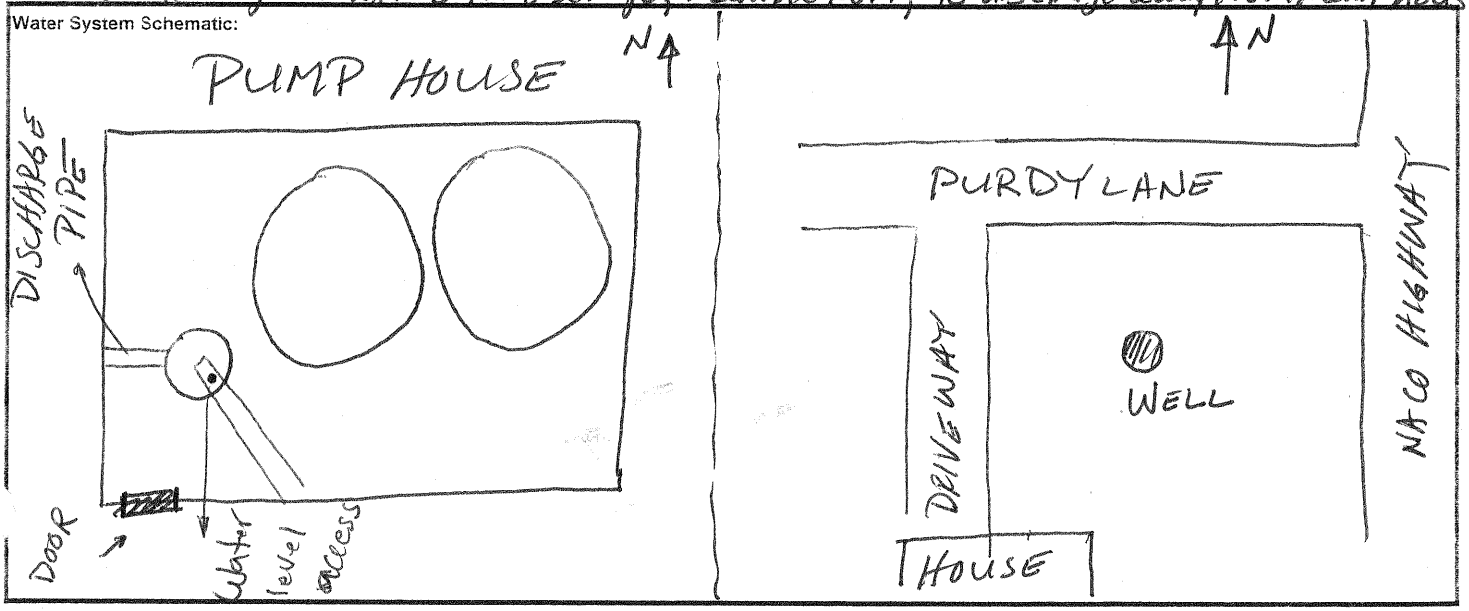
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
0955	15		7.38	15	1096	CLEAR	N	—
1000	"		7.40	19.7	936	"	"	—
1005	"		7.41	20.2	1015	"	"	—
1007	"		7.45	18.9	991	"	"	—
1010	"		7.45	19.9	904	"	"	—
1012	"		7.47	19.7	964	"	"	—
1015	"		7.53	19.9	910	"	"	—
TOTAL DISCHARGE = 330 G.								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
PIONKE	1017	PLASTIC	500	1	300.0	N	

Additional Comments: Cannot obtain W/L as the plug on well head is covered by discharge pipe. This site requires the use of 1½" pipe reduced down for garden hose at the discharge, or sample port, to discharge away from pump house.

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	POOL	Date:	2/20/03
ADWR No.	~~55-579508~~ 509518	Weather:	Cloudy, Windy
Location:	2831 Willson Rd Naco, AZ 85603	Collected By:	Arnason

WELL DATA

Well Depth (ft bls):	313	Static Water Level (ft bmp):	204.22
Casing Diameter (in):	6"	Date/Time:	2-20-03 / 14:15
Well Use:	Domestic Supply	Point of Measurement:	Top of Casing
3 Casing Volumes:	479 Gal.	GPS:	12R 0599682 UTM 3478015
		Elevation:	4630' AMSL

FIELD SAMPLING DATA

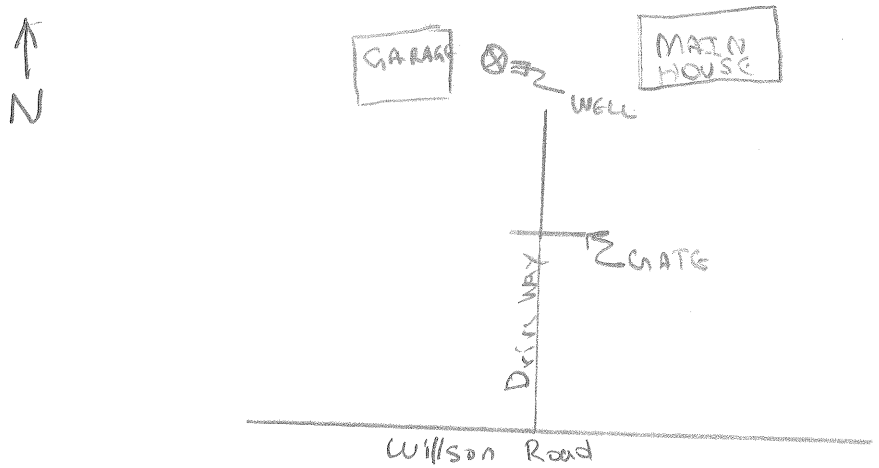
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1430	12	12	7.96	20.8	496	Clear	None	OPENED Bibb 1429
1433	12	48	7.95	20.9	496	↓	↓	
1438	12	108	8.16	20.6	492			
1441	12	144	8.01	20.8	497			
1446	12	204	7.95	20.9	497			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
POOL	1450	Plastic	250ml	1	300.1	None	SO_4

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	POWER	Date:	12 FEB 08
ADWR No.	55-624535	Weather:	sunny
Location:	1769 Gold Gulch Rd	Collected By:	KW / AP

WELL DATA

Well Depth (ft bls):	100	Static Water Level (ft bmp):	42.30
Casing Diameter (in):	7	Date/Time:	12 FEB 08 8:51
Well Use:	domestic	Point of Measurement:	TOC
3 Casing Volumes:	115 x 3 = 346 g	GPS:	UTM 3472737 12R 0608377
25gpm	13.84	Elevation:	4857

FIELD SAMPLING DATA

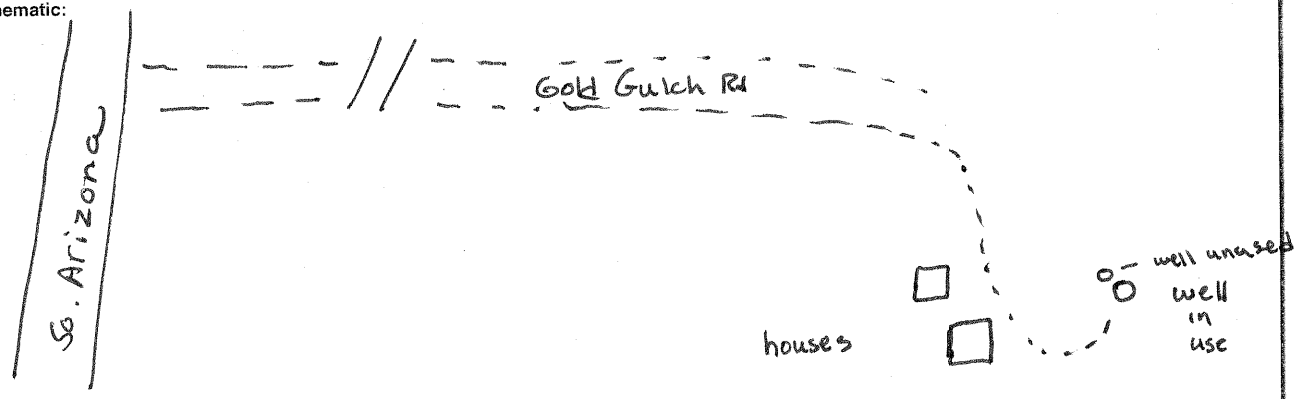
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
8:57	25		6.90	11.8	418	clear	none	
9:01	"		6.87	19.4	452	"	"	
9:05	"		6.94	20.3	433	"	"	
9:09	"		7.01	20.4	424	"	"	
9:13	*slowed		7.07	15.1	432	"	"	
9:16	25		7.11	18.9	428	"	"	
	TOTAL DISCHARGE =		16 minutes	X 25 =	400 GLS.			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
POWER	9:20	plastic	125/250/500	3	300.0	Y/N/N	

Additional Comments: 9:13 discharge rate slowed suddenly; then resumed by 9:16 – THE TOTAL TIME FOR DISCHARGE IS 16 min.

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	55-216425	Date:	2-4-08
ADWR No.	RAMIREZ	Weather:	WINDY - CLOUDY
Location:	Dominguez St. Naco, AZ	Collected By:	~~AP/MA~~

WELL DATA

Well Depth (ft bls):	300'	Static Water Level (ft bmp):	NA
Casing Diameter (in):	~~6"~~ 6"	Date/Time:	02/04/2008
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	PURGE FOR STABILITY	GPS:	UTM: 3467586 12 R 05-99731
		Elevation:	4594 ft

FIELD SAMPLING DATA

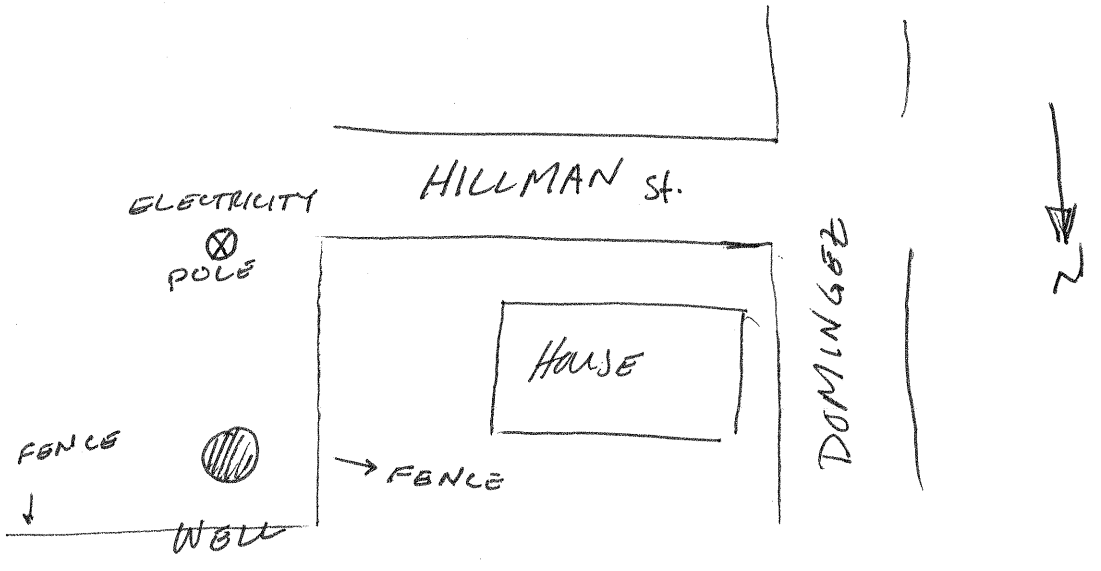
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
10:35	10	20	7.32	19.0	398	CLEAR	N	—
10:40	"	70	7.44	21.0	399	"	"	—
10:45	"	120	7.46	21.8	408	"	"	—
10:50	"	170	7.48	20.7	403	"	"	—
10:55	"	230	7.47	21.7	408	"	"	—

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
RAMIREZ	11:00	PLASTIC	250	1	300-0	N	

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
ell ID:	RAY	Date:	15 Feb 08
ADWR No.	803772	Weather:	RAIN
Location:	648 E MULBERRY LN	Collected By:	KW & AP

WELL DATA

Well Depth (ft bls):	100'	Static Water Level (ft bmp):	40.85
Casing Diameter (in):	8"	Date/Time:	15 Feb 08 9:48
Well Use:	domestic	Point of Measurement:	TOC
3 Casing Volumes:	154 x 3 = 462	GPS:	47M 3469200 IRR 0607083
		Elevation:	4652

FIELD SAMPLING DATA

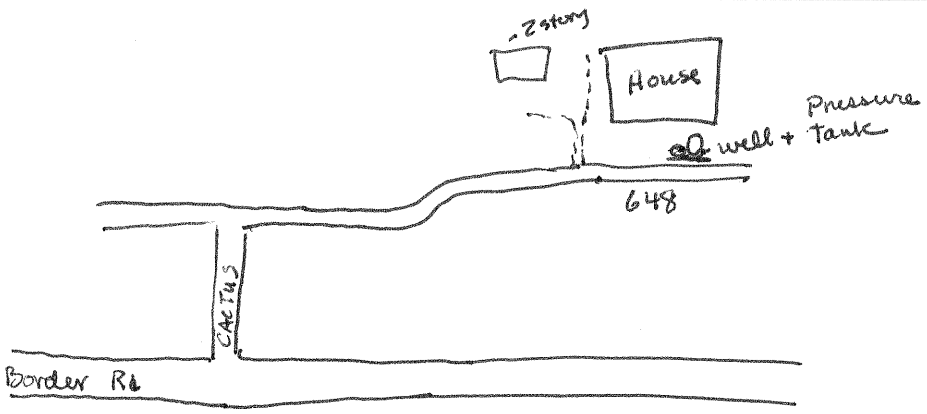
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
10:00	10	0	7.28	14.3	1587	clear	none	v. few flakes of rust
10:04	"	40	7.30	18.7	1609	"	"	"
10:10	"	100	7.31	17.9	1586	"	"	clear
10:14	"	140	7.33	19.1	1558	"	"	"
10:19	"	190	7.33	18.8	1556	"	"	"
10:24	"	240	7.30	19.1	1540	"	"	few rusty flakes

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
RAY	10:30	plastic	250	1	300.0	NO	

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	RODRIGUEZ	Date:	2-14-08
ADWR No.	55-648360	Weather:	very windy, sunny
Location:	3773 S. Rodriguez Ave	Collected By:	AP + KW

WELL DATA

Well Depth (ft bls):	approx. 200	Static Water Level (ft bmp):	dry
Casing Diameter (in):	unknown	Date/Time:	2-14-08
Well Use:	not in use	Point of Measurement:	TOC
3 Casing Volumes:		GPS:	UTM 3467447 12R 0599965
		Elevation:	4593

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: Well no longer in use. Dry; feels about 200' deep. ADWR has no data other than reg # & drilled ~50 yrs ago

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720010	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	ROGERS 803	Date:	2-7-08
ADWR No.	641803	Weather:	Clear
Location:	Mule Deer Rd Naco, AZ	Collected By:	AP/MA

WELL DATA

Well Depth (ft bls):	300'	Static Water Level (ft bmp):	129.85
Casing Diameter (in):	6"	Date/Time:	2-7-08
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	250x3=750	GPS:	3468416 12R 600980
		Elevation:	4566

FIELD SAMPLING DATA

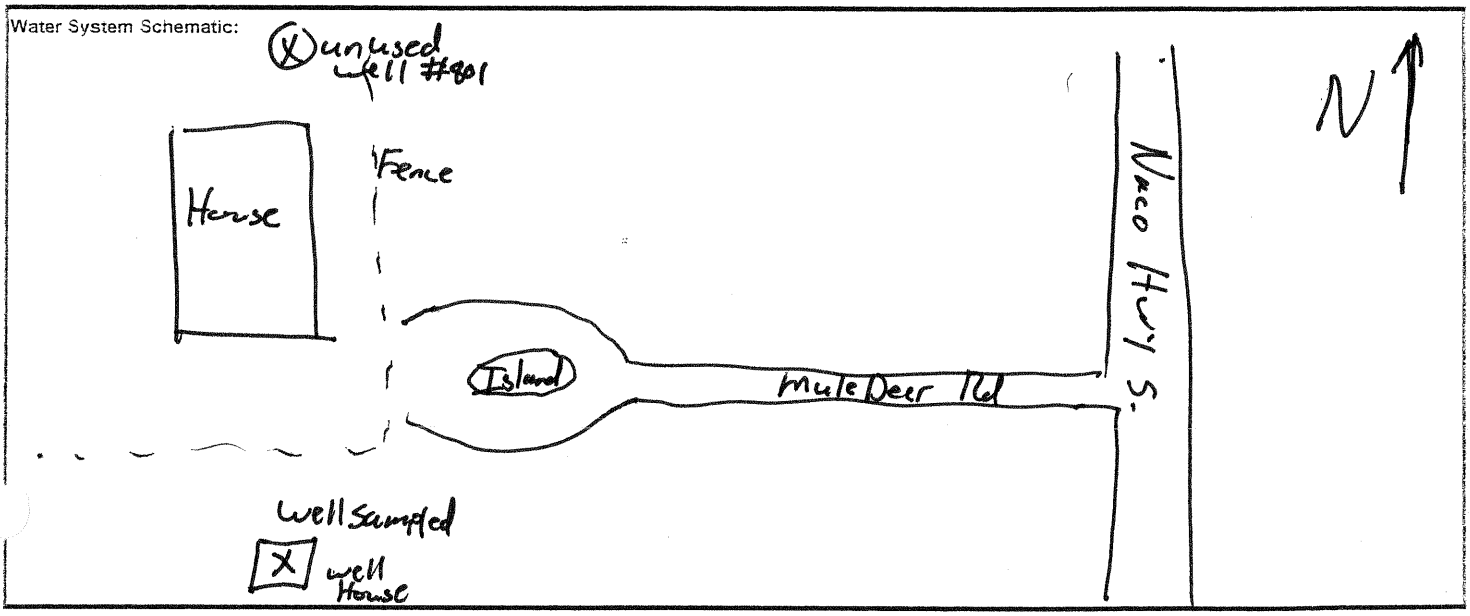
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1358	10		7.34	17.4	451	Clear	No	
1400	"		7.41	17.1	448	"	"	
1403	"		7.52	17.9	443	"	"	
1408	"		7.58	19.0	443	"	"	
1413	"		7.53	19.5	449	"	"	
1418	"		7.52	19.8	455	"	"	
		Total Discharge 200 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
ROGERS 803	14:20	Plast.	250ml	1	300.0	N	

Additional Comments: Could not purge for full 75 min as the yard is flooding

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000	Client:	FMI Sierrita Operations
Phase No.	2.2	Date:	3-20-08
Well ID:	ROGERS 803	Weather:	Clear
ADWR No.	55-641803	Collected By:	MA

WELL DATA

Well Depth (ft bls):	140'	Time:	7:30
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	129.85' (2-7-08)	GPS:	UTM 3468416 12R 0600980
1 Casing Volume (gals):	14.6	Elevation:	4566
3 Casing Volumes (gals):	44.0		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
0736	5	5	7.08	13.6	600	None	None	Open b.BE 735
0738	5	45	7.31	16.6	590			
0740	5	75	7.39	18.4	601			
0742	5	105	7.44	18.5	602			
0744	5	135	7.45	18.6	601			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Rogers 803	0745	Plastic	125/250ml	2	EPA 300.0	NO3/None	Filtered
ROGERS 803	0745	Plastic	250/~~500~~ml	1	EPA 300.0	None	Unfiltered

Additional Comments: RESAMPLE FOR FULL SUITE

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	87-2001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	ROGERS E	Date:	02/04/2008
ADWR No.	55-216018	Weather:	WINDY - CLEAR
Location:	Dominguez / Rogers St. Naco, AZ	Collected By:	ALI / MARK A

WELL DATA

Well Depth (ft bls):	285	Static Water Level (ft bmp):	NM (OBSTRUCTION)
Casing Diameter (in):	8"	Date/Time:	02/04/2008 / 9:00 AM
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	365x3 = 1096	GPS:	UTM: 3467634 E: 0600464
@ 15 gpm = 73 min purge		Elevation:	4607 (ft)

FIELD SAMPLING DATA

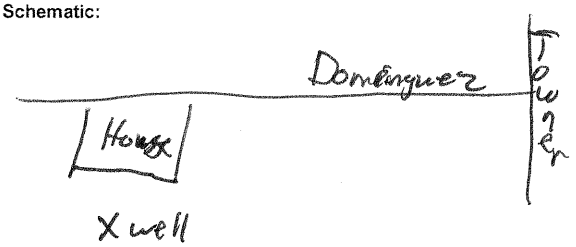
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
0915	15		7.30	20.2	434	CLEAR	N	
0918	"		7.35	19.9	432	"	"	
0925	"		7.33	20.4	436	"	"	
0930	"		7.40	20.9	436	"	"	
0935	"		7.40	21.0	435	"	"	
TOTAL DISCHARGE =								375 G

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
ROGERS E	0930	Plastic	250	1	300.0	None	

Additional Comments: Pump turned on at 917
No other wells on property.

Water System Schematic:



2

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	RUIZ	Date:	02/05/2008
ADWR No.	53/770	Weather:	CLEAR
Location:	S. Barnett Rd San Jose	Collected By:	M/H

WELL DATA

Well Depth (ft bls):	312	Static Water Level (ft bmp):	293.29
Casing Diameter (in):	6	Date/Time:	02/05/2008
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	~~68.8~~ 27.9x3 = 84 G	GPS: UTM	3471414 12R 0602852
@ 15 gpm = 6 min purge		Elevation:	4749

FIELD SAMPLING DATA

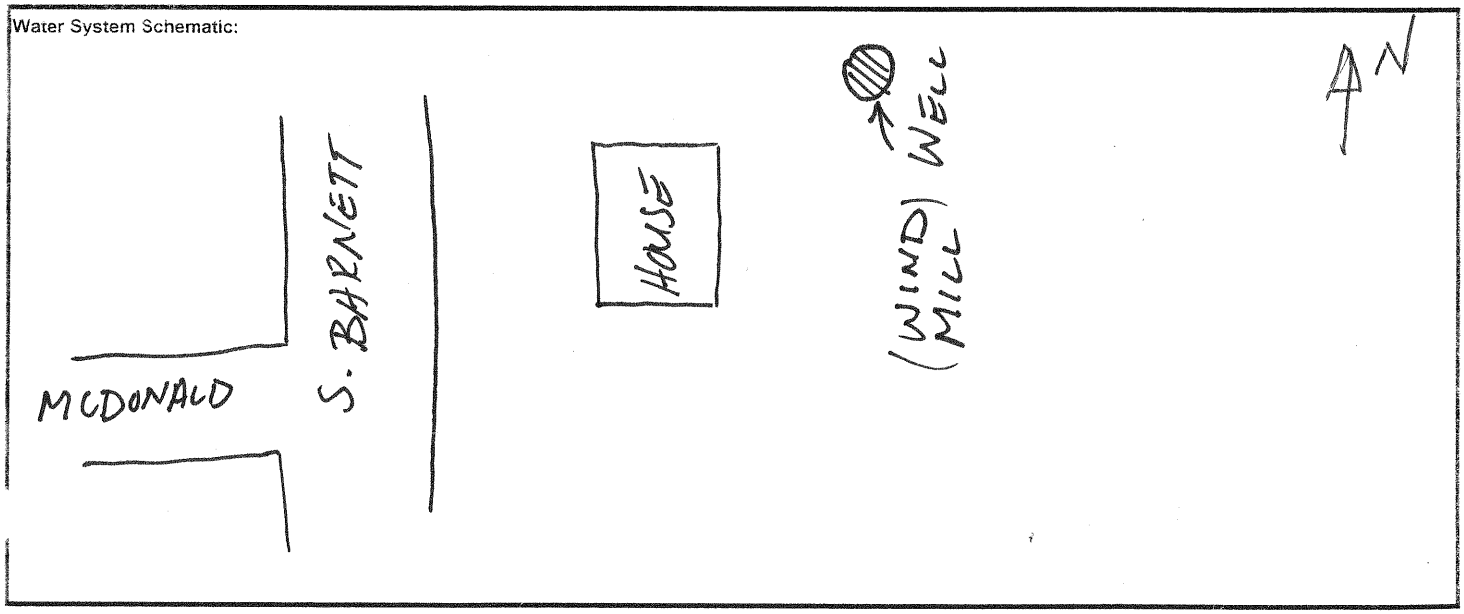
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
0830	15		7.86	16.9	4.53	CLEAR	N	
0840	"		7.58	18.8	4.54			
0850	"		7.64	19.6	996			
0855	"		7.73	18.2	445			
TOTAL DISCHARGE = 300 G.								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
RUIZ	8:50	PLASTIC	250	1	300.0	N	

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	SCHWARTZ	Date:	02/08/2008
ADWR No.	210865	Weather:	CLEAR
Location:	3468 S. Clubview Terrace Naco, AZ	Collected By:	AP/MA

WELL DATA

Well Depth (ft bls):	305'	Static Water Level (ft bmp):	121.80
Casing Diameter (in):	6"	Date/Time:	02/08/2008
Well Use:	DOMESTIC	Point of Measurement:	TOC
3 Casing Volumes:	269x3=806÷15= 54 min Purge @ 15gpm	GPS: UTM	3468270 12R 0600813
		Elevation:	4567

FIELD SAMPLING DATA

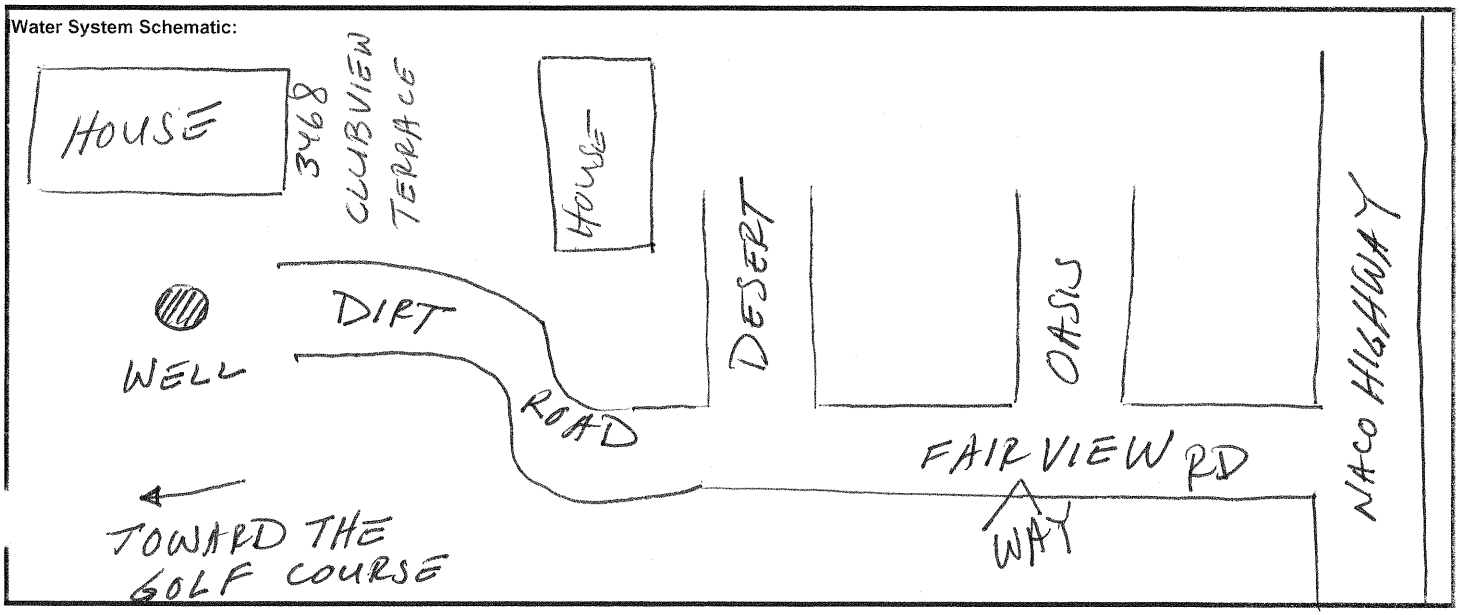
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1007	15	15	7.55	20.4	509	clear	None	
1009	"	45	7.49	21.2	510	"	"	
1011	"	75	7.50	21.4	504	"	"	
1015	"	135	7.52	21.7	507	"	"	
1020	"	210	7.47	21.8	506	"	"	
1026	"	300	7.46	21.7	505	"	"	
1028	"	330	7.52	21.5	506	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
SCHWARTZ	1030	Plastic	250mL	1	300.0	None	Filtered

Additional Comments: Only this one well on property

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000.1	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	SRC *	Date:	3/20/08
ADWR No.	55-211345	Weather:	Clear
Location:		Collected By:	MA

WELL DATA

Well Depth (ft bls):	965	Static Water Level (ft bmp):	Capped
Casing Diameter (in):	6 5/8"	Date/Time:	3/20/08 15:15
Well Use:		Point of Measurement:	
3 Casing Volumes:		GPS:	12R 0599718 3472516
		Elevation:	4245

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

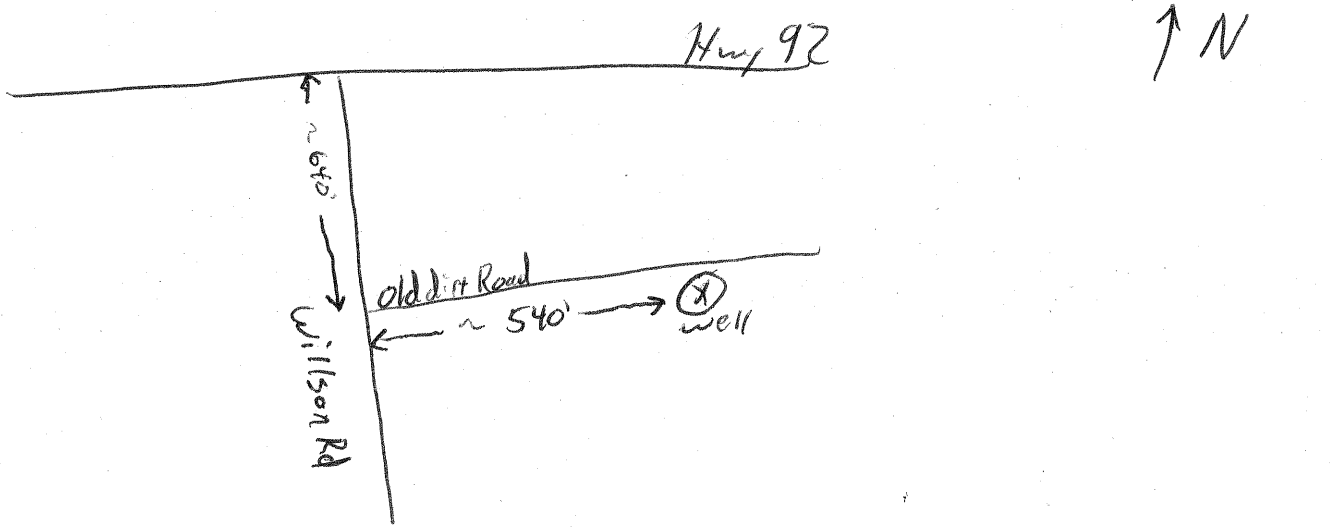
SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: Well has welded cap - No sample collected

* SPECIALTY RESTAURANTS CORPORATION

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	87001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	SUNBELT MARKETING	Date:	02/06/2008
ADWR No.	201531	Weather:	CLEAR
Location:		Collected By:	API/MA

WELL DATA

Well Depth (ft bls):	380(ft)	Static Water Level (ft bmp):	352.10(ft)
Casing Diameter (in):	6"	Date/Time:	02/05/2008 1350
Well Use:	DOMESTIC	Point of Measurement:	TOC
3 Casing Volumes:	41X3 = 123 ÷ 12 = 11 min	GPS: UTM	3471737 12R 0606008
		Elevation:	4788

FIELD SAMPLING DATA

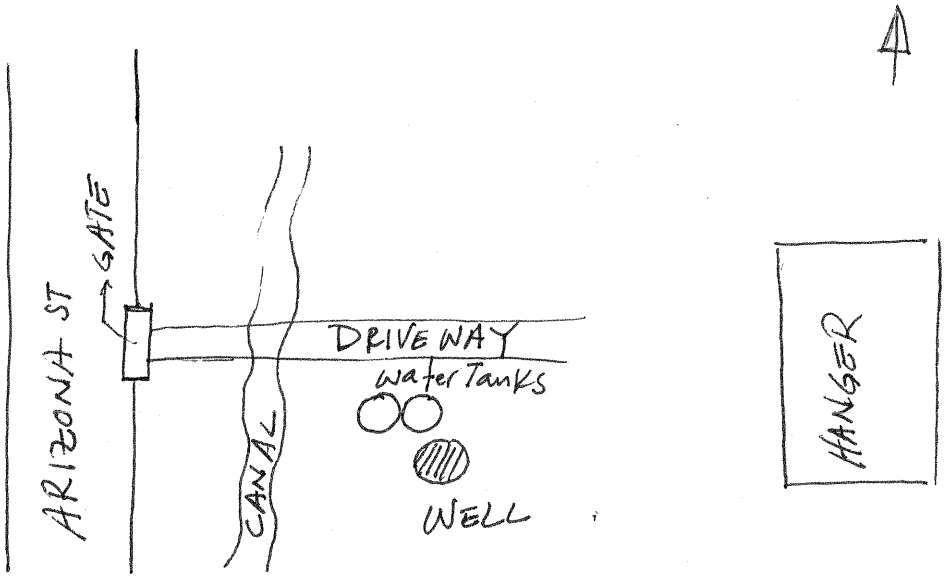
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1400	12	0	8.37	13.2	403	~~TANNISH~~ gp	N	—
1405	"	60	8.48	12.1	407	TAN	N	—
1410	"	180	8.57	11.5	403	TAN	N	—
1415	"	240	8.62	11.2	401	TAN	N	—
TOTAL DISCHARGE = 300 G.								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
SUNBELT ~~MARKETING~~	1425	PLASTIC	125/250	3	300-0	Y/N/N	—
			500				

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	SWAN	Date:	2-13-08
ADWR No.	No Record	Weather:	Sunny; windy
Location:	2601 SWAN Rd Bisbee, AZ	Collected By:	AP/KW

WELL DATA

Well Depth (ft bls):	98	Static Water Level (ft bmp):	26.50
Casing Diameter (in):	4	Date/Time:	2-13-08 12:45
Well Use:	domestic	Point of Measurement:	TOC
3 Casing Volumes:	47x3 = 141	GPS:	UTM 3470649 12R 607378
		Elevation:	4694

FIELD SAMPLING DATA

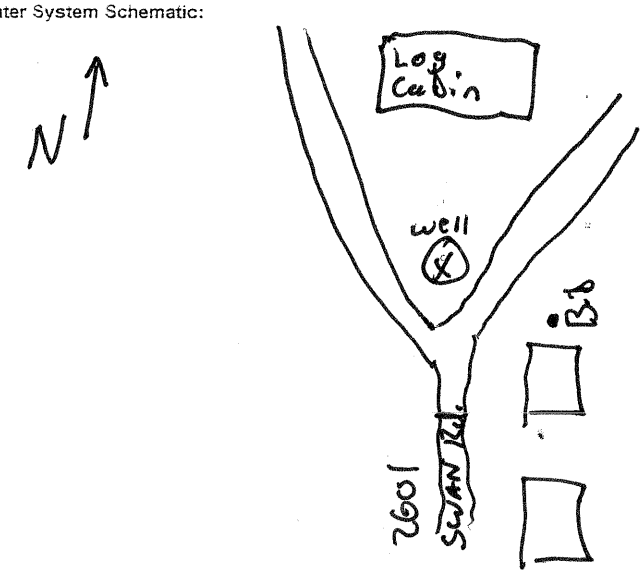
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
12:57	10		7.24	19.5	455	clear	No	few brn sed flakes
13:01	"		7.29	20.5	458	"	"	very few brn sed flakes
13:04	"		7.26	20.6	458	"	"	clear, no sediment
13:07	"		7.26	20.2	459	"	"	"
13:11	"		7.28	20.7	467	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
SWAN	13:15	plastic	125/250/500	3	300.0	Y/N/N	

Additional Comments: well depth est. based on owner. 4 houses using this well.

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Vell ID:	TM-2	Date:	03-04-08
ADWR No.	522573	Weather:	Sunny, breezy
Location:	D-24-24-4aac	Collected By:	MA + KW

WELL DATA

Well Depth (ft bls):	640	Static Water Level (ft bmp):	obstructed @ 339.70
Casing Diameter (in):	4"	Date/Time:	03/04/08
Well Use:	monitoring	Point of Measurement:	T.O.C
3 Casing Volumes:	—	GPS:	UTM 347 2019 x 12R 0604155
		Elevation:	4799

FIELD SAMPLING DATA

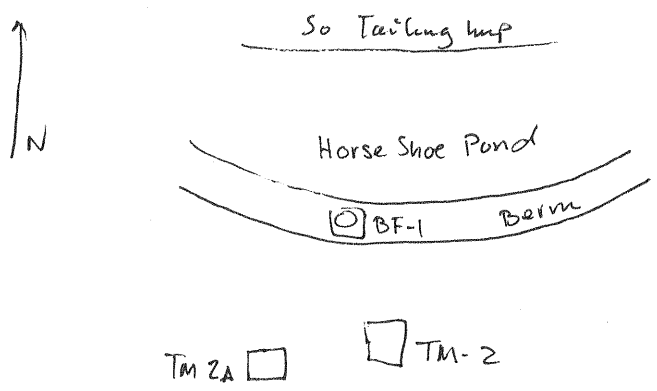
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
13:51	dry							

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: Dry - no sample

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	TM-2A	Date:	03-04-08
ADWR No.	55 - 522574	Weather:	sunny
Location:	D-24-24-4aac	Collected By:	KW + MA

WELL DATA

Well Depth (ft bls):	925	Static Water Level (ft bmp):	346.62
Casing Diameter (in):	4	Date/Time:	03-04-08 13:43
Well Use:	monitoring	Point of Measurement:	T.O.C.
3 Casing Volumes:	378 gal x 3 = 1134	GPS:	UTM 347 2019 x 12R 0604155
	113 min	Elevation:	4799

FIELD SAMPLING DATA

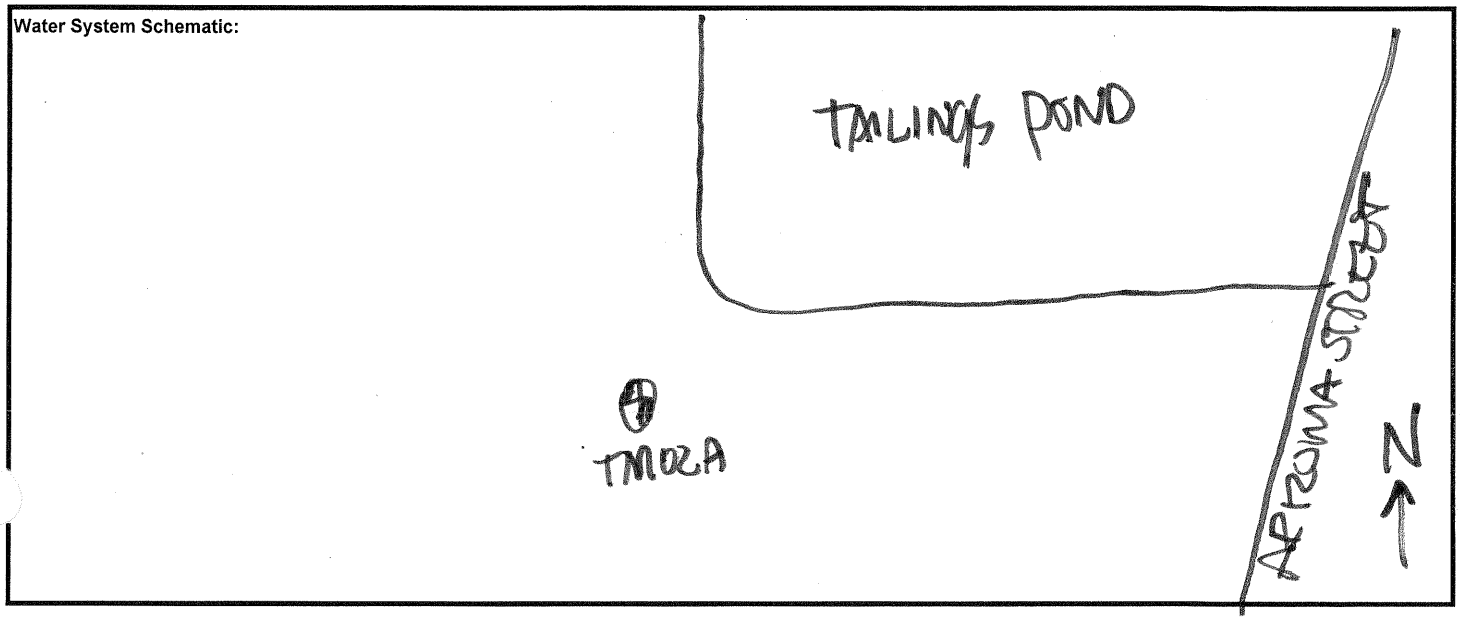
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
13:54	10	0	10.04	21.6	263	light brn	none	
14:00	"	60	9.08	21.9	295	"	"	
14:03	"	90	8.67	22.6	302	almost clear	none	few rust flecks
14:08	went dry @ 140							

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
TM-2A	14:25	plastic	1L 250 250	3	300.0	Y/N/N	

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720022	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	TM-3	Date:	3/12/08
ADWR No.	55-522575	Weather:	clear
Location:	CRAWford Mill	Collected By:	MA

WELL DATA

Well Depth (ft bls):	200	Static Water Level (ft bmp):	127.14
Casing Diameter (in):	4"	Date/Time:	3/12/08
Well Use:	Monitoring	Point of Measurement:	TOC
3 Casing Volumes:	Casing Vol = 47.6ga x 3 = 143 gal	GPS:	12R 0606365 UTM 3473710
		Elevation:	4885

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: Pump would not stay engaged – pump controller opens – resets

Water System Schematic:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720022	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	TM-05 MILLER	Date:	2-26-08
ADWR No.	522694	Weather:	Clear/cold
Location:		Collected By:	MA/KW

WELL DATA

Well Depth (ft bis):	160	Static Water Level (ft bmp):	Dry Bottomed at 154.30
Casing Diameter (in):	4"	Date/Time:	2-26-08
Well Use:		Point of Measurement:	TOC
3 Casing Volumes:		GPS:	12R 603900 3467190
		Elevation:	4615

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: Sounder Probe hit bottom @ 154.30' btoc

Water System Schematic:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	TM-6 MILLER	Date:	02-26-08
ADWR No.	522695	Weather:	sunny, breezy
Location:	D-24-24-14 bacc	Collected By:	KW + MA

WELL DATA

Well Depth (ft bls):	200	Static Water Level (ft bmp):	158.78
Casing Diameter (in):	4	Date/Time:	2/26/08 9:00
Well Use:	Monitoring	Point of Measurement:	TOC
3 Casing Volumes:	41 x 3 = 123	GPS:	UTM 3468377 12R 0606061
	7 min purge	Elevation:	4687

FIELD SAMPLING DATA

	Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
2/27	8:30	12	0	7.54	17.9	467	light brn	strong	rotten smelling
	8:33		36	7.50	18.9	466	almost clr	decreased	nearly clear
	8:37		96	7.45	19.5	457	clear	none	
	8:42	144	156	7.44	19.6	457	clear	none	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
2/27 TM-6	8:45	plastic	125/250/250	3	300.0	Y/N/N	

Additional Comments: early odor - sulfurous rotten egg odor. Cleared up quickly. Sample collected 2/27 after getting adaptor apparatus yesterday

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	TM-7	Date:	03-06-08
ADWR No.	55-522576	Weather:	sunny breezy cool
Location:	D. 24-24. 4bca East of Helen St	Collected By:	MA + KW

WELL DATA

Well Depth (ft bis):	350	Static Water Level (ft bmp):	— obstructed @ 58.15
Casing Diameter (in):	4"	Date/Time:	03-06-08 13:11
Well Use:	monitoring	Point of Measurement:	—
3 Casing Volumes:	49 x 3 = 147 (based on 1989 W.L.)	GPS:	UTM 3471918 x 0603010
		Elevation:	4759

FIELD SAMPLING DATA

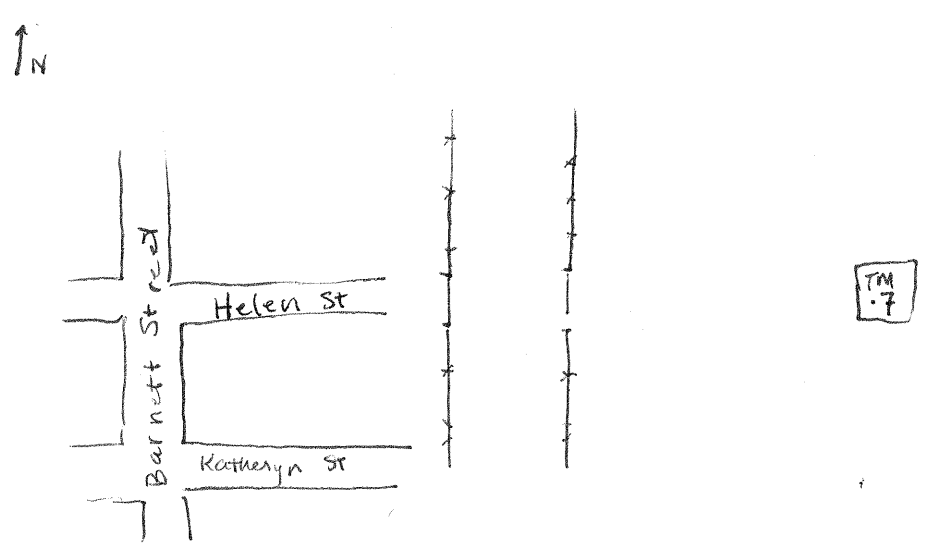
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
13:29	9		7.45	20.8	726	clear	none	
13:31	ran out of water	18						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
TM-7	13:50	plastic	x5 x5 x5	3	300.0	Y/N/N	

Additional Comments: Ran dry after 2 minutes. Allowed 18 minutes to recover Sample slightly tannish colored. No odor

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	TM-08 SWAN	Date:	2-13-08
ADWR No.	55-522817	Weather:	Sunny, windy ; becoming cloudy
Location:	2594 Windmill Ranch Rd (off of Swan Rd)	Collected By:	KW/AP

WELL DATA

Well Depth (ft bls):	817	Static Water Level (ft bmp):	unable to measure (>500')
Casing Diameter (in):	4"	Date/Time:	2/13/08 13:36
Well Use:	domestic	Point of Measurement:	TOC
3 Casing Volumes:	123 x 3 = 369	GPS:	3470668 12R 607788
		Elevation:	4701

FIELD SAMPLING DATA

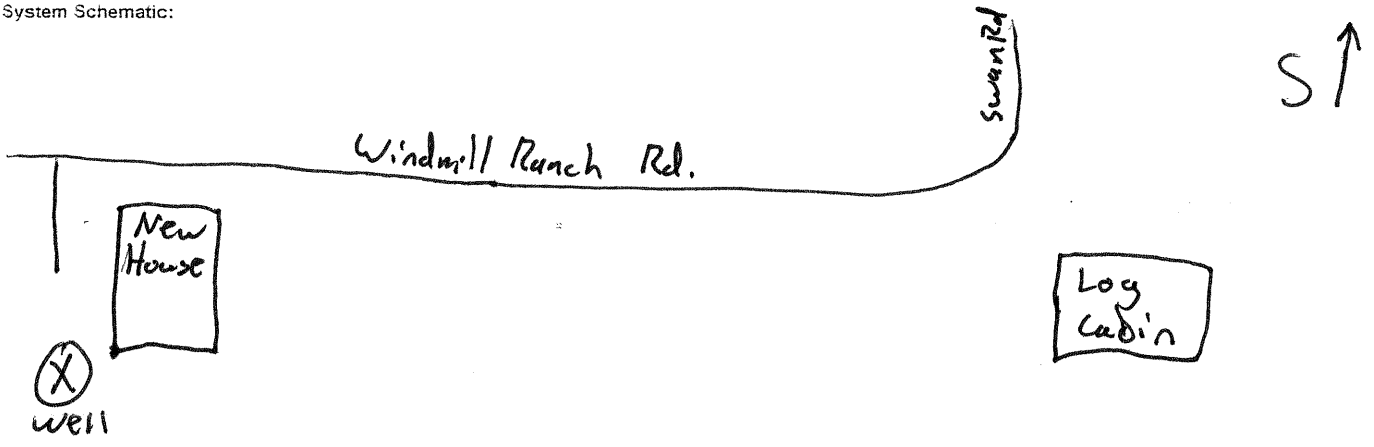
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
13:55	10		7.63	25.2	511	clear	No	Sampled from Tank

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
TM-08 SWAN	14:05	Plastic	125/250/500	3	300.0	Y/N/N	

Additional Comments: At the request of owner, sample was taken from 1000 gal tank which was filled on 2-11-08

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	TM-11 PIONKE	Date:	3-11-08
ADWR No.	55-522815	Weather:	Clear
Location:		Collected By:	MA

WELL DATA

Well Depth (ft bls):	160'	Static Water Level (ft bmp):	Dry to 140'
Casing Diameter (in):	6" to 20' 4" from 20' to 160'	Date/Time:	3-11-08 / 18:05
Well Use:	Monitoring	Point of Measurement:	
3 Casing Volumes:		GPS:	12R 0600830 UTM 3468934
		Elevation:	4570

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: well Not in use

Water System Schematic:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720022	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	TM-12	Date:	2-26-08
ADWR No.	522697	Weather:	Clear
Location:		Collected By:	MA/KW

WELL DATA

Well Depth (ft bls):	175	Static Water Level (ft bmp):	Dry (Bottomed at 159.80)
Casing Diameter (in):	4"	Date/Time:	2-26-08
Well Use:	Monitoring	Point of Measurement:	TOC
3 Casing Volumes:		GPS:	12R 601518 3467147
		Elevation:	4610

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: Sounder Probe hit the bottom at 159.80' btoc

Water System Schematic:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720022	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	TM-13	Date:	3-11-08
ADWR No.	55-522698	Weather:	Clear
Location:	Naco, AZ	Collected By:	MA

WELL DATA

Well Depth (ft bls):	200	Static Water Level (ft bmp):	Dry to 180'
Casing Diameter (in):	6" to 20' 4" to 200'	Date/Time:	3-11-08/1600
Well Use:	monitoring	Point of Measurement:	
3 Casing Volumes:		GPS:	12R 0601269 UTM 3469822
		Elevation:	4626

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: Not sampled - Sounder hit bottom @ 180' btoc - Dry

Water System Schematic:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	87200.10	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	TM-14	Date:	02/08/2008
ADWR No.	522816	Weather:	CLEAR
Location:	NACO, AZ	Collected By:	AP/MA

WELL DATA

Well Depth (ft bls):	215'	Static Water Level (ft bmp):	~~210.79~~ 211.79 (AP)
Casing Diameter (in):	6"	Date/Time:	02/08/2008
Well Use:	~~DOMESTIC~~ NOWSW	Point of Measurement:	TOC
3 Casing Volumes:	well is near dry	GPS:	UTM 347011 12R 0 5-99627
		Elevation:	4618

FIELD SAMPLING DATA

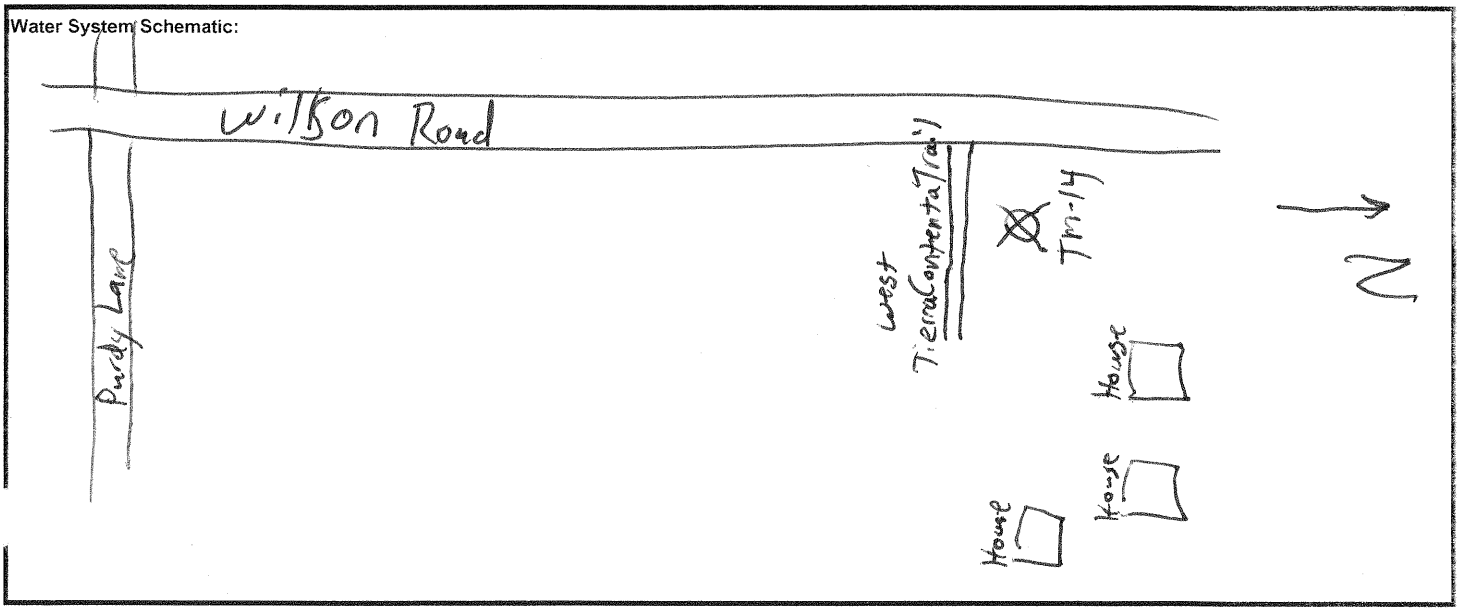
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1116	<2gpm	0	7.62	23.5	321	Clear	None	
1117	<2gpm	~1	7.64	22.4	319			
1119	<1gpm	~4	7.68	21.4	316			
1121	<1gpm	~6	7.65	22.0	317			
1123	<1gpm	~7	7.64	21.6	319			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
TM-14	1125	Plastic	125/250/500	3	300.0	HNO_3/None	Filtered/unfiltered
DUP020908		Plastic	125/250/500	3	300.0	HNO_3/None	Filtered/unfiltered

Additional Comments: 1125 water flow has almost stopped.
Collected Field Blank FB020808

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

oject No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
ell ID:	TM-15 MILLER	Date:	2/27/08
ADWR No.	522699	Weather:	sunny breezy
Location:	D.24.24.6 bcc Willson Road	Collected By:	MA + KW

WELL DATA

Well Depth (ft bls):	325	Static Water Level (ft bmp):	294.90
Casing Diameter (in):	4"	Date/Time:	2/27/08 9:20
Well Use:	monitoring / Domestic	Point of Measurement:	T.O.C
3 Casing Volumes:	30 x 3 = 90 (61)	GPS:	UTM 3471436 12R 0599618
22 gal x 3 = 61 = 3 casing V	9 min purge	Elevation:	4765

FIELD SAMPLING DATA

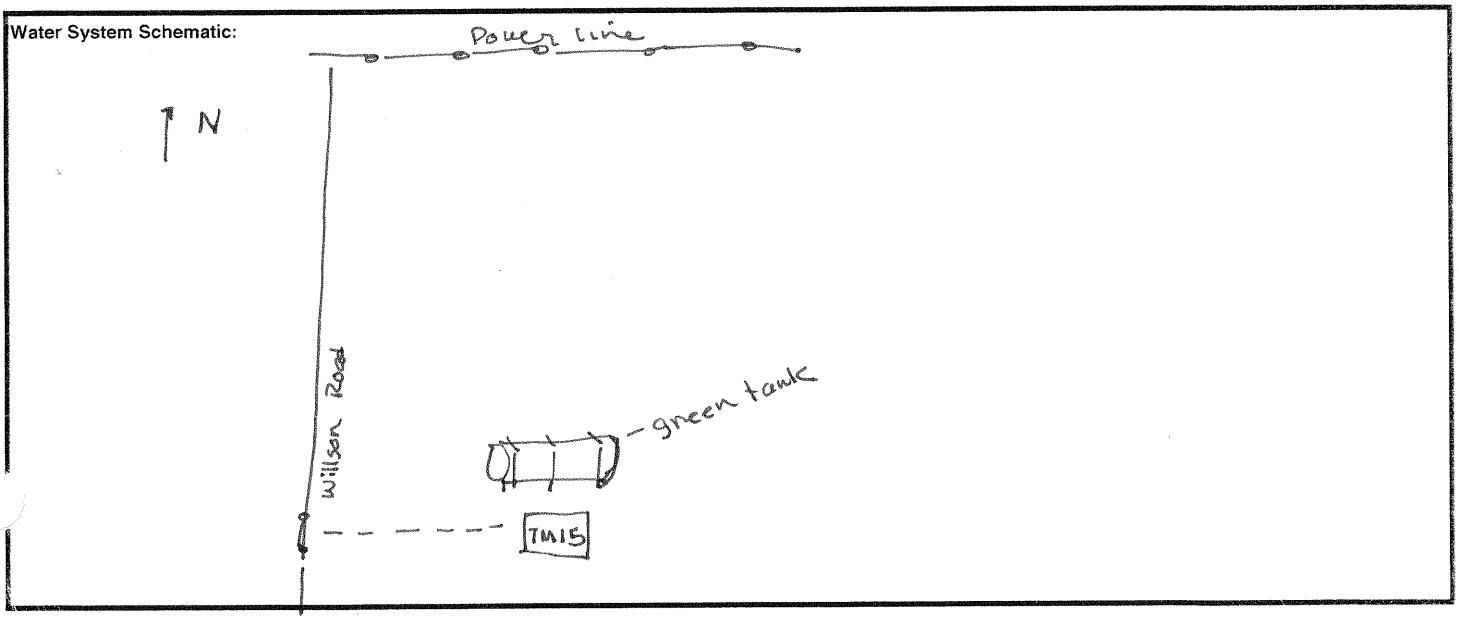
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
9:56	7	0	7.71	18.9	345	clear	none	
9:58		14	7.89	21.2	348	"	"	
10:01		35	7.81	21.7	346	"	"	
10:04		63	7.73	21.8	344	"	"	
10:06	70	77	7.66	21.9	344	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
TM-15 MILLER	10:07	plastic	125/250/250	3	300.0	Y/N/N	

Additional Comments: sounder hung up @ 147'

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	TM-16	Date:	03-05-08
ADWR No.	55- 522578	Weather:	windy, partly cloudy
Location:	D-24-24 10 dba	Collected By:	KW + M-A

WELL DATA

Well Depth (ft bls):	115	Static Water Level (ft bmp):	81.00
Casing Diameter (in):	4	Date/Time:	03-05-08 13:01
Well Use:	Monitoring	Point of Measurement:	T.O.C
3 Casing Volumes:	22.2 x 3 = 66.6	GPS:	12R 0605587 UTM 3469847
		Elevation:	4685

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
13:13	15	0	7.14	21.2	1334	none	none	clear
13:15	"	30	7.14	20.8	1328	"	"	"
13:17	"	60	7.15	20.8	1342	"	"	"
13:19	"	90	7.17	20.6	1351	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
TM-16	13:20	plastic	125, 250, 250	3	300.0	Y/N/N	

Additional Comments:

Water System Schematic:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720022	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	TM-17	Date:	3-12-08
ADWR No.	522700	Weather:	Clear
Location:		Collected By:	MA

WELL DATA

Well Depth (ft bls):	200'	Static Water Level (ft bmp):	Dry
Casing Diameter (in):	4"	Date/Time:	3-12-08
Well Use:	Monitoring	Point of Measurement:	TOC
3 Casing Volumes:		GPS:	12R 604016 3468451
		Elevation:	4622

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: Dry to 188.50 btoc

Water System Schematic:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	TM-19	Date:	03-06-08
ADWR No.	55-522581	Weather:	clear, windy
Location:	D-24-24-8ddc2	Collected By:	MA + KW

WELL DATA

Well Depth (ft bls):	210	Static Water Level (ft bmp):	dry / obstructed @ 179'
Casing Diameter (in):	4"	Date/Time:	3/6/08 11:55
Well Use:	monitoring	Point of Measurement:	T.O.C
3 Casing Volumes:	—	GPS:	3469185 x 0602464
		Elevation:	4615

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
dry								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: NO SAMPLE obstructed, turned pump on, no water

Water System Schematic:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	TM-19A	Date:	3/6/08
ADWR No.	55-522580	Weather:	clear - windy
Location:		Collected By:	MA

WELL DATA

Well Depth (ft bls):	~~210~~ 700	Static Water Level (ft bmp):	199.85
Casing Diameter (in):	4"	Date/Time:	3/6/08 11:11
Well Use:	Monitoring	Point of Measurement:	TOC
3 Casing Volumes:	1 vol = 65 gal x 3 = 19.5	GPS:	3469185 x 0602464 ←TM-19
		Elevation:	4615

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1126	20	0	8.17	17.5	458	clear	None	
1127	"	20	7.64	19.8	522			
1129	"	60	7.99	21.0	460			
1132	"	120	8.04	21.5	462			
1135	"	180	8.06	21.2	459	~~Slight~~		Slightly Rusty in color
1138	"	240	8.02	22.2	471	Rusty		

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
TM-19A	11:40	Plastic	125/250/250	3	300.0	HNO_3/None/None	

Additional Comments: This well will likely be pumped dry as pump is rated at 45gpm. But it didn't

Water System Schematic:

19A = 522580 700
19 522581 210

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	TM-41	Date:	03-04-08
ADWR No.	55-562555	Weather:	sunny, breezy
Location:	D-23-24-3ccc	Collected By:	KW + MA

WELL DATA

Well Depth (ft bls):	210	Static Water Level (ft bmp):	193.20
Casing Diameter (in):	5	Date/Time:	03-04-08 14:48
Well Use:	monitoring	Point of Measurement:	T.OC.
3 Casing Volumes:	17 gal x 3 = 52	GPS:	UTM 3471308 x 0604838
		Elevation:	4770

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
	dry / no sample						bad air smell from hose	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: No sample - pump above current WL? Foul odor came up w/ sounder

Water System Schematic:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	TM-42	Date:	03-05-08
ADWR No.	55-562554	Weather:	windy, partly cloudy
Location:	D23-24-10 CBC just North of Purdy Lane	Collected By:	MA + KW

WELL DATA

Well Depth (ft bls):	250	Static Water Level (ft bmp):	211.04
Casing Diameter (in):	5	Date/Time:	03-05-08 12:18 (14:18)
Well Use:	Monitoring	Point of Measurement:	T.O.C
3 Casing Volumes:	40 gal x 3 = 120	GPS:	12R 0603698 x 3469105
		Elevation:	4645

FIELD SAMPLING DATA

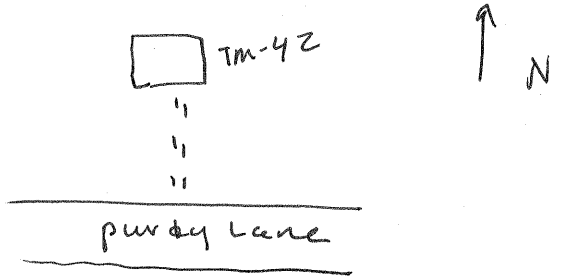
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
14:25	4	0	7.96	20.1	1316	clear	none	
14:29	"	16	7.16	20.5	1393	slightly brownish	"	
14:33	"	32	7.10	20.7	1357	clear	"	
14:38	"	52	7.10	20.8	1342	"		
	running out of water							

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
TM-42	14:40	plastic	125, 250, 250	3	300.0	Y/N/N	

Additional Comments: Flow decreasing @ 14:38

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	TM-43	Date:	03.03.08
ADWR No.	569729	Weather:	Sunny, cold
Location:	See GPS	Collected By:	MA / KW

WELL DATA

Well Depth (ft bls):	210	Static Water Level (ft bmp):	~~133.71~~ 149.05
Casing Diameter (in):	4"	Date/Time:	03.03.08
Well Use:	MONITORING	Point of Measurement:	TOC
3 Casing Volumes:	130 gallons	GPS:	605358 E 3474663 N
		Elevation:	

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1203	7	0	6.09	19.5	2866	clear	yes	
1206		21	6.22	20.2	2685			
1210		49	6.23	19.9	2698			
1214		77	6.20	20.1	2718			
1218		105	6.20	20.2	2762			
1222		133	6.17	19.9	2775			
1226		161	6.18	19.8	2817			
1230		189	6.17	19.9	2788			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
TM-43	1235	Plastic	125/250/1L	3	300.0		

Additional Comments:

Water System Schematic:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
'ell ID:	TM-43A	Date:	03.03.08
ADWR No.	564726	Weather:	Sunny cold
Location:	See GPS	Collected By:	MA/KW

WELL DATA

Well Depth (ft bls):	820	Static Water Level (ft bmp):	~~149.05~~ 133.71
Casing Diameter (in):	4"	Date/Time:	03.03.08
Well Use:	Monitoring	Point of Measurement:	TOC
3 Casing Volumes:	1344.0 gallons	GPS:	605364 E 3474672 N
		Elevation:	4969

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1245	10	0	10.02	18.9	370	cloudy	Yes	
1249		40	8.69	20.3	350	"		
1253		80	8.65	20.7	348	"		
1257		120	8.60	21.2	347	"		
1301		160	8.57	21.0	341	"		

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
TM_43A	13:05	Plastic	125/250	3	300.0		

Additional Comments: Sample had some debris and was cloudy.

Water System Schematic:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	TM-43B	Date:	03-03-08
ADWR No.	55-565004	Weather:	sunny, windy, cold
Location:	D-23.24-27 dad	Collected By:	MA + KW

WELL DATA

Well Depth (ft bls):	215	Static Water Level (ft bmp):	64.0
Casing Diameter (in):	5	Date/Time:	03-03-08 14:45
Well Use:	monitoring	Point of Measurement:	T.O.C
3 Casing Volumes:	154 gal x 3 = 462 gal	GPS:	0605816 x 3474382
		Elevation:	4920 ft amsl

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
15:06	7	0	6.69	19.1	520	clear	strong, sulf	few sediments (brown)
15:11	"	35	6.76	20.3	517	"	"	"
15:16	"	70	6.77	20.3	515	"	moderate	"
15:21	"	105	6.81	20.4	514	"	"	"
15:31	"	175	6.79	20.6	514	"	"	"
15:39	Pump is off - No Flow							
15:49	Pump on collect sample closout							

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
TM-43B	15:49	plastic	125/250/250	3	300.0	Y/N/N	

Additional Comments: Rotten egg sulfurous odor.

Water System Schematic:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	871002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	TM-45	Date:	03-05-08
ADWR No.	55-564728	Weather:	sunny, windy, cool
Location:	D.23-21-27 bcc; access via	Collected By:	KW + MA

WELL DATA

Well Depth (ft bls):	520	Static Water Level (ft bmp):	>500'
Casing Diameter (in):	4½	Date/Time:	03-05-08 10:30
Well Use:	monitoring	Point of Measurement:	T.O.C.
3 Casing Volumes:	—	GPS:	IZR 0604401 x WIM 3474741
		Elevation:	5003

FIELD SAMPLING DATA

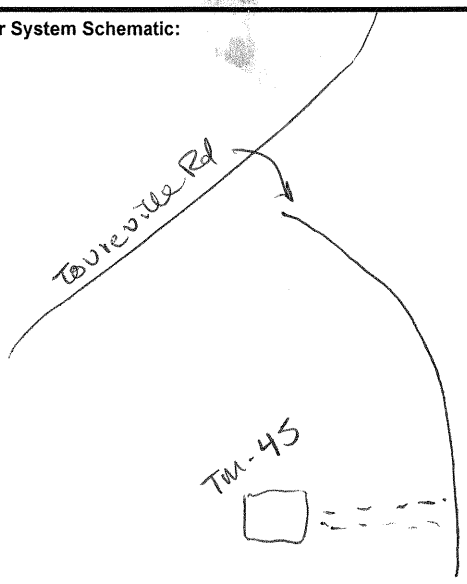
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
10:53	0	0						dry

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: Well dry. NO sample

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	TVI 236	Date:	2-21-08
ADWR No.	55-802236	Weather:	Clear
Location:	Turquoise Valley Golf RV-Rest. 1794 W. Newell St Naco, AZ	Collected By:	Arneson / Thompson

WELL DATA

Well Depth (ft bls):	222	Static Water Level (ft bmp):	Last known 140' btoc (1999)
Casing Diameter (in):	12"	Date/Time:	2/21/08
Well Use:	Irrigation	Point of Measurement:	Top of Casing
3 Casing Volumes:	1445 gal.	GPS:	600564 / 3467991
		Elevation:	4572'

FIELD SAMPLING DATA

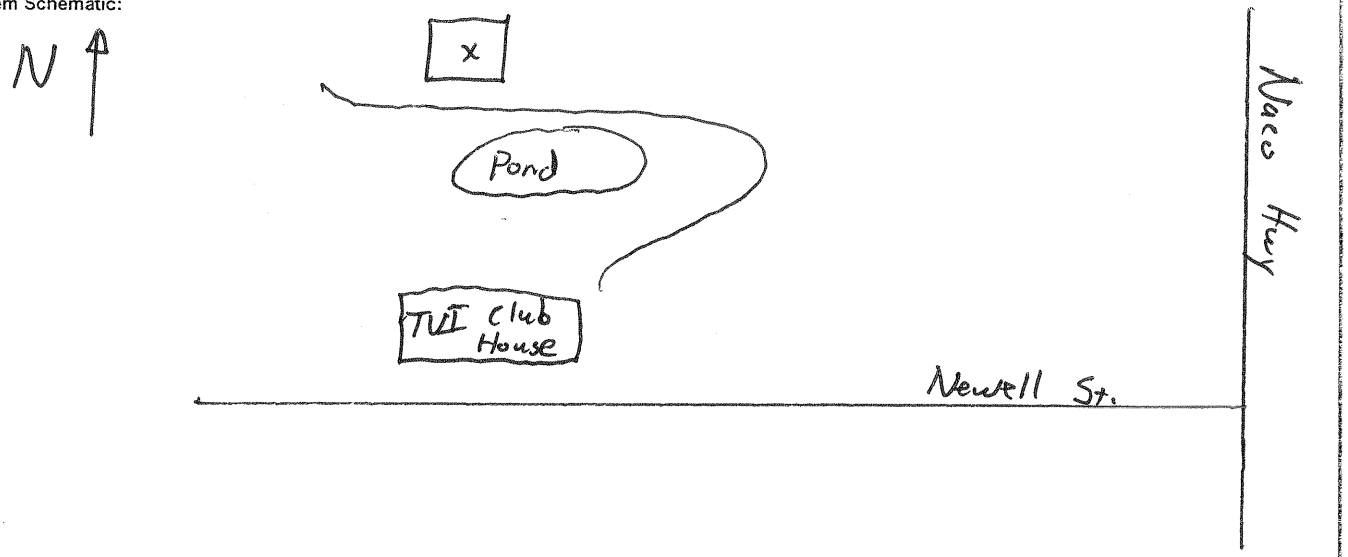
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
0947	550	Continuous	7.47	19.7	419	clear	None	Used to fill pond

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
~~LARSON~~ TVI 236	0950	Plastic	250ml	1	300.0	None	Filtered SO_4

Additional Comments: Sample was collected from end of discharge pipe that was actively pumping into pond

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	3-20-08
Well ID:	TVI 236	Weather:	Clear
ADWR No.	55-802236	Collected By:	MA

WELL DATA

Well Depth (ft bls):	222	Time:	8:15
Casing Diameter (in):	12"	Point of Measurement:	140' (1999)
Static Water Level (ft bmp):	Last known 140' btoc (1999)	GPS:	UTM 3467991 / 600564
1 Casing Volume (gals):	481	Elevation:	4572
3 Casing Volumes (gals):	1445		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
0821	500	Continuous	7.49	19.1	485	Clear	None	
0824	"	"	7.48	19.2	489	"	"	
0827	"	"	7.48	20.0	488	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TVI 236	0830	Plastic	125 ml	1	EPA 300.0	HNO3	Filtered
TVI 236	0830	Plastic	250 ml	1	EPA 300.0	None	Filtered
TVI 236	0830	Plastic	500 ml	1	EPA 300.0	None	Unfiltered

Additional Comments: Golf Course superintendant stated that the pump has been on since 8am approx and that this well is pumped every evening of the year for 6-8 hrs each day

Resampled for full suite

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	TVI 875	Date:	2/21/08
ADWR No.	55-568875	Weather:	Cloudy/Cool
Location:	west side of golf cart perimeter road, north of Green Bush Draw	Collected By:	Arneson / Thompson

WELL DATA

Well Depth (ft bls):	330'	Static Water Level (ft bmp):	No Access for WL
Casing Diameter (in):	6"	Date/Time:	2/21/08
Well Use:	Irrigation	Point of Measurement:	NA
3 Casing Volumes:		GPS:	600733 3468417
		Elevation:	4752

FIELD SAMPLING DATA

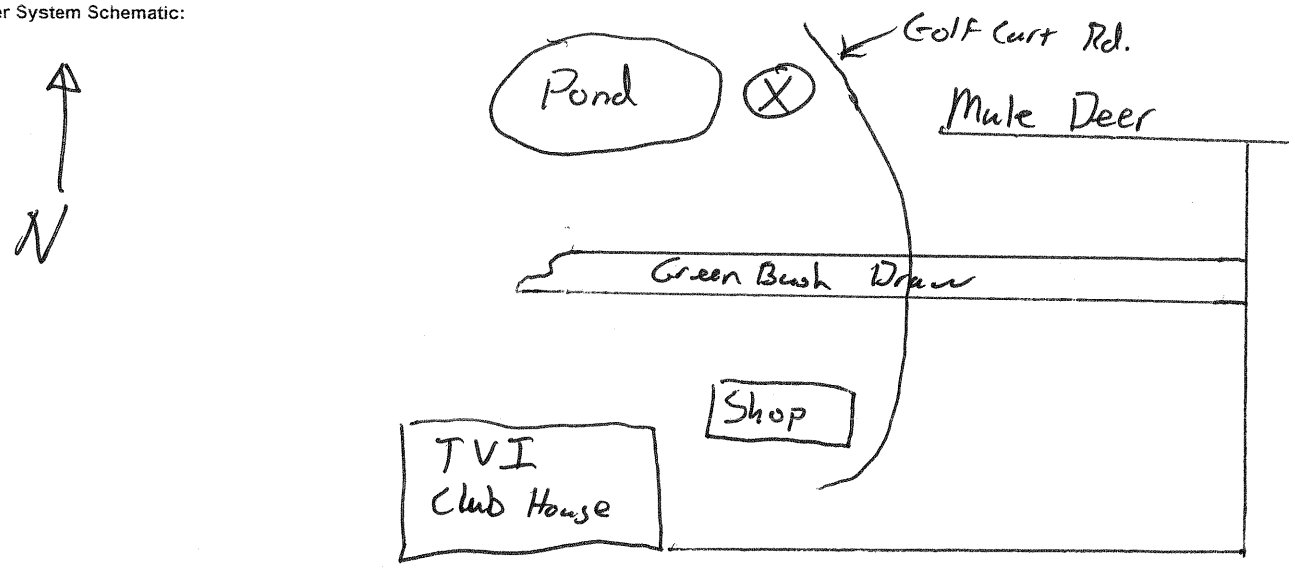
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
915	500	Start	7.14	19.8	708	clear	None	
919	"		7.26	20.1	745	"	"	
922	"		7.28	20.9	742	"	"	
925	"		7.30	21.0	735	"	"	
928	"		7.28	21.1	739	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
TVI 875	930	Plastic	125/250	2	300.0	HNO_3/None	Filtered
TVI 875	930	Plastic	250	1	300.0	None	Unfiltered

Additional Comments: Pump is actively on to Fill Golf course pond at 500 gpm
No purge required to sample

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	WALKER	Date:	2-13-08
ADWR No.	55-200393	Weather:	Sunny, warm
Location:	3350 S. Mesquite Ridge	Collected By:	KW + AP

WELL DATA

Well Depth (ft bls):	120	Static Water Level (ft bmp):	25.2
Casing Diameter (in):	O.D. 5½ to 100' no casing 100-120' 6" diam	Date/Time:	2-13-08 10:21 KW
Well Use:	domestic	Point of Measurement:	T.OC. (19" stick up)
3 Casing Volumes:	117 x 3 = 351 23 min	GPS:	UTM 346B591 1D,R 0607555
		Elevation:	4669

FIELD SAMPLING DATA

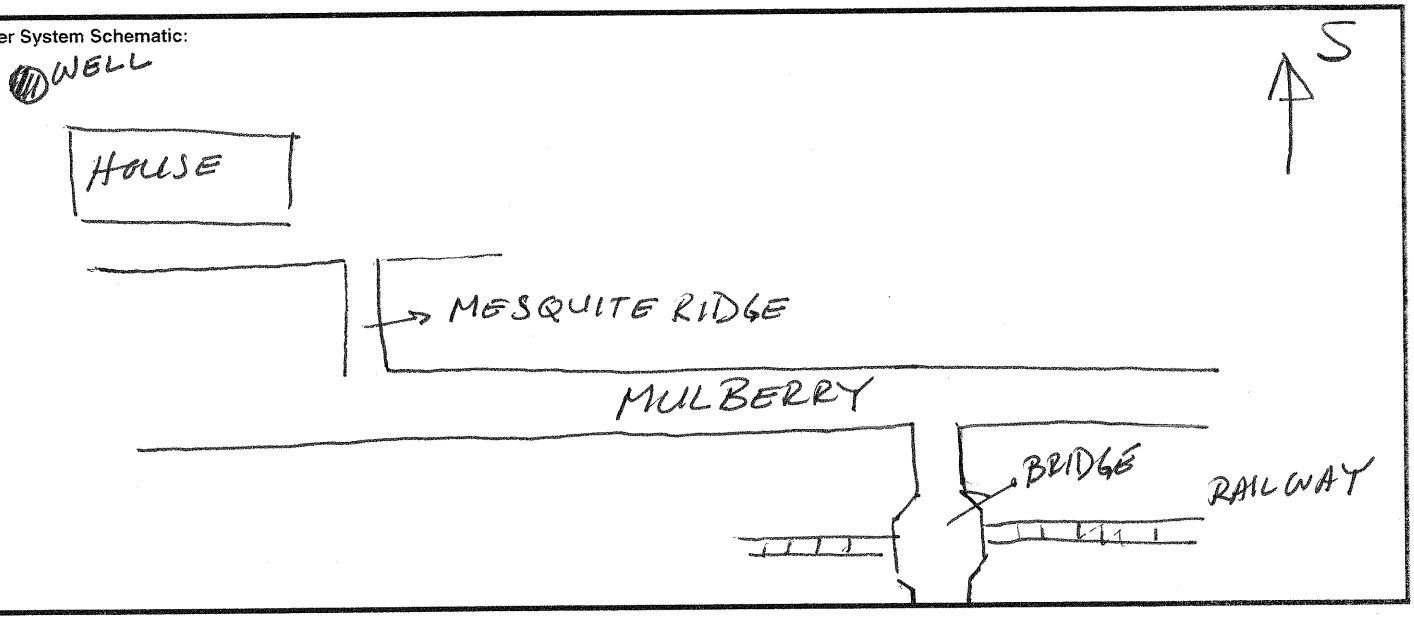
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
10:29	15		6.84	19.0	639	clear	none	
10:32	"		6.98	19.9	647	"	"	
10:35	"		7.02	19.6	647	"	"	
10:38	"		7.01	20.0	648	"	"	
10:42	"		7.04	20.2	647	"	"	
10:46	"		7.08	20.5	647	"	"	
10:50	"		7.05	20.2	650			
		375						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
WALKER	10:55	plastic	125/250/500	3	300.0	Y/N/N	

Additional Comments: No casing 100-120'; perf 80-100.

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	WEED	Date:	2-14-08
ADWR No.	544535	Weather:	windy, dusty
Location:	1463 Hull Ranch Rd. Naco, AZ	Collected By:	AP/KW

WELL DATA

Well Depth (ft bls):	300	Static Water Level (ft bmp):	No Access
Casing Diameter (in):	NA	Date/Time:	2-14-08 14:40
Well Use:	domestic	Point of Measurement:	NA
3 Casing Volumes:	NA	GPS:	3470976 12R 601415
		Elevation:	4682

FIELD SAMPLING DATA

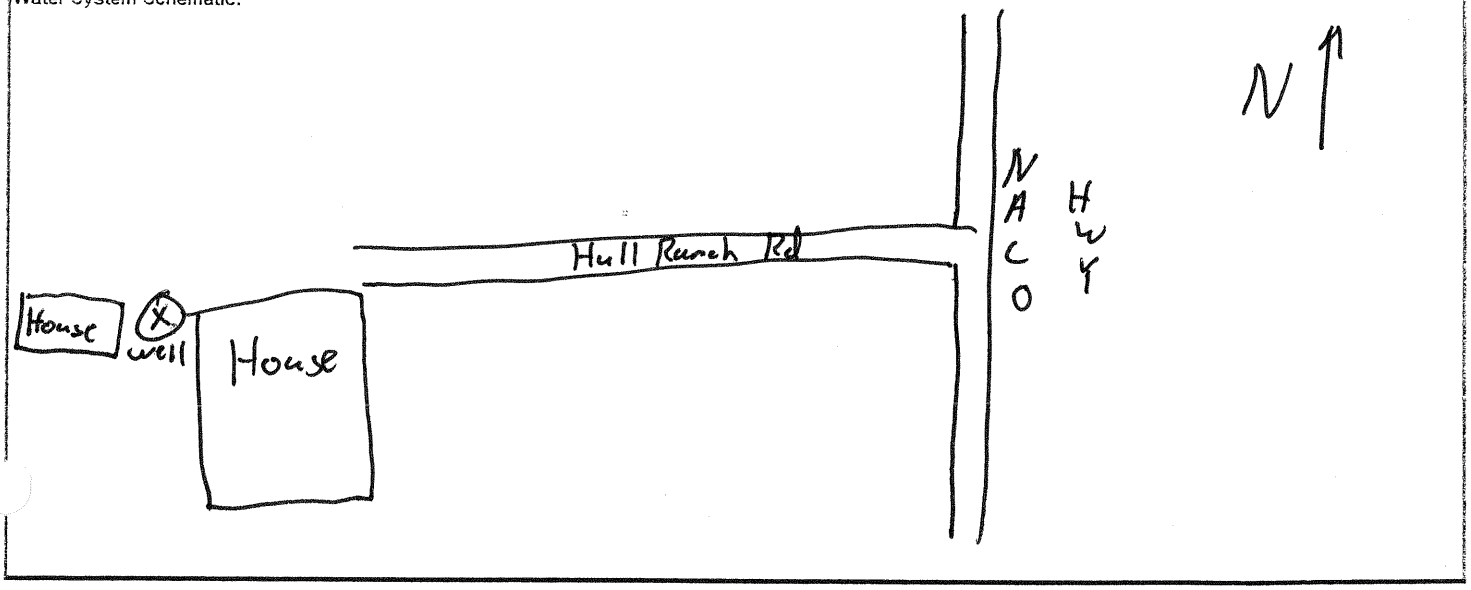
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
14:52	NA	NA	7.74	21.7	323	clear	No	few rusty sediment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
WEED	15:10	plastic	250	1	300.0	N	

Additional Comments: Owner reports well depth at 300' and WL @ about 250' bls
This well replaces 1915 well #606854. Other 1915 well #606855 w/ depth of 400' is not in use

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	WEISKOPF	Date:	15 Feb 08
ADWR No.	641802	Weather:	RAIN + Wind
Location:	3316 S. Naco Hwy	Collected By:	KW & AP

WELL DATA

Well Depth (ft bls):	200	Static Water Level (ft bmp):	143.31
Casing Diameter (in):	6"	Date/Time:	15Feb08 8:01
Well Use:	domestic	Point of Measurement:	TOC
3 Casing Volumes:	83 x 3 = 251	GPS:	~~KW 4602~~ UTM 12R 3468667 0601147
	25	Elevation:	4602

FIELD SAMPLING DATA

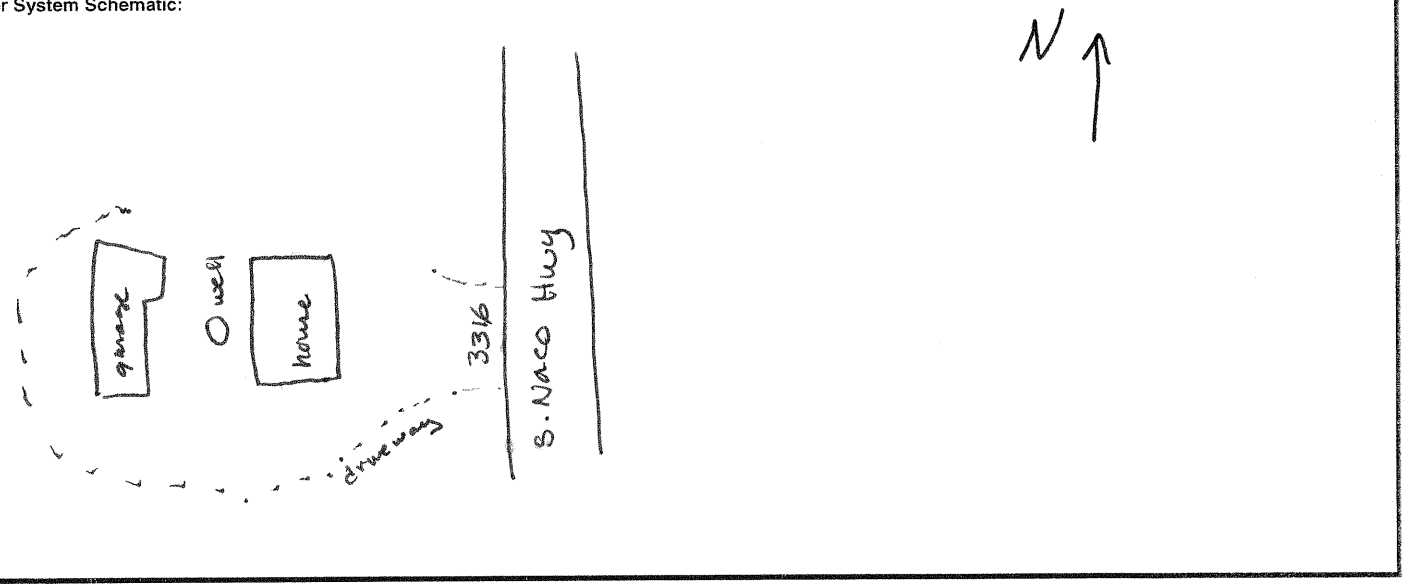
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
8:15	10		7.17	15.8	997	clear	none	few rusty flakes
8:17	"		7.28	16.4	1000	"	"	" " "
8:19	"		7.39	19.0	995	"	"	clear
8:22	"		7.52	19.6	910	"	"	"
8:24	"		7.51	19.8	965	"	"	"
8:28	"		7.51	20.2	1024	"	"	"
8:31	"		7.50	20.2	1048	"	"	"
8:34	"		7.50	20.0	1069	"	"	"
8:37	"		7.48	20.0	1072	"	"	"
		220 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
WEISKOPF	8:40	plastic	125/250/500	3	300.0	Y/N/N	—

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001-0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	ZANDER	Date:	02/04/2008
ADWR No.	205826	Weather:	RAINY-CLOUDY
Location:		Collected By:	ARMA

WELL DATA

Well Depth (ft bis):	280'	Static Water Level (ft bmp):	144.85
Casing Diameter (in):	6"	Date/Time:	02/04/2008
Well Use:	DOMESTIC	Point of Measurement:	TOC
3 Casing Volumes:	198X3 = 595 @ 15gpm	GPS: UTM:	3468003 12 R 0599677
40min purge		Elevation:	4566

FIELD SAMPLING DATA

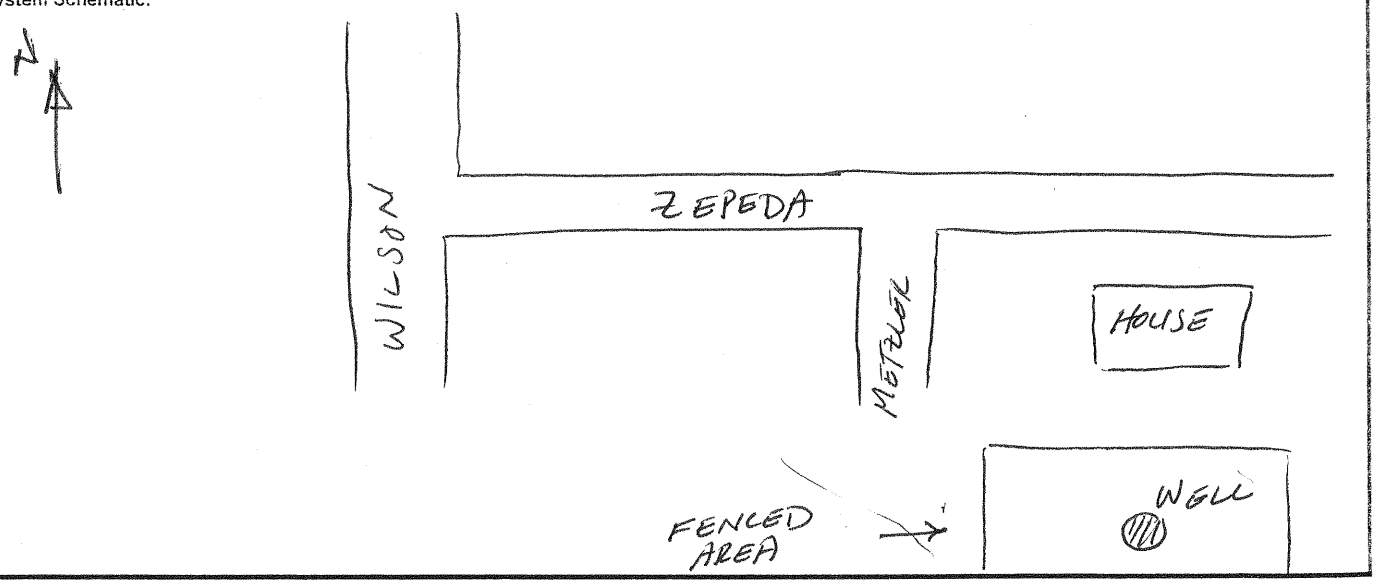
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
2:30	20	40	7.07	17.1	395	CLEAR	N	
0235	"	140	7.13	19	391	"	"	
0240	"	240	7.14	19.8	395	"	"	
0250	"	440	7.21	20.2	392	"	"	
0255	"	540	7.24	19.7	392	"	"	
	TOTAL DISCHARGE = 600 GALLONS							

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
ZANDER	1500	PLASTIC	250	1	300.0	N	

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-5-08
Well ID:	ANDERSON	Weather:	Clear
ADWR 55 No.	613396	Collected By:	MA

WELL DATA

Well Depth (ft bls):	~~285~~ 236	Time:	10:12
Casing Diameter (in):	8"	Point of Measurement:	TOC
Static Water Level (ft bmp):	145.84	GPS:	See file
1 Casing Volume (gals):	235.5	Elevation:	See file
3 Casing Volumes (gals):	707 7/min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1025	10	20	6.74	23.2	1247	clear	None	open bib at 1023
1031	~~80~~ 10	80	6.98	21.6	1213	"	"	
1038	10	150	7.00	21.5	1232	"	"	
1048	"	250	6.86	21.6	1238	"	"	
1058	"	350	6.85	21.8	1231	"	"	
1108	"	450	6.92	21.7	1242	"	"	
1118	"	550	7.02	21.8	1229	"	"	
1128	"	650	7.03	21.8	1233	"	"	
1132	"	700	7.03	21.8	1231	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
ANDERSON	11:35	Plastic	250 ml	1	EPA 300.0	~~None~~ ~~NO3~~	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FMI Copper Queen Branch
Phase No.	2.2	Date:	5-12-08
Well ID:	BANKS 986	Weather:	Clear / windy
ADWR No.	647986	Collected By:	MA

WELL DATA

Well Depth (ft bls):	435.8	Time:	13:25
Casing Diameter (in):	6"	Point of Measurement:	NA
Static Water Level (ft bmp):	See Comment below	GPS:	See File
1 Casing Volume (gals):	321	Elevation:	See File
3 Casing Volumes (gals):	964		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1332	10	20	7.26	25.6	1070	Clear	None	Open bib at 13:30
1340	~~10~~ 10	100	7.41	22.3	1056	"	"	
1400	10	300	7.33	22.2	1017	"	"	
1415	"	450	7.34	22.1	1025	"	"	
1430	"	600	7.30	22.2	1028	"	"	
1445	"	750	7.39	22.2	1021	"	"	
1500	"	900	7.40	22.1	1021			
		Total	Discharge		1,000 gal			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BANKS 986	15:10	Plastic	250ml	1	EPA 300.0	None	Filtered
DUP 051208	15:10	Plastic	250ml	1	300.0	None	Filtered

Additional Comments: I will use wl measure from 55-647987 of 216.30 for Purge Vol. Collect FB-051208 and EQB-051208. FB= unfiltered EQB = Filtered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FMI Copper Queen Branch
Phase No.	2.2	Date:	5-12-08
Well ID:	BANKS 987	Weather:	Clear / windy
ADWR No.	647987	Collected By:	MA

WELL DATA

Well Depth (ft bls):	~~216.30 MA~~	Time:	13:15
Casing Diameter (in):		Point of Measurement:	TOC
Static Water Level (ft bmp):	216.30	GPS:	See File
1 Casing Volume (gals):	NA	Elevation:	See File
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250ml	1	EPA 300.0	None	Filtered

Additional Comments: Water level measurement only

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	~~2.2~~ BARTON 010	Date:	5-12-08
ADWR No.	55-085010	Weather:	clear / windy
Location:		Collected By:	MA

WELL DATA

Well Depth (ft bls):	300'	Static Water Level (ft bmp):	227.50 Irrad. ck
Casing Diameter (in):	6"	Date/Time:	5-12-08 17:05
Well Use:	Domestic / Irrigation	Point of Measurement:	
3 Casing Volumes:		GPS:	12R 606200 3469049
		Elevation:	4688

FIELD SAMPLING DATA

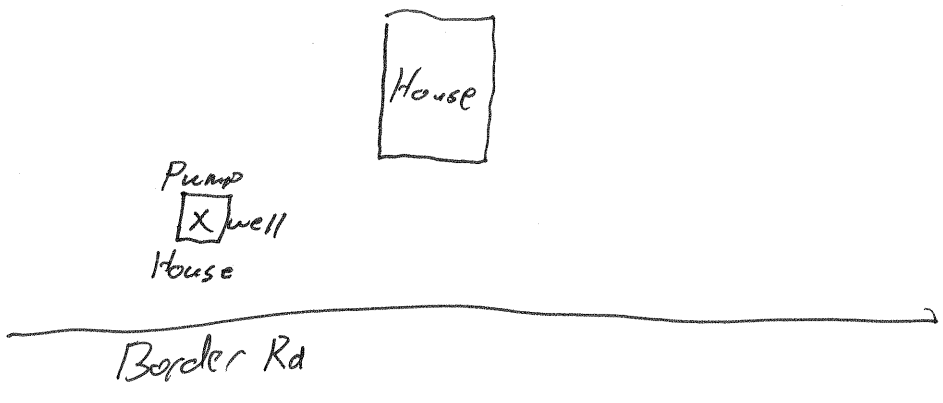
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: This well is not operational
Sounder probe covered in rust scale - beep starting at 225' btoc

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	87200002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	BARTON 919	Date:	5-12-08
ADWR No.	55-644919	Weather:	clear/windy
Location:		Collected By:	MA

WELL DATA

Well Depth (ft bls):	130	Static Water Level (ft bmp):	113.71'
Casing Diameter (in):	6"	Date/Time:	5-12-08 17:30
Well Use:	Domestic	Point of Measurement:	
3 Casing Volumes:	NA	GPS:	12R 606242 3469077
		Elevation:	4683

FIELD SAMPLING DATA

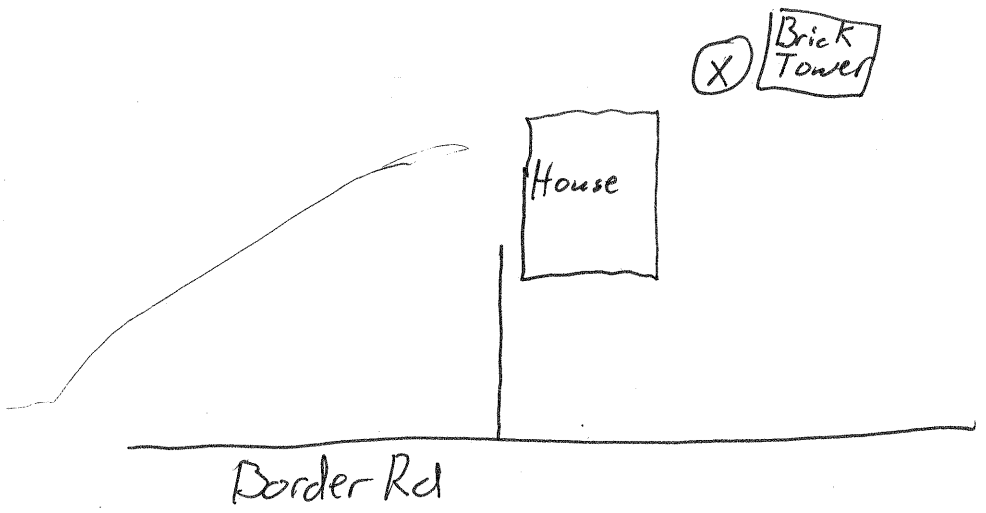
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: This well is not operational
Tagged bottom at approx 128' btoc

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	9720000	Client:	FMI Copper Queen Branch
Phase No.	2.2	Date:	5-23-08
Well ID:	BF-01	Weather:	Cloudy / rain / windy
ADWR No.	539783	Collected By:	MH

WELL DATA

Well Depth (ft bls):	400'	Time:	7:45
Casing Diameter (in):	4"	Point of Measurement:	Top of Sounding tube
Static Water Level (ft bmp):	348.80	GPS:	See file
1 Casing Volume (gals):	33.4	Elevation:	See file
3 Casing Volumes (gals):	101		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
7:51	8	8	6.30	20.3	2773	Clear	Slight Sulfur	Pump on 7:50
7:53	8	24	6.29	20.5	2752	"	None	Black sediment
7:54	Pumped dry 32					"	"	"
8:10	6	44	6.41	18.3	2698	Clear	None	Few sediments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BF-01	8:10	Plastic	250ml	1	EPA 300.0	None	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FMI Copper Queen Branch
Phase No.	2.2	Date:	5-13-08
Well ID:	BIMA	Weather:	clear / windy
ADWR No.	577927	Collected By:	MA

WELL DATA

Well Depth (ft bls):	460	Time:	13:25
Casing Diameter (in):	4"	Point of Measurement:	TOC
Static Water Level (ft bmp):	367.31	GPS:	See file
1 Casing Volume (gals):	60.5	Elevation:	See file
3 Casing Volumes (gals):	181.5 16min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
13:29	12	24	6.53	23.6	1496	clear	None	Opened bib 13:27
13:35	"	72	6.56	22.9	1498	"	"	
13:38	"	132	6.58	22.8	1486	"	"	
13:42	"	180	6.58	22.8	1488	"	"	
13:45	"	216	6.58	22.7	1489	"	"	
		Total Discharge 252 gal.						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BIMA	13:48	Plastic	250ml	1	EPA 300.0	None	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000 00	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-15-08
Well ID:	BLOMMER	Weather:	Clear / windy
ADWR 55 No.	633472	Collected By:	MA

WELL DATA

Well Depth (ft bls):	350	Time:	11:45
Casing Diameter (in):	6"	Point of Measurement:	NA
Static Water Level (ft bmp):	NA obstructed at 277	GPS:	See File
1 Casing Volume (gals):	NA	Elevation:	See File
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
11:52	10	20	7.08	24.1	846	Clear	None	open b.b at 11:50
11:55	10	50	7.11	22.4	843	"	"	
12:00	10	100	7.24	21.9	846	"	"	
12:10	10	200	7.16	22.2	850	"	"	
12:15	10	250	7.16	22.2	846	"	"	
12:20	10	300	7.16	22.2	845	"	"	
		Total Purge is 350 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BLOMMER	12:25	Plastic	250 ml	1	EPA 300.0	None ~~NO3~~	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000	Client:	FMI Copper Queen Branch
Phase No.	2.2	Date:	4-22-08
Well ID:	BURKE	Weather:	Clear
ADWR No.	55-212268	Collected By:	MA

WELL DATA

Well Depth (ft bls):	780'	Time:	10:20
Casing Diameter (in):	6"	Point of Measurement:	Top of Conductor casing
Static Water Level (ft bmp):	606.55	GPS:	347303I 12R 0602231
1 Casing Volume (gals):	254.8	Elevation:	4833'
3 Casing Volumes (gals):	765 gal 96min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
14:03	8	8	6.65	28.6	462	Clear	None	
14:05	8		6.97	27.3	445	"	"	
14:10	8		7.05	26.8	445	"	"	
14:15	"		7.07	27.0	444	"	"	
14:25	"		7.09	27.5	447	"	"	
14:35	"		7.05	27.3	444	"	"	
14:45	"		7.06	27.6	436	"	"	
14:55	"		7.04	27.5	430	"	"	
15:10	"		7.09	27.4	428	"	"	
15:25	"		7.09	27.3	422	"	"	
15:35	"		7.13	27.0	423	"	"	
	Total Discharge is			772 gal				

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BURKE-F	15:40	Plastic	250ml	2	EPA 300.0	NO3	Filtered
BURKE	15:40	Plastic	500 ml	1	EPA 300.0	None	Unfiltered

Additional Comments:

At 8gpm a ~~54 min~~ 1.6hr purge is Req MA

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FMI Copper Queen Branch
Phase No.	2.2	Date:	5-13-08
Well ID:	CAMPBELL	Weather:	Clear
ADWR No.	215509	Collected By:	MA

WELL DATA

Well Depth (ft bls):	200'	Time:	8:35
Casing Diameter (in):	5"	Point of Measurement:	TOC
Static Water Level (ft bmp):	181.80	GPS:	See file
1 Casing Volume (gals):	NA	Elevation:	See File
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250ml	1	EPA 300.0	None	Filtered

Additional Comments: No Sample, Well is not in operation

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	9720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-05-08
Well ID:	CHAMBERS	Weather:	Clear
ADWR 55 No.	629807	Collected By:	MA

WELL DATA

Well Depth (ft bls):	245	Time:	9:30
Casing Diameter (in):	6	Point of Measurement:	NA
Static Water Level (ft bmp):	NA See File	GPS:	See File
1 Casing Volume (gals):	NA	Elevation:	See File
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
936	6	6	7.19	21.5	434	Clear	None	open bib at 935
940	"	30	7.19	22.1	421	"	"	
945	"	60	7.15	22.0	423	"	"	
950	"	90	7.16	22.1	420	"	"	
955	"	120	7.15	22.1	421	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
CHAMBERS	9:57	Plastic	250 ml	1	EPA 300.0	~~NO3~~ None	Filtered

Additional Comments: Pump was running upon arrival
9:52 Flower beds are getting Full

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-20-08
Well ID:	COB MW-1	Weather:	Clear
ADWR 55 No.	903992	Collected By:	MA

WELL DATA

Well Depth (ft bls):	420	Time:	8:12
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	233.12	GPS:	See File
1 Casing Volume (gals):	274.6	Elevation:	See File
3 Casing Volumes (gals):	824 55min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:14	15	15	6.86	21.9	2153	Clear	None	open bib at 8:13
8:18	"	75	6.87	21.8	2106	"	"	
8:23	"	150	6.84	21.7	2135	"	"	
8:28	"	225	6.86	21.7	2129	"	"	
8:33	"	300	6.86	21.9	2117	"	"	
8:38	"	375	6.86	21.7	2112	"	"	
8:43	"	450	6.78	21.9	2066	"	"	
8:53	"	600	6.83	21.9	2055	"	"	
9:03	"	750	6.87	22.0	2063	"	"	
9:08	"	825	6.88	22.0	2050	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
COB MW-1	9:10	Plastic	250 ml	1	EPA 300.0	None ~~NO3~~	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-20-08
Well ID:	COB MW-2	Weather:	Clear / windy
ADWR 55 No.	903984	Collected By:	MA

WELL DATA

Well Depth (ft bls):	162'	Time:	10:27
Casing Diameter (in):	4"	Point of Measurement:	Top of Sounding tube
Static Water Level (ft bmp):	123.00	GPS:	See File
1 Casing Volume (gals):	25.5	Elevation:	See File
3 Casing Volumes (gals):	77 gal 10 min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:34	8	8	7.02	24.4	495	clear	None	Pump on at 10:33
10:37	11	40	7.18	22.0	479	"	"	
10:40	"	56	7.28	21.3	489	"	"	
10:43	"	90	7.32	21.2	490	"	"	
		Total Discharge = 96 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
COB MW-2	10:45	Plastic	250 ml	1	EPA 300.0	None ~~HNO3~~	Filtered

Additional Comments: The measuring point is 3.15' above the surveyor's mark on concrete pad around outside of conductor casing.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-20-08
Well ID:	COB MW-3	Weather:	Clear
ADWR 55 No.	906823	Collected By:	MA

WELL DATA

Well Depth (ft bls):	300'	Time:	11:18
Casing Diameter (in):	4"	Point of Measurement:	
Static Water Level (ft bmp):	125.00	GPS:	See file
1 Casing Volume (gals):	114	Elevation:	See file
3 Casing Volumes (gals):	343 17min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
11:25	20	100	7.38	21.7	479	Clear	None	Pump on 11:20
11:30	|	200	7.52	23.5	469	|	|	
11:35	|	300	7.51	22.3	470	|	|	
11:40	|	400	7.54	22.4	471	|	|	
11:45	|	500	7.56	22.3	473	|	|	
		Total Discharge 500 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
COB MW-3	11:46	Plastic	250 ml	1	EPA 300.0	~~NO3~~ None	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-20-08
Well ID:	COB WL	Weather:	Clear / Windy
ADWR 55 No.	593116	Collected By:	MA

WELL DATA

Well Depth (ft bls):	150'	Time:	9:27
Casing Diameter (in):	4"	Point of Measurement:	Top of Sounding tube
Static Water Level (ft bmp):	57.50	GPS:	see file
1 Casing Volume (gals):	60	Elevation:	see file
3 Casing Volumes (gals):	181 18 min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:33	10	10	6.90	23.6	1049	Clear	None	Pump on 9:33
9:35	"	30	6.97	22.1	1043	"	"	
9:39	"	70	7.04	21.5	1049	"	"	
9:42	"	100	7.09	21.3	1047	"	"	
9:45	3	110	7.14	21.5	1048	"	"	9:47 Slow 6gpm
9:50	6	134	7.29	21.8	1053	"	"	
9:53	6	152	7.30	21.9	1055			steady at 6gpm
9:56	4	164	7.30	21.9	1053			
								flow is slow
	Total Discharge is 180 gal							

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
COB WL	10:00	Plastic	250 ml	1	EPA 300.0	NO3	Filtered

Additional Comments: The measuring point is 1.6' above the survey mark on the concrete pad around conductor casing. COB rep stated that this well tends to stop pumping sometimes.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FMI Copper Queen Branch
Phase No.	2.2	Date:	5-14-08
Well ID:	COOPER	Weather:	Clear
ADWR No.	623564	Collected By:	MA

WELL DATA

Well Depth (ft bls):	325	Time:	13:40
Casing Diameter (in):	6"	Point of Measurement:	NA
Static Water Level (ft bmp):	NA No Access	GPS:	See File
1 Casing Volume (gals):	NA	Elevation:	See File
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
14:01	6	6	7.94	24.3	415	Clear	None	on at 14:00
14:05	"	30	8.01	22.2	421	"	"	
14:10	"	60	8.14	21.9	419	"	"	
14:20	"	120	8.08	22.3	421	"	"	
14:30	"	180	8.11	22.4	428			
14:40	"	240	8.02	22.3	420			
14:50	"	300	8.08	22.1	419			
		Total Discharge is 360 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
COOPER	15.00	Plastic	250ml	1	EPA 300.0	None	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-5-08
Well ID:	COOPER C	Weather:	clear
ADWR 55 No.	637069	Collected By:	MA

WELL DATA

Well Depth (ft bls):	220'	Time:	12:29
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	155.34	GPS:	See file
1 Casing Volume (gals):	95	Elevation:	See File
3 Casing Volumes (gals):	285 30min Purge		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1240	10	20	6.64	24.5	2132	clear	None	open bib at 1238
1245	10	70	6.76	22.4	2156	"	"	
1250	10	120	6.77	22.1	2130	"	"	
1300	10	220	6.75	22.1	2130	"	"	
1305	10	270	6.78	22.4	2139	"	"	
~~1310~~ MA								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
COOPER C	13:10	Plastic	250 ml	1	EPA 300.0	NO3	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FMI Copper Queen Branch
Phase No.	2.2	Date:	5-12-08
Well ID:	DODSON	Weather:	Clear / Windy
ADWR No.	644927	Collected By:	MA

WELL DATA

Well Depth (ft bls):	~~200'~~ MA 180'	Time:	15:20
Casing Diameter (in):	~~6"~~ MA 4"	Point of Measurement:	TOC
Static Water Level (ft bmp):	81.38	GPS:	See File
1 Casing Volume (gals):	64.4	Elevation:	See File
3 Casing Volumes (gals):	193 18min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1526	11	11	7.00	22.5	1069	Clear	None	Open bib at 1525
1530	"	55	7.12	21.5	1061	"	"	
1533	"	88	7.14	21.1	1078	"	"	
1537	"	132	7.15	21.3	1086	"	"	
1540	"	165	7.19	21.1	1105	"	"	
1543	"	198	7.11	21.1	1118	"	"	
		Total Discharge 220						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
DODSON	15:45	Plastic	250ml	1	EPA 300.0	None	Filtered

Additional Comments: well Depth and casing d.a. are written on control box
Mr. Dodson stated that the well has been used almost constantly in the past weekend.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FMI Copper Queen Branch
Phase No.	2.2	Date:	5-13-08
Well ID:	DOUGLASS 791	Weather:	Clear/windy
ADWR No.	592791	Collected By:	MA

WELL DATA

Well Depth (ft bls):	200	Time:	14:35
Casing Diameter (in):	5"	Point of Measurement:	TOC
Static Water Level (ft bmp):	24.60	GPS:	See File
1 Casing Volume (gals):	NA	Elevation:	See File
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250ml	1	EPA 300.0	None	Filtered

Additional Comments: Water Level only

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FMI Copper Queen Branch
Phase No.	2.2	Date:	5-13-08
Well ID:	DOUGLASS 792	Weather:	Clear / Windy
ADWR No.	592.792	Collected By:	MA

WELL DATA

Well Depth (ft bls):	200	Time:	14:40
Casing Diameter (in):	5"	Point of Measurement:	TOC
Static Water Level (ft bmp):	87.21	GPS:	See File
1 Casing Volume (gals):	NA	Elevation:	See File
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250ml	1	EPA 300.0	None	Filtered

Additional Comments: Water Level only

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-14-08
Well ID:	EAST	Weather:	Clear
ADWR 55 No.	599796	Collected By:	MA

WELL DATA

Well Depth (ft bls):	125'	Time:	10:10
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	52.45	GPS:	See file
1 Casing Volume (gals):	106.5	Elevation:	see file
3 Casing Volumes (gals):	320 27min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:14	12	24	7.18	22.2	555	Clear	None	Open bibat 10:12
10:17	12	60	7.29	21.3	544	"	"	
10:22	11	120	7.33	21.1	571	"	"	
10:27	11	180	7.31	21.0	586	"	"	
10:32	11	240	7.31	21.0	592	"	"	
10:37	11	300	7.31	20.9	595	"	"	
	Total Discharge ≈ 360 gal							

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
EAST	10:42	Plastic	250 ml	1	EPA 300.0	None ~~NO3~~	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FMI Copper Queen Branch
Phase No.	2.2	Date:	5-29-08
Well ID:	ENGLUND	Weather:	Clear
ADWR No.	565260	Collected By:	MA

WELL DATA

Well Depth (ft bls):	320	Time:	13:43
Casing Diameter (in):	4.5	Point of Measurement:	TOC
Static Water Level (ft bmp):	288.53	GPS:	See File
1 Casing Volume (gals):	26	Elevation:	See File
3 Casing Volumes (gals):	78 10min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1357	8	8	6.64	24.9	1433	Clear	None	Open bl 13:56
1400	8	40	6.90	22.4	1430	"	"	
1403	8	56	6.99	21.8	1440	"	"	
1406	8	80	7.01	22.0	1459	"	"	
		Total Discharge 96 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
ENGLUND	14:10	Plastic	250ml	1	EPA 300.0	None	Filtered
DUP052908	14:10	Plastic	250ml	1	EPA 300.0	None	Filtered

Additional Comments: Collect FB 052908 and EQB 052908
FB is unFiltered EQB is Filtered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	87200.00	Client:	FMI Copper Queen Branch
Phase No.	2.2	Date:	5-12-08
Well ID:	EPPELE 641	Weather:	Clear / windy
ADWR No.	605641-L	Collected By:	MA

WELL DATA

Well Depth (ft bls):	265	Time:	9:40
Casing Diameter (in):	8"	Point of Measurement:	TOC
Static Water Level (ft bmp):	30.64	GPS:	See File
1 Casing Volume (gals):	612	Elevation:	See File
3 Casing Volumes (gals):	1836 183min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:00	10	50	7.18	23.3	690	clear	None	open b:b at 9:55
10:10	"	150	7.18	21.6	675	"	"	
10:30	"	350	7.21	21.4	678	"	"	
11:00	"	650	7.21	21.7	667	"	"	
11:20	well pumped Dry							
		Total Discharge 800 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
EPPELE 641	12:00	Plastic	250ml	1	EPA 300.0	~~None~~	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-5-08
Well ID:	FRANCO	Weather:	clear
ADWR 55 No.	500101	Collected By:	MA

WELL DATA

Well Depth (ft bls):	200'	Time:	13:30
Casing Diameter (in):	6"	Point of Measurement:	NA
Static Water Level (ft bmp):	NA	GPS:	See File
1 Casing Volume (gals):	NA	Elevation:	See File
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1330	10	10	6.79	25.0	1563	Clear	None	open bib at 1329
1335	~~60~~ 10	60	6.88	23.0	1550	"	"	
1340	~~NA~~ ~~10~~ 10	110	6.89	23.0	1555	"	"	
1345	~~160~~ 10	160	6.93	23.0	1558	"	"	
1350	10	210	6.93	23.1	1557	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
FRANCO	13:55	Plastic	250 ml	1	EPA 300.0	None ~~NO3~~	Filtered

Additional Comments: Mrs. Franco is concerned about too much water on her yard.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-14-08
Well ID:	FULTZ	Weather:	clear / windy
ADWR 55 No.	212447	Collected By:	MA

WELL DATA

Well Depth (ft bls):	300	Time:	10:55
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	No Access	GPS:	See File
1 Casing Volume (gals):	NA	Elevation:	See File
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
11:00	9	9	6.66	19.6	1859	clear	None	Open bleed at 10:59
11:05	"	54	6.82	20.8	1891	"	"	
11:10	"	99	6.85	21.2	1899	"	"	
11:15	"	144	6.86	21.3	1893	"	"	
11:20	"	189	6.87	21.4	1895	"	"	
11:25	"	234	6.90	21.3	1892	"	"	
11:30	"	279	6.89	21.3	1882			
11:40	"	369	6.88	21.3	1881			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
FULTZ	11:45	Plastic	250 ml	1	EPA 300.0	None ~~NO3~~	Filtered

Additional Comments: 11:36 yard is Flooding

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	9720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-5-08
Well ID:	558557	Weather:	clear/windy
ADWR 55 No.	GARNER 557	Collected By:	MA

WELL DATA

Well Depth (ft bls):	300	Time:	15:30
Casing Diameter (in):	6'	Point of Measurement:	TOC
Static Water Level (ft bmp):	191.28	GPS:	See file
1 Casing Volume (gals):	160	Elevation:	See file
3 Casing Volumes (gals):	480		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250 ml	1	EPA 300.0	NO3	Filtered

Additional Comments: Could not obtain a sample as the pump stopped running after 2 min. of operation.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-5-08
Well ID:	GARNER 635	Weather:	Clear / Windy
ADWR 55 No.	587635	Collected By:	MA

WELL DATA

Well Depth (ft bls):	680'	Time:	14:25
Casing Diameter (in):	12"	Point of Measurement:	TOC
Static Water Level (ft bmp):	195.90	GPS:	See File
1 Casing Volume (gals):	2844	Elevation:	see file
3 Casing Volumes (gals):	8533 7.5hr purge		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1431	19	19	7.30	26.5	470	clear	None	Open bib at 14:30
1441	20	220	7.38	24.8	467	"	"	
1451	20	420	7.35	24.8	467	"	"	
1501	20	620	7.41	24.6	466	"	"	
1515	20	900	7.26	24.9	468	"	"	
		Total Discharge = 1,000 gal.						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
GARNER 635	1520	Plastic	250 ml	1	EPA 300.0	None ~~NO3~~	Filtered

Additional Comments: Dawn Walker stated that the well has been used alot over the past 2 days irrigating trees.
15:15 yard is flooding

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-27-08
Well ID:	G GOOSE 547	Weather:	Clear / windy
ADWR 55 No.	628547	Collected By:	MA

WELL DATA

Well Depth (ft bls):	800	Time:	9:47
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	220.91	GPS:	See file
1 Casing Volume (gals):	850	Elevation:	See file
3 Casing Volumes (gals):	2551		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:38	25-30	200	6.87	24.0	829	Rusty	Rotten	Pump on at 10:30
10:43	25	325	6.90	22.9	822	very slightly tan	None	
10:50	"	500	7.10	22.8	840	Clear	"	
11:00	"	750	7.06	22.7	846	"	"	
11:15	"	1125	7.11	22.8	857	"	"	
11:30	"	1500	7.06	22.7	855	"	"	
11:45	"	1875	7.01	22.7	854	"	"	
12:00	"	2250	7.08	22.8	854	"	"	
12:15	"	2625	7.08	22.7	856	"	"	
		Total Discharge ~ 3000 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
G GOOSE 547	12:30	Plastic	~~125~~ ml	1	EPA 300.0	NO3	Filtered
G GOOSE 547	12:30	Plastic	250/500	2	EPA 300.0	None	Filtered / unfiltered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-22-08
Well ID:	GL-03	Weather:	Cloudy / windy
ADWR 55 No.	539782	Collected By:	MA

WELL DATA

Well Depth (ft bls):	825	Time:	14:30
Casing Diameter (in):	4"	Point of Measurement:	TOC
Static Water Level (ft bmp):	660.15	GPS:	See File
1 Casing Volume (gals):	108	Elevation:	See File
3 Casing Volumes (gals):	323		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
14:36	8	8	7.33	20.4	469	clear	None	Pump on 14:35
14:40	"	40	7.07	22.7	658	"	"	
14:45	"	80	7.31	25.1	546	"	"	
14:50	"	120	7.16	25.3	585	"	"	
14:55		160	7.14	25.8	593	"	"	
15:00	Flow is down to 3gpm							
15:01	3	187	7.12	25.9	589	Black	None	
15:05	2	195	7.11	25.8	593	Black	"	
15:10	3-5	210	7.11	26.1	594	Dark Grey	"	
15:15	3	225	6.97	25.9	668	clear	"	
15:33	Restart		7.06	25.3	647	Clear	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
GL-03	15:35	Plastic	250 ml	1	EPA 300.0	None ~~NO3~~	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-5-08
Well ID:	GOAR Ranch	Weather:	clear / windy
ADWR 55 No.	610695	Collected By:	MA

WELL DATA

Well Depth (ft bls):	250	Time:	16:10
Casing Diameter (in):	7"	Point of Measurement:	TOC
Static Water Level (ft bmp):	188.11	GPS:	See File
1 Casing Volume (gals):	NA	Elevation:	See File
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250 ml	1	EPA 300.0	NO3	Filtered

Additional Comments: Water level measurement only.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-7-08
Well ID:	HOBAN	Weather:	Clear / windy
ADWR 55 No.	805290	Collected By:	MA

WELL DATA

Well Depth (ft bls):	316	Time:	10:20
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	163.28	GPS:	See File
1 Casing Volume (gals):	224	Elevation:	See File
3 Casing Volumes (gals):	673 45min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:26	15	15	6.75	22.6	1497	Clear	None	open bib at 10:25
10:30	"	75	6.86	22.1	1478	"	"	
10:35	"	150	6.91	22.1	1416	"	"	
10:40	"	225	6.89	22.1	1439	"	"	
10:45	"	300	6.90	22.3	1545	"	"	
10:55	"	450	6.88	22.2	1515	"	"	
11:00	"	525	6.89	22.2	1517	"	"	
11:05	"	600	6.87	22.4	1509	"	"	
11:10	"	675	6.88	22.3	1532	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
HOBAN	11:15	Plastic	250 ml	1	EPA 300.0	None ~~NO3~~	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000C	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-8-08
Well ID:	HOWARD	Weather:	Clear / windy
ADWR 55 No.	Unknown	Collected By:	MA

WELL DATA

Well Depth (ft bls):	200	Time:	9:25
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	150.70	GPS:	See File
1 Casing Volume (gals):	73.4	Elevation:	See File
3 Casing Volumes (gals):	220		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:48	8	8	6.75	22.9	1472	Clear	None	open bib at 9:47
9:52	11	40	6.86	21.5	1349	"	"	
9:57	11	80	6.91	21.5	1446	"	"	
10:02	11	120	6.91	21.2	1472	"	"	
10:07	11	160	6.93	21.1	1490	"	"	
10:12	11	200	6.95	21.0	1494	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
HOWARD	10:15	Plastic	250 ml	1	EPA 300.0	None ~~HNO3~~	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000.0	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-6-08
Well ID:	KEEFER	Weather:	Clear / windy
ADWR 55 No.	209744	Collected By:	MH

WELL DATA

Well Depth (ft bls):	250	Time:	8:10
Casing Diameter (in):	NA (6") see Note	Point of Measurement:	TOC
Static Water Level (ft bmp):	135.28	GPS:	See File
1 Casing Volume (gals):	168	Elevation:	See file
3 Casing Volumes (gals):	505 42 min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:25	12	12	7.00	19.5	480	~~Appr~~ Clear	None	open bib at 8:24
8:30	"	72	7.13	20.1	477	"	"	
8:35	"	132	7.12	19.9	473	"	"	
8:40	"	192	7.17	20.0	499	"	"	
8:45	"	252	7.15	20.3	486	"	"	
8:50	"	312	7.16	20.1	515	"	"	
9:00	"	432	7.15	20.4	508	"	"	
9:05	"	492	7.19	20.3	512	"	"	
		Total Discharge = 552 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
KEEFER	9:10	Plastic	250 ml	1	EPA 300.0	~~NO3~~ None	Filtered

Additional Comments: Mr. Keefer said casing dia. is either 6" or 4" - I will use 6" for purge vol. calculation. The conductor casing is 8"

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000 / 2.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	KEMP	Date:	5-20-08
ADWR No.	55- 645912	Weather:	Clear
Location:	1552 E. Border Rd Bisbee, AZ 85603	Collected By:	MA

WELL DATA

Well Depth (ft bls):	150'	Static Water Level (ft bmp):	NA
Casing Diameter (in):	6"	Date/Time:	5-22-08 16:40
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	NA	GPS:	12R 609523 3468858
		Elevation:	4622

FIELD SAMPLING DATA

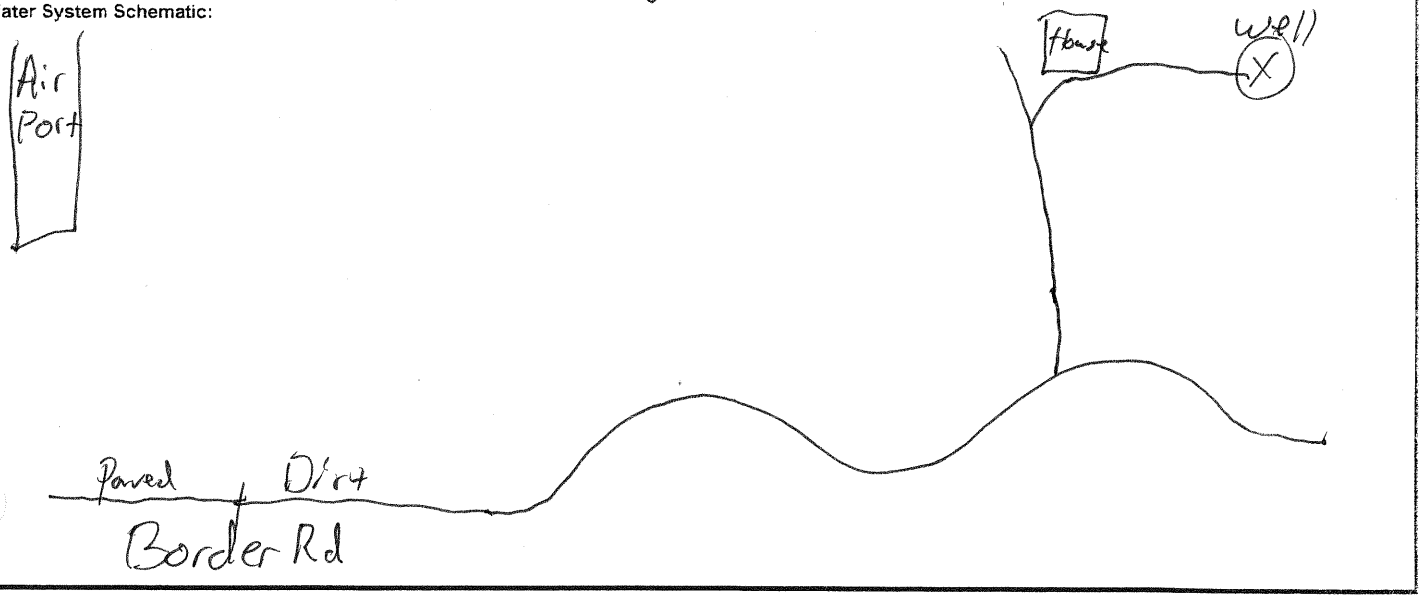
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1650	10	20	7.27	21.7	435	Clear	None	Open hose bib at 1648
1655	"	70	7.23	21.3	430	"	"	
1700	"	120	7.26	20.8	430			
1705	2		7.24	21.2	435			Flow Rate way down

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
KEMP	17:10	Plastic	250	1	300.0	None	SO_4^- only

Additional Comments: I deployed both sounders to 180' and neither indicated water. Owners stated wl is around 80'. I will base purge volume on that. 1 casing = 103 3 casings = 309

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-6-08
Well ID:	MCCONNELL 265	Weather:	clear / windy
ADWR 55 No.	539265	Collected By:	MA

WELL DATA

Well Depth (ft bls):	216	Time:	11:32
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	156.40	GPS:	See file
1 Casing Volume (gals):	87.5	Elevation:	See file
3 Casing Volumes (gals):	263 33min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
11:43	8	8	6.61	23.8	1672	clear	None	open bib at 11:42
11:48	"	48	6.71	21.8	1674	"	"	
11:53	"	88	6.76	21.6	1686	"	"	
11:58	"	128	6.77	21.3	1696	"	"	
12:03	"	168	6.77	21.4	1677	"	"	
12:08	"	208	6.75	21.5	1658	"	"	
12:13	"	248	6.77	21.5	1665	"	"	
12:18	"	288	6.77	21.6	1668			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
MCCONNELL265	12:20	Plastic	250 ml	1	EPA 300.0	None ~~NO3~~	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-15-08
Well ID:	METZLER	Weather:	Clear
ADWR 55 No.	35-71891	Collected By:	MA

WELL DATA

Well Depth (ft bls):	351	Time:	10:15
Casing Diameter (in):	6	Point of Measurement:	TOC
Static Water Level (ft bmp):	286.53	GPS:	See File
1 Casing Volume (gals):	94.7	Elevation:	see File
3 Casing Volumes (gals):	284		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:22	20	20	7.00	23.7	1032	Clear	None	Open bib at 10:20
10:26	"	60	7.10	22.6	1035	"	"	
10:31	"	110	7.16	22.4	1043	"	"	
10:36	"	160	7.15	22.7	1045	"	"	
10:41	"	210	7.14	22.7	1047	"	"	
10:46	"	260	7.12	22.8	1051	"	"	
		Total Discharge 260 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
METZLER	10:50	Plastic	250 ml	1	EPA 300.0	None ~~NO3~~	Filtered

Additional Comments: This well has been running as the basins around trees are wet

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-8-08
Well ID:	MOORE	Weather:	Clear
ADWR 55 No.	538847	Collected By:	MA

WELL DATA

Well Depth (ft bls):	220	Time:	7:50
Casing Diameter (in):	6"	Point of Measurement:	NA
Static Water Level (ft bmp):	No Access	GPS:	See File
1 Casing Volume (gals):	NA	Elevation:	See File
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
7:56	9	9	7.00	19.8	429	Clear	None	open b.h. at 7:55
8:00	"	45	7.10	20.9	428	"	"	
8:10	"	135	7.12	22.0	427	"	"	
8:20	"	225	7.03	22.2	428	"	"	
8:30	"	315	7.04	22.3	430	"	"	
8:40	"	405	7.09	22.4	432	"	"	
		Total Discharge 450 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
MOORE	8:45	Plastic	250 ml	1	EPA 300.0	None ~~NO3~~	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FMI Copper Queen Branch
Phase No.	2.2	Date:	5-13-08
Well ID:	NOTEMAIN	Weather:	Clear/Windy
ADWR No.	212483	Collected By:	MA

WELL DATA

Well Depth (ft bls):	470	Time:	12:05
Casing Diameter (in):	5"	Point of Measurement:	TOC
Static Water Level (ft bmp):	339.77	GPS:	See File
1 Casing Volume (gals):	132.8	Elevation:	See File
3 Casing Volumes (gals):	399 34min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
12:12	12	24	6.65	22.7	1451	Clear	None	open bl at 12:10
12:15	"	60	6.68	23.6	1453	"	"	
12:20	"	120	6.68	23.7	1459	very lite Brown tan	None	
12:25	"	180	6.70	23.6	1458	faint red/tan	"	
12:30	"	240	6.70	23.7	1441	" "	None	
12:40	"	360	6.67	23.	1445	" "	"	
	Total Purge = 420 gal							

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
NOTEMAIN	12:45	Plastic	250ml	1	EPA 300.0	None	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FMI Copper Queen Branch
Phase No.	2.2	Date:	5-13-08
Well ID:	OSBORN	Weather:	Clear / Windy
ADWR No.	643436	Collected By:	MA

WELL DATA

Well Depth (ft bls):	258	Time:	15:35
Casing Diameter (in):	~~MA~~ 6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	68.65	GPS:	See File
1 Casing Volume (gals):	278	Elevation:	See File
3 Casing Volumes (gals):	835 56min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
15:42	15	30	7.11	22.9	578	Clear	None	open bib at 15:40
15:46	"	90	7.28	22.4	576	"	"	
15:51	"	165	7.28	22.4	576	"	"	
16:01	"	315	7.24	22.4	575	"	"	
16:11	"	465	7.21	22.3	574	"	"	
16:24	"	660	7.19	22.3	575	"	"	
16:35	"	825	7.22	22.2	576	"	"	
		Total Discharge is 900 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
OSBORN	16:40	Plastic	250ml	1	EPA 300.0	None	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FMI Copper Queen Branch
Phase No.	2.2	Date:	5-13-08
Well ID:	PALMER 819	Weather:	Clear / windy
ADWR No.	578819	Collected By:	MA

WELL DATA

Well Depth (ft bls):	220	Time:	15:10
Casing Diameter (in):	6"	Point of Measurement:	NA
Static Water Level (ft bmp):	No Access	GPS:	See file
1 Casing Volume (gals):	NA	Elevation:	See file
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
15:12	1	1	7.92	22.9	508	Clear	None	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
PALMER 819	15:15	Plastic	250ml	1	EPA 300.0	None	Filtered

Additional Comments: Sample was taken From Storage tank per owners request

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-15-08
Well ID:	PARRA	Weather:	Cloudy
ADWR 55 No.	576415	Collected By:	MA

WELL DATA

Well Depth (ft bls):	355	Time:	13:30
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	279.78'	GPS:	See file
1 Casing Volume (gals):	80.7	Elevation:	See file
3 Casing Volumes (gals):	242		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1333	10	10	6.98	23.3	1201	Clear	None	open bib at 1332
1337	10	50	7.04	22.3	1199	"	"	
1342	10	100	7.09	22.1	1192	"	"	
1347	10	150	7.10	21.9	1196	"	"	
1352	10	200	7.12	21.8	1196	"	"	
1357	10	250	7.10	21.8	1200	"	"	
		Total Discharge 280 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
PARRA	14:00	Plastic	250 ml	1	EPA 300.0	~~NO3~~ None	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-7-08
Well ID:	PIONKE	Weather:	Clear / windy
ADWR 55 No.	613395	Collected By:	MA

WELL DATA

Well Depth (ft bls):	330	Time:	1300
Casing Diameter (in):	8"	Point of Measurement:	NA
Static Water Level (ft bmp):	NA	GPS:	See File
1 Casing Volume (gals):	NA	Elevation:	See File
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
13:14	18	18	6.94	21.9	1126	Clear	None	opened at 13:13
13:20	"	126	7.04	21.7	1143	"	"	
13:30	"	306	7.05	21.3	1092	"	"	
13:40	"	486	6.95	21.7	1199	"	"	
13:50	"	666	7.03	21.5	1094	"	"	
14:00	"	846	7.13	21.4	1092	"	"	
14:10	"	1026	7.14	21.6	1110	"	"	
14:20	"	1206	7.08	21.4	1100	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
PIONKE	14:25	Plastic	250 ml	1	EPA 300.0	None ~~NO3~~	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-19-08
Well ID:	POOL	Weather:	Clear
ADWR 55 No.	509518	Collected By:	MA

WELL DATA

Well Depth (ft bls):	313	Time:	9:40
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	204.72	GPS:	See file
1 Casing Volume (gals):	159	Elevation:	See file
3 Casing Volumes (gals):	477 40 min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:54	12	12	7.04	22.7	580	Tan	None	open b'hole ax 953
9:57	12	48	7.18	22.1	575	clear	"	
10:03	12	120	7.34	21.7	579	"	"	
10:08	12	180	7.38	21.9	579	"	"	
10:13	12	240	7.38	22.4	580	"	"	
10:18	12	300	7.40	22.2	579	"	"	
10:23	12	360	7.40	22.4	584	"	"	
10:28	12	420	7.43	22.3	584	"	"	
10:33	12	480	7.40	22.2	585			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
POOL	10:35	Plastic	250 ml	1	EPA 300.0	None ~~NO3~~	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-6-08
Well ID:	RAMIREZ	Weather:	Clear / windy
ADWR 55 No.	216425	Collected By:	MA

WELL DATA

Well Depth (ft bls):	300	Time:	13:02
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	NA	GPS:	See File
1 Casing Volume (gals):	NA	Elevation:	See File
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
13:11	10	10	7.12	24.7	422	Clear	None	open bib at 13:10
13:15	"	50	7.11	23.4	403	"	"	
13:20	"	100	7.13	23.4	407	"	"	
13:25	"	150	7.18	23.0	407	"	"	
13:30	"	200	7.18	22.7	405	"	"	
13:35	"	250	7.18	22.7	405			
13:40	"	300	7.19	22.7	405			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
RAMIREZ	13:45	Plastic	250 ml	1	EPA 300.0	None ~~HNO3~~	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FMI Copper Queen Branch
Phase No.	2.2	Date:	5-13-08
Well ID:	RAY	Weather:	Clear / Windy
ADWR No.	803772	Collected By:	MA

WELL DATA

Well Depth (ft bls):	100	Time:	9:15
Casing Diameter (in):	8"	Point of Measurement:	TOC
Static Water Level (ft bmp):	43.82	GPS:	See file
1 Casing Volume (gals):	146.7	Elevation:	See File
3 Casing Volumes (gals):	440 55min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:25	8	8	6.96	20.9	1584	Clear	None	Opened bib at 9:24
9:30	"	48	6.99	20.9	1491	"	"	
9:35	"	88	7.02	20.7	1497	"	"	
9:40	"	128	7.06	20.6	1396	"	"	
9:45	"	168	7.06	20.7	1509	"	"	
9:50	"	208	7.04	20.9	1545	"	"	
10:00	"	288	7.03	20.7	1548	"	"	
10:10	"	368	7.04	20.8	1526			
10:20	"	448	7.05	20.9	1515			
		Total Discharge is 448 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
RAY	10:25	Plastic	250ml	1	EPA 300.0	None	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-8-08
Well ID:	ROGERS 803	Weather:	Clear
ADWR 55 No.	641803	Collected By:	MA

WELL DATA

Well Depth (ft bls):	140	Time:	7:00
Casing Diameter (in):	6	Point of Measurement:	TOC
Static Water Level (ft bmp):	obstructed	GPS:	See file
1 Casing Volume (gals):	NA	Elevation:	See File
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
7:21	8	8	7.16	22.7	617	clear	None	open bib at 7:20
7:23	"	24	7.13	21.3	625	"	"	
7:28	"	64	7.13	21.1	620	"	"	
7:33	"	104	7.14	21.2	622	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
ROGERS 803	7:35	Plastic	250 ml	1	EPA 300.0	None ~~NO3~~	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-7-08
Well ID:	ROGERS E	Weather:	clear
ADWR 55 No.	216018	Collected By:	MA

WELL DATA

Well Depth (ft bls):	285	Time:	16:05
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	NA	GPS:	See file
1 Casing Volume (gals):	NA	Elevation:	See file
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
16:11	12	12	7.12	23.9	428	Clear	None	open bibcock 16:10
16:15	"	60	7.15	22.6	412	"	"	
16:20	"	120	7.19	22.4	417	"	"	
16:25	"	180	7.19	22.3	413	"	"	
16:30	"	240	7.20	22.2	415	"	"	
16:35	"	300	7.20	22.2	417	"	"	
16:40	"	360	7.18	22.2	416	"	"	
16:45	"	420	7.18	22.2	415	"	"	
		Total Discharge is 480 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
ROGERS E	16:50	Plastic	250 ml	1	EPA 300.0	None ~~NO3~~	Filtered

Additional Comments: Yard is nearly flooded at 16:43

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	9720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-15-08
Well ID:	RUIZ	Weather:	clear / windy
ADWR 55 No.	531770	Collected By:	MA

WELL DATA

Well Depth (ft bls):	312	Time:	11:18
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	293.57	GPS:	See File
1 Casing Volume (gals):	27.2	Elevation:	See File
3 Casing Volumes (gals):	82		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
11:27	NA	NA	7.23	25.9	965	Clear	None	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
RUIZ	11:30	Plastic	250 ml	1	EPA 300.0	None ~~HNO3~~	Filtered

Additional Comments: This pump would not run - possibly dry - Sample water was drawn from storage tank

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-19-08
Well ID:	SCHWARTZ	Weather:	clear
ADWR 55 No.	210865	Collected By:	MA

WELL DATA

Well Depth (ft bls):	305	Time:	11:50
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	123.49	GPS:	See file
1 Casing Volume (gals):	266	Elevation:	See file
3 Casing Volumes (gals):	800 53 min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
11:56	15	15	7.08	25.6	631	clear	None	open bib at 11:53
12:00	"	75	7.29	22.9	620	"	"	
12:10	"	225	7.24	22.4	637	"	"	
12:20	"	375	7.39	22.3	632	"	"	
12:25	"	450	7.41	22.5	630	"	"	
12:30	"	525	7.40	22.5	637	"	"	
12:35	"	600	7.40	22.4	635	"	"	
12:45	"	750	7.38	22.4	629	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
SCHWARTZ	12:50	Plastic	250 ml	1	EPA 300.0	~~NOS~~ None	Filtered

Additional Comments:

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Groundwater Sampling Form

Project No.	872000	Client:	FMICQB
Phase No.	2.2	Date:	4-23-09
Well ID:	SRC	Weather:	Clear/windy
ADWR No.	55-211345	Collected By:	MA

WELL DATA

Well Depth (ft bls):	965	Time:	9:35
Casing Diameter (in):	6"	Point of Measurement:	Top of well Casing
Static Water Level (ft bmp):	541.10 btoc	GPS:	3472516 12R 0599718
1 Casing Volume (gals):	623	Elevation:	4745
3 Casing Volumes (gals):	1869 187min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment Turb NTU
1226	10		7.33	25.0	379	slight Red	None	
1230	10		7.60	24.6	391	Pink	"	140
1235	10		7.65	24.7	381	Pink	"	
1240	"		7.65	25.1	381	light Pink	"	
1250	"		7.58	25.0	380	light Pink	"	237
1300	Pump off at 13'12 - Reset pump to 700'					" "	"	
1335	10		7.48	25.6	386	" "	"	226
1345	10		7.50	25.7	384	" "	"	190
1400	10		7.60	26.0	387	light Pink	"	184
1415	8		7.56	25.9	388	" "	"	197
1430	8		7.56	25.9	386	" "	"	178
1445	7		7.55	26.0	387	" "	"	243

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250ml	2	EPA 300.0	NO3	Filtered
		Plastic	500 ml	1	EPA 300.0	None	Unfiltered

Additional Comments: Pump on at 1220

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000	Client:	FMI - CQB
Phase No.	2.2	Date:	4-23-08
Well ID:	SRC	Weather:	
ADWR No.	21345	Collected By:	

WELL DATA

Well Depth (ft bls):		Time:	
Casing Diameter (in):		Point of Measurement:	
Static Water Level (ft bmp):		GPS:	
1 Casing Volume (gals):		Elevation:	
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment Turb NTU
1520	8		7.54	25.7	387	light Pink	None	192
1530			7.55	25.8	385	"	"	165
1605	7		7.56	26.3	386	Very light Pink	"	111
1630	7		7.61	25.9	382	" " "	"	83.7
1645	7		7.45	25.6	381	" " "	"	57.3
1700	7		7.45	25.6	380	" " "	"	47.6
1715	7		7.57	25.8	380	" " "	"	41.1
	Total Purge is	1912	gal.					

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
SRC-F	17:30	Plastic	250ml	2	EPA 300.0	NO3	Filtered
SRC	17:30	Plastic	500 ml	1	EPA 300.0	None	Unfiltered

Additional Comments:

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Groundwater Sampling Form

Project No.	87200000 2.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	STARK-CAMPBELL	Date:	5-13-08
ADWR No.	55-643481	Weather:	Clear
Location:		Collected By:	MA

WELL DATA

Well Depth (ft bls):	262	Static Water Level (ft bmp):	Dry
Casing Diameter (in):	~~6~~ 4"	Date/Time:	5-13-08 8:25
Well Use:	~~Domestic~~	Point of Measurement:	TOC
3 Casing Volumes:	NA	GPS:	12R 606425 3469323
		Elevation:	4734

FIELD SAMPLING DATA

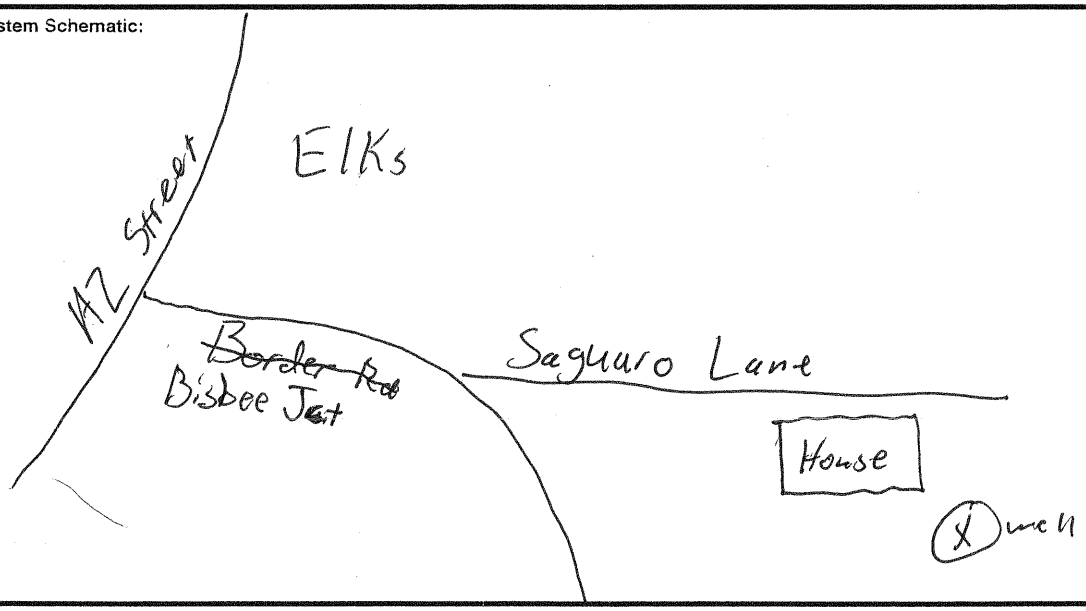
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: Tagged bottom of well at 262'
This well is not in use. It has no equipment

Water System Schematic:



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Groundwater Sampling Form

Project No.	8720000	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	STEPHENS	Date:	5-13-08
ADWR No.	808560	Weather:	clear / windy
Location:	3675 S. CACTUS LANE Bisbee, AZ 85603	Collected By:	MA

WELL DATA

Well Depth (ft bls):		Static Water Level (ft bmp):	44.94
Casing Diameter (in):	4"	Date/Time:	5-13-08 / 10:45
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	NA	GPS:	12R 606982 3469074
		Elevation:	4705

FIELD SAMPLING DATA

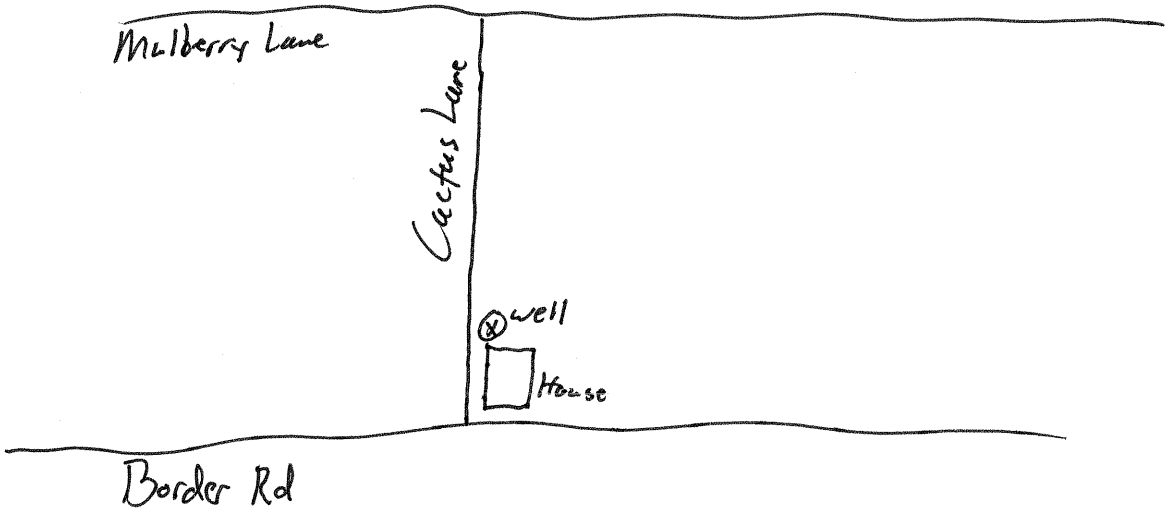
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes

Additional Comments: This well is not operational
Tagged the bottom at approx 77' btoc

Water System Schematic:



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Groundwater Sampling Form

Project No.	8720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-15-08
Well ID:	SUNBELT	Weather:	clear
ADWR 55 No.	201531	Collected By:	MA

WELL DATA

Well Depth (ft bls):	380	Time:	8:10
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	358.97	GPS:	See file
1 Casing Volume (gals):	NA	Elevation:	See file
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250 ml	1	EPA 300.0	NO3	Filtered

Additional Comments: This well has been disassembled.

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Groundwater Sampling Form

Project No.	872000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-14-08
Well ID:	No Record → SWAN	Weather:	Clear
ADWR 55 No.		Collected By:	MA

WELL DATA

Well Depth (ft bls):	98	Time:	9:00
Casing Diameter (in):	4"	Point of Measurement:	TOC
Static Water Level (ft bmp):	30.69	GPS:	See File
1 Casing Volume (gals):	44	Elevation:	See File
3 Casing Volumes (gals):	132		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:09	8	8	7.18	21.7	500	Clear	None	open bib 9:08
9:13	"	40	7.20	21.2	484	"	"	
9:16	"	64	7.22	21.2	487	"	"	
9:20	"	96	7.23	21.2	475	"	"	
9:24	"	128	7.24	21.2	479	"	"	
		Total Discharge is 160 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
SWAN	9:28	Plastic	250 ml	1	EPA 300.0	None ~~NO3~~	Filtered

Additional Comments:

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Groundwater Sampling Form

Project No.	8720000	Client:	FMI Copper Queen Branch
Phase No.	2.2	Date:	5-23-08
Well ID:	TM-02A	Weather:	Cloudy / windy / rain
ADWR No.	522574	Collected By:	MA

WELL DATA

Well Depth (ft bls):	925'	Time:	8:37
Casing Diameter (in):	4"	Point of Measurement:	TOC
Static Water Level (ft bmp):	346.16	GPS:	See File
1 Casing Volume (gals):	378	Elevation:	See File
3 Casing Volumes (gals):	1134 94min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:12	12	12	8.58	21.0	325	light tan	None	Pump on at 9:11
9:14	"	36	8.53	20.3	304	" "	"	
9:17	"	72	8.01	21.7	323	" "	"	
9:22	10	132	7.87	22.7	325	almost clear		
9:27	10	182	7.75	22.9	321	" "	None	
9:29 *								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-02A	9:40	Plastic	250ml	1	EPA 300.0	None	Filtered

Additional Comments: * Breaker tripped on gen. while Flow steady at 10gpm. When I reengaged breaker pump ran for 1min then tripped again.

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Groundwater Sampling Form

Project No.	8720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-20-08
Well ID:	TM ~~MW~~-03	Weather:	Clear / windy
ADWR 55 No.	522575	Collected By:	MA

WELL DATA

Well Depth (ft bls):	925	Time:	1310
Casing Diameter (in):	4"	Point of Measurement:	TOC
Static Water Level (ft bmp):	127.40	GPS:	See File
1 Casing Volume (gals):	520.6	Elevation:	See File
3 Casing Volumes (gals):	1562		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
13:12	12	12	7.06	26.2	763	Clear	None	Pumpon 13:11
13:16	"	60	7.34	23.0	768	"	"	
13:21	"	120	7.42	22.3	776	"	"	
13:26	"	180	7.51	22.2	778			
~~13:31~~								
1335	Pumped Dry after 288 gallons							

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-~~MW~~03	1410	Plastic	250 ml	1	EPA 300.0	~~HNO3~~ None	Filtered

Additional Comments:

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Groundwater Sampling Form

Project No.	9720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-20-08
Well ID:	TM-06 MILLER	Weather:	clear
ADWR 55 No.	522695	Collected By:	MA

WELL DATA

Well Depth (ft bls):	200	Time:	16:00
Casing Diameter (in):	4"	Point of Measurement:	TOC
Static Water Level (ft bmp):	158.76	GPS:	See file
1 Casing Volume (gals):	26.8	Elevation:	See file
3 Casing Volumes (gals):	81 7min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
16:04	12	12	7.69	21.9	513	slight dark tint	Rotten egg	16:03 pump on
16:08	12	60	7.53	21.3	506	clear	None	
16:10	12	84	7.50	20.6	508	"	"	
16:13	12	120	7.50	20.7	506	"	"	
		Total discharge = 144 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-06 MILLER	16:15	Plastic	250 ml	1	EPA 300.0	None ~~HNO3~~	Filtered

Additional Comments:

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Groundwater Sampling Form

Project No.	6720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-22-08
Well ID:	TM-07	Weather:	clear / windy
ADWR 55 No.	522576	Collected By:	MA

WELL DATA

Well Depth (ft bls):	350'	Time:	8:32
Casing Diameter (in):	4"	Point of Measurement:	obstructed at 70'
Static Water Level (ft bmp):	Obstruction	GPS:	See file
1 Casing Volume (gals):	NA	Elevation:	See file
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:46	10	10	6.96	20.1	385	Slight tan	None	Pump on at 8:45
8:48	Pumped Dry							

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-07	9:18	Plastic	250 ml	1	EPA 300.0	None ~~NO3~~	Filtered

Additional Comments:

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Groundwater Sampling Form

Project No.	8720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-14-08
Well ID:	TM-08 SWAN	Weather:	clear
ADWR 55 No.	522817	Collected By:	MA

WELL DATA

Well Depth (ft bls):	817	Time:	8:10
Casing Diameter (in):	4"	Point of Measurement:	TOC
Static Water Level (ft bmp):	>500'	GPS:	See file
1 Casing Volume (gals):	NA	Elevation:	See file
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:17	8	8	7.32	20.3	478	clear	None	Pump on 8:16
8:20	"	32	7.59	22.0	480	"	"	
8:25	"	72	7.48	23.9	480	"	"	
8:30	"	112	7.44	24.3	481	"	"	
8:35	"	152	7.44	24.4	480	"	"	
		Total discharge = 192 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-08 SWAN	8:40	Plastic	250 ml	1	EPA 300.0	~~None~~ NOS	Filtered

Additional Comments: Bees are all around

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FMI Copper Queen Branch
Phase No.	2.2	Date:	5-23-08
Well ID:	TM-15 MILLER	Weather:	Partly cloudy
ADWR No.	522699	Collected By:	MA

WELL DATA

Well Depth (ft bls):	325	Time:	10:35
Casing Diameter (in):	4"	Point of Measurement:	NA
Static Water Level (ft bmp):	obstructed	GPS:	See File
1 Casing Volume (gals):	NA	Elevation:	See File
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:41	6	6	7.36	21.2	382	Clear	None	Pump on at 1040
10:43	6	18	7.65	21.9	375	"	"	
10:45	6	30	7.67	21.9	370	"	"	
10:49	6	54	7.58	22.0	372	"	"	
10:50	6	60	7.54	22.1	371	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-15 MILLER	10:52	Plastic	250ml	1	EPA 300.0	None	Filtered

Additional Comments: I will use previous wl measure for purge vol. which is 3 casings = 59 gallons

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-22-08
Well ID: (MW)	522578	Weather:	Cloudy / Windy
ADWR 55 No.	TM-16	Collected By:	MA

WELL DATA

Well Depth (ft bls):	115	Time:	12:05
Casing Diameter (in):	4"	Point of Measurement:	TOC
Static Water Level (ft bmp):	81.24	GPS:	See file
1 Casing Volume (gals):	22.0	Elevation:	See file
3 Casing Volumes (gals):	66		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
12:13	15	15	7.00	21.2	1284	clear	None	on at 12:12
12:15	"	45	7.08	20.8	1302	"	"	
12:18	"	90	7.09	20.6	1321	"	"	
12:20	"	120	7.05	20.5	1304	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-16	12:22	Plastic	250 ml	1	EPA 300.0	None ~~NO3~~	Filtered

Additional Comments:

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Groundwater Sampling Form

Project No.	8720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-22-08
Well ID:	TM-19A	Weather:	Cloudy / windy
ADWR 55 No.	522580	Collected By:	MA

WELL DATA

Well Depth (ft bls):	700	Time:	10:02
Casing Diameter (in):	4"	Point of Measurement:	TOC
Static Water Level (ft bmp):	MA 199.05 199.50	GPS:	See File
1 Casing Volume (gals):	326.4	Elevation:	See File
3 Casing Volumes (gals):	980 50 min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:08	20	40	7.42	20.7	476	Dark Red	None	Pump on 10:06
10:10	"	80	7.56	21.2	479	Clear	None	
10:15	"	180	7.71	22.0	464	Slight Dark	None	
10:20	"	280	7.40	23.3	501	light Red	None	
10:25	"	380	7.37	23.6	504	light grey	None	
10:30	"	480	7.35	23.8	503	Clear	"	
10:35	"	580	7.34	24.0	505	Clear	"	
10:40	"	680	7.34	24.1	503	"	"	
10:45	"	780	7.35	24.1	503	"	"	
10:50	"	880	7.36	24.0	501	"	"	
10:55	"	980	7.36	24.0	501	"	"	
~~Purge~~								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-19A	10:58	Plastic	250 ml	1	EPA 300.0	None ~~HNO3~~	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	5-22-08
Well ID:	TM-41	Weather:	Clear
ADWR No.	55-562555	Collected By:	MA

WELL DATA

Well Depth (ft bls):	210	Time:	9:30
Casing Diameter (in):	5"	Point of Measurement:	TOC
Static Water Level (ft bmp):	* 193.88	GPS:	604838 3471308
1 Casing Volume (gals):	NA	Elevation:	4770
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
		No Sample						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: * TD of sounding tube is 194.00
No sample, wl too low to pump

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-22-08
Well ID:	TM-42	Weather:	cloudy / windy
ADWR 55 No.	562554	Collected By:	MA

WELL DATA

Well Depth (ft bls):	250	Time:	11:17
Casing Diameter (in):	~~4~~ MA 5"	Point of Measurement:	TOC
Static Water Level (ft bmp):	210.98	GPS:	See file
1 Casing Volume (gals):	~~25.5~~ MA 40	Elevation:	See file
3 Casing Volumes (gals):	~~76~~ MA 120		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
11:23	6	6	6.92	21.2	1296	clear	None	on at 11:22
11:26	"	24	6.96	21.6	1298	"	"	
11:30	6	48	7.02	21.4	1285	"	"	
11:33	6	66	7.04	21.4	1270	"	"	
11:36	6	84	7.05	21.3	1269	"	"	
11:40	6	108	7.05	21.4	1270	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-42	11:44	Plastic	250 ml	1	EPA 300.0	~~None~~ NO3	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-7-08
Well ID:	TVI 236	Weather:	Clear
ADWR 55 No.	802236	Collected By:	MA

WELL DATA

Well Depth (ft bls):	222	Time:	7:45
Casing Diameter (in):	12"	Point of Measurement:	TOC
Static Water Level (ft bmp):	123.30	GPS:	See file
1 Casing Volume (gals):	580	Elevation:	See file
3 Casing Volumes (gals):	1740 4 min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
7:50	500	1500	7.18	19.4	498	clear	None	Pump on @ 7:47
7:55	"	4000	7.15	20.3	499	"	"	
8:00	"	6500	7.13	20.4	492	"	"	
8:05	"	9000	7.13	20.4	494	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TVI 236	8:08	Plastic	250 ml	1	EPA 300.0	None ~~NO3~~	Filtered

Additional Comments: This well runs every evening and had only been off for approx 3 hrs prior to water level measure.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-7-08
Well ID:	TVI 713	Weather:	Clear
ADWR 55 No.	567713	Collected By:	MA

WELL DATA

Well Depth (ft bls):		Time:	~~5-7-0~~ MA 8:56
Casing Diameter (in):		Point of Measurement:	TOC
Static Water Level (ft bmp):	127.10	GPS:	600726 12R 3468411
1 Casing Volume (gals):		Elevation:	4537'
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250 ml	1	EPA 300.0	NO3	Filtered

Additional Comments: This well is capped. This well is approx. 11½' SW of TVI 875

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000.0	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-7-08
Well ID:	TVI 875	Weather:	Clear
ADWR 55 No.	568875	Collected By:	MA

WELL DATA

Well Depth (ft bls):	330	Time:	8:25
Casing Diameter (in):	6"	Point of Measurement:	No Access
Static Water Level (ft bmp):	NA	GPS:	See file
1 Casing Volume (gals):	NA	Elevation:	See file
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:29	500	500	7.01	21.6	833	Clear	None	Pump on at 8:28
8:33	~~2500~~ MAX	2500	7.08	21.2	846	"	"	
8:38	500	5000	7.09	21.3	840	"	"	
8:43	500	7500	7.09	21.2	833	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TVI 875	8:47	Plastic	250 ml	1	EPA 300.0	~~None~~ NO3	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-15-08
Well ID:	WEED	Weather:	Clear
ADWR 55 No.	~~599535~~ 544535	Collected By:	MA

WELL DATA

Well Depth (ft bls):	300	Time:	9:20
Casing Diameter (in):	NA	Point of Measurement:	NA
Static Water Level (ft bmp):	No Access	GPS:	See File
1 Casing Volume (gals):	NA	Elevation:	See File
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:33	NA	NA	7.22	22.7	365	clear	None	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
WEED	9:40	Plastic	250 ml	1	EPA 300.0	None ~~HNO3~~	Filtered

Additional Comments: At the request of owner, sample was collected at well head and not purged. Owner stated that the well is in constant use.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-7-08
Well ID:	WEISKOPF	Weather:	Clear
ADWR 55 No.	641802	Collected By:	MA

WELL DATA

Well Depth (ft bls):	200'	Time:	15:05
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	143.90	GPS:	See File
1 Casing Volume (gals):	82.4	Elevation:	See File
3 Casing Volumes (gals):	247		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
15:07	10	10	6.85	23.3	1024	clear	None	openbid at 15:06
15:10	"	40	6.98	22.1	957	"	"	
15:15	"	90	7.08	21.7	1032	"	"	
15:20	"	140	7.08	21.8	1181	"	"	
15:25	"	190	7.12	21.8	1218	"	"	
15:30	"	240	7.10	21.8	1251	"	"	
		Total Discharge is 290 gal.						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
WEISKOPF	15:35	Plastic	250 ml	1	EPA 300.0	None ~~NO3~~	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	FREEPORT Copper Queen Branch
Phase No.	2.2	Date:	5-6-08
Well ID:	ZANDER	Weather:	clear / windy
ADWR 55 No.	205126	Collected By:	MA

WELL DATA

Well Depth (ft bls):	280'	Time:	9:28
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	145.33	GPS:	see file
1 Casing Volume (gals):	197.8	Elevation:	see file
3 Casing Volumes (gals):	594 40min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:32	15	15	7.11	21.9	417	Clear	None	open lib at 9:31
9:35	"	60	7.21	21.5	409	"	"	
9:40	"	135	7.22	21.4	405	"	"	
9:45	"	210	7.24	21.1	404	"	"	
9:50	"	285	7.26	21.2	403	"	"	
10:00	"	435	7.25	21.1	403	"	"	
10:05	"	510	7.25	21.1	405	"	"	
10:10	"	585	7.26	21.2	404			
		Total Discharge: 660 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
ZANDER	10:15	Plastic	250 ml	1	EPA 300.0	~~NO3~~ None	Filtered

Additional Comments:

WELL INVENTORY REPORT
TASK 1 OF AQUIFER CHARACTERIZATION PLAN
FOR MITIGATION ORDER ON CONSENT NO. P-121-07
COCHISE COUNTY, ARIZONA

Prepared for:

FREEPORT-MCMORAN
COPPER QUEEN BRANCH
36 West Highway 92
Bisbee, Arizona 85603

Prepared by:

HYDRO GEO CHEM, INC.
51 West Wetmore Road, Suite 101
Tucson, Arizona 85705
(520) 293-1500

July 28, 2008

WELL INVENTORY REPORT
TASK 1 OF AQUIFER CHARACTERIZATION PLAN
FOR MITIGATION ORDER ON CONSENT NO. P-121-07
COCHISE COUNTY, ARIZONA

Prepared for:

FREEPORT-MCMORAN
COPPER QUEEN BRANCH
36 West Highway 92
Bisbee, Arizona 85603

Approved by:

James R. Norris
Arizona Registered Geologist No. 30842

Prepared by:

Daniel R. Simpson
Senior Hydrogeologist

July 28, 2008

EXECUTIVE SUMMARY

This report presents the results of the well inventory required pursuant to Mitigation Order on Consent No. P-121-07 (MO) between Phelps Dodge Copper Queen Branch, now doing business as Freeport-McMoRan Copper Queen Branch (CQB), and Arizona Department of Environmental Quality (ADEQ). The objective of the well inventory was to identify and sample drinking water supply wells within a one mile radius downgradient and crossgradient of the outer edge of the sulfate plume from the Concentrator Tailing Storage Area (CTSA). The well inventory also evaluated the presence of drinking water wells within the footprint of the plume.

Forty-three active drinking water supply wells were identified out of the 204 wells in the well inventory area. The drinking water supply wells were identified based on the following information:

- A compilation and review of data for wells registered with Arizona Department of Water Resources (ADWR) Program 35 and 55 Databases,
- A cross check of the registered wells with information from ADEQ public water systems database,
- Interviews with local residents regarding potential drinking water wells,
- Contact with Arizona Water Company (AWC), Naco Water Company (NWC), and Cochise County Health Department (CCHD),
- Use of INTELIUS records search engine to locate registered well owners,
- Contact with residents receiving bottled water from data provided by CQB,
- Contact with the ADEQ public water system field inspector for the Bisbee-Naco area,
- Contact with local real estate agents regarding properties and current owners,
- Compilation and review of imaged records for potential drinking water supply wells,
- Field verification of potential drinking water supply wells, and
- Contacts with the owners/operators of potential drinking water supply wells.

Water quality samples were collected from 38 wells used for drinking water supply. Water quality data for one well was provided AWC. Wells belonging to NWC were not available for sampling. NWC has agreed to provide water quality data but was unable to do so by the time of report preparation. CQB will evaluate data for the NWC wells when it becomes available. Of the 39 wells with water quality data, 13 had sulfate concentrations greater than the 250 milligram per liter (mg/L) limit set by the MO.

Residents using ten of the thirteen wells were already receiving bottled water. As an interim action for the three that were not already receiving bottled water, CQB has offered to provide bottled water to residents using private wells where sulfate concentrations exceed 250 mg/L[1].

[1] Freeport-McMoRan Copper Queen Branch. 2008. Interim Action Report from Michael Jaworski (CQB) to Robert Casey (ADEQ) regarding the interim action selection and implementation. May 22, 2008.

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1. INTRODUCTION

In November 2007, Arizona Department of Environmental Quality (ADEQ) and Phelps Dodge Copper Queen Branch, now doing business as Freeport-McMoRan Copper Queen Branch (CQB) entered into Mitigation Order on Consent No. P-121-07 (MO) requiring CQB to characterize the extent of a plume of sulfate-bearing groundwater downgradient of the Concentrator Tailing Storage Area (CTSA) and to develop a Mitigation Plan for any impacted drinking water supplies attributable to the CTSA (ADEQ, 2007a). Section III.A.4 of the MO required *"A plan to inventory all existing private wells used as a drinking water source and public water system wells located within a one (1) mile radius of the sulfate plume's down and cross-gradient outer edge."*

A Work Plan was submitted to ADEQ on December 17, 2007 pursuant to the MO. CQB initiated the well inventory in February 2008 prior to Work Plan approval while ADEQ was commenting on the Work Plan and CQB was responding to their comments. Revision 1 of the Work Plan was submitted to ADEQ on July 3, 2008 (Hydro Geo Chem, Inc. [HGC] 2008). The Work Plan describes an Aquifer Characterization Plan to address the MO requirements to characterize the sulfate plume and to collect data needed for a feasibility study of mitigation actions. The well inventory reported here is Task 1 of the Aquifer Characterization Plan and was conducted according to the specifications of the Work Plan.

Specific well inventory tasks identified by the Work Plan include:

- Identify drinking water supply wells within one mile downgradient and crossgradient of the outer edge of the plume using the Arizona Department of Water Resources (ADWR) Well Registry Database (WRD).
- Categorize wells based on water use to identify potential drinking water wells.
- Cross-check potential drinking water wells identified from the WRD against ADEQ public water system data to identify any additional drinking water supply wells.
- Check with local water providers and Cochise County to identify any drinking water supply wells in the area of interest.
- Field check and obtain global positioning system (GPS) coordinates for drinking water supply wells.
- Collect a water quality sample from or obtain recent water quality data for drinking water supply wells, and, if possible, determine the depth to groundwater.

The "outer edge" of the sulfate plume has been delimited using the 250 milligrams per liter (mg/L) sulfate contour (Figure 1), which is based on available water quality data summarized by HGC (2008). As stated in the Work Plan, the area of the well inventory may be revised if the results of the sulfate plume characterization indicate a significantly different shape for the plume.

The remainder of this report is organized as follows:

- Section 2 reviews the well inventory methodology.
- Section 3 describes the results of the well inventory and provides a list of drinking water supply wells.
- Section 4 presents the results of water quality sampling from drinking water supply wells.
- Section 5 is a summary of the major findings of the well inventory and sampling.

2. WELL INVENTORY METHODOLOGY

The well inventory consisted of three steps:

- Identification of all wells located within one mile downgradient and crossgradient of the outer edge of the sulfate plume and in the footprint of the plume.
- A primary well screening to identify potential drinking water supply wells on the basis of the well and water use information in the WRD, and a cross-check of ADEQ public water systems.
- Verification of potential drinking water wells by a review of well records, field inspection of wells and owner/operator contacts, including collection of water quality samples or data.

2.1 Identification of Potential Drinking Water Supply Wells

2.1.1 Source of Data

The well inventory was conducted with the ADWR WRD compiled in October 2007 (ADWR, 2007), which was provided in both Microsoft Access database and Geographic Information System (GIS) formats. The GIS format allows the use of spatial queries to identify and extract well information from the database on the basis of well location. Spatial queries were constructed within Arc View software using the geo-referenced shape files.

2.1.2 Well Inventory Area

The well inventory area (WIA) consists of the area one mile downgradient and crossgradient of the outer edge of the sulfate plume as defined by the MO and the area within the

footprint of the sulfate plume. The outer edge of the plume is defined in the Work Plan as the 250 mg/L sulfate contour line. Figure 1 shows the 250 mg/L sulfate contour and the downgradient and crossgradient directions based on groundwater elevation contours.

Using ArcView software, a buffer of one mile in all directions was created based on the 250 mg/L sulfate contour line. The area within the 250 mg/L sulfate plume was clipped from the buffer, creating the downgradient and crossgradient search area polygon (Figure 1). As shown on Figure 1, this description of the plume footprint search area encompasses a larger area than the sulfate plume identified by HGC (2008). The search area polygon was then used for the spatial query to identify wells within the WIA.

2.1.3 Well Search Process and Safety Factors

Wells within the WIA were identified using safety factors to account for uncertainty in location due to cadastral coordinates. Well locations in the ADWR WRD are described by cadastral coordinates based on township, range, and section. Each 640-acre section is divided into 160-acre quarters (NE, NW, SE, and SW). Location is further specified by a 40-acre quarter of the quarter section, and a 10-acre quarter of the 40-acre quarter, quarter section. For example: Section 25, NE, SW, NW describes a location in the NW 10-acre quarter of the SW 40-acre quarter of the NE 160-acre quarter of Section 25.

The cadastral coordinates impart an uncertainty because they are not exact with respect to well location. Most well records in the ADWR WRD include information on the quarter,

quarter, and quarter section; although some well records may only contain spatial information accurate to the section; quarter section; or quarter, quarter section. The WRD assigns the well location to the midpoint of the cadastral area, although the well can be anywhere in the described area. Thus, a well within the WIA might not be identified if the midpoint of the quarter, quarter, and quarter section lies outside the WIA boundary. Conversely, a well outside the WIA boundary could be identified as being in the WIA if the midpoint of its cadastral coordinate is within the WIA boundary.

To account for the uncertainty in well location due to cadastral coordinates and to ensure the well inventory is comprehensive and identifies wells potentially within the WIA, a series of safety factors were added to the search area to identify wells that might be in the WIA even though the midpoint of their cadastral coordinates are outside the WIA. An additional distance of 3,735 feet was added to the search radius of the WIA's downgradient and crossgradient boundary. The safety factor of 3,735 feet represents the distance from a corner of a 640-acre section to its midpoint and is meant to account for wells known only to the section. Again, a buffer was created to extract wells within the given number of feet outside of the original mile search area polygon. The data set was reviewed for any wells identified only by the section number with no quarter section information.

Next, all wells within 1,870 feet of the WIA's downgradient and crossgradient boundary were identified. The safety factor of 1,870 feet is the distance from a corner of a 160-acre quarter section to its midpoint. Another buffer and spatial query were created and the resulting

data set was reviewed for any wells identified only by the section number and the 160-acre quarter.

This process was repeated using safety factors of 935 feet and 470 feet to account for the distance from the corner of a 40-acre quarter, quarter section to its midpoint and from the corner of a 10-acre quarter, quarter, and quarter section to its midpoint, respectively. From the set of wells identified on this basis, wells were removed only if they could be verified as being outside the search area based on more detailed cadastral coordinates. The final set of wells remaining after this process constitutes the inventory of wells potentially within the WIA.

2.2 Primary Well Screening

Well compilations typically identify many different types of wells, including wells that are not potential drinking water supplies; such as wells used for cathodic protection, geotechnical investigations, or mineral exploration. The objective of the primary well screening was to identify potential drinking water supply wells for further evaluation and to eliminate from additional consideration those wells without a drinking water use.

2.2.1 Screening Based on Well Type, Well Use, and Water Use

Information in the WRD on all wells identified in the WIA was compiled into a spreadsheet and sorted according to well type, well uses, and water uses. This information was

used to screen the population of wells in the WIA to identify potential drinking water supply wells and to eliminate wells without drinking water use.

For the primary well screening, wells listed with a water production well use and a domestic, domestic-irrigation, domestic-stock, municipal, utility, and stock water use were identified for further evaluation as potential drinking water wells. Water production wells listed with an industrial water use were evaluated on a well-by-well basis to identify wells used for other non-drinking water uses. Wells with no well or water use listed were also included for further evaluation.

The primary well screening excluded from further evaluation as potential drinking water wells those wells listed as:

- Abandoned, cancelled (abandoned or not drilled), or capped wells.
- Wells associated with exploration, geotechnical, groundwater monitoring and observation.

2.2.2 ADEQ Public Water System Review

Wells identified in the WIA were also cross-checked against ADEQ Public Water System (PWS) data to identify potential drinking water supply wells in the WIA. Potential drinking water supply wells identified by the ADEQ data were cross-checked against the well inventory list to ensure inclusion of potential drinking water supply wells. After completing the cross-check, no additional wells were added to the well inventory list. The cross-check methods are described below.

ADEQ provided a database of all registered public water systems in the State of Arizona (ADEQ, 2007b). These include water systems that provide drinking water to a minimum of 25 users or 15 service connections. The data included the water system ID, county, water system name, water system type, population served, number of connections, water source, initial monitoring year, and the name of the principle city served. The following summarizes ADEQ public water system data evaluation procedures:

1. Water systems potentially in the WIA were identified using county and principle city served information. After sorting the data by county, water systems serving the cities of Bisbee and Naco were identified.
2. Contact with Bisbee-Naco area PWS field inspector to verify any water systems not identified in database (ADEQ, 2007c).
3. The water system names identified in step 1 were searched for in the WRD (ADWR, 2007) in three ways including: a) in the last name field, b) in the company field, and c) using a keyword search.
4. Matching records from the WRD were saved in a separate spreadsheet.
5. All wells compiled in the spreadsheet described in step 3 were plotted in Arc View as a layer on top of a layer representing wells identified in the WIA search.
6. Overlapping wells were assumed to have been included in the well inventory. All wells identified in this query had been previously identified by the WIA search.

2.2.3 Other Well Screening Methods

Additional sources of well information included: a cross check of the registered wells with information from ADEQ PWS database, interviews with local residents regarding potential drinking water wells, contact with Arizona Water Company (AWC), Naco Water Company (NWC), and Cochise County Health Department (CCHD), use of INTELIUS records search engine to locate registered well owners, contact with residents receiving bottled water from data

provided by CQB, contact with ADEQ public water system field inspector in Bisbee-Naco area, and contact with local real estate agents regarding properties and current owners.

2.2.4 Verification of Potential Drinking Water Supply Wells

Wells identified by the primary screening as potential drinking water supply wells were verified by (1) review of the ADWR imaged records for the well to further research its water use, (2) field checks of wells to determine their location and operational status, and (3) contacts with well owner/operators to determine well operational status and water use.

Records for each of the wells identified as potential drinking water supply wells were downloaded from ADWR's online Imaged Records Database and cross-checked with information obtained from ADWR (2007). Information such as ownership, water use, additional well identifiers, and well status were compiled and reviewed for information pertinent to operational status and well use.

A field check on wells identified as potential drinking water supply wells were conducted to verify the well location using a hand-held GPS unit, evaluate the operational status of the well, and gather supplemental well ownership information. Subsequent to the field check, well owners/operators were contacted on a case by case basis to verify water use and other well information. The results of the verification of potential drinking water supply wells are reported in Section 3.3.

2.3 Water Quality Sampling

CQB requested permission to sample wells that were verified as drinking water supply wells. Where permission was granted, HGC collected water quality samples and, if possible, depth to water measurements. In some cases, water quality samples were collected and analyzed by the owner/operator and the information was provided to HGC.

Groundwater sampling and analysis methods used by HGC are described in the Quality Assurance Project Plan contained in Appendix F of the Work Plan (HGC, 2008). Prior to sampling, wells were purged to the degree permitted by site specific circumstances. If it was not practical to purge three casing volumes from the well because of inconvenience to the owner/operator, wells were purged of less than three casing volumes. The purge condition under which the sample was collected was noted in the field logbook or on the groundwater sampling form. Wells sampled by AWC were wells in continuous operation which were sampled without purging. Data provided by AWC were gathered using the AWC's standard sampling and analysis protocols. Section 4 contains the results of water quality sampling for the well inventory task.

3. WELL INVENTORY RESULTS

3.1 Identification of Wells in the Well Inventory Area

A total of 204 wells were identified in the WIA. These wells include water production wells, monitor and piezometer wells, test wells, exploration and geotechnical boreholes, and cancelled, capped or abandoned wells. Appendix A lists the ADWR WRD records for the wells identified in the WIA. These wells were reviewed for the primary well screening.

3.2 Results of Primary Well Screening

The primary screening identified potential drinking water supply wells on the basis of well type, well use, water use, and cancelled status information in the ADWR WRD, and a cross check with ADEQ water system database. ADEQ public water systems included in the cross-check of WIA wells are listed in Table 1.

Table 2 summarizes the results of the primary well screening. Of the 204 wells identified in the WIA, 123 were considered potential drinking water supply wells based on the primary well screening and cross check of ADWR and ADEQ databases. The remaining 81 wells were considered non-drinking water supply wells and eliminated from further consideration. The wells eliminated from the well inventory are described below and listed in Appendix A.

- Fifty (50) wells identified as abandoned, cancelled, or capped.
- Four (4) wells associated with geotechnical or exploration.

- Twenty-seven (27) wells associated with groundwater monitoring or observation use.

3.3 Results of Verification of Potential Drinking Water Wells

Of the 123 potential drinking water supply wells identified in the WIA consisted of: 114 wells listed with a water use of domestic, domestic-industrial, domestic-irrigation, domestic-municipal-industrial, domestic-stock, domestic-stock-irrigation, utility or stock; 1 well listed with no well use or water use; 2 wells listed as monitor wells that were verified by field interviews to be drinking water supply wells and; 6 wells identified during field interviews, from bottled water delivery information provided by CQB and a search of the ADWR Program 35 database (Appendix A). Figure 2 shows wells evaluated as potential drinking water supply wells.

Verification of the potential drinking water supply wells was needed to:

1. Determine operational status of wells belonging to local public water systems: AWC and NWC.
2. Verify water uses for wells with industrial, irrigation, stock, utility and unlisted water uses.
3. Evaluate the existence, operational status, and water use of wells at private residences.

Verification was conducted by a compilation and review of ADWR imaged records, a field check of the well, and contacts with well owner/operators. The result of the verification was a list of confirmed drinking water supply wells for water quality sampling.

Information contained in the ADWR imaged records database was compiled for each potential drinking water supply well. The imaged records are provided in portable document format on the compact disk included as Appendix B. Information from the imaged records was useful for understanding the chain of ownership for some wells and historical uses of well water.

The field check was able to determine the location and operational status of some but not all potential drinking water wells. Wells were inspected in the field unless the property had restricted access or the well could not be found using its cadastral coordinates. Well owners/operators were contacted by phone and visited in the field as necessary to obtain additional information on wells.

As required by the Work Plan, water providers in the WIA and CCHD were contacted to discuss whether they had knowledge of any private wells used as water supplies in the portions of their service areas covered by the WIA. AWC (AWC, 2008), NWC (NWC, 2008), and CCHD (CCHD, 2008) were not aware of any private wells used for water supply in the WIA other than the ones evaluated by this study.

Table 3 summarizes the results of the verification of potential drinking water supply wells and indicates the status of each well as a drinking water supply. Of the 123 wells identified as potential drinking water supply wells, 43 wells were verified as having a current drinking water supply use. Five of the current drinking water supply wells are operated by public water companies, either AWC (1 well in the WIA) or NWC (4 wells), and the remaining

wells are private domestic wells. AWC does have three additional wells outside the WIA and data for those wells indicate sulfate concentrations range between 13 and 41 mg/L.

Table 4 identifies the verified drinking water supply wells in the WIA including their GPS coordinates and sulfate concentration in mg/L. Figure 3 shows the locations of verified drinking water supply wells. The results of groundwater sampling from drinking water supply wells are presented in Section 4.

4. WATER QUALITY SAMPLING RESULTS

The owners of wells verified as drinking water wells were contacted by CQB with an offer to collect and analyze a groundwater sample free of charge. In the case of AWC, CQB compiled water quality information provided by AWC. Table 4 presents the list of owners/operators identified as having active drinking water supply wells with a corresponding sulfate concentration detected in well water.

Analytical laboratory reports for samples collected by HGC are provided in portable document format on the compact disc in Appendix C. Copies of groundwater sampling forms for samples collected by HGC are in Appendix D. A copy of the analytical data for the water sample collected by AWC is included in Appendix E. NWC has agreed to provide water quality data but was unable to do so by the time of report preparation.

Of the 39 wells sampled, 13 had sulfate concentration greater than the 250 milligram per liter (mg/L) limit set by the Mitigation Order. Sulfate concentrations in verified drinking water supply wells are presented in Figure 4.

5. DISCUSSION

Potential drinking water supply wells were identified in the WIA defined as the area one mile downgradient and crossgradient of the sulfate plume from the CTSA and in the footprint of the plume. Forty-three active drinking water supply wells were identified out of the 204 wells in the WIA. The drinking water supply wells were identified based on the following information:

- A review of data for wells registered with ADWR Program 35 and 55 databases,
- A cross check of the registered wells with ADEQ's public water systems database,
- A review of data from imaged records for potential drinking water supply wells,
- Use of INTELIUS records search engine to locate registered well owners,
- Contact with the ADEQ public water system inspector for the Bisbee-Naco area,
- Contact with local real estate agents to identify properties or current residents,
- Contact with residents receiving bottled water provided by CQB,
- Interviews with local residents regarding potential drinking water supply wells,
- Field checks of potential drinking water supply wells, and
- Contacts with the owners/operators of potential drinking water supply wells.

Water quality samples were collected from 38 private wells used for drinking water. Water quality data for one public supply well was provided by AWC. Of the 39 wells sampled, 13 wells had sulfate concentrations greater than the 250 mg/L limit set by the MO.

Residents using ten of the thirteen wells with sulfate concentrations greater than 250 mg/L were already receiving bottled water. As an interim action for the three wells used by residents who were not already receiving bottled water, CQB has offered to provide bottled water to residents using private wells where sulfate concentrations exceed 250 mg/L. A copy of the Interim Action Report (CQB, 2008) submitted to ADEQ is included as Attachment F. Based

on the sampling results (Table 4), monthly groundwater sampling is being conducted for four months at wells with a sulfate concentration between 135 and 250 mg/L as specified in the Work Plan. A monitoring plan will be developed for these wells based on any apparent trend in sulfate concentrations. Water quality data to be provided by NWC will be evaluated when it becomes available.

The results of the well inventory sampling will be evaluated to determine if there is any significant change in the shape of the sulfate plume and well inventory area. If the WIA changes and additional wells are identified, the results of any subsequent work will be submitted in a separate report.

6. REFERENCES

Arizona Department of Environmental Quality (ADEQ). 2007a. Mitigation Order on Consent. Docket No. P-121-07, ADEQ Identification Number 101679. November 14, 2007

ADEQ. 2007b. Drinking Water Systems Quick Look Report of Active Regulated Systems in Arizona, by System ID or Name, ASCII delimited, CD. November 2007.

ADEQ. 2007c. Public Water System Identification Numbers (PWSID) query through personal communication with John Eyre, ADEQ Field Inspector for Bisbee-Naco area. December 5, 2007.

Arizona Department of Water Resources. 2007. Wells 55 Data CD-ROM. October 2007.

Arizona Water Company. 2008. Personnel communication with Joe Mauzy of Arizona Water Company regarding private wells used as water supply wells in their service area covered by the well investigation area. March 25, 2008.

Cochise County Health Department. 2008. Personnel communication with Tim Wyatt of Cochise County Health Department regarding private wells used as water supply wells in their service area covered by the well investigation area. March 25, 2008.

CQB, see Freeport-McMoRan Copper Queen Branch.

Freeport-McMoRan Copper Queen Branch. 2008. Interim Action Report from Michael Jaworski (CQB) to Robert Casey (ADEQ) regarding the interim action selection and implementation. May 22, 2008.

Hydro Geo Chem, Inc. 2008. Work Plan to Characterize and Mitigate Sulfate with Respect to Drinking Water Supplies in the Vicinity of the Concentrator Tailing Storage Area, Cochise County, Arizona. July 3, 2008.

Naco Water Company. 2008. Personnel communication with Elaine Byfield of Southwest Utility Management, Inc. regarding private wells used as water supply wells in Naco Water Company's service area covered by the well investigation area. March 25, 2008.

TABLES

TABLE 1
Summary of Public Water Systems

Public Water System	County	System ID	Address	City	State	Zip	Phone	Type [1]	Status	Source	Population	Connections	Initial Monitoring Year
Arizona Water Company - Bisbee	Cochise	AZ0402001	PO BOX 29006	Phoenix	Arizona	85038	602-240-6860	C	Active	Groundwater	8054	3459	1994
Naco Water Company - Main	Cochise	AZ0402024	PO BOX 85160	Tucson	Arizona	85754	520-623-5172	C	Active	Groundwater	858	286	1995
Naco Water Company - Bisbee	Cochise	AZ0402112	PO BOX 85160	Tucson	Arizona	85754	520-623-5172	C	Active	Groundwater	219	73	1995
Naco Water Company - Bisbee Highway	Cochise	AZ0402133	PO BOX 85160	Tucson	Arizona	85754	520-623-5172	NR	Inactive	Groundwater	24	10	1995

Source: Arizona Department of Environmental Quality Public Water System (PWS) Quick Look Database
Each PWS was cross referenced to the October 2007 Arizona Department of Water Resources Program 55 Database
[1] Established under Arizona Administrative Code R18-4-101
C = Community Water System, serves at least 25 year round residents or has at least 15 service connections
NR = Non Regulated

TABLE 2
Summary of Primary Well Screening

Well Type	Well Use	Water Use	Number of Wells	Evaluated as Potential Drinking Water Supply Well
Abandoned, Cancelled or Capped			50	0
Geotechnical / Exploration	Geotechnical / Cathodic	None	4	0
Monitor / Piezometer	Monitor / Observation / None	Monitoring / Test / None	29	2
Exempt	None Listed	None Listed	1	1
Exempt / Non-Exempt	Water Production	Domestic / Domestic-Irrigation / Domestic-Municipal-Industrial / Domestic-Stock / Domestic-Stock-Irrigation / Irrigation / Stock / Utility (Water Company)	114	114
Domestic Wells Identified During; Field Interviews, Bottled Water Deliveries List provided by Freeport and ADWR Program 35 Database	None Listed	None Listed	6	6
		Total	**204**	**123**

CQB = Freeport-McMoRan Copper Queen Branch
ADWR = Arizona Department of Water Resources

TABLE 3
Summary of Well Verification

Owner/Operator	ADWR Program 55 ID	Well Name	Operational?	Active Drinking Water Supply Well?	Information Summary
Alvarez, Maria	650255	ALVAREZ	No Data	No Data	No Response
Anderson, David	613396	ANDERSON	Yes	Yes	Active Drinking Water Supply Well
Anderson, Mary	616775	ANDERSON 775	No Data	No Data	Owner Declined Participation in Program
Anderson, Mary	616776	ANDERSON 776	No Data	No Data	Owner Declined Participation in Program
Arizona State Land Department	616436	ASLD	No	No	ADWR Records indicate Stock Well
Arizona Water Company	616585	AWC 03	Yes	Yes	Active Drinking Water Supply Well; Public Water System; outside program area
Arizona Water Company	590620	AWC 05	Yes	Yes	Active Drinking Water Supply Well; Public Water System
Banks, Douglas	647986	BANKS 986	Yes	Yes	Active Drinking Water Supply Well
Banks, Douglas	647987	BANKS 987	No	No	Inactive Drinking Water Supply Well
Barton, Loyd	85010	BARTON 010	No	No	Inactive Drinking Water Supply Well
Barton, Loyd	644919	BARTON 919	No	No	Inactive Drinking Water Supply Well
Bernal, Luz	648363	BERNAL	No Data	No Data	Owner Deceased; unable to contact relatives
Bisbee Municipal Airport, LLC	577927	BIMA	Yes	Yes	Active Drinking Water Supply Well
Bisbee, City of	903992	COB MW-1	Yes	No	San Jose Wastewater Treatment Plant Industrial Water Well
Blommer, Connie	633472	BLOOMER	Yes	Yes	Active Drinking Water Supply Well
Blommer, Connie	645536	BLOMMER	No	No	Interview with owner confirmed same well as 633472
Brindley, Lou	86775	BRINDLEY	No Data	No Data	Unable to Contact Owner
Bullard, Bob	602134	BULLARD	No	No	Inactive Drinking Water Supply Well
Burke, James	212268	BURKE	No	No	Inactive Drinking Water Supply Well
Campbell, Don	215509	CAMPBELL	No	No	Inactive Drinking Water Supply Well
Chambers, Terry	629807	CHAMBERS	Yes	Yes	Active Drinking Water Supply Well
Chase, Charles	648359	CHASE	No Data	No Data	Unable to Contact Owner
Cooper, Charles	637069	COOPER C	Yes	Yes	Active Drinking Water Supply Well
Cooper, Teresa	623564	COOPER	Yes	Yes	Active Drinking Water Supply Well
Cota, Barbara	651116	COTA	No Data	No Data	Well Not Located
Crowley	510298	CROWLEY	No	No	Inactive Drinking Water Supply Well
Dodson, John	644927	DODSON	Yes	Yes	Active Drinking Water Supply Well
Douglass, James	592791	DOUGLASS 791	No	No	Inactive Drinking Water Supply Well
Douglass, James	592792	DOUGLASS 792	No	No	Inactive Drinking Water Supply Well
Durazo, Neltiz	NR	DURAZO	No Data	No Data	No Response
East, Leon	599796	EAST	Yes	Yes	Active Drinking Water Supply Well
Eberwein, Geraldo	641726	EBERWEIN	No	No	Inactive Drinking Water Supply Well
Englund, Lee	565260	ENGLUND	Yes	No	Inactive Drinking Water Supply Well
Eppele, Geneva	805641	EPPELE 641	Yes	Yes	Active Drinking Water Supply Well
Eppele, Geneva	805643	EPPELE 643	No	No	Inactive Irrigation Well
Eppele, Geneva	805642	EPPELE 642	No	No	Well used for landscape Irrigation
Franco, Irma	500101	FRANCO	Yes	Yes	Active Drinking Water Supply Well
Fultz, Richard	212447	FULTZ	Yes	Yes	Active Drinking Water Supply Well
Galloping Goose Properties, LLC	628546	GGOOSE 546	No	No	Inactive Drinking Water Supply Well
Galloping Goose Properties, LLC	628547	GGOOSE 547	No	No	Inactive Drinking Water Supply Well
Garner, Terry	587635	GARNER 635	Yes	Yes	Active Drinking Water Supply Well
Garner, Terry	558557	GARNER 557	Yes	No	Inactive Drinking Water Supply Well
Goar, Sheila	610694	GOAR	No	No	Inactive Drinking Water Supply Well
Goar, Sheila	610695	GOAR RANCH	No	No	Inactive Drinking Water Supply Well
Goar, Sheila	610686	GOAR 686	No	No	Well Dry
Goar, Sheila	610687	GOAR 687	No	No	Well Dry
Goar, Sheila	610688	GOAR 688	No	No	Well Dry
Goar, Sheila	610689	GOAR 689	No	No	Well Dry
Goar, Sheila	610690	GOAR 690	No	No	Well Dry
Goar, Sheila	610691	GOAR 691	No	No	Well Dry
Goar, Sheila	610692	GOAR 692	No	No	Well Dry
Goar, Sheila	610693	GOAR 693	No	No	Well Dry
Gregg, Diane	630852	GREGG	No	No	Well Dry
Haubert, John	801607	HAUBERT	No Data	No Data	Owner Declined Participation in Program
Heck, Harold	507823	HECK	No	No	Inactive Drinking Water Supply Well
Hoban, Barbara	805290	HOBAN	Yes	Yes	Active Drinking Water Supply Well
Howard, Joel	NR	HOWARD	Yes	Yes	Active Drinking Water Supply Well
Hull, Charles	606854	HULL 854	No	No	ADWR Records indicate Irrigation Well; Owner indicated that well collapsed
Hull, Charles	606855	HULL 855	No	No	Inactive Drinking Water Supply Well
Humphrey, Manuela	649153	HUMPHREY	No Data	No Data	Owner Deceased; unable to contact relatives
Irons, Lee	632924	IRONS	No Data	No Data	Owner Declined Participation in Program
Jackson, Joseph	506034	JACKSON	No Data	No Data	No Response from Current Resident
Jayln Associates, LLC	209737	JAYLN	No	No	Inactive Drinking Water Supply Well
Keefer, Craig	209744	KEEFER	Yes	Yes	Active Drinking Water Supply Well
Kennedy, David	647003	KENNEDY	No	No	Interview with owner confirmed same well as ASLD 616436
Lesnik, Ron	587749	LESNIK	No	No	Vacant Lot; Inactive Drinking Water Supply Well
Lucero, Marcos	618175	LUCERO	No	No	Owner indicated well not operational
McConnell, Russell	590386	MCCONNELL 386	No	No	Inactive Drinking Water Supply Well; Incomplete NOI on file with ADWR
McConnell, Virginia	539265	MCCONNELL 265	Yes	Yes	Active Drinking Water Supply Well
Mendez, Alfredo	650256	MENDEZ	No	No	Well Dry
Metzler, Triny	35-71891	METZLER	Yes	Yes	Active Drinking Water Supply Well
Miller, Charles	522699	TM-15 MILLER	Yes	Yes	Active Drinking Water Supply Well

TABLE 3
Summary of Well Verification

Owner/Operator	ADWR Program 55 ID	Well Name	Operational?	Active Drinking Water Supply Well?	Information Summary
Miller, Charles	641342	MILLER 342	No	No	Well Dry
Miller, Charles	641340	MILLER 340	No	No	Well Dry - Stock Well
Miller, Charles	641341	MILLER 341	No	No	Well Dry - Stock Well
Minnerly, Herbert	650662	MINNERLY	No Data	No Data	Well Not Located
Minor, Lawrence	633316	MINOR 316	No	No	Inactive Drinking Water Supply Well
Minor, Lawrence	633317	MINOR 317	No	No	Inactive Drinking Water Supply Well
Moore, Patrick	538847	MOORE	Yes	Yes	Active Drinking Water Supply Well
Moroyoqui, Helen	647847	MOROYOQUI	No	No	Inactive Drinking Water Supply Well
Naco Water Company	627682	NWC 01	No Data	No	Inactive Drinking Water Supply Well
Naco Water Company	562944	NWC 02R	Yes	Yes	No Response to Request for Data
Naco Water Company	203321	NWC 03R	Yes	Yes	No Response to Request for Data
Naco Water Company	627685	NWC 04 UPRR	Yes	Yes	No Response to Request for Data
Naco Water Company	627696	NWC 05	No Data	No	Inactive Drinking Water Supply Well
Naco Water Company	575700	NWC 06	Yes	Yes	No Response to Request for Data
Naco Water Company	627683	NWC 02	No	No	Inactive Drinking Water Supply Well; Replaced by NWC 02R
Naco Water Company	627684	NWC 03	No	No	Inactive Drinking Water Supply Well; Replaced by NWC 03R
Noble, Alice	618611	NOBLE	No Data	No Data	Unable to Contact Owner
Noteman, Russell	212483	NOTEMAN	Yes	Yes	Active Drinking Water Supply Well
Osborn, Dale	643436	OSBORN	Yes	Yes	Active Drinking Water Supply Well
Palmer, Patrick	578819	PALMER 819	Yes	Yes	Active Drinking Water Supply Well
Panagakos, Alfred	35-76413	PANAGAKOS	Yes	Yes	Active Drinking Water Supply Well
Parra, Steve	576415	PARRA	Yes	Yes	Active Drinking Water Supply Well
Pionke, Jim	613395	PIONKE	Yes	Yes	Active Drinking Water Supply Well
Pool, Joan	509518	POOL	Yes	Yes	Active Drinking Water Supply Well
Ramirez, Roberto	216425	RAMIREZ	Yes	Yes	Active Drinking Water Supply Well
Ray, Maria	803772	RAY	Yes	Yes	Active Drinking Water Supply Well
Rodriguez, Manuel	648360	RODRIQUEZ	No	No	Well Dry
Rogers, Ernest D	641803	ROGERS 803	Yes	Yes	Active Drinking Water Supply Well
Rogers, Ernest D	641801	ROGERS 801	No	No	Inactive Drinking Water Supply Well
Rogers, Ernest D	573596	ROGERS 596	No Data	No Data	Well Not Located
Rogers, Ernest M	216018	ROGERS E	Yes	Yes	Active Drinking Water Supply Well
Rollins, Mary	641750	ROLLINS	No Data	No Data	Unable to Contact Owner; Vacant Lot
Ross, Richard	517526	ROSS	No Data	No Data	Unable to Contact Owner
Ruiz, David	531770	RUIZ	Yes	Yes	Active Drinking Water Supply Well
Schwartz, Elizabeth	210865	SCHWARTZ	Yes	Yes	Active Drinking Water Supply Well
Shafer, Earnest	649994	SHAFER	No	No	Well Dry; Owner interview indicated no well on property, well buldozed
Stark-Campbell	643481	STARK-CAMPBELL	No	No	Inactive Drinking Water Supply Well
Stephens	808560	STEPHENS	No	No	Inactive Drinking Water Supply Well
Sunbelt Marketing, Inc.	201531	SUNBELT	No	No	Inactive Drinking Water Supply Well
Sunnyside Holdings, LLC	588270	SUNNYSIDE	No	No	Inactive Drinking Water Supply Well
Swan, Charles	NR	SWAN	Yes	Yes	Active Drinking Water Supply Well
Swan, Charles	522817	TM-08 SWAN	Yes	Yes	Active Drinking Water Supply Well
Turquoise Valley, Inc.	568875	TVI 875	Yes	No	Golf Course Irrigation
Turquoise Valley, Inc.	802236	TVI 236	Yes	No	Golf Course Irrigation
Turquoise Valley, Inc.	567713	TVI 713	No	No	Well Capped
Valenzuela, Gustavo	645050	VALENZUELA	No Data	No Data	Owner Declined Participation in Program
Weed, Peggy	544535	WEED	Yes	Yes	Active Drinking Water Supply Well
Weiskopf, Tom	641802	WEISKOPF	Yes	Yes	Active Drinking Water Supply Well
Willson, Thomas	648362	WILSON 362	No	No	ADWR Records indicate Stock Well
Willson, Thomas	648361	WILSON 361	No	No	Inactive Drinking Water Supply Well
Zander, Paul	205126	ZANDER	Yes	Yes	Active Drinking Water Supply Well

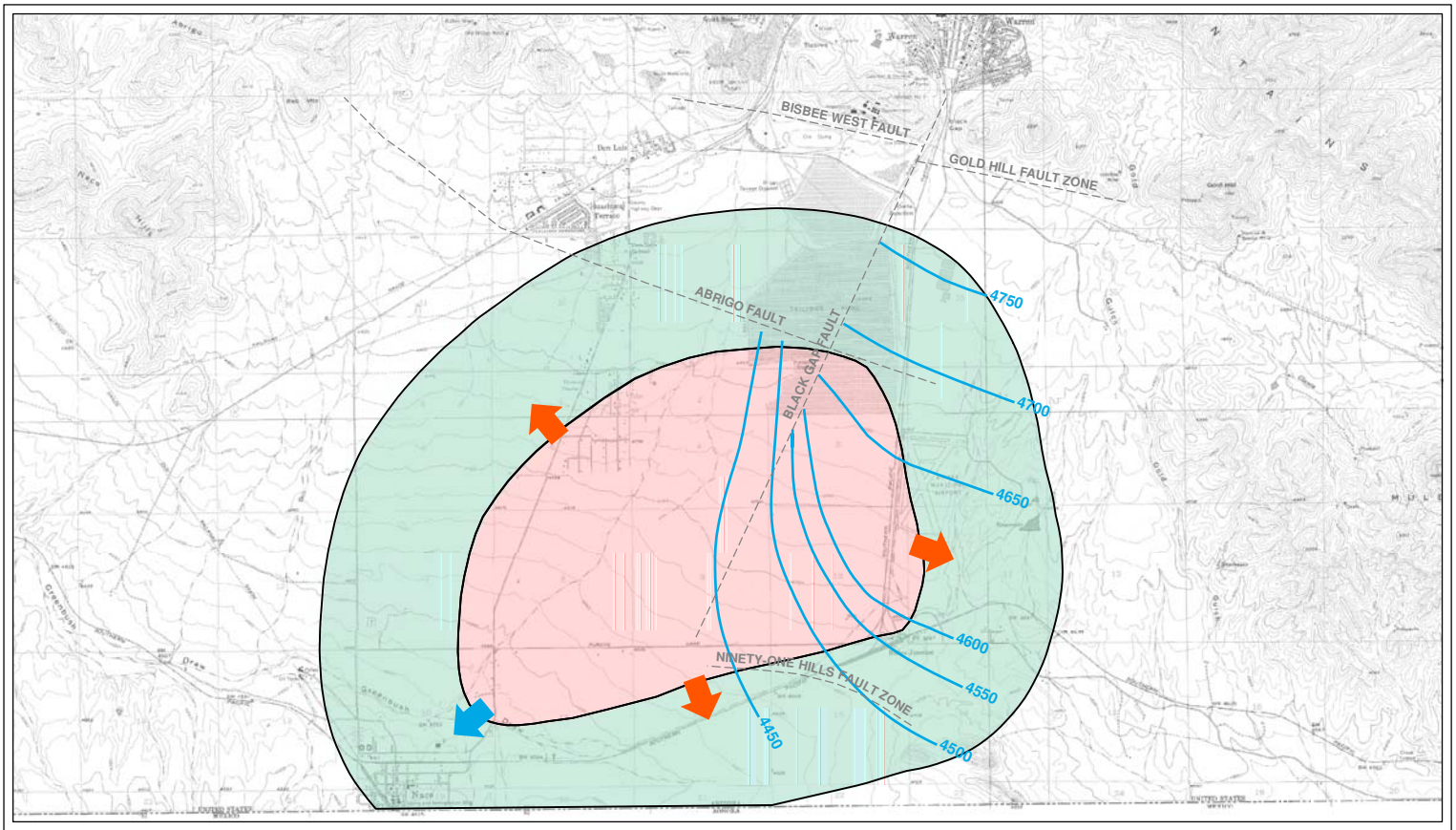
ADWR = Arizona Department of Water Resources
35-71891 = ADWR Program 35 ID
ND = No Data
NR = No Record

TABLE 4
Verified Drinking Water Supply Well and Sulfate Concentration

Owner/Operator	ADWR Program 55 ID	Well Name	UTM N	UTM E	Sample Date	Sulfate (mg/l)
Anderson, David	613396	ANDERSON	3468816	601134	03/20/08	431
Arizona Water Company	590620	AWC 05	3468526	599278	02/04/08	13
Banks, Douglas	647986	BANKS 986	3469205	606982	02/27/08	44
Bisbee Municipal Airport, LLC	577927	BIMA	3471859	606003	02/06/08	210
Blommer, Connie	633472	BLOMMER	3471532	602726	02/05/08	206
Chambers, Terry	629807	CHAMBERS	3467385	600024	03/06/08	7.7
Cooper, Charles	637069	COOPER C	3468915	601350	03/04/08	880
Cooper, Teresa	623564	COOPER	3471687	602138	02/14/08	33
Dodson, John	644927	DODSON	3469065	605596	02/20/08	54
East, Leon	599796	EAST	3468713	607076	02/08/08	10.6
Eppele, Geneva	805641	EPPELE 641	3469230	607159	03/11/08	21.7
Franco, Irma	500101	FRANCO	3468828	602851	02/06/08	670
Fultz, Richard	212447	FULTZ	3469068	607151	02/27/08	152
Garner, Terry	587635	GARNER 635	3468972	602664	02/04/08	37.8
Hoban, Barbara	805290	HOBAN	3468878	601706	02/27/08	510
Howard, Joel	NR	HOWARD	3468769	601291	03/04/08	571
Keefer, Craig	209744	KEEFER	3468112	599881	02/06/08	6.8
McConnell, Virginia	539265	MCCONNELL 265	3468844	601463	02/20/08	720
Metzler, Alfonzo	35-71891	METZLER	3471380	602094	03/05/08	317
Miller, Charles	522699	TM-15 MILLER	3471436	599618	02/27/08	14
Moore, Patrick	538847	MOORE	3467845	599560	02/20/08	7.1
Naco Water Company	562944	NWC 02R	3467817	600348	ND	ND
Naco Water Company	203321	NWC 03R	3468343	601149	ND	ND
Naco Water Company	627685	NWC 04 UPRR	3469113	605915	ND	ND
Naco Water Company	575700	NWC 06	3467742	599826	ND	ND
Noteman, Russell	212483	NOTEMAN	3471575	606045	02/05/08	310
Osborn, Dale	643436	OSBORN	3470274	607030	02/25/08	16.4
Palmer, Patrick	578819	PALMER 819	3469485	607775	02/14/08	15.9
Panagakos, Alfred	35-76413	PANAGAKOS	3469320	605312	04/21/08	410
Parra, Steve	576415	PARRA	3471261	602170	02/11/08	360
Pionke, Jim	613395	PIONKE	3468956	601048	02/06/08	394
Pool, Joan	509518	POOL	3470015	599682	02/20/08	134
Ramirez, Roberto	216425	RAMIREZ	3467586	599731	02/04/08	7.6
Ray, Maria	803772	RAY	3469200	607083	02/15/08	159
Rogers, Ernest D	641803	ROGERS 803	3468416	600980	02/07/08	138
Rogers, Ernest M	216018	ROGERS E	3467634	600464	02/04/08	4.6
Ruiz, David	531770	RUIZ	3471414	602852	02/05/08	263
Schwartz, Elizabeth	210865	SCHWARTZ	3468270	600813	02/08/08	158
Swan, Charles	522817	TM-08 SWAN	3470668	607788	02/13/08	12.6
Swan, Charles	NR	SWAN	3470649	607378	02/13/08	24.1
Weed, Peggy	544535	WEED	3470976	601415	02/14/08	11.1
Weiskopf, Tom	641802	WEISKOPF	3468667	601147	02/15/08	500
Zander, Paul	205126	ZANDER	3468003	599677	02/04/08	5.7

ADWR = Arizona Department of Water Resources
UTM = Universal Transverse Mercator; Zone 12 Band R
mg/l = milligrams per liter
NR = No Record
ND = No Data
35-71891 = ADWR Program 35 ID

FIGURES



Legend

- Groundwater Elevation Contour (ft amsl, 50 ft interval) (September 2005)
- >250 mg/L Sulfate Plume Footprint (HGC, 2008)
- 1 Mile Search Radius Area
- Downgradient Direction
- Cross-Gradient Direction

1 inch equals 3,500 feet

0 1,750 3,500 Feet

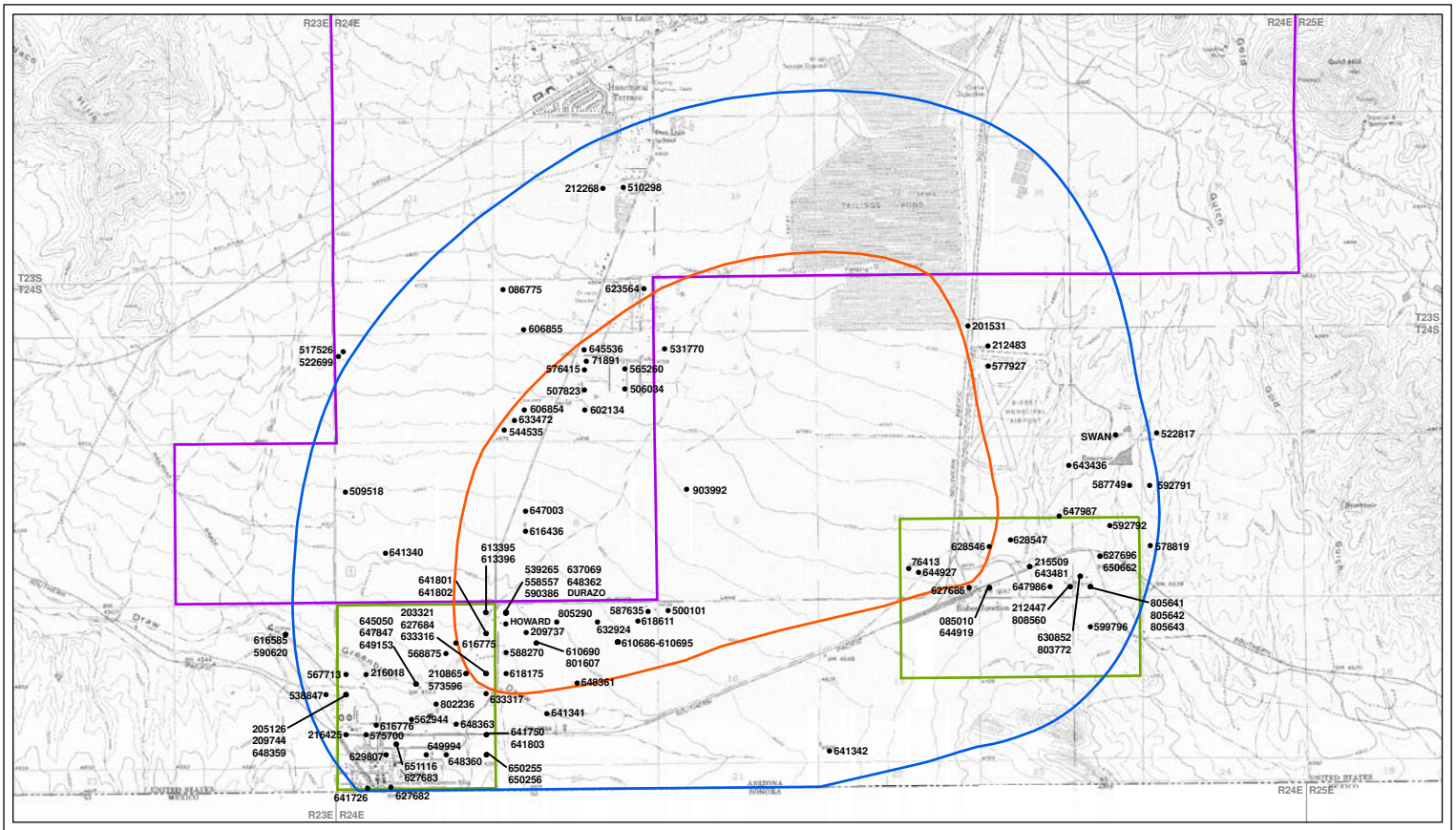
PROJECTION: UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

SULFATE PLUME, GROUNDWATER ELEVATIONS, HYDRAULIC GRADIENT DIRECTIONS, AND WELL INVENTORY AREA

Approved	Date	Author	Date	File Name	Figure
DRS	07/03/08	RAM	07/03/08	8720020G	1



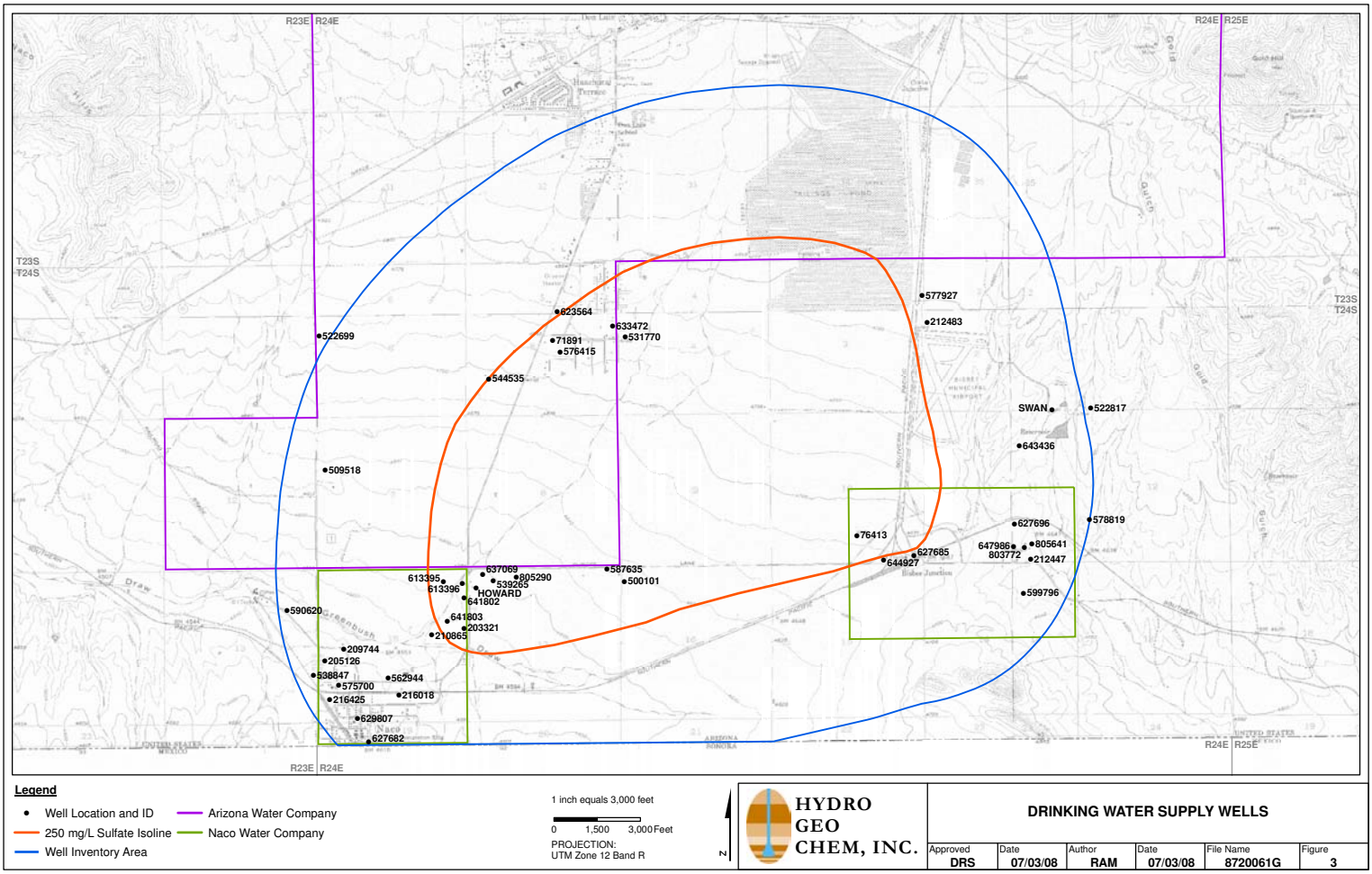
Legend

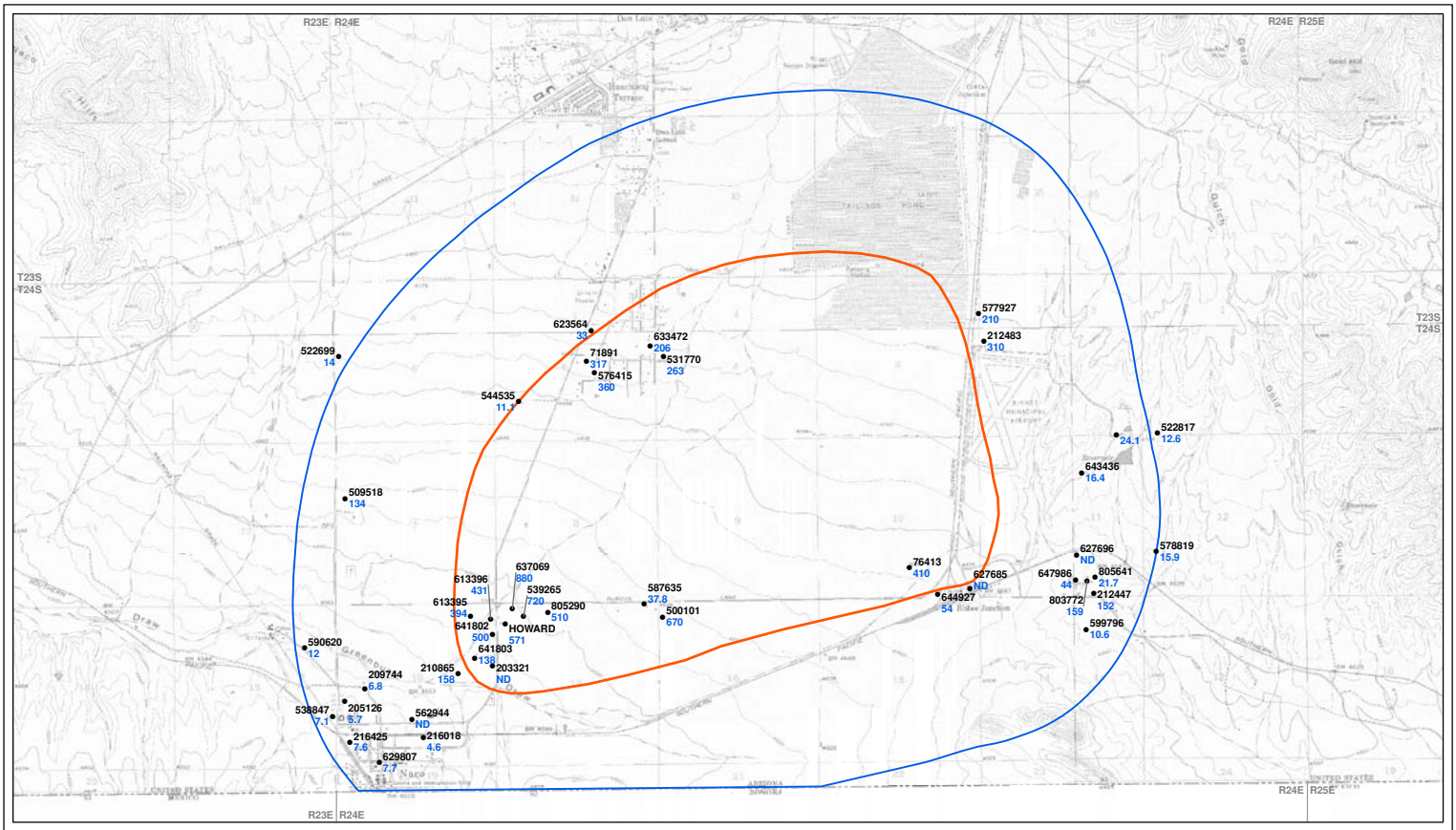
- Well Location and ID
- 250 mg/L Sulfate Isoline
- Well Inventory Area
- Arizona Water Company
- Naco Water Company

HYDRO GEO CHEM, INC.

WELLS EVALUATED AS POTENTIAL DRINKING WATER SUPPLY WELLS

Approved	Date	Author	Date	File Name	Figure
DRS	07/03/08	RAM	07/03/08	8720021G	2


R23E R24E
R24E R25E
T23S T24S
522699
623564
633472
531770
71891
576415
544535
509518
577927
212483
SWAN
522817
643436
578819
627696
76413
647986
805641
803772
212447
627685
644927
599796
587635
500101
637069
805290
539265
HOWARD
641802
613395
613396
641803
203321
210865
590620
209744
205126
538847
562944
575700
216018
216425
629807
627682
Legend
Well Location and ID
250 mg/L Sulfate Isoline
Well Inventory Area
Arizona Water Company
Naco Water Company
1 inch equals 3,000 feet
0 1,500 3,000 Feet
PROJECTION:
UTM Zone 12 Band R
N
HYDRO GEO CHEM, INC.
DRINKING WATER SUPPLY WELLS
Approved DRS
Date 07/03/08
Author RAM
Date 07/03/08
File Name 8720061G
Figure 3



Legend

- Well Location and ID
- 200 Sulfate Concentration (mg/L)
- ND= No Data
- 250 mg/L Sulfate Isoline
- Well Inventory Area

1 inch equals 3,000 feet

0 1,500 3,000 Feet

PROJECTION:
UTM Zone 12 Band R

N

HYDRO GEO CHEM, INC.

SULFATE CONCENTRATIONS IN DRINKING WATER SUPPLY WELLS IN FEBRUARY THROUGH APRIL 2008

Approved	Date	Author	Date	File Name	Figure
DRS	07/28/08	RAM	06/09/08	8720074G	4

APPENDIX A

WELL INVENTORY AREA SEARCH RESULTS

Appendix A
Well Inventory Area Search Results

Abandoned, Cancelled, or Capped: 50

Well Name	Program 55 ID	Township	Range	Section	160-acre Quarter	40-acre Quarter	10-acre Quarter	Well Type	Well Use	Water Use	Installed	Well Depth	Water Level	Last Name / Company	Address	City	State	Zip Code
CANCELLED-ABANDONED	805326	23S	24E	34	SW	SW	SE	EXEMPT	ABANDONED	NONE	10/23/54	700	151	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	506999	24S	24E	2				EXPLORATION	ABANDONED	NONE		0	0	SOUTHEASTERN AZ GOVERNMENT	PO BOX 204	BISBEE	AZ	85603
CANCELLED-ABANDONED	522577	23S	24E	33	NW	SW	NE	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	11/03/88	940	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525140	23S	24E	34	NW	NW	NW	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	10/26/89	500	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525142	23S	24E	35	SW	SW	NW	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	08/04/89	140	59	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525143	23S	24E	33	SE	NW	SW	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	09/05/89	410	304	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525145	23S	24E	34	NW	NE	NE	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	08/18/89	805	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85856
CANCELLED-ABANDONED	522569	24S	24E	9	NE	NE	NW	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	11/01/88	265	219	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525141	24S	24E	3	SW	NE	NW	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	08/10/89	165	89	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525548	24S	24E	8	SE	NE	SW	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	09/25/89	700	162	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525552	24S	24E	9	NW	NW	SW	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	10/09/89	700	190	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525553	24S	24E	9	SW	NE	NE	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	10/03/89	700	186	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525554	24S	24E	10	SW	NW	SE	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	10/22/89	440	184	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525558	24S	24E	8	SE	NE	SW	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	09/13/89	210	163	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525559	24S	24E	8	SE	NE	SW	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	09/26/89	700	180	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525136	24S	24E	3	SW	NE	NW	MONITOR OR PIEZOMETER	ABANDONED	TEST	08/06/89	140	91	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525137	24S	24E	3	SW	NE	NW	MONITOR OR PIEZOMETER	ABANDONED	TEST	08/09/89	165	89	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525556	24S	24E	9	NE	NE	NW	MONITOR OR PIEZOMETER	ABANDONED	TEST	09/11/89	265	217	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525557	24S	24E	9	NE	NE	NW	MONITOR OR PIEZOMETER	ABANDONED	TEST	09/09/89	265	223	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	539787	23S	24E	33	SE	NE	NW	MONITOR OR PIEZOMETER	MONITOR / ABANDONED	MONITORING	08/14/93	605	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED-ABANDONED	522693	24S	24E	2	NW	SW	SW	MONITOR OR PIEZOMETER	OBSERVATION / ABANDONED	MONITORING	01/17/89	175	131	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	529361	23S	24E	32	NW	SW	SE	NON-EXEMPT	ABANDONED	TEST	09/12/90	400	0	COCHISE COUNTY	PO DRAWER AJ	BISBEE	AZ	85603
CANCELLED	510918	24S	23E	24	NE	NE	NE	NON-EXEMPT	WATER PRODUCTION	INDUSTRIAL/DOMESTIC		0	0	D & R LAND COMPANY	PO BOX 305	NACO	AZ	85620
CANCELLED	525551	24S	24E	17	NE	SE	SE	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED	539727	24S	24E	7	NW	NW	NW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539728	24S	24E	5	NW	SW	NW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539729	24S	24E	8	SE	NE	SW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539730	24S	24E	9	SE	NW	SW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539731	24S	24E	10	SE	NW	SW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539732	24S	24E	10	NE	NW	NW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539733	24S	24E	9	NE	NW	NW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539734	24S	24E	8	NE	NE	NW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539735	24S	24E	4	SE	NW	SE	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539736	24S	24E	3	SE	NW	NW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539737	24S	24E	3	NE	SW	NE	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539738	24S	24E	3	NW	SW	NW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539739	24S	24E	3	NW	SE	NE	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539740	23S	24E	34	NE	SW	SW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539741	23S	24E	34	SW	NE	SW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539742	23S	24E	27	SW	SE	SE	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	207236	23S	24E	32	NE	SW	SE	EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	BURKE	11 YUCCA STREET	BISBEE	AZ	85603
CANCELLED	085343	24S	24E	11	SW	SE	NE	EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	BANKS, D.L.	5 MULBERRY	BISBEE	AZ	85603
CANCELLED	500431	24S	24E	18	SW	NE	SW	EXEMPT	WATER PRODUCTION	DOMESTIC		240	0	DAVIES, DANIEL, R	PO BOX 757	NACO	AZ	85620
CANCELLED	500881	24S	24E	18	SW	NW	NE	EXEMPT	WATER PRODUCTION	DOMESTIC		150	0	BINIEWSKI, F J	PO BOX 803	NACO	AZ	85620
CANCELLED	544685	24S	24E	5	NE	SE	NE	EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	PATSIS, JOHN	2232 BARNETT RD	BISBEE	AZ	85603
CANCELLED	556161	24S	24E	18	NW	SW	SE	EXEMPT	WATER PRODUCTION	RECREATION / DOMESTIC		0	0	TURQUOISE VALLEY INC	P O BOX 727	NACO	AZ	85620
CANCELLED	581107	24S	24E	10	SE	SW	SE	EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	BUSK, JAMES A	233 W PURDY LANE	BISBEE	AZ	85603
CANCELLED	509394	24S	24E	9	SW	NW	SW	EXPLORATION	OBSERVATION	MONITORING		0	0	CITY OF BISBEE	118 ARIZONA ST	BISBEE	AZ	85603
CAPPED (DUPLICATE 626785)	626702	24S	24E	10	SE	SE	SE	NON-EXEMPT	CAPPED	MUNICIPAL	01/31/18	379	216	UNION PACIFIC RAILROAD	1416 DODGE ST	OMAHA	NE	68179
NWC 04 CAPPED	627685	24S	24E	10	SE	SE	SE	NON-EXEMPT	CAPPED	MUNICIPAL	12/31/26	379	216	NACO WATER COMPANY	PO BOX 307	NACO	AZ	85620

Well Type or Well Use = Exploration or Geotechnical: 4

Well Name	Program 55 ID	Township	Range	Section	160-acre Quarter	40-acre Quarter	10-acre Quarter	Well Type	Well Use	Water Use	Installed	Well Depth	Water Level	Last Name / Company	Address	City	State	Zip Code
COCHISE COUNTY HIGHWAY DEPARTMENT	582581	24S	24E	11				GEOTECHNICAL	GEOTECHNICAL	NONE	08/16/00	82	0	COCHISE COUNTY HIGHWAY DEPARTMENT	1415 W MELODY LANE BLDG B	BISBEE	AZ	85603
COCHISE COUNTY HIGHWAY DEPARTMENT	582582	24S	24E	11				GEOTECHNICAL	GEOTECHNICAL	NONE	08/17/00	68	0	COCHISE COUNTY HIGHWAY DEPARTMENT	1415 W MELODY LANE BLDG B	BISBEE	AZ	85603
SOUTHWEST GAS CORPORATION	532135	24S	24E	18	NE	NE	NE	EXPLORATION	CATHODIC	NONE	07/25/91	228	0	SOUTHWEST GAS COMPANY	3401 E GAS RD	TUCSON	AZ	85714
SOUTHWEST GAS CORPORATION	532136	24S	24E	5	NE	NE	SW	EXPLORATION	CATHODIC	NONE	07/29/91	228	0	SOUTHWEST GAS COMPANY	3401 E GAS RD	TUCSON	AZ	85714

Well Type or Well Use = Monitor, Monitor or Piezometer: 29

Well Name	Program 55 ID	Township	Range	Section	160-acre Quarter	40-acre Quarter	10-acre Quarter	Well Type	Well Use	Water Use	Installed	Well Depth	Water Level	Last Name / Company	Address	City	State	Zip Code
BF-01	539783	24S	24E	4	NE	NE	NE	MONITOR OR PIEZOMETER	MONITOR	MONITORING	08/15/93	400	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
BF-02	539786	24S	24E	4	NW	SE	SE	MONITOR OR PIEZOMETER	MONITOR	MONITORING	08/05/93	326	275	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
COB WARREN LAGOON (ABANDON)	576012	23S	24E	35	SW	NW	SE	MONITOR	MONITOR	MONITORING				CITY OF BISBEE	118 ARIZONA STREET	BISBEE	AZ	85603
COB WARREN LAGOON	593116	23S	24E	35	SW	NW	SE	MONITOR	MONITOR	TEST	07/22/02	150	102	CITY OF BISBEE	118 ARIZONA STREET	BISBEE	AZ	85603
COB MW-2	903984	24S	24E	18	SE	NE	NE	MONITOR	MONITOR	MONITORING	01/20/06	162	118	CITY OF BISBEE	118 ARIZONA STREET	BISBEE	AZ	85603
COB MW-3	906823	24S	23E	13	NE	NE	SW	MONITOR	MONITOR	NONE		0	0	CITY OF BISBEE	118 ARIZONA STREET	BISBEE	AZ	85603
GL-01	539785	23S	24E	34	NW	SE	NE	MONITOR OR PIEZOMETER	MONITOR	MONITORING	08/20/93	833	778	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
GL-02	539784	23S	24E	34	SE	NE	NE	MONITOR OR PIEZOMETER	MONITOR	MONITORING	08/08/93	400	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
GL-03	539782	23S	24E	34	NW	NW	NW	MONITOR OR PIEZOMETER	MONITOR	MONITORING	08/11/93	825	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-02	522573	24S	24E	4	NE	NE	SW	MONITOR OR PIEZOMETER	OBSERVATION	MONITORING	12/14/88	640	287	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-02A	522574	24S	24E	4	NE	NE	SW	MONITOR OR PIEZOMETER	OBSERVATION	MONITORING	02/10/89	925	319	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-03	522575	23S	24E	35	NW	NW	NE	MONITOR OR PIEZOMETER	OBSERVATION	MONITORING	12/16/88	200	116	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-05 MILLER	522694	24S	24E	21	NE	NW	SE	MONITOR OR PIEZOMETER	MONITOR	MONITORING	01/31/89	160	131	MILLER, CHARLES	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-06 MILLER	522695	24S	24E	14	NW	SW	SW	MONITOR OR PIEZOMETER	MONITOR	MONITORING	01/24/89	200	157	MILLER, CHARLES	36 W HIGHWAY 92	BISBEE	AZ	85603

Appendix A
Well Inventory Area Search Results

TM-07	522576	24S	24E	4	NW	NW	SE	MONITOR OR PIEZOMETER	MONITOR	MONITORING	11/04/88	350	275	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-08 SWAN	522817	24S	24E	1	SW	SW	SW	MONITOR OR PIEZOMETER	OBSERVATION	MONITORING	01/20/89	210	153	SWAN, GEORGE	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-10 USBP	522696	24S	24E	5	NW	NE	SW	MONITOR OR PIEZOMETER	MONITOR	MONITORING	11/08/88	290	249	US BORDER PATROL	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-11 PIONKE	522815	24S	24E	18	NE	NE	NW	MONITOR OR PIEZOMETER	OBSERVATION	MONITORING	11/18/88	210	153	PIONKE, JIM	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-12 MILLER	522697	24S	24E	20	NW	NE	SE	MONITOR OR PIEZOMETER	MONITOR	MONITORING	01/21/89	175	128	MILLER, CHARLES	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-13 MILLER	522698	24S	24E	8	NW	SW	SW	MONITOR OR PIEZOMETER	OBSERVATION	MONITORING	01/05/89	210	153	MILLER, CHARLES	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-14 NELSON	522816	24S	24E	7	NW	SW	NW	MONITOR OR PIEZOMETER	MONITOR	MONITORING	01/12/89	215	178	NELSON, DENNIS	2112 TIERRA COMENTA TRAIL	NACO	AZ	85620
TM-15 MILLER	522699	24S	24E	6	NW	SW	SW	MONITOR OR PIEZOMETER	OBSERVATION	MONITORING	01/11/89	210	153	MILLER, CHARLES	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-16	522578	24S	24E	10	NE	SW	SE	MONITOR OR PIEZOMETER	MONITOR	MONITORING	12/15/88	115	75	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-17	522700	24S	24E	16	NE	SW	NE	MONITOR OR PIEZOMETER	OBSERVATION	MONITORING	01/07/89	210	153	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-19	522580	24S	24E	8	SE	SE	SW	MONITOR OR PIEZOMETER	OBSERVATION	MONITORING	11/16/88	700	158	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-19A	522581	24S	24E	8	SE	SE	SW	MONITOR OR PIEZOMETER	OBSERVATION	MONITORING	11/17/88	210	153	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-26	525144	23S	24E	34	SW	SE	NE	MONITOR OR PIEZOMETER	MONITOR	MONITORING	09/07/89	800	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-41	562555	23S	24E	3	SW	SW	SW	MONITOR OR PIEZOMETER	MONITOR	MONITORING	06/12/97	210	157	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-42	562554	23S	24E	10	SW	NW	SW	MONITOR OR PIEZOMETER	MONITOR	MONITORING	06/13/97	250	186	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603

Exempt Well with no Well Use or Water Use (Retained for evaluation as a potential Drinking Water Supply Well): 1

Well Name	Program 55 ID	Township	Range	Section	160-acre Quarter	40-acre Quarter	10-acre Quarter	Well Type	Well Use	Water Use	Installed	Well Depth	Water Level	Last Name / Company	Address	City	State	Zip Code
STEPHENS	808560	24S	24E	11	SE	SW	SW	EXEMPT				0	0	STEPHENS	616 BORDER ROAD	BISBEE	AZ	85603

Well Use = Water Production; Water Use = Domestic, Irrigation, Stock, Municipal, Utility (Water Co), and Industrial, or a Combination (Non-Domestic Water Uses Retained for Evaluation as a Potential Drinking Water Supply Well): 114

Well Name	Program 55 ID	Township	Range	Section	160-acre Quarter	40-acre Quarter	10-acre Quarter	Well Type	Well Use	Water Use	Installed	Well Depth	Water Level	Last Name / Company	Address	City	State	Zip Code
ALVAREZ	650255	24S	24E	18	SE	SE	SE	EXEMPT	WATER PRODUCTION	IRRIGATION	01/01/38	160	120	ALVAREZ, M J	PO BOX 581	NACO	AZ	85620
ANDERSON	613396	24S	24E	18	NE	NE	NE	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/54	236	126	ANDERSON, DAVID	BOX 4055	BISBEE	AZ	85603
ANDERSON 776	616776	24S	24E	18	SW			NON-EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/16	0	200	ANDERSON M J	768 CAL DEL ENSALMO	GREEN VALLEY	AZ	85614
ANDERSON 775	616775	24S	24E	18	NE			NON-EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION		0	0	ANDERSON M J	768 CAL DEL ENSALMO	GREEN VALLEY	AZ	85614
ASLD	616436	24S	24E	8	SW	NW	NE	EXEMPT	WATER PRODUCTION	STOCK	07/15/20	150	110	ARIZONA STATE LAND DEPARTMENT	1616 WEST ADAMS	PHOENIX	AZ	85007
AWC 03	616585	24S	23E	13	NE	NW	SE	NON-EXEMPT	WATER PRODUCTION	DOMESTIC / MUNICIPAL / INDUSTRIAL	07/20/56	333	100	ARIZONA WATER COMPANY	PO BOX 29006	PHOENIX	AZ	85038
AWC 05	590620	24S	23E	13	NE	NW	SE	NON-EXEMPT	WATER PRODUCTION	MUNICIPAL	06/24/02	337	0	ARIZONA WATER COMPANY	PO BOX 29006	PHOENIX	AZ	85038
BANKS 986	647986	24S	24E	11	SW	SE	SE	EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION	06/23/80	445	300	BANKS D L	630 EAST MULBERRY LANE	BISBEE	AZ	85603
BANKS 987	647987	24S	24E	11	SW	SE	SE	EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION		339	300	BANKS D L	630 EAST MULBERRY LANE	BISBEE	AZ	85603
BARTON 010	080010	24S	24E	11	SW	SW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/81	300	168	BARTON	702 BORDER ROAD	BISBEE	AZ	85603
BARTON 919	644919	24S	24E	11	SW	SW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC		130	90	BARTON	702 BORDER ROAD	BISBEE	AZ	85603
BERNAL	648363	24S	24E	18	SE			EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/48	125	0	BERNAL L	PO BOX 234	NACO	AZ	85620
BIMA	577927	24S	24E	2	SW	NW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	03/03/00	465	341	BISBEE MUNICIPAL AIRPORT, LLC	2145 SOUTH ARIZONA STREET	BISBEE	AZ	85603
BLOMMER 472	633472	24S	24E	5	SW	SW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	11/01/78	350	244	BLOMMER, CONNIE	2254 SOUTH BARNETT ROAD	BISBEE	AZ	85603
BLOMMER 536	645536	24S	24E	5	NE	SW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	11/13/78	350	244	BLOMMER, CONNIE	2254 SOUTH BARNETT ROAD	BISBEE	AZ	85603
BRINDLEY	086775	24S	24E	5	NW	NW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/81	360	295	BRINDLEY	ROUTTE 1 76 DELLA ST	BISBEE	AZ	85603
BULLARD	602134	24S	24E	5	SE	SW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	09/0674	300	80	BULLARD, BOB	PO BOX 385	NUTRIOSO	AZ	85932
BURKE	212268	23S	24E	32	NE	SW	SE	EXEMPT	WATER PRODUCTION	DOMESTIC	10/1/106	781	613	BURKE, JAMES	11 YUCCA STREET	BISBEE	AZ	85603
CAMPBELL	643481	24S	24E	11	SW	SE	NW	EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	CAMPBELL, DON	403 EAST SAGUARO LANE	BISBEE	AZ	85603
CHAMBERS	629807	24S	24E	18	SW	SE	SW	EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION	01/01/77	245	137	CHAMBERS, TERRY	PO BOX 1222	NACO	AZ	85620
CHASE	648359	24S	24E	18	SW	NW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/70	100	0	CHASE, CHARLES	6445 NORTH PLACITA PEGUE	TUCSON	AZ	85718
COB MW-1	903992	24S	24E	9	NW	SW	NE	EXEMPT	WATER PRODUCTION	INDUSTRIAL	03/02/06	420	240	CITY OF BISBEE	118 ARIZONA STREET	BISBEE	AZ	85603
COOPER	623564	24S	24E	5	NE	NE	NE	NON-EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION	12/20/79	325	254	COOPER, TERESA	PO BOX AX	BISBEE	AZ	85603
COOPER,C	637089	24S	24E	17	NW	NW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	07/29/66	220	165	COOPER, CHARLES	1497 WEST PURDY LANE	BISBEE	AZ	85603
COTA	651116	24S	24E	18	SW	SE		EXEMPT	WATER PRODUCTION	DOMESTIC		160	140	COTA, BARBARA	215 1ST STREET	NACO	AZ	85620
CROWLEY	510298	23S	24E	32	NE	SE	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	04/19/85	788	0	CROWLEY	101 OCOTILLO	BISBEE	AZ	85603
DODSON	644927	24S	24E	10	SE	SW		EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION	10/01/59	200	96	DODSON, JOHN	235 PURDY LANE	BISBEE	AZ	85603
DOUGLASS 791	592791	24S	24E	12	NW	SW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	06/03/02	200	110	DOUGLASS, JAMES	1649 DRIFTWOOD CIRCLE	SIERRA VISTA	AZ	85635
DOUGLASS 792	592792	24S	24E	11	SE	NE	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	06/03/02	200	110	DOUGLASS, JAMES	1649 DRIFTWOOD CIRCLE	SIERRA VISTA	AZ	85635
EAST	599706	24S	24E	14	NE	NW	SE	EXEMPT	WATER PRODUCTION	DOMESTIC	08/05/03	125	35	EAST LEON	651 EAST BORDER ROAD	BISBEE	AZ	85603
EBERWEIN	641726	24S	24E	19	NW	NW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/76	249	104	EBERWEIN, G A	PO BOX 605	NACO	AZ	85620
ENGLUND	565260	24S	24E	5	SE	NE	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	12/16/97	320	250	ENGLUND, LEE	2331 SOUTH COLEMAN STREET	BISBEE	AZ	85603
EPPELE 641	805641	24S	24E	11	SE	SW	SE	EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION		265	30	EPPELE, GENEVA	1467 WHITE SCHOOL ROAD	CAVE JUNCTION	OR	97523
EPPELE 642	805642	24S	24E	11	SE	SW	SE	EXEMPT	WATER PRODUCTION	IRRIGATION	12/31/00	40	20	EPPELE, GENEVA	1467 WHITE SCHOOL ROAD	CAVE JUNCTION	OR	97523
EPPELE 643	805643	24S	24E	11	SE	SW	SE	EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION		165	30	EPPELE, GENEVA	1467 WHITE SCHOOL ROAD	CAVE JUNCTION	OR	97523
FRANCO	500101	24S	24E	16	NW	NW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	07/01/81	200	120	FRANCO, IRMA	3425 SOUTH FRANCO LOOP	BISBEE	AZ	85603
FULTZ	212447	24S	24E	11	SE	SW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	08/23/06	300	124	FULTZ, RICHARD	694 E BORDER RD	BISBEE	AZ	85603
GARNER 557	558557	24S	24E	17	NE	NE	NE	EXEMPT	WATER PRODUCTION	DOMESTIC	09/04/96	300	170	GARNER, TERRY	1027 WEST PURDY LANE	BISBEE	AZ	85603
GARNER 635	587635	24S	24E	17	NE	NE	NE	EXEMPT	WATER PRODUCTION	DOMESTIC	10/12/01	680	180	GARNER, TERRY	1027 WEST PURDY LANE	BISBEE	AZ	85603
GGOOSE 546	628546	24S	24E	11	SW	NW	SW	NON-EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION	02/11/63	800	143	BEAUMONT, ED (GALLOPING GOOSE PROPERTIES)	700 WEST HIGHWAY 24, SUITE A	WOODLAND PARK	CO	80863
GGOOSE 547	628547	24S	24E	11	SW	NW	SE	NON-EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION	08/18/61	800	104	BEAUMONT, ED (GALLOPING GOOSE PROPERTIES)	700 WEST HIGHWAY 24, SUITE A	WOODLAND PARK	CO	80863
GOAR	610694	24S	24E	17	NE			EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/50	250	175	GOAR, SHEILA	1185 WEST PURDY LANE	BISBEE	AZ	85603
GOAR 686	610686	24S	24E	17	NE			NON-EXEMPT	WATER PRODUCTION	IRRIGATION	01/01/50	250	175	GOAR, SHEILA	1185 WEST PURDY LANE	BISBEE	AZ	85603
GOAR 687	610687	24S	24E	17	NE			NON-EXEMPT	WATER PRODUCTION	IRRIGATION	01/01/50	250	175	GOAR, SHEILA	1185 WEST PURDY LANE	BISBEE	AZ	85603
GOAR 688	610688	24S	24E	17	NE			NON-EXEMPT	WATER PRODUCTION	IRRIGATION	01/01/50	250	175	GOAR, SHEILA	1185 WEST PURDY LANE	BISBEE	AZ	85603
GOAR 689	610689	24S	24E	17	NE			NON-EXEMPT	WATER PRODUCTION	IRRIGATION	01/01/50	250	175	GOAR, SHEILA	1185 WEST PURDY LANE	BISBEE	AZ	85603
GOAR 690	610690	24S	24E	17	NW			NON-EXEMPT	WATER PRODUCTION	DOMESTIC / STOCK	01/01/50	250	175	GOAR, SHEILA	1185 WEST PURDY LANE	BISBEE	AZ	85603
GOAR 691	610691	24S	24E	17	NE			NON-EXEMPT	WATER PRODUCTION	DOMESTIC / STOCK	01/01/50	250	175	GOAR, SHEILA	1185 WEST PURDY LANE	BISBEE	AZ	85603
GOAR 692	610692	24S	24E	17	NE			NON-EXEMPT	WATER PRODUCTION	DOMESTIC / STOCK	01/01/50	250	175	GOAR, SHEILA	1185 WEST PURDY LANE	BISBEE	AZ	85603
GOAR 693	610693	24S	24E	17	NE			EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/50	250	175	GOAR SHEILA	1185 WEST PURDY LANE	BISBEE	AZ	85603
GOAR RANCH	610695	24S	24E	17	NE			EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/50	250	175	GOAR, SHEILA	1113 WEST PURDY LANE	BISBEE	AZ	85603
GREGG	630852	24S	24E	11	SE	SW		EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	GREGG, DIANE	570 MULBERRY LANE	BISBEE	AZ	85603
HAUBERT	801607	24S	24E	17	NW			NON-EXEMPT	WATER PRODUCTION	DOMESTIC/STOCK/IRRIGATION	01/01/55	195	114	HAUBERT J M	RR 1 BX 315 NACO HWY	BISBEE	AZ	85603
HECK	507823	24S	24E	5	SE	NW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	05/04/84	313	208	HECK, HAROLD	BOX 325	BISBEE	AZ	85603
HOBAN	805290	24S	24E	17	NW	NE		EXEMPT	WATER PRODUCTION	DOMESTIC	03/02/64	316	130	HOBAN, BARBARA	1385 PURDY LANE	BISBEE	AZ	85603

Appendix A
Well Inventory Area Search Results

HULL 854	606854	24S	24E	5	SW	SW	NE	NON-EXEMPT	WATER PRODUCTION	IRRIGATION	01/01/15	25	220	HULL C W	RT 1 NACO HIGHWAY	BISBEE	AZ	85603
HULL 855	606855	24S	24E	5	NW	SW	NE	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/15	400	240	HULL C W	RT 1 NACO HIGHWAY	BISBEE	AZ	85603
HUMPHREY	649153	24S	24E	18				EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/38	160	120	HUMPHREY, M	PO BOX 36	NACO	AZ	85620
IRONS	632924	24S	24E	17	NE	NW		NON-EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION	12/12/55	175	30	IRONS, LEE	PO BOX 1446	NOGALES	AZ	85621
JACKSON	506034	24S	24E	5	SE	NE	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	08/16/83	342	208	JACKSON, JOE	PO BOX 4520	BISBEE	AZ	85603
JALYN	209737	24S	24E	17	NW	NW	SE	EXEMPT	WATER PRODUCTION	DOMESTIC	11/16/05	245	150	JALYN ASSOCIATES, LLC	NACO HIGHWAY	BISBEE	AZ	85603
KEEFER	209744	24S	24E	18	SW	NW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	11/15/05	245	136	KEEFER, CRAIG	6530 SOUTH QUETEL AVENUE	NACO	AZ	85620
KENNEDY	647003	24S	24E	8	NW	SW	SE	EXEMPT	WATER PRODUCTION	STOCK		110	60	KENNEDY, DAVID	3819 EAST INDIAN SCHOOL ROAD	PHOENIX	AZ	85018
LESNICK	587749	24S	24E	11	NE	SE	NE	EXEMPT	WATER PRODUCTION	DOMESTIC	07/10/01	400	350	LESNIK, RON	PO BOX 757	BISBEE	AS	85603
LUCERO	618175	24S	24E	17	NW	SW	SW	NON-EXEMPT	WATER PRODUCTION	DOMESTIC	06/26/72	301	95	LUCERO, MARCOS	408 E MICHIGAN	TUCSON	AZ	85714
MCCONNELL 265	539265	24S	24E	17	NW	NW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	07/06/93	216	165	MCCONNELL, VIRGINIA	1463 PURDY LANE	BISBEE	AZ	85603
MENDEZ	650256	24S	24E	18	SE	SE	SE	EXEMPT	WATER PRODUCTION	IRRIGATION	01/01/38	160	120	MENDEZ,FRANCES	3757 TOWNER AVENUE	NACO	AZ	85620
MILLER 340	641340	24S	24E	7	SW	NE	SW	EXEMPT	WATER PRODUCTION	DOMESTIC/STOCK	01/01/40	200	150	MILLER, CHARLES	MILLER RANCH	NACO	AZ	85620
MILLER 341	641341	24S	24E	17	SW	NE	SW	EXEMPT	WATER PRODUCTION	STOCK	01/01/20	100	60	MILLER, CHARLES	MILLER RANCH	NACO	AZ	85620
MILLER 342	641342	24S	24E	15	SW	SW	SW	EXEMPT	WATER PRODUCTION	STOCK	01/01/57	200	160	MILLER, CHARLES	MILLER RANCH	NACO	AZ	85620
MINNERLY	650862	24S	24E	11	SE			EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	MINNERLY, H.R.	RT 1 614 BORDER RD	BISBEE	AZ	85603
MINOR 316	633316	24S	24E	18	NE	SE	SE	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/55	208	95	MINOR, LAWRENCE	3386 SOUTH NACO HIGHWAY	BISBEE	AZ	85603
MINOR 317	633317	24S	24E	18	SE	NE	NE	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/56	155	95	MINOR, LAWRENCE	3386 SOUTH NACO HIGHWAY	BISBEE	AZ	85603
MOORE	538847	24S	23E	13	SE	NE	NE	EXEMPT	WATER PRODUCTION	DOMESTIC	04/24/93	220	125	MOORE, PATRICK	3606 WILSON ROAD	NACO	AZ	85620
MOROYOQUI	647847	24S	24E	18				EXEMPT	WATER PRODUCTION	DOMESTIC	06/18/69	180	130	MOROYOQUI,H B	PO BOX 535	TUCSON	AZ	85754
NOBLE	619611	24S	24E	17	NE	NE		NON-EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	NOBLE A J	EL RANCHO MOTEL/R1H92	BISBEE	AZ	85603
NOTEMAN	212483	24S	24E	2	NW	SW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	NOTEMAN, RUSS	2240 ARIZONA STREET	BISBEE	AZ	85603
NWC 01	627682	24S	24E	19	NW	NE	NW	NON-EXEMPT	WATER PRODUCTION	MUNICIPAL	09/24/51	215	140	NACO WATER COMPANY	PO BOX 85160	TUCSON	AZ	85754
NWC 02	627683	24S	24E	18	SW	SE		NON-EXEMPT	WATER PRODUCTION	MUNICIPAL	08/02/59	210	131	NACO WATER COMPANY	PO BOX 85160	TUCSON	AZ	85754
NWC 02R	562944	24S	24E	18	SW	NE	SE	NON-EXEMPT	WATER PRODUCTION	MUNICIPAL	06/11/97	312	150	NACO WATER COMPANY	PO BOX 85160	TUCSON	AZ	85754
NWC 03	627684	24S	24E	18	NE	SE	SE	NON-EXEMPT	WATER PRODUCTION	MUNICIPAL	01/01/30	179	94	NACO WATER COMPANY	PO BOX 85160	TUCSON	AZ	85754
NWC 03R	203321	24S	24E	18	NE	SE	SE	EXEMPT	WATER PRODUCTION	MUNICIPAL	05/12/04	312	140	NACO WATER COMPANY	PO BOX 85160	TUCSON	AZ	85754
NWC 04 UPRR	551849	24S	24E	10	SE	SE	SE	NON-EXEMPT	WATER PRODUCTION	UTILITY (WATER CO)	08/24/95	462	375	UNION PACIFIC RAILROAD COMPANY	1416 DODGE STREET	OMAHA	NE	68179
NWC 05	627696	24S	24E	11	SE			EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/60	175	104	NACO WATER COMPANY	PO BOX 85160	TUCSON	AZ	85754
NWC 06	575700	24S	24E	18	SW	SW	NE	NON-EXEMPT	WATER PRODUCTION	UTILITY (WATER CO)	09/15/99	410	140	NACO WATER COMPANY	PO BOX 85160	TUCSON	AZ	85754
OSBORN	643436	24S	24E	11	NE	NW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	08/05/93	258	94	OSBORN, DALE	PO BOX 9027 SWAN ROAD	BISBEE	AZ	85603
PALMER 819	578819	24S	24E	12	SW	NW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	01/10/00	220	68	PALMER, PATRICK	PO BOX CV	BISBEE	AZ	85603
PARRA	579415	24S	24E	5	SE	NW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	10/06/99	355	263	PARRA, STEVE	2356 SOUTH HOPE STREET	BISBEE	AZ	85603
PIONKE	613395	24S	24E	18	NE	NE	NE	NON-EXEMPT	WATER PRODUCTION	IRRIGATION	01/01/64	300	0	PIONKE, JIM	3330 E OAK HILL ST	SIERRA VISTA	AZ	85635
POOL	509518	24S	24E	7	NW	SW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	12/12/84	313	174	POOL, JOAN	PO BOX 4051	BISBEE	AZ	85603
RAMIREZ	216425	24S	24E	18	SW	SW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	RAMIREZ, ROBERTO	2082 WEST DOMINGUEZ, PO BOX 362	NACO	AZ	85620
RAY	803772	24S	24E	11	SE	SW		EXEMPT	WATER PRODUCTION	DOMESTIC		100	60	RAY, TERRY	648 EAST MULBERRY LANE	BISBEE	AZ	85603
RODRIGUEZ	648360	24S	24E	18	SE	SW	SE	EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	RODRIGUEZ, MANUEL	2092 WEST DOMINGUES	NACO	AZ	85620
ROGERS 596	573596	24S	24E	18	NE	SE	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	09/16/99	290	140	ROGERS, ERNEST D	1598 WEST MULEDEER ST	BISBEE	AZ	85603
ROGERS 801	641801	24S	24E	18	NE	NE	SE	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/60	142	92	ROGERS, ERNEST D	1598 WEST MULEDEER ST	BISBEE	AZ	85603
ROGERS 803	641803	24S	24E	18	SE	SE	NE	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/60	140	92	ROGERS, ERNEST D	1598 WEST MULEDEER ST	BISBEE	AZ	85603
ROGERS E	216018	24S	24E	18	NW	SW	SE	EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	ROGERS, ERNEST M	1820 WEST DOMINGUES	NACO	AZ	85620
ROLLINS	641750	24S	24E	18	SE	SE	NE	EXEMPT	WATER PRODUCTION	DOMESTIC		126	0	ROLLINS M	PO BOX 332	NACO	AZ	85620
ROSS	517526	24S	24E	6	NW	SW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	04/16/87	425	375	ROSS, RICHARD	PO BOX 305	NACO	AZ	85620
RUIZ	531770	24S	24E	4	NW	SW	SW	NON-EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION	05/29/91	312	254	RUIZ, DAVID	2295 SOUTH BARNETT ROAD	BISBEE	AZ	85603
SCHWARTZ	210865	24S	24E	18	NE	SE	SW	NON-EXEMPT	WATER PRODUCTION	DOMESTIC	02/07/06	305	123	SCHWARTZ, ELIZABETH	3486 SOUTH CLUBVIEW TERRACE	BISBEE	AZ	85603
SHAFER	646894	24S	24E	18	SE	SW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	07/15/66	162	120	SHAFER E	PO BOX 545	NACO	AZ	85620
STARK-CAMPBELL	215509	24S	24E	11	SW	SE	NW	EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	STARK-CAMPBELL	403 E SAGUARO LANE	BISBEE	AZ	85603
SUNBELT	201531	24S	24E	3	NE	SE	NE	EXEMPT	WATER PRODUCTION	DOMESTIC	12/04/03	380	296	SUNBELT MARKETING, INC.	2209 SOUTH ARIZONA STREET	BISBEE	AZ	85603
SUNNYSIDE	588270	24S	24E	17	NW	SW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	08/28/01	200	115	SUNNYSIDE HOLDINGS, LLC	PO 1303	HEREFORD	AZ	85615
TVI 236	802236	24S	24E	18	SE	NW		NON-EXEMPT	WATER PRODUCTION	IRRIGATION	02/14/34	222	100	LAWSON, PETER (TURQUOISE VALLEY INC.)	1794 WEST NEWELL, PO BOX 727	NACO	AZ	85620
TVI 713	587713	24S	24E	18	NW	SW	SW	NON-EXEMPT	WATER PRODUCTION	DOMESTIC	04/14/98	200	100	LAWSON, PETER (TURQUOISE VALLEY INC.)	1794 WEST NEWELL, PO BOX 727	NACO	AZ	85620
TVI 875	568875	24S	24E	18	NE	SW	NE	NON-EXEMPT	WATER PRODUCTION	IRRIGATION	06/14/98	330	140	LAWSON, PETER (TURQUOISE VALLEY INC.)	1794 WEST NEWELL, PO BOX 727	NACO	AZ	85620
VALENZUELA	645050	24S	24E	18				EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/47	167	115	VALENZUELA G E	PO BOX 14	NACO	AZ	85620
WEED	544535	24S	24E	5	SW	SW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC / STOCK	07/09/94	320	226	WEED, PEGGY	1443 WEST HULL RANCH ROAD	BISBEE	AZ	85603
WEISKOPF	641802	24S	24E	18	NE	NE	SE	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/60	200	0	WEISKOPF	3316 NACO HIGHWAY	BISBEE	AZ	85603
WILLSON 361	648361	24S	24E	17	NW	NW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/29	160	0	WILLSON T J	BOX 425	NACO	AZ	85620
WILLSON 362	648362	24S	24E	17	NW	NW	NW	EXEMPT	WATER PRODUCTION	STOCK	01/01/47	180	0	WILLSON T J	BOX 425	NACO	AZ	85620
ZANDER	205126	24S	24E	18	SW	NW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	02/10/05	280	165	ZANDER, PAUL	3535 METZLER PLACE	NACO	AZ	85620

Well Use = Domestic; Identified During Field Verification OR Bottled Water Deliveries List: 6

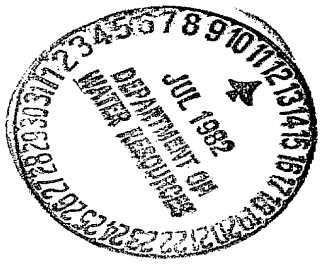
Well Name	Program 55 ID	Township	Range	Section	160-acre Quarter	40-acre Quarter	10-acre Quarter	Well Type	Well Use	Water Use	Installed	Well Depth	Water Level	Last Name / Company	Address	City	State	Zip Code
DURAZO	NR	24S	24E	18	NR	NR	NR	NR	NR	DOMESTIC	NR	0	0	DURAZO, NILTZA	2350 SUNFLOWER STREET	BISBEE	AZ	85603
HOWARD	NR	24S	24E	17	NR	NR	NR	NR	NR	DOMESTIC	NR	0	0	HOWARD, JOEL	3269 SOUTH NACO HIGHWAY	BISBEE	AZ	85603
MCCONNELL 386	590386	24S	24E	17	NW	NW	NW	NR	NR	DOMESTIC	NR	0	0	MCCONNELL, RUSSELL	P.O. Box 4513	BISBEE	AZ	85603
PANAGAKOS	76413 [1]	24S	24E	10	SW	SE	SE	NR	NR	DOMESTIC	07/57	200	131	PANAGAKOS, ALFRED	500 WEST PURDY LANE	BISBEE	AZ	85603
METZLER	71891 [1]	24S	24E	5	NW	NW	SE	NR	NR	DOMESTIC	04/17/79	351	238	METZLER, TRINY	P.O. Box 204	BISBEE	AZ	85603
SWAN	NR	24S	24E	1	NR	NR	NR	NR	NR	DOMESTIC	NR	0	0	SWAN, GEORGE	PO Box 5593	BISBEE	AZ	85603

ADWR = Arizona Department of Water Resources
ASLD = Arizona State Land Department
AWC = Arizona Water Company
BIMA = Bisbee Municipal Airport
COB = City of Bisbee
NR = No Record
NWC = Naco Water Company
TVI = Turquoise Valley Inc.
UPRR = Union Pacific Railroad
USBP = United States Border Patrol
[1]ADWR Program 35 Database

APPENDIX B

ADWR IMAGED RECORDS FOR WELLS EVALUATED AS POTENTIAL DRINKING WATER SUPPLY WELLS

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

))

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55-650255-L
FILE NO. D(24-24) 18 ddd
FILED 7-12-82 (DATE) AT (TIME)
INA
AMA

1. Name of Registrant:
MARIA JESUS ALVAREZ
104 D. ST. (Address) mailing: P.O. Box 581 NACO (City) AZ (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law: NEVER REGISTERED.
NONE (File Number) 35- (Control Number)

3. a. The well is located within the SE ¼ SE ¼ SE ¼, Section 18, of Township 24 N(S) Range 24 E(W), G & SRB & M, in the County of Cochise. — UNKNOWN.

b. If in a subdivision: Name of subdivision NACO TOWNSITES 102-57-598 NACO Lot No. 305, Address 104 D. ST. NACO, AZ 85620.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
IRRIGATION.

5. If for irrigation use, number of acres irrigated from well NONE - ~~Domestic~~.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 160 feet
b. Diameter of casing 6 inches
c. Depth of casing 100 feet
d. Type of casing STEEL.
e. Maximum pump capacity — gallons per minute.
f. Depth to water 120 feet below land surface.
g. Date well completed (Month) (Day) 1938 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒
___ ¼ ___ ¼ ___ ¼, Section ___ Township ___ Range ___
___ ¼ ___ ¼ ___ ¼, Section ___ Township ___ Range ___
NACO TOWNSITES, NACO LOT # 305, 104 D. ST, NACO, AZ 85620
Attach additional sheet if necessary.

9. DATE 7/8/82 SIGNATURE OF REGISTRANT Maria Jesus Alvarez

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED MAY 18 1982 DEPT OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 616775
FILE NO. D(24-24)18 a
FILED 5-18-82 (DATE) AT 9am (TIME)
INA —
AMA —

1. Name of Registrant:
MARY JANE NEWELL ANDERSON
768 Calle Del Ensalmo (Address) Green Valley (City) AZ (State) 85614 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within ~~the~~ Lot 36, Block 76, Townsite of Naco, Arizona, being part ~~of~~ ~~¼~~ the ¼ NE ¼, Section ~~8~~ 18 ~~&~~ ~~19~~, of Township 24 S N/S, Range 24 E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Townsite of Naco, Block 76 Lot No. 36, Address Naco, Arizona.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation and domestic.

5. If for irrigation use, number of acres irrigated from well Unknown.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well N/A feet
b. Diameter of casing N/A inches
c. Depth of casing N/A feet
d. Type of casing N/A .
e. Maximum pump capacity N/A gallons per minute.
f. Depth to water N/A feet below land surface.
g. Date well completed N/A (Month) (Day) (Year).

RECEIVED AUG 5 1982 DEPT. OF WATER RESOURCES

8. The place(s) of use of water. If same as Item 3, check this box ☐.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Bisbee Country Club (sometimes known as Warren District Country Club)
Attach additional sheet if necessary.

9. DATE 5/17/82 SIGNATURE OF REGISTRANT Mary Jane Newell Anderson

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Mary Jane Newell Anderson
768 Calle Del Ensalmo
Green Valley AZ 85614

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	616775
	THRU
55	616776

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing Wells	10.00	20.00
					File No. D(24-24)18c and D(24-24)18a		

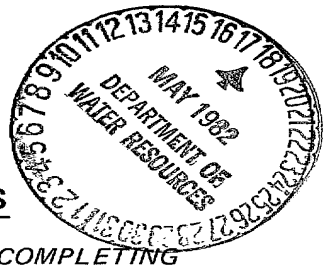
WAITER PAYMENT
GUESTS 2
CHK NO 2385
2@ 10.00
55-1 20.00
TAX 0.00
TOTL 20.00
GEN.CHEK 20.00

Check No. 2385
8-17-82 im

TOTAL $ 20.00

MICROFILMED

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 616776
FILE NO. D(24-24)18 c
FILED 5-18-82 (DATE) AT 9 am (TIME)
INA —
AMA —

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 ☒

1. Name of Registrant:
MARY JANE NEWELL ANDERSON
768 Calle Del Ensalmo (Address) Green Valley (City) AZ (State) 85614 (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35- (Control Number)

3. a. The well is located within ~~the~~ Lot 10, Block 35, Townsite of Naco, Arizona, being part ~~of~~ ~~¼~~ the ¼ SW ¼, Section ~~18~~ 18 & ~~19~~, of Township 24 S N/S, Range 24 E E/W, G & SRB & M, in the County of Cochise.

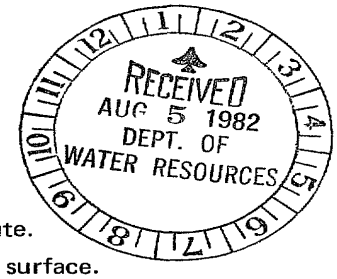
b. If in a subdivision: Name of subdivision Townsite of Naco, Block 35
Lot No. 10 /, Address Naco, Arizona.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic.

5. If for irrigation use, number of acres irrigated from well Approximately 5 acres

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well N/A feet
b. Diameter of casing N/A inches
c. Depth of casing N/A feet
d. Type of casing N/A .
e. Maximum pump capacity N/A gallons per minute.
f. Depth to water Approximately 200 feet below land surface.
g. Date well completed Jan. (Month) (Day) 1916 (Year) .



8. The place(s) of use of water. If same as Item 3, check this box ☐.
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
Newell Camp, Naco, Arizona
Attach additional sheet if necessary.

9. DATE 5/17/82 SIGNATURE OF REGISTRANT Mary Jane Newell Anderson

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Mary Jane Newell Anderson
768 Calle Del Ensalmo
Green Valley AZ 85614

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	616775
	THRU
55	616776

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing Wells	10.00	20.00
					File No. D(24-24)18c and D(24-24)18a		

WAITER PAYMENT
GUESTS 2
CHK NO 2385
2@ 10.00
55-I 20.00
TAX 0.00
TOTL 20.00
GEN.CHEK 20.00

~~# 1275 A 10:30~~

Check No. 2385
8-17-82 im

TOTAL $ 20.00

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED
JUN 9 1982
DEPT. OF
WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	X
NON-EXEMPT WELL — $10.00	

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 613396
FILE NO. D(24-24)18aaa
FILED 6-9-82 (DATE) AT 4— (TIME)
INA —
AMA —

1. Name of Registrant:
Shamrell, Richard
Box 4055 (Address) Bisbee (City) Az. (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35- _____ (Control Number)

3. a. The well is located within the NE ¼ NE ¼ NE ¼, Section 18, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
domestic.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box X
_____
_____ (Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 236 feet
b. Diameter of casing 8 inches
c. Depth of casing 110 feet
d. Type of casing steel .
e. Maximum pump capacity 20 gallons per minute.
f. Depth to water 126 feet below land surface.
g. Date well completed _____ (Month) _____ (Day) 1954 (Year)

8. The place(s) of use of water. If same as Item 3, check this box X.
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
Attach additional sheet if necessary.

9. DATE 6/3/82 SIGNATURE OF REGISTRANT Richard Shamrell
By Wilford R. Richardson
Wilford R. Richardson, Attorney

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

05-895
Miller, C. G.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

11
FOR OFFICE USE ONLY
REGISTRATION NO. 55- 616436
FILE NO. 10(24-24)8 CBA
FILED 6/14/82 (DATE) AT 4:35p (TIME)
INA
AMA

1. Name of Registrant:
THE STATE OF ARIZONA - STATE LAND DEPARTMENT
1624 W. ADAMS (Address) PHOENIX (City) ARIZONA (State) 85007 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ NW ¼ SW ¼, Section 8, of Township 24S [redacted] Range 24E [redacted] G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Stockwater - Wildlife.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
NOT APPLICABLE
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 150 feet
b. Diameter of casing N/A inches
c. Depth of casing N/A feet
d. Type of casing N/A .
e. Maximum pump capacity N/A gallons per minute.
f. Depth to water 110 feet below land surface.
g. Date well completed July (Month) 15, (Day) 1920 (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE June 14, 1982 SIGNATURE OF REGISTRANT
for STATE LAND COMMISSIONER

MICROFILMED

SUPERSEDED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Well #3 - Bisbee
Naco
D(24-23) 13-3

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED
APR 2 1982
DEP'T. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 616585
FILE NO. D(24-23)13 abd
FILED 4-2-82 (DATE) AT (TIME)
INA —
AMA —

1. Name of Registrant:
ARIZONA WATER COMPANY
2612 N. 16th St., P. O. Box 5396, Phoenix, Arizona 85010
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
None (File Number) 35- None (Control Number)

3. a. The well is located within the SE ¼ NW ¼ NE ¼, Section 13, of Township 24S N/S, Range 23E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision N/A, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic - municipal - industrial.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 270 feet
b. Diameter of casing 16 inches
c. Depth of casing 269 feet
d. Type of casing slotted steel .
e. Maximum pump capacity 850 gallons per minute.
f. Depth to water 108 feet below land surface.
g. Date well completed 7 (Month) 20 (Day) 1956 (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☐.
_____¼ _____¼ _____¼, Section _____ Township 23S Range 24E
_____¼ _____¼ _____¼, Section _____ Township 24S Range 24E
Township 24S, Range 23E
Attach additional sheet if necessary.

9. DATE 4-2-82 SIGNATURE OF REGISTRANT ARIZONA WATER COMPANY By: [signature]
Chief Engineer

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

ARIZONA WATER CO
2612 N 16th ST
PO BOX 5396
PHOENIX AZ 85010

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	616581
	THRU
	616694

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing Wells	10.00	1,140.00
					114 wells		
					File No's.: A(8-23)5dcd	WATER PAYMENT	
					A(1-7)26adb	GUESTS 114	
					A(1-8)30dcc	CHK NO 42039	
					A(1-7)26aac and other various	55-I 1140.00	
					D(7-5)9ccc	TAX 0.00	
					D(6-6)9bbd	TOTL 1140.00	
					D(6-6)21bbc	GEN.CHEK 1140.00	
					D(6-6)9bdd and various others	# 904 A 8:16-	

Check No. 42039
8-5-82 im

TOTAL $ 1,140.00

MICROFILMED

Arizona Department of Water Resources
Records Management Section
500 N. 3rd Street • Phoenix, Arizona 85004
(602) 417-2405 • (800) 352-8488
www.water.az.gov

Pump Installation Completion Report

RECEIVED
APR 29 2003
Information Management

- Review instructions prior to completing form.
- The registered well owner should file this report with the Department within 30 days following installation of pump equipment.

FILE NUMBER
WELL REGISTRATION NUMBER
55 - 590620

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
Arizona Water Company

MAILING ADDRESS
P.O. Box 29006

CITY / STATE / ZIP CODE
Phoenix, AZ 85038-9006

CONTACT PERSON NAME AND TITLE
Michael J. Whitehead, Vice President - Engineering

TELEPHONE NUMBER: 602-240-6860
FAX: 602-240-6878

Location of Well

WELL LOCATION ADDRESS (IF ANY)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S.	23E.	13	NE ¼	NW ¼	SE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
102	34	5

COUNTY WHERE WELL IS LOCATED
Cochise

SECTION 2. EQUIPMENT INSTALLED

DATE PUMP INSTALLED
11/15/2002

Pump Type
CHECK ONE

- ☐ Air Lift
- ☐ Bucket
- ☐ Centrifugal
- ☐ Jet
- ☐ Piston
- ☐ Rotary
- ☐ Submersible
- ☒ Turbine
- ☐ Other (*please specify*):

Power Type
CHECK ONE

- ☐ Diesel Engine
- ☒ Electric Motor
- ☐ Gasoline Engine
- ☐ Hand
- ☐ Natural Gas
- ☐ Windmill
- ☐ Other (*please specify*):

RATED PUMP CAPACITY
600 Gallons Per Minute

HORSE POWER RATING OF MOTOR
100-HP

SECTION 3. WELL TEST

Pump Test Data

DATE WELL TESTED
See attacged pump test results

STATIC WATER LEVEL (A)
Feet Below Land Surface

PUMPING WATER LEVEL (B)
Feet Below Land Surface

DRAWDOWN [(B) – (A)]
Feet Below Land Surface

TEST PUMPING RATE
Gallons Per Minute

DURATION OF PUMP TEST (Minimum 4 Hours)
Hours

TOTAL PUMPING LIFT
Feet

FOR FLOWING WELL, MEASURED SHUT IN HEAD ☐ FT ☐ PSI

Method of Discharge Measurement
CHECK ONE

- ☐ Bailer
- ☐ Bucket – Barrel – Stopwatch
- ☐ Current
- ☐ Estimated – Air Lift
- ☐ Gauge
- ☐ Meter
- ☒ Orifice
- ☐ Volume
- ☐ Weir – Flume
- ☐ Other (*please specify*):

Method of Measuring Water Level
CHECK ONE

- ☐ Air Line
- ☒ Electric Measuring Line (Sounder)
- ☐ Steel Tape
- ☐ Other (*please specify*):

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief according to A.R.S. § 45-600(B).

SIGNATURE OF WELL OWNER: Michael J. Whitehead
DATE: 4-23-2003

16825 South Weber Drive • Chandler, Arizona 85226-4112 • 602/961-1141 • FAX 602/961-0290 Test Eng. T-14/E-4

8" Pipe X 6" Orifice
P.D. 840'

TEST PUMP RESULTS

STEPS. 500, 600, 700, 800, 900, [illegible] 750, 860, & 1100 R.P.M.

CUSTOMER AZ. Becmen AZ. Water, Bisbee, Well #5 DATE 7-31-02

STATIC WATER LEVEL 120.29' STEP Test JOB NO. 02-4158

TIME	INCHES ORIFICE PRESSURE	PUMPING LEVEL	DRAW DOWN	GPM	SPECIFIC YIELD	REMARKS
						Check Test – 4"
13:00	12.75"	198.23	77.94	502	6.4408	R.P.M. 875 O.P. 21 W.T. 171°
13:30	12.5"	199.82	79.53	497	6.2492	↑ Same
* 14:00	12.25"	200.95	80.66	493	6.1120	Received Fuel – 795.5 GALS. R.P.M. 875 O.P. 21 W.T. 171° *
14:30	12.25"	202.44	82.15	493	6.0012	↑ Same
14:45	28.5"			751		Q ↑ to 1100 R.P.M.
15:00	28"	256.88	136.59	744	5.4469	R.P.M. 1100 O.P. 24 W.T. 172°
15:15	27.5"	260.56	140.27	738	5.2612	↑ Same
15:20	28.75"			755		Q ↑ to 1125 R.P.M.
15:30	28.5"	269.05	148.76	751	5.0484	Clean – Clear Water R.P.M. 1125 O.P. 30 W.T. 172°
15:45	28.25"	272.1	151.81	748	4.9272	↑ Same
16:02	28"	274.5	154.21	744	4.8245	↑ Same
16:15	28"	276.69	156.4	744	4.7570	↑ Same
16:30	27.5"	278.99	158.5	738	4.6561	↑ Same
17:00	27"	282.32	162.03	731	4.5115	↑ Same
17:06	30"			771		Q ↑ to 1150 R.P.M.
17:15	29.75"	295.63	175.34	767	4.3743	Clean – Clear Water R.P.M. 1150 O.P. 32 W.T. 174°
17:30	29.5"	299.28	178.99	764	4.2683	↑ Same
17:45	29.5"	301.35	181.06	764	4.2195	↑ Same
18:00	29.5"	303.33	183.04	764	4.1739	↑ Same
18:03	36.5"			850		Clean – Clear Water Q ↑ to 1250 R.P.M.
18:15	36.5"	329.1	208.81	850	4.0706	R.P.M. 1250 O.P. 34 W.T. 172°
18:30	36.5"	332.88	212.59	850	3.9993	↑ Same / Possum – Trace only
19:00	36"	339.2	218.91	814	3.8554	R.P.M. 1250 O.P. 34 W.T. 172°
19:30	35.5"	344.29	224.0	838	3.7410	↑ Same

Moyvebor Group Inc.
16825 South Weber Drive • Chandler, Arizona 85226-4112 • 602/961-1141 • FAX 602/961-0290

10" Pipe x 6" Orifice
P.D. 840'

Test Eng. T-14/E-4
STEPS: 500, 750, 850, & 1100 G.P.m

TEST PUMP RESULTS

CUSTOMER Az. Beeman, Az Water, Bisbee, Well #5 DATE 7-31-02

STATIC WATER LEVEL 120.29 STEP TEST JOB NO. 02-4158

TIME	INCHES ORIFICE PRESSURE	PUMPING LEVEL	DRAW DOWN	GPM	SPECIFIC YIELD	REMARKS
20:00	35"	348.86	228.57	832	3.6400	R.P.m. 1250 O.P. 34 W.T. 172°
20:30	35"	360.0	239.71	832	3.4708	
21:00	34.5"	364.43	244.14	826	3.3833	
21:10	62"			1108		Q↑ to 1550 R.P.m.
21:30	62"	493.17	372.88	1108	2.9714	Clean water with A lot of Air R.P.m. 1550 O.P. 35 W.T. 175°
22:00	62"	504.51	384.22	1108	2.8837	↑ Same / Discharge Blowing A lot of Air
22:30	62"	514.11	393.82	1108	2.8134	↑ Same
23:00	62"	514.93	394.64	1108	2.8076	↑ Same
23:30	62"	518.22	397.93	1108	2.7844	↑ Same
23:55	62"	522.57	402.28	1108	2.7543	↑ Same
00:00 24:00						Pump off
00:30 24:30						TEST Eng. off

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16825 South Weber Drive • Chandler, Arizona 85226-4112 • 602/961-1141 • FAX 602/961-0290

TEST PUMP RESULTS

CUSTOMER AZ. WATER Co. Recovery after STEP TEST DATE 8-1-02

JOB NO. well #5 NACO

STATIC WATER LEVEL

TIME	INCHES ORIFICE PRESSURE	PUMPING LEVEL	DRAW DOWN	GPM	SPECIFIC YIELD	REMARKS
12:04		290				
12:05		257.62				
12:06		257.3				
12:07		251.91				
12:09		248.53				
12:10		243.4				
12:15		235.0				
12:20		229.38				
12:25		227.0				
12:30		223.18				
12:35		220.75				
12:40		218.9				
12:45		217.05				
12:50		214.9				
12:55		211.9				
1:00		209.13				
1:10		207.17	(Actually 5 min new watch)			
1:20		202.63				
1:30		197.34				
1:40		195.79				
1:50		192.55				
2:00		188.71				
2:15		186.23				
2:30		183.03				

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AUG 0 2 2002
ARIZONA WATER COMPANY
PHOENIX - ENGINEERING

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The Weber Group Inc.
16825 South Weber Drive • Chandler, Arizona 85226-4112 • 602/961-1141 • FAX 602/961-0290

TEST PUMP RESULTS

CUSTOMER AZ Water Co. Recovery After Step Test. DATE 8-1-02

JOB NO. Well #5 NACO

STATIC WATER LEVEL

TIME	INCHES ORIFICE PRESSURE	PUMPING LEVEL	DRAW DOWN	GPM	SPECIFIC YIELD	REMARKS
2:45		176.18				
3:00		175.5				
3:15		174.18				
3:30		171.78				
3:45		169.21				
4:00		167.49				
5:55		154'-8"				
6:30		152'-5"				
7:00		148'-10"				
8:05		145'-10"				
9:10		142'-7"				
10:04		140'-10"				
11:15		137'-11"				
12:53		135'-6"				
13:28		134'-7"				

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TEST PUMP RESULTS

CUSTOMER ARIZONA WATER CO. DATE 8-15-02

STATIC WATER LEVEL 111.5" JOB NO. NACO well #5

TIME	INCHES ORIFICE PRESSURE	PUMPING LEVEL	DRAW DOWN	GPM	SPECIFIC YIELD	REMARKS
	Top of Bowls		503' 508 FT	800		
			517' intake			
		111.5"				RECEIVED AUG 16 2002 ARIZONA WATER COMPANY PHOENIX - ENGINEERING
11:36		160.0				
11:41		202.0		800		
11:48		212.0				
11:54		216.0				Re-adjust RPM
12:00		216.0				water clear 1100 RPM
12:05		222.0				
12:18		226.0				
12:25		226.0				
12:30		229.11"				RPM 1100 water clear
12:36		230				
12:41		231.9"				
12:46		232.6"				
12:51		236.9½"				32½" - 33½"
12:56		238.8½"				
1:01		239.8"				
1:07		240.9"				
1:12		241.10"				32" - 33"
1:17		242.8"				
1:22		243.6"				Cl2-0 Turbidity 5.7 PH-7.3
1:27		244				32" - 32½"
1:32		245				
1:37		245.9½"				

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The Weber Group Inc.
16825 South Weber Drive • Chandler, Arizona 85226-4112 • 602/961-1141 • FAX 602/961-0290

10" Pipe x 6" Orifice
P.D. 840'

TEST PUMP RESULTS

TEST Eng. T. [illegible]

8 hrs.

CUSTOMER Az. Beeman, Az. Water Bisbee, Well #5 DATE 7-30-02

STATIC WATER LEVEL 113.7' Developing Well JOB NO. 02-4158

TIME	INCHES ORIFICE PRESSURE	PUMPING LEVEL	DRAW DOWN	GPM	SPECIFIC YIELD	REMARKS
						[illegible] Fuel-Side Tanks-3/8 / Tank-6" = [illegible]
[illegible]						START [illegible]
START 10:50	20.5"			637		[illegible] Pump on / R.P.M. 900 O.P. 22 W.T. 1[illegible]
10:55	11.5"			477		Q↓ To 800 R.P.M. [illegible]
11:05	13"			507		Q↑ to 9[illegible] R.P.M. / Clean But Cloudy
11:10	15"	165.71	52.01	507	9.7481	Clean - Clear water R.P.M. 825 O.P. 20 W.T. 17P
11:20						Surge 3X5 AT 1000 R.P.M.
11:40	35"			832		Clean Clear water Q↑ to 1075 R.P.M.
11:45	25.5"			710		Clean but Cloudy - light Brown Q↓ To 1025 R.P.M.
11:50	24.5"	214.24	100.54	696	6.9226	Clean but little Cloudy / Ioff Cone - Trace Small 1/8" Rossum - Trace only / 1 Packing Stone
12:05						Surge 3X5 AT 1100 R.P.M.
12:25	53"					Q↑ to 1300 R.P.M.
12:30	48"	296.43	182.73	975	5.3357	Clean but Cloudy water R.P.M. 1300 O.P. 34 W.T. 172°
12:35						Ioff Cone - .2 P.P.M. Fine Brown Sand Rossum - .2 P.P.M. Fine Brown Sand
12:50	44"	315.75	202.05	933	4.6176	Clean But Cloudy water R.P.M. 1300 O.P. 34 W.T. 171°
13:00						Surge 3X5 AT 1300 R.P.M.
13:20	74"			1209		Q↑ to 1500 R.P.M. / Med Brown water / Cloudy
13:30	68"	383.13	269.43	1160	4.3053	Med Brown water / Cloudy R.P.M. 1500 O.P. 35 W.T. 172°
13:45	62"	399.7	286	1108	3.8741	Ioff Cone - .3 P.P.M. Fine Brown Sand Rossum - .4 P.P.M. Fine Brown Sand
14:00	62"	411.3	297.6	1108	3.7231	Very light Brown [illegible] R.P.M. 1500 O.P. 35 W.T. 172°
14:10	74"			1209		Light Brown water / Cloudy Q↑ to 1600 R.P.M.
14:20						[illegible] Not working Right R.P.M. 1600 O.P. 35 W.T. 172°
14:50						[illegible] Surge 3X5 AT 1500 R.P.M.
15:10	74"			1209		R.P.M. 1500
15:[illegible]	64"	379.13	265.43	1125	4.2384	Very light Brown Cloudy water R.P.M. 1500 O.P. 35 W.T. 172°

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Mike Weber Group Inc.
16825 South Weber Drive · Chandler, Arizona 85226-4112 · 602/961-1141 · FAX 602/961-0290

70" Pipe x 6" orifice
P.D. 840'

TEST PUMP RESULTS TEST Eng. T-14/E4

CUSTOMER Az. Beeman, Az. Water, Bisbee, Well #5 DATE 7-30-02

STATIC WATER LEVEL 113.7' Developing Well JOB NO. 02-4158

TIME	INCHES ORIFICE PRESSURE	PUMPING LEVEL	DRAW DOWN	GPM	SPECIFIC YIELD	REMARKS
15:30						Check Fuel Side Tanks – 3/8 Full & Tank – 5" = 3/8 Full
15:40	62"	412.27	298.57	1108	3.7110	Clean water but Cloudy Rossum – .15 P.P.m. Cone – .12 P.P.m. R.P.m. 1500 O.P. 35 W.T. 172°
15:50						Surge 3 X'S AT 1500 R.P.m.
16:13	78"			1241		Light Brown water / Cloudy Q↑ to 1600 R.P.m.
16:20	74"	415.55	301.85	1209	4.0053	Light Brown water R.P.m. 1600 O.P. 35 W.T. 175°
16:30						Rossum – .2 P.P.m. / With 2 small Packing Stone 5 20m. I off Cone – .2 P.P.m.
16:45	74"	467.73	354.03	1209	3.4149	R.P.m. 1600 O.P. 35 W.T. 175°
16:50						Surge 3 X'S AT 1600 R.P.m.
						Take out 6" orifice To 8" orifice
0" X 8" 17:15	23"			1445		Q↑ to 1700 R.P.m. / med. Brown water
17:30	22"	502.13	388.43	1413	3.6377	R.P.m. 1700 O.P. 35 W.T. 175°
17:40				1413		I off Cone – Pulling Packing Stone out Rossum – .6 P.P.m. Fine Brown Sand
17:50	22"	535.39	421.69	1413	3.3508	R.P.m. 1700 O.P. 35 W.T. 178°
17:55						Surge 3 X'S AT 1500 R.P.m.
18:15	16"			1205		med. Brown water Q↓ to 1500 R.P.m.
18:20						Q↓ to 1400 R.P.m.
18:25	10.5"	367.42	253.72	976	3.8467	Clean water but Cloudy R.P.m. 1400 O.P. 35 W.T. 172°
18:30						Rossum – .1 P.P.m. / Fine Brown Sand W/ small Stone 18m.m.
18:45	10"	379.52	265.82	953	3.5851	Clean water, still Alittle Cloudy R.P.m. 1400 O.P. 35 W.T. 172°
18:50						Pump off
19:00						Test Eng. [illegible]
						Check Fuel Side Tanks – 3/8 Full & Tank – 4 1/2" = 3/8 [illegible]

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The Weber Group Inc.
16825 South Weber Drive • Chandler, Arizona 85226-4112 • 602/961-1141 • FAX 602/961-0290 TEST Eng. T-14/E-4

10" Pipe x 6" orifice
P.D. 840

TEST PUMP RESULTS

STEPS. ~~500, 600, 700, 800, 900, & 1000 G.P.m.~~ 500, 750, 850 & 1100 G.P.m.

CUSTOMER AZ. Beeman, Az. Water, Bisbee, Well #5 DATE 7-31-02 / 16 hrs.

STATIC WATER LEVEL 120.29' STEPTEST 6ed. JOB NO. 02-4158

TIME	INCHES ORIFICE PRESSURE	PUMPING LEVEL	DRAW DOWN	GPM	SPECIFIC YIELD	REMARKS
						Check Eng. Oil - Ok Side Tanks - 3/8 Full ¢ TANK - 4½ = 3/8 Full
07:50						TEST Eng. STARTed
I. START 08:30	13"			507		Clear - Clear Water Pump on / 825 R.P.m
08:35	14"	158.09	37.8	526	13.9153	Clear Water R.P.m. 840 O.P. 20 W.T. 171°
08:45	13"	166.32	46.03	507	11.0145	↑ Same
08:50	13"	168.7	48.41	507	10.4730	Rossum - TRACE only Conc - TRACE only
09:00	12"	169.66	49.37	487	9.8642	Clear - Clear Water R.P.m. 825 O.P. 20 W.T. 171°
09:06	12.5"			497		Q↑ A little 840 R.P.m
09:15	12.25"	173.57	53.28	493	9.2530	Clean - Clear Water R.P.m. 840 O.P. 20 W.T. 171°
09:22	13"			507		Clean - Clear Water Q↑ A little 850 R.P.m.
09:30	13"	179.0	58.71	507	8.6356	Clean - Clear Water R.P.m. 850 O.P. 20 W.T. 171°
09:45	13"	180.52	60.23	507	8.4177	↑ Same
10:00	13"	181.69	61.4	507	8.2573	↑ Same
10:15	12.5"	183.05	62.76	497	7.9190	↑ Same
10:30	12.5"	184.22	63.93	497	7.7741	Check Fuel - ¢ TANK 4¼" = Just under 3/8 Full ↑ Same
10:45	12.25"	185.0	64.71	493	7.6186	R.P.m. 850 O.P. 20 W.T. 171°
11:03	12"	185.89	65.6	487	7.4237	↑ Same
11:15	12"	186.4	66.11	487	7.3665	↑ Same
11:32	11.75"	187.5	67.21	482	7.1715	↑ Same
11:45	11.75"	188.33	68.04	482	7.0840	R.P.m. 850 O.P. 20 W.T. 171°
11:50	13.25"			512		Q↑ TO 875 R.P.m.
12:00	13"	194.45	74.16	507	6.8365	Clean - Clear Water R.P.m. 875 O.P. 21 W.T. 171°
12:20	13"	195.97	75.68	507	6.6992	↑ Same
12:30	13"	196.41	76.12	507	6.6605	↑ Same
12:45	13"	197.45	77.16	507	6.5707	Clean - Clear Water R.P.m. 875 O.P. 21 W.T. 171°

NPTH

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street
Phoenix, Arizona 85004

RECEIVED
JUL - 3 2002
RECORDS MGT

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. ARIZONA BEEMAN DRILLING dba Morex Investments LLC
P.O. BOX 3370
APACHE JUNCTION, AZ 85217-3370

2. Owner Name: ARIZONA WATER Company
Address: P.O. Box 29006 Phoenix AZ 85038
City State Zip

3. Location: 24 N/S 23 E/W 13 ¼ SE ¼ NW ¼ NE
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55-590620 (Required)

5. Permit No. _____ (If Issued)

DESCRIPTION OF WELL

6. Total depth of hole 1183 ft.
7. Type of casing Steel
8. Diameter and length of casing 26 in. from 0 to 39, 16 in from -1 to 1183
9. Method of sealing at reduction points NO REDUCTION NEAT CEMENT 0-39
10. Perforated from 1163 to 623, from 603 to 163 from _____ to _____
11. Size of cuts .075 Number of cuts per foot _____
12. If screen was installed: Length 980 ft. Diam 16 in. Type Steel
13. Method of construction Reuese Circulation
(drilled, dug, driven, bored, jetted, etc)
14. Date started 05 20 02
Month Day Year
15. Date completed 06 24 02
Month Day Year
16. Depth to water _____ ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea_level elevation if available
Ground level
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55- 590620
File No. D(24-23) 13 ABD
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

COMPLETED SEP 0 6 2002

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	2	Top Soil.
2	40	Sandy Clay Dry.
40	130	Sm.-Med. Gravels w/Coarse Sands.
130	220	Silty Clay Little to No Sands.
220	400	Course Sands w/little Clays.
400	440	Course Fractured Rock.
440	510	Red Clay w/moderate Sands.
510	590	Red Clay w/ Less Sands.
590	770	Red Clay w/ Little Gravels & Sands.
770	810	Gray Silty Clay no Sands.
810	1140	Red Clay w/little to med. Sands.
1140	1183	Volcanics - Black w/White Quartz.

I hereby certify that this well was drilled by me (or under by supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: ARIZONA BEEMAN DRILLING dba Morex Investments L

P.O. BOX 3370
Street

APACHE JUNCTION, AZ 85217-3370 480-983-2542
City State Zip Phone No.

Signature of Driller 7-1-02
Date

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ 602-417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

RECEIVED
JAN 18 2002
GROUNDWATER MGT

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. Arizona Water Company (LANDOWNER'S NAME) PO Box 29006 (CURRENT MAILING ADDRESS) Phoenix (CITY) AZ (STATE) 85038-9006 (ZIP)

B. TELEPHONE NO. 602 240 6860 — **COUNTY ASSESSOR'S PARCEL ID INFORMATION:**

C. WELL LOCATED IN Cochise COUNTY D. 102 (BOOK) 34 (MAP) 5 (PARCEL) E. _____ (# OF ACRES) — **OFFICIAL SEAL OR STAMP**

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. SE (10AC) ¼ NW (40AC) ¼ NE (160AC) ¼ OF SECTION 13 TOWNSHIP 24S N/S RANGE 23E E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL_____; INSUFFICIENT INFORMATION TO MAKE A DETERMINATION_____; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE_____ AUTHORIZED SIGNATURE_____ TITLE_____

1. OWNER OF WELL:
Arizona Water Company
NAME
P.O. Box 29006
CURRENT **MAILING** ADDRESS
Phoenix AZ 85038-9006
CITY STATE ZIP

TELEPHONE NUMBER 602-240 -6860

2. ACTION REQUESTED:
DRILL NEW WELL X DEEPEN_____
MODIFY_____ REPLACE _____

WELL REGISTRATION NO 55-_____

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL _____ GALLONS PER MINUTE;

DISTANCE FROM THE ORIGINAL WELL: _____ FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH June YEAR 2002

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: steel
DIAMETER: 16 " DEPTH: 1,000

DOWNHOLE CASING:_____
DIAMETER:_____ " DEPTH: _____

5. DESIGN PUMP CAPACITY:
1,000 GALLONS PER MINUTE
3,258 a.f./yr.

6. LESSEE OF LAND OF WELLSITE:
NAME
CURRENT **MAILING** ADDRESS
CITY STATE ZIP

TELEPHONE: - -

7. PRINCIPAL USE OF WATER: (BE SPECIFIC)
municipal and industry

8. OTHER USES OF WATER: (BE SPECIFIC).

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55-590620
DATE FILED 1-18-02
FILE NO. D(24.23)13ABD
AMA/INA —
W/S 11 S/B 76
PROCESSED BY MB
DATE MAILED 1-23-02
MO.

9. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
SE ¼ (10AC) NW ¼ (40AC) NE ¼ (160AC) SECTION 13
TWNSHP 24S N/S RNG 23E E/W

10. TYPE OF WELL (CHECK ONE):
EXEMPT _____ NON-EXEMPT X

11. CHECK ONE:
RESIDENTIAL_____ STOCKWATER _____
OTHER municipal & industry

12. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES _____ NO X

13. DRILLING FIRM:
Arizona Beeman Drilling LLC
NAME
PO Box 3370
MAILING ADDRESS
Apache Junction AZ 85217
CITY STATE ZIP
480-982-2542
TELEPHONE NO.
360
DWR LICENSE NUMBER
A-4
ROC LICENSE CATEGORY

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

Mike Loggins, Engineer — **14.** TYPE OR PRINT NAME AND TITLE
Mike Loggins as Agent — **15.** SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE
1/16/02 — **16.** DATE

DWR 55-40 (REV 9/99)

APPLICATION GUIDELINES

In accordance with Arizona Revised Statutes ("A.R.S.") §§ 41-1008 and 1079, the Department of Water Resources (Department) provides the following information regarding the application review process for authority to drill.

NECESSARY STEPS & INSTRUCTIONS TO OBTAIN DRILLING AUTHORITY

1. Pursuant to A.R.S. § 45-596, a person may not drill, cause to be drilled, deepen or modify any well for which a permit is not required without first filing a Notice of Intent to Drill with the Department. Only a well drilling contractor licensed in the State of Arizona or a single well licensee (a person licensed to drill or modify one exempt well on his or her own property) is authorized to drill, deepen or modify a well. Drilling may not begin until the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, and which authorizes the drilling of the specific well in a specific location. To assist you in understanding the requirements for this application, copies of A.R.S. § 45-596 and Arizona Administrative Code ("A.A.C.") R12-15-810 are available at the Department bookstore (602-417-2450 x7127).
2. If replacing, deepening, or modifying an existing well, provide the registration number of the existing well in item 2. A replacement well is one located no more than 660 feet from the original well and that is not expected to annually withdraw more groundwater than historically withdrawn from the original well.
3. Information to complete items 3, 4, 5 and 13 may be available from your driller.
4. Information to complete items 9 and 12 may be available from your County Assessor's Office.
5. For item 10, in an Active Management Area, A.R.S § 45-454 only allows non-irrigation uses for "exempt" wells. If the proposed use includes the growing of 2 or more acres of plants for sale or human/animal consumption (irrigation use), the well does not qualify as an exempt well.
6. An exempt well, referred to in Item 10, means a well with a pump with a maximum capacity of not more than thirty-five gallons per minute and used for non-irrigation purposes.
7. For item 11, in an Active Management Area, A.R.S §45-454 allow up to 56 acre feet per year of pumping from a domestic (residential) or stock watering exempt well, and up to 10 acre ft per year from an exempt well used for other (usually commercial non-irrigation) purposes.
8. If any water from a proposed well on a parcel of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant must submit a well site plan of the property. The plan must be on an 8½" x 11" piece of plain paper with representation of the locations of all structures and proximity of adjacent lot lines, to scale. It must include the county assessor's parcel identification number. The plan must show the proposed well location and the location of any septic tank or sewer system that is either located on the property or within one hundred feet of the proposed well site, as well as indicating the measured shortest distance between the proposed well and existing septic tank system. **The plan must demonstrate that the well will not be drilled within one hundred feet of any septic or sewer system.**
9. The site plan must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Endorsement by the county/local authority is based solely on the best available judgement that the proposed well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. In areas where there is no local or county authority that controls installation of septic tanks or sewer systems, or if the health authority is unable to determine whether the proposed well location complies with state and local requirements, the applicant must apply for approval directly to the Department of Water Resources.
10. If an individual other than the land owner or lessee signs this notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific notice on his or her behalf, must accompany the notice.
11. Please mail **two original Notices** with **original signatures** and **two site plans** and, in accordance with A.R.S. § 45-113, a **check or money order (no cash) in the amount of $10.00** to P. O. Box 458, Phoenix Arizona, 85001-0458, or hand deliver to 500 North Third Street, Phoenix, Arizona.
12. Arizona Revised Statute § 45-596(D) provides that the Director of the Department is to determine whether or not all information required on this form has been submitted. If not, the person filing the Notice will be notified, and the drilling or modification of the well may **not** proceed.
13. This form is not applicable for non-exempt wells (those yielding more than thirty-five gallons per minute) within an Active Management Area. Contact Groundwater Management for further information regarding the appropriate notice to file with the Department.

TIME FRAME FOR REVIEW OF YOUR APPLICATION

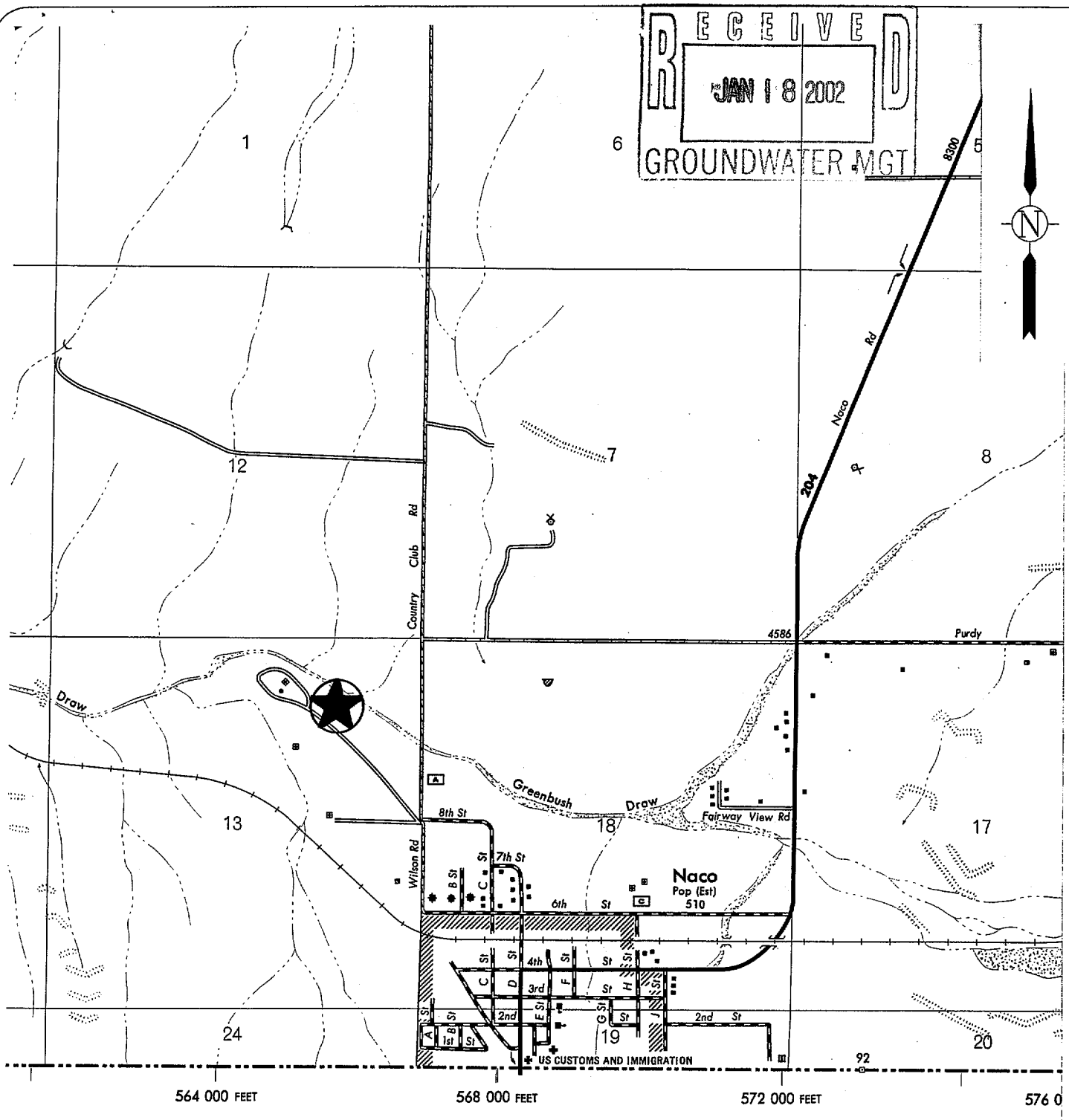
Within 15 days after receipt of your Notice of Intention the Arizona Department of Water Resources ("Department") will determine whether your application should be granted or denied, unless this time is extended for lack of a complete application. If your application is incomplete, the Department will notify you in writing and will specify what information is necessary to make the application complete. Until the missing information is received, the time frame for review of your application will be suspended. Your application will not be complete until all of the requested information is received. If you do not supply the missing information within sixty (60) days, the Department may deem your application withdrawn and close the file.

At the end of its review, the Department will send you a written notice either granting or denying your application for drilling authority. If your application is approved, the Drill Card will be mailed directly to the drilling contractor. If denied, the Department's notice will state justification for the denial and an explanation of your right to appeal.

CONSTRUCTION AND FOLLOW UP REQUIREMENTS

1. Construction and abandonment standards for wells, must be in accordance with Department Regulations. A.R.S. § 45-594 and Arizona Administrative Code R12-15-811 require the well to be constructed with a twenty foot steel surface seal casing, including a one foot steel stickup and one and one-half inches of grout seal around the casing from the surface to a depth of twenty feet, unless a variance is granted **(see A.R.S. § 45-596 (G) for procedure to follow in requesting a variance).**
2. Pursuant to § 45-596(E), the drilling, deepening or modification of the well must be completed within one year of the date of the Notice of Intent. If the well is not completed within one year, a new Notice of Intent must be filed before proceeding with further construction.
3. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use is later proposed to be converted to use for domestic purposes as defined in § 45-454, the well owner must file a Notice of Intention to Drill and comply with the requirements of § 45-596 before the well is converted and any water from that well is used for domestic purposes.
4. Within thirty days after installation of pumping equipment, the registered well owner must file a Completion Report with the Department. The person to whom a well is registered also must notify the Department of a change in ownership or a change in data relating to this well.

RECEIVED
JAN 18 2002
GROUNDWATER MGT

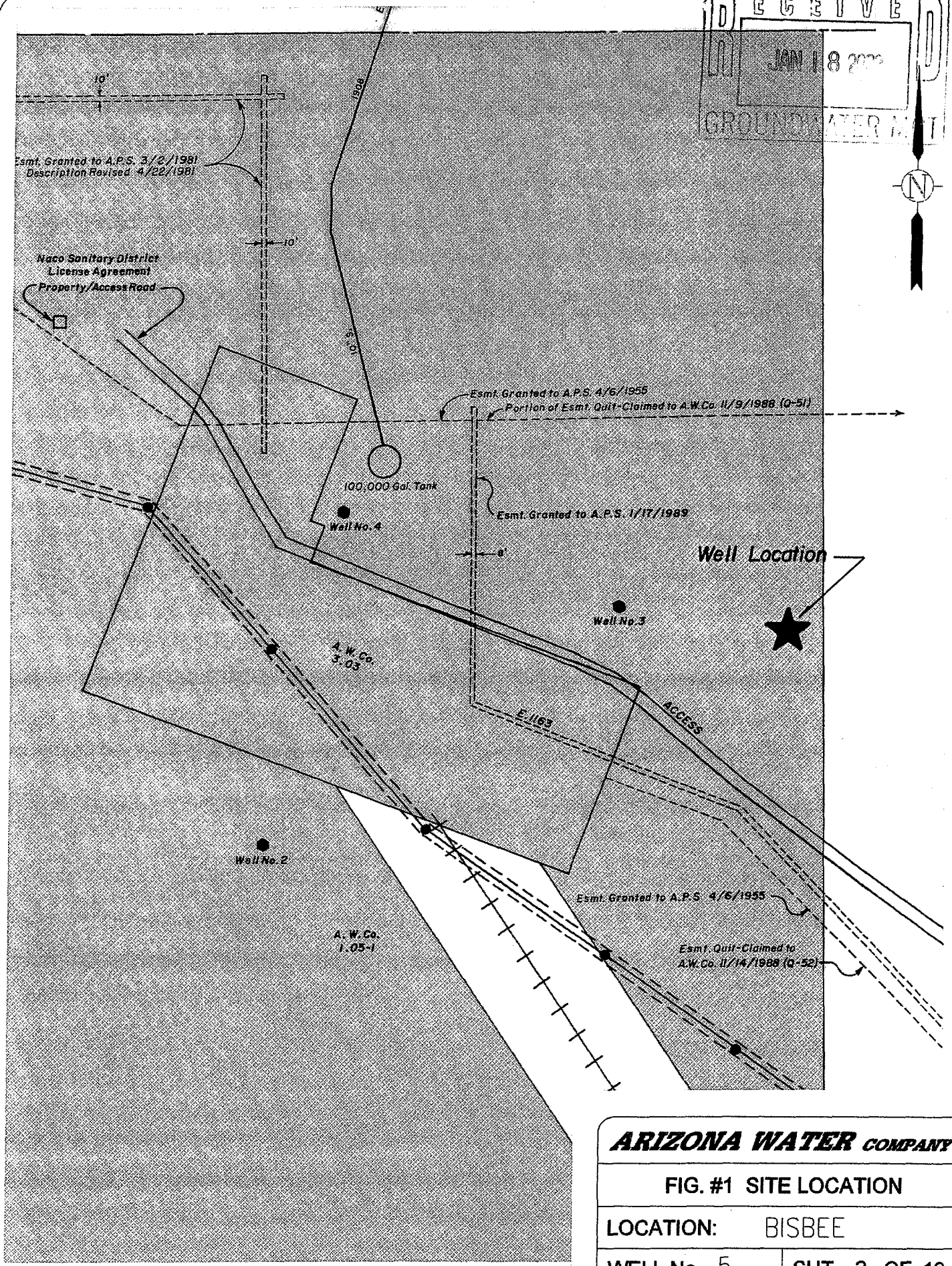


SONORA

MEXICO

ARIZONA WATER COMPANY	
FIG. #1 SITE LOCATION	
LOCATION: BISBEE	
WELL No. 5	SHT. 2 OF 19

RECEIVED
JAN 18 2011
GROUNDWATER MGT

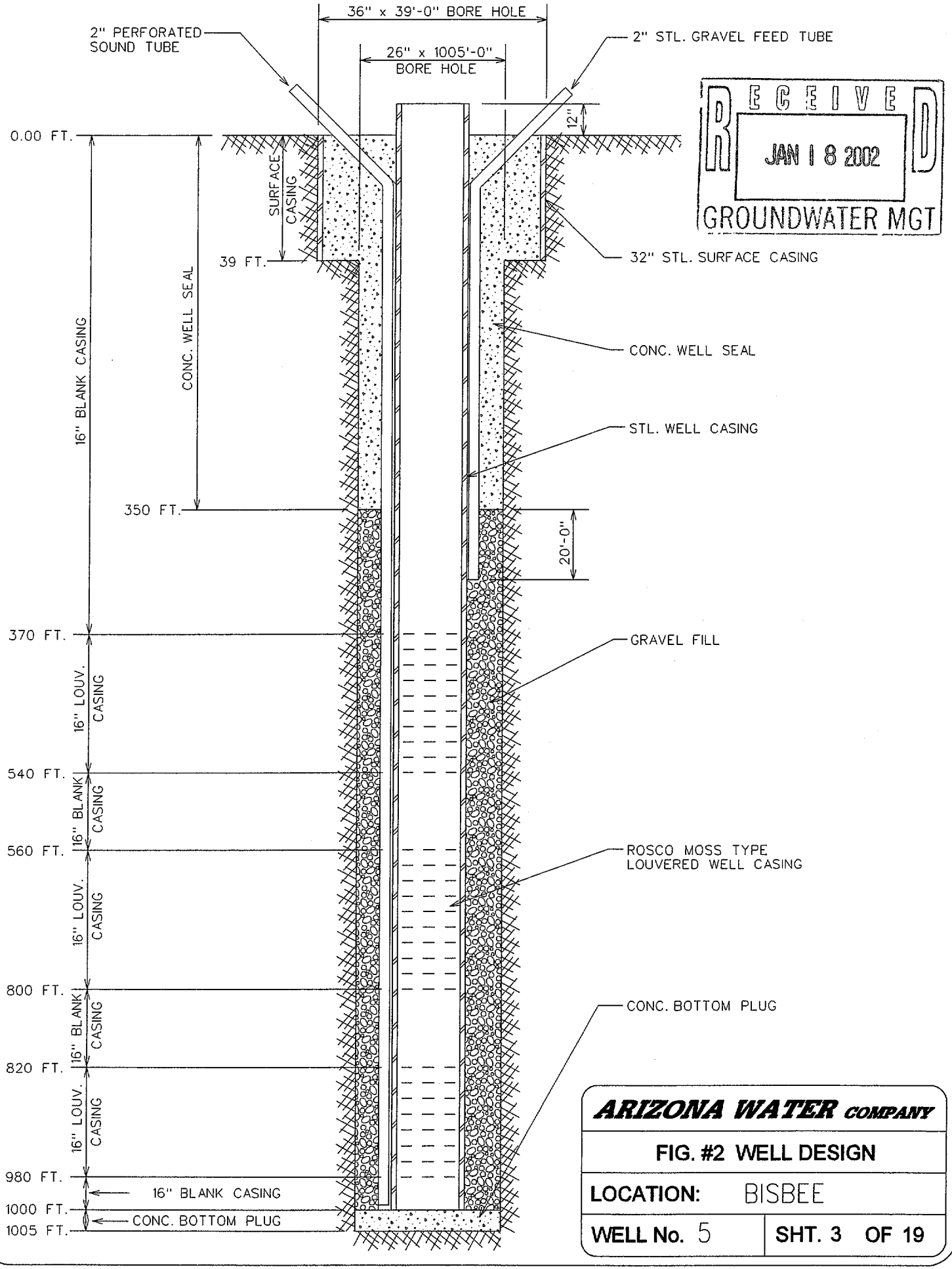


ARIZONA WATER COMPANY

FIG. #1 SITE LOCATION

LOCATION: BISBEE

WELL No. 5 | SHT. 2 OF 19



RECEIVED
JAN 18 2002
GROUNDWATER MGT

ARIZONA WATER COMPANY

FIG. #2 WELL DESIGN

LOCATION: BISBEE

WELL No. 5 | **SHT. 3 OF 19**

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

January 23, 2002

JANE DEE HULL
Governor

JOSEPH C. SMITH
Director

ARIZONA WATER COMPANY
PO BOX 29006
PHOENIX, AZ 85038

Registration No. 55- 590620
File No. D(24-23) 13 ABD

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Toni Bergeman

Toni Bergeman
Water Resource Technician
Groundwater Management Support Section

Enclosures

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, ARIZONA 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6878

RECEIVED
JAN 18 2002
GROUNDWATER MGT

January 10, 2002

Groundwater Management Support Section
AZ Dept. of Water Resources
P.O. Box 458
Phoenix, AZ 85001-0458

Re: Authorization to Act as Agent

Dear Dept. of Water Resources:

Authorization is hereby granted to Mike Loggins to act as Arizona Water Company's agent for the purpose of filing the attached Notice of Intention to Drill a Well.

Very truly yours,

James R. Livingston
President

tmw

E-MAIL: mail@azwater.com

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ 602-417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

RECEIVED
JAN 18 2002
GROUNDWATER MGT

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. Arizona Water Company (LANDOWNER'S NAME) PO Box 29006 (CURRENT MAILING ADDRESS) Phoenix (CITY) AZ (STATE) 85038-9006 (ZIP)

B. TELEPHONE NO. 602 240 6860 — COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN Cochise COUNTY D. 102 (BOOK) 34 (MAP) 5 (PARCEL) E. _____ (# OF ACRES) — OFFICIAL SEAL OR STAMP

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. SE (10AC) ¼ NW (40AC) ¼ NE (160AC) ¼ OF SECTION 13 TOWNSHIP 24S N/S RANGE 23E E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL_____; INSUFFICIENT INFORMATION TO MAKE A DETERMINATION_____; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE_____ AUTHORIZED SIGNATURE_____ TITLE_____

1. OWNER OF WELL:
Arizona Water Company
NAME
P.O. Box 29006
CURRENT MAILING ADDRESS
Phoenix AZ 85038-9006
CITY STATE ZIP
TELEPHONE NUMBER 602-240 -6860

6. LESSEE OF LAND OF WELLSITE:
NAME
CURRENT MAILING ADDRESS
CITY STATE ZIP
TELEPHONE: - -

9. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
SE ¼ (10AC) NW ¼ (40AC) NE ¼ (160AC) SECTION 13
TWNSHP 24S N/S RNG 23E E/W

10. TYPE OF WELL (CHECK ONE):
EXEMPT _____ NON-EXEMPT X

11. CHECK ONE:
RESIDENTIAL_____ STOCKWATER _____

ARIZONA WATER COMPANY
GENERAL ACCOUNT
3805 N. BLACK CANYON HIGHWAY
POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006

91-170
1221

No. 59193

DATE January 15, 2002

PAY TEN AND NO/100 DOLLARS

Security features included. Details on back.

$ $10.00

TO THE ORDER OF

ARIZONA DEPT OF WATER RESOURCES
GROUNDWATER MGT SUPPORT SECTION
PO BOX 458
PHOENIX AZ 85001-0458

ARIZONA WATER COMPANY—GENERAL ACCT.

[redacted]

NK OF AMERICA

[redacted]

5. DESIGN PUMP CAPACITY:
1,000 GALLONS PER MINUTE
3,258 a.f./yr.

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

Mike Loggins, Engineer — as Agent — 1/16/02
14. TYPE OR PRINT NAME AND TITLE — 15. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE — 16. DATE

DWR 55-40 (REV 9/99)

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-590620

AUTHORIZED DRILLER: ARIZONA BEEMAN DRILLING dba Morex Investments LLC LICENSE NO: 360

NOTICE OF INTENTION TO DRILL A NON-EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: ARIZONA WATER COMPANY PO BOX 29006 PHOENIX, AZ 85038

The well(s) is/are to be located in the:

SE ¼ of the NW ¼ of the NE ¼ Section 13 Township 24 SOUTH Range 23 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 17TH DAY OF JANUARY, 2003

ARS

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 647986
FILE NO. D(24-24)11
FILED 6-14-82 (DATE) AT 3PM (TIME)
INA
AMA

1. Name of Registrant:
DOUGLAS L BANKS & SONJA E BANKS
3 MULBERRY LANE (Address) BISBEE (City) AZ (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
D (24-24) 11 cdd HOME (File Number) 35- — 84628 (Control Number)

3. a. The well is located within the N/A ¼ ____ ¼ ____ ¼, Section 11, of Township 24 ~~N~~/S, Range 24 E/~~W~~, G & SRB & M, in the County of COCHISE.

b. If in a subdivision: Name of subdivision BISBEE JUNCTION, Lot No. —, Address 3 MULBERRY LANE BISBEE AZ.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC & IRRIGATION.

5. If for irrigation use, number of acres irrigated from well 1.

6. Owner of land on which well is located. If same as Item 1, check this box ☐
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 445 FEET feet
b. Diameter of casing 6 INCHES inches
c. Depth of casing N/A feet
d. Type of casing N/A .
e. Maximum pump capacity 10 GALLONS gallons per minute.
f. Depth to water 300 FEET feet below land surface.
g. Date well completed July (Month) 7 (Day) 1980 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☐
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 06-10-82 SIGNATURE OF REGISTRANT D Banks Douglas Banks

MICROFILMED

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

JUN 1982 DEPARTMENT OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 647987
FILE NO. D(24-24) 11
FILED 6-14-82 (DATE) AT 3PM (TIME)
INA
AMA

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☒
NON-EXEMPT WELL — $10.00 ☐

1. Name of Registrant:
DOUGLAS L. & SONJA E BANKS
3 MULBERRY LANE RR#1 BISBEE AZ 85603
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
NONE (File Number) 35- — (Control Number)

3. a. The well is located within the ____¼ ____¼ ____¼, Section 11, of Township 24 N/S, Range 24 E/W, (G) & SRB (M) in the County of COCHISE COUNTY.

b. If in a subdivision: Name of subdivision BISBEE JUNCTION, Lot No. —, Address 3 MULBERRY LANE BISBEE AZ

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC & IRRIGATION.

5. If for irrigation use, number of acres irrigated from well 1.

6. Owner of land on which well is located. If same as Item 1, check this box ☑
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 339 FEET feet
b. Diameter of casing 6" INCHES inches
c. Depth of casing N/A feet
d. Type of casing N/A .
e. Maximum pump capacity 10 gallons per minute.
f. Depth to water 300 FEET feet below land surface.
g. Date well completed N/A (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☑
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 06-10-82 SIGNATURE OF REGISTRANT Douglas L Banks Sonja E Banks

MICROFILMED

62-73

NOTICE OF INTENTION TO DRILL WELL

LAND DEPARTMENT
WATER DIVISION
STATE OF ARIZONA

By Law, no person shall drill, or cause to be drilled, any well for the development and use of Ground Water in Arizona without first filing Notice of Intention to Drill with the State Land Department. The only exceptions are for those irrigation wells within critical Ground Water areas for which Drilling Permits are required. No well shall be drilled by other than the owner without the driller being licensed with the Registrar of Contractors. The driller's license number must be included before the State Land Department will process the filing.

FILING FEE ..... $3.00 SEE REVERSE SIDE

LOCATION OF WELL

North

West — NW¼ NE¼ — East

SW¼ SE¼

X

South

Indicate Well Location by X
(Above diagram represents one 640 acre section)

1. Twp. 24 S
2. Rge. 24 E
3. Section 11
4. SW ¼ SW ¼ SW ¼
   10-acre subdivision
5. Owner of Well Site
   Loyd K. Barton

INSTRUCTIONS

Fill out both copies and mail to Water Division, State Land Department, 1624 W. Adams, Phoenix, Arizona, 85007.

Duplicate will be returned to Filer, together with Drilling Card.

55-85010

DESCRIPTION OF WELL

6. Diameter 8 in. depth 200 ft.
7. Type of casing Steel
8. Estimated depth to water 100 ft.
9. Proposed use Domestic
10. Drilling will start about 8 (Month) 80 (Year)
11. Driller Robert D. Tanner (Indiv) (Name)
    RI Box 36 McNeal Az. (Address)
    Driller's License No. T-0133 50428
12. Water will be applied to use about
    9 (Month) 80 (Year)
20. This notice filed by:
    Check one { Owner ☐ Lessee ☐ Driller ☑
    Name Robert D. Tanner
    Address RI Box 36 McNeal Az. 85617

PLACE OF USE

13. Twp. 24S
14. Rge. 24E
15. Section 11
16. SW¼ SW¼ SW¼
    Legal Description of Land to be Irrigated or place of other use.
17. Acres (if irrigation) None
18. Owner Loyd K. Barton (Name)
    702 Border Rd.
19. Bisbee, Az. 85603 (Address)

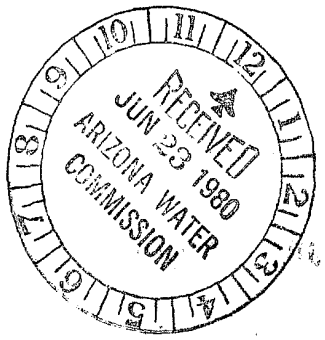
DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received 6-23-80 By Pat
Filed 7-10-80 By Pat
Duplicate Mailed JUL 10 1980 By AH
File Number D(24-24)11 ccc

I, _____ state that the driller designated on the reverse side of this form is currently licensed under the provisions of Chapter 161 Laws of 1979, Section 32-1168 Arizona Revised Statutes, as amended and that his license number is _____

_____ _____

(DATE) (SIGNATURE OF APPLICANT)



Robert Tanner
Rt. 1 Box 36
Mc Neal, Arizona 85617

STATE OF ARIZONA
ARIZONA WATER COMMISSION
WATER RIGHTS ADMINISTRATION
222 N. CENTRAL AVE — SUITE 550
PHOENIX, ARIZONA 85004

RECEIPT — FILE

KIND ENTRY	FILE REFERENCE NO.
55	85010
	THRU

№ 4772

FUND SOURCE	ACCOUNT NO. AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Notice of Intention to Drill Well (2)		3.00
							3.00
					Water Rights (GW)		
					File #D(24-24)11 ccc		
					D(22-21)35 bca		
					Ck #4767 for Loyd K. Barton and Walter G. Golding		

WATER PAYMENT
GUESTS 2
CHK NO 4767
2@ 3.00
55-I 6.00
TAX 0.00
TOTL 6.00
GEN.CHEK 6.00

109 A 10:07

7-7-80 pds

TOTAL $ 6.00

STATE OF ARIZONA

DEPARTMENT OF
WATER RESOURCES

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Loyd K. Barton (Name)
   702 Border Rd., Bisbee, AZ 85603 (Address)
2. Lessee or Operator SAME (Name)
   (Address)
3. Driller Robert D. Tanner (Name)
   R1 Box 306 McNeal, AZ 85617 (Address)
4. Location of well: SW SW SW 11 T24S R24E
5. Permit No. (if issued) None

DESCRIPTION OF WELL

6. Total depth of hole 300 ft.
7. Type of Casing Steel
8. Diameter and length of casing 6 in. from 0 to 300', _____ in from _____ to _____.
9. Method of sealing at reduction points None
10. Perforated from 180' to 300', from _____ to _____, from _____ to _____
11. Size of cuts 18" x 6" Number of cuts per foot 6
12. If screen was installed: Length None ft. Diam _____ in. Type _____
13. Method of construction Drilled (drilled, dug, driven, bored, jetted, etc.)
14. Date started 1 (Month) 22 (day) 81 (year)
15. D te completed 3 (Month) 14 (day) 81 (year)
16. Depth to water 168 ft. (If flowing well, so state.)
17. Describe point from which depth measurements were made, and give sea-level elevation if available. water was measured from ground level
18. If flowing well, state method of flow regulation Not
19. REMARKS:

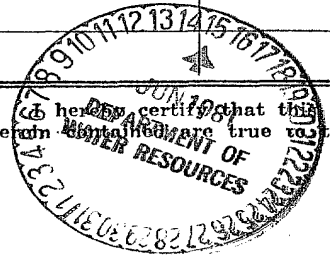
DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55-85010
Received _____ By _____
Entered 8-4-81 By [illegible]
File No. D(24-24)11 ccc

(Well log to appear on Reverse side)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	11	Red Clay + Rock
11	20	Tan Clay + Boulders
20	46	Gray Clay + Rock
46	114	Brown Clay + Rock
114	139	Tan Rock
139	144	Red Clay + Gravel
144	149	Rock
149	152	Red Clay
152	158	Tan Clay (trace of water 154')
158	171	Yellow Rock
171	194	Gray Rock
194	209	Brown Clay (water tst 209' 4gal m)
209	212	Grey Rock
212	241	Brown Clay + Gravel (water 240')
241	243	Tan Rock + Clay
243	256	Red Clay + Rock
256	269	Tan Clay + Gravel
269	285	Tan Rock
285	300	Yellow Rock + Clay



I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Robert D. Tanner
Name

R.1 Box 36 McNeal, Az.
Address

85617

222 North Central Ave., Suite 850
Phoenix, Arizona 85004

Registration No. 55-85010
Owner of
Well Site Barton

File No. D(24-24)11 ccc

COMPLETION REPORT

1. Completion Report to be filed with the Department within 30 days after installation of pump equipment.

2. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

3. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.

4. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

LOCATION OF THE WELL

SW SW SW 11 T24S R24E

Date Well Completed 3-14-81 Depth of Well 300'

1. Well Test:
Test Pumping Capacity 13 G.P.M. Date Well Tested 3-20-81
(Gal. per min.)

Method of Discharge Measurement _____
(weir, orifice, current meter, etc.)

Static Groundwater Level 168 ft. Drawdown 12 ft.
Total Pumping Lift 180 ft. Drawdown _____ lbs.
(Flowing Well)

2. Equipment Installed:

Kind of Pump Submersible
(turbine, centrifugal, etc.)

Kind of Power Elec (Elec., Nat. Gas, Etc.) H.P. Rating of Motor 2 H.P.

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

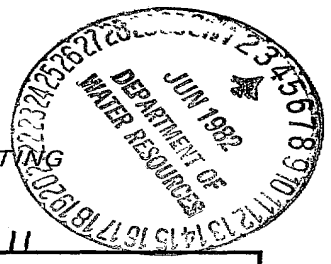
Robert R. Tanner
Signature

RI Box 36
Address

3-25, 1981
Date

McNeal Az. 85617
City / State Zip

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55-644919
FILE NO. D(24-24)11CCC
FILED 6-4-82 (DATE) AT 10:00 am (TIME)
INA —
AMA —

1. Name of Registrant:
LOYD K. OR RITA F. BARTON
702 BORDER ROAD (Address) BISBEE (City) ARIZONA (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the SE¼SW¼ SW¼ SW¼, Section 11, of Township 24S N/S, Range 24 E/W G & SRB & M, in the County of COCHISE.
b. If in a subdivision: Name of subdivision LOT 9 BISBEE JUNCTION SUBDIVISION Lot No. 9, Address 702 BORDER ROAD, BISBEE AZ 85603

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC — WATER FOR HOUSE AND YARD.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well APPROX — 130 feet
b. Diameter of casing 6 — SIX inches
c. Depth of casing UNKNOWN — BELIEVE 130 feet
d. Type of casing CAST IRON.
e. Maximum pump capacity 15 gallons per minute.
f. Depth to water 90 feet below land surface.
g. Date well completed UNKNOWN (Month) (Day) (Year).

The well was here when Property was Purchased. FROM - CRIST ESTATE I bought it from his SON.

8. The place(s) of use of water. If same as Item 3, check this box ☒
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 2 June 1982 SIGNATURE OF REGISTRANT Loyd K Barton Jr

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED
JUN 17 1982
DEP'T. OF
WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 648363
FILE NO. D(24-24)18 d
FILED 6-17-82 (DATE) AT 2p (TIME)
INA ~
AMA —

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☑
NON-EXEMPT WELL — $10.00 ☐

1. Name of Registrant:
Luz Bernal
406 "D" St.- P. O. Box 234 (Address) | Naco, (City) | AZ (State) | 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35- _____ (Control Number)

3. a. The well is located within the ____ ¼ ____ ¼ SE ¼, Section 18, of Township Naco 24 N(S), Range 24 (E)W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☐
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 125 feet
b. Diameter of casing _____ inches
c. Depth of casing _____ feet
d. Type of casing _____.
e. Maximum pump capacity _____ gallons per minute.
f. Depth to water _____ feet below land surface.
g. Date well completed Before 1948 (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☐.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6-14-82 SIGNATURE OF REGISTRANT Luz Bernal

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middie initiai. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Pump Installation Completion Report

RECEIVED
NOV 12 2004
Information Management

- Review instructions prior to completing form
- The registered well owner should file this report with the Department within 30 days following installation of pump equipment

** PLEASE PRINT CLEARLY **

FILE NUMBER: D(24-24) 2 CBB
WELL REGISTRATION NUMBER: 55- 577927

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: BIMA LLC

MAILING ADDRESS: PO DRAWER Q

CITY / STATE / ZIP: BISBEE, AZ 85603

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER: 520-432-7687

FAX:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	2	SW 1/4	NW 1/4	NW 1/4

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
101	41	008

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 2. EQUIPMENT INSTALLED

DATE PUMP INSTALLED: 9-20-04

Pump Type

CHECK ONE

- ☐ Air Lift
- ☐ Bucket
- ☐ Centrifugal
- ☐ Jet
- ☐ Piston
- ☐ Rotary
- ☒ Submersible
- ☐ Turbine
- ☐ Other (please specify)

Power Type

CHECK ONE

- ☐ Diesel Engine
- ☑ Electric Motor
- ☐ Gasoline Engine
- ☐ Hand
- ☐ Natural Gas
- ☐ Windmill
- ☐ Other (please specify)

RATED PUMP CAPACITY: 10 Gallons Per Minute

HORSE POWER RATING OF MOTOR: 2 hp

SECTION 3. WELL TEST

Pump Test Data

DATE WELL TESTED: 9-20-04

STATIC WATER LEVEL (A): 341 Feet Below Land Surface

PUMPING WATER LEVEL (B): 355 Feet Below Land Surface

DRAWDOWN [(B) - (A)]: 14

TEST PUMPING RATE: 10 Gallons Per Minute

DURATION OF PUMP TEST (Minimum 4 Hours): Hours

TOTAL PUMPING LIFT: 355 Feet

FOR FLOWING WELL, MEASURED SHUT IN HEAD ☐ FT ☐ PSI

Method of Discharge Measurement

CHECK ONE

- ☐ Bailer
- ☐ Bucket - Barrel - Stopwatch
- ☐ Current
- ☐ Estimated - Air Lift
- ☐ Gauge
- ☐ Meter
- ☐ Orifice
- ☐ Volume
- ☐ Weir - Flume
- ☒ Other (please specify)

Method of Measuring Water Level

CHECK ONE

- ☐ Air Line
- ☒ Electric Measuring Line (Sounder)
- ☐ Steel Tape
- ☐ Other (please specify)

ANSWERED NOV 15 2004

I HEREBY CERTIFY *that the above statements are true to the best of my knowledge and belief according to* A.R.S § 45-600(B)

SIGNATURE OF WELL OWNER: [signature] MANAGER

DATE: 11-4-04

DWR-55-56 (Rev. 10/11/01)

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

RECEIVED SEP 22 2004 Information Management

Well Driller Report and Well Log

FILE NUMBER: D(24-24) 2 CBB
WELL REGISTRATION NUMBER: 55- 577927
PERMIT NUMBER (IF ISSUED):

- Review instructions prior to completing form
- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: BIMA LLC
MAILING ADDRESS: PO DRAWER Q
CITY / STATE / ZIP: BISBEE, AZ 85603
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-432-7687
FAX:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	2	SW 1/4	NW 1/4	NW 1/4

LATITUDE: 31 ° 22 ' 58 "N
LONGITUDE: 109 ° 53 ' 119 "W
LAND SURFACE ELEVATION AT WELL: 5000 Feet Above Sea Level
METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☒ Hand-Held
☐ USGS Quad Map ☐ Conventional Survey ☒ GPS : ☐ Survey-Grade
COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 101 MAP 41 PARCEL 008
COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME: ALLEN WELL SERVICE
DWR LICENSE NUMBER: 14
TELEPHONE NUMBER: 520-642-3775
FAX:

ENTERED SEP 2 2 2004

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED: 9-17-04
DATE WELL CONSTRUCTION COMPLETED: 9-17-04
IF FLOWING WELL, METHOD OF FLOW REGULATION: ☐ Valve ☐ Other

Drill Method

CHECK ONE
- ☒ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development

CHECK ONE
- ☒ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Water Level Information

STATIC WATER LEVEL: 341 Feet Below Land Surface
DATE MEASURED: 9-17-04

Method of Sealing at Reduction Points

CHECK ONE
- ☒ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☐ Other (please specify)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 577927

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
Existing	Well	
0	20	
20	350	8"
		new
350	465	5 3/4

Installed Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (X) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (X) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	8 5/8	X										
20	350	6"		X									
350	465	4 1/2		X		an Perforated							1/8"

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (X) NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
+1/2"	19 1/2				X							

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
465	Feet Below Land Surface	465	Feet Below Land Surface

DWR-55-55B-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 577927

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
350	465	red shale rock with some thin layers of clay	
		water @ 400'	X

Well Driller Report and Well Log

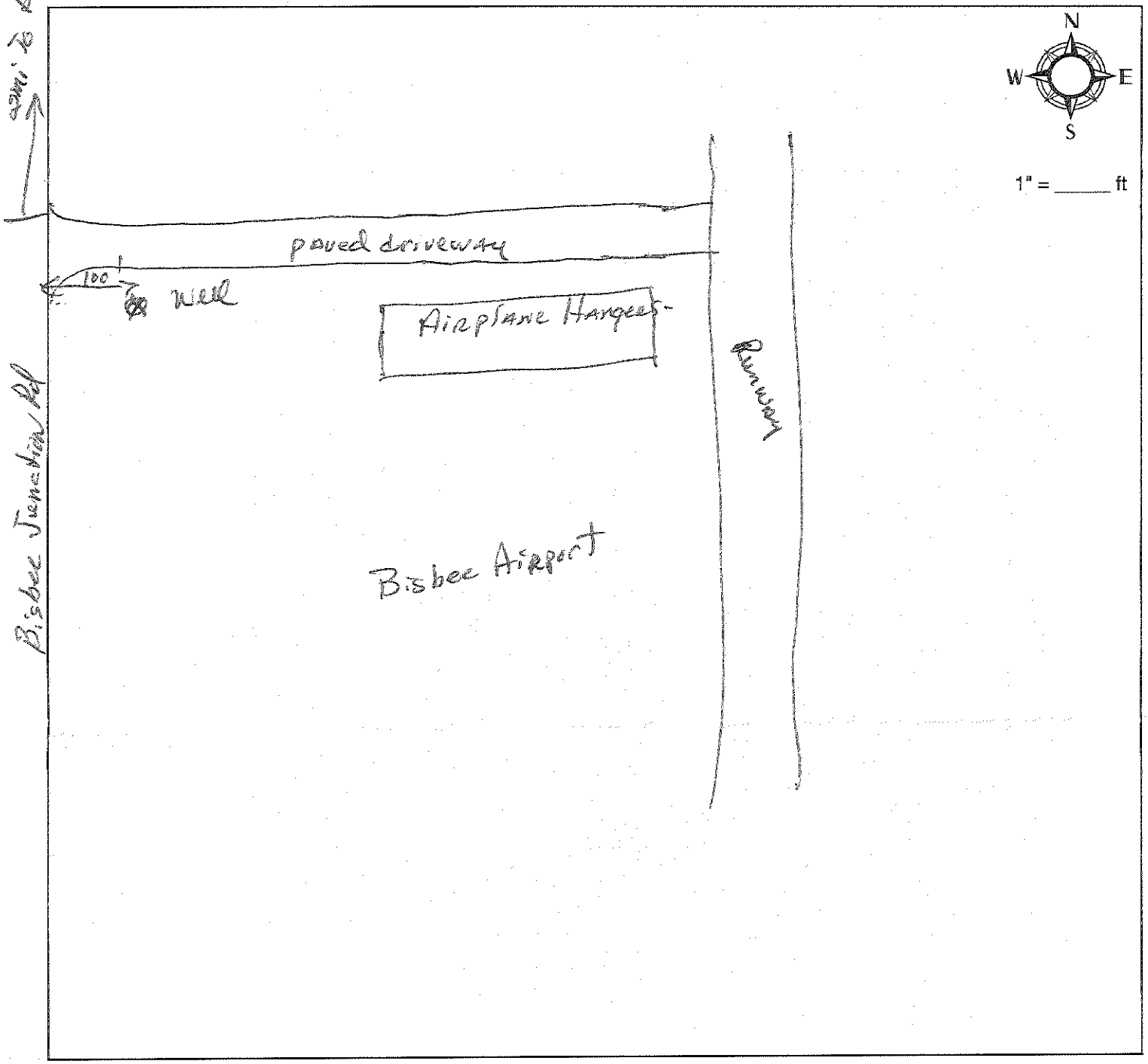
WELL REGISTRATION NUMBER
55- 577927

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
BIMA LLC	101	41	008

* Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.

Please indicate the distance between the well location and any septic tank system or sewer system.



I state that this notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
Allen Well Service		9-20-04

DWR-55-55 (Rev. 10/11/01)

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

May 12, 2004

Janet Napolitano
Governor

Herb Guenther
Director

BIMA LLC
PO DRAWER Q
BISBEE, AZ 85603

Registration No. 55- 577927
File No. D(24-24) 2 CBB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Deepen a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Pump Installation Completion Report is to be submitted when pump equipment is installed. The drilling card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the drilling card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended drilling card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a Pump Installation Completion Report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate Well Drillers Report and Well Log within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Sharon Ward

Sharon Ward
NOI Unit
Water Management Support Section

Enclosures

ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-577927

AUTHORIZED DRILLER: ALLEN WELL SERVICE LICENSE NO: 14

NOTICE OF INTENTION TO DEEPEN AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: BIMA LLC PO DRAWER Q BISBEE, AZ 85603

The well(s) is/are to be located in the:

NW ¼ of the NW ¼ of the SW ¼ Section 2 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1 Assessor Parcel No: 101-41-008

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 9TH DAY OF MAY, 2005

5/18/04

WATER MANAGEMENT SUPPORT SECTION

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $50 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
  - Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $50.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA/INA — R 76 SB
RECEIVED 5/10/04 DATE — WS 11
ISSUED 5/12/04 DATE — WQARF — CERCLA

FILE NUMBER D(24-24)2CBB
WELL REGISTRATION NUMBER 55-577927

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY ENDORSEMENT (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 before submission to the Department of Water Resources. You must also attach a site plan (see instructions).

CHECK ONE

- [X] County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
  - [X] Field Inspection Performed
  - [ ] Site Plan Review Only
- [ ] Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ ENV. HLth Spec I

TELEPHONE NUMBER: 520-432-9442

DATE: April 26, 2004

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE: April 26 2004
BY: Carlos Diaz

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

- [X] Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)
- [ ] Non-Exempt (Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 10 Gallons Per Minute

Proposed Action

CHECK ONE

- [ ] Drill New Well
- [X] Deepen
- [ ] Replace
- [ ] Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55-577927

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	2	SW ¼	NW ¼	NW ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
101	41	008	9

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: BIMA, LLC

MAILING ADDRESS: P.O Drawer Q

CITY / STATE / ZIP CODE: Bisbee, Az 85603

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER: 520-432-7687

FAX:

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL:

MAILING ADDRESS:

CITY / STATE / ZIP CODE:

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER:

FAX:

RECEIVED MAY WATER MGT

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?	X		PLEASE STATE 55-577927
3. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

GPS N 31° 22'.581
W 109° 53'.119

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55- 577927

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: Allen's Well Service

DWR LICENSE NUMBER	ROC LICENSE CATEGORY
14	C-53 L-53
TELEPHONE NUMBER	**FAX**
520 642 3775	520-642 3221

SECTION 6. WATER / SITE INFORMATION

***Principal Use* of Water** CHECK ONE	***Other Uses* of Water** CHECK ALL THAT APPLY
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☒ Domestic	☒ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify):*	☐ Other *(please specify):*

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

DATE CONSTRUCTION IS TO BEGIN: MAY-04

Deepening

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
Existing Well 0	300	
New 300	400	5 3/4

Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (✓) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (✓) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
+1 0	19 300	8" 6"	X*	X									Cement
295	400	4 1/2"		X									

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811.B)

RECEIVED
MAY 10 2004
WATER MGT.

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: WILLIAM SEIBOLD MANAGER

SIGNATURE OF WELL OWNER OR LANDOWNER: William Seibold

DATE: 4-19-04

...Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55-577927

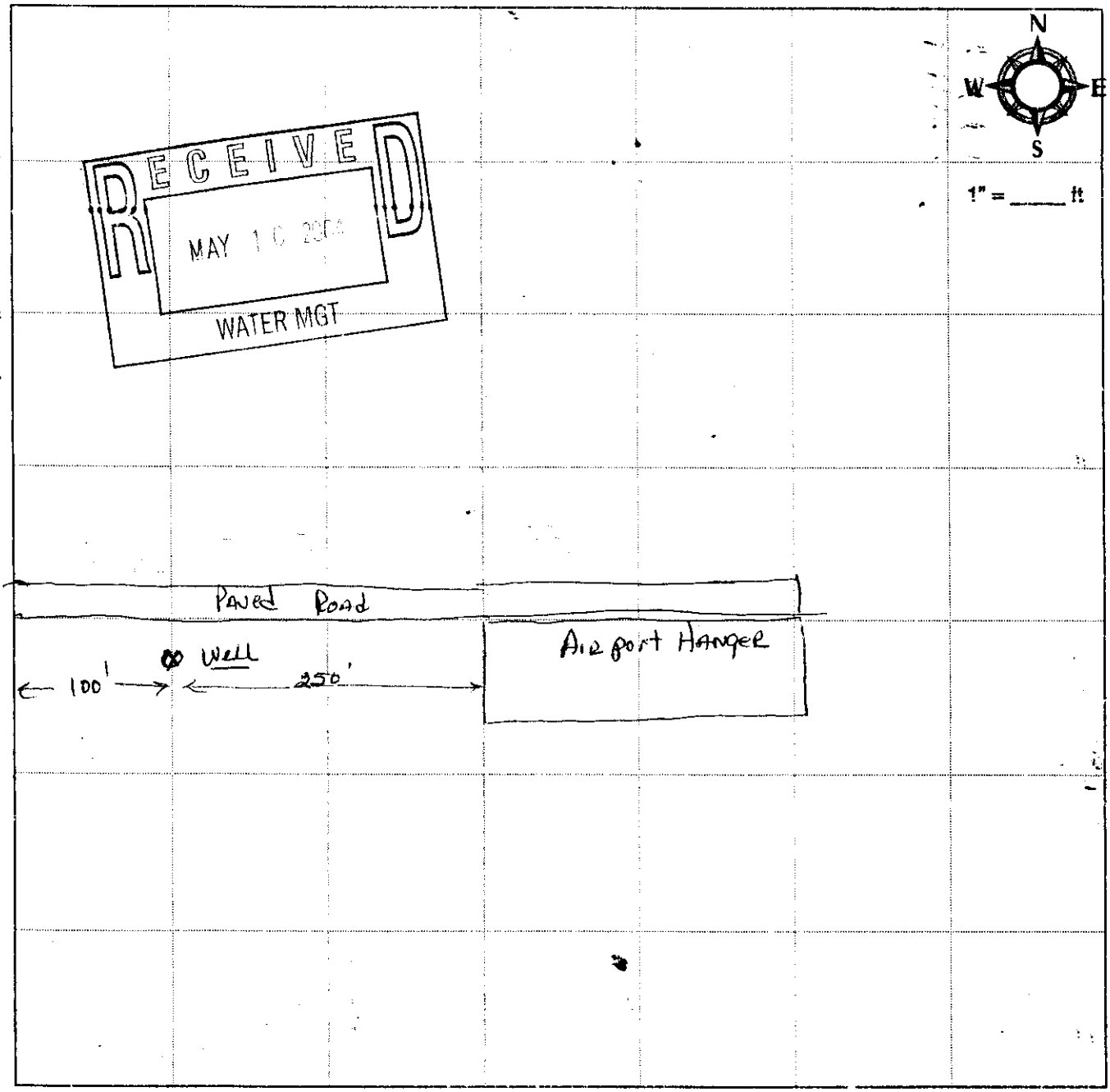
WELL SITE PLAN

NAME OF WELL OWNER
BIMA- LLC

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
101	41	008

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE
Carlos Diaz Env Hlth Spec I

COUNTY OR LOCAL AUTHORITY SIGNATURE
Carlos Diaz

TELEPHONE NUMBER
520-432-9442

DATE
April 26 2004

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION

DATE April 26 2004

BY Carlos Diaz

RECEIVED
MAY 1 [illegible]
WATER MGT

RECEIVED
OCT 25 1999
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ (602)417-2470

NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. BIMA, LLC (LANDOWNER'S NAME) P.O. Drawer Q (CURRENT MAILING ADDRESS) Bisbee (CITY) AZ (STATE) 85603 (ZIP)

B. TELEPHONE NO. 520-432-7687

COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN COCHISE COUNTY D. 101 (BOOK) 41 (MAP) 008 (PARCEL) E. 9 (# OF ACRES)

OFFICIAL SEAL OR STAMP: COCHISE COUNTY HEALTH & SOCIAL SERVICES

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NW ¼ (10AC) NW ¼ (40AC) SW ¼ (160AC) OF SECTION 2 TOWNSHIP 24 N(S) RANGE 24 E(W)

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL X ; INSUFFICIENT INFORMATION TO MAKE DETERMINATION _____ ; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE 10-20-99 AUTHORIZED SIGNATURE Steven Herbert TITLE Envir Health Specialis

1. OWNER OF WELL:
BIMA, LLC
NAME
P.O. Drawer Q
CURRENT MAILING ADDRESS
Bisbee AZ 85603
CITY STATE ZIP

TELEPHONE NUMBER 520-432-7687

2. ACTION REQUESTED:
DRILL NEW WELL X DEEPEN _____
MODIFY _____ REPLACE _____

WELL REGISTRATION NO 55-_____

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL _____ GALLONS PER MINUTE;

DISTANCE FROM THE ORIGINAL WELL: _____ FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH NOV YEAR 99

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: STEEL
DIAMETER: 7 " DEPTH: 20 '

DOWNHOLE CASING: PVC
DIAMETER: 5 " DEPTH: 300 '

5. DESIGN PUMP CAPACITY:
10 GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
N/A
NAME

CURRENT MAILING ADDRESS

CITY STATE ZIP

TELEPHONE: _____

7. PRINCIPAL USE OF WATER: (BE SPECIFIC)
[illegible]

8. OTHER USES OF WATER: (BE SPECIFIC).
N/A

9. IF USE INCLUDES IRRIGATION, STATE TO NEAREST TENTH, THE NUMBER OF ACRES TO BE IRRIGATED: N/A

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55-572927
DATE FILED 10-25-99
FILE NO. D(24-24)2 CBB
AMA/INA —
W/S 11 S/B 76
PROCESSED BY _____
DATE MAILED 11-4-99
M.D.

10. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NW ¼ (10AC) NW ¼ (40AC) SW ¼ (160AC) SECTION 2
TWNSHP 24 N(S) RNG 24 E(W)

11. TYPE OF WELL (CHECK ONE):
EXEMPT X NON-EXEMPT _____

12. CHECK ONE:
RESIDENTIAL X COMMERCIAL _____

13. IS THE PROPOSED WELLSITE WITHIN 10(FEET OF A SEPTIC TANK SYSTEM, SEWEI DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGI AREAS AND TANKS?
YES _____ NO X

14. DRILLING FIRM:
BJ DRILLING CO, INC.
NAME
P.O. BOX 815
MAILING ADDRESS
BENSON, AZ 85602-0815
CITY STATE ZIP
(520) 586-3282
TELEPHONE NO.
25
DWR LICENSE NUMBER
A-4
ROC LICENSE CATEGORY

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAN THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

William Stroud, Manager
15. TYPE OR PRINT NAME AND TITLE

BIMA, LLC Manager
16. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE

10-14-99
17. DATE

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street
Phoenix, Arizona 85004

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

RECEIVED
MAY 22 2000
RECORDS MGT

1. JS & K DRILLING, INC.
2235 N. RANCH TRAIL
HUACHUCA CITY, AZ 85616-8283

2. Owner Name: BIMA, LLC
Address: BISBEE (City) AZ (State) 85603 (Zip)

3. Location: 24 N/S 24 E/W 2 (Township / Range / Section) ¼ NW (10-acre) ¼ NW (40-acre) ¼ SW (160-acre)

4. Well Registration No. 55-577927 (Required)

5. Permit No. _____ (If Issued)

DESCRIPTION OF WELL

6. Total depth of hole 360 ft.
7. Type of casing PVC
8. Diameter and length of casing 8 in. from 0 to 20, 6 in from 10 to 255
9. Method of sealing at reduction points —
10. Perforated from 215 to 255, from — to _____ from _____ to _____
11. Size of cuts 3/8 HOLE Number of cuts per foot 3
12. If screen was installed: Length — ft. Diam _____ in. Type _____
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started MAR (Month) 1 (Day) 06 (Year)
15. Date completed MAR (Month) 3 (Day) 06 (Year)
16. Depth to water 260 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea_level elevation if availabl
STATIC
18. If flowing well, state method of flow regulation: —
19. Remarks: —

ANSWERED MAY 23 2000

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55- 577927
File No. D(24-24) 2 CBB
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	7	SANDY TOP SOIL
7	27	CLAY (RED)
27	57	DECOMPOSED GRANITE & CLAY (RED)
57	335	RED ROCK
335	360	CEMENTED CONGLOMERATE

I hereby certify that this well was drilled by me (or under by supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: JS & K DRILLING, INC.

2235 N. RANCH TRAIL
Street

HUACHUCA CITY, AZ 85616-8283 456-2355
City State Zip Phone No.

[signature] 3/3/00
Signature of Driller Date

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

MAIL TO: P. O. BOX 458 - PHOENIX ARIZONA 85001-0458
Phone (602) 417-2470

RECEIVED
DEC 14 1999
RECORDS MGT

COMPLETION REPORT

(Pump Installation Report)

A. Per A.R.S. § 45-600.B, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.

B. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operations. For a flowing well the shut-in pressure should be measured in feet above the land surface or in pounds per square inch at the land surface.

C. The static groundwater level should be measured in feet from the land surface immediately prior to the capacity test.

D. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well be measuring the natural flow at the land surface.

E. Items 1 and 2 are available from the Notice of Intent to Drill.

F. Items 3 and 4 may be available from the driller.

D(24-24)2CBB

1. REGISTRATION NO: 55- 573927 **FILE NO:** 9C(6-17) 17DCD

2. LOCATION OF THE WELL:

16S N/S	17E E/W	17	¼	¼	¼
Township	Range	Section	10-acre	40-acre	160-acre

3. EQUIPMENT INSTALLED:

Kind of pump Submersible (Turbine, Submersible, Centrifugal, etc.) Kind of power ELEC. (Electric, natural gas, gasoline, etc.)

H.P. Rating of Motor 5 Pumping Capacity 25 Date Pump Installed 11-30-99

4. WELL TEST:

Test pumping capacity 25 (Gallons per minute) Date Well Tested 11-30-99

Method of Discharge Measurement BUCKET (Weir, orifice, current meter, etc.)

Static Groundwater Level 320 ft. Drawdown 14 ft.

Total Pumping Lift 334 ft. Drawdown _____ lbs (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

D Durham	11750 S. Agua Verde	Vail	Az	85641
Print Well Owner's Name	Address	City	State	Zip

D Durham	5207629510	11/30/99
Signature of Well Owner	Phone Number	Date

DWR 55-56 (Rev 1/99)

ANSWERED DEC 15 1999

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

REISSUE

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-577927

AUTHORIZED DRILLER: JS & K DRILLING, INC. LICENSE NO: 565

NOTICE OF INTENTION TO DRILL A EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: BIMA, LLC PO DRAWER Q BISBEE, AZ 85603

The well(s) is/are to be located in the:

NW ¼ of the NW ¼ of the SW ¼ Section 2 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 24TH DAY OF OCTOBER, 2000

AMS

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

COPY

REISSUE

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-577927

AUTHORIZED DRILLER: JS & K DRILLING, INC. LICENSE NO: 565

NOTICE OF INTENTION TO DRILL A EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: BIMA, LLC PO DRAWER Q BISBEE, AZ 85603

The well(s) is/are to be located in the:

COPY

NW ¼ of the NW ¼ of the SW ¼ Section 2 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 24TH DAY OF OCTOBER, 2000

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

********** -COMM.JOURNAL- ********** DATE FEB-23-2000 ***** TIME 13:20 *** P.01

MODE = MEMORY TRANSMISSION START=FEB-23 13:19 END=FEB-23 13:20

FILE NO.= 043

NO.	COM	ABBR/INTWK	STATION NAME/ TELEPHONE NO.	PAGES	PRG.NO.	PROGRAM NAME
001	OK	#	9152045611 69	001/001		

-AZ DEPT OF WATER RESOURCE- - ***** - 602 417 2422- **********

Post-it® Fax Note 7671 | Date 3/23 | # pages ▶ 1

To John | From Rita

Co./Dept. JS & K Drilling | Co. ADWR

Phone # | Phone # 602/417-2470

Fax # 520/456-1169 | Fax #

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

COPY

REISSUE

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-577927

AUTHORIZED DRILLER: JS & K DRILLING, INC. LICENSE NO: 565

NOTICE OF INTENTION TO DRILL A EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: BIMA, LLC PO DRAWER Q BISBEE, AZ 85603

The well(s) is/are to be located in the:

COPY

NW ¼ of the NW ¼ of the SW ¼ Section 2 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 24TH DAY OF OCTOBER, 2000

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

Run Date: 02/23/2000

WELL REGISTRY REPORT - WELLS55

Location D 24 0 24 0 2 C B B **WR** 577927 **AMA** NOT WITHIN ANY AMA OR INA

Name BIMA, LLC
PO DRAWER Q

BISBEE AZ 85603

File Type NEW WELLS (INTENTS OR APPLICATIONS)
Application/Issue Date 10/25/1999

Owner OWNER
Driller Nbr 6
Driller Name JIM WILLIAMS WELL DRILLING
Driller Phone 520-772-8881
County COCHISE
GPM

Well Type EXEMPT
SubBasin NO SUBBASIN
Watershed SAN PEDRO RIVER
Water Uses DOMESTIC
Well Uses WATER PRODUCTION
Discharge Method BUCKET - BARREL - STOPWATCH
Power ELECTRIC MOTOR 1 - 5 HP

Well Depth	0.00	**Case Diam**	0.00	**Tested Cap**	25.00
Pump Cap.	25.00	**Case Depth**	0.00	**CRT**	X
Draw Down	14.00	**Water Level**	0.00	**Log**	
		Acres Irrig	0.00	**Finish**	NO CASING CODE LISTED

Comments

Places Of Use

1 D 24 0 24 0 2 C B B

Current Action

2/9/00	869	CHANGE OF DRILLER PACKET ISSUED

Action History

2/7/00	865	CHANGE OF DRILLER RECEIVED
12/14/99	805	COMPLETION REPORT RECEIVED
11/16/99	550	DRILLING AUTHORITY ISSUED
10/25/99	150	NOI RECEIVED FOR A NEW PRODUCTION WELL
10/20/99	210	COUNTY HEALTH AUTHORITY ENDORSED

John J S & K Drilling
Fax: 520/456-1169

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
FOR INFORMATION: CALL MONICA ORTIZ AT (602)417-2470

RECEIVED
FEB - 7 2000
GROUNDWATER MGT

3. REQUEST TO CHANGE WELL DRILLER **$10.00 FEE REQUIRED FOR EACH WELL**

This request must be received by this Department and the Drill Authorization issued to the new drilling firm prior to the start of drilling or the completion of the well listed below.

Well Registration No. 55- 577927	**File No.** D(24-24)2CBB
BJ DRILLING CO. INC.	JS&K DRILLING, INC.
Original Well Driller	**New Well Driller**
P.O. BOX 815	501 SOUTH PATTON
Mailing Address	**Mailing Address**
BENSON AZ 85602-0815	HUACHUCA CITY, AZ 85616
City State Zip	**City State Zip**
520-586-3282	520-456-2355
Telephone Number	**Telephone Number**
25	LIC# 565 ROC CLASS C-53
ADWR License Number	**ADWR License Number ROC License Category**
BIMA, LLC	MNGR 2-3-00
Typed or Printed Name of Well Owner	**Signature of Well Owner Date**

The fee charged for a change of well ownership and/or reissue of a drill card is authorized by R12-15-151, effective June 30, 1994.

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-577927

AUTHORIZED DRILLER: B-J DRILLING COMPANY, INC. LICENSE NO: 25

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: BIMA, LLC PO DRAWER Q BISBEE, AZ 85603

The well(s) is/are to be located in the:

NW 1/4 of the NW 1/4 of the SW 1/4 Section 2 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 24TH DAY OF OCTOBER, 2000.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ (602)417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

RECEIVED
OCT 25 1999
GROUNDWATER MGT

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. BIMA, LLC (LANDOWNER'S NAME) P.O. DRAWER Q (CURRENT MAILING ADDRESS) BISBEE (CITY) AZ (STATE) 85603 (ZIP)

B. TELEPHONE NO. 520-432-7687 COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN COCHISE COUNTY D. 101 (BOOK) 41 (MAP) 008 (PARCEL) E. 9 (# OF ACRES)

OFFICIAL SEAL OR STAMP: COCHISE COUNTY HEALTH & SOCIAL SERVICES

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NW ¼ (10AC) NW ¼ (40AC) SW ¼ (160AC) OF SECTION 2 TOWNSHIP 24 N(S) RANGE 24 E(W)

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL ✓; INSUFFICIENT INFORMATION TO MAKE DETERMINATION _____; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE 10-20-99 AUTHORIZED SIGNATURE Steven Hubert TITLE Envir. Health Specialist

1. OWNER OF WELL:
BIMA, LLC
NAME
P.O. DRAWER Q
CURRENT MAILING ADDRESS
BISBEE AZ 85603
CITY STATE ZIP
TELEPHONE NUMBER 520-432-7687

2. ACTION REQUESTED:
DRILL NEW WELL X DEEPEN _____
MODIFY _____ REPLACE _____
WELL REGISTRATION NO 55-_____

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL _____ GALLONS PER MINUTE;
DISTANCE FROM THE ORIGINAL WELL: _____ FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH NOV YEAR 99

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: STEEL
DIAMETER: 7 " DEPTH: 20 '
DOWNHOLE CASING: PVC
DIAMETER: 5 " DEPTH: 300 '

5. DESIGN PUMP CAPACITY:
10 GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
N/A
NAME
CURRENT MAILING ADDRESS
CITY STATE ZIP
TELEPHONE: _____

7. PRINCIPAL USE OF WATER: (BE SPECIFIC)
WASHING HANDS, FLUSHING TOILETS

8. OTHER USES OF WATER: (BE SPECIFIC).
N/A

9. IF USE INCLUDES IRRIGATION, STATE TO NEAREST TENTH, THE NUMBER OF ACRES TO BE IRRIGATED: N/A

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55-577927
DATE FILED 10-25-99
FILE NO. D(24-24)2 CBB
AMA/INA _____
W/S 11 S/B 76
PROCESSED BY _____
DATE MAILED 11-9-99
mo

10. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NW ¼ (10AC) NW ¼ (40AC) SW ¼ (160AC) SECTION 2
TWNSHP 24 N(S) RNG 24 E(W)

11. TYPE OF WELL (CHECK ONE):
EXEMPT X NON-EXEMPT _____

12. CHECK ONE:
RESIDENTIAL X COMMERCIAL _____

13. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES _____ NO X

14. DRILLING FIRM:
BJ DRILLING CO, INC.
NAME
P.O. BOX 815
MAILING ADDRESS
BENSON, AZ 85602-0815
CITY STATE ZIP
(520) 586-3282
TELEPHONE NO.
25
DWR LICENSE NUMBER
A-4
ROC LICENSE CATEGORY

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

WILLIAM SEIBOLD, MANAGER — WILLIAM SEIBOLD, MANAGER — 10-16-99
15. TYPE OR PRINT NAME AND TITLE — 16. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE — 17. DATE

DWR 55-40 (REV 1/99)

APPLICATION GUIDELINES

In accordance with Arizona Revise Statutes ("A.R.S.") §§ 41-1008 and 1079, the Department of Water Resources (Department) provides the following information regarding the application review process for authority to drill.

NECESSARY STEPS & INSTRUCTIONS TO OBTAIN DRILLING AUTHORITY

1. Pursuant to A.R.S. § 45-596, a person may not drill, cause to be drilled, deepen or modify any well for which a permit is not required without first filing a Notice of Intent to Drill with the Department. Only a well drilling contractor licensed in the State of Arizona or a single well licensee (a person licensed to drill or modify one exempt well on his or her own property) is authorized to drill, deepen or modify a well. Drilling may not begin until the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, and which authorizes the drilling of the specific well in a specific location. To assist you in understanding the requirements for this application, copies of A.R.S. § 45-596 and Arizona Administrative Code ("A.A.C.") R12-15-810 are available at the Department bookstore (602-417-2450 x7127).
2. If replacing, deepening or modifying an existing well, provide the registration number of the existing well in item 2. A replacement well is one located no more than 660 feet from the original well and that is not expected to annually withdraw more groundwater than historically withdrawn from the original well.
3. Information to complete items 3, 4, 5 and 14 may be available from your driller.
4. Information to complete items 10 and 13 may be available from your County Assessor's Office.
5. An exempt well, referred to in Item 11, means a well with a pump with a maximum capacity of not more than thirty-five gallons per minute used primarily for domestic purposes, including the noncommercial irrigation of less than two acres of land.
6. If any water from a proposed well on a parcel of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant must submit a well site plan of the property. The plan must be on an 8½" x 11" piece of plain paper with representation of the locations of all structures and proximity of adjacent lot lines, to scale. It must include the county assessor's parcel identification number. The plan must show the proposed well location and the location of any septic tank or sewer system that is either located on the property or within one hundred feet of the proposed well site, as well as indicating the measured shortest distance between the proposed well and existing septic tank system. **The plan must demonstrate that the well will not be drilled within one hundred feet of any septic or sewer system.**
7. The site plan must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Endorsement by the county/local authority is based solely on the best available judgement that the proposed well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. In areas where there is no local or county authority that controls installation of septic tanks or sewer systems, or if the health authority is unable to determine whether the proposed well location complies with state and local requirements, the applicant must apply for approval directly to the Department of Water Resources.
8. If an individual other than the land owner or lessee signs this notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific notice on his or her behalf, must accompany the notice.
9. Please mail **two original Notices** with **original signatures** and **two site plans** and, in accordance with A.R.S. § 45-113, a **check or money order (no cash) in the amount of $10.00** to P. O. Box 458, Phoenix Arizona, 85001-0458, or hand deliver to 500 North Third Street, Phoenix, Arizona.
10. Arizona Revised Statute § 45-596(D) provides that the Director of the Department is to determine whether or not all information required on this form has been submitted. If not, the person filing the Notice will be notified, and the drilling or modification of the well may **not** proceed.
11. This form is not applicable for non-exempt wells (those yielding more than thirty-five gallons per minute) within an Active Management Area. Contact Groundwater Management for further information regarding the appropriate notice to file with the Department.

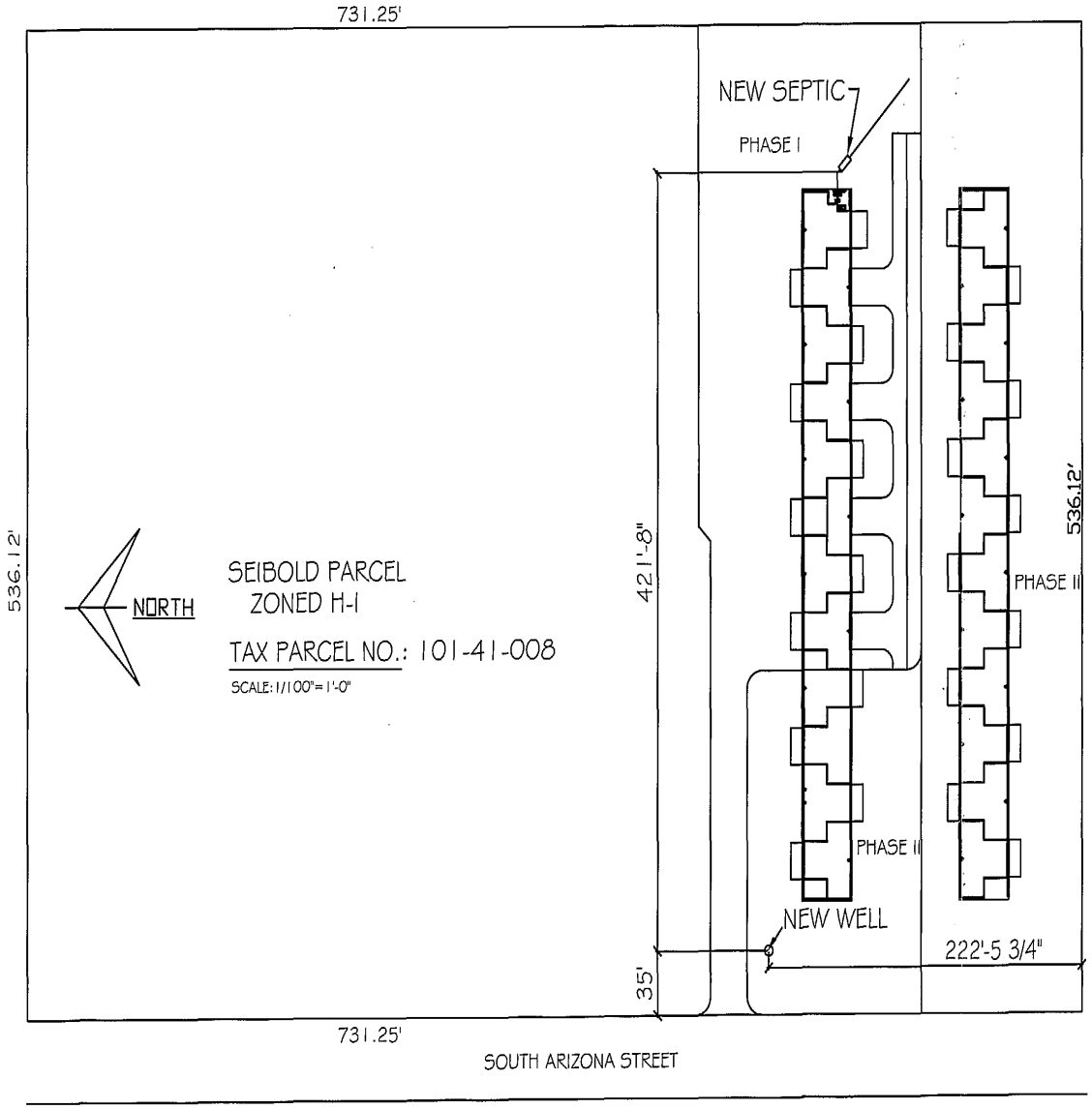
TIME FRAME FOR REVIEW OF YOUR APPLICATION

Within 15 days after receipt of your Notice of Intention, the Arizona Department of Water Resources ("Department") will determine whether your application should be granted or denied, unless this time is extended for lack of a complete application. If your application is incomplete, the Department will notify you in writing and will specify what information is necessary to make the application complete. Until the missing information is received, the time frame for review of your application will be suspended. Your application will not be complete until all of the requested information is received. If you do not supply the missing information within sixty (60) days, the Department may deem your application withdrawn and close the file.

At the end of its review, the Department will send you written notice either granting or denying your application for drilling authority. If your application is approved, the Drill Card will be mailed directly to the drilling company. If denied, the Department's notice will state justification for the denial and an explanation of your right to appeal.

CONSTRUCTION AND FOLLOW UP REQUIREMENTS

1. Construction and abandonment standards for wells, including abandonment, must be in accordance with Department Regulations. A.R.S. § 45-594 and Arizona Administrative Code R12-15-811 require the well to be constructed with a twenty foot steel surface seal casing, including a one foot steel stickup and one and one-half inches of grout seal, unless a variance is granted **(see A.R.S. § 45-596 (G) for procedure to follow in requesting a variance).**
2. Pursuant to § 45-596(E), the drilling, deepening or modification of the well must be completed within one year of the date of the Notice of Intent. If the well is not completed within one year, a new Notice of Intent must be filed before proceeding with further construction.
3. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use is later proposed to be converted to use for domestic purposes as defined in § 45-454, the well owner must file a Notice of Intention to Drill and comply with the requirements of § 45-596 before the well is converted and any water from that well is used for domestic purposes.
4. Within thirty days after installation of pumping equipment, the registered well owner must file a Completion Report with the Department. The person to whom a well is registered also must notify the Department of a change in ownership or a change in data relating to this well.



RECEIVED
OCT 25 1999
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

November 16, 1999

JANE DEE HULL
Governor

RITA P. PEARSON
Director

BIMA, LLC
PO DRAWER Q
BISBEE, AZ 85603

Registration No. 55-577927
File No.D(24-24) 2 CBB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Sylvia Valdez
Water Resource Technician
Groundwater Management Support Section

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED MAR 2 1982 DEP'T. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY	
REGISTRATION NO. 55-	633472
FILE NO.	D(24-24)5CC
FILED (DATE)	3-2-82
AT (TIME)	2:00pm
INA	—
AMA	—

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☐

1. Name of Registrant:
BLOMMER F.V.
2839 AGATE DR (Address) SANTA CLARA (City) CALIF (State) 95051 (Zip)

2. File and/or Control Number under previous groundwater law:
D24094005ACCGS1 (File Number) 35- 68852 (Control Number)

3. a. The well is located within the SW ¼ SW ¼ ____ ¼, Section 05, of Township 24.0S N/S, Range 24.0E E/W, G & SRB & M, in the County of COCHISE.

   b. If in a subdivision: Name of subdivision SUNSET ACRES, Lot No. 143/44, Address ____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC (I AM ALLERGIC TO CHLORINATED WATER.

5. If for irrigation use, number of acres irrigated from well N/A.

6. Owner of land on which well is located. If same as Item 1, check this box ☑
____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
   a. Depth of Well 350 feet
   b. Diameter of casing 07 inches
   c. Depth of casing 350 feet
   d. Type of casing PERFORATED OR SLOTTED CASING
   e. Maximum pump capacity 35 gallons per minute.
   f. Depth to water 244 feet below land surface.
   g. Date well completed NOVEMBER (Month) ____ (Day) 1978 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☑.
   ____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
   ____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
   Attach additional sheet if necessary.

9. DATE Jan 16, 1982 SIGNATURE OF REGISTRANT F.V. Blommer

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 645536
FILE NO. D(24-24)5ACC
FILED 6-10-82 (DATE) AT 1 (TIME)
INA
AMA

1. Name of Registrant:
F. V. Blommer
P.O. Box 4520 (Address) Bisbee (City) AZ (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
D(24-24)5acc (File Number) 35- 68882 (Control Number)

3. a. The well is located within the SW ¼ SW ¼ NE ¼, Section 5, of Township 24 ~~N~~/S, Range 24 E/~~W~~, G & SRB & M, in the County of Cochise.

   b. If in a subdivision: Name of subdivision Barnett Acres, Lot No. 143, Address 143 Barnett Road.

4. The principal use(s) of water (Examples: irrigation - stockwater (domestic) - municipal - industrial)
.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
   a. Depth of Well 350 feet
   b. Diameter of casing 6 inches
   c. Depth of casing 350 feet
   d. Type of casing P.E. Steel .
   e. Maximum pump capacity 35 gallons per minute.
   f. Depth to water 244 feet below land surface.
   g. Date well completed 11-13-78 (Month) (Day) (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒.
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   Attach additional sheet if necessary.

9. DATE 6-7-82 SIGNATURE OF REGISTRANT F V Blommer

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

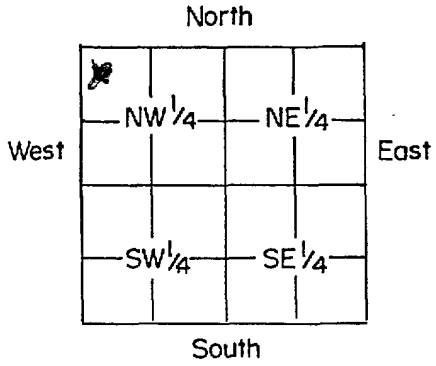
9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

EXEMPT WELL
FILING FEE: $3.00

DEPARTMENT OF WATER RESOURCES
NOTICE OF INTENTION TO DRILL OR DEEPEN
AN EXEMPT WELL

EXEMPT WELL

Section 45-596, Arizona Revised Statutes, provides: A person may not drill or cause to be drilled any well or deepen or replace an existing well without first filing a Notice of Intention to Drill with the Department on a form prescribed and furnished by the Department. The well shall be completed within one year after the date of Notice. An exempt well means a well having a pump with a maximum design capacity of not more than 35 gallons per minute which is used to withdraw ground water. An exempt well may include the non-commercial irrigation of not more than 1 acre of land.



- Indicate Well Location by X
(Above diagram represents one 640 acre section)

WELL/LAND LOCATION:

1. Township 24 S
2. Range 24 E
3. Section 5
4. NW ¼ NW ¼ NW ¼
   10 acre sub-division
5. County Cochise
6. Owner of Well:

Lou Brindley
Name
RT 1, 76 Della ST
Address
Bisbee AZ 85603
City State Zip

7. Owner of Land:

432-3359
Name

Address

City State Zip

DESCRIPTION OF WELL:

8. Diameter 6
   Depth 300
9. Type of Casing PVC

10. Principle use of Water
Domestic

11. Other uses Intended

(If for non-commercial irrigation, state approximate area being cultivated.)

12. Construction will start about:
1 81
Month Year

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
FILE NO. D(24-24)5 bbb
FILED 1-14-81 BY jj
INPUT 1-16-81 BY Pat
DUPLICATE MAILED 1-23-81 BY pd
REGISTRATION NO 55-86775
AMA NON EXPANSION AREA —

PLACE OF USE:

13. Township 24
14. Range 24
15. Section 5
16. Legal description of land water is to be used on:

17. Design Pump Capacity
10 GPM

18. Action Requested:
Drill X
Deepen
Replace

19. This notice filed by:
Owner
Lessee
Driller X

Lee's Well Drilling
Name
P. O. Bx-4558
Huachuca City, AZ. 85616
Address
T-80
City State Zip

20. Drillers Name:
Lee's Well Drilling
Name
P. O. Bx-4558
Huachuca City, AZ. 85616
Address

City State Zip
48979 T-80
Department License Number

1. Fill out this form in duplicate and mail to P.O. Box 2600, Phoenix, Arizona, 85002, or deliver to 222 N. Central Ave., Suite 550, Phoenix, Arizona, 85004.
2. If the Exempt Well is in fact a replacement (or deepening) well, state the registration number of the existing well. _____
3. Construction standards for new and replacement wells and the deepening and abandonment of existing wells, shall be in accordance with Department Rules and Regulations.

I, Leo D. Drew, state that the construction will be under the direct and personal supervision of the well driller designated on this form and that the designated driller holds a contractors license pursuant to ARS 45-595.

Jan 6, 81
Date

Leo D. Drew
Signature of Person Filing

Lee's Well Drilling
[illegible] 90 North
[illegible]nca City AZ 85616

STATE OF ARIZONA
ARIZONA WATER COMMISSION
WATER RIGHTS ADMINISTRATION
222 N. CENTRAL AVE — SUITE 550
PHOENIX, ARIZONA 85004

RECEIPT — FILE

KIND ENTRY	FILE REFERENCE NO.
55	86773
	THRU

№ 7356

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Notice of Intention to Drill an Exempt Well (3 Wells)		3.00
					Water Rights (GW)		3.00
					File #D(17-12)16ccc Ashton 86774		
					File #D(16-12)34aaa Lundquist 86773		
					File #D(17-12)35bbb Brindley 86775		
					Paid Check #1375		

WATER PAYMENT
GUESTS 1
CHK NO 1375
3@ 3.00
55-I 9.00
TAX 0.00
TOTL 9.00
GEN.CHEK 9.00
1753 A 15:26

1-15-81 ps TOTAL $ 9.00

STATE OF ARIZONA

DEPARTMENT OF
WATER RESOURCES

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. **Owner** Lou Brindley
Name
Rt 1 76 Della St Bisbee AZ 85603
Address

2. **Lessee or Operator**
Name
Address

3. **Driller** Lee's Well Drilling
Name
P O Box 4558 Huachuca City AZ 85616
Address

4. **Location of well:** T24S R24E Sec5 NW NW NW

5. **Permit No.** (if issued)

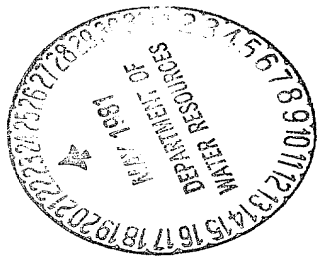
DESCRIPTION OF WELL

6. **Total depth of hole** 360 ft.
7. **Type of Casing** PVC
8. **Diameter and length of casing** 6" in. from 0 to 360, in from to .
9. **Method of sealing at reduction points** Cement
10. **Perforated from** 340 to 360, from to , from to
11. **Size of cuts** 1/8" **Number of cuts per foot** one
12. **If screen was installed:** Length ft. Diam in. Type
13. **Method of construction** drilled
drilled, dug, driven, bored, jetted, etc.
14. **Date started** 4 (Month) 30 (day) 81 (year)
15. **Date completed** 4 (Month) 30 (day) 81 (year)
16. **Depth to water** 295 ft. (If flowing well, so state.)
17. **Describe point from which depth measurements were made, and give sea-level elevation if available.** Ground Level
18. **If flowing well, state method of flow regulation**
19. **REMARKS:**

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55-86775
Received By
Entered 5-28-81 By Pat
File No. D(24-24)5bbb

(Well log to appear on Reverse side)

MAY 1981
DEPARTMENT OF WATER RESOURCES



LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	2	Top
2	295	Rock & clay
295	360	Cemented clay

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

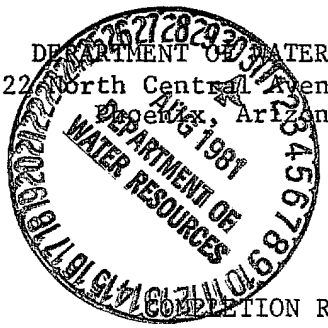
Driller [signature]
Name

Box 4558 Huachuca City
Address

Date May 10, 81

2-73

DEPARTMENT OF WATER RESOURCES
222 North Central Avenue - Suite 850
Phoenix, Arizona 85004



Registration No. 55-86775
Owner of
Well Site Lou Brindley
File No. D(24-24)5bbb

COMPLETION REPORT

1. A Completion Report is to be filed with the Department within 30 days after installation of pump equipment.

2. The tested pumping capacity of the well in gallons per minute for a nonflowing well should be determined by measuring the discharge of the pump after continuous operation for at least four hours and for a flowing well by measuring the natural flow at the land surface.

3. Drawdown of the water level for a nonflowing well should be measured in feet after not less than four hours of continuous operation and while still in operation and for a flowing well the shutin pressure should be measured in feet above the land or in pounds per square inch at the land surface.

4. The static groundwater level should be measured in feet from the surface immediately prior to the well capacity test.

LOCATION OF THE WELL:

T24S R24E Sec5 NW NW NW

Date Well Completed 3/15/81 Depth of Well 330

1. Well Test:
Test Pumping Capacity 6 GPM (Gallons per minute) Date Well Tested 3/20/81

Method of Discharge Measurement 5 gal Container (Weir, orifice, current meter, et cetera)

Static Groundwater Level 110' ft Drawdown 210' ft

Total Pumping Lift 320 ft Drawdown (Flowing well) lbs

2. Equipment Installed:

Kind of Pump Submersible (Turbine, Centrifugal, et cetera)

Kind of Power Elec. (Electric, Natural, Gas, et cetera) Horse Power Rating of Motor 1 hp

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

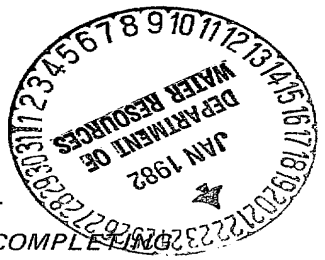
L L Lohse
Signature

Box 4111
Address

Jun 25, 1981
Date

Nuevo C.t. AZ 85616
City State Zip

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 602134
FILE NO. D(24-24)5 dcb
FILED 1-22-82 (DATE) AT 8 (TIME)
INA —
AMA —

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 ☐

1. Name of Registrant:

Ben W. Duree
El Rancho Notso Grande
Route 1, Naco Highway
Bisbee, Arizona 85603

Ben W. Duree
R.R. 1 Naco Hwy - Bisbee AZ - 85603
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
D24024005 DC BASI (File Number) 35- 29403 (Control Number)

3. a. The well is located within the NW ¼ SW ¼ SE ¼, Section 05, of Township 24-09 N/S, Range 24.0E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision N/A, Lot No. —, Address —.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial) Domestic.

5. If for irrigation use, number of acres irrigated from well N/A.

6. Owner of land on which well is located. If same as Item 1, check this box ☑

(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 300 feet
b. Diameter of casing 06 inches
c. Depth of casing 300 feet
d. Type of casing Perforated or Slotted Casing
e. Maximum pump capacity 25 gallons per minute.
f. Depth to water 80 feet below land surface.
g. Date well completed 9 (Month) 6 (Day) 74 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☑.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 1-21-82 SIGNATURE OF REGISTRANT Ben W. Duree

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470 Fax (602) 417-2422

RECEIVED
NOV 21 2000
RECORDS MGT

REQUEST FORM TO CHANGE WELL INFORMATION
OWNERSHIP * DRILLER * VARIANCE

Please complete the appropriate section of this request form and return to the above address with applicable fee. NOTE: A.R.S. §45-593.C requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. **CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)**

NOTE: If the location of the proposed well changes after drilling authority has been issued, **attach a $10.00 reissue fee for each well.**

WELL REGISTRATION NO. 55- 602134 **FILE NO:** D (24-24) 5 ~~DEB~~ DCB

If known, I/We request the following well information be changed: CHANGE OF OWNERSHIP

Date_____ **Signature of Current Well Owner**_____

2. **STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)**

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, BOB BULLARD, state that I am the **Previous/New Owner** of the well described below:

NW ¼ (10 Acre) SW ¼ (40 Acre) SE ¼ (160 Acre) of Section 05 Township 24-0S N/S Range 24 0E E/W

Well Registration No. 55- 602134 File No: D (24-24) 5 ~~DEB~~ DCB (if known)

BEN W. DUREE	BOB BULLARD
PRINT Previous Owner's Name	**PRINT** New Owner's Name
5-A CAMPBELL STREET	931 W. GEOFFREY STREET
Mailing Address	Mailing Address
BISBEE AZ 85603	BISBEE AZ 85603
City State Zip	City State Zip
520-432-7370	520-432-2090
Telephone Number	Telephone Number

Signature of Previous/New Well Owner Bob Bullard **Date** 11/17/00

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470 Fax (602) 417-2422

REQUEST TO CHANGE WELL DRILLER — $10.00 FEE REQUIRED FOR EACH WELL

This request must be received by this Department and the Drill Card issued to the new drilling firm prior to the drilling or completion of any well.

Well Registration No. 55-_____ **File No.**_____

Original Well Driller	**New Well Driller**
Mailing Address	**Mailing Address**
Telephone Number	**Telephone Number**
ADWR License Number	**ADWR License Number**
R.O.C. License Category	**R.O.C. License Category**
Typed or Printed Name of Well Owner	**Signature of Well Owner** **Date**

The fee charge for well ownership and reissue of drill card is authorized by R12-15-151, effective June 30, 1994.

4. REISSUE OF DRILLING AUTHORITY FOR VARIANCE REQUEST: ($10.00 EACH WELL)

NOTE: If extraordinary or unusual conditions exist, after the initial drilling authority has been issued, the well owner or well driller may request a variance from the provisions of R12-15-811.

WELL REGISTRATION NO. 55-_____ **FILE NO:**_____

I/WE REQUEST THE FOLLOWING WELL DRILLING AUTHORITY BE REISSUED PER THE ATTACHED VARIANCE REQUEST:

_____

Signature of Well Owner/Well Driller_____ **Date**_____

ARIZONA DEPARTMENT OF WATER RESOURCES
Information Management Unit
P.O. Box 458, Phoenix, Arizona 85001-0458
(602) 771-8527 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

RECEIVED
OCT 23 2006
INFORMATION MANAGEMENT

This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

FILE NUMBER: D(23-24) 32 ACD
WELL REGISTRATION NUMBER: 55- 212268
PERMIT NUMBER (IF ISSUED):

SECTION 1. DRILLING AUTHORIZATION

Mail To:

Drilling Firm

NAME	DWR LICENSE NUMBER
TANNER WELL SERVICE	133
ADDRESS	TELEPHONE NUMBER
7914 NORTH FRONTIER ROAD	520-378 1606
CITY/STATE/ZIP	FAX
MCNEAL, AZ 85617-9718	520 - 803 - 7400

SECTION 2. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: JAMES E BURKE
MAILING ADDRESS: PO BOX 4623
CITY / STATE / ZIP: BISBEE, AZ 85603
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-236-3319
FAX:
WELL NAME (e.g., MW-1, PZ-3, Lot 25 Well, Smith Well, etc.):

Location of Well

WELL LOCATION ADDRESS (IF ANY): 11 YUCCA ST. BISBEE

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
23 S	24 E	32	NE 1/4	SW 1/4	SE 1/4

LATITUDE			LONGITUDE		
31 ° Degrees	23 . Minutes	24 3 "N Seconds	109 ° Degrees	55 . Minutes	48 9 "W Seconds

METHOD OF LATITUDE / LONGITUDE (CHECK ONE): [X] *GPS: Hand-Held [ ] USGS Quad Map [ ] Conventional Survey [ ] *GPS: Survey-Grade

LAND SURFACE ELEVATION AT WELL: 4753 Feet Above Sea Level

METHOD OF ELEVATION (CHECK ONE): [X] *GPS: Hand-Held [ ] USGS Quad Map [ ] Conventional Survey [ ] *GPS: Survey-Grade

*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE): [X] NAD-83 [ ] Other (please specify):

COUNTY	ASSESSOR'S PARCEL ID NUMBER BOOK	MAP	PARCEL
COCHISE	102	30	114T

SECTION 3. WELL CONSTRUCTION DETAILS

Drill Method (CHECK ONE)
- [X] Air Rotary
- [ ] Bored or Augered
- [ ] Cable Tool
- [ ] Dual Rotary
- [ ] Mud Rotary
- [ ] Reverse Circulation
- [ ] Driven
- [ ] Jetted
- [ ] Air Percussion / Odex Tubing
- [ ] Other (please specify)

Method of Well Development (CHECK ONE)
- [X] Airlift
- [ ] Bail
- [ ] Surge Back
- [ ] Surge Pump
- [ ] Other (please specify)

Method of Sealing at Reduction Points (CHECK ONE)
- [X] None
- [ ] Packed
- [ ] Swedged
- [ ] Welded
- [ ] Other (please specify)

Condition of Well (CHECK ONE)
- [X] Capped
- [ ] Pump Installed

Construction Dates
DATE WELL CONSTRUCTION STARTED: 10-2-06
DATE WELL CONSTRUCTION COMPLETED: 10-11-06

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
TANNER WELL SERVICE	Matt L Tanner	10-20-06

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 212268

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
781	Feet Below Land Surface	781	Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
613 Feet Below Land Surface	10-11-06	10:51 AM	☐ Valve ☐ Other:

Borehole			Installed Casing															
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (X)				PERFORATION TYPE (X)							
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	12"	+1	20	8 5/8"	X				X						
20	781	10"	0	661	6 5/8		X			X						
			661	781	6 5/8		X							X		7 8 x 6"

Installed Annular Material

DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)								FILTER PACK		
						BENTONITE						
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	GROUT	CHIPS	PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	20			X								

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 212268

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	2	TOPSOIL	
2	40	CALACHEE & ROCK	
40	150	BROWN CLAY & ROCK	
150	630	RED SHALE - HARD	
630	781	RED SHALE W/ THIN LAYERS OF GREY SHALE	X

Well Driller Report and Well Log

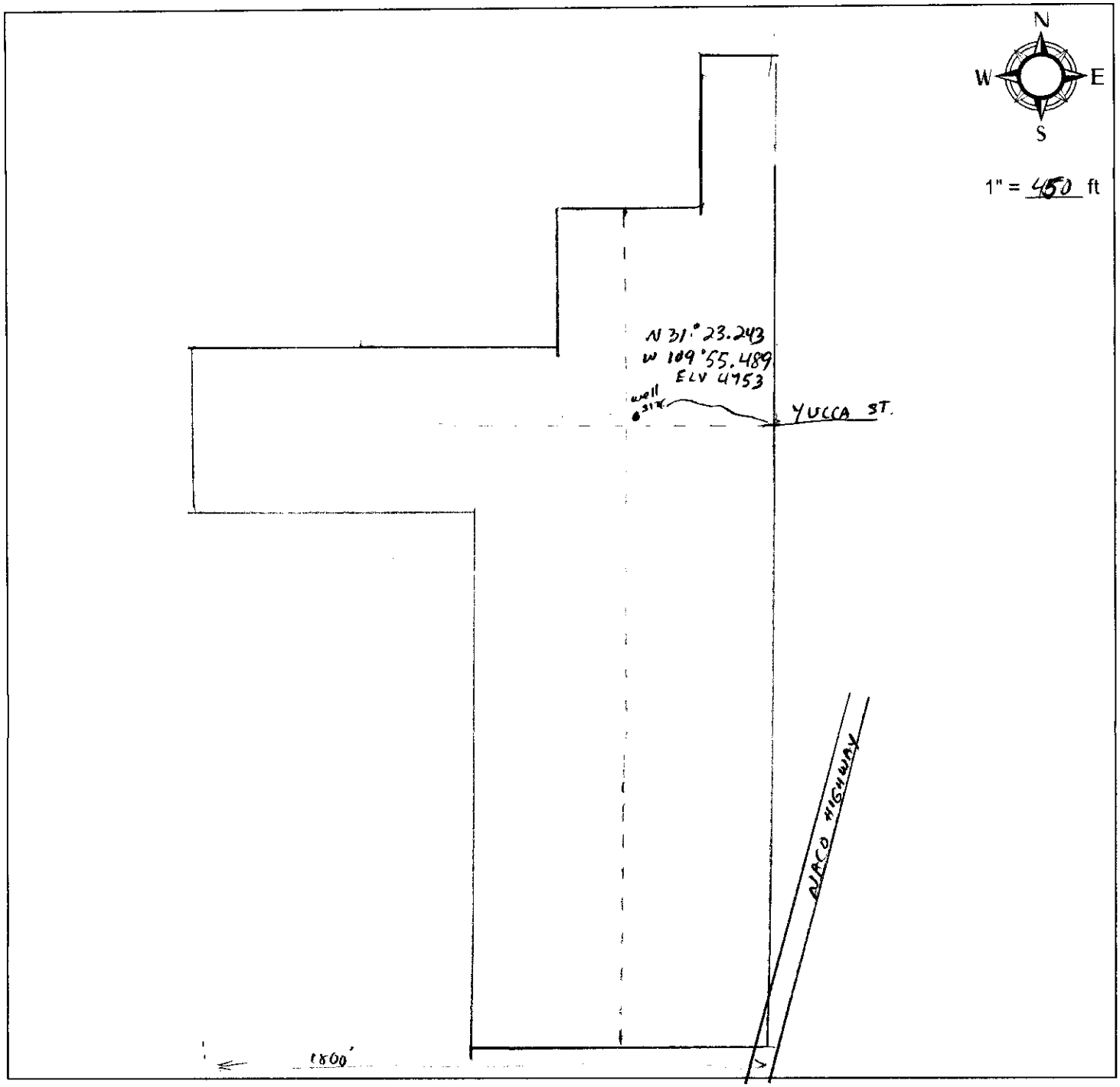
WELL REGISTRATION NUMBER
55- 212268

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER BOOK	MAP	PARCEL
JAMES E BURKE	102	30	114T

Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.

Please indicate the distance between the well location and any septic tank system or sewer system.



ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

3550 N. Central Avenue
Phoenix, Arizona 85012

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-212268

AUTHORIZED DRILLER: TANNER WELL SERVICE LICENSE NO: 133

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: JAMES E BURKE PO BOX 4623 BISBEE, AZ 85603

THE WELL(S) IS/ARE TO BE LOCATED IN THE:
SE ¼ OF THE SW ¼ OF THE NE ¼ SECTION 32 TOWNSHIP 23 SOUTH RANGE 24 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 102-30-114T

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 14TH DAY OF MAY, 2007

WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue, Phoenix, Arizona 85012
Telephone (602) 771-8500
Fax (602) 771-8691

May 15, 2006

Janet Napolitano
Governor

Herbert R. Guenther
Director

JAMES E BURKE
PO BOX 4623
BISBEE, AZ 85603

Registration No. 55-212268
File No. D(23-24) 32 ACD

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well that you recently filed with this Department pursuant to A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed or otherwise provided a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card, which must be displayed on the drill rig during drilling.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the proposed well, you may not proceed with drilling until you file an amended NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the amended NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DWR form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed is a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55) within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at <http://www.water.az.gov/adwr/content/forms/default.htm#NOI>.

Sincerely,

Danita Haywood
NOI Unit
Water Management Support Section

Enclosures

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 771-8500 • (800) 352-8488
(602) 771-8691 fax • www.azwater.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA	B	SB
		74
RECEIVED DATE	WS	
5.15.06	11	
ISSUED DATE	WQARF	CERCLA
5.15.06	—	

FILE NUMBER: D(23-24)32ACD
WELL REGISTRATION NUMBER: 55212268

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

☐ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☐ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

Official County or Local Seal or Stamp

COUNTY OR LOCAL AUTHORITY NAME AND TITLE

TELEPHONE NUMBER | DATE | COUNTY OR LOCAL AUTHORITY SIGNATURE

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

☒ Exempt
(Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.)
(See instructions.)

☐ Non-Exempt
(Pump has a maximum capacity of more than 35 gpm and the well is located outside an AMA.)
(See instructions.)

DESIGN PUMP CAPACITY: 20 Gallons Per Minute

Proposed Action

CHECK ONE

☒ Drill New Well
☐ Deepen
☐ Replace
☐ Modify

If Deepening, Replacing or Modifying:
ORIGINAL WELL REGISTRATION NUMBER: 55 -
MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute
DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY): 11 Yucca St., Bisbee AZ 85603

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
23 S	24 E	32	NE ¼	SW ¼	SE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
102	30	114T	34.25

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: Cochise County

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: James E. Burke + Marian Weaver
MAILING ADDRESS: PO Box 4623
CITY / STATE / ZIP CODE: Bisbee, AZ 85603
CONTACT PERSON NAME AND TITLE: Jim Burke
TELEPHONE NUMBER: (520) 236-3319 | FAX:

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL:
MAILING ADDRESS:
CITY / STATE / ZIP CODE:
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER | FAX:

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well (e.g., Lot 35 Well, Smith Well, etc.)?		X	PLEASE STATE
3. Is the proposed well a NEW well to be located within an Active Management Area? *(See instructions)*		X	Unless the well is a replacement well and the total number of operable exempt wells on the land is not increasing, you must also file a supplemental form A.R.S. § 45-454(B) & (D).
4. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

RECEIVED
MAY 15
GROUNDWATER MGT

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55- 212268

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: Tanner Well Service LLC

DWR LICENSE NUMBER: 133

ROC LICENSE CATEGORY: C-53

TELEPHONE NUMBER: 520-378-1606

FAX: 520-803-7400

MAILING ADDRESS: 7914 N. FRONTIER RD.

CITY / STATE / ZIP CODE: McNeal, Az. 85617

DATE CONSTRUCTION IS TO BEGIN: AUGUST 2006

SECTION 6. WATER / SITE INFORMATION

***Principal Use* of Water** (CHECK ONE)	***Other Uses* of Water** (CHECK ALL THAT APPLY)
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☒ Domestic	☒ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify)*:	☐ Other *(please specify)*:

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

Borehole			Casing												
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (T)				PERFORATION TYPE (T)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	20	12	+1	20	8 5/8	X*				X						Cement
20	340	8	0	280	6 5/8		X			X						
			280	340	6 5/8		X							X		

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: James E. Burke

SIGNATURE OF WELL OWNER: James E. Burke — DATE: 3/7/06

SIGNATURE OF LANDOWNER, IF APPLICABLE (SEE INSTRUCTIONS) — DATE

RECEIVED
MAY 15 2006
GROUNDWATER MGT

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 771-8500 • (800) 352-8488
(602) 771-8691 fax • www.azwater.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well
(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- Review instructions prior to completing form in Black or Blue Ink
- You must read and sign at the bottom
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $150.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA	T	R	SB
GROUPT	RATE	WS	
SUBBS	DATE	NOTICE	ID PDTA

FILE NUMBER

WELL REGISTRATION NUMBER
55 21 22 08

RECEIVED
MAY 5 2006
WATER MGT

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

[ ] County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- [ ] Field Inspection Performed
- [ ] Site Plan Review Only

[ ] Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE

Official County or Local Seal / Stamp

THE NATURE CONSERVANCY
AMERICAN ELK

The Nature Conservancy

James E. Burke
Marian Weaver
P.O. Box 4623
Bisbee, AZ 85603

2704

DATE 3/7/06

91-170/1221 AZ
8423

PAY TO THE ORDER OF A.D.W.R. $ 100-

One Hundred dollars even DOLLARS

Security features are included. Details on back.

Bank of America

ACH R/T 122101706

FOR Well drilling fee

[redacted]

MP

Printed on Recycled Paper. The Nature Conservancy ©Janet Hass

SIGNATURE

[redacted] Az 85603

160 ACRE	40 ACRE	10 ACRE
NE ¼	SW ¼	SE ¼

PARCEL	# OF ACRES
114T	34.25

ENT FROM LOCATION OF WELL)		
160 ACRE	40 ACRE	10 ACRE
¼	¼	¼

SECTION 3. OWNERSHIP INFORMATION

Well Owner

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL
James E. Burke + Marian Weaver

MAILING ADDRESS
Po Box 4623

CITY / STATE / ZIP CODE
Bisbee, AZ 85603

CONTACT PERSON NAME AND TITLE
Jim Burke

TELEPHONE NUMBER
(520) 236-3319

FAX

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL

MAILING ADDRESS

CITY / STATE / ZIP CODE

CONTACT PERSON NAME AND TITLE

TELEPHONE NUMBER

FAX

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also submit a variance (A.A.C. R12-15-818)
2. Is there another well name or identification number associated with this well (e.g. Ltr 35 Well, Smith Well, etc.)?		X	
3. Is the proposed well a replacement well for the purpose of pumpable exempt water and the existing well will not be abandoned?		X	Unless the well is a replacement well for the sole purpose of pumpable exempt water and the existing well will not be abandoned, you must also file a Supplemental Form (A.R.S. § 45-454(D)(3))
4. Is the proposed well site in an Active Management Area (see page 2 for boundaries)?		X	If the proposed well is in an Active Management Area, you must also file a Supplemental Form (A.R.S. § 45-604(A))

WP 6-40 (Revised 10/05) (Page 1 of 3)

ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

3550 N. Central Avenue
Phoenix, Arizona 85012

REISSUE

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-215509

AUTHORIZED DRILLER: ABC PUMP AND WELL DRILLING LICENSE NO: 691

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: DON CAMPBELL 403 E SAGUARO LN BISBEE, AZ 85603

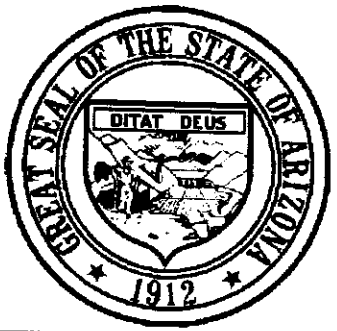
THE WELL(S) IS/ARE TO BE LOCATED IN THE:
NW ¼ OF THE SE ¼ OF THE SW ¼ SECTION 11 TOWNSHIP 24 SOUTH RANGE 24 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 101-43-005

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 16TH DAY OF APRIL, 2008

WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING



Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Request to Change Well Information

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

FILE NUMBER: D(24-24)11 COB
WELL REGISTRATION NUMBER: 55- 215509

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: DON CAMPBELL
MAILING ADDRESS: 403 E. SAGUARO LN.
CITY / STATE / ZIP CODE: BISBEE, AZ. 85603
CONTACT PERSON NAME AND TITLE: OWNER SAME AS ABOVE
TELEPHONE NUMBER: 520 432 3672
FAX:

Location of Well

WELL LOCATION ADDRESS (IF ANY): 403 E. SAGUARO LN. BISBEE AZ 85603

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	11	SW ¼	SE ¼	NW ¼

LATITUDE			LONGITUDE		
° Degrees	' Minutes	"N Seconds	° Degrees	' Minutes	"W Seconds

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
101	43	005

COUNTY WHERE WELL IS LOCATED: Cochise

Type of Request (CHECK ONE)

☒ Change of Well Drilling Contractor *(Fill out Section 2)*
☐ Change of Well Ownership *(Fill out Section 3)*
☐ Change of Well Information (location, use, etc.) *(Fill out Section 4)*

SECTION 2. REQUEST TO CHANGE WELL DRILLING CONTRACTOR ($10 Fee Required)

- If drilling or abandoning a well, the Department must receive this request and issue authorization to the new drilling firm prior to the commencement of well drilling or abandonment.

$10 FEE

Current Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: A-DRILLING CO.
DWR LICENSE NUMBER: 726
TELEPHONE NUMBER: DISCONNECTED
FAX: N/A

New Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: ABC PUMP & WELL DRILLING
DWR LICENSE NUMBER: # 691
ROC LICENSE CATEGORY: 176890 K-53
TELEPHONE NUMBER: 520 586 2113
FAX:

SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP ($10 Fee Required)

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

$10 FEE

Previous Well Owner		New Well Owner	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	
MAILING ADDRESS		MAILING ADDRESS	
CITY / STATE / ZIP CODE		CITY / STATE / ZIP CODE	
CONTACT PERSON NAME AND TITLE		CONTACT PERSON NAME AND TITLE	
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

RECEIVED
MAY 29 2007
WATER MGMT

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required)

NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE	SIGNATURE OF WELL OWNER	DATE
DON CAMPBELL	Don Campbell	5.28.07

CHECK DEPOSIT REQUEST

ARIZONA DEPARTMENT OF WATER RESOURCES

NOTICE OF INTENT

Well No(s). (IF KNOWN):
55-215509

Date Submitted:	5/29/2007	**Check No.:**	157
Submitted by:	DYLAN'S DRILLING	**Check Amount:**	$ 10.00
Applicant:	DON CAMPBELL	**Name on Check:** (IF DIFFERENT THAN APPLICANT)	DYLAN'S DRILLING
Received By:	Monica Phillips	**Prior Amount Paid:**	$ NA (FEES ALREADY RECEIVED FOR THIS NOI)

Code	Type of Application	Quantity	Fee (PER WELL UNLESS OTHERWISE NOTED)	Current Payment	Fees Owed
4439-06	**Exempt** Wells **Outside AMAs** to be used for **Domestic** Purposes Only.		$100.00	$	$
	Exempt Wells Inside AMAs and **ALL Exempt** Wells **Not** to be Used for **Domestic** Purposes.		$150.00	$	$
	Non-exempt Wells **Outside AMAs**.		$150.00	$	$
	Mineral Exploration or **Geotechnical**.		$150.00/per land section	$	$
	Cathodic Protection, Heat Pump, Grounding, Monitor, Piezometer, Air Sparging Soil Vapor Extraction, Non-recharge **Vadose Zone** or **Injection** Wells.		$150.00	$	$
4439-11	**Late Registration** of an **Exempt** Well (not used for Irrigation inside an AMA).		$10.00	$	$
	Late Registration of a **Non-exempt** well **outside an AMA**.		$20.00	$	$
4439-08	Request to **Change** Well Information (Change of Well **Driller**).	1	$10.00	$ 10.00	$ NA
4439-12	Request to **Change** Well Information (Change of **Ownership**).		$10.00*	$	$
	*CHANGING TO MORE THAN 1 WELL WHERE NAMES TO BE CHANGED ARE ALL THE SAME, ONE $10.00 FEE TOTAL FOR THOSE WELLS, OTHERWISE, CHANGE OF OWNERSHIP IS $10.00/WELL.				
	Well Driller Licensing NOTE: (IF KNOWN) PLEASE NOTE DRILLER'S ADWR LICENSE NUMBER IN THE WELL NUMBER BOX ON TOP RIGHT, AND NAME ANF FIRM IN COMMENTS.				
4420-01	**Full-Time** Well Driller's License.		$50.00	$	$
4420-02	Well Driller's License **Renewal**.		$10.00	$	$
4420-03	Well Driller's License **Reactivation** (MUST BE WITHIN 1 YEAR OF LICENSE EXPIRATION DATE).		$20.00	$	$

Comments:

Total Paid*:	$ 10.00	**Debt Owed:**	$0

*IF FEES HAVE BEEN PAID PREVIUOSLY FOR THIS NOI, INCLUDE THAT AMOUNT.

ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

3550 N. Central Avenue
Phoenix, Arizona 85012

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-215509

AUTHORIZED DRILLER: 'A' DRILLING CO LICENSE NO: 726

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: DON CAMPBELL 403 E SAGUARO LN BISBEE, AZ 85603

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WATER MANAGEMENT SUPPORT

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WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue, Phoenix, Arizona 85012
Telephone (602) 771-8500
Fax (602) 771-8691

April 20, 2007

Janet Napolitano
Governor

Herbert R. Guenther
Director

DON CAMPBELL
403 E SAGUARO LN
BISBEE, AZ 85603

Registration No. 55-215509
File No. D(24-24) 11 CDB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well that you recently filed with this Department pursuant to A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed or otherwise provided a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card, which must be displayed on the drill rig during drilling.

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Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at <http://www.water.az.gov/adwr/content/forms/default.htm#NOI>.

Sincerely,

Monica Phillips

Monica Phillips
NOI Unit
Water Management Support Section

Enclosures

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 771-8500 • (800) 352-8488
(602) 771-8691 fax • www.azwater.gov

Notice of Intent to
Drill, Deepen, Replace or Modify a Well
(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA		B	35	BB
RECEIVED DATE	4/17/07	WS	13	
ISSUED DATE	4/20/07	WQARF	CERCLA	

FILE NUMBER: D(24-24)11CDB
WELL REGISTRATION NUMBER: 55-215509

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

- [X] County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
  - [X] Field Inspection Performed
  - [ ] Site Plan Review Only
- [ ] Insufficient Information to Make a Determination

Official County or Local Seal or Stamp

APPROVED COCHISE COUNTY
ENVIRONMENTAL HEALTH DIVISION
DATE April 12, 2007
BY Carlos Diaz R.S.

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ R.S.

TELEPHONE NUMBER: 520-432-9452

DATE: April 12, 2007

COUNTY OR LOCAL AUTHORITY SIGNATURE: COCHISE Carlos Diaz R.S.

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

- [X] Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)
- [ ] Non-Exempt (Pump has a maximum capacity of more than 35 gpm and the well is located outside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 35 Gallons Per Minute

Proposed Action

CHECK ONE

- [X] Drill New Well
- [ ] Deepen
- [ ] Replace
- [ ] Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55-643481

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY): 403 E. SAGUARO LN, BISBEE AZ 85603

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	11	SW ¼	SE ¼	NW ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
101	43	005	2.8

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: COCHISE

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: DON CAMPBELL

MAILING ADDRESS: 403 E. SAGUARO LN.

CITY / STATE / ZIP CODE: BISBEE AZ 85603

CONTACT PERSON NAME AND TITLE: OWNER

TELEPHONE NUMBER: 520-432-3672

FAX:

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: SAME

MAILING ADDRESS: RECEIVED

CITY / STATE / ZIP CODE: APR 17 2007

CONTACT PERSON NAME AND TITLE: WATER MGMT

TELEPHONE NUMBER:

FAX:

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well (e.g., Lot 35 Well, Smith Well, etc.)?		X	PLEASE STATE
3. Is the proposed well a NEW well to be located within an Active Management Area? *(See instructions)*		X	Unless the well is a replacement well and the total number of operable exempt wells on the land is not increasing, you must also file a supplemental form A.R.S. § 45-454(C) & (D).
4. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 215509

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: A-DRILLING

DWR LICENSE NUMBER	ROC LICENSE CATEGORY
DWR - 726	C53

TELEPHONE NUMBER	FAX
520-249-4116	

MAILING ADDRESS: 238 W. Purdy LN.

CITY / STATE / ZIP CODE: Bisbee AZ 85603

DATE CONSTRUCTION IS TO BEGIN:

SECTION 6. WATER / SITE INFORMATION

Principal Use of Water (CHECK ONE)	*Other Uses* of Water (CHECK ALL THAT APPLY)
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☒ Domestic	☐ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify)*:	☐ Other *(please specify)*:

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

Borehole			Casing													
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (T)				PERFORATION TYPE (T)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	20'	10"	0	20	7"	X*				X						Cement
0	350'	6"	20	350	6"		X							X		

RECEIVED
APR 17 2007
WATER MGMT

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: DON CAMPBELL OWNER

SIGNATURE OF WELL OWNER: D.D. Campbell — DATE: 4/11/07

SIGNATURE OF LANDOWNER, IF APPLICABLE (SEE INSTRUCTIONS): D.D. Campbell — DATE: 4/11/07

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 215509

CHECK ONE: ☒ FILING MANUALLY
☐ FILING ELECTRONICALLY* *DRILLER'S E-MAIL ADDRESS: _____

COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL CODE

If applicant is filing this NOI electronically via the ADWR website and County approval is required, please indicate approval by providing a County Approval Code.

COUNTY APPROVAL CODE

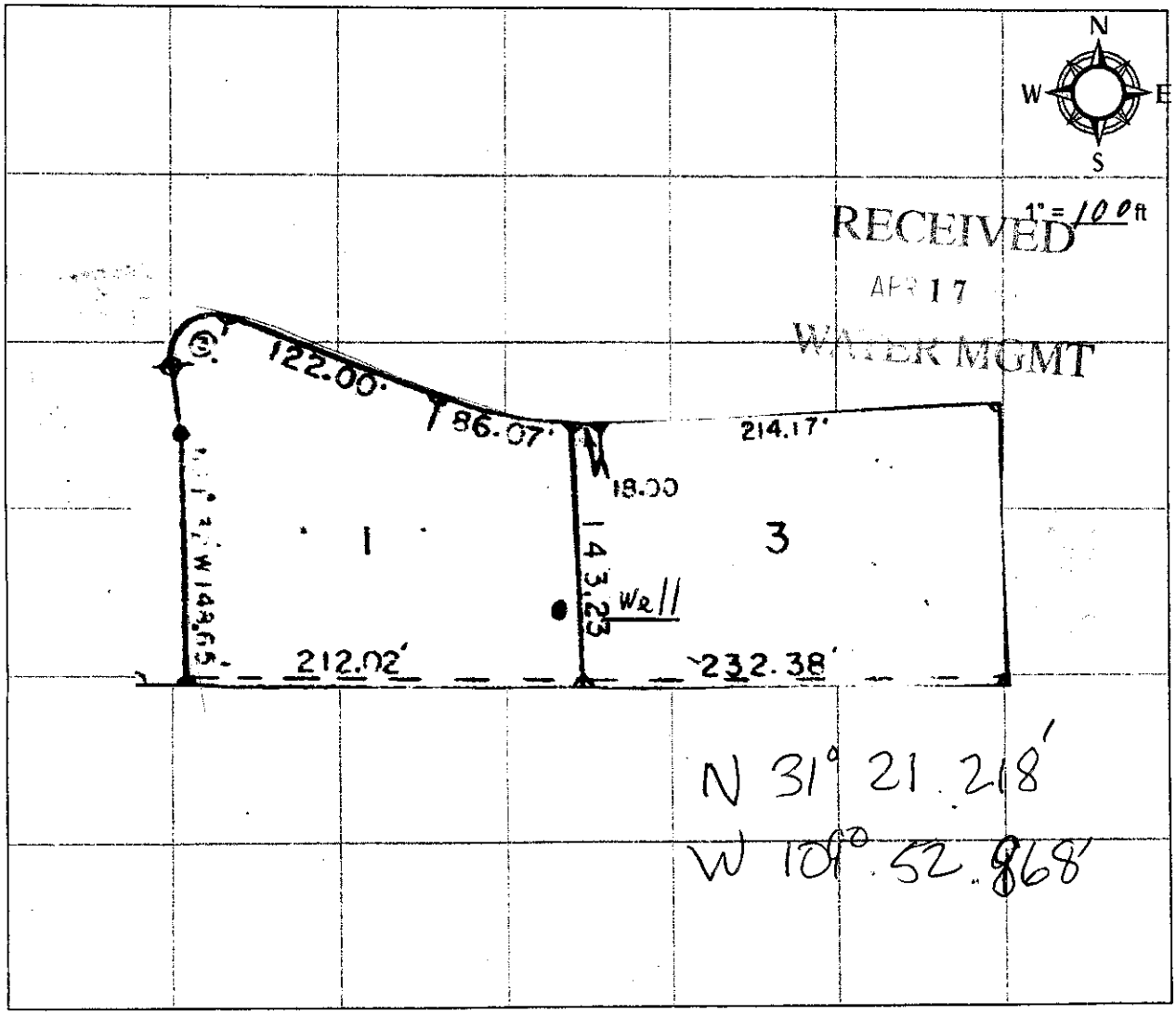
WELL SITE PLAN

NAME OF WELL OWNER
DAN CAMPBELL

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
101	43	005

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ R.S.	Official County or Local Seal or Stamp APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz R.S.	DATE: April 12 2007
TELEPHONE NUMBER: 520-432-9442 DATE:	BY: Carlos Diaz R.S.

Printed: 04/17/2007 9:34:48 AM

215509

Store 0010
Sale Receipt #
04/17/2007
Page 1

Arizona Department of Water Resources

3550 N Central Ave
Phoenix AZ 85012

Date: 04/17/2007
Cashier: WRRAT
Type: Mail

DON CAMPBELL
225 E. THORPE
LAS CRUCES,NM 88005

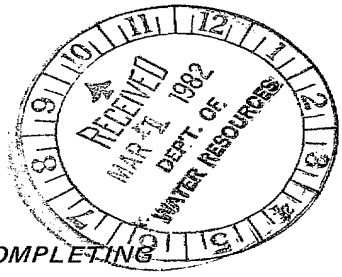
DCS/INV#	DESCRIPTION		ATTR	SIZE	QTY	PRICE	EXT PRICE
F 72	4439-06	NOTICE OF INTENT TO DRILL WELL			1	100.00	100.00
				1 Unit(s)		Subtotal:	100.00
						RECEIPT TOTAL:	**100.00**
						Tendered:	100.00

Check #: 100.00 # 2921

DON CAMPBELL
WELL OWNER

We Appreciate Your Business!

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY	
REGISTRATION NO. 55-	629867
FILE NO.	D(24-24)18cdc
FILED (DATE)	MAR 01 1982
AT (TIME)	9:30 am
INA	
AMA	

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

1. Name of Registrant:
FRANCIS G. SLOAN and NANCY M. SLOAN, his wife,
P.O. Box 215, 221 D Street, Naco, Arizona 85620
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
D24024018CDCGS2 (File Number) 35- 43827 (Control Number)

3. a. The well is located within the SW ¼ SE ¼ SW ¼, Section 18, of Township 24.0 /S, Range 24.0 E/, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic - irrigation of small orchard and garden.

5. If for irrigation use, number of acres irrigated from well 4 lots.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 245 feet
b. Diameter of casing 06 inches
c. Depth of casing 245 feet
d. Type of casing Perforated or slotted steel casing.
e. Maximum pump capacity 26-28 gallons per minute.
f. Depth to water 137 feet below land surface.
g. Date well completed _____ (Month) _____ (Day) 1977 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 2/6/82 SIGNATURE OF REGISTRANT Francis G Sloan
Nancy M Sloan

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

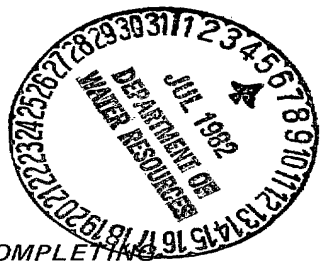
6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

11

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 648359-L
FILE NO. D(24-24)18Cbb
FILED 7-6-82 (DATE) AT 3P (TIME)
INA —
AMA /

1. Name of Registrant:
Charles H. Chase and Muriel W. Chase
6445 N. Placita Pequena (Address) Tucson (City) AZ (State) 85718 (Zip)

2. File and/or Control Number under previous groundwater law: Previous owner does not possess this information.
(File Number) 35- (Control Number)

3. a. The well is located within the NW ¼ NW ¼ SW ¼, Section 18, of Township 24 N(S), Range 24 E(W), G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Naco Townsite, Lot No. Lots 2,3,4,5 and 6 (Naco lots are 25' in width), Address Block 68 102-57.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
The only use of this well would be for a garden, if and when we ever build anything on this property.

5. If for irrigation use, number of acres irrigated from well 1/4 acre or less.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 100 feet, more or less. feet
b. Diameter of casing 4 inches
c. Depth of casing 90 to 100 feet feet
d. Type of casing N/A .
e. Maximum pump capacity 15 gallons per minute.
f. Depth to water N/A feet below land surface.
g. Date well completed 1970, approx. (Month) (Day) (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 7/5/82 SIGNATURE OF REGISTRANT Charles H. Chase
Muriel W. Chase

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Arizona Department of Water Resources
Information Management Unit
P.O. Box 458, Phoenix, AZ 85001-0458
(602) 771-8627 • (800) 352-8488
www.azwater.gov

Pump Installation Completion Report

- Review instructions prior to completing form in black or blue ink.
- The registered well owner should file this report with the Department within 30 days following installation of pump equipment.

RECEIVED APR - 6 2006 Information Management

FILE NUMBER

WELL REGISTRATION NUMBER 55 - 903992

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: City of Bisbee

MAILING ADDRESS: 118 Arizona Street

CITY / STATE / ZIP CODE: Bisbee, AZ 85603

CONTACT PERSON NAME AND TITLE: Ross McConnell, Public Works Director

TELEPHONE NUMBER: 520 · 432 6262 FAX: 520 4326069

Location of Well

WELL LOCATION ADDRESS (IF ANY): 940 W. Purdy Lane Bisbee

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	9	NW ¼	SW ¼	NE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
102	36	015F

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 2. EQUIPMENT INSTALLED

DATE PUMP INSTALLED: 3-14-06

Pump Type

CHECK ONE

- ☐ Air Lift
- ☐ Bucket
- ☐ Centrifugal
- ☐ Jet
- ☐ Piston
- ☐ Rotary
- ☑ Submersible
- ☐ Turbine
- ☐ Other (*please specify*):

RATED PUMP CAPACITY: 11.5 Gallons Per Minute

Pitless Adaptor

CHECK ONE *(SEE INSTRUCTIONS FOR DEFINITION)*

Was a pitless adaptor installed? ☑ Yes ☐ No

IF YES, DEPTH BELOW GROUND LEVEL THE DEVICE WAS INSTALLED: Feet

Power Type

CHECK ONE

- ☐ Diesel Engine
- ☑ Electric Motor
- ☐ Gasoline Engine
- ☐ Hand
- ☐ Natural Gas
- ☐ Windmill
- ☐ Other (*please specify*):

HORSE POWER RATING OF MOTOR: 1

SECTION 3. PUMP TEST

Pump Test Data

DATE WELL TESTED

STATIC WATER LEVEL (A): Feet Below Land Surface

PUMPING WATER LEVEL (B): Feet Below Land Surface

DRAWDOWN [(B) – (A)]: Feet Below Land Surface

TEST PUMPING RATE: Gallons Per Minute

DURATION OF PUMP TEST (Minimum 4 Hours): Hours

TOTAL PUMPING LIFT: Feet

FOR FLOWING WELL, MEASURED SHUT IN HEAD ☐ FT ☐ PSI

Method of Discharge Measurement

CHECK ONE

- ☐ Bailer
- ☐ Bucket – Barrel – Stopwatch
- ☐ Current
- ☐ Estimated – Air Lift
- ☐ Gauge
- ☐ Meter
- ☐ Orifice
- ☐ Volume
- ☐ Weir – Flume
- ☐ Other (*please specify*):

Method of Measuring Water Level

CHECK ONE

- ☐ Air Line
- ☐ Electric Measuring Line (Sounder)
- ☐ Steel Tape
- ☐ Other (*please specify*):

COMPLETED APR 2 2006

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief according to A.R.S. § 45-600(B).

SIGNATURE OF WELL OWNER: [signature]

DATE: 3.20.06

Arizona Department of Water Resources
Records Management Section
3550 N. Central Avenue • Phoenix, Arizona 85012
(800) 352-8488 • (602) 771-8627
www.water.az.gov

Well Driller Report and Well Log

- Review instructions prior to completing form in black or blue ink.
- The registered well owner shoud file this report with the Department within 30 days following installation of pump equipment.

** PLEASE PRINT CLEARLY **

APR - 6
Information Management

FILE NUMBER
D(24-24)9 BCA
WELL REGISTRATION NUMBER
55 - 903992
PERMIT NUMBER (IF ISSUED)

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
City of Bisbee

MAILING ADDRESS
118 Arizona Street

CITY / STATE / ZIP
Bisbee, AZ, 85603

CONTACT PERSON NAME AND TITLE
Russ McConnell, Public Works Director

TELEPHONE NUMBER
520 432-6262

FAX
520-432-6069

Location of Well

WELL LOCATION ADDRESS (IF ANY)
940 W. Purdy Lane, Bisbee, AZ

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24 S	24 E	9	NW 1/4	SW 1/4	NE 1/4

LATITUDE			LONGITUDE		
31 °	21 '	31.9 "N	109 °	54 '	55.6 "N

LAND SURFACE ELEVATION AT WELL
4763 Feet Above Sea Level

METHOD OF LATITUDE/LONGITUDE (CHECK ONE) ☐ Hand-Held
☐ USGS Quad Map ☐ Conventional Survey ☑ GPS ☐ Survey-Grade

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
102	36	015F

COUNTY WHERE WELL IS LOCATED
Cochise

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME
YELLOW JACKET DRILLING

DWR LICENSE NUMBER
78

TELEPHONE NUMBER
602-453-3252

FAX
602 453 3258

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED
1-24-06

DATE WELL CONSTRUCTION COMPLETED
3-2-06

IF FLOWING WELL, METHOD OF FLOW REGULATION
☐ Valve ☐ Other

Drilling Firm

CHECK ONE
- ☐ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☑ Other (please specify) ARCH

Method of Well Development

CHECK ONE
- ☐ Airlift
- ☑ Bail
- ☑ Surge Block
- ☐ Surg Pump
- ☑ Other (please specify) Pump

Water Level Information

STATIC WATER LEVEL
240 Feet Below Land Surface

DATE MEASURED
3-1-06

Method of Sealing at Reduction Points

CHECK ONE
- ☐ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☑ Other (please specify)
  No reduction points

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 903992

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILD) (attach additional page if needed)

Borehole			Installed Casing														
DEPTH FROM			DEPTH FROM			MATERIAL TYPE (T)				PERFORATION TYPE (T)						
(feet)	(feet)	BOREHOLE DIAMETER (inches)	(feet)	(feet)	OUTER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE (inches)
0	20	11 3/4	0	20		✓				✓						
20	430	9 5/8	0	350			✓			✓						
			350	410			✓							✓		0.032
			410	420			✓			✓						

Installed Annular Material

DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (T)								FILTER PACK		
						BENTONITE						
(feet)	(feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	GROUT	CHIPS	PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	20				✓							
20	100					✓						
100	330									✓		8-12
330	340							✓				
340	430									✓		8-12

DEPTH OF BORIG		DEPTH OF COMPLETED WELL	
430	Feet Below Land Surface Level	420	Feet Below Land Surface Level

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 903992

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE (feet)	(feet)	Description Describe material, grain size, color, etc.	Check (T) every interval where water was encounter (if known)
0	20	Silty clay & caliche	
20	60	Clay & gravel	
60	65	gravel	
65	80	Clay w/ some gravel	
80	90	Clay	
90	95	gravel	
95	100	hard clay some gravel	
100	145	gravel	
145	150	clay	
150	170	Clay & gravel	
170	175	Clay	
175	180	gravel	
180	195	Clay & gravel	
195	200	gravel	
200	215	Clay & gravel	
215	240	Clay & gravel	
240	250	gravel	
250	255	Clay & gravel	
255	430	gravel	
		TD 430	
		▽ 240	

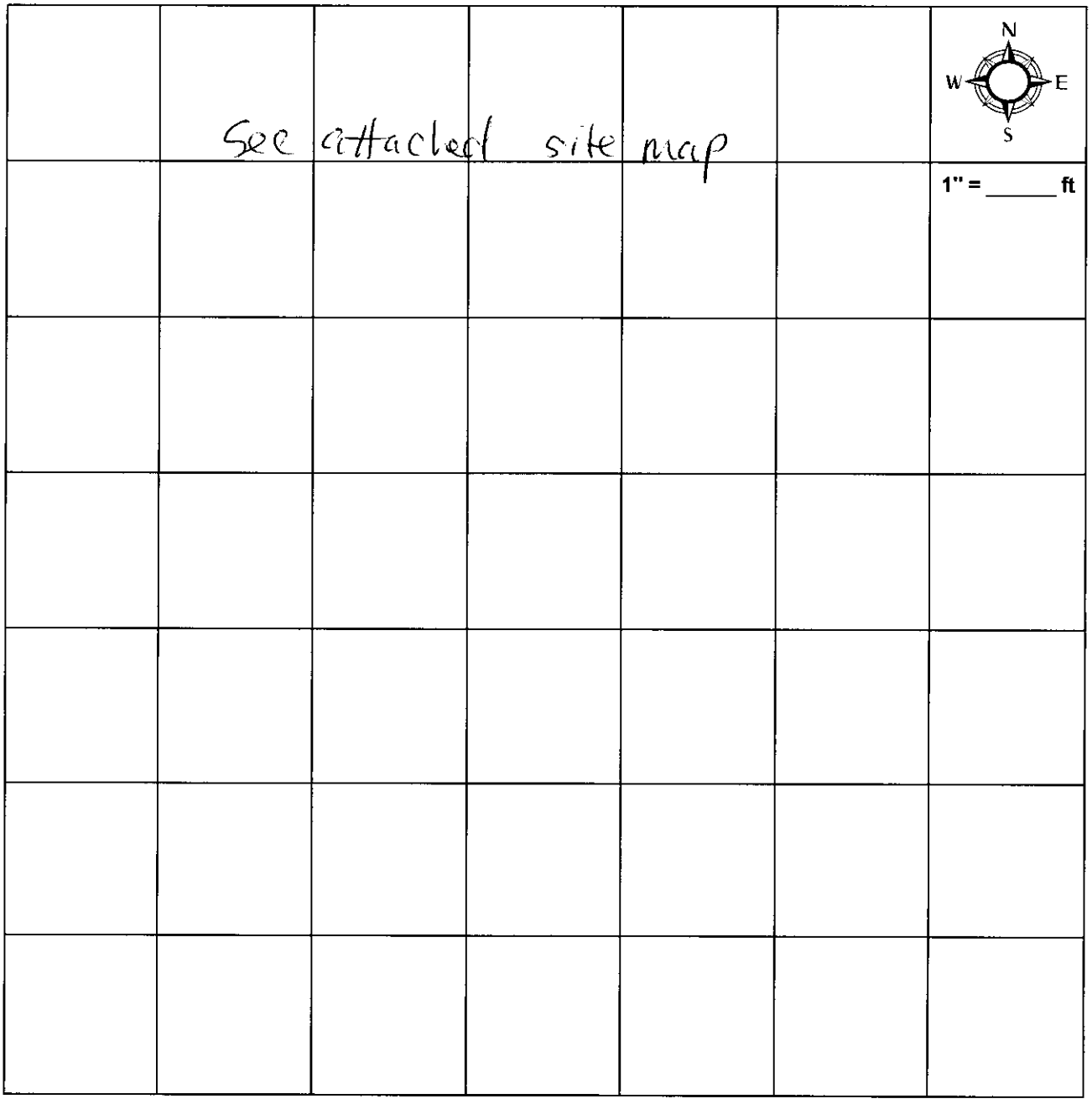
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 903992

SECTION 6. WELL SITE PLAN

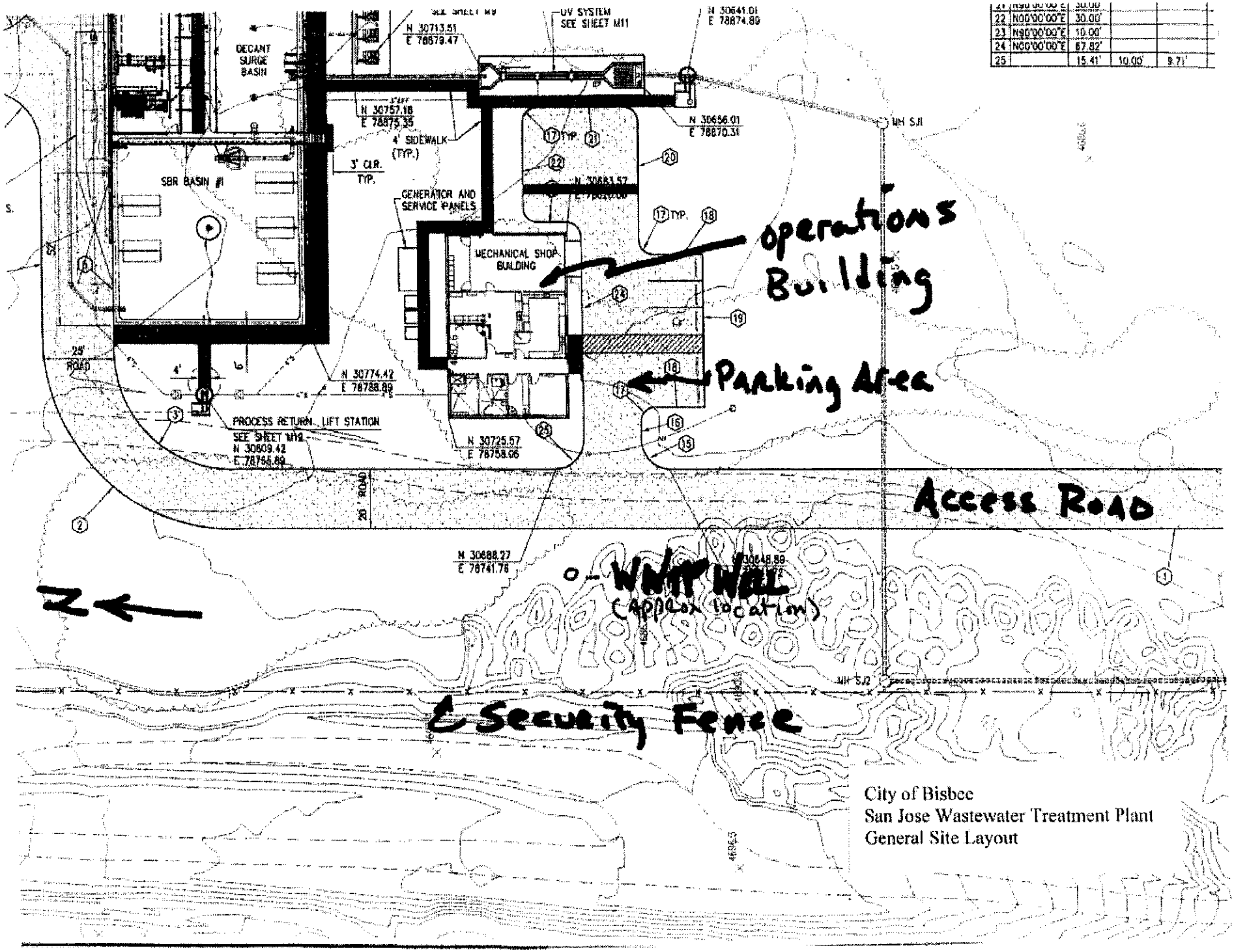
NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)		
	BOOK	MAP	PARCEL
City of Bisbee	102	36	015F

- Please draw the following: (1) the boundaries of property on wich the well was located; (2) the well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and beleif.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY
YELLOW JACKET DRILLING	


DECANT SURGE BASIN
SBR BASIN #1
GENERATOR AND SERVICE PANELS
MECHANICAL SHOP BUILDING
4' SIDEWALK (TYP.)
3' CLR. TYP.
PROCESS RETURN LIFT STATION
SEE SHEET M9
N 30609.42
E 78766.89
N 30757.18
E 78875.35
N 30713.51
E 78879.47
N 30774.42
E 78788.89
N 30725.57
E 78758.06
N 30688.27
E 78741.78
N 30656.01
E 78870.31
N 30641.01
E 78874.89
UV SYSTEM SEE SHEET M11
MH S.11
MH S.12
operations Building
Parking Area
Access Road
WWTP Wall (approx location)
Security Fence
N
City of Bisbee
San Jose Wastewater Treatment Plant
General Site Layout

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue
Phoenix, Arizona 85012

DRILLING CARD

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILLING OPERATIONS

WELL REGISTRATION NO: **55-903992**

AUTHORIZED DRILLER: **YELLOW JACKET DRILLING** LICENSE NO: **78**

NOTICE OF INTENT TO **DRILL AN EXEMPT WELL** HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: **City of Bisbee**

ADDRESS: **118 Arizona Street, Bisbee, AZ, 85603**

THE WELL(S) IS/ARE TO BE LOCATED IN THE:

NE 1/4 of the **SW** 1/4 of the **NW** 1/4 Section **09** Township **24 S** Range **24 E**

NO. OF WELLS IN THIS PROJECT: **1** ASSESSOR'S PARCEL NO: **102-36-015F**

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE DAY OF **1/11/2007**

THE DRILLER MUST FILE A WELL DRILLER REPORT AND WELL LOG WITHIN 30 DAYS OF COMPLETION OF DRILLING

This drilling or abandonment authority was granted based upon the certifications made by the above-named Driller in the notice of intent to drill or abandon. Those certifications, along with any variances granted, are listed below. By drilling or abandoning the well pursuant to this authorization, the above-named driller acknowledges the accuracy of the driller certifications. If the certifications are in error, this authorization is invalid and driller must contact the Department of Water Resource's NOI Section in writing at the address above to correct.

Variance(s) Granted To Driller: **None**

Certification(s) Made By Driller:

- ☑ By checking this box, I certify that I have all necessary Registrar of Contractor (ROC) licenses in all necessary license categories for this drilling or abandonment project and that those licenses are current.
- ☑ By checking this box, I certify that the proposed well site is not within 100 feet of any septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks.
- ☑ By checking this box, I certify that this NOI application is not an application to replace, deepen, or modify an existing well.
- ☑ By checking this box, I certify that I have been authorized by the above-named well owner to submit this Notice of Intent on the well owner's behalf.
- ☑ By checking this box, I certify that the information above is complete and correct, and that the well shall be drilled or abandoned in compliance with all pertinent statutes and rules, including any special standards that may be required to protect the aquifer or other water sources.

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue • Phoenix, Arizona 85012
Telephone (602) 771-8500 • Fax (602) 771-8486

Thursday, January 12, 2006

City of Bisbee
118 Arizona Street
Bisbee, AZ, 85603

Janet Napolitano
Governor

Herbert R. Guenther
Director

Registration No. 55-903992
File No. D(24-24)9 BCA
Dear Applicant:

Enclosed is a copy of the Notice of Intent to Drill a Well ("NOI") which you recently filed with this Department pursuant to A.R.S. §45-596. This is to inform you that the Department has approved the NOI and has mailed (or otherwise provided) a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card which he must keep in his possession at well site during drilling.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the well, you may not proceed with drilling until you file a new NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the new NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DWR form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed is a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55) within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at
http://www.azwater.gov/dwr/Content/Find_by_Category/Permits_Forms_Applications/default.htm.

ARIZONA DEPARTMENT OF WATER RESOURCES

Electronic Filing - NOI Report

3550 N. Central Avenue
Phoenix, Arizona 85012

NOI Type: Notice of Intent to Drill, Deepen, Replace or Modify a Well
Well Type: EXEMPT
Date Received at ADWR Website: 1/12/2006 7:47:24 AM

Fee Paid: $150.00 Order Number: VKVE0F37B182

Well Registration Number: 55 - 903992
Number of Wells/Holes: 1 Drilling Authority Expires On: 1/11/2007

Driller's ADWR License Number: 78

Authorized Driller: YELLOW JACKET DRILLING
ROC License Number Entered By Driller: 131584
Qualifying Party License Categories: A-4

Well Owner Name: City of Bisbee
Well Owner Address: 118 Arizona Street
Well Owner City, State - Zip: Bisbee, AZ - 85603
Well Owner Phone: 520 432-6262

Book: 102 Map: 36 Parcel: 015F

Is the Land Owner the same as the Well Owner?: Yes

Well Location: **NE** 1/4 of the **SW** 1/4 of the **NW** 1/4 Section **9** Township **24 S** Range **24 E**

AMA: NOT WITHIN ANY AMA OR INA
County: COCHISE
Contamination Site: NOT IN ANY WQARF SITE

Design Pumping Capacity: <= 35 GPM

Primary Water Use: INDUSTRIAL
Secondary Water Use(s): N/A

Is the proposed water use for domestic purposes on <= 5 acres?: N/A

Is any portion of the land, on which the well is to be located, within 100 feet of a designated municipal provider's operating water distribution system as shown on the municipal provider's most recent digitized service area map filed by the municipal provider with the director of ADWR. N/A

Proximity to a designated municipal provider's operating water distribution system exemption type:
N/A

Will the installed pump have a pumping capacity of greater than 35 GPM, or will the well will be used to withdraw greater than 10 Acre Feet per year?: N/A

Is this NOI an application to replace, deepen, or modify an existing well? No

Variance(s) Granted To Driller: **None**

Certification(s) Made By Driller:

- ☑ By checking this box, I certify that I have all necessary Registrar of Contractor (ROC) licenses in all necessary license categories for this drilling or abandonment project and that those licenses are current.
- ☑ By checking this box, I certify that the proposed well site is not within 100 feet of any septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks.
- ☑ By checking this box, I certify that this NOI application is not an application to replace, deepen, or modify an existing well.
- ☑ By checking this box, I certify that I have been authorized by the above-named well owner to submit this Notice of Intent on the well owner's behalf.
- ☑ By checking this box, I certify that the information above is complete and correct, and that the well shall be drilled or abandoned in compliance with all pertinent statutes and rules, including any special standards that may be required to protect the aquifer or other water sources.

From: "ADWR" <wrnoi@azwater.gov>
To: <richard@yjdrilling.com>
Date: Thu, Jan 12, 2006 7:53 AM
Subject: ADWR Well NOI Confirmation re: Well Registration Number 903992

****
* Confirmation for Order: VKVE0F37B182
****

Thank you for your order, Richard LeBlanc.

Should you have any questions concerning your
order, please contact us by email at
wrnoi@azwater.gov or by phone at (602) 771-8500
and be sure to mention your order number:
VKVE0F37B182.

Thanks again for shopping with Arizona Department of Water Resources!

Best regards,
Arizona Department of Water Resources Management.
Phone: (602) 771-8500
Email: wrnoi@azwater.gov

Order ID: VKVE0F37B182
Date: 1/12/2006
Status: Approved

Arizona Department of Water Resources
3550 N. Central Avenue
Phoenix, AZ 85012 United States
Phone: (602) 771-8500 Fax: (602) 771-8486

Bill To: YELLOW JACKET DRILLING-Richard LeBlanc
P.O. BOX 801
GILBERT, AZ. 85299-0801
Email: richard@yjdrilling.com

000600 - All Except Domestic Outside AMA/INA
qty 1 - price ea. - amount $150.00

Subtotal:	$150.00
Tax Total	$0.00
Shipping	$0.00
Handling	$0.00

Total:	$150.00

Transaction Detai

This report provides information on a specific transaction.

VKVE0F37B182

Request Data

Transaction ID:	**VKVE0F37B182**	Merchant:	**adwr02**
User Name:	**adwr02**	Timestamp:	**2006-01-12 06:52:20**
Trans Type:	**Sale**	Duration:	**0**
Tender Type:	**Visa**	Client IP Address:	**216.168.254.142**
Account Number:	[redacted]	Client Version:	**300**
Expiration:	**0108**	Amount:	**$150.00**
Comment 1:	**903992**	Comment 2:	
Bill First Name:	**Richard**	Bill Last Name:	**LeBlanc**
Bill Addr. (AVS Street):	**P.O. BOX 801**	Bill City:	**GILBERT**
Bill State:	**AZ**	Bill Zip (AVS Zip):	**852990801**
Bill Country:	**US**	Bill Email:	**richard@yjdrilling.com**
Ship First Name:		Ship Last Name:	
Ship Address:		Ship City:	
Ship State:		Ship Zip Code:	
Ship Country:			
Recurring:			

Results

Result Code:	**0**	Response Message:	**Approved**
Auth. Code:	**065895**		
Orig Trans ID:		AVS Street Match:	**Y**
Orig Amount:	**$0.00**	AVS Zip Match:	**Y**
International AVS Indicator:	**N**	CSC Match:	**Y**
Batch ID:	**10**		

Level 2 Information

Purchase Order #:	**VKVE0F37B182**	Customer Code:	
Tax Amount:	**$0.00**	Shipping/Freight Amount:	**$0.00**
Duty Amount:	**$0.00**		

View Transaction Status

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001- 0458
FOR INFORMATION: CALL MONICA ORTIZ AT (602)417-2470

RECEIVED
JUL 10 2001
RECORDS MGT

REQUEST FORM TO CHANGE WELL INFORMATION OWNERSHIP * DRILLER

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-045. In accordance with A.R.S. § 45-113, please submit the applicable fee. NOTE: A.R.S. §45-593 (C) requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. **CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)**

NOTE: If the location of the proposed well changes after drilling authority has been issued, **attach a $10.00 reissue fee for each** of the drilling authorities to be changed.

WELL REGISTRATION NO. 55- 637069 **FILE NO:** _____

RECEIVED
JUL 26 2001
RECORDS MGT

I/We request the following well information be changed: _____

_____

Date _____ Signature of Current Well Owner _____

***Note: This information is on your copy of the Notice of Intent to Drill.**

2. **STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)**

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, LEONARD HUTSON, state that I am the **Previous/New Owner** of the well described below:

NE ¼ NW ¼ NW ¼ of Section 17 Township 24 N(S) Range 24 E(W)
10 Acre 40 Acre 160 Acre

Assessor's tax parcel number of the parcel on which the well is located: Book 102 Map 53 Parcel 009-7

Well Registration No. 55- 637069	File No. _____ (if known)
CAROLYN B. OLMSTEAD	LEONARD W. HUTSON
PRINT Previous Owner's Name	**PRINT** New Owner's Name
107 HAZZARD STREET	1497 W. PURDY LANE
Mailing Address	Mailing Address
BISBEE, AZ 85603	BISBEE, AZ 85603
City State Zip	City State Zip
Telephone Number	Telephone Number

Signature of Previous/New Well Owner _____ **Date** 07/03/01

DWR 55-71a (Rev 1/99)

ANSWERED AUG - 6 2001

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

JUN 1982 DEPARTMENT OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 637069
FILE NO. D(24-24)17bbb
FILED 6-7-82 (DATE) AT 11 (TIME)
INA
AMA

1. Name of Registrant:
BAKER L. OLMSTEAD SR.
BOX 600 R.T. I PURDY LANE (Address) BISBEE (City) ARIZONA (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the NE¼ NW¼ NW¼ NW¼, Section 17 24-24 GAC of Township 24-SOUTH N/S, Range 24-EAST E/W, G & SRB & M, in the County of COCHISE.
b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC.

5. If for irrigation use, number of acres irrigated from well 1.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 220 feet
b. Diameter of casing 6 in inches
c. Depth of casing 220 feet
d. Type of casing STEEL.
e. Maximum pump capacity 35 gpm gallons per minute.
f. Depth to water 166 ft feet below land surface.
g. Date well completed 7 (Month) - 29 (Day) - 66 (Year)

8. The place(s) of use of water. If same as Item 3, check this box ☒
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
Attach additional sheet if necessary.

9. DATE 6-3-82 SIGNATURE OF REGISTRANT Baker L. Olmstead Sr.

MICROFILMED

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
PO Box 458
Phoenix, Arizona 85001-0458
Telephone (602) 417-2405
Fax (602) 417-2421

RECEIVED
JUL 26 2001
RECORDS MGT

July 18, 2001

Your Change of Ownership request cannot be processed due to one or more of the following reasons:

O A $10.00 fee is required.

O Returned for same name change: only one $10.00 fee is required.

X **All originals are being returned.**

O We are currently showing this Well canceled due to no drill log.

O Please provide me with a name, mailing address and information on new owners.

O Previous Owners Name does not correspond with our records. Please provide me with other previous owners names.

X Further information is necessary please provide legal land description and registration number. If assistance is needed please contact records mgmt section. ***(Please provide me with a Township, Range, Section and quarter/quarter/quarter.)***

n²nwnw 17-24S-24E
037069

O ADWR does not regulate shared wells. A copy of the form will be filed in folder and a refund will be processed.

If we cannot complete the request, a refund check will be sent to you.

PLEASE RETURN ALL COPIES WITH REQUESTED INFORMATION

ANSWERED AUG - 6 2001

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001- 0458
FOR INFORMATION: CALL MONICA ORTIZ AT (602)417-2470

RECEIVED
JUL 10 2001
RECORDS MGT

REQUEST FORM TO CHANGE WELL INFORMATION
OWNERSHIP * DRILLER

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-045. In accordance with A.R.S. § 45-113, please submit the applicable fee. NOTE: A.R.S. §45-593 (C) requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty

FOR SECURITY PURPOSES, THE FACE OF THIS DOCUMENT CONTAINS A COLORED BACKGROUND AND MICROPRINTING IN THE BORDER

Pioneer Title Agency, Inc.
P.O. BOX 1900
Sierra Vista, AZ 85636

BANK OF AMERICA, ARIZONA
Commercial Banking Unit #9155
Phoenix, Arizona 85003
91-170/1221

NO. 007171

FILE NUMBER	DATE	AMOUNT
00908601 906 DB	07/09/01	$10.00

PAY TEN DOLLARS and no/100

TO THE ORDER OF ARIZONA DEPARTMENT OF WATER RESOURCES
P.O. BOX 458
PHOENIX, AZ 85001-0458

ESCROW ACCOUNT

THE REVERSE SIDE OF THIS DOCUMENT INCLUDES AN ARTIFICIAL WATERMARK - HOLD AT ANGLE TO VIEW

2. STATEMENT OF CHANGE OF WELL OWNERSHIP

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, LEONARD HUTSON, state that I am the **Previous/New Owner** of the well described below:

____ ¼ ____ ¼ ____ ¼ of Section ____ Township ____ N/S Range ____ E/W
10 Acre 40 Acre 160 Acre

Assessor's tax parcel number of the parcel on which the well is located: Book 102 Map 53 Parcel 009-7

Well Registration No. 55-____ File No. ____ (if known)

RECEIVED
JUL 26 2001
RECORDS MGT

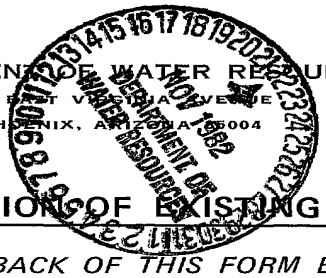
CAROLYN B. OLMSTEAD	LEONARD W. HUTSON
PRINT Previous Owner's Name	**PRINT** New Owner's Name
107 HAZZARD STREET	1497 W. PURDY LANE
Mailing Address	Mailing Address
BISBEE, AZ 85603	BISBEE, AZ 85603
City State Zip	City State Zip
Telephone Number	Telephone Number

Signature of Previous/New Well Owner [signature] **Date** 07/23/01

DWR 55-71a (Rev 1/99)

ANSWERED AUG - 6 2001

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004





REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 623564
FILE NO. D(24-24)5 aaa
FILED 3-22-82 (DATE) AT 1115A (TIME)
INA -
AMA -

1. Name of Registrant:
William G. Gianetto - Jean Gianetto
P.O. Box 4517 (Address) Bisbee (City) Arizona (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
240240005AAAGS1 (File Number) 35- 82973 (Control Number)

3. a. The well is located within the NE ¼ NE ¼ NE ¼, Section 05, of Township 24 S N/S, Range 24 E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Sunset Acres, Lot No. 14, Address Cochise County, Az.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation - domestic.

5. If for irrigation use, number of acres irrigated from well 4 acres.

6. Owner of land on which well is located. If same as Item 1, check this box ☒

(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 325 feet
b. Diameter of casing 6 inches
c. Depth of casing 325 feet
d. Type of casing P.V.C. Plastic.
e. Maximum pump capacity 30 gallons per minute.
f. Depth to water 254 feet below land surface.
g. Date well completed 12 (Month) 20 (Day) 1979 (Year)

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 3/18/82 SIGNATURE OF REGISTRANT William G. Gianetto

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

ARIZONA DEPARTMENT OF WATER RESOURCES

mailed 6/10/98

GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470 Fax (602) 417-2422

RECEIVED
JUN 16 1998
RECORDS MGT

REQUEST FORM TO CHANGE WELL INFORMATION
OWNERSHIP * DRILLER * VARIANCE

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, ARizona 85001-0458 or hand deliver to the above address with applicable fee. NOTE: A.R.S. §45-593.C requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. **CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)**

NOTE: If the location of the proposed well changes after drilling authority has been issued, **attach a $10.00 reissue fee for each well.**

WELL REGISTRATION NO. 55-_____ **FILE NO:**_____

If known, I/We request the following well information be changed:_____

_____

_____

Date_____ **Signature of Current Well Owner**_____

2. **STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)**

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, SANDRA JEAN, state that I am the **Previous/New Owner** of the well described below:

_____¼ _____¼ _____¼ of Section 5 Township 24 S. Range 24 E.
10 Acre 40 Acre 160 Acre

Well Registration No. 55- 623564 File No. _____ (if known)

ANSWERED

W. G. GRANETTO	DON OR THERESA LAEDING
PRINT Previous Owner's Name	**PRINT** New Owner's Name
(CORRECT SPELLING) GIANETTO	P.O. BOX 4006
Mailing Address	Mailing Address
P.O. BOX 4083	BISBEE AZ 85603
City BISBEE AZ State 85603 Zip	City State Zip
(520)432-3952	(520)432-5432
Telephone Number	Telephone Number

Signature of Previous/New Well Owner Sandra Jean **Date** 6-10-98
daughter of W.G. Gianetto (deceased)

DWR 55-71 (Rev 4/96)

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470 Fax (602) 417-2422

3. REQUEST TO CHANGE WELL DRILLER $10.00 FEE REQUIRED FOR EACH WELL

This request must be received by this Department and the Drill Card issued to the new drilling firm prior to the drilling or completion of any well.

Well Registration No. 55-_____ File No._____

Original Well Driller	**New Well Driller**
Mailing Address	**Mailing Address**
Telephone Number	**Telephone Number**
ADWR License Number	**ADWR License Number**
R.O.C. License Category	**R.O.C. License Category**
Typed or Printed Name of Well Owner	**Signature of Well Owner** **Date**

The fee charge for well ownership and reissue of drill card is authorized by R12-15-151, effective June 30, 1994.

4. REISSUE OF DRILLING AUTHORITY FOR VARIANCE REQUEST: ($10.00 EACH WELL)

NOTE: If extraordinary or unusual conditions exist, after the initial drilling authority has been issued, the well owner or well driller may request a variance from the provisions of R12-15-811.

WELL REGISTRATION NO. 55-_____ FILE NO:_____

I/WE REQUEST THE FOLLOWING WELL DRILLING AUTHORITY BE REISSUED PER THE ATTACHED VARIANCE REQUEST:

_____

Signature of Well Owner/Well Driller_____ Date_____

WILLIAM G GIANETTO
P O BOX 4517
BISBEE AZ 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	623564
55	THRU

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	10.00	10.00
					Existing Wells		
					File No. D(24-24)5aaa		

WATER PAYMENT
GUESTS 1
CHK NO 948
55-1 10.00
TAX 0.00
TOTL 10.00
GEN.CHEK 10.00

4632 A 14:05

Check # 948

TOTAL $ 10.00

11/23/82/ek

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED
JUL 16 1982
DEPT OF
WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

12

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 651116L
FILE NO. D(24-24)18 cdd
FILED 7-16-82 (DATE) AT 11a (TIME)
INA —
AMA —

1. Name of Registrant:
Barbara Ann Cota
215 1st Street (Address) Naco (City) Az (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
Don't Know (File Number) 35- (Control Number)

3. a. The well is located within the ___ ¼ SE ¼ SW ¼, Section 18, of Township 24 N/S, Range 24 E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Naco, Lot No. 517 519 521 523 BLK 7, Address 215 1st St Naco Az. 85620.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic.

5. If for irrigation use, number of acres irrigated from well ___.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
___
___
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 160 feet
b. Diameter of casing 4" inches
c. Depth of casing 150 feet
d. Type of casing N/A .
e. Maximum pump capacity 30 gallons per minute.
f. Depth to water 140 feet below land surface.
g. Date well completed (Month) NA (Day) (Year). Well is at least 20 years old - Do not have this information

8. The place(s) of use of water. If same as Item 3, check this box ☒
___¼ ___¼ ___¼, Section ___ Township ___ Range ___
___¼ ___¼ ___¼, Section ___ Township ___ Range ___
Attach additional sheet if necessary.

9. DATE 7-14-82 SIGNATURE OF REGISTRANT Barbara Ann Cota

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

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5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

STATE OF ARIZONA MAY 1985 DEPARTMENT OF WATER RESOURCES

DEPARTMENT OF
WATER RESOURCES

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Jack Yates
Name
101 Ocotillo Bisbee AZ 85603
Address

2. Lessee or Operator ✓
Name
Address

3. Driller J. R. SHARP GENERAL CONTRACTORS BOX 4520 322 NACO HWY. BISBEE, ARIZ. 85603 432-4597
Name
Address

4. Location of well: SW SE NE S32 T23S R24E

5. Permit No. _____
(if issued)

DESCRIPTION OF WELL

6. Total depth of hole 788 ft.
7. Type of Casing P.E. steel
8. Diameter and length of casing 6 in. from 0 to 22, open ~~in~~ from 22 to 788.
9. Method of sealing at reduction points _____
10. Perforated from 0 to _____, from _____ to _____, from _____ to _____
11. Size of cuts None Number of cuts per foot _____
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction _____
(drilled), dug, driven, bored, jetted, etc.
14. Date started 4-11-85 (Month-day-year)
15. Date completed 4-19-85 (Month-day-year)
16. Depth to water dry ft. (If flowing well, so state.)
17. Describe point from which depth measurements were made, and give sea-level elevation if available: Top of casing
18. If flowing well, state method of flow regulation _____
19. REMARKS: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55-510298
Received _____ By _____
Entered 5-16-85 By _____
File No. D(23-24)32adc

(Well log to appear on Reverse side)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	22	Soil with caliche layers.
22	782	Red conglomerate grading from soft to very hard at depth.

I hereby certify that this well was drilled by me (or under my supervison), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller J. R. Sharp
Name

J. R. SHARP GENERAL CONTRACTORS
BOX 4520 322 NACO HWY.
BISBEE, ARIZ. 85603 432-4597

J. R. SHARP GENERAL CONTRACTORS
BOX 4520 322 NACO HWY.
BISBEE, ARIZ. 85603 432-4597

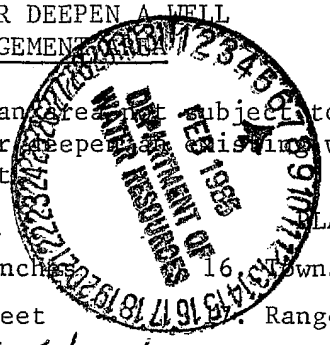
Address

City State Zip

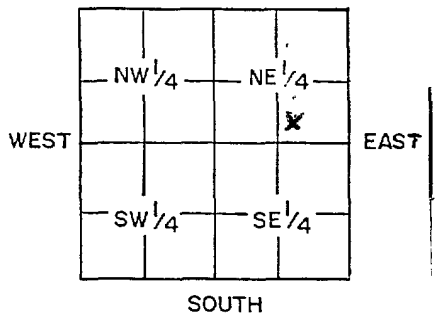
Date 4-24-85

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL OR DEEPEN A WELL
OUTSIDE OF AN ACTIVE MANAGEMENT AREA



Section 45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management, a person may not drill or cause to be drilled any well or deepen an existing well without first filing a Notice of Intention to Drill with the Department.



INDICATE WELL LOCATION BY X
(Above diagram represents one 640 acre section)

WELL/LAND LOCATION:

1. Township 23S
2. Range 24E
3. Section 32
4. SW ¼, SE ¼, NE ¼
   10 acre subdivision
5. County Cochise
6. Owner of well:
   Jack Yates
   Name
   101 Ocotillo
   Address
   Bisbee, AZ 85603
   City State Zip
   Telephone 432-3648
7. Owner of land:
   Same.
   Name
   Address
   City State Zip

DESCRIPTION OF WELL:

8. Diameter 6 inches
   Depth 500 feet
9. Type of casing P.E. Steel
10. Design pump capacity:
    35 gallons per minute
11. Estimate of total annual pumping: 1 acre feet
12. Principal use of water:
    Domestic
    (Be Specific)
13. Other uses intended:
    Lawn & Garden
    (Be Specific)
14. If for irrigation, state the number of acres to be irrigated:
    _____ acres
15. Construction will start about:
    May 1985
    Month Year

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

FILE NO. D(23-24)32 ADC
FILED 2-7-85 BY SB
INPUT 2-19-85 BY SO
DUPLICATE MAILED 2-15-85 BY SB
REGISTRATION NO. 55-510298
INA —
W/S 11 S/B _____

PLACE OF USE:

16. Township 23S
    Range 24E
18. Section 32
19. Legal description of land SW SE NE
20. Type well:
    ✓ Exempt
    ___ Non-Exempt
21. Action Requested:
    Drill ___ Deepen ✓ Replace ___
    55- _____
22. This notice filed by:
    Owner ✓
    Lessee ___
    See #6
    Name
    Address
    City State Zip
    Telephone _____
23. Driller's Name:
    J.R. Sharp Gen. Contrs.
    Name
    P.O. Box 4520
    Address
    Bisbee, AZ 85603
    City State Zip
    155 27262
    DWR License Number

GENERAL INSTRUCTIONS

1. Fill out this form in duplicate and send to 99 East Virginia, Suite 100, Phoenix, Az. 85004.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen or replace a well outside of an Active Management Area
4. If the well is a replacement or deepening of an existing well, state the registration number of the existing well in Item 21.
5. Construction standards for new and replacement wells and the deepening and abandonment of existing wells shall be in accordance with Department Rules and Regulations.

I state that this Notice is filed in compliance with ARS §45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well set forth on the reverse side of this form.

DATE 2-5-85 Signature of Person Filing Jack Yates

DWR-55-41-10/83

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Upon receipt of the return of this annotated Notice, the owner is authorized to proceed in drilling or deepening the well as set forth on this Notice.

2. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

3. Only one exempt well may be drilled or used to serve the same use at the same location.

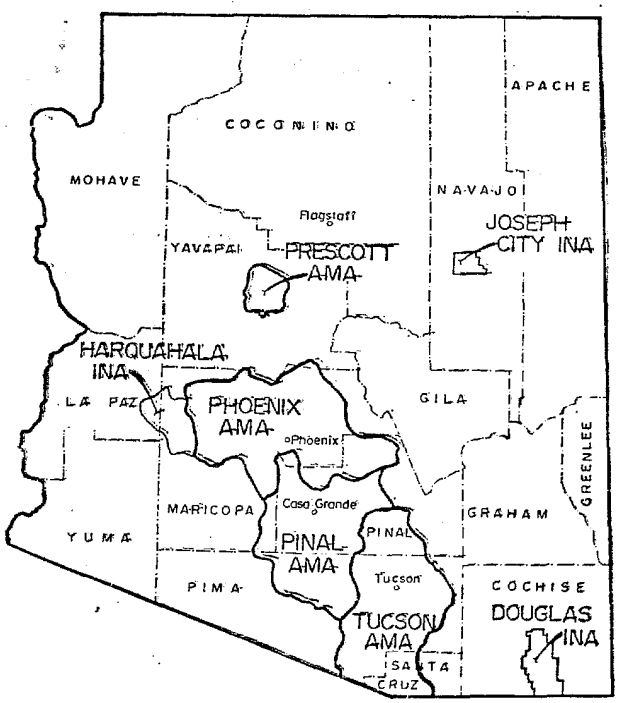
4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 2 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to ARS §45-434 or §45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of ARS §45-437.

5. The drilling or deepening of this well shall be completed within one (1) year of the date of this Notice.

6. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

7. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of the annotated copy of this Notice.

8. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.



STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

J R SHARP GENERAL CONTRACTORS
BOX 4520
BISBEE AZ 85603

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	510298
	THRU

YATES

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEE FOR NOTICE OF INTENTION TO		10.00
					DRILL A WELL	WAITER	PAYMENT
						GUESTS 1	
						CHK NO 10156	
					FILE#D(23-24)32adc REG#55-510298	55-I	10.00
						TAX	0.00
						TOTL	10.00
						GEN.CHEK	10.00
						# 6666 A	14:19

CHECK#10156
2-15-85 jb

TOTAL $ 10.00

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001- 0458
FOR INFORMATION: CALL MONICA ORTIZ AT 602-417-2470

RECEIVED
JUL 27 2004
Information Management

REQUEST FORM TO CHANGE WELL INFORMATION OWNERSHIP * DRILLER

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-045. In accordance with A.R.S. § 45-113, please submit the applicable fee. NOTE: A.R.S. §45-593 (C) requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

D(24-24)10DC

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)

NOTE: If the location of the proposed well changes after drilling authority has been issued, attach a $10.00 reissue fee for each of the drilling authorities to be changed.

WELL REGISTRATION NO. 55-_____ FILE NO:_____

I/We request the following well information be changed: _____ ANSWERED JUL 27 2004

_____

Date_____ Signature of Current Well Owner_____
*Note: This information is on your copy of the Notice of Intent to Drill.

2. STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, John S. Dodson, state that I am the Previous/(New Owner) of the well described below:

_____¼ _____¼ _____¼ of Section 10 Township 24 (N)S Range 24 (E)W
10 Acre 40 Acre 160 Acre

Assessor's tax parcel number of the parcel on which the well is located: Book_____ Map_____ Parcel_____.

Well Registration No. 55-644927 File No._____(if known)

JOSEPH & BEVERLY JACKSON
PRINT Previous Owner's Name

1254 W. SUNRISE STREET
Mailing Address

BISBEE AZ 85603
City State Zip

Telephone Number

JOHN & JENNIFER DODSON
PRINT New Owner's Name

253 PURDY LANE
Mailing Address

BISBEE AZ 85603
City State Zip

Telephone Number

Signature of Previous/New Well Owner _____ Date 7/21/04

DWR 55-71a (Rev 1/99)

Pioneer Title Agency, Inc.

ARIZONA DEPARTMENT OF WATER RESOURCES
P.O. BOX 458
PHOENIX, AZ 85001

Escrow No. 00910546-DB
Date: July 23, 2004
Re: JACKSON/DODSON
253 PURDY LANE
BISBEE, AZ 85603

In connection with the above escrow, we enclose the following papers indicated with a ☑

☑ Check For Transfer Fee
☑ Statement of Change of Well Ownership

Thank you for the opportunity to serve you in this transaction.

Very truly yours,
Pioneer Title Agency, Inc.

Candace Morales

Candace Morales
Escrow Secretary

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001- 0458
FOR INFORMATION: CALL MONICA ORTIZ AT 602-417-2470

RECEIVED
JUL 27 2004
Information Management

REQUEST FORM TO CHANGE WELL INFORMATION
OWNERSHIP * DRILLER

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D(24-24)10DC

Pioneer Title Agency, Inc.
P.O. BOX 1900
Sierra Vista, AZ 85636

NATIONAL BANK OF ARIZONA
1160 E. Fry Blvd.
Sierra Vista, Arizona 85635
91-532/1221

NO. 668120

FILE NUMBER	DATE	AMOUNT
00910546 - 006 DB	07/23/04	$10.00

PAY TEN DOLLARS and no/100

TO THE ORDER OF ARIZONA DEPARTMENT OF WATER RESOURCES
P.O. BOX 458
PHOENIX, AZ 85001

ESCROW ACCOUNT

[redacted]

[redacted]

Details on back. Security Features Included

2. STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, John S. Dodson, state that I am the Previous/(New Owner) of the well described below:

____ ¼ ____ ¼ ____ ¼ of Section 10 Township 24 N(S) Range 24 (E)W
10 Acre 40 Acre 160 Acre

Assessor's tax parcel number of the parcel on which the well is located: Book____ Map____ Parcel____.

Well Registration No. 55-644927 File No.____(if known)

JOSEPH & BEVERLY JACKSON
PRINT Previous Owner's Name

1254 W. SUNRISE STREET
Mailing Address

BISBEE AZ 85603
City State Zip

Telephone Number

JOHN & JENNIFER DODSON
PRINT New Owner's Name

253 DURDY LANE
Mailing Address

BISBEE AZ 85603
City State Zip

Telephone Number

Signature of Previous/New Well Owner John S Dodson Date 7/21/04

DWR 55-71a (Rev 1/99)

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED DEC 30 1982 DEPT. OF WATER RESOURCES

JUN 1982 DEPARTMENT OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 644927
FILE NO. DC 24.2410 dc
FILED 6-4-82 (DATE) AT 315P (TIME)
INA —
AMA —

1. Name of Registrant:
Dan A. Thomas & Ruth M. Thomas

Rt 1 310 Purdy Lane (Address) | Bisbee, Az. (City) | Az. (State) | 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
005975 6/10/80 (File Number) 35- N/A (Control Number)

3. a. The well is located within the ____ ¼ SW ¼ SE ¼, Section ~~Tax Assessor~~ 10 ~~E~~, of Township ~~N/A~~ 24 South N/S, Range 24 East ~~N/A~~ E/W, G & SRB & M, in the County of Cochise.

In SW SE of Sec 10 & in Nw NE of Sec 15 by M&B from notice of valuation Cochise County

b. If in a subdivision: Name of subdivision N/A, Lot No. ____, Address ____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
~~Domestic~~ & Yard Irrigation.

5. If for irrigation use, number of acres irrigated from well ¼ Ac.

6. Owner of land on which well is located. If same as Item 1, check this box ☒

(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well Two Hundred feet
b. Diameter of casing Six Inch inches
c. Depth of casing Two Hundred feet
d. Type of casing Steel .
e. Maximum pump capacity 15 (Fifteen) gallons per minute.
f. Depth to water 96 (ninety ~~Six~~ feet) feet below land surface.
g. Date well completed Oct (Month) N/a (Day) 1959 (Year) best of my knowledge.

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____

Attach additional sheet if necessary.

9. DATE June 2, 1982 SIGNATURE OF REGISTRANT ~~Dan~~ Ruth M. Thomas

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

SEP - 4 2003

FILE NUMBER: D(24-24) 12 BCB
WELL REGISTRATION NUMBER: 55- 592791
PERMIT NUMBER (IF ISSUED):

- Review instructions prior to completing form
- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: JAMES P DOUGLASS
MAILING ADDRESS: 1649 DRIFTWOOD CIR
CITY / STATE / ZIP: SIERRA VISTA, AZ 85635
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-940-0694
FAX:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24 S	29 E	12	1/4	1/4	1/4

LATITUDE: ° ' "N
LONGITUDE: ° ' "W
LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level
METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☐ Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ GPS : ☐ Survey-Grade
COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 104 | MAP 39 | PARCEL 004E
COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME: DRIVER DRILLING COMPANY
DWR LICENSE NUMBER: 177
TELEPHONE NUMBER: 520-459-3496
FAX:

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED: 9-20-02
DATE WELL CONSTRUCTION COMPLETED: 9-21-02
IF FLOWING WELL, METHOD OF FLOW REGULATION: ☐ Valve ☐ Other

Drill Method

CHECK ONE
- [X] Air Rotary
- [ ] Bored or Augered
- [ ] Cable Tool
- [ ] Dual Rotary
- [ ] Mud Rotary
- [ ] Reverse Circulation
- [ ] Driven
- [ ] Jetted
- [ ] Air Percussion / Odex Tubing
- [ ] Other (please specify)

Method of Well Development

CHECK ONE
- [X] Airlift
- [ ] Bail
- [ ] Surge Back
- [ ] Surge Pump
- [ ] Other (please specify)

Method of Sealing at Reduction Points

CHECK ONE
- [X] None
- [ ] Packed
- [ ] Swedged
- [ ] Welded
- [ ] Other (please specify)

Water Level Information

STATIC WATER LEVEL: 110 Feet Below Land Surface
DATE MEASURED: 9-21-02

ANSWERED SEP 8 2003

DWR-55-55-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 592791

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Borehole			Installed Casing															
DEPTH FROM SURFACE		BOREHOLE DIAMETER (inches)	DEPTH FROM SURFACE		OUTER DIAMETER (inches)	MATERIAL TYPE (X)				PERFORATION TYPE (X)						SLOT SIZE IF ANY (inches)
FROM (feet)	TO (feet)		FROM (feet)	TO (feet)		STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	
0	20	12 1/4	0	20	8.5	X				X						
0	200	8"	+1	200	5.5		X							X		

Installed Annular Material												
DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)								FILTER PACK		
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	20		X									

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
200	Feet Below Land Surface	200	Feet Below Land Surface

DWR-55-55B-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 592791

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	4	overburden	
4	200	clay conglomerate	X

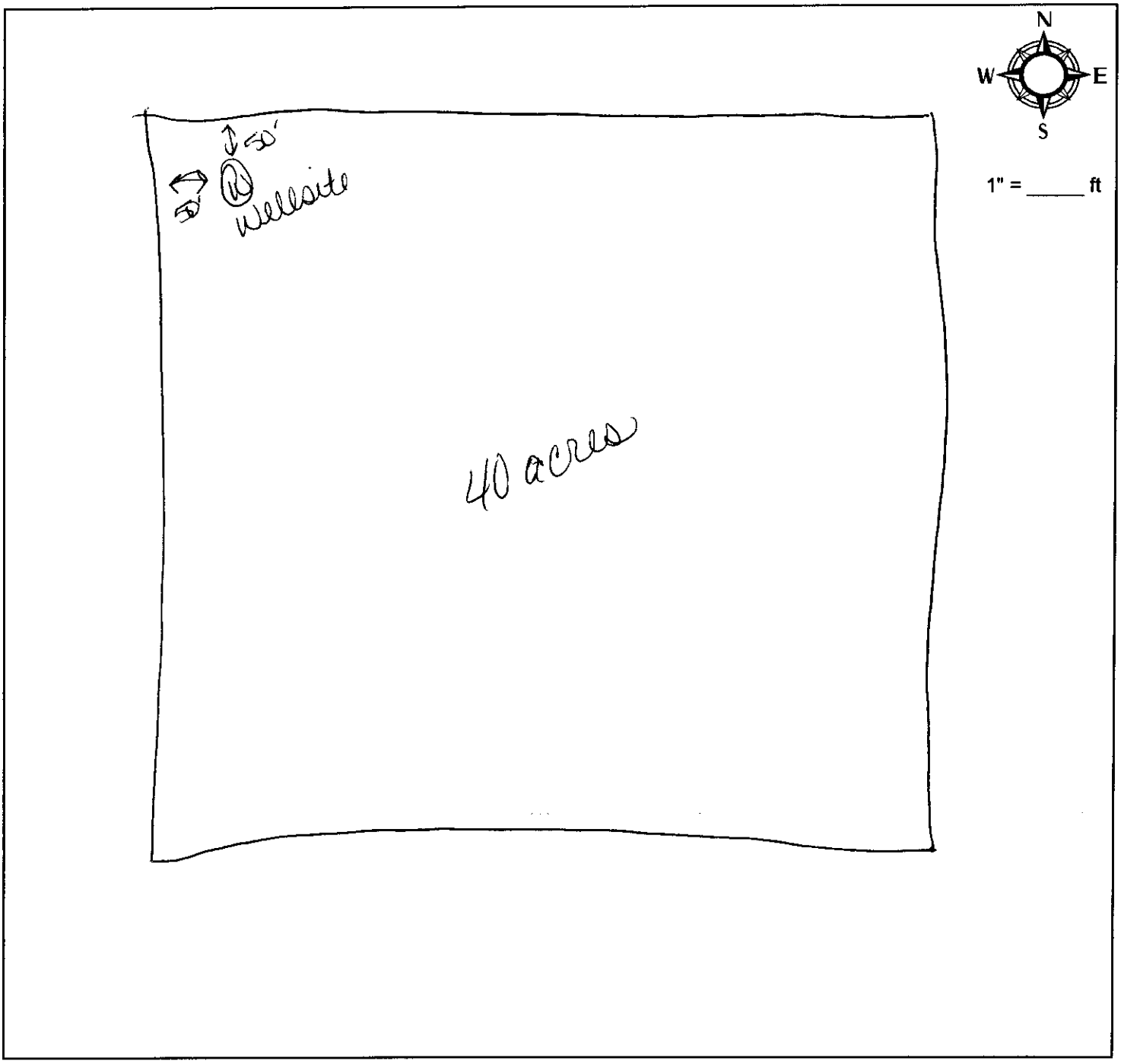
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 592791

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER BOOK	MAP	PARCEL
JAMES P DOUGLASS	104	39	004E

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
Drews Drilling Inc.		9-24-03

DWR-55-55 (Rev. 10/11/01)

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-592791

AUTHORIZED DRILLER: DRIVER DRILLING COMPANY LICENSE NO: 177

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: JAMES P DOUGLASS 1649 DRIFTWOOD CIR SIERRA VISTA, AZ 85635

The well(s) is/are to be located in the:

NW ¼ of the SW ¼ of the NW ¼ Section 12 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 30TH DAY OF MAY, 2003

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

RECEIVED
MAY 3 1 2002
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ 602-417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. James Douglass (LANDOWNER'S NAME) 1649 Driftwood (CURRENT MAILING ADDRESS) S.V. (CITY) Az (STATE) 85635 (ZIP)

B. TELEPHONE NO. 520-940-0694 COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN Cochise COUNTY D. 101 (BOOK) - 39 (MAP) - 004E (PARCEL) E. 40 (# OF ACRES) OFFICIAL SEAL OR STAMP

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NW¼ (10AC) SW¼ (40AC) NW¼ (160AC) OF SECTION 12 TOWNSHIP 24 N/S RANGE 24 E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL _____; INSUFFICIENT INFORMATION TO MAKE A DETERMINATION _____; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE _____ AUTHORIZED SIGNATURE _____ TITLE _____

1. OWNER OF WELL:
James Douglass
NAME
1649 Driftwood
CURRENT MAILING ADDRESS
Sierra Vista, Az, 85635
CITY STATE ZIP

TELEPHONE NUMBER 520 940 0694

2. ACTION REQUESTED:
DRILL NEW WELL X DEEPEN _____
MODIFY _____ REPLACE _____

WELL REGISTRATION NO 55-_____

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL _____ GALLONS PER MINUTE;

DISTANCE FROM THE ORIGINAL WELL: _____ FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH April (June/JPD) YEAR 02

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: Steel
DIAMETER: 6 " DEPTH: 20 '

DOWNHOLE CASING: PVC
DIAMETER: 4 " DEPTH: 200 '

5. DESIGN PUMP CAPACITY:
20± GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
N/A
NAME
CURRENT MAILING ADDRESS
CITY STATE ZIP

TELEPHONE: _____ - _____

7. PRINCIPAL USE OF WATER: (BE SPECIFIC)
Domestic

8. OTHER USES OF WATER: (BE SPECIFIC).
None

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55-592791
DATE FILED 5-31-02
FILE NO. D(24-24)12 BCB
AMA/INA _____
W/S 13 S/B _____
PROCESSED BY MO
DATE MAILED 6-3-02

9. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NW¼ (10AC) SW¼ (40AC) NW¼ (160AC) SECTION 12
TWNSHP 24 N/S RNG 24 E/W

10. TYPE OF WELL (CHECK ONE):
EXEMPT X NON-EXEMPT _____

11. CHECK ONE:
RESIDENTIAL X STOCKWATER _____
OTHER _____

12. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES _____ NO X

13. DRILLING FIRM:
Driver Drilling
NAME
Box 4345
MAILING ADDRESS
Huachuca City Az 85616
CITY STATE ZIP
520 4593466
TELEPHONE NO.
177
DWR LICENSE NUMBER
L53 / C53
ROC LICENSE CATEGORY

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

James P. Douglass — 14. TYPE OR PRINT NAME AND TITLE
James P. Douglass — 15. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE
3-20-02 — 16. DATE

DWR 55-40 (REV 9/99)

APPLICATION GUIDELINES

In accordance with Arizona Revised Statutes ("A.R.S.") §§ 41-1008 and 1079, the Department of Water Resources (Department) provides the following information regarding the application review process for authority to drill.

NECESSARY STEPS & INSTRUCTIONS TO OBTAIN DRILLING AUTHORITY

1. Pursuant to A.R.S. § 45-596, a person may not drill, cause to be drilled, deepen or modify any well for which a permit is not required without first filing a Notice of Intent to Drill with the Department. Only a well drilling contractor licensed in the State of Arizona or a single well licensee (a person licensed to drill or modify one exempt well on his or her own property) is authorized to drill, deepen or modify a well. Drilling may not begin until the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, and which authorizes the drilling of the specific well in a specific location. To assist you in understanding the requirements for this application, copies of A.R.S. § 45-596 and Arizona Administrative Code ("A.A.C.") R12-15-810 are available at the Department bookstore (602-417-2450 x7127).
2. If replacing, deepening, or modifying an existing well, provide the registration number of the existing well in item 2. A replacement well is one located no more than 660 feet from the original well and that is not expected to annually withdraw more groundwater than historically withdrawn from the original well.
3. Information to complete items 3, 4, 5 and 13 may be available from your driller.
4. Information to complete items 9 and 12 may be available from your County Assessor's Office.
5. For item 10, in an Active Management Area, A.R.S § 45-454 only allows non-irrigation uses for "exempt" wells. If the proposed use includes the growing of 2 or more acres of plants for sale or human/animal consumption (irrigation use), the well does not qualify as an exempt well.
6. An exempt well, referred to in Item 10, means a well with a pump with a maximum capacity of not more than thirty-five gallons per minute and used for non-irrigation purposes.
7. For item 11, in an Active Management Area, A.R.S §45-454 allow up to 56 acre feet per year of pumping from a domestic (residential) or stock watering exempt well, and up to 10 acre ft per year from an exempt well used for other (usually commercial non-irrigation) purposes.
8. If any water from a proposed well on a parcel of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant must submit a well site plan of the property. The plan must be on an 8½" x 11" piece of plain paper with representation of the locations of all structures and proximity of adjacent lot lines, to scale. It must include the county assessor's parcel identification number. The plan must show the proposed well location and the location of any septic tank or sewer system that is either located on the property or within one hundred feet of the proposed well site, as well as indicating the measured shortest distance between the proposed well and existing septic tank system. **The plan must demonstrate that the well will not be drilled within one hundred feet of any septic or sewer system.**
9. The site plan must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Endorsement by the county/local authority is based solely on the best available judgement that the proposed well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. In areas where there is no local or county authority that controls installation of septic tanks or sewer systems, or if the health authority is unable to determine whether the proposed well location complies with state and local requirements, the applicant must apply for approval directly to the Department of Water Resources.
10. If an individual other than the land owner or lessee signs this notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific notice on his or her behalf, must accompany the notice.
11. Please mail **two original Notices** with **original signatures** and **two site plans** and, in accordance with A.R.S. § 45-113, a **check or money order (no cash) in the amount of $10.00** to P. O. Box 458, Phoenix Arizona, 85001-0458, or hand deliver to 500 North Third Street, Phoenix, Arizona.
12. Arizona Revised Statute § 45-596(D) provides that the Director of the Department is to determine whether or not all information required on this form has been submitted. If not, the person filing the Notice will be notified, and the drilling or modification of the well may **not** proceed.
13. This form is not applicable for non-exempt wells (those yielding more than thirty-five gallons per minute) within an Active Management Area. Contact Groundwater Management for further information regarding the appropriate notice to file with the Department.

TIME FRAME FOR REVIEW OF YOUR APPLICATION

Within 15 days after receipt of your Notice of Intention the Arizona Department of Water Resources ("Department") will determine whether your application should be granted or denied, unless this time is extended for lack of a complete application. If your application is incomplete, the Department will notify you in writing and will specify what information is necessary to make the application complete. Until the missing information is received, the time frame for review of your application will be suspended. Your application will not be complete until all of the requested information is received. If you do not supply the missing information within sixty (60) days, the Department may deem your application withdrawn and close the file.

At the end of its review, the Department will send you a written notice either granting or denying your application for drilling authority. If your application is approved, the Drill Card will be mailed directly to the drilling contractor. If denied, the Department's notice will state justification for the denial and an explanation of your right to appeal.

CONSTRUCTION AND FOLLOW UP REQUIREMENTS

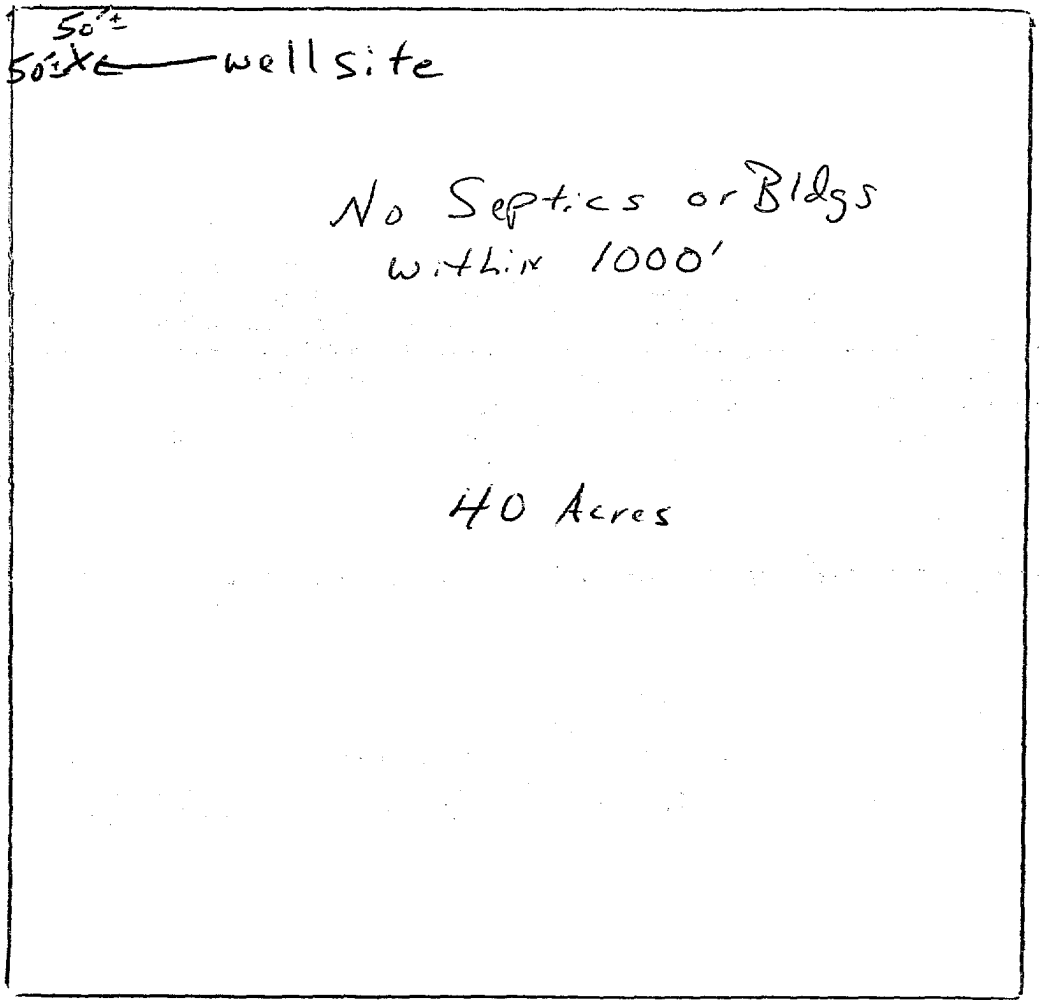
1. Construction and abandonment standards for wells, must be in accordance with Department Regulations. A.R.S. § 45-594 and Arizona Administrative Code R12-15-811 require the well to be constructed with a twenty foot steel surface seal casing, including a one foot steel stickup and one and one-half inches of grout seal around the casing from the surface to a depth of twenty feet, unless a variance is granted **(see A.R.S. § 45-596 (G) for procedure to follow in requesting a variance).**
2. Pursuant to § 45-596(E), the drilling, deepening or modification of the well must be completed within one year of the date of the Notice of Intent. If the well is not completed within one year, a new Notice of Intent must be filed before proceeding with further construction.
3. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use is later proposed to be converted to use for domestic purposes as defined in § 45-454, the well owner must file a Notice of Intention to Drill and comply with the requirements of § 45-596 before the well is converted and any water from that well is used for domestic purposes.
4. Within thirty days after installation of pumping equipment, the registered well owner must file a Completion Report with the Department. The person to whom a well is registered also must notify the Department of a change in ownership or a change in data relating to this well.

RECEIVED
MAY 31 2002
GROUNDWATER MGT

Douglass

101-39-0040E

NW SW NW Sec 12 T24S R24E
10 40 160



ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

June 03, 2002

JANE DEE HULL
Governor

JOSEPH C. SMITH
Director

JAMES P DOUGLASS
1649 DRIFTWOOD CIR
SIERRA VISTA, AZ 85635

Registration No. 55- 592791
File No. D(24-24) 12 BCB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Pump Installation Completion Report is to be submitted when pump equipment is installed. The drilling card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the drilling card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended drilling card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a Pump Installation Completion Report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate Well Drillers Report and Well Log within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Monica Ortiz
Water Resource Technician
Groundwater Management Support Section

Enclosures

RECEIVED
MAY 3 1 2002
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ 602-417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. James Douglass (LANDOWNER'S NAME) 1649 Driftwood (CURRENT MAILING ADDRESS) S.V. (CITY) Az (STATE) 85635 (ZIP)

B. TELEPHONE NO. 520-940-0694 COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN Cochise COUNTY D. 101 (BOOK) - 39 (MAP) - 004E (PARCEL) E. 40 (# OF ACRES)

OFFICIAL SEAL OR STAMP

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NW¼ (10AC) SW¼ (40AC) NW¼ (160AC) OF SECTION 12 TOWNSHIP 24 N/S RANGE 24 E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL _____; INSUFFICIENT INFORMATION TO MAKE A DETERMINATION _____; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE _____ AUTHORIZED SIGNATURE _____ TITLE _____

1. OWNER OF WELL:
James Douglass
NAME
1649 Driftwood
CURRENT MAILING ADDRESS
Sierra Vista, Az, 85635
CITY STATE ZIP
TELEPHONE NUMBER 520 940 0694

6. LESSEE OF LAND OF WELLSITE:
N/A
NAME
CURRENT MAILING ADDRESS
CITY STATE ZIP

9. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NW¼ (10AC) SW¼ (40AC) NW¼ (160AC) SECTION 12
TWNSHP 24 N/S RNG 24 E/W

10. TYPE OF WELL (CHECK ONE):
EXEMPT X NON-EXEMPT _____

11. CHECK ONE:
RESIDENTIAL X STOCKWATER _____
OTHER _____

12. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE TANKS?
YES _____ NO X

JAMES P. DOUGLASS
JENNIFER S. DOUGLASS
1649 DRIFTWOOD CIR. 520-459-1841
SIERRA VISTA, AZ 85635

91-2/1221 178
27764035
485

DATE 5-28-02

PAY TO THE ORDER OF Az. Dept. of Water Resources $ 20.00

Twenty and No/100 DOLLARS

Security Features Included. Details on Back.

BANK ONE
Bank One, NA
Phoenix, Arizona 85073
www.bankone.com
Preferred One

MEMO

MP

DRILLING FIRM: River Drilling
ADDRESS Box 4345
MAILING ADDRESS Tucson City Az 85616
CITY STATE ZIP
TELEPHONE NO. 520 4593466
DWR LICENSE NUMBER 177
ROC LICENSE CATEGORY L53 / C53

CASING: PVC
DIAMETER: 4 " DEPTH: 200 '

13. DESIGN PUMP CAPACITY:
20± GALLONS PER MINUTE

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

14. TYPE OR PRINT NAME AND TITLE: James P Douglass
15. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE: James P Douglass
16. DATE: 3-20-02

DWR 55-40 (REV 9/99)

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

SEP - 4 2003

FILE NUMBER: D(24-24) 11 DAB
WELL REGISTRATION NUMBER: 55- 592792
PERMIT NUMBER (IF ISSUED)

- Review instructions prior to completing form
- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: JAMES P DOUGLASS
MAILING ADDRESS: 1649 DRIFTWOOD CIR
CITY / STATE / ZIP: SIERRA VISTA, AZ 85635
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-940-0694
FAX:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN):
TOWNSHIP (N/S): 24 RANGE (E/W): 24 SECTION: 11 160 ACRE: NW 1/4 40 ACRE: NE 1/4 10 ACRE: SE 1/4
LATITUDE: ° . "N LONGITUDE: ° . "W
LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level
METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☐ Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ GPS : ☐ Survey-Grade
COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 101 MAP 39 PARCEL 004C
COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME: DRIVER DRILLING COMPANY
DWR LICENSE NUMBER: 177
TELEPHONE NUMBER: 520-459-3496
FAX:

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED: 9-18-02
DATE WELL CONSTRUCTION COMPLETED: 9-19-03
IF FLOWING WELL, METHOD OF FLOW REGULATION: ☐ Valve ☐ Other

Drill Method

CHECK ONE
- ☒ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development

CHECK ONE
- ☒ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Method of Sealing at Reduction Points

CHECK ONE
- ☒ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☐ Other (please specify)

Water Level Information

STATIC WATER LEVEL: 110 Feet Below Land Surface
DATE MEASURED: 9-19-02

ANSWERED SEP 8 2003

DWR-55-55-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 592792

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Borehole			Installed Casing														
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (X)				PERFORATION TYPE (X)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	12¼	+1	20	8.5	X				X						
20	200	8"	0	200	5.5		X							X		

Installed Annular Material												
DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)								FILTER PACK		
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	20		X									

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
200	Feet Below Land Surface	200	Feet Below Land Surface

DWR-55-55B-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 592792

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	4	overburden	
4	200	Clay conglomerate	X

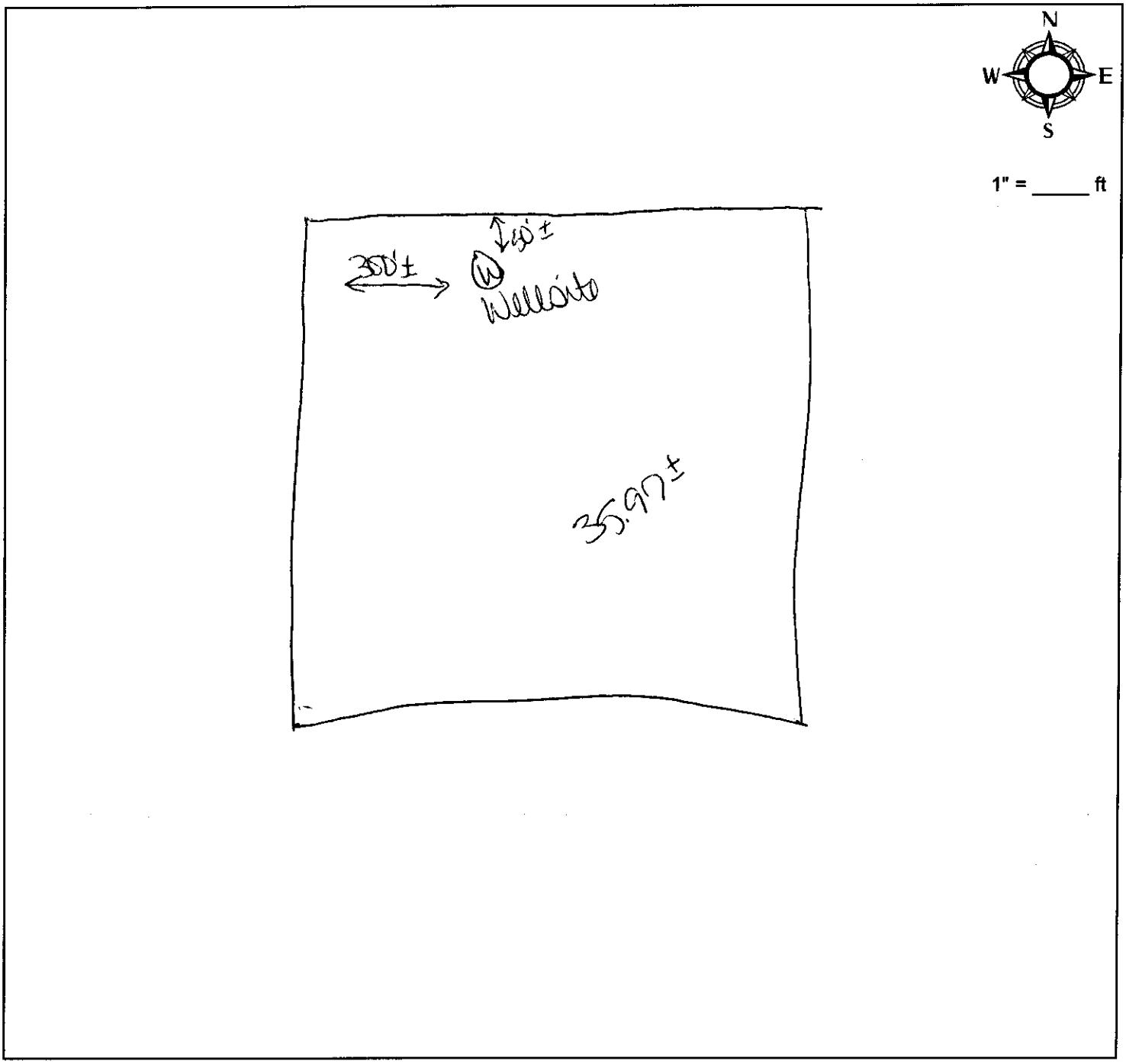
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 592792

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
JAMES P DOUGLASS	101	39	004C

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
Driver Drilling Inc.		9-23-03

DWR-55-55 (Rev. 10/11/01)

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-592792

AUTHORIZED DRILLER: DRIVER DRILLING COMPANY LICENSE NO: 177

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: JAMES P DOUGLASS 1649 DRIFTWOOD CIR SIERRA VISTA, AZ 85635

The well(s) is/are to be located in the:

NW ¼ of the NE ¼ of the SE ¼ Section 11 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 30TH DAY OF MAY, 2003

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

RECEIVED
MAY 3 1 2002
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ 602-417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. J + J Douglass 1649 Driftwood Sierra Vista Az 85635
LANDOWNER'S NAME | CURRENT MAILING ADDRESS | CITY | STATE | ZIP

B. TELEPHONE NO. 520 - 940 - 0694 COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN Cochise COUNTY D. 101 - 39 - 004C E. 36 ± OFFICIAL SEAL OR STAMP
BOOK | MAP | PARCEL | # OF ACRES

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NW ¼ NE ¼ SE ¼ OF SECTION 11 TOWNSHIP 24 N/S RANGE 24 E/W
10AC | 40AC | 160AC | COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL _____; INSUFFICIENT INFORMATION TO MAKE A DETERMINATION _____; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE _____ AUTHORIZED SIGNATURE _____ TITLE _____

1. OWNER OF WELL:
J + J Douglass
NAME
1649 Driftwood
CURRENT MAILING ADDRESS
Sv Az 85635
CITY | STATE | ZIP
TELEPHONE NUMBER 520-940-0694

2. ACTION REQUESTED:
DRILL NEW WELL ✓ DEEPEN _____
MODIFY _____ REPLACE _____

WELL REGISTRATION NO 55- _____

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL _____ GALLONS PER MINUTE;

DISTANCE FROM THE ORIGINAL WELL: _____ FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH June YEAR 02

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: Steel
DIAMETER: 6 " DEPTH: 20 '
DOWNHOLE CASING: PVC
DIAMETER: 4 " DEPTH: 200 ' ±

5. DESIGN PUMP CAPACITY:
20 ± GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
NAME
CURRENT MAILING ADDRESS
CITY | STATE | ZIP
TELEPHONE: - -

7. PRINCIPAL USE OF WATER: (BE SPECIFIC)
Domestic

8. OTHER USES OF WATER: (BE SPECIFIC).
None

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55- 592792
DATE FILED 5-31-02
FILE NO. D(24-24)11DAB
AMA/INA _____
W/S 13 S/B _____
PROCESSED BY MO
DATE MAILED 6-3-02

9. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NW ¼ NE ¼ SE ¼ SECTION 11
10AC 40AC 160AC
TWNSHP 24 N/S RNG 24 E/W

10. TYPE OF WELL (CHECK ONE):
EXEMPT ✓ NON-EXEMPT _____

11. CHECK ONE:
RESIDENTIAL ✓ STOCKWATER _____
OTHER _____

12. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES _____ NO ✓

13. DRILLING FIRM:
Driver Drilling
NAME
Box 4345
MAILING ADDRESS
Huachuca City Az 85616
CITY | STATE | ZIP
520 459 3466
TELEPHONE NO.
177
DWR LICENSE NUMBER
L-53 / C-53
ROC LICENSE CATEGORY

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

James P. Douglass Owner James P Douglass 5-28-02
14. TYPE OR PRINT NAME AND TITLE | 15. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE | 16. DATE

DWR 55-40 (REV 9/99)

APPLICATION GUIDELINES

In accordance with Arizona Revised Statutes ("A.R.S.") §§ 41-1008 and 1079, the Department of Water Resources (Department) provides the following information regarding the application review process for authority to drill.

NECESSARY STEPS & INSTRUCTIONS TO OBTAIN DRILLING AUTHORITY

1. Pursuant to A.R.S. § 45-596, a person may not drill, cause to be drilled, deepen or modify any well for which a permit is not required without first filing a Notice of Intent to Drill with the Department. Only a well drilling contractor licensed in the State of Arizona or a single well licensee (a person licensed to drill or modify one exempt well on his or her own property) is authorized to drill, deepen or modify a well. Drilling may not begin until the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, and which authorizes the drilling of the specific well in a specific location. To assist you in understanding the requirements for this application, copies of A.R.S. § 45-596 and Arizona Administrative Code ("A.A.C.") R12-15-810 are available at the Department bookstore (602-417-2450 x7127).
2. If replacing, deepening, or modifying an existing well, provide the registration number of the existing well in item 2. A replacement well is one located no more than 660 feet from the original well and that is not expected to annually withdraw more groundwater than historically withdrawn from the original well.
3. Information to complete items 3, 4, 5 and 13 may be available from your driller.
4. Information to complete items 9 and 12 may be available from your County Assessor's Office.
5. For item 10, in an Active Management Area, A.R.S § 45-454 only allows non-irrigation uses for "exempt" wells. If the proposed use includes the growing of 2 or more acres of plants for sale or human/animal consumption (irrigation use), the well does not qualify as an exempt well.
6. An exempt well, referred to in Item 10, means a well with a pump with a maximum capacity of not more than thirty-five gallons per minute and used for non-irrigation purposes.
7. For item 11, in an Active Management Area, A.R.S §45-454 allow up to 56 acre feet per year of pumping from a domestic (residential) or stock watering exempt well, and up to 10 acre ft per year from an exempt well used for other (usually commercial non-irrigation) purposes.
8. If any water from a proposed well on a parcel of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant must submit a well site plan of the property. The plan must be on an 8½" x 11" piece of plain paper with representation of the locations of all structures and proximity of adjacent lot lines, to scale. It must include the county assessor's parcel identification number. The plan must show the proposed well location and the location of any septic tank or sewer system that is either located on the property or within one hundred feet of the proposed well site, as well as indicating the measured shortest distance between the proposed well and existing septic tank system. **The plan must demonstrate that the well will not be drilled within one hundred feet of any septic or sewer system.**
9. The site plan must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Endorsement by the county/local authority is based solely on the best available judgement that the proposed well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. In areas where there is no local or county authority that controls installation of septic tanks or sewer systems, or if the health authority is unable to determine whether the proposed well location complies with state and local requirements, the applicant must apply for approval directly to the Department of Water Resources.
10. If an individual other than the land owner or lessee signs this notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific notice on his or her behalf, must accompany the notice.
11. Please mail **two original Notices** with **original signatures** and **two site plans** and, in accordance with A.R.S. § 45-113, a **check or money order (no cash) in the amount of $10.00** to P. O. Box 458, Phoenix Arizona, 85001-0458, or hand deliver to 500 North Third Street, Phoenix, Arizona.
12. Arizona Revised Statute § 45-596(D) provides that the Director of the Department is to determine whether or not all information required on this form has been submitted. If not, the person filing the Notice will be notified, and the drilling or modification of the well may **not** proceed.
13. This form is not applicable for non-exempt wells (those yielding more than thirty-five gallons per minute) within an Active Management Area. Contact Groundwater Management for further information regarding the appropriate notice to file with the Department.

TIME FRAME FOR REVIEW OF YOUR APPLICATION

Within 15 days after receipt of your Notice of Intention the Arizona Department of Water Resources ("Department") will determine whether your application should be granted or denied, unless this time is extended for lack of a complete application. If your application is incomplete, the Department will notify you in writing and will specify what information is necessary to make the application complete. Until the missing information is received, the time frame for review of your application will be suspended. Your application will not be complete until all of the requested information is received. If you do not supply the missing information within sixty (60) days, the Department may deem your application withdrawn and close the file.

At the end of its review, the Department will send you a written notice either granting or denying your application for drilling authority. If your application is approved, the Drill Card will be mailed directly to the drilling contractor. If denied, the Department's notice will state justification for the denial and an explanation of your right to appeal.

CONSTRUCTION AND FOLLOW UP REQUIREMENTS

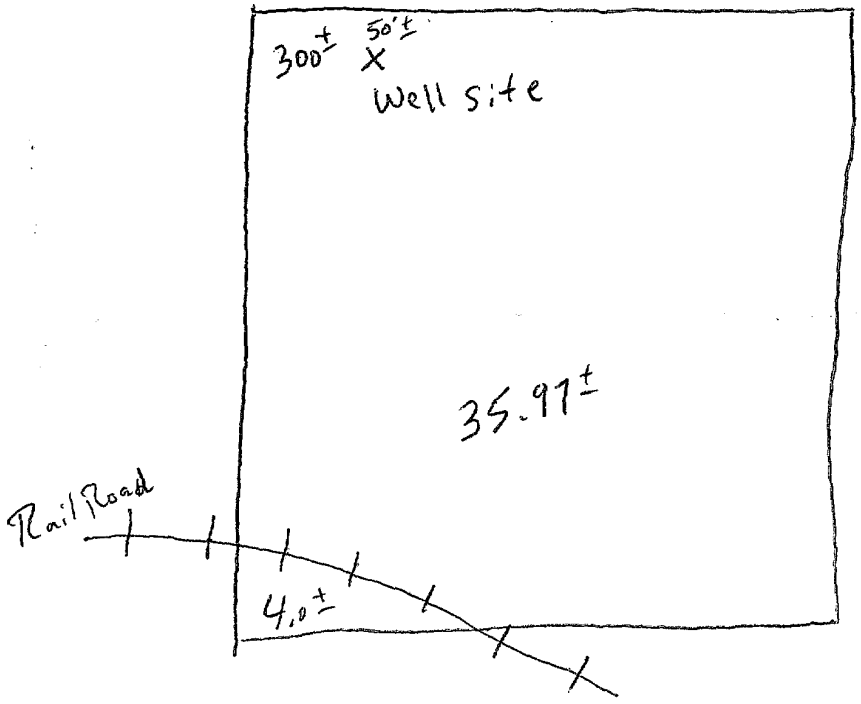
1. Construction and abandonment standards for wells, must be in accordance with Department Regulations. A.R.S. § 45-594 and Arizona Administrative Code R12-15-811 require the well to be constructed with a twenty foot steel surface seal casing, including a one foot steel stickup and one and one-half inches of grout seal around the casing from the surface to a depth of twenty feet, unless a variance is granted **(see A.R.S. § 45-596 (G) for procedure to follow in requesting a variance).**
2. Pursuant to § 45-596(E), the drilling, deepening or modification of the well must be completed within one year of the date of the Notice of Intent. If the well is not completed within one year, a new Notice of Intent must be filed before proceeding with further construction.
3. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use is later proposed to be converted to use for domestic purposes as defined in § 45-454, the well owner must file a Notice of Intention to Drill and comply with the requirements of § 45-596 before the well is converted and any water from that well is used for domestic purposes.
4. Within thirty days after installation of pumping equipment, the registered well owner must file a Completion Report with the Department. The person to whom a well is registered also must notify the Department of a change in ownership or a change in data relating to this well.

RECEIVED
MAY 31 2002
GROUNDWATER MGT

Douglass
101-39-004C

No Known Septics or Bldgs within 700'

NW NE SE Sec 11 T24S R24E
10 40 160



ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

June 03, 2002

JANE DEE HULL
Governor

JOSEPH C. SMITH
Director

JAMES P DOUGLASS
1649 DRIFTWOOD CIR
SIERRA VISTA, AZ 85635

Registration No. 55- 592792
File No. D(24-24) 11 DAB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Pump Installation Completion Report is to be submitted when pump equipment is installed. The drilling card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the drilling card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended drilling card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a Pump Installation Completion Report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate Well Drillers Report and Well Log within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Monica Ortiz
Water Resource Technician
Groundwater Management Support Section

Enclosures

RECEIVED
MAY 3 1 2002
GROUNDWATER

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ 602-417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. James Douglass (LANDOWNER'S NAME) 1649 Driftwood (CURRENT MAILING ADDRESS) S.V. (CITY) Az (STATE) 85635 (ZIP)

B. TELEPHONE NO. 520. 940. 0694 — COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN Cochise COUNTY D. 101 - 39 - 004E (BOOK - MAP - PARCEL) E. 40 (# OF ACRES) — OFFICIAL SEAL OR STAMP

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NW¼ (10AC) SW¼ (40AC) NW¼ (160AC) OF SECTION 12 TOWNSHIP 24 N/S RANGE 24 E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL _____; INSUFFICIENT INFORMATION TO MAKE A DETERMINATION _____; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE _____ AUTHORIZED SIGNATURE _____ TITLE _____

1. OWNER OF WELL:
NAME James Douglass
CURRENT MAILING ADDRESS 1649 Driftwood
CITY Sierra Vista STATE Az ZIP 85635
TELEPHONE NUMBER 520 940 0694

6. LESSEE OF LAND OF WELLSITE:
NAME N/A
CURRENT MAILING ADDRESS
CITY STATE ZIP

9. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NW¼ (10AC) SW¼ (40AC) NW¼ (160AC) SECTION 12
TWNSHP 24 N/S RNG 24 E/W

10. TYPE OF WELL (CHECK ONE):
EXEMPT X NON-EXEMPT _____

JAMES P. DOUGLASS
JENNIFER S. DOUGLASS
1649 DRIFTWOOD CIR. 520-459-1841
SIERRA VISTA, AZ 85635

91-2/1221 178 — 485
27764035

DATE 5-28-02

PAY TO THE ORDER OF Az. Dept. of Water Resources $ 20.00

Twenty and No/100 DOLLARS

Security Features Included. Details on Back.

BANK ONE. Preferred One.
Bank One, NA
Phoenix, Arizona 85073
www.bankone.com

MEMO

MP

[redacted]

I. CHECK ONE:
RESIDENTIAL X STOCKWATER _____
OTHER _____

J. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE TANKS AND TANKS?
YES _____ NO X

DRILLING FIRM: Driver Drilling
ADDRESS Box 4345
DRILLING ADDRESS Huachuca City Az 85616
CITY STATE ZIP
TELEPHONE NO. 520 4593466
DWR LICENSE NUMBER 177
ROC LICENSE CATEGORY L53 / C53

CASING: PVC
DIAMETER: 4 " DEPTH: 200 '

5. DESIGN PUMP CAPACITY:
20 ± GALLONS PER MINUTE

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

14. TYPE OR PRINT NAME AND TITLE: James P Douglass
15. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE: James P Douglass
16. DATE: 3-20-02

DWR 55-40 (REV 9/99)

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

RECEIVED
NOV 12 2003
Information Management

- Review instructions prior to completing form
- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

FILE NUMBER: D(24-24) 14 ABD
WELL REGISTRATION NUMBER: 55- 599796
PERMIT NUMBER (IF ISSUED):

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: LEON & MARY EAST
MAILING ADDRESS: 651 E BORDER RD
CITY / STATE / ZIP: BISBEE, AZ 85603
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-432-5992
FAX:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN): 651 E. Border Rd.

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	14	NE 1/4	NW 1/4	SE 1/4

LATITUDE: ° . "N
LONGITUDE: ° . "W
LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level
METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☐ Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ GPS : ☐ Survey-Grade
COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 101 | MAP 48 | PARCEL 007
COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME: JS & K DRILLING, INC.
DWR LICENSE NUMBER: 565
TELEPHONE NUMBER: 520-456-2355
FAX:

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED: Oct 23
DATE WELL CONSTRUCTION COMPLETED: Oct 24
IF FLOWING WELL, METHOD OF FLOW REGULATION: ☐ Valve ☐ Other

Drill Method

CHECK ONE
- ☑ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development

CHECK ONE
- ☑ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Water Level Information

STATIC WATER LEVEL: 35 Feet Below Land Surface
DATE MEASURED: Oct 30, 03

Method of Sealing at Reduction Points

CHECK ONE
- ☐ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☒ Other (please specify)

NATIVE

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 599796

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Borehole			Installed Casing														
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (X)				PERFORATION TYPE (X)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	19	12"	0	19	8 5/8	X				X						
19	125	7 7/8"	5	85	6 5/8		X			X						
			85	125	6 5/8		X							X		1/8

Installed Annular Material												
DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)								FILTER PACK		
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	19			X								
5	19								NATIVE			

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
125	Feet Below Land Surface	125	Feet Below Land Surface

DWR-55-55B-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 599796

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	5	Top Soil	
5	20	Sand & Gravel	
20	25	Rock (Limestone)	
25	40	Boulders, Sand & Gravel	
40	45	Clay	
45	50	Sand & Gravel	
50	55	Rock (Limestone)	
55	65	Gravel, Sand & Boulders	
65	80	Limestone	
80	125	Boulders, Sand & Gravel	X

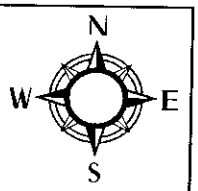
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 599796

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
LEON & MARY EAST	101	48	007

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



1" = _____ ft

SEE ATTACHED

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
J3 & IC Drilling, Inc.		Nov. 7, 03

DWR-55-55 (Rev. 10/11/01)

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 599796

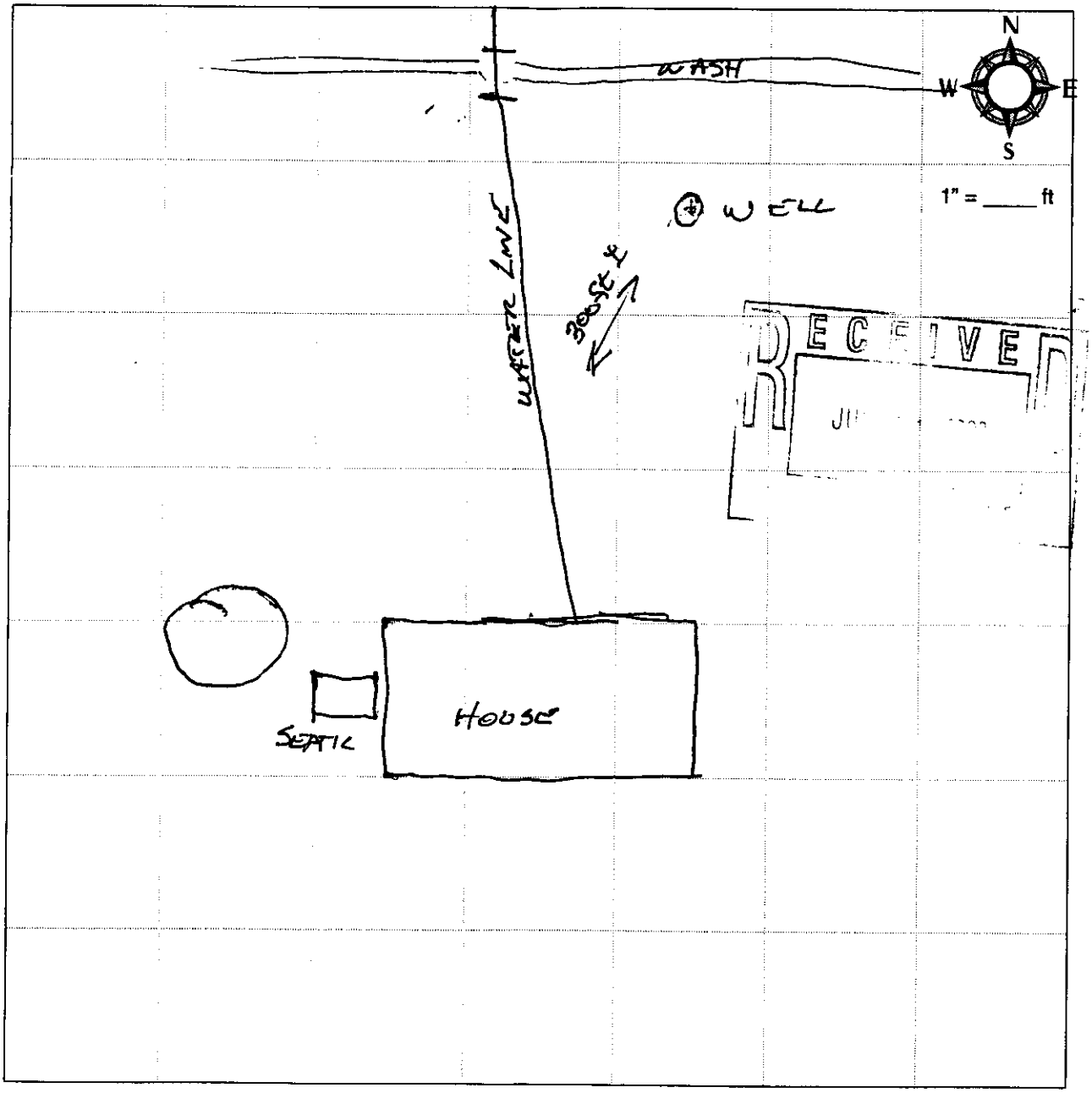
WELL SITE PLAN

NAME OF WELL OWNER
LEON & MARY EAST

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
101	48	007

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE
Cochise County

COUNTY OR LOCAL AUTHORITY SIGNATURE

TELEPHONE NUMBER
520-432-9440

DATE
July 30, 2003

Official County or Local Seal or Stamp
APPROVED BY THE COCHISE COUNTY
ENVIRONMENTAL HEALTH DIVISION
DATE July 30 2003
BY

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-599796

AUTHORIZED DRILLER: JS & K DRILLING, INC. LICENSE NO: 565

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: LEON & MARY EAST 651 E BORDER RD BISBEE, AZ 85603

The well(s) is/are to be located in the:

SE ¼ of the NW ¼ of the NE ¼ Section 14 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 30TH DAY OF JULY, 2004

Shannon L Key

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

RECEIVED
JUL 31 2003
GROUNDWATER MG

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $50 FEE

AMA / INA	B	SB
		35
RECEIVED DATE	WS	
7-31-03	13	
ISSUED DATE	WQARF	CERCLA
8-5-03		

FILE NUMBER: D(24-24)14ABD
WELL REGISTRATION NUMBER: 55-599796

- ❖ Review instructions prior to completing form in black or blue ink.
- ❖ You must include with your Notice:
- • Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $50.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- ❖ Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY ENDORSEMENT (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 before submission to the Department of Water Resources. You must also attach a site plan (see instructions).

CHECK ONE

☐ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☐ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE July 30, 2003
BY C. D. Diaz

COUNTY OR LOCAL AUTHORITY NAME AND TITLE

TELEPHONE NUMBER | DATE | COUNTY OR LOCAL AUTHORITY SIGNATURE

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

☒ Exempt
(Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)

☐ Non-Exempt
(Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 15 Gallons Per Minute

Proposed Action

CHECK ONE

☒ Drill New Well
☐ Deepen
☐ Replace
☐ Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55-

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY): 651 E. BORDER Rd. Bisbee

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	14	NE ¼	NW ¼	SE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER: 101-48-007-0

BOOK	MAP	PARCEL	# OF ACRES
101	48	007	5

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Leon + Mary East

MAILING ADDRESS: 651 E. BORDER Rd.

CITY / STATE / ZIP CODE: Bisbee, Az. 85603

CONTACT PERSON NAME AND TITLE: Leon East Owner

TELEPHONE NUMBER: 520-432-5992 | FAX: N/A

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL

MAILING ADDRESS

CITY / STATE / ZIP CODE

CONTACT PERSON NAME AND TITLE

TELEPHONE NUMBER | FAX

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 599796

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

JS+K

NAME: BRADLY DRILLING

DWR LICENSE NUMBER: 565

ROC LICENSE CATEGORY: C-53

TELEPHONE NUMBER: 520 456-2355

FAX: 520 456-1169

MAILING ADDRESS: 403 NUACNOCA BLVD

CITY / STATE / ZIP CODE: NUACHUCA [illegible] 85616

RECEIVED
JUL 31 2003
GROUNDWATER MGT

SECTION 6. WATER / SITE INFORMATION

Principal Use of Water (CHECK ONE)	*Other Uses* of Water (CHECK ALL THAT APPLY)
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☒ Domestic	☒ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify):*	☐ Other *(please specify):*

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

DATE CONSTRUCTION IS TO BEGIN: Sept, 03

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	19	12 1/4
19	200	7 7/8

Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T): STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T): BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	19	8 5/8	X*				X						Cement
10	160	6 1/4		X			X						
160	200	6 1/4		X							X		

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: Leon A. East - Mary Ellen East — Owners

SIGNATURE OF WELL OWNER OR LANDOWNER: Leon A. East Mary Ellen East

DATE: 7/18/03

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION

DATE: July 30 2003

BY: [signature]

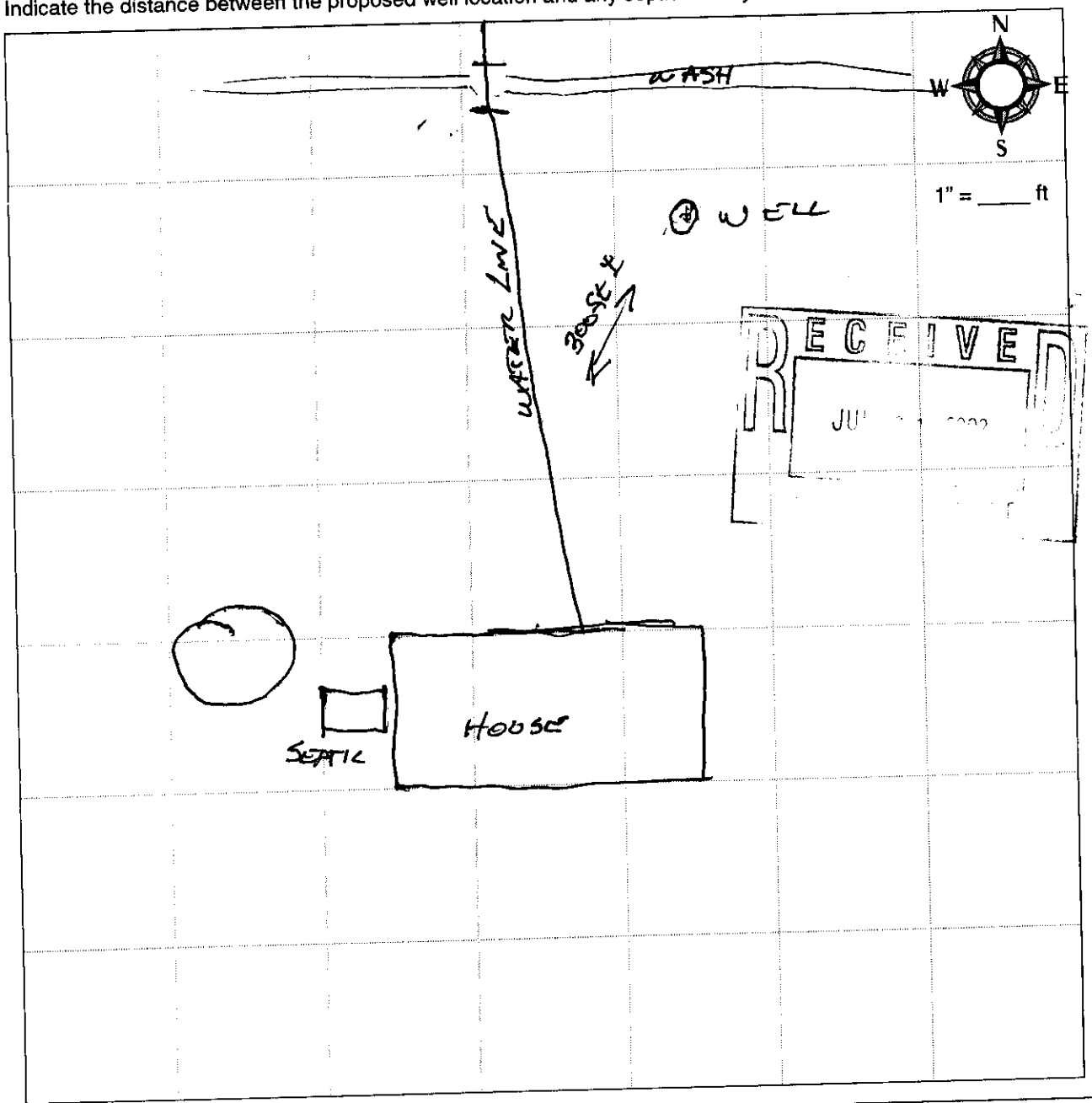
Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 599796

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
LEON & MARY EAST	101	48	007

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE
Cochise County

COUNTY OR LOCAL AUTHORITY SIGNATURE
Edna Diaz

TELEPHONE NUMBER
520-432-9440

DATE
July 30, 2003

Official County or Local Seal or Stamp
APPROVED BY THE COCHISE COUNTY
ENVIRONMENTAL HEALTH DIVISION
DATE July 30 2003
BY Edna Diaz

☐ 55Update

Review Sheet for Notices of Intention (NOI) to Drill or Abandon Wells (Updated 07/24/2003)

Well Owner Name Leon & Mary East **Date** 8-4-03
Well Location D(24-24)14 ABD **Well Registration Number:** 55-599796

☒ **Permission has been granted to drill, deepen, replace, modify or abandon** the well indicated on the attached NOI.

☐ **Permission has been granted to drill or abandon** the well indicated on the attached NOI. However, special well construction or abandonment requirements may apply since the proposed well is located near or within the boundary of a groundwater contamination site. See attached special requirements or visit the ADWR "WQARF" homepage on the ADWR website at http://www.water.az.gov/ for further information on "Special well drilling requirements for wells located within areas of groundwater contamination". Please be aware that groundwater produced from the proposed well may not meet applicable federal, state, county or local water quality standards.

The checked special well drilling requirements apply to the indicated well (see attachments):

_____ **Standard Special Requirements (applies to contamination areas not covered by site-specific requirements)**
_____ **Pinal Creek Special Requirements**
_____ **Yuma Marine Corps Air Station Special Requirements**
_____ **Well Abandonment Handbook (see Standard Method or Alternatives 2 or 3)**

☐ **Permission has not been granted to drill or abandon** the well indicated on the attached NOI for the following reasons(s):

☐ Insufficient filing fee submitted*. Your check for $_____ is being returned to you. You must resubmit this review sheet, the attached NOI form (with any changes indicated below) and a check for the appropriate fee, which is $_____.

*NOI filing fees were increased on May 7, 2003. The appropriate filing fee for a well located within an AMA or INA is $150. For a well not located within an AMA or INA, the fee is $50 if the well will be used solely for domestic purposes and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise the fee is $150.

☐ County or local health official endorsement and approval is required but was not provided.

☐ Insufficient information to determine if well meets 100-foot setback requirement. Well owner must sign and return the attached certification form if well meets 100-foot minimum set-back requirement.

☐ Incomplete or incorrect well location information.

☐ Incomplete or incorrect well owner information.

☐ Land owner permission to drill letter is required.

☐ Proposed well is located within 100 feet of a septic system, sewer disposal area, landfill, hazardous waste materials or petroleum storage area or tank.

☐ Well driller information incomplete.

☐ Well driller is not currently licensed with ADWR and/or the Registrar of Contractors.

☐ Well construction information is incomplete, you must include design pump capacity (if applicable), well depth, well diameter and type of casing (if applicable).

☐ Well abandonment information is incomplete, you must include information on proposed well abandonment design (see ADWR Well Abandonment Handbook)

☐ Well owner or landowner information and/or signature incomplete or incorrect.

☐ Variance request has not been granted. Explanation:_____

☐ Other_____

If permission to drill or abandon the specified well has not been granted, please correct all indicated errors and/or deficiencies and resubmit the corrected NOI form, this review sheet, and any attachments (if applicable) to ADWR. Unless stated above, no additional fees are required to resubmit this NOI. Be sure to submit all necessary information with your corrected NOI. The original NOI file will not be reviewed when ADWR reviews your corrected NOI. You must resubmit all the required information within 60 days, or you will need to file a new NOI with a new fee. Note: If you do not have the necessary information or need help, please contact your driller/consultant.

Mail resubmittals to: ADWR NOI-Resubmittals
PO Box 458
Phoenix Arizona 85001-0458

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $50 FEE

RECEIVED
JUL 31 2003
GROUNDWATER MG

AMA / INA	B	BB
		35
RECEIVED DATE	WS	
	13	
ISSUED DATE	WQARF	CERCLA

FILE NUMBER
WELL REGISTRATION NUMBER
55 -

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $50.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY ENDORSEMENT (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 before submission to the Department of Water Resources. You must also attach a site plan (see instructions).

CHECK ONE

☐ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☐ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE July 30, 2003
BY C. Diaz

COUNTY OR LOCAL AUTHORITY NAME AND TITLE

TELEPHONE NUMBER | DATE

COUNTY OR LOCAL AUTHORITY SIGNATURE

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

☒ Exempt
(Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)

☐ Non-Exempt
(Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY
15 Gallons Per Minute

Proposed Action

CHECK ONE

☒ Drill New Well
☐ Deepen
☐ Replace
☐ Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER
55 -

MAXIMUM CAPACITY OF ORIGINAL WELL
Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL
Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY)
651 E. BORDER Rd. Bisbee

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	14	NE ¼	NW ¼	SE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER 101-48-007-0

BOOK	MAP	PARCEL	# OF ACRES
101	48	007	5

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED
Cochise

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
Leon + Mary East

MAILING ADDRESS
651 E. BORDER Rd.

CITY / STATE / ZIP CODE
Bisbee, Az. 85603

CONTACT PERSON NAME AND TITLE
Leon East Owner

TELEPHONE NUMBER
520-432-5992

FAX
N/A

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL

MAILING ADDRESS

CITY / STATE / ZIP CODE

CONTACT PERSON NAME AND TITLE

TELEPHONE NUMBER | FAX

riance (A.A.C. R12-15-818).

Active Management Area, you must
m 55-40A.

LEON A. EAST
MARY ELLEN EAST
651 E. BORDER RD. 520-432-5992
BISBEE, AZ 85603-0529

91-532/1221
27

DATE 7/23/03 2452

PAY TO THE ORDER OF A.D.W.R. $ 50.00

Fifty and No/100 DOLLARS

Contains Security Features. Details on Back.

NATIONAL BANK OF ARIZONA
101 NACO HIGHWAY
BISBEE, AZ 85603

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

August 05, 2003

Janet Napolitano
Governor

Herb Guenther
Director

LEON & MARY EAST
651 E BORDER RD
BISBEE, AZ 85603

Registration No. 55- 599796
File No. D(24-24) 14 ABD

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Pump Installation Completion Report is to be submitted when pump equipment is installed. The drilling card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the drilling card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended drilling card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a Pump Installation Completion Report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate Well Drillers Report and Well Log within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Monica Ortiz
NOI Unit
Water Management Support Section

Enclosures

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

MAY 1982 DEPARTMENT OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY	
REGISTRATION NO. 55-	64,726
FILE NO.	D(24-24)19bbc
FILED (DATE)	5-11-82 AT (TIME) 11A
INA	
AMA	

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☐

1. Name of Registrant:
   GERALD A. EBERWEIN
   PO BOX 605 NACO AZ 85620-605
   (Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
   D(24-24)19BBCG S1 (File Number) 55- 39632 (Control Number)

3. a. The well is located within the ~~NE~~ SE¼ NW¼ NW¼, Section 19, of Township 24.0 S ~~N~~, Range 24.0 E/~~W~~, G & SRB & M, in the County of COCHISE.

   b. If in a subdivision: Name of subdivision NACO TOWNSITE, Lot No. 4, Address 420 FIRST ST ABANDON PART OF A SP.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
   DOMESTIC.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
   _____
   (Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
   a. Depth of Well 249 feet
   b. Diameter of casing 06 inches
   c. Depth of casing 249 feet
   d. Type of casing PERFORATED STEEL.
   e. Maximum pump capacity 30 gallons per minute.
   f. Depth to water 104 feet below land surface.
   g. Date well completed _____ (Month) _____ (Day) 76 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☐.
   _____¼ _____¼ _____¼, Section _____ Township _____ Range _____
   _____¼ _____¼ _____¼, Section _____ Township _____ Range _____
   Attach additional sheet if necessary.

9. DATE 5/8/82 SIGNATURE OF REGISTRANT [signature]

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001- 0458
FOR INFORMATION: CALL MONICA ORTIZ AT (602)417-2470

MAY - 6 2005

REQUEST FORM TO CHANGE WELL INFORMATION
OWNERSHIP * DRILLER

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-045. In accordance with A.R.S. § 45-113, please submit the applicable fee. NOTE: A.R.S. §45-593 (C) requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty

Pioneer Title Agency, Inc.
P.O. BOX 1900
Sierra Vista, AZ 85636

NATIONAL BANK OF ARIZONA
1160 E. Fry Blvd.
Sierra Vista, Arizona 85635
91-532/1221

NO. 681319

FILE NUMBER	DATE	AMOUNT
00911065 - 006 DB	05/03/05	$10.00

PAY TEN DOLLARS and no/100

TO THE ORDER OF ARIZONA DEPARTMENT OF WATER
P.O. BOX 458
PHOENIX, AZ 85001

ANSWERED MAY 0 8 2005

ESCROW ACCOUNT

[redacted]

2. **STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)**

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, LEE R. ENGLUND AND ROSE T. ENGLUND, state that I am the **Previous/New Owner** of the well described below:

____¼ ____¼ ____¼ of Section____ Township____N/S Range____E/W
10 Acre 40 Acre 160 Acre

Assessor's tax parcel number of the parcel on which the well is located: Book____ Map____ Parcel____.

Well Registration No. 55-565260

File No. D124-24 (if known)

LEO DAY
PRINT Previous Owner's Name

LEE R. ENGLUND AND ROSE T. ENGLUND
PRINT New Owner's Name

P10 BOX 4174
Mailing Address

616 N. 56TH AVE W.
Mailing Address

BISBEE AZ 85603
City State Zip

DULUTH, MN 55807-1325
City State Zip

Telephone Number

Telephone Number

Signature of Previous/New Well Owner Lee R Englund Date 4/28/05
Rose T. Englund 4/29/05

DWR 55-71a (Rev 1/99)

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001- 0458
FOR INFORMATION: CALL MONICA ORTIZ AT (602)417-2470

MAY - 6 2005

REQUEST FORM TO CHANGE WELL INFORMATION
OWNERSHIP * DRILLER

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SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. **CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)**

NOTE: If the location of the proposed well changes after drilling authority has been issued, **attach a $10.00 reissue fee for each** of the drilling authorities to be changed. D(24-24)5 DAB

WELL REGISTRATION NO. 55- 565260 **FILE NO:** D124-24

I/We request the following well information be changed: _____

_____

Date _____ Signature of Current Well Owner _____

***Note: This information is on your copy of the Notice of Intent to Drill.**

2. **STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)**

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, LEE R. ENGLUND AND ROSE T. ENGLUND, state that I am the **Previous/New Owner** of the well described below:

_____¼ _____¼ _____¼ of Section _____ Township _____ N/S Range _____ E/W
10 Acre 40 Acre 160 Acre

Assessor's tax parcel number of the parcel on which the well is located: Book _____ Map _____ Parcel _____.

Well Registration No. 55- 565260 File No. D124-24 (if known)

LEO DAY
PRINT Previous Owner's Name

PO& BOX 4174
Mailing Address

BISBEE AZ 85603
City State Zip

Telephone Number

LEE R. ENGLUND AND ROSE T. ENGLUND
PRINT New Owner's Name

616 N. 56TH AVE W.
Mailing Address

DULUTH, MN 55807-1325
City State Zip

Telephone Number

Signature of Previous/New Well Owner Lee R Englund Date 4/28/05
Rose T. Englund 4/29/05

DWR 55-71a (Rev 1/99)

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

RECEIVED
FEB 29 2000
RECORDS MGT

1. JS & K DRILLING INC
501 PATTON STREET
HUACHUCA CITY, AZ 85616

2. Owner Name: LEO DAY
Address: BISBEE (City) AZ (State) 85603 (Zip)

3. Location: 24 N/S 24 E/W 5 ¼ NW ¼ NE ¼ SE ¼
(Township) (Range) (Section) (10-acre) (40-acre) (160-acre)

4. Well Registration No. 55- 565260 (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 320 ft.
7. Type of casing PVC
8. Diameter and length of casing 6 in. from 0 to 20, 4½ in from 0 to 320
9. Method of sealing at reduction points —
10. Perforated from 260 to 320, from — to _____ from _____ to _____
11. Size of cuts ⅛ Number of cuts per foot 2
12. If screen was installed: Length — ft. Diam _____ in. Type _____
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started DEC (Month) 12 (Day) 97 (Year)
15. Date completed DEC (Month) 16 (Day) 97 (Year)
16. Depth to water 250 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
STATIC
18. If flowing well, state method of flow regulation: —
19. Remarks: —

DWR-55-55-7/95 (Rev.)

ANSWERED MAR 2 2000

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-565260
File No. D(24-24)5 DAB
Received _____ By _____
Entered _____ By _____

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	3	CLEACHIE & GRAVEL
3	40	GRAVEL & CLAY
40	320	CONGLOMERATE

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: [signature]

501 PATTON ST
Street

H.C. AZ 85616 856-2357
City State Zip Phone No.

[signature] Dec 20, 97
Signature of Driller Date

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street - Phoenix, Arizona 85004-3903
Phone (602) 417-2470

RECEIVED
OCT 16 1997
GROUNDWATER MGT

NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL
PLEASE READ SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS ON REVERSE SIDE OF THIS FORM BEFORE COMPLETING

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES.

LEO DAY | Box 4174 | BISBEE | AZ | 85603-4174
Land Owner's Name | Current Mailing Address | City | State | Zip

Telephone No. 432-9127

COUNTY ASSESSOR'S PARCEL ID INFORMATION:

Well Located In COCHISE County

102 | 39 | 150E | 1.02
BOOK | MAP | PARCEL | # of Acres

Well/Land Location (must be completed as requested):

NW ¼ NE ¼ SE ¼ of Section 5 Township 24 N/S Range 24 E/W
10AC 40AC 160AC

OFFICIAL SEAL OR STAMP

C.C.H.S.
1415 W. Melody Lane, Bldg. A
Bisbee, Arizona 85603-3090

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

Check one:
Recommend Approval ✓; Insufficient Information to Make Determination ___; Variance Required ___ (Explanation attached)

DATE 10-10-97 AUTHORIZED SIGNATURE Donald Maier TITLE DIR. Environmental Health

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH ADWR

1. Section §45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section §45-596(d) provides that the Department has 15 days after the receipt of a complete and correct notice of intention to record the notice and mail duplicate to owner. Drill card will be mailed directly to drilling firm as stated in item #14.
3. Please mail two original notices with original signatures, a site plan in DUPLICATE, and a check or money order (no cash) in the amount of $10.00 to P.O. Box 458, Phoenix, Arizona 85001-0458 or hand deliver to 500 North Third Street, Phoenix, Arizona 85004-3903. USE BLACK OR BLUE INK.
4. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
5. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. Owner of well:
LEO DAY
Name
4174 PO Box
Current Mailing Address
BISBEE AZ 85603
City State Zip
Telephone No. 432-9127

2. Action requested: Drill New Well X; Deepen ___ Modify ___ Replace ___.
For a replacement well provide: Maximum capacity of the original well ___ gallons per minute; distance from the original well ___ feet.
Well Registration No.55-___

3. Construction will start about:
Month Dec Year 97

4. Description of proposed well:
Diameter 4½ inches
Depth 250 feet
Type of Casing PVC

5. Design pump capacity:
10 gallons per minute

6. Lessee of land of wellsite:
Name
Current Mailing Address
City State Zip
Telephone No.

7. Principal Use of Water; (be specific):
DOMESTIC

8. Other uses of Water; (be specific):

9. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated;

FOR DEPARTMENT USE ONLY
File No. D(24-24)5AAB
Filed 10-16-97 By
Input NOV 12 By 1997
DUPLICATE MAILED
Date 10-31-97
Registration 55-565260
AMA/INA
W/S S/B

10. Place of Use (Legal Description of Land):
NW ¼ NE ¼ SE ¼ Section 5
10 AC 40AC 160AC
Township 24 N/S Range 24 E/W

11. Type of Well (Check One):
Exempt X Non-Exempt ___

12. Check One:
Residential X Commercial ___

13. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous materials or petroleum storage areas and tanks? Yes ___ No X

14. Drilling Firm:
J S & K DRILLING, INC.
Name
501 PATTON ST.
Mailing Address
HUACHUCA CITY AZ 85616
City State Zip
456-2355
Telephone No.
565
DWR License Number
C-53
ROC License Category

I State that this Notice is filed in compliance with A.R.S. §§45-595 and 45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations and conditions set forth on the reverse side of this form.

Leo E Day | LEO DAY | Oct 1,97
Typed or Printed Name and Title | Signature [ ] Land Owner [ ] Lessee of Wellsite, Title | Date

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Pursuant to Section §45-596, Arizona Revised Statutes, provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department.

2. If any water from a proposed well on a parcel of land of twenty or fewer acres will be used for domestic purposes, as defined in §45-454, the applicant shall submit a site plan to scale of the property with the county assessor's parcel identification number. The site plan:

   a. Will be on a 8½"x11" piece of plain paper with representation of the locations of all structures, septic tank or sewer systems and proximity of adjacent lot lines to scale.

   b. Must show the proposed well location and the location of any septic or sewer system that is either located on the property or within one hundred feet of the proposed well site.

   c. Shall demonstrate to the Director's satisfaction that the well will not be drilled within one hundred feet of any septic or sewer system.

   d. Must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Before approval, the health authority shall review the plan and determine whether the proposed well location complies with applicable state and local laws regarding the placement of wells. If so, the health authority shall endorse the site plan and the proposed well placement.

3. Endorsement by the county/local authority is based on the best available judgement that this well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. Information brought to light at a future date may render this determination invalid.

4. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use and is later proposed to be converted to use for domestic purposes, as defined in section §45-454, the well owner shall file a notice of intention to drill and comply with the requirements prescribed pursuant to this section before the well is converted and any water from that well used for domestic purposes.

5. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

6. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an Irrigation Non-Expansion Area or Active Management Area to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

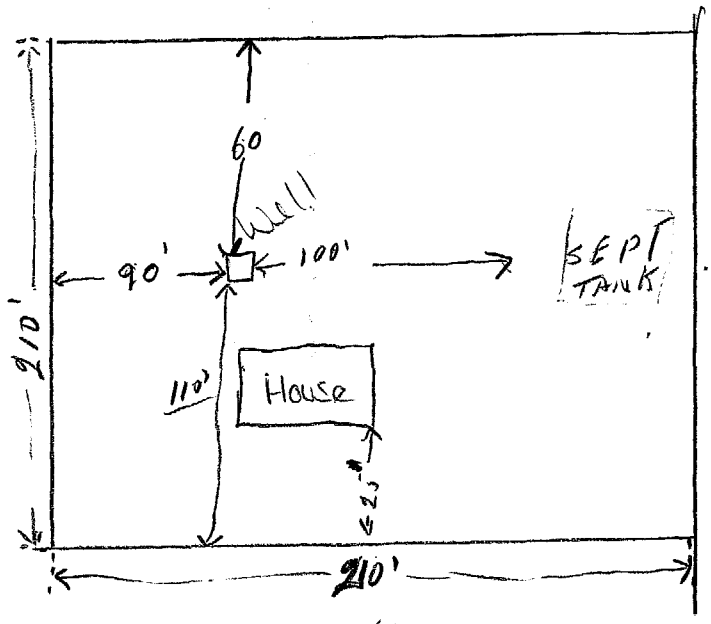
7. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of the notice (§45-596.E.).

8. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this notice.

9. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

10. If an individual other than the land owner or lessee signs this Notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific Notice on their behalf, shall accompany the Notice.

RECEIVED
OCT 16 1997
GROUNDWATER MGT



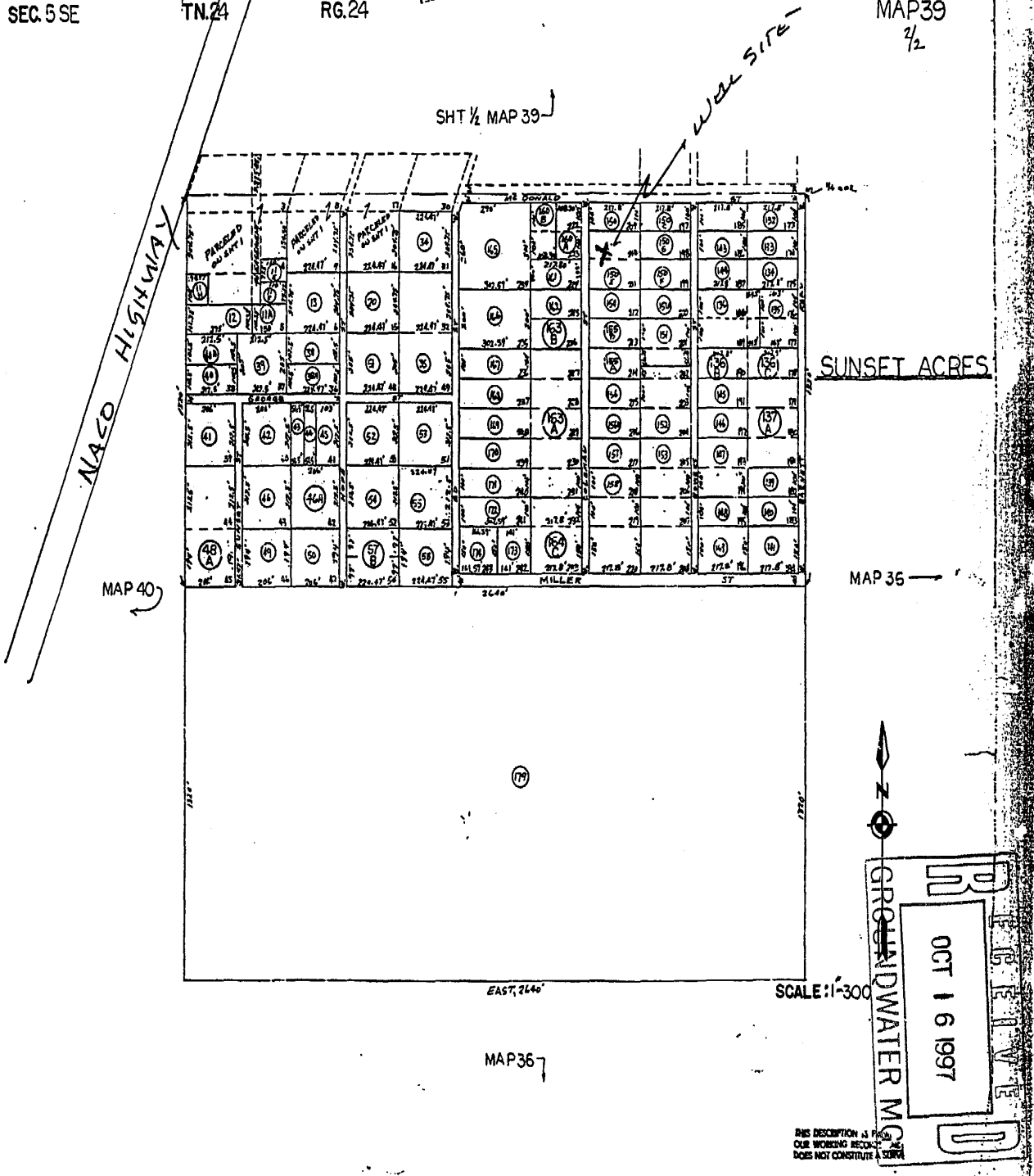
LEO DAY
2331 COLEMAN AZ
PHONE 432-9127

Small well
$3500.00

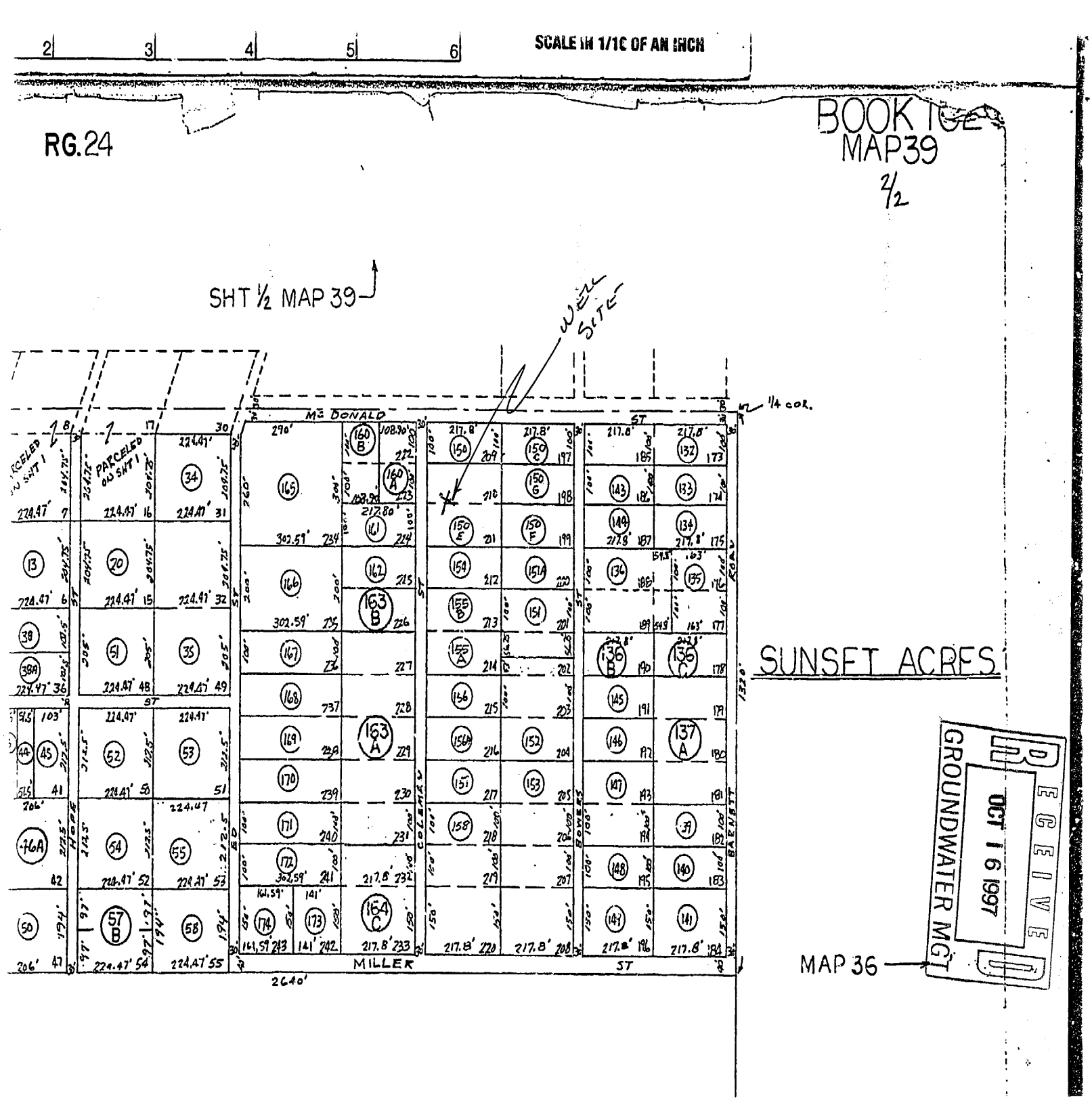
1-800-345-7334

SEC. 5 SE TN. 24 RG. 24

BOOK 102
MAP 39
2/2



COUNTY ASSESSOR'S MAP


SCALE IN 1/10 OF AN INCH
RG.24
BOOK 102
MAP39
2/2
SHT 1/2 MAP 39
WELL SITE
1/4 COR.
McDONALD ST
MILLER ST
HOPE ST
COLEMAN ST
BOWERS ST
BARNETT ROAD
SUNSET ACRES
MAP 36
RECEIVED
OCT 16 1997
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

JANE DEE HULL
Governor

RITA P. PEARSON
Director

November 4, 1997

LEO DAY
P O BOX 4174
BISBEE, AZ 85603

Registration No. 55-565260
File No. D(24-24)5 DAB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill/deepen/modify/replace a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Toni Bergeman

Toni M Bergeman
Water Resource Technician
Groundwater Management Support Section

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-565260

AUTHORIZED DRILLER: JS & K DRILLING INC **LICENSE NO:** 565

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: LEO DAY P O BOX 4174 BISBEE, AZ 85603

The well(s) is/are to be located in the:

NW 1/4 of the NE 1/4 of the SE 1/4 Section 5 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 15TH DAY OF OCTOBER, 1998.

FOR: CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

TB

#1

DEPARTMENT OF WATER RESOURCES
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING

PRINT OR TYPE - FILE IN DUPLICATE

13

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL - $10.00	☐

For Office Use Only
REGISTRATION NO. 55 805641-L
FILE NO. D(24-24)11dcd
FILED 11.15.89 at ✓
(Date) (Time)
INA ✓
AMA ✓

LATE FEE $10.00 ☒

1. Name of Registrant:
David L. Eppele
8 Mulberry Lane | Bisbee | Arizona | 85603
Address | City | State | * Zip

2. File and/or Control Number under previous groundwater law: _____ 35 (see attachment #1)
File No. Control No.

3. * a. The well is located within the SE ¼ SW ¼ SE ¼, Section 0011 of Township 024 N/S, Range 024 E/W, G&SRB&M, in the County of Cochise.
* see: attachemnt #2
b. If in a subdivision: Name of subdivision n/a
Lot No. _____ Address _____

4. The principal uses(s) of water: (Examples: irrigation, stockwater, domestic, municipal industrial 1. Domentic 2. Irrigation

5. If for irrigation use, number of acres irrigated from well 1.9.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
Name | Address | City | State | Zip

7. Well data (If data not available, write N/A)
a. Depth of Well 265 feet
b. Diameter of casing n/a inches
c. Depth of casing n/a feet
d. Type of casing n/a.
e. Maximum pump capacity 6 gallons per minute.
f. Depth to water 30 feet below land surface.
g. Date well completed Unknown.
(Month) (Day) (Year)

NOV 15 1989

8. The place(s) of use of water. If same as Item 3, check this box ☐
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____

9. DATE 11/15/89 SIGNATURE OF REGISTRANT David L. Eppele

DEC - 5 1989

ENTERED DEC 07 1989

DWR-55-76-9/85

DAVID L. EPPELE
GENEVA M. EPPELE
8 MULBERRY LANE
BISBEE, AZ. 85603
432-7040

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 S. 15TH AVENUE
PHOENIX, ARIZONA 85007

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	805641-L
	THRU
55	805643-L

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEE FOR REGISTRATION OF 3 EXISTING	10.00	30.00
					WELLS ALL OUTSIDE THE A.M.A.'s		
					55-805641-L D (24-24)11dcd		
					55-805642-L D (24-24)11dcd		
					55-805643-L D (24-24)11dcd		
					12/6/89 P. Rocko Check# 1852		

TOTAL $ 30.00

PAID

#2

DEPARTMENT OF WATER RESOURCES
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING

PRINT OR TYPE - FILE IN DUPLICATE

13

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL - $10.00	☐

LATE FEE $10.00 ☒

For Office Use Only
REGISTRATION NO. 55 805642-L
FILE NO. D(24-24)11 dcd
FILED 11.15.89 (Date) at / (Time)
INA /
AMA /

1. Name of Registrant:
David L. Eppele
8 Mulberry Lane | Bisbee | Arizona | 85603
Address | City | State | Zip *see attached #1)

2. File and/or Control Number under previous groundwater law: 35 (File No.) 0011 (Control No.)

3. *a. The well is located within the SE ¼ SW ¼ SE ¼, Section 11 of Township 024 N/S, Range 024 E/W, G&SRB&M, in the County of Cochise.
*see: attachment #2
b. If in a subdivision: Name of subdivision n/a
Lot No. _____ Address _____

4. The principal uses(s) of water: (Examples: irrigation, stockwater, domestic, municipal industrial irrigation

5. If for irrigation use, number of acres irrigated from well 1.9.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
Name | Address | City | State | Zip

7. Well data (If data not available, write N/A)
a. Depth of Well 40 feet
b. Diameter of casing n/a inches
c. Depth of casing n/a feet
d. Type of casing n/a.
e. Maximum pump capacity 5 gallons per minute.
f. Depth to water 20 feet below land surface.
g. Date well completed Unknown (early 1900's) (Month) (Day) (Year).

NOV 15 1989

8. The place(s) of use of water. If same as Item 3, check this box ☒
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____

9. DATE 11/15/89 SIGNATURE OF REGISTRANT David L. Eppele

DWR-55-76-9/85

ENTERED DEC 07 1989

DAVID L. EPPELE
GENEVA M. EPPELE
8 MULBERRY LANE
BISBEE, AZ. 85603
432-7040

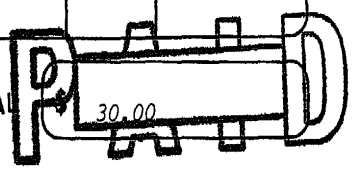
STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 S. 15TH AVENUE
PHOENIX, ARIZONA 85007

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	805641-L
	THRU
55	805643-L

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEE FOR REGISTRATION OF 3 EXISTING	10.00	30.00
					WELLS ALL OUTSIDE THE A.M.A.'s		
					55-805641-L D (24-24)11dcd		
					55-805642-L D (24-24)11dcd		
					55-805643-L D (24-24)11dcd		
					12/6/89 P. Rocko Check# 1852		

TOTAL 30.00



#3

DEPARTMENT OF WATER RESOURCES
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING

PRINT OR TYPE - FILE IN DUPLICATE

13

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☒
NON-EXEMPT WELL - $10.00 ☐

LATE FEE $10.00 ☒

For Office Use Only
REGISTRATION NO. 55 805643-L
FILE NO. D(24-24) 11dcd
FILED 11.15.89 (Date) at — (Time)
INA —
AMA —

1. Name of Registrant:
David L. Eppele
8 Mulberry Lane | Bisbee | Arizona | 85603 (*see attached #1)
Address | City | State | Zip

2. File and/or Control Number under previous groundwater law: ____ (File No.) 35 (Control No.)

3.* a. The well is located within the SE ¼ SW ¼ SE ¼, Section 0011 of Township 024 N/S, Range 024 E/W, G&SRB&M, in the County of Cochise.
* see attachment #2
b. If in a subdivision: Name of subdivision n/a
Lot No. _____ Address _____

4. The principal uses(s) of water: (Examples: irrigation, stockwater, domestic, municipal industrial 1. Domestic 2. Irrigation

5. If for irrigation use, number of acres irrigated from well 1.9.

6. Owner of land on which well is located. If same as Item 1, check this box ☐
Name | Address | City | State | Zip

7. Well data (If data not available, write N/A)
a. Depth of Well 165 feet
b. Diameter of casing n/a inches
c. Depth of casing n/a feet
d. Type of casing n/a.
e. Maximum pump capacity 6-9 pm gallons per minute.
f. Depth to water 30 feet below land surface.
g. Date well completed n/a (Month) (Day) (Year).

NOV 15 1989

8. The place(s) of use of water. If same as Item 3, check this box ☒
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____

9. DATE 11/15/89 SIGNATURE OF REGISTRANT David L. Eppele

- 5 1989

DWR-55-76-9/85

ENTERED DEC 07 1989

DAVID L. EPPELE
GENEVA M. EPPELE
8 MULBERRY LANE
BISBEE, AZ. 85603
432-7040

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 S. 15TH AVENUE
PHOENIX, ARIZONA 85007

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	805641-L
	THRU
55	805643-L

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEE FOR REGISTRATION OF 3 EXISTING	10.00	30.00
					WELLS ALL OUTSIDE THE A.M.A.'s		
					55-805641-L D (24-24)11dcd		
					55-805642-L D (24-24)11dcd		
					55-805643-L D (24-24)11dcd		
					12/6/89 P. Rocko Check# 1852		

TOTAL $ 30.00

PAID

2-72

OF ARIZONA

DEPARTMENT OF
WATER RESOURCES

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Jesus Frances
Name
P.O. Box 395, Naco, Az 85620
Address

2. Lessee or Operator _____
Name
_____
Address

3. Driller Lee's Well Drilling
P. O. Bx-4558
Name Huachuca City, AZ. 85616
_____
Address

4. Location of well: T-24S R 24E Sec 16 aw nw nw

5. Permit No. _____
(if issued)

DESCRIPTION OF WELL

6. Total depth of hole 200 ft.
7. Type of Casing PVC
8. Diameter and length of casing 6 in. from 0 to 200, _____ in from _____ to _____.
9. Method of sealing at reduction points Cement
10. Perforated from 180 to 200, from _____ to _____, from _____ to _____
11. Size of cuts 1/8" Number of cuts per foot one
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction Drilled
drilled, dug, driven, bored, jetted, etc.
14. Date started 7 (Month) 1 (day) 81 (year)
15. Date completed 7 (Month) 1 (day) 81 (year)
16. Depth to water 160' ft. (If flowing well, so state.)
17. Describe point from which depth measurements were made, and give sea-level elevation if available. Ground Level
18. If flowing well, state method of flow regulation _____
19. REMARKS: _____

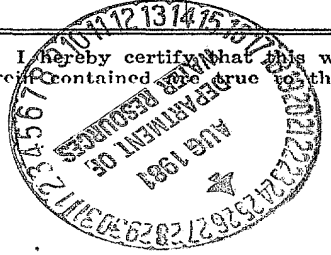
DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55-500101
Received _____ By _____
Entered 9-15-81 By BT
File No. D(24-24)16 bbb

(Well log to appear on Reverse side)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	10	clay
10	200	Sandy clay & gravel



I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Lee's Well Drilling
P. O. Box-4556
Huachuca City, AZ 85616

Address

Date

DEPARTMENT OF WATER RESOURCES
99 East Virginia
Phoenix, Arizona 85004

Registration No. 55-500101
Owner of
Well Site JESUS FRANCO

File No. D(24-24) 16 bbb

COMPLETION REPORT



1. Completion Report to be filed with the Department within 30 days after installation of pump equipment.

2. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

3. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.

4. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

LOCATION OF THE WELL

T-24s-R24E-S-16 NW-NW-NW .

Date Well Completed 7-81 Depth of Well 200'

1. Well Test:
Test Pumping Capacity 25 (Gal. per min.) Date Well Tested 7/8/81

Method of Discharge Measurement 5 gal Container (weir, orifice, current meter, etc.)

Static Groundwater Level 120' ft. Drawdown 10' ft.

Total Pumping Lift 180' ft. Drawdown _____ lbs. (Flowing Well)

2. Equipment Installed:

Kind of Pump Submersible (turbine, centrifugal, etc.)

Kind of Power Elec. (Elec., Nat. Gas, Etc.) H.P. Rating of Motor 3

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TRIPLE L PUMP CO.
Signature Box 414 • Huachuca City, Az. 85616
Phone 456-9377
Address

8/10, 1982
Date

City State Zip

8-17-82

EXEMPT WELL
FILING FEE: $3.00

DEPARTMENT OF WATER RESOURCES
NOTICE OF INTENTION TO DRILL OR DEEPEN
AN EXEMPT WELL

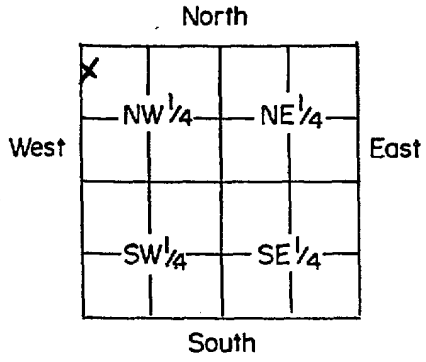
EXEMPT WELL

Section 45-596, Arizona Revised Statutes, provides: A person may not drill or cause to be drilled any well or deepen or replace an existing well without first filing a Notice of Intention to Drill with the Department on a form prescribed and furnished by the Department. The well shall be completed within one year after the date of Notice. An exempt well means a well having a pump with a maximum design capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An exempt well may include the non-commercial irrigation of not more than 1 acre of land.

North

X		
NW 1/4	NE 1/4	
SW 1/4	SE 1/4	

West East South



- Indicate Well Location by X
(Above diagram represents one 640 acre section)

WELL/LAND LOCATION:
1. Township 24S
2. Range 24E
3. Section 16
4. NW 1/4 NW 1/4 NW 1/4
10 acre sub-division
5. County Cochise
6. Owner of Well:
Jesus Franco
Name
P.O. BX - 395
Address
NACO, Az 85620
City State Zip
7. Owner of Land:
Name
Address
City State Zip

DESCRIPTION OF WELL:
8. Diameter 6"
Depth 250'
9. Type of Casing PVC
10. Principle use of Water
domestic
11. Other uses Intended
(If for non-commercial irrigation, state approximate area being cultivated.)
12. Construction will start about:
6 81
Month Year

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
FILE NO. D(24-24)16 bbb
FILED 6-8-81 BY jc
INPUT 6-11-81 BY Pat
DUPLICATE MAILED 6-12-81 BY jc
REGISTRATION NO 55-500101
AMA NON EXPANSION AREA =

PLACE OF USE:
13. Township 24S
14. Range 24E
15. Section 16
16. Legal description of land water is to be used on:
17. Design Pump Capacity
10
18. Action Requested:
Drill ✓
Deepen
Replace
19. This notice filed by:
Owner
Lessee
Driller ✓
Name Lee's Well Drilling
Address P. O. Bx-4558 Huachuca City, AZ. 85616
City State Zip
20. Drillers Name:
Name Lee's Well Drilling
Address P. O. Bx-4558 Huachuca City, AZ. 85616
City State Zip
T-80 ✓ 48979
Department License Number

1. Fill out this form in duplicate and mail to P.O. Box 2600, Phoenix, Arizona, 85002, or deliver to 222 N. Central Ave., Suite 550, Phoenix, Arizona, 85004.
2. If the Exempt Well is in fact a replacement (or deepening) well, state the registration number of the existing well.
3. Construction standards for new and replacement wells and the deepening and abandonment of existing wells, shall be in accordance with Department Rules and Regulations.

I, _____, state that the construction will be under the direct and personal supervision of the well driller designated on this form and that the designated driller hold a contractors license pursuant to ARS 45-595.

June 3-1981
Date

Carol Driver - Lee's Well Drlg
Signature of Person Filing

Lee's Well Drilling
P. O. Box 4558
Huachuca City, Arizona 85616

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT — FILE

KIND ENTRY	FILE REFERENCE NO.
55	500101
	THRU

For: Jesus Franco

№ 9289

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing fee for Notice of Intention to Drill		3.00
					or Deepen an Exempt Well		
					Water Rights (GW)		
					File #D(24-24)16 bbb		
					Registration #55-500101		
					Check #1776		

6/9/81 jc

TOTAL $ 3.00

ARIZONA DEPARTMENT OF WATER RESOURCES
Information Management Unit
P.O. Box 458, Phoenix, Arizona 85001-0458
(602) 771-8527 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

RECEIVED
JUN 28 2006
Information Management

This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

FILE NUMBER: D(24-24) 11 DCC
WELL REGISTRATION NUMBER: 55- 212447
PERMIT NUMBER (IF ISSUED):

SECTION 1. DRILLING AUTHORIZATION

Mail To:

Drilling Firm

NAME	DWR LICENSE NUMBER
ALLEN S WELL SERVICE L.L.C	14
ADDRESS	TELEPHONE NUMBER
5509 W. GLEESON ROAD	520-642-3775
CITY/STATE/ZIP	FAX
ELFRIDA, AZ 85610-9050	

SECTION 2. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: RICHARD & JULIE FULTZ
MAILING ADDRESS: 694 E BORDER RD
CITY / STATE / ZIP: BISBEE, AZ 85603
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-432-4463
FAX:
WELL NAME (e.g., MW-1, PZ-3, Lot 25 Well, Smith Well, etc.):

Location of Well

WELL LOCATION ADDRESS (IF ANY):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	11	SE 1/4	SW 1/4	SW 1/4

LATITUDE			LONGITUDE		
31 ° Degrees	21 . Minutes	02 "N Seconds	109 ° Degrees	52 . Minutes	24 "W Seconds

METHOD OF LATITUDE / LONGITUDE (CHECK ONE): [X] *GPS: Hand-Held [ ] USGS Quad Map [ ] Conventional Survey [ ] *GPS: Survey-Grade

LAND SURFACE ELEVATION AT WELL: 4686 Feet Above Sea Level

METHOD OF ELEVATION (CHECK ONE): [X] *GPS: Hand-Held [ ] USGS Quad Map [ ] Conventional Survey [ ] *GPS: Survey-Grade

*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE): [ ] NAD-83 [ ] Other (please specify):

COMPLETED JUL 20 2006

COUNTY: Cochise

ASSESSOR'S PARCEL ID NUMBER: BOOK 101 | MAP 44 | PARCEL 010

SECTION 3. WELL CONSTRUCTION DETAILS

Drill Method — CHECK ONE
- [X] Air Rotary
- [ ] Bored or Augered
- [ ] Cable Tool
- [ ] Dual Rotary
- [ ] Mud Rotary
- [ ] Reverse Circulation
- [ ] Driven
- [ ] Jetted
- [ ] Air Percussion / Odex Tubing
- [ ] Other (please specify)

Method of Well Development — CHECK ONE
- [X] Airlift
- [ ] Bail
- [ ] Surge Back
- [ ] Surge Pump
- [ ] Other (please specify)

Method of Sealing at Reduction Points — CHECK ONE
- [X] None
- [ ] Packed
- [ ] Swedged
- [ ] Welded
- [ ] Other (please specify)

Condition of Well — CHECK ONE
- [X] Capped
- [ ] Pump Installed

Construction Dates
DATE WELL CONSTRUCTION STARTED: 6-22-06
DATE WELL CONSTRUCTION COMPLETED: 6-23-06

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
Allens Well Service	[signature]	6-23-06

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 212447

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

DEPTH OF BORING	DEPTH OF COMPLETED WELL
300 Feet Below Land Surface	300 Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
124 Feet Below Land Surface	6-23-06 ~~10-00~~	10:00	☐ Valve ☐ Other:

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	12 1/4
20	300	8"

Installed Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (X) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (X) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
+1	20	8 5/8	X										
0	300	5" ID		X									
	280	300									X		
	240	260									X		
	200	280									X		

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (X) NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
0	20			X					NONE			

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 212447

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	10	(Red) Clay	
10	90	red Clay & rock	
90	130	Gray - rock	
130	140	Sand	*
140	200	Red Volcanic rock	
200	310	brown - hard Clay	
310	320	brown sand	*
320	360	Volcanic rock	

Well Driller Report and Well Log

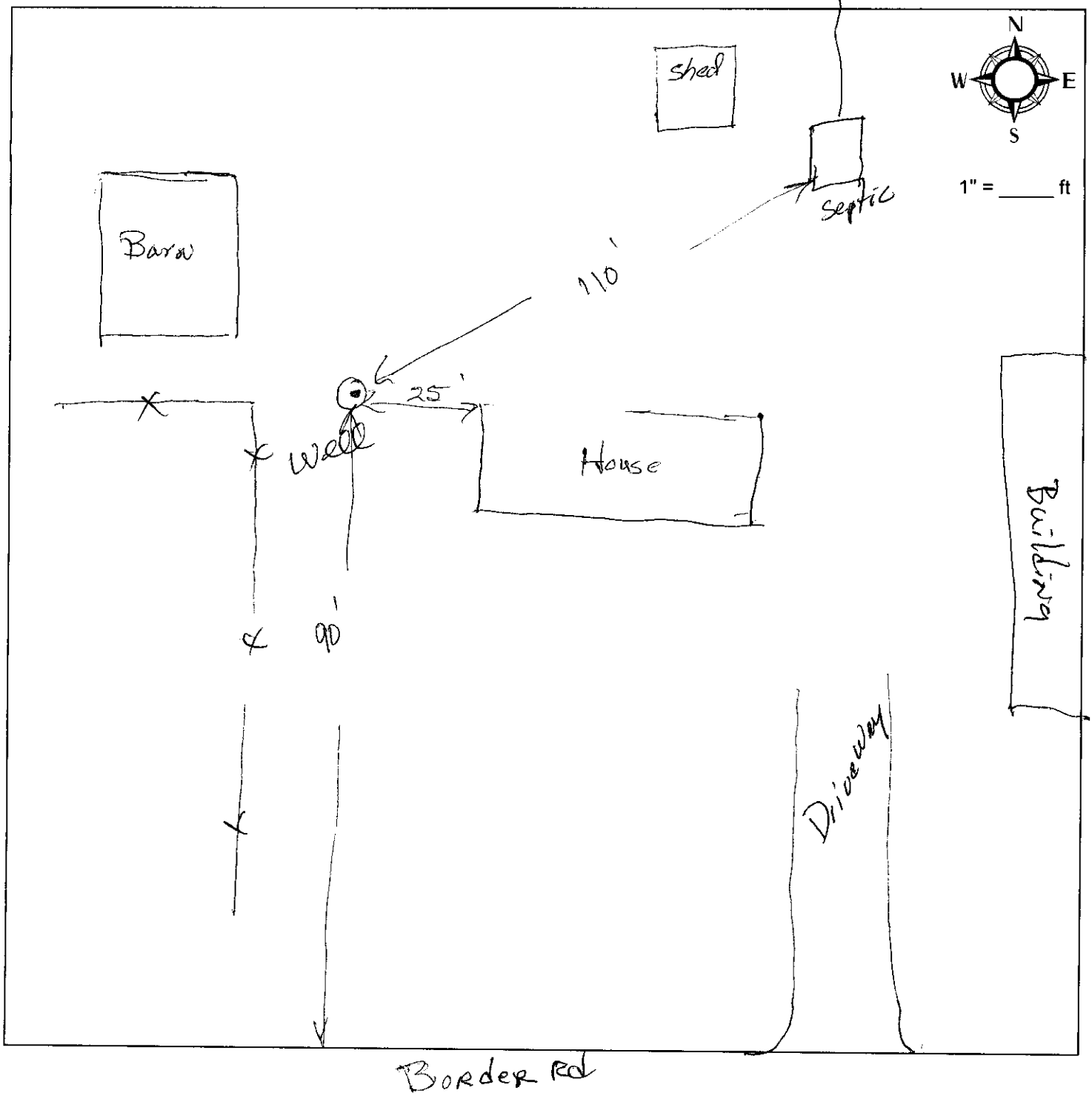
WELL REGISTRATION NUMBER
55- 212447

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
RICHARD & JULIE FULTZ	101	44	010

Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.

Please indicate the distance between the well location and any septic tank system or sewer system.



ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

3550 N. Central Avenue
Phoenix, Arizona 85012

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-212447

AUTHORIZED DRILLER: ALLEN S WELL SERVICE L.L.C LICENSE NO: 14

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: RICHARD & JULIE FULTZ 694 E BORDER RD BISBEE, AZ 85603

THE WELL(S) IS/ARE TO BE LOCATED IN THE:
SW ¼ OF THE SW ¼ OF THE SE ¼ SECTION 11 TOWNSHIP 24 SOUTH RANGE 24 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 101-44-010

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 22ND DAY OF MAY, 2007

WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue, Phoenix, Arizona 85012
Telephone (602) 771-8500
Fax (602) 771-8691

May 24, 2006

Janet Napolitano
Governor

Herbert R. Guenther
Director

RICHARD & JULIE FULTZ
694 E BORDER RD
BISBEE, AZ 85603 - 6324

Registration No. 55- 212447
File No. D(24-24) 11 DCC

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well that you recently filed with this Department pursuant to A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed or otherwise provided a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card, which must be displayed on the drill rig during drilling.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the proposed well, you may not proceed with drilling until you file an amended NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the amended NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DWR form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed is a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55) within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at <http://www.water.az.gov/adwr/content/forms/default.htm#NOI>.

Sincerely,

Tiffany Hancock

Tiffany Hancock
NOI Unit
Water Management Support Section

Enclosures

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or ~~$50~~ 100 FEE

AMA / INA	B 35 SB
RECEIVED DATE 5/23/06	WS 13
ISSUED DATE 5/24/06	WQARF CERCLA

FILE NUMBER D(24-24)11DCC
WELL REGISTRATION NUMBER 55 - 212447

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $50.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY ENDORSEMENT (If applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 before submission to the Department of Water Resources. You must also attach a site plan (see instructions).

CHECK ONE

- [X] County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
  - [X] Field Inspection Performed
  - [ ] Site Plan Review Only
- [ ] Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: Carlos Diaz R.S.

TELEPHONE NUMBER: 520-432-9442 | DATE: May 19, 2006

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE May 19, 2006
BY Carlos Diaz R.S.

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz R.S.

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

- [X] Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)
- [ ] Non-Exempt (Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 25 Gallons Per Minute

Proposed Action

CHECK ONE

- [X] Drill New Well
- [ ] Deepen
- [ ] Replace
- [ ] Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 -

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	11	SE ¼	SW ¼	SW ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
101	44	010-6	5.06

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Richard & Julie FuLTZ

MAILING ADDRESS: 694 E Border Rd

CITY / STATE / ZIP CODE: Bisbee Az. 85603-6324

CONTACT PERSON NAME AND TITLE: Same

TELEPHONE NUMBER: 520 432 4463 | FAX:

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL:

MAILING ADDRESS:

CITY / STATE / ZIP CODE: MAY 23 2006

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER: | FAX:

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Existing old well has caved in

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55-212447

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: ALLENS Well Service

DWR LICENSE NUMBER: 14

ROC LICENSE CATEGORY: C-53 L-53

TELEPHONE NUMBER: 520 642 3775

FAX: 520 642 3221

MAILING ADDRESS: 5509 W. Gleeson Rd

CITY / STATE / ZIP CODE: Elfrida Az. 85610

MAY 23 2006

SECTION 6. WATER / SITE INFORMATION

Principal Use of Water (CHECK ONE)

- ☐ Irrigation
- ☐ Utility
- ☐ Commercial
- ☑ Domestic
- ☐ Municipal
- ☐ Industrial
- ☐ Mining
- ☐ Stock
- ☐ Recharge
- ☐ Dewatering
- ☐ Other *(please specify):*

Other Uses of Water (CHECK ALL THAT APPLY)

- ☐ Irrigation
- ☐ Utility
- ☐ Commercial
- ☐ Domestic
- ☐ Municipal
- ☐ Industrial
- ☐ Mining
- ☐ Stock
- ☐ Recharge
- ☐ Dewatering
- ☐ Other *(please specify):*

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

DATE CONSTRUCTION IS TO BEGIN: June 06

Borehole			Casing														
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (T)				PERFORATION TYPE (T)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	20	12 1/4	+1	20	8 5/8	X*										Cement
20	200	8	0	200	6		X									

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: Richard & Julie Fultz

SIGNATURE OF WELL OWNER OR LANDOWNER: Richard Fultz, Julie Fultz

DATE: 4-28-06

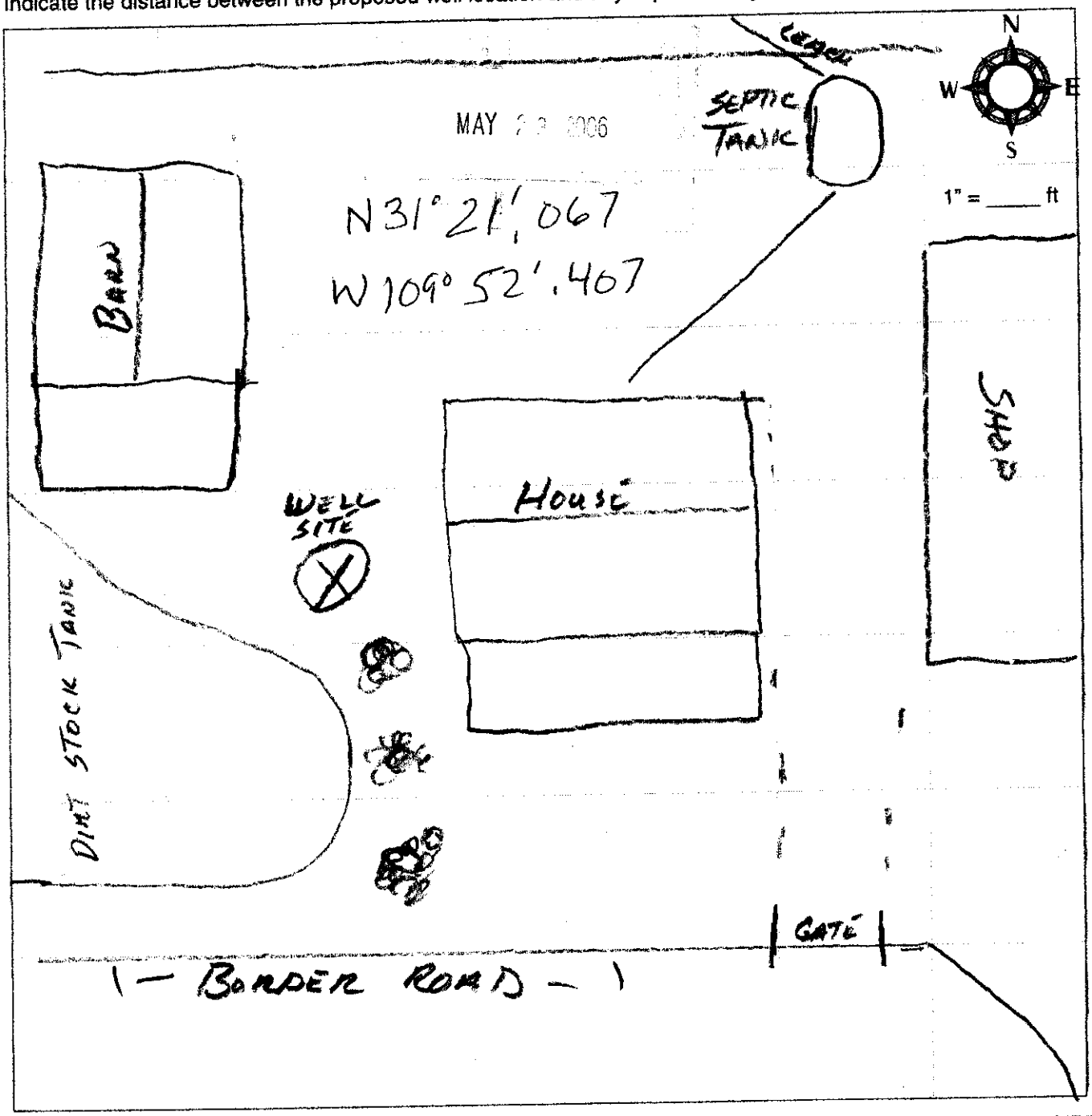
Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55- 212447

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
Richard & Julie Fultz			

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE	CARLOS DIAZ RS
COUNTY OR LOCAL AUTHORITY SIGNATURE	Carlos Diaz RS
TELEPHONE NUMBER	520 432-9402
DATE	May 19, 2006

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE May 19 2006
BY Carlos Diaz RS

COUNTY OF COCHISE ARIZONA

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $50 FEE 100

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $50.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA		B	SB
RECEIVED	DATE	WS	
ISSUED	DATE	WQARF	CERCLA

FILE NUMBER

WELL REGISTRATION NUMBER

55 - 212447

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY ENDORSEMENT (If applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 before submission to the Department of Water Resources. You must also attach a site plan (see instructions).

CHECK ONE

☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☒ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

MAY 23 2006

COUNTY OR LOCAL AUTHORITY NAME AND TITLE

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE May 19, 2006
BY

COUNTY OF COCHISE ARIZONA

THORITY SIGNATURE

RICHARD C. FULTZ
694 BORDER RD 520-432-4463
BISBEE, AZ 85603

148
91-532/1221
27

Date 4-28-06

Pay to the Order of ADWR $ 100.00

One Hundred Dollars & 00/100 Dollars

National Bank OF ARIZONA
1-800-487-9168
www.nbarizona.com

For

ANY)

CTION	160 ACRE	40 ACRE	10 ACRE
11	SE ¼	SW ¼	SW ¼

ID NUMBER

PARCEL	# OF ACRES
010 - 6	5.06

F DIFFERENT FROM LOCATION OF WELL)

CTION	160 ACRE	40 ACRE	10 ACRE
	¼	¼	¼

DESIGN PUMP CAPACITY	DISTANCE & DIRECTION FROM ORIGINAL WELL	COUNTY WHERE WELL IS LOCATED
25 Gallons Per Minute	Feet	Cochise

SECTION 3. OWNER INFORMATION

Well Owner	Landowner (if different from Well Owner)
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Richard & Julie Fultz	FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL
MAILING ADDRESS: 694 E Border Rd	MAILING ADDRESS
CITY / STATE / ZIP CODE: Bisbee Az. 85603-6324	CITY / STATE / ZIP CODE
CONTACT PERSON NAME AND TITLE: Same	CONTACT PERSON NAME AND TITLE
TELEPHONE NUMBER: 520 432 4463 / FAX	TELEPHONE NUMBER / FAX

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Existing old well has caved in

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

RECEIVED
OCT 18 1996
RECORDS MGT

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. TANNER WELL SERVICE
7914 N. FRONTIER RD
MCNEAL, AZ 85617

2. Owner Name: TERRY GARNER
Address: 1027 W. PURDY LANE BISBEE AZ. 85603
Street City State Zip

3. Location: 24 ~~N~~/S 24 E/~~W~~ 17 ¼ NW ¼ NW ¼ NW ¼
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55- 558557 (Required)

5. Permit No. N/A (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 300 ft.
7. Type of casing 22' STEEL — 279' PVC
8. Diameter and length of casing 6 in. from 0 to 300', in from to
9. Method of sealing at reduction points N/A
10. Perforated from 180' to 220', from 240' to 300' from to
11. Size of cuts ⅛" x 6" Number of cuts per foot 3
12. If screen was installed: Length N/A ft. Diam in. Type
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started 7-24-96
Month Day Year
15. Date completed 9-4-96
Month Day Year
16. Depth to water 170' ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
FROM GROUND LEVEL
18. If flowing well, state method of flow regulation: N/A
19. Remarks: GRAVEL PACKED 20' - 300'

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-558557
File No. D(24-24)17BBB
Received By
Entered ENTERED OCT 21 By 1996

DWR-55-55-7/95 (Rev.)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	2	TOP SOIL
2	63	BROWN CLAY
63	80	BROWN CLAY + ROCK
80	183	SAND + GRAVEL (HIT WATER 180' - ROSE TO 170')
183	220	BROWN CLAY + ROCK
220	225	SAND + GRAVEL
225	300	CONGLOMERATE - GRAVEL + ROCK

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: ROBERT D. TANNER

7914 N. FRONTIER RD.
Street

McNEAL, AZ. 85617 520-642-3654
City State Zip Phone No.

Robert D. Tanner 9-5-96
Signature of Driller Date

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470 Fax: (602) 417-2422

RECEIVED
JUL 29 1997
RECORDS MGT

COMPLETION REPORT
(Pump Installation Report)

1. Per A.R.S. § 45-600, The completion report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation. For a flowing well the shut-in presssure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

REGISTRATION NO: 55- 558557 FILE NO: D(24-24) 17bbb

LOCATION OF THE WELL:

24S	24E	17	¼ NW	¼ NW	¼ NW
Township	Range	Section	10-acre	40-acre	160-acre

EQUIPMENT INSTALLED:

Kind of Pump Submersible (Turbine, Submersible, Centrifugal, etc.) Kind of Power Electric (Electric, Natural Gas, Gasoline, etc.)

H.P. Rating of Motor 1 1/2 Pumping Capacity 16 GPM Date Pump Installed 9/8/96

WELL TEST:

Test Pumping Capacity 16 (Gallons per minute) Date Well Tested 9-8-96

Method of Discharge Measurement Measured Container (Weir, orifice, current meter, bucket, etc.)

Static Groundwater Level 171 ft. Drawdown 14 ft.

Total Pumping Lift 260 ft. Drawdown _____ lbs. (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Terry Garner	1027 W. Purdy Ln.	Bisbee	Az.	85603
Print Well Owner's Name	Address	City	State	Zip

Terry Garner	520-432-4210	7-25-97
Signature of Well Owner	Phone Number	Date

DWR 55-56 (Rev 10/95)

ENTERED AUG 22 1997

Should they have Rec. a Summons?

Run Date: 09/18/2002

AZ DEPARTMENT OF WATER RESOURCES

WELL REGISTRY REPORT - WELLS55

Location A 10.0 21.0 5 A A D

Well Reg.No 55 - 558587

AMA NOT WITHIN ANY AMA OR INA

Name LOVERIDGE, ROSE,
6645 HWY 260

SHOW LOW AZ 85904

File Type NEW WELLS (INTENTS OR APPLICATIONS)
Application/Issue Date 06/27/1996

Owner OWNER
Driller Nbr 453
Driller Name H. E. BEEMAN WELL DRILLING dba Wyatt Drilling, Inc.
Driller Phone 928-537-1031
County NAVAJO
Intended Capacity GPM 25.00

Well Type EXEMPT
SubBasin LITTLE COLORADO RIVER PLATEAU
Watershed LITTLE COLORADO RIVER
Water Uses DOMESTIC
Well Uses WATER PRODUCTION
Discharge Method NONE
Power NO POWER CODE LISTED

Well Depth	340.00	**Case Diam**	8.00	**Tested Cap**	0.00
Pump Cap.	0.00	**Case Depth**	340.00	**CRT**	
Draw Down	0.00	**Water Level**	280.00	**Log**	X
		Acres Irrig	0.00	**Finish**	STEEL - PERFORATED OR SLOTTED CASING

Comments |ICO:|IPQ:|PQ#:

Current Action

Action History

6/15/1997	750	WELL LOG RECEIVED
6/15/1997	755	WELL CONSTRUCTION COMPLETED

New address
P.O. Box 1833
Show Low, AZ
85901
928-537-3469

SEP 19 2002

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division, 15 South 15th Avenue
Phoenix, Arizona 85007 (602) 542-1581

NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

Section § 45-596, A.R.S., provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department.

IF PARCEL IS 20 ACRES OR LESS, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BELOW, BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES.

Terry Garner — 1027 W Purdy Ln — Bisbee — AZ — 85603
Land Owner's Name — Address — City — State — Zip

Telephone 432-4210

County: Cochise

COUNTY ASSESSOR'S PARCEL ID INFORMATION:
102 54 0029 — 4
BOOK MAP PARCEL — No. of Acres of Parcel

Well/Land Location:
X NW 1/4 NW 1/4 NW 1/4 of Section ~~12~~ 17 Township 24 N/S Range 24 E/W
10AC 40ac 160ac

OFFICIAL SEAL
C.C.H.S.S.
1415 W. Melody Lane Bldg. A
Bisbee, Arizona 85603-0090

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

Check one:
Recommend Approval X ; Insufficient information to make determination ____ ; Variance required ____ (Explanation attached)

DATE 6-21-96 AUTHORIZED SIGNATURE Steven Herbert

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH

1. Section § 45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section § 45-596(D), provides that the Department has **15 days after** the receipt of a **complete and correct** notice of intention to record the notice and mail the duplicate to the owner.
3. Fill out this form and site plan in **DUPLICATE** and send **WITH $10.00 FEE** to 15 South 15th Ave., Phoenix, AZ 85007. **USE BLACK OR BLUE INK.**
4. For specific instructions, limitations and conditions, see the reverse side of this form.
5. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
6. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. **Owner of well:**
Terry Garner
Name
1027 W Purdy Ln
Mailing Address
Bisbee AZ 85603
City State Zip
Telephone: 432 4210

2. **Action requested:** Drill New Well X ;
Deepen ____ Modify ____ Replace ____
For a replacement well provide: Maximum capacity of the original well ____ gallons per minute; distance from the original well ____ feet.
Well Registration No. 55- ____

3. **Construction will start about:**
Month June Year 1996

4. **DESCRIPTION OF PROPOSED WELL:**
Diameter 6 inches
Depth 200 feet
Type of Casing PVC

5. **Design Pump Capacity:**
20 gallons per minute

6. **Lessee of Land of wellsite:**
none
Name
Mailing Address
City State Zip
Telephone: ____

7. **Principal use of water:** (be specific)
Domestic

8. **Other uses of water:** (be specific)
none

9. If use includes **irrigation**, state to nearest tenth, the number of acres to be irrigated: ____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. D(24-24)17 By BBB
Filed 6/24/96 By dh
Input ____ By ____
DUPLICATE MAILED
Date 6/27/96 By dh
Registration 55- 55-558557
AMA/INA ✓
W/S 13 S/B ✓
ENTERED JUL 1 1996

10. **PLACE OF USE** (Legal Description of Land):
Township 24 N/S Range 24 E/W
Section 17 1/4 NW 1/4 NW 1/4 NW

11. **Type of well:** Exempt X Non-Exempt ____
Residential X Commercial ____

12. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks? YES ____ NO X

13. **DRILLING FIRM:**
Tanner Well Service
Firm Name
7914 N. Frontier Rd.
Mailing Address
McNeal, AZ 85617
City 133 State Zip
DWR License C-53
ROC License Classification

RECEIVED
JUN 24 1996
GROUNDWATER MGT

Terry Garner
Typed or Printed Name of Owner or Lessee

Terry Garner
Signature [ ] Land Owner [ ] Lessee of Wellsite

June 18 - 1996
DATE

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. If any water from a proposed well on a parcel of land of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant shall submit a site plan to scale of the property with the county assessor's parcel identification number. The site plan:

   a. Will be on a 8½"x11" piece of plain paper with representation of the locations of all structures, septic tank or sewer systems and proximity of adjacent lot lines to scale.
   b. Must show the proposed well location and the location of any septic or sewer system that is either located on the property or within one hundred feet of the proposed well site.
   c. Shall demonstrate to the director's satisfaction that the well will not be drilled within one hundred feet of any septic or sewer system.
   d. Must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Before approval, the health authority shall review the plan and determine whether the proposed well location complies with applicable state and local laws regarding the placement of wells. If so, the health authority shall endorse the site plan and the proposed well placement.

2. Endorsement by the county/local authority is based solely on the best available judgement that this well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. Information brought to light at a future date may render this determination invalid.

3. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use and is later proposed to be converted to use for domestic purposes, as defined in § 45-454, the well owner shall file a notice of intention to drill and comply with the requirements prescribed pursuant to this section before the well is converted and any water from that well used for domestic purposes.

4. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

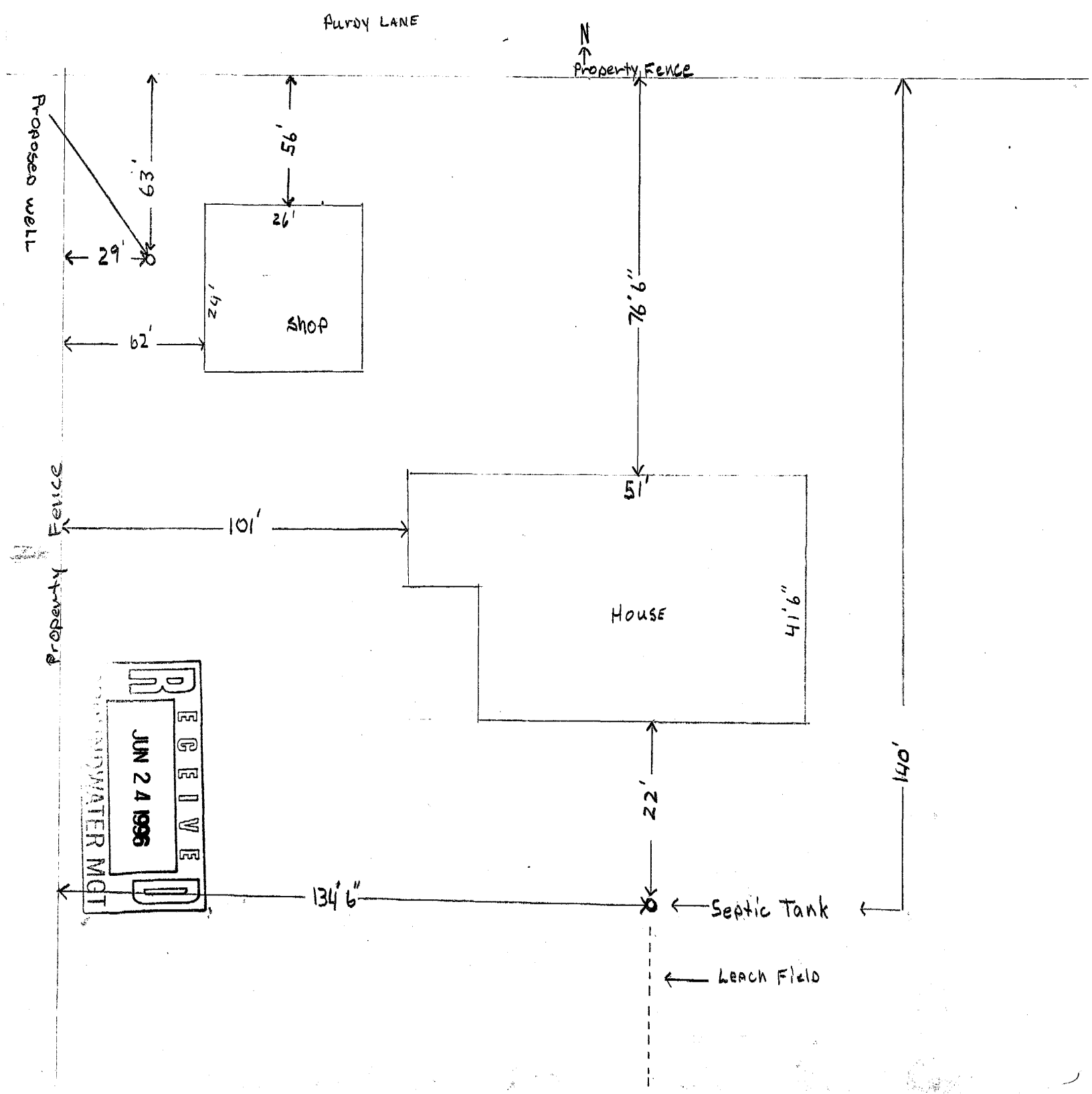
5. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an Irrigation Non-Expansion Area or Active Management Area to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

6. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of the notice (§ 45-596.E.).

7. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this notice.

8. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

9. If an individual other than the land owner or lessee signs this Notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific Notice on their behalf, shall accompany the Notice.


PURDY LANE
N
Property Fence
Proposed well
63'
56'
26'
29'
24'
62'
Shop
76'6"
51'
101'
Property Fence
House
41'6"
22'
140'
134'6"
Septic Tank
Leach Field
RECEIVED
JUN 24 1996
WATER MGT

32837

1957 1053 #

IN NENE BY M&B Beg 308 W of NE Cor of
NE 4 W 205' S 850' E 205' N 850'
to Beg Sec 17 24 24 4

(1) (24-24) 17 AAA

RECEIVED
JUN 24 1996

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

June 27, 1996

Terry Garver
1027 W. Purdy Circle
Bisbee, AZ 85603

Registration No. 55-558557
File No. D(24-24)17BBB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill, deepen or modify a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593(C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Dorothy Boggs
Groundwater Permit Specialist

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-558557

AUTHORIZED DRILLER: TANNER WELL SERVICE LICENSE NO: 133

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: TERRY GARVER

The well(s) is/are to be located in the:

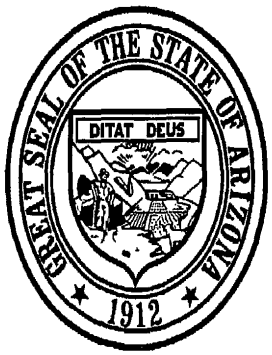
NW 1/4 of the NW 1/4 of the NW 1/4 Section 17 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 23RD DAY OF JUNE, 1997.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING



ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street
Phoenix, Arizona 85004

RECEIVED
OCT 18 2001
RECORDS MGT

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. ARIZONA BEEMAN DRILLING dba Morex Investments LLC
P.O. BOX 3370
APACHE JUNCTION, AZ 85217-3370

2. Owner Name: Terry S. Garner
Address: 1027 W. Purdy Lane (City) Bisbee, AZ 85603 (State, Zip)

3. Location: 24 (Township) N/(S) 24 (Range) (E)/W 17 (Section) ¼ NE (10-acre) ¼ NE (40-acre) ¼ NE (160-acre)

4. Well Registration No. 55-587635 (Required)

5. Permit No. _____ (If Issued)

DESCRIPTION OF WELL

6. Total depth of hole 680 ft.
7. Type of casing PVC
8. Diameter and length of casing 12 in. from 0 to 20, 5 in from 0 to 660
9. Method of sealing at reduction points No Reduction Neat Cement 0-20'
10. Perforated from 580 to 660, from _____ to _____ from _____ to _____
11. Size of cuts .040 Number of cuts per foot 48
12. If screen was installed: Length 80 ft. Diam 5 in. Type PVC
13. Method of construction Mud Rotary Drilled
(drilled, dug, driven, bored, jetted, etc)
14. Date started 09 (Month) 16 (Day) 01 (Year)
15. Date completed 10 (Month) 12 (Day) 01 (Year)
16. Depth to water 180 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea level elevation if availat
Ground Level
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55- 587635
File No. D(24-24) 17 AAA
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

COMPLETED OCT 2 1 2001

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470 Fax: (602) 417-2422

RECEIVED
NOV 15 2001
RECORDS MGT

COMPLETION REPORT
(Pump Installation Report)

1. Per A.R.S. § 45-600, The completion report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.

2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation. For a flowing well the shut-in presssure should be measured in feet above the land or in pounds per square inch at the land surface.

3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

REGISTRATION NO: 55- 587635 FILE NO: D(24-24)17AAA

LOCATION OF THE WELL:

24	24	17	¼ NE	¼ NE	¼ NE
Township	Range	Section	10-acre	40-acre	160-acre

EQUIPMENT INSTALLED:

Kind of Pump Submersible (Turbine, Submersible, Centrifugal, etc.) Kind of Power Electric (Electric, Natural Gas, Gasoline, etc.)

H.P. Rating of Motor 2 Pumping Capacity 20 Date Pump Installed 10-11-01

WELL TEST:

Test Pumping Capacity 20 (Gallons per minute) Date Well Tested 10-11-01

Method of Discharge Measurement Bucket (Weir, orifice, current meter, bucket, etc.)

Static Groundwater Level 182 ft. Drawdown 230 ft.

Total Pumping Lift 300 ft. Drawdown _____ lbs. (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Terry S. Garner	1027 W Dundy Ln	Bisbee	AZ	85603
Print Well Owner's Name	Address	City	State	Zip

Terry Garner	520-432-4210	11-8-01
Signature of Well Owner	Phone Number	Date

DWR 55-56 (Rev 10/95)

NOV 20 2001

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001- 0458
FOR INFORMATION: CALL MONICA ORTIZ AT 602-417-2470

REQUEST FORM TO CHANGE WELL INFORMATION
OWNERSHIP * DRILLER

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-045. In accordance with A.R.S. § 45-113, please submit the applicable fee. NOTE: A.R.S. §45-593 (C) requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)

NOTE: If the location of the proposed well changes after drilling authority has been issued, **attach a $10.00 reissue fee for each** of the drilling authorities to be changed.

WELL REGISTRATION NO. 55-_____ **FILE NO:**_____

I/We request the following well information be changed: _____

_____

Date_____ Signature of Current Well Owner_____

***Note: This information is on your copy of the Notice of Intent to Drill.**

2. STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I,_____, state that I am the **Previous/New Owner** of the well described below:

_____¼ _____¼ _____¼ of Section_____ Township_____N/S Range_____E/W
10 Acre 40 Acre 160 Acre

Assessor's tax parcel number of the parcel on which the well is located: Book_____ Map_____ Parcel_____

Well Registration No. 55-_____ File No._____(if known

_____	_____
PRINT Previous Owner's Name	**PRINT** New Owner's Name
_____	_____
Mailing Address	Mailing Address
_____	_____
City State Zip	City State Zip
_____	_____
Telephone Number	Telephone Number

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

REISSUE

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-587635

AUTHORIZED DRILLER: ARIZONA BEEMAN DRILLING dba Morex Investments LLC LICENSE NO: 360

NOTICE OF INTENTION TO DRILL A EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: TERRY S GARNER 1027 W PURDY LN BISBEE, AZ 85603

The well(s) is/are to be located in the:

NE ¼ of the NE ¼ of the NE ¼ Section 17 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 26TH DAY OF JUNE, 2002

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR INFORMATION, CALL OUR WATER RESOURCE TECHNICIAN AT (602) 417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

RECEIVED JUN 27 2001 GROUNDWATER MG

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES

A. Terry S Garner 1027 W. Purdy Ln Bisbee AZ 85603
LAND OWNER S NAME — CURRENT MAILING ADDRESS — CITY — STATE — ZIP

B TELEPHONE NO 520 432 4210 COUNTY ASSESSOR'S PARCEL ID INFORMATION

C WELL LOCATED IN COCHISE COUNTY D 107 54 002 E 4
BOOK MAP PARCEL # OF ACRES

OFFICIAL SEAL OR STAMP

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED)

F NE ¼ NE ¼ NE ¼ OF SECTION 17 TOWNSHIP 24 N(S) RANGE 24 E(W)
10AC 40AC 160AC

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE.
G RECOMMEND APPROVAL ✓ INSUFFICIENT INFORMATION TO MAKE DETERMINATION ____ VARIANCE REQUIRED ____ (EXPLANATION ATTACHED)

H. DATE 6/22/01 AUTHORIZED SIGNATURE [signature] TITLE ____

GENERAL INSTRUCTIONS BELOW - PLEASE READ SPECIFIC INSTRUCTION ON BACK

1. Section §45-596(D) provides that the director shall determine that all information required on this form has been submitted. If not the person filing will be notified and the drilling or modification of the well may **not** proceed.
2. Section§ 45-596(D) provides that the department has 15 days **after** the receipt of a complete and correct notice of intention to record the notice and mail duplicate to owner. Drill card will be mailed directly to drilling firm as stated in item #14
3. Please mail **two** original notices with original signatures and a site plan in **duplicate and,** in accordance with A.R.S. §45-113 a check or money order (no cash) in **the amount of $10 00** to P O Box 458 Phoenix Arizona. 85001 0458 or hand deliver to 500 North Third Street Phoenix Arizona
4. If the well is a replacement deepening or modification of an existing well provide the registration number of the existing well in item 2
5. Construction standards for wells including abandonment shall be in accordance with department rules

1 OWNER OF WELL
Terry S Garner
NAME
1027 W Purdy Ln.
CURRENT MAILING ADDRESS
Bisbee AZ 85603
CITY STATE ZIP

TELEPHONE NUMBER 520 432-4210

2 ACTION REQUESTED
DRILL NEW WELL X DEEPEN ____

MODIFY ____ REPLACE ____

WELL REGISTRATION NO 55 ____

FOR A REPLACEMENT WELL PROVIDE MAX. CAPACITY OF THE ORIGINAL WELL ____ GALLONS PER MINUTE
DISTANCE FROM THE ORIGINAL WELL ____ FEET

3 CONSTRUCTION WILL START ABOUT
MONTH JULY YEAR 2001

4 TYPE OF CASING FOR PROPOSED WELL
SURFACE CASING STEEL
DIAMETER 12 75 " DEPTH 19 '
DOWNHOLE CASING PVC
DIAMETER 5 " DEPTH 710

5 DESIGN PUMP CAPACITY
15 GALLONS PER MINUTE

6 LESSEE OF LAND OF WELLSITE
NAME
CURRENT MAILING ADDRESS
CITY STATE ZIP
TELEPHONE ____

7 PRINCIPLE USE OF WATER (BE SPECIFIC)
DOMESTIC

8 OTHER USES OF WATER. (BE SPECIFIC)

9 IF USE INCLUDES IRRIGATION STATE TO NEAREST TENTH. THE NUMBER OF ACRES TO BE IRRIGATED ____

* FOR DEPARTMENT USE ONLY
REGISTRATION NO 55- 587635
DATE FILED 6/27/01
FILE NO D(24-24)17AAA
AMA/INA ____
W/S 11 S/B 76
PROCESSED BY MD
DATE MAILED 7/5/01
MD

10 PLACE OF USE (LEGAL DESCRIPTION OF LAND)
NE ¼ NE ¼ NE ¼ SECTION 17
10AC 40AC 160AC
TWNSHP 24 N(S) RNG 24 E(W)

11 TYPE OF WELL (CHECK ONE)
EXEMPT X NON-EXEMPT ____

12 CHECK ONE
RESIDENTIAL X COMMERCIAL ____

13 IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM SEWER DISPOSAL AREA LANDFILL HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES ____ NO X

14 DRILLING FIRM
STEWART BROS
NAME
PO Box 2067
MAILING ADDRESS
MILAN NM 87021
CITY STATE ZIP
(505) 287-2166
TELEPHONE NO 314
DWR LICENSE NUMBER C-53
ROC LICENSE CATEGORY

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S §§45-595 & 45 596 AND IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO 55-587635

AUTHORIZED DRILLER STEWART BROTHERS DRILLING COMPANY LICENSE NO 314

NOTICE OF INTENTION TO DRILL A EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY

WELL OWNER TERRY S GARNER 1027 W PURDY LN BISBEE, AZ 85603

The well(s) is/are to be located in the

NE ¼ of the NE ¼ of the NE ¼ Section 17 Township 24 SOUTH Range 24 EAST

No of wells in this project 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 26TH DAY OF JUNE, 2002

ARS

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

July 05, 2001

JANE DEE HULL
Governor
JOSEPH C SMITH
Director

TERRY S GARNER
1027 W PURDY LN
BISBEE, AZ 85603

Registration No 55-587635
File No D(24-24) 17 AAA

Dear Well Owner

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596 The enclosed Completion Report is to be submitted when pump equipment is installed The Drilling Card and Well Drilling Report form have been sent to your driller He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling If you change drillers, you must supply this Department with the new driller's identity Please ensure that the driller you select is licensed to drill the type of well you require All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling You should insist, and ensure, that both of these are done

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816 F

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate We have enclosed a Change of Well Information Form should it be needed in the future

Sincerely,

Toni Bergeman

Toni Bergeman
Water Resource Technician
Groundwater Management Support Section

Enclosures

D124-2411 CBC

Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Request to Change Well Information

- Review instructions prior to completing form
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

** PLEASE PRINT CLEARLY **

JUL 20 2005

FILE NUMBER
WELL REGISTRATION NUMBER
55- 628546-L

SECTION 1 REGISTRY INFORMATION

Well Owner	Location of Well
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Galloping Goose Properties, LLC	WELL LOCATION ADDRESS (IF ANY)
MAILING ADDRESS: [illegible]	TOWNSHIP (N/S) / RANGE (E/W) / SECTION / 160 ACRE / 40 ACRE / 10 ACRE

Pioneer Title Agency, Inc.
P.O. BOX 1900
Sierra Vista, AZ 85636

BANK ONE, ARIZONA, N.A.
TITLE SERVICING (769)
PHOENIX, ARIZONA
91-2/1221

NO. 360619

FILE NUMBER	DATE	AMOUNT
00515747 - 001 FMM	07/05/05	$10.00

PAY TEN DOLLARS and no/100

TO THE ORDER OF
AZ DEPT OF WATER RESOURCES
P.O. BOX 458
PHOENIX, AZ 85001

ES[redacted]

ANSWERED JUL 2 2 2005

[redacted]

Security Features Included. Details on back.

SECTION 3 STATEMENT OF CHANGE OF WELL OWNERSHIP ($10 Fee Required) — $10 FEE

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

Previous Well Owner	New Well Owner
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: B.P.O. ELKS NO. 671	FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Galloping Goose Properties LLC
MAILING ADDRESS: DRAWER BX	MAILING ADDRESS: PO 9015
CITY / STATE / ZIP CODE: BISBEE, AZ 85603	CITY / STATE / ZIP CODE: WOODLAND PARK
CONTACT PERSON NAME AND TITLE:	CONTACT PERSON NAME AND TITLE: ED BEAUMONT MGR.
TELEPHONE NUMBER: / FAX:	TELEPHONE NUMBER: (719) 687-9215 / FAX: (719) 687-9317

SECTION 4 CHANGE OF WELL INFORMATION (No Fee Required) — NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN

HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: EDWARD A. BEAUMONT, MGR.

SIGNATURE OF WELL OWNER: [signature] MGR

DATE: 7/1/05

D124-2411 CBC

Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Request to Change Well Information

- Review instructions prior to completing form
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

JUL 20 2005

FILE NUMBER
WELL REGISTRATION NUMBER
55 - 628546-L

** PLEASE PRINT CLEARLY **

SECTION 1: REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Galloping Goose Properties, LLC

MAILING ADDRESS: P.O. Box 9015

CITY / STATE / ZIP CODE: Woodland Park, CO 80866

CONTACT PERSON NAME AND TITLE: Ed Beaumont

TELEPHONE NUMBER: 719-687-9215 FAX: 719-687-9317

Location of Well

WELL LOCATION ADDRESS (IF ANY):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	11	SW ¼	NW ¼	SW ¼

LATITUDE ° ' "N LONGITUDE ° ' "W

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
101	43	001A-6

COUNTY WHERE WELL IS LOCATED: COCHISE

Type of Request (Check one)

- ☐ Change of Well Drilling Contractor *(Fill out Section 2)*
- ☒ Change of Well Ownership *(Fill out Section 3)*
- ☐ Change of Well Information (location, use, etc.) *(Fill out Section 4)*

SECTION 2: REQUEST TO CHANGE WELL DRILLING CONTRACTOR ($10 Fee Required) — $10 FEE

- If drilling or abandoning a well, the Department must receive this request and issue authorization to the new drilling firm prior to the commencement of well drilling or abandonment.

Current Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL:

DWR LICENSE NUMBER:

TELEPHONE NUMBER: FAX:

New Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL:

DWR LICENSE NUMBER: ROC LICENSE CATEGORY:

TELEPHONE NUMBER: FAX:

SECTION 3: STATEMENT OF CHANGE OF WELL OWNERSHIP ($10 Fee Required) — $10 FEE

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

Previous Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: B.P.O. ELKS NO. 671

MAILING ADDRESS: DRAWER BX

CITY / STATE / ZIP CODE: BISBEE, AZ 85603

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER: FAX:

New Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Galloping Goose Properties LLC

MAILING ADDRESS: PO 9015

CITY / STATE / ZIP CODE: WOODLAND PARK

CONTACT PERSON NAME AND TITLE: ED BEAUMONT MGR.

TELEPHONE NUMBER: (719) 687-9215 FAX: (719) 687-9317

SECTION 4: CHANGE OF WELL INFORMATION (No Fee Required) — NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: EDWARD A. BEAUMONT, MGR.

SIGNATURE OF WELL OWNER: [signature] MGR DATE: 7/1/05

A portion of the Southwest quarter of Section 11, Township 24 South, Range 24 East of the Gila and Salt River Base and Meridian, Cochise County, Arizona, described as follows:

BEGINNING at the Northwest corner of said Southwest quarter of Section 11;
thence along the North line of said Southwest quarter, South 89° 52' 30" East 1,186.69 feet (Record), South 89° 31' 02" East 1,194.02 feet (Measured) to the most Northwesterly corner of DILLARD SUBDIVISION, according to Filed Map No. 536, records of Cochise County, Arizona;
thence along a West boundary line of said DILLARD SUBDIVISION South 01° 23' East 1,320.27 feet (Record), South 01° 03' 00" East 1,322.00 feet (Measured) to a corner of said DILLARD SUBDIVISION;
thence along a boundary line of said DILLARD SUBDIVISION South 89° 55' West (Record), North 89° 45' 00" West (Measured) 227.58 feet to a corner of said DILLARD SUBDIVISION;
thence along the most Westerly boundary line of said DILLARD SUBDIVISION South 01° 23' East 153.60 feet (Record) South 01°03' 00" East 157.45 feet (Measured) to the North line of a County Road;
thence Westerly along said North line of a County Road (Record), Westerly along a curve concave to the South having a radius of 408.96 feet and a central angle of 50° 54' 32", a distance of 363.37 feet to a point;
thence South 77° 16' 14" West 685.28 feet (Measured) to the intersection of said County Road with the West line of said Southwest quarter of Section 11;
thence North along said West line of the Southwest quarter of Section 11, 1,587.20 feet (Record), 1,561.94 feet (Measured) to the POINT OF BEGINNING;

EXCEPT any portion lying within the following described parcel:

COMMENCING at an LS 11281 yellow cap monument for the West quarter corner of said Section;
thence South 89° 31' 02" East (South 89° 52' 30" East, record) 731.32 feet along the mid-section line to the POINT OF BEGINNING;
thence South 89° 31' 02" East (South 89° 52' 30" East, record) 462.70 feet along said mid-section line;
thence South 1° 03' 00" East 1322.00 feet (South 1° 23' 00" East 1320.27 feet, record) along the line of Dillard Subdivision recorded as Map No. 74, records of Cochise County, Arizona;
thence North 89° 45' 00" West (South 89° 55' West, record) 227.58 feet along the line of said subdivision;
thence South 1° 03' 00" East (South 1° 23' 00" East, record) 157.45 feet along the line of said subdivision, and its extension, to the non-tangent point of a curve;
thence 363.37 feet along a County Road on a curve to the left having a delta angle of 50° 54' 32" and radius of 408.96 feet;
thence South 77° 16' 14" West, 171.76 feet along the line of said County Road;
thence North 9° 45' 49" East 1463.73 feet to the POINT OF BEGINNING.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED
JUL 16 1982
DEPT. OF
WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

Well No. 1

REGISTRATION FEE (CHECK ONE)

EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

11

FOR OFFICE USE ONLY

REGISTRATION NO. 55- 628546-L
FILE NO. D(24-24)11cbc
FILED JUL 16 1982 (DATE) AT 9:30 am (TIME)
INA
AMA

1. Name of Registrant:
B. P. O. Elks No. 671
Drawer BX (Address) Bisbee (City) AZ (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the SW ¼ NW ¼ SW ¼, Section 11, of Township 24 ☒S, Range 24 E/☒, G & SRB & M, in the County of Cochise.

   b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: (irrigation) stockwater (domestic) municipal - industrial)
_____.

5. If for irrigation use, number of acres irrigated from well 20.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
   a. Depth of Well 800 feet
   b. Diameter of casing 6 inches
   c. Depth of casing ≅ 430 feet
   d. Type of casing P.E. Steel .
   e. Maximum pump capacity 100 gallons per minute.
   f. Depth to water 143 feet below land surface.
   g. Date well completed Feb. (Month) 11 (Day) '63 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   Attach additional sheet if necessary.

9. DATE 7-14-82 SIGNATURE OF REGISTRANT G. L. Brady Trustee

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

B.P.O. ELKS #671
DRAWER BX
BISBEE AZ 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	628546
THRU	
55	628547

(2)

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	10.00	20.00
					Existing Wells		
					File No. D(24-24)11 cbc		
					D(24-24)11 cbd		

WAITER PAYMENT
GUESTS 2
CHK NO 4294
55-I 20.00
TAX 0.00
TOTL 20.00
GEN.CHEK 20.00

4850 H 16:05

11/29/82 jc

Check # 4294

TOTAL $ 20.00

MICROFILMED

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUL 16 1982 DEPT WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

Well No. 2

REGISTRATION FEE (CHECK ONE)

EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

11

FOR OFFICE USE ONLY

REGISTRATION NO. 55- 628547-L
FILE NO. D(24-24)11cbd
FILED JUL 16 1982 (DATE) AT 9:30 am (TIME)
INA
AMA

1. Name of Registrant:
B. P. O. Elks No. 671
Drawer BX (Address) Bisbee, (City) AZ (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the SE ¼ NW ¼ SW ¼, Section 11, of Township 24 ~~N~~/S, Range 24 E/~~W~~, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: (irrigation) stockwater (domestic) municipal - industrial)
_____.

5. If for irrigation use, number of acres irrigated from well 20.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 800 feet
b. Diameter of casing 6" to 600', 5" 600-800 inches
c. Depth of casing 800 feet
d. Type of casing P.E. Steel .
e. Maximum pump capacity 100 gallons per minute.
f. Depth to water 104 feet below land surface.
g. Date well completed 8 - 18 - '61 (Month) (Day) (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 7-14-82 SIGNATURE OF REGISTRANT G. L. Brady Trustee

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

B.P.O. ELKS #671
DRAWER BX
BISBEE AZ 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	628546
	THRU
55	628547

(2)

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	10.00	20.00
					Existing Wells		
					File No. D(24-24)11 cbc		
					D(24-24)11 cbd		

WAITER PAYMENT
GUESTS 2
CHK NO 4294
55-I 20.00
TAX 0.00
TOTL 20.00
GEN.CHEK 20.00

4550 H 16:05

11/29/82 jc

Check # 4294

TOTAL $ 20.00

MICROFILMED

RECEIVED APR 21 1982 DEPT. OF WATER RESOURCES

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 3 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

FOR OFFICE USE ONLY	
REGISTRATION NO. 55-	610686
FILE NO.	D(24-24)17a
FILED (DATE)	4-21-82
AT (TIME)	9 —
INA	—
AMA	—

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

1. Name of Registrant:
Goar Service & Supply, Inc.
P.O. Box 5804 (Address) Tucson, (City) Az. (State) 85703 (Zip)

2. File and/or Control Number under previous groundwater law: ~~See Attached~~ No Numbers, Wells dug in late 49's or early 50's.
(File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ ¼ ¼, Section ~~XXXXXXXXXXXXXXXXXXXX~~ 17 of Township 24S 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Purdy Subdivision, Lot No. None, Address R.R. 1, Purdy Lane - Bisbee, Az. 85603.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation.

5. If for irrigation use, number of acres irrigated from well 25.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. #1 Depth of Well 250' feet
b. Diameter of casing 10" inches
c. Depth of casing 250' feet
d. Type of casing Steel.
e. Maximum pump capacity 60 gallons per minute.
f. Depth to water Approx. 175' feet below land surface.
g. Date well completed Late 40's or early 50's (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____

Attach additional sheet if necessary.

9. DATE 4/15/82 SIGNATURE OF REGISTRANT Leola Fitzgerald Contract

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Goar Service & Supply, Inc
P O Box 5804
Tucson, AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	610686
	THRU
55	610692

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	10.00	70.00
					Existing Wells	WAITER	PAYMENT
						GUESTS	7
						CHK NO	12364
						55-I	70.00
					File No. D(24-24)17 a	TAX	0.00
					D(24-24)17 a	TOTL	70.00
					D(24-24)17 a	GEN.CHEK	70.00
					D(24-24)17 a		
					D(24-24)17 b	# 9592 A	13:21
					Various		

Check # 12364

TOTAL $ 70.00

June 22, 1982
sg

MICROFILMED

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED APR 21 1982 DEPT. OF WATER RESOURCES

RECEIVED JUN 3 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 610687
FILE NO. D(24-24)17a
FILED 4/21/82 (DATE) AT 9 (TIME)
INA
AMA

1. Name of Registrant:
Goar Service & Supply, Inc.
P.O. Box 5804 (Address) Tucson (City) Az. (State) 85703 (Zip)

2. File and/or Control Number under previous groundwater law: No Numbers, Well dug in late 40's or early 50's.
(File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ ¼ ¼, Section ~~XXXXX~~ 17, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Purdy Subdivision, Lot No. None, Address R.R. 1, Purdy Lane - Bisbee, Az. 85603.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation.

5. If for irrigation use, number of acres irrigated from well 25.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. #2 Depth of Well 250' feet
b. Diameter of casing 10" inches
c. Depth of casing ~~XXX~~ 250' feet
d. Type of casing Steel.
e. Maximum pump capacity 60 gallons per minute.
f. Depth to water Approx. 175' feet below land surface.
g. Date well completed Late 40's or early 50's (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
¼ ¼ ¼, Section Township Range
¼ ¼ ¼, Section Township Range
Attach additional sheet if necessary.

9. DATE 4/15/82 SIGNATURE OF REGISTRANT Dale Fitzgerald Controller

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Goar Service & Supply, Inc
P O Box 5804
Tucson, AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	610686
	THRU
55	610692

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	**10.00**	70.00
					Existing Wells		
					File No. D(24-24)17 a		
					D(24-24)17 a		
					D(24-24)17 a		
					D(24-24)17 b		
					Various		

WAITER PAYMENT
GUESTS 7
CHK NO 12364
55-I 70.00
TAX 0.00
TOTL 70.00
GEN.CHEK 70.00

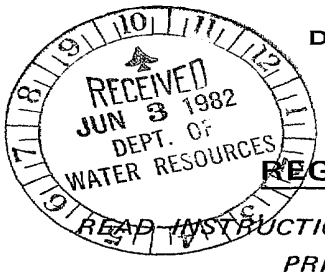
9592 A 13:21

Check # 12364

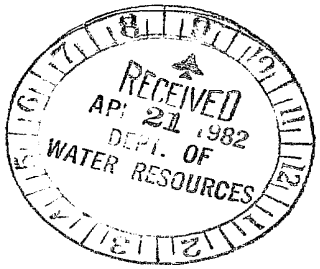
TOTAL $ 70.00

MICROFILMED

June 22, 1982
sg



DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

FOR OFFICE USE ONLY
REGISTRATION NO. 55-610688
FILE NO. D(24-24)17a
FILED 4/21/82 (DATE) AT 9 (TIME)
INA
AMA

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 ☒

1. Name of Registrant:
Goar Service & Supply, Inc.
P.O. Box 5804 (Address) Tucson (City) Az. (State) 85703 (Zip)

2. File and/or Control Number under previous groundwater law: No number, Dug in early 50's or late 40's.
(File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ ¼ ¼, Section 17, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Purdy Subdivision, Lot No. None, Address R.R. 1, Purdy Lane, Bisbee, AZ. 85603.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation.

5. If for irrigation use, number of acres irrigated from well 25.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. #3 Depth of Well 250' feet
b. Diameter of casing 10" inches
c. Depth of casing 250' feet
d. Type of casing Steel .
e. Maximum pump capacity 60 gallons per minute.
f. Depth to water Approx. 175' feet below land surface.
g. Date well completed Late 40's or early 50's. (Month) (Day) (Year)

8. The place(s) of use of water. If same as Item 3, check this box ☒.
¼ ¼ ¼, Section Township Range
¼ ¼ ¼, Section Township Range
Attach additional sheet if necessary.

9. DATE 4/15/82 SIGNATURE OF REGISTRANT Doyle Fitzgerald
Contractor

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Goar Service & Supply, Inc
P O Box 5804
Tucson, AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	610686
	THRU
55	610692

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	10.00	70.00
					Existing Wells		
					File No. D(24-24)17 a		
					D(24-24)17 a		
					D(24-24)17 a		
					D(24-24)17 a		
					D(24-24)17 b		
					Various		

WAITER PAYMENT
GUESTS 7
CHK NO 12364
55-I 70.00
TAX 0.00
TOTL 70.00
GEN.CHEK 70.00

9592 A 13:21

Check # 12364

TOTAL $ 70.00

MICROFILMED

June 22, 1982
sg

RECEIVED
JUN 3 1982
DEPT. OF
WATER RESOURCES

RECEIVED
APR 21 1982
DEPT. OF
WATER RESOURCES

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

FOR OFFICE USE ONLY
REGISTRATION NO. 55-610689
FILE NO. D(24-24)17a
FILED 4/21/82 (DATE) AT 9 (TIME)
INA
AMA

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 ☒

1. Name of Registrant:
Goar Service & Supply, Inc.
P.O. Box 5804 (Address) Tucson, (City) Az. (State) 85703 (Zip)

2. File and/or Control Number under previous groundwater law: No number, dug late 40's or early 50's.
(File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ ¼ ¼, Section 17 ~~XXNK~~, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Purdy Subdivision, Lot No. None, Address R.R. 1, Purdy Lane - Bisbee, Az. 85603.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation.

5. If for irrigation use, number of acres irrigated from well 25.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. #4 Depth of Well 250' feet
b. Diameter of casing 10" inches
c. Depth of casing 250' feet
d. Type of casing Steel.
e. Maximum pump capacity 60 gallons per minute.
f. Depth to water Approx 175' feet below land surface.
g. Date well completed Late 40's or early 50's. (Month) (Day) (Year)

8. The place(s) of use of water. If same as Item 3, check this box ☒.
¼ ¼ ¼, Section Township Range
¼ ¼ ¼, Section Township Range
Attach additional sheet if necessary.

9. DATE 4/15/82 SIGNATURE OF REGISTRANT Lola Fitzgerald Controller

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Goar Service & Supply, Inc
P O Box 5804
Tucson, AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	610686
	THRU
55	610692

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	**10.00**	70.00
					Existing Wells		
					File No. D(24-24)17 a		
					D(24-24)17 a		
					D(24-24)17 a		
					D(24-24)17 b		
					Various		

WAITER PAYMENT
GUESTS 7
CHK NO 12364
55-I 70.00
TAX 0.00
TOTL 70.00
GEN.CHEK 70.00

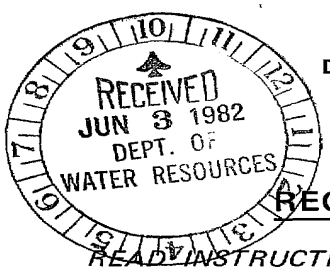
9592 A 13:21

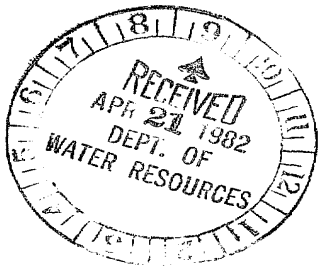
Check # 12364

TOTAL $ 70.00

June 22, 1982
sg

MICROFILMED





DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

FOR OFFICE USE ONLY
REGISTRATION NO. 55-610690
FILE NO. D(24-24)17 b
FILED 4/21/82 (DATE) AT 9 (TIME)
INA
AMA

1. Name of Registrant:
Goar Service & Supply, Inc.
P.O. Box 5804 (Address) Tucson, (City) Az. (State) 85703 (Zip)

2. File and/or Control Number under previous groundwater law: No Number, dug in late 40's or early 50's
(File Number) 35- (Control Number)

3. a. The well is located within the NW ¼ ¼ ¼, Section ~~XXXXXX~~ 17, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Purdy Subdivision, Lot No. None, Address R.R. 1, Purdy Lane = Bisbee, Az. 85603.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Stockwater and domestic.

5. If for irrigation use, number of acres irrigated from well 0.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. #5 Depth of Well 250' feet
b. Diameter of casing 6" inches
c. Depth of casing ~~XXX~~ 250' feet
d. Type of casing Steel.
e. Maximum pump capacity Windmill gallons per minute.
f. Depth to water Approx. 175' feet below land surface.
g. Date well completed Late 40's or early 50's. (Month) (Day) (Year)

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 4/15/82 SIGNATURE OF REGISTRANT Viola Fitzgerald Contractor

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Goar Service & Supply, Inc
P O Box 5804
Tucson, AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	610686
	THRU
55	610692

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	**10.00**	70.00
					Existing Wells	WAITER	PAYMENT
						GUESTS	7
						CHK NO	12364
						55-I	70.00
					File No. D(24-24)17 a	TAX	0.00
					D(24-24)17 a	TOTL	70.00
					D(24-24)17 a	GEN.CHEK	70.00
					D(24-24)17 b	# 3592 A	13:21
					Various		

Check # 12364

TOTAL $ 70.00

June 22, 1982
sg

MICROFILMED

RECEIVED
JUN 3 1982
DEPT. OF
WATER RESOURCES

RECEIVED
APR 21 1982
DEPT. OF
WATER RESOURCES

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

FOR OFFICE USE ONLY
REGISTRATION NO. 55-610691
FILE NO. D(24-24) 17a
FILED 4/21/82 (DATE) AT 9 (TIME)
INA
AMA

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 ☒

1. Name of Registrant:
Goar Service & Supply, Inc.
P.O. Box 5804 (Address) Tucson (City) Az. (State) 85703 (Zip)

2. File and/or Control Number under previous groundwater law: No number, dug late 40's or early 50's
(File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ ¼ ¼, Section ~~17NE~~ 17, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Purdy Subdivision, Lot No. None, Address R.R. 1, Purdy Lane -Bisbee, Az. 85603.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Stockwater and domestic.

5. If for irrigation use, number of acres irrigated from well 0.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A) #7
a. Depth of Well 250' feet
b. Diameter of casing 6" inches
c. Depth of casing 250' feet
d. Type of casing Steel .
e. Maximum pump capacity Windmill gallons per minute.
f. Depth to water Approx. 175' feet below land surface.
g. Date well completed Late 40's or early 50's. (Month) (Day) (Year)

8. The place(s) of use of water. If same as Item 3, check this box ☒.
¼ ¼ ¼, Section Township Range
¼ ¼ ¼, Section Township Range
Attach additional sheet if necessary.

9. DATE 4/15/82 SIGNATURE OF REGISTRANT Dola Fitzgerald

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Goar Service & Supply, Inc
P O Box 5804
Tucson, AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	610686
	THRU
55	610692

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	**10.00**	70.00
					Existing Wells		
					File No. D(24-24)17 a		
					D(24-24)17 a		
					D(24-24)17 a		
					D(24-24)17 b		
					Various		

WAITER PAYMENT
GUESTS 7
CHK NO 12364
55-I 70.00
TAX 0.00
TOTL 70.00
GEN.CHEK 70.00

9592 A 13:21

Check # 12364

TOTAL $ 70.00

June 22, 1982
sg

MICROFILMED

RECEIVED JUN 3 1982 DEPT. OF WATER RESOURCES

RECEIVED APR 21 1982 DEPT. OF WATER RESOURCES





DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

FOR OFFICE USE ONLY
REGISTRATION NO. 55-40692
FILE NO. DC24-24 17a
FILED 4/21/82 (DATE) AT 9 (TIME)
INA
AMA

1. Name of Registrant:
Goar Service & Supply, inc.
P.O. Box 5804 (Address) Tucson (City) Az. (State) 85703 (Zip)

2. File and/or Control Number under previous groundwater law: No number, dug late 40's or early50's.
(File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ ¼ ¼, Section ~~XXXXX~~ 17, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.
b. If in a subdivision: Name of subdivision Purdy Subdivision, Lot No. None, Address R.R. 1, Purdy Lane - Bisbee, Az. 85603.

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Stockwater and domestic.

5. If for irrigation use, number of acres irrigated from well 0.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. #6 Depth of Well 250' feet
b. Diameter of casing 6" ~~Submersible~~ inches
c. Depth of casing 250' feet
d. Type of casing Steel.
e. Maximum pump capacity Windmill gallons per minute.
f. Depth to water Approx.175' feet below land surface.
g. Date well completed Late 40's or early 50's. (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
¼ ¼ ¼, Section Township Range
¼ ¼ ¼, Section Township Range
Attach additional sheet if necessary.

9. DATE 4/15/82 SIGNATURE OF REGISTRANT Viola Fitzgerald Controller

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

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1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Goar Service & Supply, Inc
P O Box 5804
Tucson, AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	610686
	THRU
55	610692

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	**10.00**	70.00
					Existing Wells		
					File No. D(24-24)17 a		
					D(24-24)17 a		
					D(24-24)17 a		
					D(24-24)17 b		
					Various		

WAITER PAYMENT
GUESTS 7
CHK NO 12364
55-I 70.00
TAX 0.00
TOTL 70.00
GEN.CHEK 70.00

9592 A 13:21

Check # 12364

TOTAL **$** 70.00

MICROFILMED

June 22, 1982
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APR 21 1982
DEPT. OF
WATER RESOURCES

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 610693
FILE NO. D(24-24)17a
FILED 4-21-82 (DATE) AT 9 (TIME)
INA
AMA

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☒
NON-EXEMPT WELL — $10.00 ☐

1. Name of Registrant:
Goar Service & Supply, Inc.
P.O. Box 5804 (Address) Tucson (City) Az. (State) 85703 (Zip)

2. File and/or Control Number under previous groundwater law: No number, dug late 40's or early 50's.
(File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ ¼ ¼, Section 17, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Purdy Subdivision, Lot No. None, Address R.R. 1, Purdy Lane - Bisbee, Az. 85603.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic.

5. If for irrigation use, number of acres irrigated from well 0.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
#8
a. Depth of Well 250' feet
b. Diameter of casing 6" inches
c. Depth of casing 250' feet
d. Type of casing Steel .
e. Maximum pump capacity 15 gallons per minute.
f. Depth to water Approx. 175' feet below land surface.
g. Date well completed Late 40's or early 50's. (Month) (Day) (Year)

8. The place(s) of use of water. If same as Item 3, check this box ☒.
¼ ¼ ¼, Section Township Range
¼ ¼ ¼, Section Township Range
Attach additional sheet if necessary.

9. DATE 4/15/82 SIGNATURE OF REGISTRANT Dyke Fitzgerald
Mr. Controller

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

RECEIVED
JUN 3 1982
DEPT. OF
WATER RESOURCES

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

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APR 21 82
WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 610695
FILE NO. D(24-24)17a
FILED 4/21/82 AT 9
(DATE) (TIME)
INA
AMA

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☒
NON-EXEMPT WELL — $10.00 ☐

1. Name of Registrant:
Sheila Goar
R.R. 1, Purdy Lane (Address) Bisbee (City) Az. (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law: No number, dug late 40's or learly 50's.
(File Number) 35- (Control Number)

3. a. The well is located within the NE ~~NW~~ ¼ ~~SW~~ ¼ ¼, Section 17, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Purdy Subdivision, Lot No. A portion of Lot 1, Address R.R.1 Purdy Lane - Bisbee, Az. 85603.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic.

5. If for irrigation use, number of acres irrigated from well 0.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well #10 250' feet
b. Diameter of casing 7" inches
c. Depth of casing 250' feet
d. Type of casing Steel .
e. Maximum pump capacity 15 gallons per minute.
f. Depth to water Approx. 175' feet below land surface.
g. Date well completed Late 40's or early 50's. (Month) (Day) (Year)

8. The place(s) of use of water. If same as Item 3, check this box ☒.
¼ ¼ ¼, Section Township Range
¼ ¼ ¼, Section Township Range
Attach additional sheet if necessary.

9. DATE 4/15/82 SIGNATURE OF REGISTRANT Sheila Goar

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

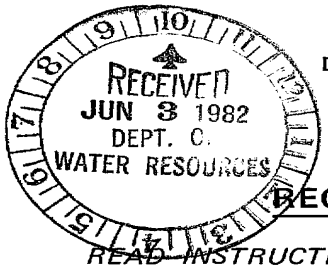
5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

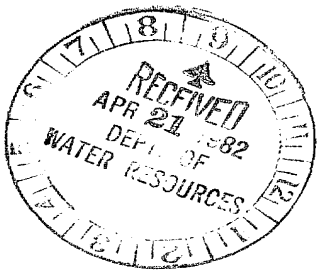
7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.



DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 610694
FILE NO. (C24-24) 17a
FILED 4/21/82 (DATE) AT 9 (TIME)
INA
AMA

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) [X]
NON-EXEMPT WELL — $10.00 [ ]

1. Name of Registrant:
GOAR SERVICE & SUPPLY, INC.
P.O. Box 5804 (Address) Tucson (City) Az. (State) 85703 (Zip)

2. File and/or Control Number under previous groundwater law: No NUmber,dug late 40's or early 50's.
(File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ ¼ ¼, Section 17 ~~17NE~~, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Purdy Subdivision, Lot No. None, Address R.R. 1, Purdy Lane - Bisbee, Az. 85603.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic.

5. If for irrigation use, number of acres irrigated from well 0.

6. Owner of land on which well is located. If same as Item 1, check this box [X]
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. #9 Depth of Well 250' feet
b. Diameter of casing 6" inches
c. Depth of casing 250' feet
d. Type of casing Steel .
e. Maximum pump capacity 15 gallons per minute.
f. Depth to water Approx. 175' feet below land surface.
g. Date well completed Late 40's or early 50's. (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box [X].
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 4/15/82 SIGNATURE OF REGISTRANT Dola Fitzgerald
MICROFILMED Controller

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

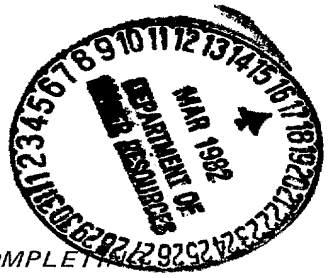
6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11 13

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55-630852
FILE NO. D(24-24)11dc
FILED MAR 17 1982 (DATE) AT 1pm (TIME)
INA
AMA

1. Name of Registrant:
BEVERLY H. JENNEY
1 MULBERRY LANE (Address) BISBEE (City) AZ (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35- (Control Number)

3. a. The well is located within the ____ ¼ SW ¼ SE ¼, Section 11, of Township 24 N/S, Range 24 E/W, G & SRB & M, in the County of COCHISE.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC (HOUSE, POOL, LAWN & GARDEN).

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well N/A feet
b. Diameter of casing _____ inches
c. Depth of casing _____ feet
d. Type of casing _____.
e. Maximum pump capacity _____ gallons per minute.
f. Depth to water _____ feet below land surface.
g. Date well completed _____ (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township _____ Range _____
____¼ ____¼ ____¼, Section ____ Township _____ Range _____
Attach additional sheet if necessary.

9. DATE 3-15-82 SIGNATURE OF REGISTRANT Beverly H. Jenney
Beverly H. Jenney

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

CHANGE OF WELL INFORMATION

Well Registration No. 55- 630852 File No. D(24-24)11DC
(location)

I/We request the following well information be changed: _____

Change water shed to: Whitewater Draw

Date: _____ Signature of Current Well Owner _____

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, _____, state that I am (no longer) the (new)
(please print)
owner of the well described below:

Township _____ Range _____ Section _____; _____ ¼ _____ ¼ _____ ¼

Well Registration No.55- _____ File No. _____
(location)

PRINT Previous Owner's Name	PRINT New Owner's Name
Address	Address
City State Zip	City State Zip

MICROFILMED

ENTERED JAN 21 1991

Dated: _____ Signature of New Owner _____

NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

DWR-55-71-3/90

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 801607-L
FILE NO. DC24-24017b
FILED 7-3-84 (DATE) AT AM (TIME)
INA —
AMA —

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 XX

LATE FEE $10.00 XX

1. Name of Registrant:
John M. Haubert or Wanda Jay Haubert
RR 1, Box 315 Naco Hwy (Address) | Bisbee (City) | AZ (State) | 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
Unknown (File Number) 35- Unknown (Control Number)

3. a. The well is located within the NW ¼ ¼ ¼, Section 17, of Township 24 S XX/S, Range 24 E E/XX, G & SRB & M, in the County of Cochise.
b. If in a subdivision: Name of subdivision On west boundry line of Parcel No. 10, Chase L. Purdy Subdivision, 1955, Map 528, Lot No. _____, Address RR1, Box 315 Naco Hwy (PLEASE SEE ATTACHED LEGAL DESCRIPTION)

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation, Stockwater and Domestic.

5. If for irrigation use, number of acres irrigated from well Seven (7).

6. Owner of land on which well is located. If same as Item 1, check this box XX
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 195 feet
b. Diameter of casing 8 inches
c. Depth of casing 195 feet
d. Type of casing Steel.
e. Maximum pump capacity 60 gallons per minute.
f. Depth to water 114 feet below land surface.
g. Date well completed Estimated 1955 (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box XX.
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
Attach additional sheet if necessary.

9. DATE 30 June 84 SIGNATURE OF REGISTRANT John M. Haubert or Wanda Jay Haubert

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.



ORDER NO. 822773
LEGAL DESCRIPTION

THAT PORTION OF THE NORTHWEST QUARTER OF SECTION 17, TOWNSHIP 24 SOUTH, RANGE 24 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, COCHISE COUNTY, ARIZONA, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT WHICH IS 0 DEGREES 02 MINUTES EAST, 330.00 FEET FROM THE NORTHWEST CORNER OF THE NORTHWEST QUARTER OF SECTION 17;

THENCE NORTH 39 DEGREES 58 MINUTES EAST, 30.00 FEET TO THE SOUTH RIGHT-OF-WAY LINE OF THE BISBEE-NACO HIGHWAY, AS IT EXISTED ON SEPTEMBER 2, 1955;

THENCE NORTH 89 DEGREES 58 MINUTES EAST, 629.76 FEET TO THE NORTHEAST CORNER OF THIS PARCEL, WHICH IS ON THE WEST BOUNDARY LINE OF PARCEL NO. 10 OF THE CHASE L. PURDY SUBDIVISION, ACCORDING TO THAT CERTAIN MAP OF "CHASE L. PURDY SUBDIVISION" RECORDED JUNE 24, 1955, MAP NO. 528;

THENCE SOUTH 0 DEGREES 02 MINUTES EAST, 500.00 FEET TO THE SOUTHWEST CORNER OF SAID PARCEL NO. 10;

THENCE SOUTH 89 DEGREES 58 MINUTES WEST, 629.76 FEET TO THE EASTERLY RIGHT-OF-WAY LINE OF THE SAID BISBEE-NACO HUGHWAY;

THENCE SOUTH 89 DEGREES 58 MINUTES WEST, 30.00 FEET TO THE CENTER LINE OF SAID HIGHWAY;

THENCE NORTH 0 DEGREES 02 MINUTES WEST, 500.00 FEET TO THE POINT OF BEGINNING.

MICROFILMED

JOHN M HAUBERT
WANDA JAY HAUBERT
RT. 1 BOX 315 NACO HWY
BISBEE ARIZONA 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	80160?-L
	THRU

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					LATE FEE	20.00	20.00
					FILING FEE FOR REGISTRATION OF EXISTING	------	------
					WELLS		
					1 NON EXEMPT WELL		
					FILE NO D(24-24)17 b		

JUL 1984 PAID

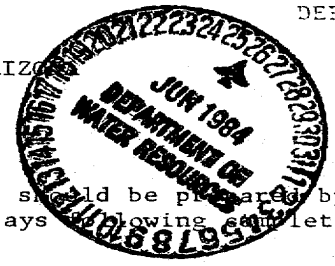
MICROFILMED

CHECK NO 185
75/84 mg

TOTAL $ 20.00

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

STATE OF ARIZ



DEPARTMENT OF
WATER RESOURCES

V

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Jim Sayre (Name)
P.O. Box 325 Bisbee AZ 85603 (Address)

2. Lessee or Operator _____ (Name)
_____ (Address)

3. Driller _____ (Name) J.R. SHARP GENERAL CONTRACTORS BOX 4529 322 NACO HWY. BISBEE, ARIZ. 85603 432-4597
_____ (Address)

4. Location of well: SW NW SE Sec. 5 T24S R24E

5. Permit No. (if issued) _____

DESCRIPTION OF WELL

6. Total depth of hole 313 ft.
7. Type of Casing P.E. Steel
8. Diameter and length of casing 5 in. from 0 to 313, _____ in from _____ to _____.
9. Method of sealing at reduction points _____
10. Perforated from 208 to 308, from _____ to _____, from _____ to _____
11. Size of cuts 1/4 x 6 Number of cuts per foot 2
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction _____ (drilled) dug, driven, bored, jetted, etc.
14. Date started 5 (Month) - 2 (day) - 84 (year)
15. Date completed 5 (Month) - 4 (day) - 84 (year)
16. Depth to water 208 ft. (If flowing well, so state.)
17. Describe point from which depth measurements were made, and give sea-level elevation if available. Top of Casing
18. If flowing well, state method of flow regulation _____
19. REMARKS: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55-507823
Received _____ By _____
Entered 6.27.84 By SR
File No. D(24-24)5dbc

(Well log to appear on Reverse side)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	20	6 5/8 O.D. x .188 wall steel pipe - grouted.
0	313	Red clay-like conglomerate with varying amounts of cobbles & gravel.
0	313	5" O.D. x .158 P.E. steel casing.

I hereby certify that this well was drilled by me (or under my supervison), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

J. R. SHARP GENERAL CONTRACTORS
BOX 4520 322 NACO HWY,
BISBEE, ARIZ. 85603 432-4577

Driller J. R. Sharp
Name

Address

City State Zip

Date 5-30-84

J R SHARP
P O BOX 4520
BISBEE AZ 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	507823
	THRU

SAYRE

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEE FOR NOTICE OF INTENTION		10.00
					TO DRILL AN EXEMPT WELL		
					FILE#D(24-24)5dbc		
					REG#55-507823		

WAITER PAYMENT
GUESTS 1
CHK NO 9814
55-I 10.00
TAX 0.00
TOTL 10.00
GEN.CHEK 10.00

CHECK#09814
4/20/84/ek

TOTAL $ 10.00

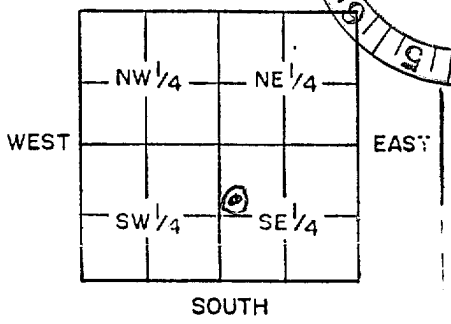
1841 A 11:04

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL OR DEEPEN A WELL
OUTSIDE OF AN ACTIVE MANAGEMENT AREA

RECEIVED APR 10 1984 DEPT. OF WATER RESOURCES
RECEIVED MAR 28 1984 DEPARTMENT OF WATER RESOURCES

Section 45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management, a person may not drill or cause to be drilled any well or deepen an existing well without first filing a Notice of Intention to Drill with the Department.



INDICATE WELL LOCATION BY X
(Above diagram represents one 640 acre section)

WELL/LAND LOCATION:

1. Township 24 S
2. Range 24 E
3. Section 5
4. SW ¼, NW ¼, SE ¼
   10 acre subdivision
5. County Cochise
6. Owner of well:
   Jim Sayre
   Name
   Box 325
   Address
   Bisbee AZ 85603
   City State Zip
   Telephone 432-2693
7. Owner of land:
   Same
   Name
   Address
   City State Zip

DESCRIPTION OF WELL:

8. Diameter 5 inches
   Depth 300 feet
9. Type of casing P.E. Steel
10. Design pump capacity:
    35 gallons per minute
11. Estimate of total annual pumping: _____ acre feet
12. Principal use of water:
    Domestic
    (Be Specific)
13. Other uses intended:
    None
    (Be Specific)
14. If for irrigation, state the number of acres to be irrigated:
    _____ acres
15. Construction will start about:
    March '84
    Month Year

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
FILE NO. D(24-24)5 dbc
FILED 4-19-84 By EK
INPUT 4-20-84 By
DUPLICATE MAILED 4-20-84 By EK
REGISTRATION NO. 55-507823
Non Expansion Area -
W/S 13 S/B -

PLACE OF USE:

16. Township Same
17. Range _____
18. Section _____
19. Legal description of land _____
20. Type well:
    ✓ Exempt
    ___ Non-Exempt
21. Action Requested:
    Drill ✓ Deepen ___ Replace ___
    55- _____
22. This notice filed by:
    Owner ✓
    Lessee ___
    Jim Sayre
    Name
    Same
    Address
    City State Zip
    Telephone _____
23. Driller's Name:
    J.R. Sharp Gen. Contrs.
    Name
    P.O. Box 4520
    Address
    Bisbee, AZ 85603
    City State Zip
    155 27862
    DWR License Number

GENERAL INSTRUCTIONS

1. Fill out this form in duplicate and send to 99 East Virginia, Suite 100, Phoenix, Az. 85004.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen or replace a well outside of an Active Management Area.
4. If the well is a replacement or deepening of an existing well, state the registration number of the existing well in Item 21.
5. Construction standards for new and replacement wells and the deepening and abandonment of existing wells shall be in accordance with Department Rules and Regulations.

I state that this Notice is filed in compliance with ARS §45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well set forth on the reverse side of this form.

DATE 3-28-84 Signature of Person Filing Jim Sayre

DWR-55-41-10/83

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Upon receipt of the return of this annotated Notice, the owner is authorized to proceed in drilling or deepening the well as set forth on this Notice.

2. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

3. Only one exempt well may be drilled or used to serve the same use at the same location.

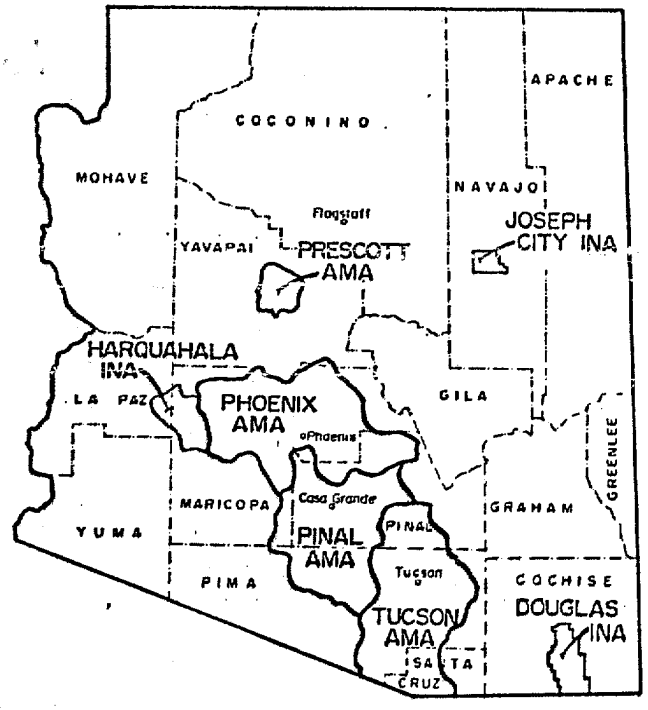
4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 2 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to ARS §45-434 or §45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of ARS §45-437.

5. The drilling or deepening of this well shall be completed within one (1) year of the date of this Notice.

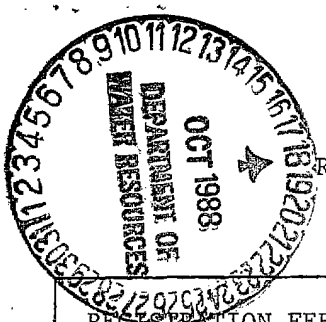
6. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

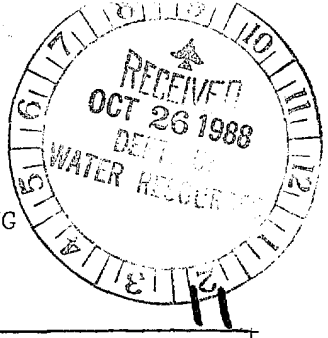
7. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of the annotated copy of this Notice.

8. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.



Arizona Department of Water Resources
15 South 15th Avenue
Phoenix, Arizona 85007





REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING

PRINT OR TYPE - FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)

EXEMPT WELL (NO CHARGE) ☒

NON-EXEMPT WELL - $10.00 ☐

LATE FEE $10.00 ☒

For Office Use Only

REGISTRATION NO. 55 805290-C

FILE NO. D(24.24)17 bA

FILED 10-26-88 (Date) at 10:00A (Time)

INA —

AMA —

1. Name of Registrant:
Elizabeth G.Welles

606 Purdy Lane (Address) Bisbee (City) Arizona (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law: _____ (File No.) 35 (Control No.)

3. a. The well is located within the NE ¼ NW ¼ ¼, Section 17 of Township 24 ●/S, Range 24 E/●, G&SRB&M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____

Lot No. _____ Address _____

4. The principal uses(s) of water: (Examples: irrigation, stockwater, domestic, municipal industrial Domestic

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒

Name Address City State Zip

7. Well data (If data not available, write N/A)

a. Depth of Well 316 ft. feet

b. Diameter of casing 6 in. inches

c. Depth of casing 316 feet

d. Type of casing 6 5/8 O.D. x. 188 P.E. casing with mild steel drive shoe

e. Maximum pump capacity 4" submersible 15 g.p.m. gallons per minute.

f. Depth to water 130 ft. feet below land surface.

g. Date well completed 3-2-64 (in use) (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒

____ ¼ ____ ¼ ____ ¼, Section ____ Township _____ Range _____

9. DATE 10-17-88 SIGNATURE OF REGISTRANT Elizabeth G. Welles

DWR-55-76-9/85

ENTERED OCT 27 1988
MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S.45-593, by filing this form in duplicate with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.
2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.
3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.
4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of less than two (2) acres of land.
5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.
2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.
3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, lot number and address.
4. Show all purposes for which the water is used.
5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.
6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.
7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.
8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, lot number and/or address on the blank line.
9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470 Fax (602) 417-2422

RECEIVED
OCT 30 1998
RECORDS MGT

REQUEST FORM TO CHANGE WELL INFORMATION OWNERSHIP * DRILLER * VARIANCE

Please complete the appropriate section of this request form and return to the above address with applicable fee. NOTE: A.R.S. §45-593.C requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)

NOTE: If the location of the proposed well changes after drilling authority has been issued, **attach a $10.00 reissue fee for each well.**

WELL REGISTRATION NO. 55-_____ **FILE NO:**_____

If known, I/We request the following well information be changed:_____

_____

_____

Date_____ **Signature of Current Well Owner**_____

2. STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, PETER J. HOBAN, state that I am the ~~Previous~~/New Owner of the well described below:

_____ ¼ _____ ¼ NW ¼ of Section 17 Township 24S Range 24E
10 Acre 40 Acre 160 Acre

Well Registration No. 55- 805290 File No. D(24-24)17 BA (if known)

RALPH R. CAMPBELL
PRINT Previous Owner's Name

4201 MONNETT CHAPEL RD
Mailing Address

BUCYRUS OH 44280
City State Zip

(419) 985-5123
Telephone Number

PETER J. HOBAN
PRINT New Owner's Name

125 E. FRY BLVD-STE 1
Mailing Address

SIERRA VISTA, AZ 85635
City State Zip

(520) 458-8828
Telephone Number

Signature of Previous/New Well Owner _____ **Date** 10-26-98

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470 Fax (602) 417-2422

3. REQUEST TO CHANGE WELL DRILLER $10.00 FEE REQUIRED FOR EACH WELL

This request must be received by this Department and the Drill Card issued to the new drilling firm prior to the drilling or completion of any well.

Well Registration No. 55-_____ **File No.**_____

Original Well Driller	**New Well Driller**
Mailing Address	**Mailing Address**
Telephone Number	**Telephone Number**
ADWR License Number	**ADWR License Number**
R.O.C. License Category	**R.O.C. License Category**
Typed or Printed Name of Well Owner	**Signature of Well Owner** **Date**

The fee charge for well ownership and reissue of drill card is authorized by R12-15-151, effective June 30, 1994.

4. REISSUE OF DRILLING AUTHORITY FOR VARIANCE REQUEST: ($10.00 EACH WELL)

NOTE: If extraordinary or unusual conditions exist, after the initial drilling authority has been issued, the well owner or well driller may request a variance from the provisions of R12-15-811.

WELL REGISTRATION NO. 55-_____ **FILE NO:**_____

I/WE REQUEST THE FOLLOWING WELL DRILLING AUTHORITY BE REISSUED PER THE ATTACHED VARIANCE REQUEST:

_____

Signature of Well Owner/Well Driller_____ **Date**_____

Operations Division, 500 North Third Street
Phoenix, Arizona 85004 Telephone (602) 417-2470

RECEIVED
FEB 26 1996
GROUNDWATER MGT

REQUEST FORM TO CHANGE WELL INFORMATION OWNERSHIP * DRILLER

Please complete the appropriate section of this request form and return to the above address with applicable fee. NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. CHANGE OF WELL INFORMATION — NO FEE REQUIRED

NOTE: If the location of the proposed well changes after drilling authority has been issued, **attach a $10.00 reissue fee for each well.**

Well Registration No. 55-_____ File No._____(If known)

I/We request the following well information be changed:_____

_____

_____

Date_____ Signature of Current Well Owner_____

2. STATEMENT OF CHANGE OF WELL OWNERSHIP — $10.00 FEE REQUIRED

If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate $10.00.

I, RALPH R. CAMPBELL, state that I am the ~~Previous~~/New Owner of the well described below:

_____¼_____¼_____¼; Section 17 Township 24South Range 24East
10 acre 40 acre 160 acre

Well Registration No. 55- 805290 File No. 39-0001484 (If known)

ELIZABETH C. WELLES	RALPH R. CAMPBELL
PRINT Previous Owner's Name	PRINT New Owner's Name
1370 N. Ronda Oesta	1385 W. Purdy Lane
Mailing Address	Mailing Address
Tucson, Az. 85715	Bisbee, Az. 85603
City State Zip	City State Zip
520-751-1832	520-432-3073
Telephone	Telephone

Date _____ Signature of ~~Previous~~/New Well Owner Ralph R. Campbell

DWR-55-71-8/94(Rev)

ARIZONA DEPARTMENT OF WATER RESOURCES

Operations Division, 500 North Third Street
Phoenix, Arizona 85004 Telephone (602) 417-2470

3. REQUEST TO CHANGE WELL DRILLER $10.00 FEE REQUIRED FOR EACH WELL

This request must be received by this Department and the Drill Card issued to the new drilling firm PRIOR to the drilling or completion of any well.

Well Registration No. 55-_____ File No._____

_____	_____
Original Well Driller	New Well Driller
_____	_____
Mailing Address	Mailing Address
_____	_____
ADWR License Number	ADWR License Number
_____	_____
R.O.C. License Number	R.O.C. License Number

_____	_____	_____
Typed or Printed Name of Well Owner	**Signature of Well Owner**	**Date**

The fee charge for well ownership and reissue of drill card is authorized by R12-15-151, effective June 30, 1994.

DWR-55-71-8/94(Rev)

LAND OWNER	WATERSHED FILE NO.	LESSEE	LEASE-PERMIT ID
WELLES, ELIZABETH C.	111-24-DCD-CC5		

LOCATION OF USES

WATER USE #	COUNTY	BK	MAP	PRCL	SECTION	TWNP	RNG	WATER SOURCE	DIVERSION #	RESERVOIR #	CHANGE
DM001	COCHISE	102	053	CC12	NWNENW17	24OS	24OE				

FILINGS AND DECREES
ADJUDICATION FILINGS

FILE NO.	CLAIMED USES	USE STATUS	CLAIMED POINTS OF DIVERSION DATES	DATE FILED	FEE PAID
39-CCC1484	DOMESTIC	VERIFIED USE	1964	MAY 24,1979	7.00

SUMMARY

WATER USE #	POINTS OF DIVERSION	APPLICABLE ADJ FILING	APPLICABLE PRE FILING	PHOTO DATE	APPARENT PRIORITY	IRR ACRES OR CAPACITY	FACILITY NAME
DM001		39-CCC1484					

Well Registration # 55-805290 Sig Eichberg (man in Phoenix office 1-800-352-8488

TO AVOID PAYMENT OF PENALTY AND INTEREST THIS PAYMENT MUST BE IN THE OFFICE OF THE STATE LAND DEPARTMENT ON OR BEFORE THE DUE DATE. DATE OF POSTAL STAMP NOT ACCEPTED AS DATE OF PAYMENT.

Welles & Sharp Wells

STATE OF ARIZONA
STATE LAND DEPARTMENT
1624 WEST ADAMS – 4th FLOOR – PHOENIX, ARIZONA 85007

RECEIPT – PAYEE

ELIZABETH WELLES
PO BOX 5351
BISBEE AZ 85603

SECTION	TOWNSHIP	RANGE

49168

KIND ENTRY	LEASE-REFERENCE NO.
39	001484 to 001485 inclusive

ACCOUNT NO. GRANT FUND	ACCOUNT NO. SUB	CARRYING CAPACITY	BILLING DESCRIPTION	RATE	ACRES	$ AMOUNT
14	310 35		Filing Fees (2)	5 00		10 00
14	430 36		Recording Fee (2)	2 00		4 00

PAID
DATE 5-24-79

CERTIFICATE OF PURCHASE $ UNPAID BALANCE	BILLING PERIOD FROM MO. DAY YR	BILLING PERIOD TO MO. DAY YR	DATE BILLED MO. DAY YR.	DATE DUE MO. DAY YR.	TOTAL ACRES	TOTAL AMOUNT $
			05 24 79			14 00

IF PAYMENT IS MADE ON OR BEFORE THIS DATE → PAY THIS AMOUNT

SEE OTHER SIDE FOR LAW PERTAINING TO PENALTY AND INTEREST – A. R. S. SEC. 37-288.

RENTAL AMOUNT SUBJECT TO PENALTY AND INTEREST IF NOT PAID ON OR BEFORE DATE DUE ($)

5% PENALTY OF RENTAL AMOUNT - - - - - - - - - - - - $

TOTAL RENTAL AMOUNT PLUS PENALTY - - - - - - - - ($) TOTAL PENALTY AND INTEREST

10% INTEREST PER ANNUM OF RENTAL AMOUNT AND PENALTY – NUMBER OF DAYS DELINQUENT ( ) $ $

TOTAL AMOUNT DUE INCLUDING PENALTY AND INTEREST - - - - - - - - - - - - $

CASH RECEIVED $

BALANCE DUE OR OVERPAYMENT $

PENALTY AND INTEREST DISTRIBUTION	$

Elizabeth Welles
606 Purdy Lane
Bisbee,Az. 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	805290-L
	THRU

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FEE FOR REGISTRATION OF EXISTING WELL		
					OUTSIDE AN A.M.A. EXEMPT WELL	10.00	
					REG. NO. 55-805290-L		
					FILE NO. D (24-24) 17ba		
					10/26/88 P. Rocko Check #1157		

PAID OCT 26 1988 PAID PAID

TOTAL $ 10.00

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED MAY 7 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 606854
FILE NO. D(24-24)5ccc a
FILED 5-7-82 (DATE) AT 9- (TIME)
INA —
AMA —

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 ☒

1. Name of Registrant:
Charles W Hall
Rte 1 Naco Hwy (Address) Bisbee (City) AZ (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
36-41841 (File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ SW ¼ SW ¼, Section 5, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
_____.

5. If for irrigation use, number of acres irrigated from well 40.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 25 feet
b. Diameter of casing Dug well inches
c. Depth of casing Open feet
d. Type of casing _____.
e. Maximum pump capacity 200 gallons per minute.
f. Depth to water 220 feet below land surface.
g. Date well completed Prior to (Month) (Day) 1915 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☐.
____¼ SW ¼ SW ¼, Section 5 Township 24S Range 24E
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 5-4-82 SIGNATURE OF REGISTRANT Charles W Hall
by Margaret E Mitchell
power-of-Atty

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

CHARLES W. HULL
Rte 1 NACO HIGHWAY
BISBEE, AZ 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	606854 THRU

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing fee for Registration of Existing		
					Well	10.00	10.00
						WRITER PAYMENT	
					File No: D (24-24) 5 cca	GUESTS 1	
						CHK NO 2509	
						55-I 10.00	
						TAX 0.00	
						TOTL 10.00	
						GEN.CHEK 10.00	
					Check No: 2509	# 7945 A 11:19	

5/11/82
Ms

TOTAL $ 10.00

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY	
REGISTRATION NO. 55-	606855
FILE NO.	D(24-24)5bca
FILED (DATE)	5-7-82
AT (TIME)	9-
INA	—
AMA	—

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

1. Name of Registrant:
Charles W. Hull
Rte 1 Naco Hwy (Address) Bisbee (City) AZ (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
36-41841 (File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ SW ¼ NW ¼, Section 5, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

   b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - (domestic) - municipal - industrial)
_____.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
   a. Depth of Well 400 feet
   b. Diameter of casing 8 inches
   c. Depth of casing 200 feet
   d. Type of casing Steel .
   e. Maximum pump capacity 35 gallons per minute.
   f. Depth to water 240 feet below land surface.
   g. Date well completed Prior to 1915 (Month) (Day) (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒.
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
_____
Attach additional sheet if necessary.

9. DATE 5-4-82 SIGNATURE OF REGISTRANT Charles Wm Hull
by Power of attorney Margaret E Hull

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 21 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY	
REGISTRATION NO. 55-	649153L
FILE NO.	D(24-24)18
FILED (DATE) AT (TIME)	
INA	
AMA	

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

1. Name of Registrant:
MANUELA HUMPHREY
P.O Box 36 (300 H St.) NACO, AZ 85620
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the ____¼ ____¼ ____¼, Section 18, of Township NACO 24SN/S, Range 24E E/W, G & SRB & M, in the County of COCHISE.
b. If in a subdivision: Name of subdivision NACO, ARIZONA, Lot No. 323, Address BLOCK 24.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC.

5. If for irrigation use, number of acres irrigated from well ____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 160 feet
b. Diameter of casing 8 inches
c. Depth of casing 20 feet
d. Type of casing STEEL.
e. Maximum pump capacity ____ gallons per minute.
f. Depth to water 120 feet below land surface.
g. Date well completed ____ (Month) ____ (Day) 1938 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6-18-82 SIGNATURE OF REGISTRANT Manuela Humphrey

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

was 55-609150 II

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00 VNB Ck. # 4619 attached.	XX

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 632924
FILE NO. D(24-24)17ab
FILED 5-17-82 (DATE) AT 8- (TIME)
INA —
AMA —

1. Name of Registrant:
IRONS, LEE (none) or IRONS, MILDRED MARIE
Post Office Box 1446 , Nogales, Arizona 85621
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
(9-1-81) 78-112963 (Grandfathered Grnd. Rts. 35- (unknown) none was ever given to us
(File Number) (Control Number)
(6-19-80 39-004024 (Az. Water Comm. -San Pedro River) (Control # unknown-none ever given to us)

3. a. The well is located within the NW ¼ NE ¼ ¼, Section 17, of Township 24 S N/S, Range 24 E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Chase L. Purdy, Lot No. 11 & 12, Address Purdy Lane n/a , Naco, Arizona (Cochise County).

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation and domestic.

5. If for irrigation use, number of acres irrigated from well 10 acres total

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well one hundred seventy five (175) feet
b. Diameter of casing ten (10) inches
c. Depth of casing one hundred seventy five (175) feet
d. Type of casing perforated steel casing .
e. Maximum pump capacity two hundred (200) gallons per minute.
f. Depth to water approximately 25-30 feet below land surface.
g. Date well completed December (Month) , 12 (Day) 1955 (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE _____ SIGNATURE OF REGISTRANT Lee Irons ~~Lee Irons~~
Mildred M. Irons Mildred M. Irons

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

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3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

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3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Lee Irons
P. O. Box 1446
Nogales, AZ 85621

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
~~55~~	~~600150~~
	THRU
55	

Reassigned to
55-632924

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	10.00	
					Existing Wells	WATER IMPROVEMENT	
						GUESTS 1 CHK NO 4619 55-I 10.00 TAX 0.00 TOTL 10.00 GEN.CHEK 10.00	
					File No. D(24-24) 17ab		
					Ck 4619 6/1/82	# 8674 A 9:44	

vf

Check # TOTAL $ 10.00

MICROFILMED

STATE OF ARIZONA

RECEIVED
SEP 14 1983
WATER RESOURCES

DEPARTMENT OF WATER RESOURCES

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Joseph K. Jackson (Name)
   220 S. Coleman, Barnett Acres, Bisbee, AZ 85603 (Address)
2. Lessee or Operator _____ (Name)
   _____ (Address)
3. Driller J. R. SHARP GENERAL CONTRACTORS (Name)
   BOX 4520 322 NACO HWY. BISBEE, ARIZ. 85603 432-4597
   _____ (Address)
4. Location of well: SW NE SE S5 T24S R24E
5. Permit No. (if issued) _____

DESCRIPTION OF WELL

6. Total depth of hole 342 ft.
7. Type of Casing P.E. steel
8. Diameter and length of casing 6 in. from 0 to 20, 5 in from 2 to 342.
9. Method of sealing at reduction points _____
10. Perforated from 240 to 340, from _____ to _____, from _____ to _____
11. Size of cuts 1/8 Number of cuts per foot 8
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction _____ (drilled) dug, driven, bored, jetted, etc.
14. Date started 8 (Month) – 11 (day) – 83 (year)
15. Date completed 8 (Month) – 16 (day) – 83 (year)
16. Depth to water 208 ft. (If flowing well, so state.)
17. Describe point from which depth measurements were made, and give sea-level elevation if available. Top of Casing
18. If flowing well, state method of flow regulation _____
19. REMARKS: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55-506034
Received _____ By _____
Entered 9-16-83 By _____
File No. D(24-24)5dac

(Well log to appear on Reverse side)

DWR-6 5-83

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	20	Top soil & Caliche Grouted.
20	342	Recent fan conglomerate with varying quantities of cobbles & gravel.
0	20	6 5/8" O.D. x .156 P.E. steel grouted.
2	342	5" O.D. x .135 P.E. steel.
240	340	Perforated @ 1/8 x 3 cuts per foot.
	240	First water, weak.
	208	Standing water level.

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

WATER RESOURCES
FEB 14 1983
RECEIVED

Driller J. R. Sharp
Name

J. R. SHARP GENERAL CONTRACTORS
BOX 4520 322 NACO HWY.
BISBEE, ARIZ. 85603 432-4597
Address

Date 8-15-83

RECEIVED
SEP 21 1984
DEPT. OF
WATER RESOURCES

DEPARTMENT OF WATER RESOURCES
99 East Virginia
Phoenix, Arizona 85004

Registration No. 55-50[redacted]6034
Owner of Joe Jackson
Well Site [redacted]
File No. (24-24) 5dac D([redacted])[redacted]

COMPLETION REPORT

1. Completion Report to be filed with the Department within 30 days after installation of pump equipment.

2. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

3. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.

4. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

LOCATION OF THE WELL

SW NE SE 35 T24S R24E .

Date Well Completed 8-16-83 Depth of Well 342

1. Well Test:
Test Pumping Capacity 30 (Gal. per min.) Date Well Tested 8-23-83
Method of Discharge Measurement Performance Chart (weir, orifice, current meter, etc.)

Static Groundwater Level 208 ft. Drawdown _____ ft.
Total Pumping Lift N/A ft. Drawdown _____ lbs. (Flowing Well)

2. Equipment Installed:

Kind of Pump 4" Submersible (turbine, centrifugal, etc.)

Kind of Power (Elec.), Nat. Gas, Etc.) H.P. Rating of Motor 3

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

J. R. Sharp
Signature

Address

9 - 12 - , 1984
Date

City State Zip

J.R. SHARP GENERAL CONTRACTORS
BOX 4520 322 NACO HWY.
BISBEE, ARIZ. 85603 432-4597

S. 24 & 25

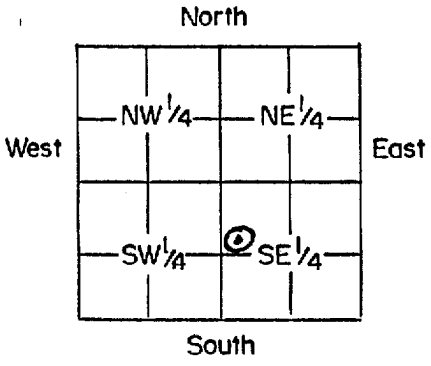
EXEMPT WELL

FILING FEE: ~~$3.00~~ 10.00

DEPARTMENT OF WATER RESOURCES
NOTICE OF INTENTION TO DRILL OR DEEPEN
AN EXEMPT WELL

EXEMPT WELL

Section 45-596, Arizona Revised Statutes, provides: A person may not drill or cause to be drilled any well or deepen or replace an existing well without first filing a Notice of Intention to Drill with the Department on a form prescribed and furnished by the Department. The well shall be completed within one year after the date of Notice. An exempt well means a well having a pump with a maximum design capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An exempt well may include the non-commercial irrigation of not more than 1 acre of land.



- Indicate Well Location by X
(Above diagram represents one 640 acre section)

WELL/LAND LOCATION:

1. Township 24S
2. Range 24E
3. Section 5
4. SW ¼ NE ¼ SE ¼
   10 acre sub-division
5. County Cochise
6. Owner of Well:

Joe Jackson
Name
P.O.Box 4520
Address
Bisbee, AZ 85603
City State Zip

7. Owner of Land:

Same
Name

Address

City State Zip

DESCRIPTION OF WELL:

8. Diameter 5
   Depth 300
9. Type of Casing
   P.E. steel
10. Principal use of Water.
    Domestic
11. Other uses Intended
    None
    (If for non-commercial irrigation, state approximate area being cultivated.)
12. Construction will start about:
    August 1983
    Month Year

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

FILE NO. D(24-24)5 dac
FILED 8-5-83 BY EK
INPUT 8-9-83 BY JC
DUPLICATE MAILED 8-5-83 BY EK
REGISTRATION NO 55-506634
AMA NON EXPANSION AREA —

PLACE OF USE:

13. Township 24S
14. Range 24E
15. Section 5
16. Legal description of land water is to be used on:
    SW NE SE
17. Design Pump Capacity
    35 gpm
18. Action Requested:
    Drill ✓
    Deepen
    Replace
19. This notice filed by:
    Owner
    Lessee
    Driller ✓

J.R. Sharp General Contractors
Name
P.O. Box 4520
Address
Bisbee AZ 85603
City State Zip

20. Drillers Name:

Same
Name

Address

City State Zip

155
Department License Number

1. Fill out this form in duplicate and mail to P.O. Box 2600, Phoenix, Arizona, 85002, or deliver to 222 N. Central Ave., Suite 550, Phoenix, Arizona, 85004.
2. If the Exempt Well is in fact a replacement (or deepening) well, state the registration number of the existing well. _____
3. Construction standards for new and replacement wells and the deepening and abandonment of existing wells, shall be in accordance with Department Rules and Regulations.

I, Joe Jackson, state that the construction will be under the direct and personal supervision of the well driller designated on this form and that the designated driller holds a contractors license pursuant to ARS 45-595.

8-3-83
Date

J. R. Sharp
Signature of Person Filing

J R SHARP GENERAL CONTRACTORS
P O BOX 4520
BISBEE AZ 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	506034
	THRU

JACKSON

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEE FOR NOTICE OF INTENTION TO DRILL		10.00
					AN EXEMPT WELL		
					FILE#D(24-24)5dac REg#55-506034		

WAITER PAYMENT
GUESTS 1
CHK NO 9563
55-I 10.00
TAX 0.00
TOTL 10.00
GEN.CHEK 10.00

0072 M 15:54

CHECK#9563
8/5/83/ek

TOTAL $ 10.00

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Pump Installation Completion Report

- Review instructions prior to completing form
- The registered well owner should file this report with the Department within 30 days following installation of pump equipment

** PLEASE PRINT CLEARLY **

RECEIVED
DEC 15 2005

FILE NUMBER: D(24-24) 17 BBD
WELL REGISTRATION NUMBER: 55- 209737

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: JALYN ASSOCIATES LLC

MAILING ADDRESS: PO BOX 4174

CITY / STATE / ZIP: BISBEE, AZ 85603

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER: 520-432-2808

FAX:

Location of Well

WELL LOCATION, ADDRESS (IF KNOWN):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24 S	24E	17	NW 1/4	NW 1/4	SE 1/4

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
102	53	007

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 2. EQUIPMENT INSTALLED

DATE PUMP INSTALLED: 11-24-05

Pump Type

CHECK ONE

- ☐ Air Lift
- ☐ Bucket
- ☐ Centrifugal
- ☐ Jet
- ☐ Piston
- ☐ Rotary
- ☒ Submersible
- ☐ Turbine
- ☐ Other (please specify)

Power Type

CHECK ONE

- ☐ Diesel Engine
- ☒ Electric Motor
- ☐ Gasoline Engine
- ☐ Hand
- ☐ Natural Gas
- ☐ Windmill
- ☐ Other (please specify)

RATED PUMP CAPACITY: 25 Gallons Per Minute

HORSE POWER RATING OF MOTOR: 2hp.

SECTION 3. WELL TEST

Pump Test Data

DATE WELL TESTED: 11-24-05

STATIC WATER LEVEL (A): 150 Feet Below Land Surface

PUMPING WATER LEVEL (B): Feet Below Land Surface

DRAWDOWN [(B) - (A)]: Power has not be

TEST PUMPING RATE: run To Well Site Gallons Per Minute

DURATION OF PUMP TEST (Minimum 4 Hours): (No - Test) Hours

TOTAL PUMPING LIFT: Feet

FOR FLOWING WELL, MEASURED SHUT IN HEAD ☐ FT ☐ PSI

Method of Discharge Measurement

CHECK ONE

- ☐ Bailer
- ☐ Bucket - Barrel - Stopwatch
- ☐ Current
- ☒ Estimated - Air Lift
- ☐ Gauge
- ☐ Meter
- ☐ Orifice
- ☐ Volume
- ☐ Weir - Flume
- ☐ Other (please specify)

Method of Measuring Water Level

CHECK ONE

- ☐ Air Line
- ☒ Electric Measuring Line (Sounder)
- ☐ Steel Tape
- ☐ Other (please specify)

ANSWERED DEC 22 2005

I HEREBY CERTIFY *that the above statements are true to the best of my knowledge and belief according to* A.R.S § 45-600(B)

SIGNATURE OF WELL OWNER: [signature]

DATE: 12-6-05

DWR-55-56 (Rev. 10/11/01)

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

RECEIVED NOV 21 2005 Information Management

FILE NUMBER: D(24-24) 17 BBD
WELL REGISTRATION NUMBER: 55- 209737
PERMIT NUMBER (IF ISSUED):

- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

SECTION 1. DRILLING AUTHORIZATION

Drilling Firm

NAME	DWR LICENSE NUMBER
ALLENS WELL SERVICE L.L.C	14
ADDRESS	TELEPHONE NUMBER
5509 W. GLEESON ROAD	520-642-3775
CITY/STATE/ZIP	FAX
ELFRIDA, AZ 85610-9050	

SECTION 2. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: JALYN ASSOCIATES LLC
MAILING ADDRESS: PO BOX 4174
CITY / STATE / ZIP: BISBEE, AZ 85603
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-432-2808
FAX:
WELL NAME:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24 S	24 E	17	NW 1/4	NW 1/4	SE 1/4

LATITUDE			LONGITUDE		
31 °	20 ·	54 "N	109 °	56 ·	01 "W

LAND SURFACE ELEVATION AT WELL: 4243 Feet Above Sea Level

METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☒ Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☒ GPS : ☐ Survey-Grade

COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 102 MAP 53 PARCEL 007

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. WELL CONSTRUCTION DETAILS

Drill Method

CHECK ONE
- ☒ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development

CHECK ONE
- ☒ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Condition of Well

CHECK ONE
- ☒ Capped
- ☐ Pump Installed

Method of Sealing at Reduction Points

CHECK ONE
- ☒ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☐ Other (please specify)

Condition of Well

DATE WELL CONSTRUCTION STARTED: 11-15-05
DATE WELL CONSTRUCTION COMPLETED: 11-16-05

I state that this notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
Allen's Well Service	Harry Allen	11/18/05

DWR-55-55-10/01 (Rev.)

ENTERED DEC - 2 2005

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 209737

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
245	Feet Below Land Surface	245	Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
150 Feet Below Land Surface	11-17-05	9:00 AM	☐ Valve ☐ Other:

Borehole / Installed Casing

Borehole: DEPTH FROM SURFACE FROM (feet)	Borehole: DEPTH FROM SURFACE TO (feet)	Borehole: BOREHOLE DIAMETER (inches)	Installed Casing: DEPTH FROM SURFACE FROM (feet)	Installed Casing: DEPTH FROM SURFACE TO (feet)	Installed Casing: OUTER DIAMETER (inches)	MATERIAL TYPE (X): STEEL	MATERIAL TYPE (X): PVC	MATERIAL TYPE (X): ABS	MATERIAL TYPE (X): IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (X): BLANK OR NONE	PERFORATION TYPE (X): WIRE WRAP	PERFORATION TYPE (X): SHUTTER SCREEN	PERFORATION TYPE (X): MILLS KNIFE	PERFORATION TYPE (X): SLOTTED	PERFORATION TYPE (X): IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	12 1/4	+1	20	8 5/8	X										
20	245	8"	0	245	6		X									
				185 –	245				perforated					X		1/8

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (X): NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE: GROUT	BENTONITE: CHIPS	BENTONITE: PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK: SAND	FILTER PACK: GRAVEL	FILTER PACK: SIZE
0	20			X					NONE			

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 209737

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	45	red clay	
45	170	red clay + rock	
170	180	Gravel	X
180	210	red clay + rock	
210	215	Gravel	X
215	245	Clay + rock	

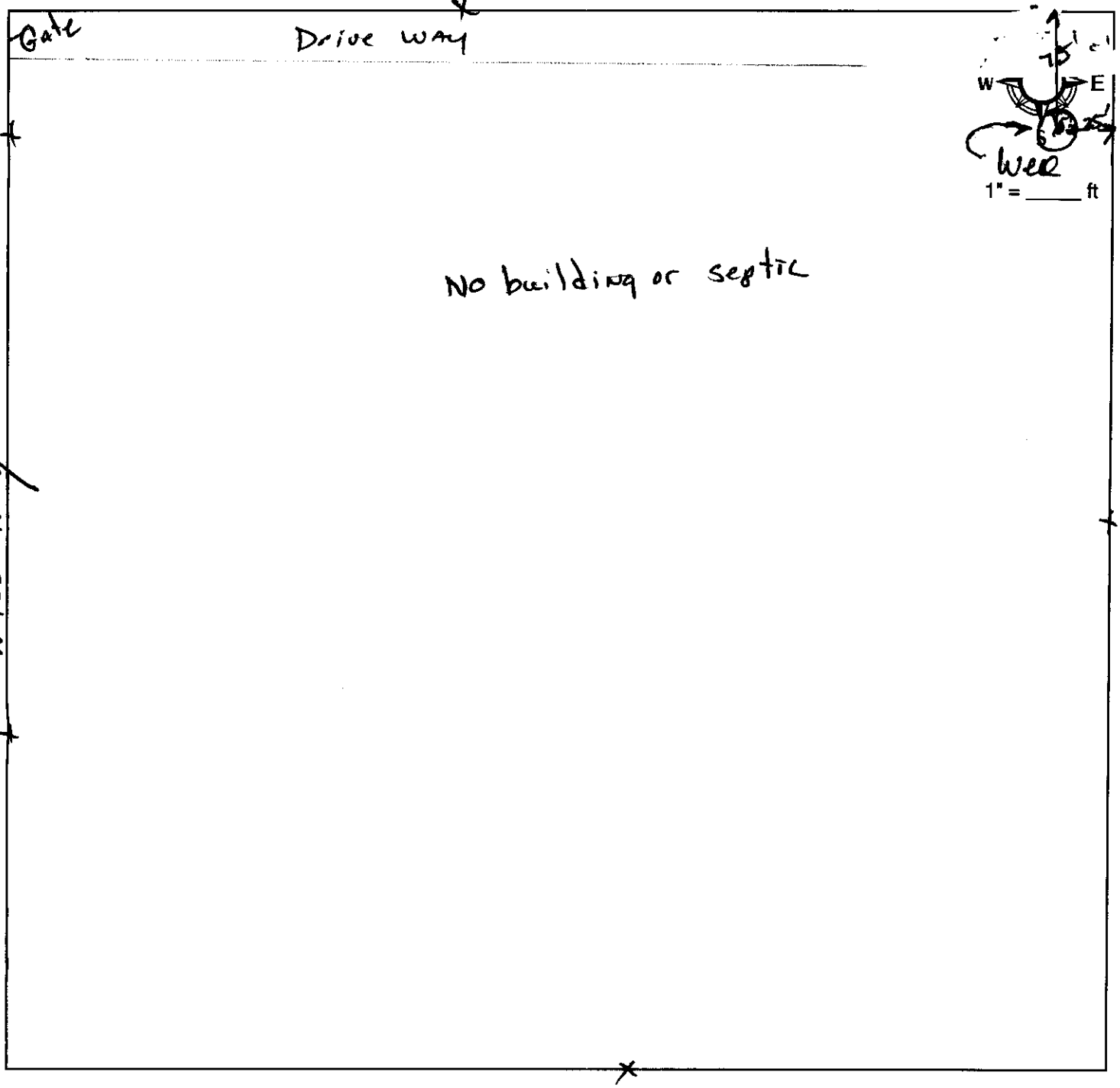
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 209737

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
JALYN ASSOCIATES LLC	102	53	007

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-209737

AUTHORIZED DRILLER: ALLENS WELL SERVICE L.L.C LICENSE NO: 14

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: JALYN ASSOCIATES LLC PO BOX 4174 BISBEE, AZ 85603

THE WELL(S) IS/ARE TO BE LOCATED IN THE:

SE ¼ OF THE NW ¼ OF THE NW ¼ SECTION 17 TOWNSHIP 24 SOUTH RANGE 24 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 102-53-007

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 13TH DAY OF OCTOBER, 2006

WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

October 17, 2005

Janet Napolitano
Governor

Herbert R. Guenther
Director

JALYN ASSOCIATES LLC
PO BOX 4174
BISBEE, AZ 85603

Registration No. 55- 209737
File No. D(24-24) 17 BBD

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well that you recently filed with this Department pursuant to A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed or otherwise provided a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card, which must be displayed on the drill rig during drilling.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the proposed well, you may not proceed with drilling until you file an amended NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the amended NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DWR form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed is a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55) within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at <http://www.water.az.gov/adwr/content/forms/default.htm#NOI>.

Sincerely,

Tiffany Hancock

Tiffany Hancock
NOI Unit
Water Management Support Section

Enclosures

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- ❖ Review instructions prior to completing form in black or blue ink.
- ❖ You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- ❖ Authority for fee: A.R.S. § 45-596.

OCT 14 2005

** PLEASE PRINT CLEARLY **

AMA / INA	B 76 SB
RECEIVED DATE 10/14/05	WS 11
ISSUED DATE 10/17/05	WQARF CERCLA

FILE NUMBER D(24-24)17BBD
WELL REGISTRATION NUMBER
55 - 209737

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

- [X] County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
  - [X] Field Inspection Performed
  - [ ] Site Plan Review Only
- [ ] Insufficient Information to Make a Determination

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE Oct 13 2005
BY Carlos Diaz R.S.

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ R.S.

TELEPHONE NUMBER: 520 432-9442

DATE: Oct 13, 2005

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz R.S.

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

- [X] Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)
- [ ] Non-Exempt (Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: Gallons Per Minute

Proposed Action

CHECK ONE

- [X] Drill New Well
- [ ] Deepen
- [ ] Replace
- [ ] Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 -

MAXIMUM CAPACITY OF ORIGINAL WELL: 30 Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY): 3273 Naco Hwy. Bisbee, AZ

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	17	NW ¼	NW ¼	SE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
102	53	007	5.0

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Jalyn Associates LLC

MAILING ADDRESS: PO Box 4174

CITY / STATE / ZIP CODE: Bisbee, AZ 85603

CONTACT PERSON NAME AND TITLE: Jimmy Perez

TELEPHONE NUMBER: 520-432-2808

FAX: 520-432-2977

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL

MAILING ADDRESS

CITY / STATE / ZIP CODE

CONTACT PERSON NAME AND TITLE

TELEPHONE NUMBER

FAX

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55- 209737

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: Allen's Well Service

DWR LICENSE NUMBER: #14

ROC LICENSE CATEGORY: C53, L53

TELEPHONE NUMBER: 642-3775

FAX:

MAILING ADDRESS: 5509 Gleeson Rd

CITY / STATE / ZIP CODE: Elfrida, AZ 85610

OCT 14 2005

SECTION 6. WATER / SITE INFORMATION

Principal Use of Water (CHECK ONE)	*Other Uses* of Water (CHECK ALL THAT APPLY)
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☒ Domestic	☐ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify):*	☐ Other *(please specify):*

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

DATE CONSTRUCTION IS TO BEGIN: OCT 2005

Borehole			Casing													
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (T)				PERFORATION TYPE (T)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0-20	1-20	12 1/4"	+1	20'	8 5/8											
20	300	8"	0	300	6"	X*	X									Cement

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: Duly Associates LLC -

SIGNATURE OF WELL OWNER:

DATE: 9-26-05

SIGNATURE OF LANDOWNER, IF APPLICABLE (SEE INSTRUCTIONS):

DATE:

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 209737

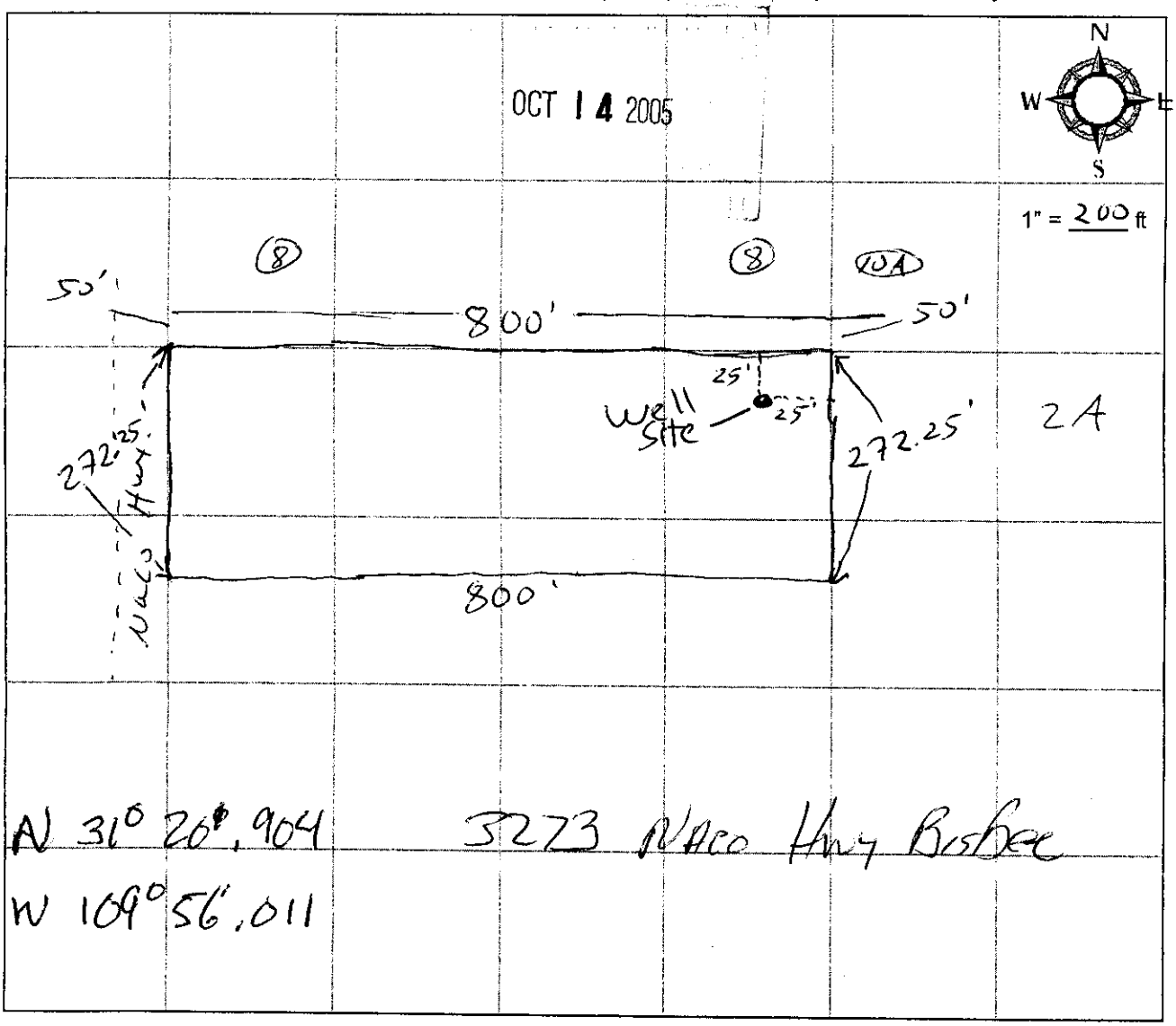
CHECK ONE: ☐ FILING MANUALLY
☐ FILING ELECTRONICALLY* *DRILLER'S E-MAIL ADDRESS:

*COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL CODE *If applicant is filing this NOI electronically via the ADWR website and County approval is required, please indicate approval by providing a County Approval Code.*	COUNTY APPROVAL CODE

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
Jalyn Associates, LLC	102	53	007

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE	APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION Official County or Local Seal or Stamp
Carlos Diaz RS	
COUNTY OR LOCAL AUTHORITY SIGNATURE	
Carlos Diaz RS	
TELEPHONE NUMBER: 520-432-9442 DATE: Oct 13, 2005	DATE Oct 13 2005 BY Carlos Diaz RS

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- ❖ Review instructions prior to completing form in black or blue ink.
- ❖ You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- ❖ Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA		B	SB
RECEIVED	DATE	WS	
ISSUED	DATE	WQARF	CERCLA

FILE NUMBER

WELL REGISTRATION NUMBER

55 - 209737

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
☒ Field Inspection Performed

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE 10/4/05

COUNTY OF COCHISE

VOID VOID VOID

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Pump Installation Completion Report

- Review instructions prior to completing form
- The registered well owner should file this report with the Department within 30 days following installation of pump equipment

** PLEASE PRINT CLEARLY **

RECEIVED NOV 17 2005 WATER MANAGEMENT

FILE NUMBER: D(24-24) 18 CBB
WELL REGISTRATION NUMBER: 55- 209744

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: CRAIG KEEFER
MAILING ADDRESS: PO BOX 530
CITY / STATE / ZIP: NACO, AZ 85620
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-236-7915
FAX:

Location of Well

WELL ~~LOCATION~~ ADDRESS (IF KNOWN): 3530 S. QueTel Av

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24 S	24 E	18	SW 1/4	NW 1/4	NW 1/4

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT): BOOK 102 MAP 57 PARCEL 310

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 2. EQUIPMENT INSTALLED

DATE PUMP INSTALLED:

Pump Type CHECK ONE

- [x] Air Lift
- [ ] Bucket
- [ ] Centrifugal
- [ ] Jet
- [ ] Piston
- [x] Rotary
- [ ] Submersible
- [ ] Turbine
- [ ] Other (please specify)

Power Type CHECK ONE

- [ ] Diesel Engine
- [x] Electric Motor
- [ ] Gasoline Engine
- [ ] Hand
- [ ] Natural Gas
- [ ] Windmill
- [ ] Other (please specify)

RATED PUMP CAPACITY: 25 Gallons Per Minute
HORSE POWER RATING OF MOTOR: 2 hp

SECTION 3. WELL TEST

Pump Test Data

DATE WELL TESTED: 11-15-05
STATIC WATER LEVEL (A): 134 Feet Below Land Surface
PUMPING WATER LEVEL (B): 140 Feet Below Land Surface
DRAWDOWN [(B) - (A)]: 6
TEST PUMPING RATE: 20 Gallons Per Minute
DURATION OF PUMP TEST (Minimum 4 Hours): Hours
TOTAL PUMPING LIFT: 140 Feet
FOR FLOWING WELL, MEASURED SHUT IN HEAD: [ ] FT [ ] PSI

Method of Discharge Measurement

CHECK ONE

- [ ] Bailer
- [ ] Bucket - Barrel - Stopwatch
- [ ] Current
- [x] Estimated - Air Lift
- [ ] Gauge
- [ ] Meter
- [ ] Orifice
- [ ] Volume
- [ ] Weir - Flume
- [ ] Other (please specify)

Method of Measuring Water Level

CHECK ONE

- [ ] Air Line
- [x] Electric Measuring Line (Sounder)
- [ ] Steel Tape
- [ ] Other (please specify)

COMPLETED DEC 07 2005

I HEREBY CERTIFY *that the above statements are true to the best of my knowledge and belief according to* A.R.S § 45-600(B)

SIGNATURE OF WELL OWNER: Patricia A. Keefer
DATE: 11/16/05

DWR-55-56 (Rev. 10/11/01)

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

RECEIVED
NOV 2 2005
Information Management

- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

FILE NUMBER: D(24-24) 18 CBB
WELL REGISTRATION NUMBER: 55- 209744
PERMIT NUMBER (IF ISSUED):

SECTION 1. DRILLING AUTHORIZATION

Drilling Firm

NAME	DWR LICENSE NUMBER
ALLENS WELL SERVICE L.L.C	14
ADDRESS	TELEPHONE NUMBER
5509 W. GLEESON ROAD	520-642-3775
CITY/STATE/ZIP	FAX
ELFRIDA, AZ 85610-9050	

SECTION 2. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: CRAIG KEEFER
MAILING ADDRESS: PO BOX 530
CITY / STATE / ZIP: NACO, AZ 85620
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-236-7915
FAX:
WELL NAME:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN): 3530 S Quetez Av.

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	18	SW 1/4	NW 1/4	NW 1/4

LATITUDE				LONGITUDE			
30 °	20 ·	34	"N	109 °	56 ·	55	"W

LAND SURFACE ELEVATION AT WELL: 4249 Feet Above Sea Level

METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☐ Hand-Held
☐ USGS Quad Map ☐ Conventional Survey ☐ GPS : ☐ Survey-Grade

COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 102 MAP 57 PARCEL 310

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. WELL CONSTRUCTION DETAILS

Drill Method

CHECK ONE
- ☒ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development

CHECK ONE
- ☒ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Condition of Well

CHECK ONE
- ☐ Capped
- ☒ Pump Installed

Method of Sealing at Reduction Points

CHECK ONE
- ☒ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☐ Other (please specify)

Condition of Well

DATE WELL CONSTRUCTION STARTED: 11-14-05
DATE WELL CONSTRUCTION COMPLETED: 11-15-05

I state that this notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
Allen's Well Service	Tommy Allen	11/17/05

ENTERED NOV 22 2005

DWR-55-55-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 209744

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
245	Feet Below Land Surface	245	Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
136 Feet Below Land Surface	11-16-05	10:00 AM	☐ Valve ☐ Other:

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	12 1/4
20	245	8

Installed Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (X) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (X) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
+1	20	8 5/8	X										
-5	245	6		X									
185	245										X		1/8

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (X) NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
0	20			X					NONE			

DWR-55-55B-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 209744

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	18	red Clay	
18	40	Gravel	
40	160	Clay & rock	
160	170	Gravel	x
170	180	Clay & rock	
180	185	Gravel	x
185	245	Clay & rock	

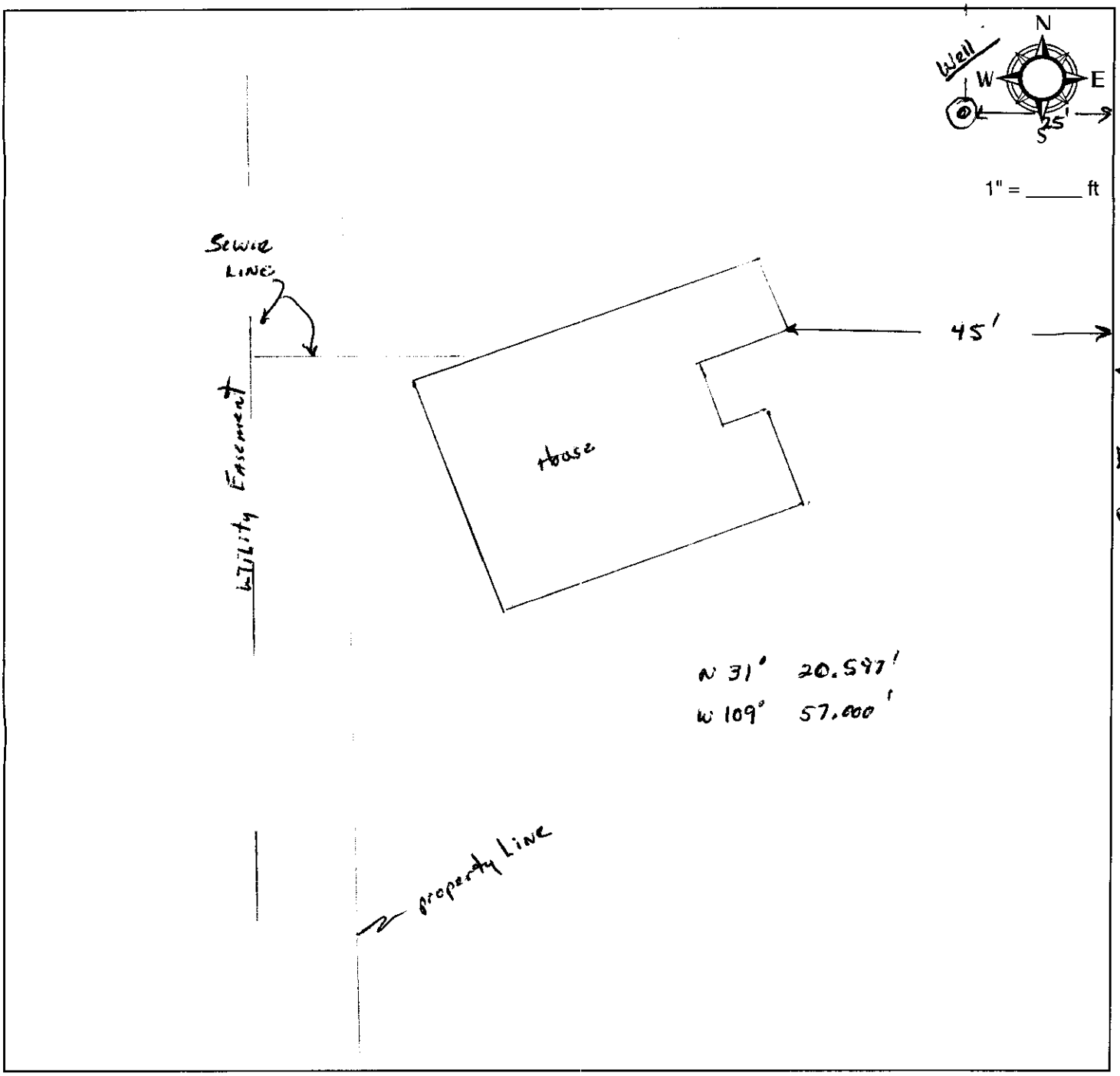
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 209744

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
CRAIG KEEFER	102	57	310

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Pump Installation Completion Report

* Review instructions prior to completing form
* The registered well owner should file this report with the Department within 30 days following installation of pump equipment

** PLEASE PRINT CLEARLY **

FILE NUMBER: D(24-24) 18 CBB
WELL REGISTRATION NUMBER: 55- 209744

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: CRAIG KEEFER

MAILING ADDRESS: PO BOX 530

CITY / STATE / ZIP: NACO, AZ 85620

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER: 520-236-7915

FAX:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN): 3530 S. Quetzal Rd

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24 S	24 E	18	SW 1/4	NW 1/4	NA 1/4

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
102	57	310

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 2. EQUIPMENT INSTALLED

DATE PUMP INSTALLED:

Pump Type

CHECK ONE

- [x] Air Lift
- [ ] Bucket
- [ ] Centrifugal
- [ ] Jet
- [ ] Piston
- [x] Rotary
- [ ] Submersible
- [ ] Turbine
- [ ] Other (please specify)

Power Type

CHECK ONE

- [ ] Diesel Engine
- [x] Electric Motor
- [ ] Gasoline Engine
- [ ] Hand
- [ ] Natural Gas
- [ ] Windmill
- [ ] Other (please specify)

RATED PUMP CAPACITY: 35 Gallons Per Minute

HORSE POWER RATING OF MOTOR: 3 hp

SECTION 3. WELL TEST

Pump Test Data

DATE WELL TESTED: 11-15-05

STATIC WATER LEVEL (A): 134 Feet Below Land Surface

PUMPING WATER LEVEL (B): 140 Feet Below Land Surface

DRAWDOWN [(B) - (A)]: 6

TEST PUMPING RATE: 20 Gallons Per Minute

DURATION OF PUMP TEST (Minimum 4 Hours): Hours

TOTAL PUMPING LIFT: 140 Feet

FOR FLOWING WELL, MEASURED SHUT IN HEAD: [ ] FT [ ] PSI

Method of Discharge Measurement

CHECK ONE

- [ ] Bailer
- [ ] Bucket - Barrel - Stopwatch
- [ ] Current
- [x] Estimated - Air Lift
- [ ] Gauge
- [ ] Meter
- [ ] Orifice
- [ ] Volume
- [ ] Weir - Flume
- [ ] Other (please specify)

Method of Measuring Water Level

CHECK ONE

- [ ] Air Line
- [x] Electric Measuring Line (Sounder)
- [ ] Steel Tape
- [ ] Other (please specify)

I HEREBY CERTIFY *that the above statements are true to the best of my knowledge and belief according to* A.R.S § 45-600(B)

SIGNATURE OF WELL OWNER: Craig A. Keefer

DATE: 11/16/05

DWR 55-56 (Rev. 10/11/05)

ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-209744

AUTHORIZED DRILLER: ALLENS WELL SERVICE L.L.C LICENSE NO: 14

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: CRAIG KEEFER PO BOX 530 NACO, AZ 85620

THE WELL(S) IS/ARE TO BE LOCATED IN THE:

NW ¼ OF THE NW ¼ OF THE SW ¼ SECTION 18 TOWNSHIP 24 SOUTH RANGE 24 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 102-57-310

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 13TH DAY OF OCTOBER, 2006

WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax • www.water.az.gov

RECEIVED OCT 14 2005 GROUNDWATER MGT.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA	B	SB
	76	
RECEIVED DATE	WS	
10-14-05	11	
ISSUED DATE	WQARF	CERCLA
10-21-05		

FILE NUMBER: D(24-24)18CBB
WELL REGISTRATION NUMBER: 55 - 209744

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

- [X] County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
  - [X] Field Inspection Performed
  - [ ] Site Plan Review Only
- [ ] Insufficient Information to Make a Determination

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE Oct 13 2005
BY Carlos Diaz RS

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ R.S.

TELEPHONE NUMBER: 520 432 9412

DATE: Oct 13, 2005

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz R.S.

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

- [X] Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)
- [ ] Non-Exempt (Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 35 Gallons Per Minute

Proposed Action

CHECK ONE

- [X] Drill New Well
- [ ] Deepen
- [ ] Replace
- [ ] Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 -

MAXIMUM CAPACITY OF ORIGINAL WELL: 30 Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY): 3530 S. QUETEL AV

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	1852	SW ¼	NW ¼	NW ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
102	57 3/6	310	5

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: COCHISE

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: CRAIG KEEFER
MAILING ADDRESS: P.O. BOX 530
CITY / STATE / ZIP CODE: NACO AZ 85620
CONTACT PERSON NAME AND TITLE: CRAIG KEEFER
TELEPHONE NUMBER: 520 236 7915
FAX: 520-432-7396

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: CRAIG KEEFER
MAILING ADDRESS: P.O. BOX 530
CITY / STATE / ZIP CODE: NACO AZ 85620
CONTACT PERSON NAME AND TITLE: CRAIG KEEFER
TELEPHONE NUMBER: 520 236-7915
FAX: 520 432-7396

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		✓	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		✓	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		✓	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 209744

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: ALLEN WELL DRILLING

DWR LICENSE NUMBER: 14

ROC LICENSE CATEGORY: C53, L53

TELEPHONE NUMBER: 520 642 3775

FAX: 520-642-3221

MAILING ADDRESS: 5509 W GLEESON RD

CITY / STATE / ZIP CODE: ELFRIDA, AZ

RECEIVED
OCT 14 2005
GROUNDWATER MGT

SECTION 6. WATER / SITE INFORMATION

***Principal Use* of Water** CHECK ONE	***Other Uses* of Water** CHECK ALL THAT APPLY
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☒ Domestic	☐ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify)*:	☐ Other *(please specify)*:

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

DATE CONSTRUCTION IS TO BEGIN: OCT 2005

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	12 1/4
20	300	8"

Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
-1	20'	8 5/8											
0	300	6"	X*	X									Cement

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: CRAIG A. KEEFER - OWNER

SIGNATURE OF WELL OWNER: Craig A. Keefer — DATE: 9/26/2005

SIGNATURE OF LANDOWNER, IF APPLICABLE (SEE INSTRUCTIONS) — DATE:

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 209744

CHECK ONE: ☒ FILING MANUALLY
☐ FILING ELECTRONICALLY* *DRILLER'S E-MAIL ADDRESS: _____

*COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL CODE	COUNTY APPROVAL CODE
If applicant is filing this NOI electronically via the ADWR website and County approval is required, please indicate approval by providing a County Approval Code.	

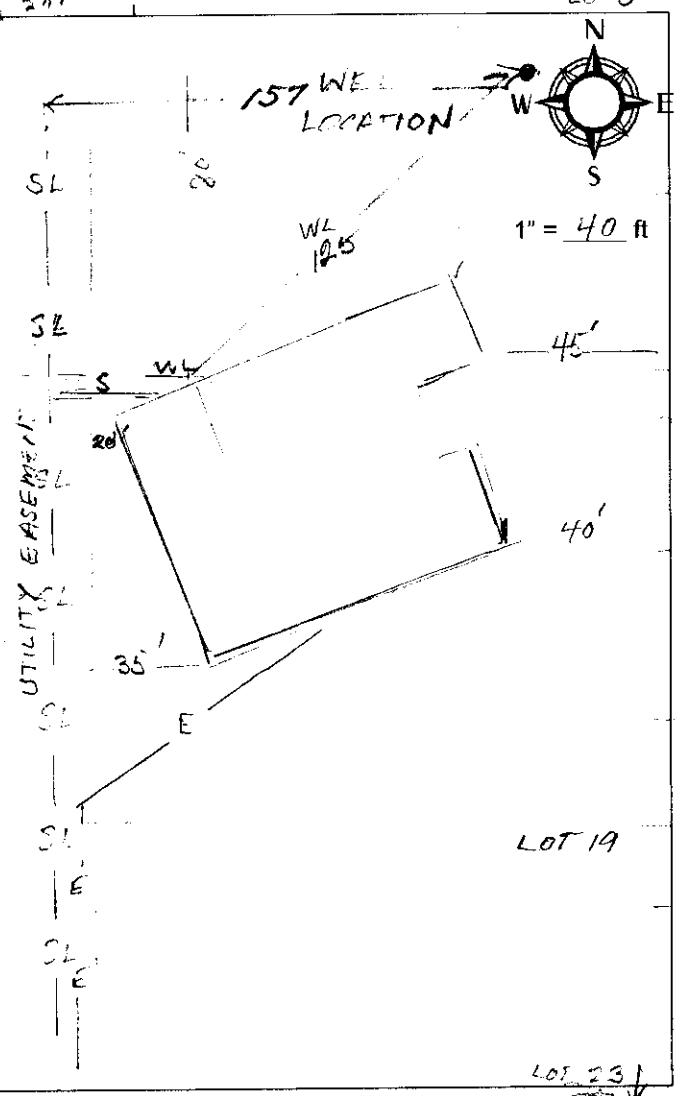
WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
CRAIG KEEFER	105	57 3/4	310

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.

RECEIVED
OCT 14 2005
GROUNDWATER MGT

N31° 20' 597
W 109° 57' 000



COUNTY OR LOCAL AUTHORITY NAME AND TITLE: Carlos Diaz R.S.
COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz R.S.
TELEPHONE NUMBER: 520-432-9442
DATE: Oct 13, 2005

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
Official County or Local Seal or Stamp
DATE Oct 13 2005
BY Carlos Diaz R.S.

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA		B	SB
RECEIVED	DATE	WS	
ISSUED	DATE	WQARF	CERCLA

FILE NUMBER

WELL REGISTRATION NUMBER
55 - 209744

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☒ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ RS

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE Oct 13 2005
BY Carlos Diaz RS

SIGNATURE

1258

Craig A. Keefer
Patricia A. Keefer
P.O. Box 530
Naco, AZ 85620

Date 9/20/2005 91-532/1221 27

Pay to the Order of ADWR $ 150 00

One Hundred Fifty & no/100 Dollars

National Bank OF ARIZONA
1-800-497-8168
www.nbarizona.com

For [redacted]

160 ACRE	40 ACRE	10 ACRE
SW ¼	NW ¼	NW ¼

AV

PARCEL	# OF ACRES
310	5

(FEET FROM LOCATION OF WELL) 160 ACRE	40 ACRE	10 ACRE
¼	¼	¼

SECTION 3. OWNER INFORMATION

Well Owner	Landowner (if different from Well Owner)
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: CRAIG KEEFER	FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: CRAIG KEEFER
MAILING ADDRESS: P.O. BOX 530	MAILING ADDRESS: P.O. BOX 530
CITY / STATE / ZIP CODE: NACO AZ 85620	CITY / STATE / ZIP CODE: NACO AZ 85620
CONTACT PERSON NAME AND TITLE: CRAIG KEEFER	CONTACT PERSON NAME AND TITLE: CRAIG KEEFER
TELEPHONE NUMBER: 520 236 7915 / FAX: 520-432-7396	TELEPHONE NUMBER: 520-236-7915 / FAX: 520 432-7396

OCT 14 2005

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		✓	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		✓	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		✓	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

October 21, 2005

Janet Napolitano
Governor

Herbert R. Guenther
Director

CRAIG KEEFER
PO BOX 530
NACO, AZ 85620

Registration No. 55-209744
File No. D(24-24) 18 CBB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well that you recently filed with this Department pursuant to A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed or otherwise provided a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card, which must be displayed on the drill rig during drilling.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the proposed well, you may not proceed with drilling until you file an amended NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the amended NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DWR form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed is a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55) within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at <http://www.water.az.gov/adwr/content/forms/default.htm#NOI>.

Sincerely,

Monica Ortiz

Monica Ortiz
NOI Unit
Water Management Support Section

Enclosures

Celebrating 25 Years

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 647003
FILE NO. D(24-24)8bcd
FILED 6-11-82 (DATE) AT 2P (TIME)
INA
AMA

1. Name of Registrant:
David C. Kennedy
1107 West Palm Lane (Address) Phoenix (City) AZ (State) 85007 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the SE ¼ SW ¼ NW ¼, Section 8, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

   b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Stockwater.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
   a. Depth of Well 110 feet
   b. Diameter of casing dug 10 feet inches
   c. Depth of casing _____ feet
   d. Type of casing rock .
   e. Maximum pump capacity 2 gallons per minute.
   f. Depth to water 60 feet below land surface.
   g. Date well completed N/A (Month) (Day) (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒.
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   Attach additional sheet if necessary.

9. DATE June 9, 1982 SIGNATURE OF REGISTRANT [signature]

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street
Phoenix, Arizona 85004

SEP - 4 2003

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. DRIVER DRILLING COMPANY
P.O. BOX 4345
HUACHUCA CITY, AZ 85616-0345

2. Owner Name: Edith Douglass
Address: Covington (City) OH (State) 45318 (Zip)

3. Location: 04 N/S 21 E/W 11 ¼ NE ¼ SE ¼ NE
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55-587749 (Required)

5. Permit No. _____ (If Issued)

DESCRIPTION OF WELL

6. Total depth of hole 400 ft. RECEIVED ANSWERED SEP 8 2003
7. Type of casing Steel + PVC
8. Diameter and length of casing 8 in. from 0 to 20, 5 in from 0 to 400
9. Method of sealing at reduction points _____
10. Perforated from 360 to 400, from _____ to _____ from _____ to _____
11. Size of cuts .25 Number of cuts per foot 3
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction drilled
(drilled, dug, driven, bored, jetted, etc)
14. Date started 05 (Month) 03 (Day) 02 (Year)
15. Date completed 05 (Month) 04 (Day) 02 (Year)
16. Depth to water 350 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea_level elevation if available
_____
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55- 587749
File No. D(24-24) 11 ADA
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	4	overburden
4	280	clay
280	400	Sandy clay

I hereby certify that this well was drilled by me (or under by supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: DRIVER DRILLING COMPANY

P.O. BOX 4345
Street

HUACHUCA CITY, AZ 85616-0345 520-459-3496
City State Zip Phone No.

Signature of Driller 6-1-02
Date

RECEIVED
JUL - 5 2001
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO P O BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL MONICA ORTIZ 602-417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT IF WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE

A. Eleth N Douglass (LANDOWNER S NAME) 8376 Covington-Gettysburg Rd (CURRENT MAILING ADDRESS) Covington (CITY) OH (STATE) 45318 (ZIP)

B TELEPHONE NO 937 473 8103 COUNTY ASSESSOR'S PARCEL ID INFORMATION

C WELL LOCATED IN Cochise COUNTY D 101 - 42 - 005A (BOOK - MAP - PARCEL) E 24 (# OF ACRES) OFFICIAL SEAL OR STAMP

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED)

F NE ¼ (10AC) SE ¼ (40AC) NE ¼ (160AC) OF SECTION 11 TOWNSHIP 24 N/S RANGE 24 E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE
G RECOMMEND APPROVAL _____ INSUFFICIENT INFORMATION TO MAKE A DETERMINATION _____ VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE _____ AUTHORIZED SIGNATURE _____ TITLE _____

1 OWNER OF WELL E. N. Douglass
NAME 8376 Covington-Gettysburg Rd
CURRENT MAILING ADDRESS Covington OH 45318
CITY STATE ZIP
TELEPHONE NUMBER 937 473 8103

2 ACTION REQUESTED
DRILL NEW WELL ✓ DEEPEN _____
MODIFY _____ REPLACE _____

WELL REGISTRATION NO 55 _____

FOR A REPLACEMENT WELL PROVIDE MAX CAPACITY OF THE ORIGINAL WELL _____ GALLONS PER MINUTE

DISTANCE FROM THE ORIGINAL WELL _____ FEET

3 CONSTRUCTION WILL START ABOUT
MONTH 8 YEAR 01

4 TYPE OF CASING FOR PROPOSED WELL
SURFACE CASING Steel
DIAMETER 6 DEPTH 20
DOWNHOLE CASING PVC
DIAMETER 4 DEPTH 250±

5 DESIGN PUMP CAPACITY
25 GALLONS PER MINUTE

6 LESSEE OF LAND OF WELLSITE
NAME _____
CURRENT MAILING ADDRESS _____
CITY STATE ZIP
TELEPHONE _____

7 PRINCIPAL USE OF WATER (BE SPECIFIC)
Future Domestic

8 OTHER USES OF WATER (BE SPECIFIC)
NONE

FOR DEPARTMENT USE ONLY
REGISTRATION NO 55 587749
DATE FILED 7-5-01
FILE NO D(24-24)11 ADA
AMA/INA (A) Douglas
W/S 13 S/B _____
PROCESSED BY MB
DATE MAILED 7-10-01
MO

9 PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NE ¼ (10AC) SE ¼ (40AC) NE ¼ (160AC) SECTION 11
TWNSHP 24 N/S RNG 24 E/W

10 TYPE OF WELL (CHECK ONE)
EXEMPT ✓ NON EXEMPT _____

11 CHECK ONE
RESIDENTIAL ✓ STOCKWATER _____
OTHER _____

12 IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM SEWER DISPOSAL AREA, LANDFILL HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES _____ NO ✓

13 DRILLING FIRM Driver Drilling
NAME Box 4345
MAILING ADDRESS Huachuca City Az 85616
CITY STATE ZIP
TELEPHONE NO 520 458 3496
DWR LICENSE NUMBER 177
ROC LICENSE CATEGORY 153 & C53

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. §45 596 IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM

E N Douglass	Eleth N Douglass	7-2-01
14 TYPE OR PRINT NAME AND TITLE	15 SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE	16 DATE

DWR 55-40 (REV 9/99)

APPLICATION GUIDELINES

In accordance with Arizona Revised Statutes ("A.R.S ") §§ 41 1008 and 1079 the Department of Water Resources (Department) provides the following information regarding the application review process for authority to drill

NECESSARY STEPS & INSTRUCTIONS TO OBTAIN DRILLING AUTHORITY

1 Pursuant to A.R.S § 45-596 a person may not drill cause to be drilled deepen or modify any well for which a permit is not required without first filing a Notice of Intent to Drill with the Department Only a well drilling contractor licensed in the State of Arizona or a single well licensee (a person licensed to drill or modify one exempt well on his or her own property) is authorized to drill deepen or modify a well Drilling may not begin until the well drilling contractor or licensee has possession of a drilling card at the well site issued by the Director in the name of the well drilling contractor or licensee and which authorizes the drilling of the specific well in a specific location To assist you in understanding the requirements for this application copies of A.R.S § 45-596 and Arizona Administrative Code (' A.A.C ") R12 15-810 are available at the Department bookstore (602-417-2450 x7127)

2 If replacing deepening or modifying an existing well provide the registration number of the existing well in item 2 A replacement well is one located no more than 660 feet from the original well and that is not expected to annually withdraw more groundwater than historically withdrawn from the original well

3 Information to complete items 3 4, 5 and 13 may be available from your driller

4 Information to complete items 9 and 12 may be available from your County Assessor's Office

5 For item 10, in an Active Management Area A.R.S § 45-454 only allows non irrigation uses for exempt" wells If the proposed use includes the growing of 2 or more acres of plants for sale or human/animal consumption (irrigation use) the well does not qualify as an exempt well

6 An exempt well, referred to in Item 10 means a well with a pump with a maximum capacity of not more than thirty-five gallons per minute and used for non irrigation purposes

7 For item 11, in an Active Management Area A.R.S §45-454 allow up to 56 acre feet per year of pumping from a domestic (residential) or stock watering exempt well and up to 10 acre ft per year from an exempt well used for other (usually commercial non-irrigation) purposes

8 If any water from a proposed well on a parcel of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant must submit a well site plan of the property The plan must be on an 8½ x 11" piece of plain paper with representation of the locations of all structures and proximity of adjacent lot lines to scale It must include the county assessor s parcel identification number The plan must show the proposed well location and the location of any septic tank or sewer system that is either located on the property or within one hundred feet of the proposed well site as well as indicating the measured shortest distance between the proposed well and existing septic tank system **The plan must demonstrate that the well will not be drilled within one hundred feet of any septic or sewer system**

9 The site plan must be approved by the county health authority or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems Endorsement by the county/local authority is based solely on the best available judgement that the proposed well as shown on the site plan submitted is 100 feet or more from all known and visually identifiable sewage treatment systems It is not a representation that a well placed at this site will be guaranteed as to quantity or quality In areas where there is no local or county authority that controls installation of septic tanks or sewer systems or if the health authority is unable to determine whether the proposed well location complies with state and local requirements the applicant must apply for approval directly to the Department of Water Resources

10 If an individual other than the land owner or lessee signs this notice an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific notice on his or her behalf must accompany the notice

11 Please mail **two original Notices** with **original signatures** and **two site plans** and, in accordance with A.R S § 45 113 a **check or money order (no cash) in the amount of $10 00** to P O Box 458 Phoenix Arizona 85001 0458 or hand deliver to 500 North Third Street Phoenix, Arizona

12 Arizona Revised Statute § 45 596(D) provides that the Director of the Department is to determine whether or not all information required on this form has been submitted If not the person filing the Notice will be notified and the drilling or modification of the well may **not** proceed

13 This form is not applicable for non exempt wells (those yielding more than thirty five gallons per minute) within an Active Management Area Contact Groundwater Management for further information regarding the appropriate notice to file with the Department

TIME FRAME FOR REVIEW OF YOUR APPLICATION

Within 15 days after receipt of your Notice of Intention the Arizona Department of Water Resources (' Department) will determine whether your application should be granted or denied unless this time is extended for lack of a complete application If your application is incomplete the Department will notify you in writing and will specify what information is necessary to make the application complete Until the missing information is received, the time frame for review of your application will be suspended Your application will not be complete until all of the requested information is received If you do not supply the missing information within sixty (60) days the Department may deem your application withdrawn and close the file

At the end of its review the Department will send you a written notice either granting or denying your application for drilling authority If your application is approved the Drill Card will be mailed directly to the drilling contractor If denied the Department s notice will state justification for the denial and an explanation of your right to appeal

CONSTRUCTION AND FOLLOW UP REQUIREMENTS

1 Construction and abandonment standards for wells must be in accordance with Department Regulations A.R.S § 45 594 and Arizona Administrative Code R12 15-811 require the well to be constructed with a twenty foot steel surface seal casing, including a one foot steel stickup and one and one-half inches of grout seal around the casing from the surface to a depth of twenty feet unless a variance is granted **(see A R S § 45-596 (G) for procedure to follow in requesting a variance)**

2 Pursuant to § 45-596(E) the drilling deepening or modification of the well must be completed within one year of the date of the Notice of Intent If the well is not completed within one year a new Notice of Intent must be filed before proceeding with further construction

3 If a well which was originally drilled as an exploration well a monitor well a piezometer well or for any use other than domestic use is later proposed to be converted to use for domestic purposes as defined in § 45-454 the well owner must file a Notice of Intention to Drill and comply with the requirements of § 45-596 before the well is converted and any water from that well is used for domestic purposes

4 Within thirty days after installation of pumping equipment the registered well owner must file a Completion Report with the Department The person to whom a well is registered also must notify the Department of a change in ownership or a change in data relating to this well

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO 55-587749

AUTHORIZED DRILLER DRIVER DRILLING COMPANY LICENSE NO 177

NOTICE OF INTENTION TO DRILL A EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY

WELL OWNER EDITH DOUGLASS 8376 COVINGTON-GETTYSBURG RD COVINGTON, OH 45318

The well(s) is/are to be located in the

NE ¼ of the SE ¼ of the NE ¼ Section 11 Township 24 SOUTH Range 24 EAST

No of wells in this project 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 3RD DAY OF JULY, 2002

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

T 24 S R 24 E

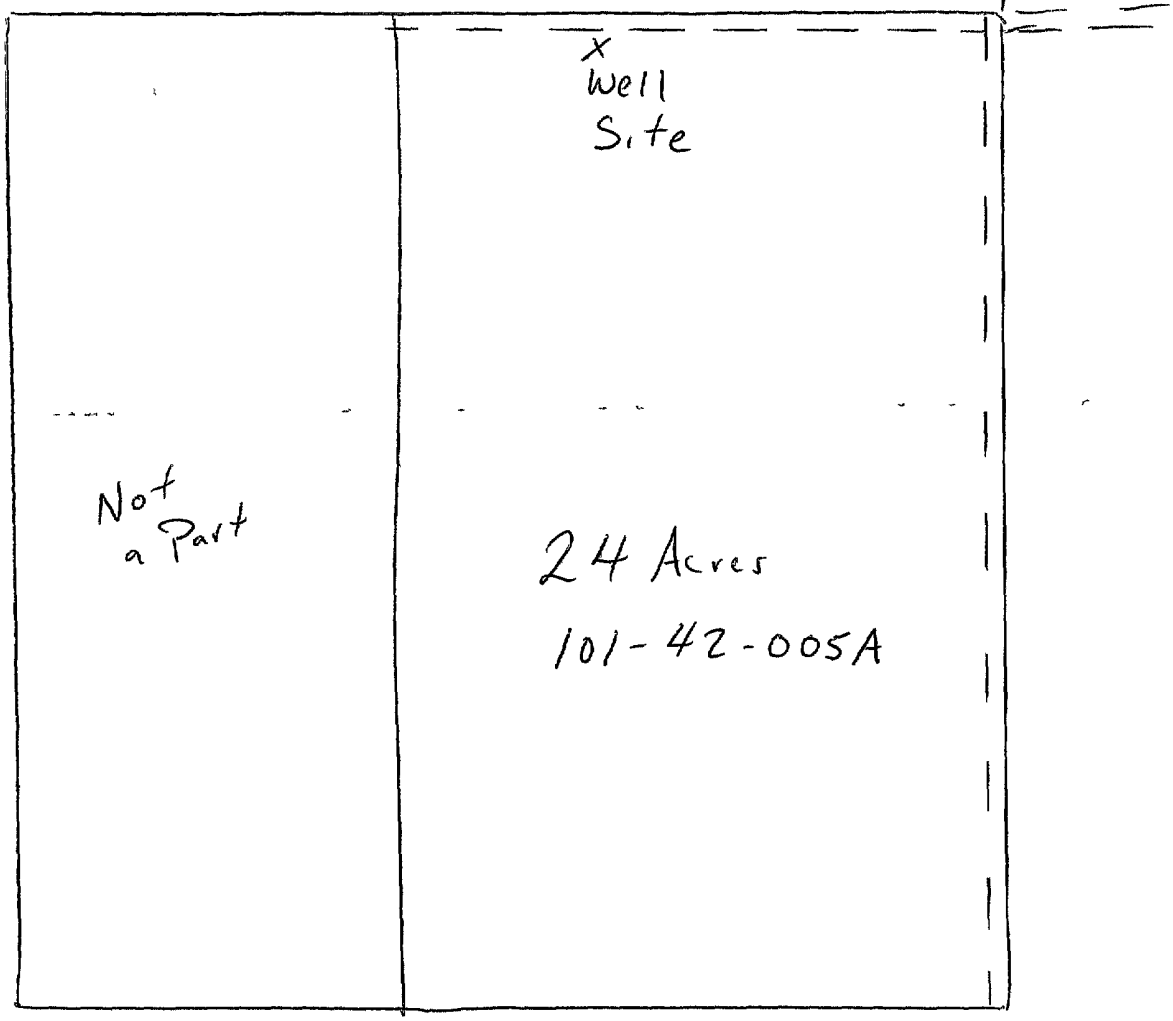
SE 1/4 of NE 1/4 Sec 11

40 160

RECEIVED
JUL - 5 2001
GROUNDWATER MGT

N

State Land



ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

July 10, 2001

JANE DEE HULL
Governor

JOSEPH C SMITH
Director

EDITH DOUGLASS
8376 COVINGTON-GETTYSBURG RD
COVINGTON, OH 45318

Registration No 55- 587749
File No D(24-24) 11 ADA

Dear Well Owner

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596 The enclosed Completion Report is to be submitted when pump equipment is installed The Drilling Card and Well Drilling Report form have been sent to your driller He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling If you change drillers, you must supply this Department with the new driller's identity Please ensure that the driller you select is licensed to drill the type of well you require All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling You should insist, and ensure, that both of these are done

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816 F

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate We have enclosed a Change of Well Information Form should it be needed in the future

Sincerely,

Toni Bergeman
Water Resource Technician
Groundwater Management Support Section

Enclosures

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 14 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 618175
FILE NO. D(24-24)17 bcc
FILED 6-14-82 (DATE) AT 4:30pm (TIME)
INA
AMA

1. Name of Registrant:
United Evangelism, Inc
408 E. Michigan Drive (Address) Tucson (City) AZ (State) 85714 (Zip)

2. File and/or Control Number under previous groundwater law:
D(24-24)17-bcc (File Number) 35- 2086 (Control Number)

3. a. The well is located within the SW ¼ SW ¼ NW ¼, Section 17, of Township 24 ~~N~~/S, Range 24 E/~~W~~, G & SRB & M, in the County of Cochise.

   b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater (domestic) municipal - industrial)
_____.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
   a. Depth of Well 301 feet
   b. Diameter of casing 6 inches
   c. Depth of casing 301 feet
   d. Type of casing P.E. Steel .
   e. Maximum pump capacity 100 gallons per minute.
   f. Depth to water 95 feet below land surface.
   g. Date well completed 6 (Month) – 26 (Day) – 72 (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   Attach additional sheet if necessary.

9. DATE 6-11-82 SIGNATURE OF REGISTRANT Marcos V. Lucero

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

UNITED EVANGELISM INC
408 E MICHIGAN
TUCSON AZ 85714

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	618175
	THRU
55	

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	10.00	10.00
					Existing Wells		
					File No. D(24-24)17 bcc		

WAITER PAYMENT
GUESTS 1
CHK NO 428
55-I 10.00
TAX 0.00
TOTL 10.00
CASH 10.00

1484 9 15:53

Check # 428

TOTAL $ 10.00

8/20/82 jc

MICROFILMED

ARIZONA DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Name: Leonard McConnell
   Address: Box 5032 (Street) Bisbee (City) AZ (State) 85603 (Zip)
2. Driller Name: WEBER DRILLING
   Address: RT. 1 BOX 276B (Street) ST. DAVID, AZ. 85630 (City, State, Zip)
3. Location: 24 (N/S) Township; 24 (E/W) Range; 17 Section; NW 1/4 10-acre; NW 1/4 40-acre; NW 1/4 160-acre
4. Well Registration No. 55- 539265 (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 216 ft.
7. Type of casing Steel
8. Diameter and length of casing 8 in. from 0 to 20, 6 in from 0 to 216.
9. Method of sealing at reduction points welded
10. Perforated from 174 to 216, from _____ to _____, from _____ to _____.
11. Size of cuts 8x8 Number of cuts per foot 4
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction Drilled (drilled, dug, driven, bored, jetted, etc)
14. Date started 7 (Month) 5 (Day) 93 (Year)
15. Date completed 7 (Month) 6 (Day) 93 (Year)
16. Depth to water 165 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
    Ground Level
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE

55-539265
Rc D(24-24)17BBB
Fi
Re ENTERED NOV 15 1993
Entered _____ by _____

DWR-55-55-7/91 (Rev.)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encounterd, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	216	Alluvial Conglomerate
		FIRST WATER 165'
		STATIC 135'

I hereby certify that this well was drilled by me (or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: Ronald E. Weber

Street: WEBER DRILLING
RT. 1 BOX 276B
ST. DAVID, AZ. 85630

City State Zip

Date 10/5/93

ARIZONA DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

Registration No. 539265

File No. D (24-24),17 BBB

COMPLETION REPORT

1. Per A.R.S. § 45-600, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.

2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.

3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

ENTERED JUN 13 1994

LOCATION OF THE WELL:

24 N/S	24 E/W	17	E½	NW 1/4	NW 1/4	NW 1/4
Township	Range	Section		10-acre	40-acre	160-acre

EQUIPMENT INSTALLED:

Kind of pump SUBMERSIBLE
Turbine, centrifugal, etc.

Kind of power ELECTRIC H.P. Rating of Motor 1
Electric, natural gas, gasoline, etc.

Pumping Capacity 20 Date pump installed:
Gallons per minute

WELL TEST:

Test pumping capacity 20 gal Date Well Tested: 8-1-93
Gallons per minute

Method of Discharge Measurement Bucket + stop watch
Weir, orifice, current meter, etc.

Static Groundwater Level 130 ft. Drawdown 0 ft.

Total Pumping Lift 130 ft. Drawdown 0 lbs.
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

June 9, 1994
Date

LEONARD McCONNELL
Print Well Owner's Name

Leonard McConnell
Signature of Well Owner or Agent

Box 1032
Address

Bisbee, Az 85603
City State Zip

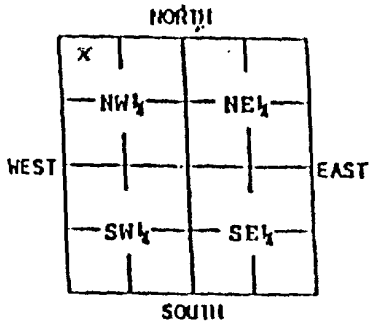
DWR-55-56-7/91 (Rev.)

FILING FEE $10.00 FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)

NOTICE OF INTENTION TO DRILL A WELL OUTSIDE OF AN ACTIVE MANAGEMENT AREA

Section §45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department.



INDICATE WELL LOCATION BY X
(Above diagram represents one 640 acre section)

WELL/LAND LOCATION

24 S/S	24 E/W	17
1. Township	2. Range	3. Section

4. NW 1/4 NW 1/4 NW 1/4 — E½
10 acre sub-division

5. County Cochise

6. Owner of well:
Leonard McConnell
Name
Box 5032
Mailing Address
Bisbee AZ 85603
City State Zip
Telephone: 432-2958

7. Owner of land:
Same
Name
Mailing Address
City State Zip
Telephone No.

DESCRIPTION OF PROPOSED WELL

8. Diameter 6 inches
Depth 160 feet
9. Type of Casing Steel
10. Design Pump Capacity:
20 gallons per minute
11. Estimate of total annual pumping:
10 acre feet
12. Principal use of water:(be specific)
Home
13. Other uses intended:(be specific)
Landscaping
14. Number of Multiple Drinking Water connections, if any: 0
15. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated: .5
16. Construction will start about:
5/93
Month Year

DO NOT WRITE IN THIS SPACE
Office Record
File No. D(24-24)17 BBB
Filed 5/18/93 By dlw
Input By
Duplicate RECEIVED MAY 24 1993
Mailed 6/24/93 By dlw
Registration No. 55-539265
INA
W/S 11 S/B

PLACE OF USE

17. Township NW SEC 17 N/S
18. Range 24E E/W
19. Section NW¼ - 17
20. Legal description of land:
a. NW 1/4 NW 1/4 NW 1/4
10 acre sub-division
b. County Assessor's I.D.
102 53 010
Book | Map | Parcel
21. Type well:
Exempt ✓ Non-exempt
22. Action Requested:
Drill New Well ✓ ; or
Deepen Replace Modify
Well No. 55-
23. Applicant: Owner ✓ Lessee
Same
Name
Mailing Address
City State Zip
Telephone: 432-2958
DRILLING FIRM
Weber Drilling
24. Firm Name
RT 1 Box 276B
Mailing Address
St. David AZ 85630
City State Zip
272
DWR License Number
A-4 C-53
Type of contractor License

25. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes No ✓

GENERAL INSTRUCTIONS

1. Fill out this form in DUPLICATE and send WITH $10.00 FEE to 15 South 15th Avenue, Phoenix, AZ 85007.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen, replace or modify a well outside of an Active Management Area.
4. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in Item 21.
5. Construction standards for wells, including abandonment, shall be in accordance with Department Rules and Regulations.

I state that Notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well as set forth on the reverse side of this form.

May 16, 1993
May 16, 1993
Date

Leonard McConnell
Virginia J. McConnell
Signature of well owner/lessee

DWR 55-40-4/90 (Rev.)

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Receipt of this annotated Notice constitutes authorization to proceed in drilling, deepening, or modifying the well as set forth on this Notice.

2. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well.

3. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

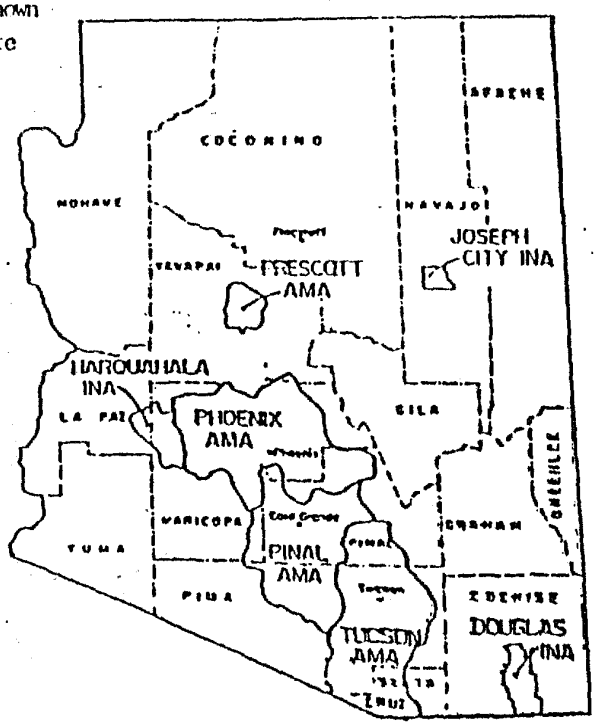
4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 3 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to A.R.S. § 45-434 or § 45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of A.R.S. § 45-437.

5. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of this Notice.

6. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

7. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of the annotated copy of this Notice.

8. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.



10-1-90

RECEIPT

№ 6242

Leonard McConnell
Box 5032
Bisbee, AZ 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007
(602) 542-1581

ENTRY CODE 55

FILE NO. 55-539265 **THRU**

ITEM DESCRIPTION	RATE	AMOUNT
FILING FEE FOR NOI TO DRILL A WELL	10.00	10.00
REG. NO.55-539265		
FILE NO.D(24-24)17BBB		
PAID		

CHECK NO. 944 FEE ACCOUNT NO. _____ TOTAL $ 10.00

CHIT NO. _____ RECEIVED BY db DATE 05-24-93

IPS 1821 – Rev. 4/91

ARIZONA DEPARTMENT OF WATER RESOURCES

15 South 15th Avenue, Phoenix, Arizona 85007
Telephone (602) 542-1581
Fax (602) 542-3383

May 24, 1993

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

Lenord Mc Connell
Box 5032
Bisbee, AZ 85603

Registration No. 55-539265
File No. D(24-24)17BBB

Dear Mr. Mc Connell:

Enclosed is a copy of the Notice of Intention (NOI) to drill a well. This NOI, whic h was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized. **In no case may the replacement well be more than 660 feet from the well it is replacing.**

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593, the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

If the information you provided indicates your well is near the Colorado River; if in the future, it is determined that water from your well is supplied from the river and you do not have a perfected water right to Colorado River water established prior to 1929, the U.S. Bureau of Reclamation may require you to cease pumping or enter into a contract for use of Colorado River water.

Sincerely,

Dorothy Boggs
Groundwater Permit Specialist

db
Enclosures

EXEMPT WELL
WELL REGISTRATION NO.

55- 539265

DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

EXEMPT WELL

THIS DRILLING CARD SHALL BE IN THE POSSESSION OF THE DRILLER BEFORE DRILLING OPERATIONS COMMENCE

AUTHORIZED DRILLER Weber Drilling LICENSE NO. 272
(Unless superceded by notification of change of well driller)

Notice of Intention to X **Drill** ____ **Deepen** ____ **Replace** ____ **Modify** a well has been filed with the Department by:

Leonard McConnell	Box 5032	Bisbee	AZ	85603
Name	Address	City	State	Zip

This well is to be located in: Township 24S Range 24E Section 17 NW 1/4 NW 1/4 NW 1/4

This authorization to X Drill ____ Deepen ____ Replace ____ Modify the above well expires at midnight on 05-23-94.

PURSUANT TO A.R.S. § 45-600, THE DRILLER SHALL FILE, ON THE PRESCRIBED DEPARTMENT FORM, A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

Bruce [illegible]
for **Deputy Director**

DWR-55-54-3/91

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

June 21, 2002

Russell McConnell
P O Box 4513
Bisbee, AZ 85603

Re: Denial of Notice of Intention to Drill Well Number 55-590386

The Department of Water Resources notified you by letter on January 10, 2002 that your application to drill a well was incomplete. Pursuant to Arizona Revised Statutes (A.R.S.) § 41-1074(B), a list of the specific deficiencies preventing your application from being complete was provided to you in that letter. The completeness review time frame was suspended by the incomplete letter, and you were given sixty (60) days within which to provide the requested information. Our records indicate that you did not do so.

Therefore, pursuant to Arizona Administrative Code R12-15-401, the Department hereby denies your application.

The Departments decision to deny your application is an appealable agency action. In order to appeal this decision, you must request an appeal within thirty (30) days from receipt of this letter. A summary of the appeals process and appeal form is enclosed should you wish to pursue this option.

Alternatively, you may submit a new Notice of Intention for authority to drill at this particular location. To expedite the process, please include the information missing in your original Notice of Intention to Drill.

Should you have any questions, please contact Alan Dulaney of the Department of Water Resources at (602) 417-2470.

Sincerely,

Toni Bergeman

Toni Bergeman
Water Resource Technician

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

January 10, 2002

Russell McConnell
P O Box 4513
Bisbee, AZ 85603

Assigned Referenced Number: 55-590386

Dear Applicant:

The Department of Water Resources recently received your Notice of Intent to **Drill, Deepen, Replace, or Modify A Well.** However, our review indicates that the filing(s) is incomplete under the Groundwater Management Act for the following reason(s):

(A) Landowner Info. Incomplete: ____
(C) County not Given: ____
(D) Book, Map, Parcel Incorrect: ____
(E) Number of Acres Not Given: ✓
(F) Legal Description Incomplete: ____
____Incomplete Quarter Sections
____Incomplete/Incorrect Section
____Incomplete/Incorrect Township ?
____Incomplete/Incorrect Range
(G) Recommendation Not Selected: ____
(H) Date Of Approval Not Given: ____
(1) Well owner Info. Incomplete: ____
(2) Action Requested (check one): ____
(3) Starting Date Not Given: ____
(4) Casing To Be Used (answer all): ✓
(5) Design Capacity of Pump : ✓
(6) Lessee Info. Incomplete: ____
(7) Primary Water Use Not Given: ____
(8) Other Water Uses Not Given: ____

(9) Place of Use Incomplete (refer to "F"): ____
(10) Type of Well (check one): ____
(11) Select One (define "other"): ____
(12) Select "Yes" or "No": ____
(13) Incomplete Driller Information: ____
(14) Printed Name/Title Not Given: ____
(15) Incorrect/Unauthorized Signature: ____
Requires Current Forms: ____
Please Refer to the Attached Letter: ____
Requires $10.00 Filing Fee: ____
Need County Approval (see attached list) ____

Other Reason(s): Please verify Township - F & 9

PLEASE CALL TONI BERGEMAN AT 602-417-2400 EXT. 7148 WITH ANY QUESTIONS.

In accordance with A.R.S § 45-596; Paragraph D, this application is being returned as a "statement of determination", requesting information necessary to make it correct and complete. If the necessary information is not received by the Department within sixty (60) days, the application may be denied. You would then have to re-initiate the N.O.I. process to receive a drilling authority for this location. If you have any questions, please contact the Groundwater Management Support Section at (602) 417-2470. **ATTACH THIS CHECK LIST WHEN RESUBMITTING THE COMPLETED NOTICE OF INTENT AND RETURN TO BOX 458, PHOENIX, ARIZONA 85004-3003. YOU MAY ALSO CONTACT YOUR DRILLER OR COUNTY ASSESSORS OFFICE FOR ASSISTANCE PERTAINING TO THE NECESSARY INFORMATION THAT IS REQUIRED TO COMPLETE YOUR APPLICATION.**

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ (602)417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

RECEIVED
JAN 3 2002
GROUNDWATER MGT

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. Russell McConnell P.O. Box 4513 Pinetop AZ 85935
LANDOWNER'S NAME | CURRENT MAILING ADDRESS | CITY | STATE | ZIP

B. TELEPHONE NO. (520) 432-7388

C. WELL LOCATED IN Navajo COUNTY

COUNTY ASSESSOR'S PARCEL ID INFORMATION:
D. 102 53 010B E. _____
BOOK | MAP | PARCEL | # OF ACRES

OFFICIAL SEAL OR STAMP

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NW¼ (10AC) NW¼ (40AC) NW¼ (160AC) OF SECTION 17 TOWNSHIP 24 N/S RANGE 24 E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL X ; INSUFFICIENT INFORMATION TO MAKE DETERMINATION _____ ; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE 12/24/01 AUTHORIZED SIGNATURE John T. Tom, R.S. TITLE Environmental Health Spec.

1. OWNER OF WELL:
Russell B. McConnell
NAME
P.O. Box 4513
CURRENT MAILING ADDRESS
Pinetop AZ 85935
CITY STATE ZIP

TELEPHONE NUMBER (520) 432-7388

2. ACTION REQUESTED:
DRILL NEW WELL ✓ DEEPEN _____
MODIFY _____ REPLACE _____

WELL REGISTRATION NO 55-_____

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL _____ GALLONS PER MINUTE;

DISTANCE FROM THE ORIGINAL WELL:
GREATER THAN 50 FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH JAN YEAR 2002

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: _____
DIAMETER: _____" DEPTH: _____'

DOWNHOLE CASING: _____
DIAMETER: _____" DEPTH: _____'

5. DESIGN PUMP CAPACITY:
_____ GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
_____
NAME
_____
CURRENT MAILING ADDRESS
_____
CITY STATE ZIP

TELEPHONE: _____

7. PRINCIPLE USE OF WATER: (BE SPECIFIC)
Household Domestic

8. OTHER USES OF WATER: (BE SPECIFIC).
Lawn / Garden

9. IF USE INCLUDES IRRIGATION, STATE TO NEAREST TENTH, THE NUMBER OF ACRES TO BE IRRIGATED: _____

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55-_____
DATE FILED _____
FILE NO. _____
AMA/INA _____
W/S _____ S/B _____
PROCESSED BY _____
DATE MAILED _____

10. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NW¼ (10AC) NW¼ (40AC) NW¼ (160AC) SECTION 17
TWNSHP 17 N/S RNG 24 E/W

11. TYPE OF WELL (CHECK ONE):
EXEMPT ✓ NON-EXEMPT _____

12. CHECK ONE:
RESIDENTIAL ✓ COMMERCIAL _____

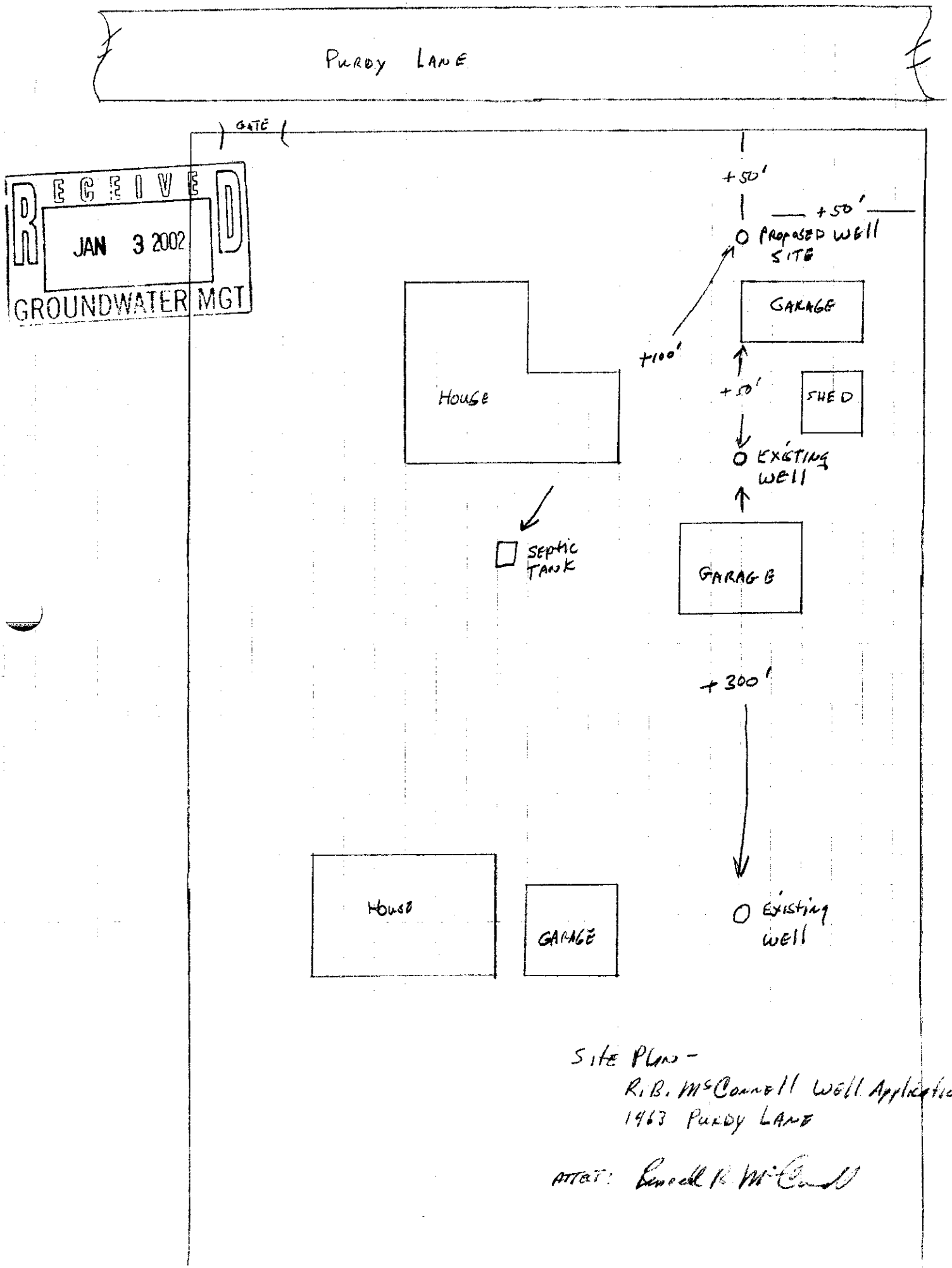
13. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES _____ NO ✓

14. DRILLING FIRM:
Tanner Well Service
NAME
7414 W. Frontier Rd.
MAILING ADDRESS
McNeal AZ 85617
CITY STATE ZIP
(520) 642-3654
TELEPHONE NO.
133
DWR LICENSE NUMBER
C-53
~~ROC~~ LICENSE CATEGORY

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

Russell B. McConnell, owner — Russell B. McConnell — Dec. 28, 2001
15. TYPE OR PRINT NAME AND TITLE | 16. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE | 17. DATE

DWR 55-40 (REV 1/99)



SITE PLAN -
R.B. McConnell Well Application
1963 PURDY LANE

ATTEST: Russell B McConnell

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ (602)417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

RECEIVED
JAN 3 2002
GROUNDWATER MGT

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. Russell McConnell (LANDOWNER'S NAME) P.O. Box 4513 (CURRENT MAILING ADDRESS) Bisbee (CITY) AZ (STATE) 85603 (ZIP)

B. TELEPHONE NO. (520) 432-7388

C. WELL LOCATED IN Cochise COUNTY

COUNTY ASSESSOR'S PARCEL ID INFORMATION:
D. 102 (BOOK) 53 (MAP) 010B (PARCEL) E. _____ (# OF ACRES)

OFFICIAL SEAL OR STAMP -

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NW¼ (10AC) NW¼ (40AC) NW¼ (160AC) OF SECTION 17 TOWNSHIP 24 N/S RANGE 24 E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL X ; INSUFFICIENT INFORMATION TO MAKE DETERMINATION _____ ; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE 12/24/01 AUTHORIZED SIGNATURE John T. Fan, R.S. TITLE Environmental Health Spec.

1. OWNER OF WELL:
Russell B. McConnell (NAME)
P.O. Box 4513 (CURRENT MAILING ADDRESS)
Bisbee (CITY) AZ (STATE) 85603 (ZIP)
TELEPHONE NUMBER (520) 432-7388

6. LESSEE OF LAND OF WELLSITE:
_____ (NAME)
_____ (CURRENT MAILING ADDRESS)
_____ (CITY) _____ (STATE) _____ (ZIP)
TELEPHONE: _____

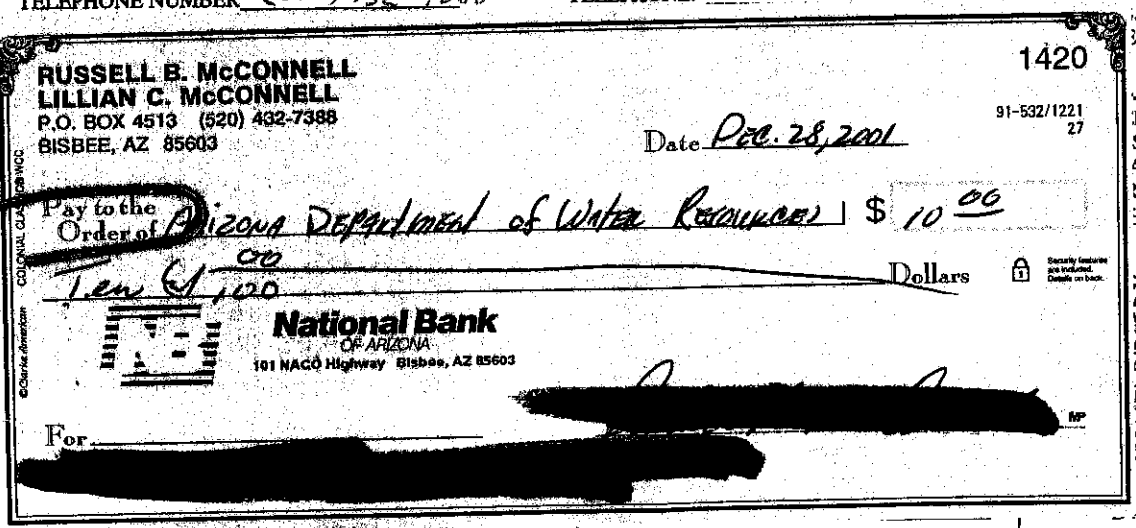
10. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NW ¼ (10AC) NW ¼ (40AC) NW ¼ (160AC) SECTION 17
TWNSHP 17 N/S RNG 24 E/W

11. TYPE OF WELL (CHECK ONE):
EXEMPT ✓ NON-EXEMPT _____

. CHECK ONE:
SIDENTIAL ✓ COMMERCIAL _____

. IS THE PROPOSED WELLSITE WITHIN 100 ET OF A SEPTIC TANK SYSTEM, SEWER SPOSAL AREA, LANDFILL, HAZARDOUS ATERIALS OR PETROLEUM STORAGE EAS AND TANKS?
ES _____ NO ✓

. DRILLING FIRM:
Bower Well Service
ME
7414 W. Frontier Rd.
AILING ADDRESS
N. Neal AZ 85617
TY (CITY) STATE ZIP
(520) 642-3654
LEPHONE NO.
133
VR LICENSE NUMBER
C-53
ROC LICENSE CATEGORY



DIAMETER: _____ " DEPTH: _____ '

DATE MAILED _____

5. DESIGN PUMP CAPACITY:
_____ GALLONS PER MINUTE

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

Russell B. McConnell, Owner (15. TYPE OR PRINT NAME AND TITLE) Russell B. McConnell (16. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE) Dec. 28, 2001 (17. DATE)

DWR 55-40 (REV 1/99)

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

JUL 1982 DEPARTMENT OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55-650256-2
FILE NO. D(24-24)18 ddd
FILED 7-12-82 (DATE) AT 900A (TIME)
INA
AMA

1. Name of Registrant:
ALFREDO A. & MICAELA R. MENDEZ
314 4TH ST. (Address) MAILING: P.O. BOX 464 NACO (City) AZ (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law: UNKNOWN - PREVIOUS OWNER DECEASED
NONE (File Number) 35- (Control Number)

3. a. The well is located within the SE ¼ SE ¼ SE ¼, Section 18, of Township 24 N(S) Range 24 E(W), G & SRB & M, in the County of Cochise. UNKNOWN

b. If in a subdivision: Name of subdivision NACO TOWNSITES 102-57-099 NACO Lot No. 309, Address 314 4TH ST. NACO AZ 85620.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
IRRIGATION.

5. If for irrigation use, number of acres irrigated from well NONE.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 160 feet
b. Diameter of casing 6 inches
c. Depth of casing 100 feet
d. Type of casing STEEL.
e. Maximum pump capacity — gallons per minute.
f. Depth to water 120 feet below land surface.
g. Date well completed (Month) (Day) 1938 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒
___¼ ___¼ ___¼, Section ___ Township ___ Range ___
___¼ ___¼ ___¼, Section ___ Township ___ Range ___
NACO TOWNSITES, NACO LOT # 309, 314 4TH ST, NACO, AZ 85620
Attach additional sheet if necessary.

9. DATE 7/8/82 SIGNATURE OF REGISTRANT Alfredo A Mendez

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form in duplicate with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

LAND DEPARTMENT
WATER DIVISION
STATE OF ARIZONA

REPORT OF WELL DRILLER

RECEIVED
APR 27 1979
STATE LAND DEPT.
1416

This report should be prepared by the driller in all detail and filed with the State Land Commissioner following completion of the well.

1. OWNER Alfonso Metzler
Name
Address

2. Lessee or Operator
Name
Address

3. DRILLER J. R. SHARP GENERAL CONTRACTORS
Name J. R. SHARP GENERAL CONTRACTORS BOX 4520 NACO HWY. BISBEE, ARIZ. 85603 432-4597
Address

4. Location of well: Twp. 24 S Rge. 24 E Section 5 NW ¼ NW ¼ SE ¼
10-acre subdivision

5. Intention to Drill File No. Permit No.

DESCRIPTION OF WELL

6. Total depth of hole 351 ft.

7. Type of casing P.E. Steel

8. Diameter and length of casing 6 in. from 0 to 351, in. from to, in. from to

9. Method of sealing at reduction points

10. Perforated from 245 to 345, from to, from to, from to

11. Size of cuts ¼ x 6 Number of cuts per foot 2

12. If screen was installed: Length ft. Diam. in. Type

13. Method of construction (drilled) dug, driven, bored, jetted, etc.

14. Date started 3 - 12 - 79 (Month Day Year)

15. Date completed 4 - 10 - 79 (Month Day Year)

16. Depth to water 2.38' ft.
If flowing well, so state.

17. Describe point from which depth measurements were made, and give sea-level elevation if available
Top of Casing

18. If flowing well, state method of flow regulation

19. REMARKS:

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received 4/27/79 by RME

Filed by

File No. D(24-24)5 dbb
35-71891

(Well Log to Appear on Reverse Side)

WD FORM G-301
REV. 4-27-53

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	351	Recent Conglomerate with occasional Boulders
	238	Standing water Level
245	250	First water.
245	345	Perforations 2 1/4x6 each foot
0	351	6 5/8 O.D. x .188 P.E. pipe with drive shoe.

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller J. R. SHARP GENERAL CONTRACTORS
Name

J. R. SHARP
GENERAL CONTRACTORS
BOX 4520 NACO HWY.
BISBEE, ARIZ. 85603 432-4597 Address

J. R. Sharp

Date 4-14-79

2-73

- 62 -

12-15-78 not State

NOTICE OF INTENTION TO DRILL WELL

LAND DEPARTMENT
WATER DIVISION
STATE OF ARIZONA

RECEIVED
DEC 18 1978
STATE LAND DEPT.

By Law, no person shall drill, or cause to be drilled, any well for the development and use of Ground Water in Arizona without first filing Notice of Intention to Drill with the State Land Department. The only exceptions are for those irrigation wells within critical Ground Water areas for which Drilling Permits are required. No well shall be drilled by other than the owner without the driller being licensed with the Registrar of Contractors. The driller's license number must be included before the State Land Department will process the filing.

FILING FEE $3.00

LOCATION OF WELL

North

West — NW¼ NE¼ — East

SW¼ SE¼

South

Indicate Well Location by X
(Above diagram represents one 640 acre section)

1. Twp. 24S
2. Rge. 24E
3. Section 5
4. NW ¼ NW ¼ SE ¼
   10-acre subdivision
5. Owner of Well Site
   Alfonso Metzler

INSTRUCTIONS

Fill out both copies and mail to Water Division, State Land Department, 1624 W. Adams, Phoenix, Arizona, 85007.

Duplicate will be returned to Filer, together with Drilling Card.

71891

DESCRIPTION OF WELL

6. Diameter 6 in. depth 350 ft.
7. Type of casing P.E. Steel
8. Estimated depth to water 250 ft.
9. Proposed use domestic
10. Drilling will start about Feb. '79
    Month Year
11. Driller J.R. Sharp Gen. Contrs
    P.O. Box 4520
    Bisbee, AZ 85603
    Name / Address
    Driller's License No. 27262
12. Water will be applied to use about
    Feb. '79
    Month Year
20. This notice filed by:
    Check one { Owner ☐ Lessee ☐ Driller ☒
    Name J.R. Sharp Gen. Contrs.
    P.O. Box 4520
    Address Bisbee, AZ 85603

PLACE OF USE

13. Twp. 24S
14. Rge. 24E
15. Section 5
16. NW¼ NW¼ SE¼
    Legal Description of Land to be Irrigated or place of other use.
17. Acres (if irrigation)
18. Owner Alfonso Metzler
    P.O. Box 4520
    Name
19. Bisbee, AZ 85603
    Address

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received 12-18-78 By M
Filed 12-19-78 By M
Duplicate Mailed 12-19-78 By M
File Number D(24-24)5 dbb

TO AVOID PAYMENT OF PENALTY AND INTEREST THIS PAYMENT MUST BE IN THE OFFICE OF THE STATE LAND DEPARTMENT ON OR BEFORE THE DUE DATE. DATE OF POSTAL STAMP NOT ACCEPTED AS DATE OF PAYMENT.

STATE OF ARIZONA
STATE LAND DEPARTMENT
1624 WEST ADAMS – 4th FLOOR – PHOENIX, ARIZONA 85007

OFFICE COPY

J. R. Sharp, General Contractors
For: Alfonso Metzler
P.O. Box 4520
Bisbee, Arizona 85603

SECTION	TOWNSHIP	RANGE

38096

KIND ENTRY	LEASE-REFERENCE NO.
35	71891 00

	ACCOUNT NO. GRANT FUND	SUB	CARRYING CAPACITY	BILLING DESCRIPTION	RATE	ACRES	$ AMOUNT
14	312	32		Filing fee for Notice of Intention to Drill Well			3 00
				Water Rights (GW)			
				File # D(24-24)5 dbb			
				XXX Check #7278		1	CK CK M 3.00+
					3141	12 18 78	3.00+T

CERTIFICATE OF PURCHASE $ UNPAID BALANCE	BILLING PERIOD FROM MO.	DAY	YR	TO MO.	DAY	YR	DATE BILLED MO.	DAY	YR.	DATE DUE MO.	DAY	YR.	TOTAL ACRES	TOTAL AMOUNT $
							12	18	78					3 00

IF PAYMENT IS MADE ON OR BEFORE THIS DATE → PAY THIS AMOUNT

SEE OTHER SIDE FOR LAW PERTAINING TO PENALTY AND INTEREST – A. R. S. SEC. 37-288.

RENTAL AMOUNT SUBJECT TO PENALTY AND INTEREST IF NOT PAID ON OR BEFORE DATE DUE ($)

5% PENALTY OF RENTAL AMOUNT - - - - - - - - - - - $

TOTAL RENTAL AMOUNT PLUS PENALTY - - - - - - - - ($) TOTAL PENALTY AND INTEREST

10% INTEREST PER ANNUM OF RENTAL AMOUNT AND PENALTY = NUMBER OF DAYS DELINQUENT ( )$ $

TOTAL AMOUNT DUE INCLUDING PENALTY AND INTEREST - - - - - - - - - - - - $

CASH RECEIVED $

BALANCE DUE OR OVERPAYMENT $

PENALTY AND INTEREST DISTRIBUTION		$

BRUCE E BABBITT
GOVERNOR

Arizona
State Land Department
1624 WEST ADAMS
PHOENIX, ARIZONA 85007
602 - 271-4634

OFFICE OF
STATE LAND COMMISSIONER
John M. Little
Acting

December 19, 1978

J. R. Sharp General Contractors
For: Alfonso Metzler
P.O. Box 4520
Bisbee, Arizona 85603

Gentlemen:

File No. D(24-24)5 dbb D
35-71891

This copy of Notice of Intention to Drill Well in Twp. 24 S , Rge. 24 E , Section 5 , NW $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$, is returned to you for your file. Also enclosed are:

X WELL DRILLING CARD, which should be in the hands of the driller before construction of the well is started;

X REPORT OF WELL DRILLER form, which may be filled in by the driller but which you should make sure is mailed to us after completion of the well;

X REPORT OF EQUIPMENT INSTALLED form, which shall be filled in by you and sent to us after the installation of the pumping equipment;

____ DIAGRAMS of recommended cement grout seal and pump installation, supplied by the Department of Health.

In the event it is necessary to change the location of the proposed well, you should obtain the written permission of the State Land Commissioner before proceeding with the drilling.

Very truly yours,

XXXXXXXXXXXXXXXXX
State Land Commissioner

By:
F. C. Ryan, Director
Water Rights Division

mm

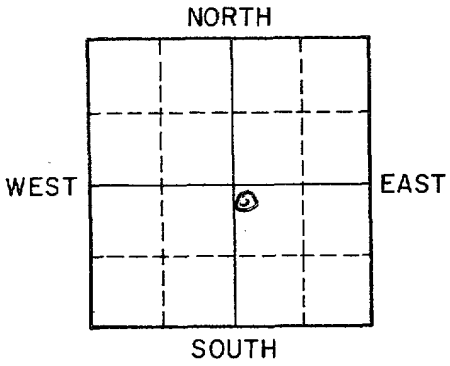
21-72

STATE LAND DEPARTMENT
Water Division
Phoenix, Arizona 85007



File No. D(24-24)5 dbb
35-71801

Location of Well



(Indicate Well Location by a circle "o" in the above Section Plat)

REPORT OF EQUIPMENT INSTALLED

OWNER Alfonso Metzler

LOCATION OF WELL:

NW ¼ NW ¼ SE ¼, Sec. 5 Twp. 24 S Rge. 24 E

Date Well Completed: 4-10-79 Depth 351'

1. Well Test:

Discharge: 15 (Gal. Per Min.) Date Well Tested: 4-10-79

Method of Discharge Measurement: Bailer test (weir, orifice, current meter, etc.)

Static Water Level: 238 ft. Drawdown 2 ± ft.

Total Pumping Lift 240 ft.

2. Equipment Installed:

Kind of Pump: 4RM19-1 Berkeley submersible (turbine, centrifugal, etc.)

Kind of Power: _____ (Elec., Nat. Gas, Etc.) H. P. Rating of Motor 1

I HEREBY CERTIFY that all the above statements are true to the best of my knowledge and belief.

J. R. SHARP GENERAL CONTRACTORS

J. R. Sharp
Signature

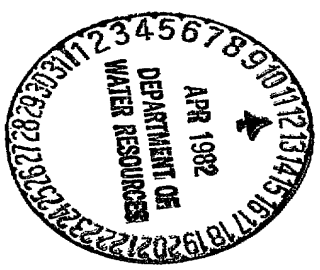
J. R. SHARP
GENERAL CONTRACTORS
BOX 4520 NACO HWY.
BISBEE, ARIZ. 85603 432-4597
Address

Date 4-14-, 1979.

63-73

house

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

11

FOR OFFICE USE ONLY
REGISTRATION NO. 55-641340
FILE NO. D(24-24)7 CAC
FILED 4-12-82 (DATE) AT 3P (TIME)
INA
AMA

1. Name of Registrant: Charles Raymond Miller
Box 613 (Address) Naco (City) Az (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35- (Control Number)

3. a. The well is located within the SW ¼ NE ¼ SW ¼, Section 7, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial) stockwater & domestic.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
_____ (Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 200 feet
b. Diameter of casing 6 inches
c. Depth of casing 200 feet
d. Type of casing steel pipe casing.
e. Maximum pump capacity 10 gallons per minute.
f. Depth to water 150 feet below land surface.
g. Date well completed ____ (Month) ____ (Day) 1940 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 4-8-82 SIGNATURE OF REGISTRANT Charles Raymond Miller

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

F-4, Line

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED
APR 12 1982
DEPT. OF
WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY	
REGISTRATION NO. 55-	641341
FILE NO.	D(24-24)17CAC
FILED (DATE)	4-12-82
AT (TIME)	3P
INA	
AMA	

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

1. Name of Registrant: Charles Raymond Miller
Box 613 (Address) Naco (City) Az (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35- (Control Number)

3. a. The well is located within the SW ¼ NE ¼ SW ¼, Section 17, of Township 24 S N/S, Range 24 E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial) Stock water.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 100 feet
b. Diameter of casing 6 inches
c. Depth of casing 100 feet
d. Type of casing Steel pipe casing.
e. Maximum pump capacity 10 gallons per minute.
f. Depth to water 60 feet below land surface.
g. Date well completed NA (Month) NA (Day) 1920 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 4-8-82 SIGNATURE OF REGISTRANT Charles Raymond Miller

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

B.J

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED
APR 12 1982
DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 641342
FILE NO. D(24-24)15CCC
FILED 4-12-82 (DATE) AT 3P (TIME)
INA
AMA

1. Name of Registrant: Charles Raymond Miller
Box 613 (Address) Naco (City) Az (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the SW ¼ SW ¼ SW ¼, Section 15, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision ____, Lot No. ____, Address ____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial) Stock water.

5. If for irrigation use, number of acres irrigated from well ____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 200 feet
b. Diameter of casing 6 inches
c. Depth of casing 200 feet
d. Type of casing Steel pipe casing.
e. Maximum pump capacity 10 gallons per minute.
f. Depth to water 160 feet below land surface.
g. Date well completed NA (Month) NA (Day) 1957 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 4-8-82 SIGNATURE OF REGISTRANT Charles Raymond Miller

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 18 1982 DEP'T OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 650662L
FILE NO. D(24-24)11 d
FILED 6-18-82 (DATE) AT 10a (TIME)
INA —
AMA —

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☐

1. Name of Registrant:
Herbert R. Minnerly
Rt #1, 614 Border Rd (Address) Bisbee (City) Arizona (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35- _____ (Control Number)

3. a. The well is located within the ____ ¼ ____ ¼ SE ¼, Section 11, of Township 24 N/S, Range 24 E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
domestic.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☑
_____
_____ (Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well N/A feet
b. Diameter of casing " inches
c. Depth of casing " feet
d. Type of casing " .
e. Maximum pump capacity " gallons per minute.
f. Depth to water " feet below land surface.
g. Date well completed " (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☑.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6/15/82 SIGNATURE OF REGISTRANT Herbert R Minnerly

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

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4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

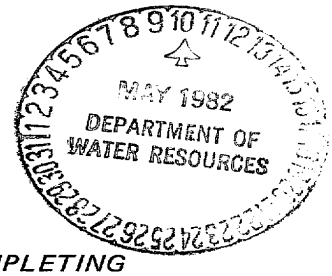
6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☐

11

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 63316
FILE NO. D(24-24)18 add
FILED MAY 10 1982 (DATE) AT 11 a m (TIME)
INA
AMA

1. Name of Registrant:
J. R. Sharp
P.O. Box 4520 (Address) Bisbee (City) AZ (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the SE ¼ SE ¼ NE ¼, Section 18, of Township 24 S N/S, Range 24 E E/W, G & SRB & M, in the County of Cochise.

   b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - (domestic) municipal - industrial)
_____.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
   a. Depth of Well 208 feet
   b. Diameter of casing 8 inches
   c. Depth of casing 208 feet
   d. Type of casing P.E. steel .
   e. Maximum pump capacity 35 gallons per minute.
   f. Depth to water 95 feet below land surface.
   g. Date well completed _____ (Month) _____ (Day) 1955 (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒.
   _____¼ _____¼ _____¼, Section _____ Township _____ Range _____
   _____¼ _____¼ _____¼, Section _____ Township _____ Range _____
   Attach additional sheet if necessary.

9. DATE 5-6-82 SIGNATURE OF REGISTRANT J. R. Sharp

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

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5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED MAY 10 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55-633317
FILE NO. D(24-24)18daa
FILED MAY 10 1982 (DATE) AT 11a m (TIME)
INA
AMA

1. Name of Registrant:
J. R. Sharp
P.O. Box 4520 (Address) Bisbee (City) AZ (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ NE ¼ SE ¼, Section 18, of Township 24 S N/S, Range 24 E E/W, G & SRB & M, in the County of Cochise.
   b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - (domestic) - municipal - industrial)
domestic.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
   a. Depth of Well 155 feet
   b. Diameter of casing 6 inches
   c. Depth of casing 155 feet
   d. Type of casing P.E. Steel .
   e. Maximum pump capacity 35 gallons per minute.
   f. Depth to water 95 feet below land surface.
   g. Date well completed (Month) (Day) 1956 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   Attach additional sheet if necessary.

9. DATE 5-6-82 SIGNATURE OF REGISTRANT J. R. Sharp

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

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5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Request to Change Well Information

RECEIVED
JAN – 3
Water Management Section

FILE NUMBER

WELL REGISTRATION NUMBER
55 – 538847

- Review instructions prior to completing form in back or blue ink.
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL

MAILING ADDRESS

CITY / STATE / ZIP CODE

CONTACT PERSON NAME AND TITLE

TELEPHONE NUMBER | FAX

Location of Well

WELL LOCATION ADDRESS (IF ANY)
3606 WILLSON ROAD, NACO, AZ 85620

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	23E	13	SE ¼	NE ¼	NE ¼

LATITUDE °	'	" N	LONGITUDE °	'	" W
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
		102-34-008-9

COUNTY WHERE WELL IS LOCATED
COCHISE

Type of Request (CHECK ONE)

☐ Change of Well Drilling Contractor *(Fill out Section 2)*
☐ Change of Well Ownership *(Fill out Section 3)*
☐ Change of Well Information *(location, use, etc.) (Fill out Section 4)*

SECTION 2. REQUEST TO CHANGE WELL DRILLING CONTRACTOR ($10 Fee Required)

- If drilling or abandoning a well, the Department must receive this request and issue authorization to the new drilling form prior to the commencement of well drilling or abandonment.

$10 FEE

Current Well Drilling Contractor		New Well Drilling Contractor	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	
DWR LICENSE NUMBER		DWR LICENSE NUMBER	ROC LICENSE CATEGORY
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP ($10 Fee Required)

$10 FEE

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

10

Previous Well Owner		New Well Owner	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	
GLORIA WILLSON		PATRICK B. MOORE	
MAILING ADDRESS		MAILING ADDRESS	
P.O. BOX 425		478 W. ROAD, 3 ½ N.	
CITY / STATE / ZIP CODE		CITY / STATE / ZIP CODE	
NACO, AZ 85620		CHINO VALLEY, AZ 86323	
CONTACT PERSON NAME AND TITLE		CONTACT PERSON NAME AND TITLE	
SAME AS ABOVE		SAME AS ABOVE	
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required)

NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE	SIGNATURE OF WELL OWNER
Gloria L. Willson, Trustee	Gloria L. Willson

Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Request to Change Well Information

- Review instructions prior to completing form in back or blue ink.
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

JAN - 9

FILE NUMBER

WELL REGISTRATION NUMBER
55 – 538847

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner	Location of Well
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	WELL LOCATION ADDRESS (IF ANY) 3606 WILLSON ROAD, NACO, AZ 85620
MAILING ADDRESS	TOWNSHIP (N/S): 24S · RANGE (E/W): 23E · SECTION: 13 · 160 ACRE: SE ¼ · 40 ACRE: NE ¼ · 10 ACRE: NE ¼

Pioneer Title Agency, Inc.
P.O. BOX 1900
Sierra Vista, AZ 85636

NATIONAL BANK OF ARIZONA
1160 E. Fry Blvd.
Sierra Vista, Arizona 85635
91-532/1221

NO. 695336

FILE NUMBER	DATE	AMOUNT
00911601 - 006 DB	12/27/05	$10.00

Details on back.

Security Features Included.

PAY TEN DOLLARS and no/100

TO THE ORDER OF ARIZONA DEPARTMENT OF WATER RESOURCES
P.O. BOX 458
PHOENIX, AZ 85001

ESCROW ACCOUNT

[redacted]

[redacted]

SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP ($10 Fee Required)

$10 FEE

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

10

Previous Well Owner		New Well Owner	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL GLORIA WILLSON		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL PATRICK B. MOORE	
MAILING ADDRESS P.O. BOX 425		MAILING ADDRESS 478 W. ROAD, 3 ½ N.	
CITY / STATE / ZIP CODE NACO, AZ 85620		CITY / STATE / ZIP CODE CHINO VALLEY, AZ 86323	
CONTACT PERSON NAME AND TITLE SAME AS ABOVE		CONTACT PERSON NAME AND TITLE SAME AS ABOVE	
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required)

NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE	SIGNATURE OF WELL OWNER
Gloria L. Willson, Trustee	Gloria L. Willson

ARIZONA DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Name: Gloria Willson
   Address: P.O. Bx 425 (Street) Naco (City), Az (State) 85620 (Zip)
2. Driller Name: L. B. DRILLING
   Address: Box 4166 (Street) Huachuca City (City), AZ (State) 85616 (Zip)
3. Location: 24 N/S (Township) 23 E/W (Range) 13 (Section) NE 1/4 (10-acre) NE 1/4 (40-acre) SE 1/4 (160-acre)
4. Well Registration No. 55-538847 (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 220 ft.
7. Type of casing PVC
8. Diameter and length of casing 6 in. from 0 to 220, _____ in from _____ to _____.
9. Method of sealing at reduction points _____
10. Perforated from 220 to 180, from _____ to _____, from _____ to _____.
11. Size of cuts 1/8 Number of cuts per foot three
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction drilled air
    (drilled, dug, driven, bored, jetted, etc)
14. Date started April (Month) 23 (Day) 1993 (Year)
15. Date completed April (Month) 24 (Day) 1993 (Year)
16. Depth to water 125 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
    ground level
18. If flowing well, state method of flow regulation: N/A
19. Remarks: blew 25 g.p.m.

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Rc 55-538847
Fi D(24-23)13DAA
Rc
El ENTERED JUN 28 1993

DWR-55-55-7/91 (Rev.)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encounterd, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	193	clayey brown sand and gravel
193	220	brown cemented sand 1st water

I hereby certify that this well was drilled by me (or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: Larry Lee

L. B. DRILLING

Street Box 4166

Huachuca City, AZ 85616

City State Zip

Date 6-22-93

ARIZONA DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

55-538847
D(24-23)13DAA

COMPLETION REPORT

1. Per **A.R.S. § 45-600**, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.

2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.

3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24 N/(S)	23 (E)/W	13	NE 1/4	NE 1/4	SE 1/4
Township	Range	Section	10-acre	40-acre	160-acre

EQUIPMENT INSTALLED:

Kind of pump Submersible
Turbine, centrifugal, etc.

Kind of power Electric H.P. Rating of Motor 3/4
Electric, natural gas, gasoline, etc.

Pumping Capacity 10 GPM Date pump installed: 4-10-93
Gallons per minute

WELL TEST:

Test pumping capacity 25 GPM Date Well Tested: 4-8-93
Gallons per minute

Method of Discharge Measurement
Weir, orifice, current meter, etc.

Static Groundwater Level 125 ft. Drawdown 0 ft.

Total Pumping Lift 125 ft. Drawdown lbs.
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

ENTERED JUN 25 1993

GLORIA WILLSON
Print Well Owner's Name

6-8, 1993
Date

Signature of Well Owner or Agent

Box 556
Address

Eloy AZ 85610
City State Zip

DWR-55-56-7/91 (Rev.)

FILING FEE $10.00

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division
15 South 15th Avenue
Phoenix, Arizona 85007

NOTICE OF INTENTION TO DRILL A WELL OUTSIDE OF AN ACTIVE MANAGEMENT AREA

Section §45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management, a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department.

WELL/LAND LOCATION:

24 N/S | 23 E/W | 13
1. Township | 2. Range | 3. Section

4. NE 1/4 (10 Acre) NE 1/4 (40 Acre) SE 1/4 (160 Acre)

5. County Assessor's I.D.
102 | 34 | 0089
Book | Map | Parcel

6. County Cochise

NORTH
NW¼ NE¼
WEST EAST
X
SW¼ SE¼
SOUTH

INDICATE WELL LOCATION BY X
(Above diagram represents one 640 acre section)

7. Type of well:
Exempt X Non-exempt ____

8. Action Requested:
Drill New Well X; or Deepen ____
Replace ____ Modify ____
Well No. 55-____

9. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks?
Yes ____ No X

10. Will this proposed well pump Colorado River Water? Yes ____ No X
(See item 10 on reverse side)

11. Applicant: Owner X Lessee ____
Gloria Willson
Name
Po Box 425
Mailing Address
Naco, Az. 85620
City State Zip
Telephone: 432-2963

12. Owner or Lessee of Land at wellsite:
SAME
Name
Mailing Address
City State Zip
Telephone:

13. Owner of well:
SAME
Name
Mailing Address
City State Zip
Telephone:

DO NOT WRITE IN THIS SPACE
Office Record
File No. D(24-23)13DAA
Filed 4/15/93 By db
Input ENTERED APR 20 1993 By
Mailed 4/19/93 By db
Registration No. 55-538847
INA ✓
W/S 11 S/B ✓

PLACE OF USE:
14. Township 24 N/S
Range 23 E/W
15. Section 13
16. Legal description of land:
NE 1/4 (10 Acre) NE 1/4 (40 Acre) SE 1/4 (160 Acre)

DESCRIPTION OF PROPOSED WELL:
17. Diameter 6 inches
Depth 200 feet
Type of Casing PVC
Design Pump Capacity:
15 gallons per minute
18. Estimate of total annual pumping:
.8 acre feet
19. Principal use of water: (be specific)
domestic
20. Other uses intended: (be specific)
None
21. Number of Multiple Drinking Water connections, if any: One
(See item 5 on reverse side)
22. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated:
N/A
23. Construction will start about:
April 1993
Month Year

DRILLING FIRM:
24. ____
Firm L. B. DRILLING
Mailing Address BOX 4166
HUACHUCA CITY, AZ 85616
City State Zip
D. W. R. LIC. #344
R. O. C. LIC. #076141-00 (A4
#0 823 -0 (C-53
DWR License Number
ROC License classification

APR 15

GENERAL INSTRUCTIONS

1. Fill out this form in DUPLICATE and send WITH $10.00 FEE to 15 South 15th Avenue, Phoenix, AZ 85007.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen, replace or modify a well outside of an Active Management Area.
4. If the well is a replacement, deepening or modification of an existing well, provide the registation number of the existing well in Item 8.
5. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.
6. Section §45-596(D), provides that the Director shall determine that all information required on form has been submitted. If not, the person filing will be notified, and the drilling, deepening, or modification of the well may not proceed.

I state that this Notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well as set forth on the reverse side of this form.

GLORIA WILLSON — Typed or printed name
Gloria Willson — Signature [X] Land Owner [ ] Lessee of wellsite
April 12/1993 — Date

DWR-55-40 9/92 (Rev.)

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Receipt of this annotated Notice constitutes authorization to proceed in drilling, deepening, or modifying the well as set forth on this Notice.

2. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

3. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an INA or AMA to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 3 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to A.R.S. §45-434 or §45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of A.R.S. §45-437.

5. Multiple Drinking Water Connections mean other parcels of land being served by your well that are not owned by you. Each separate parcel is considered one connection.

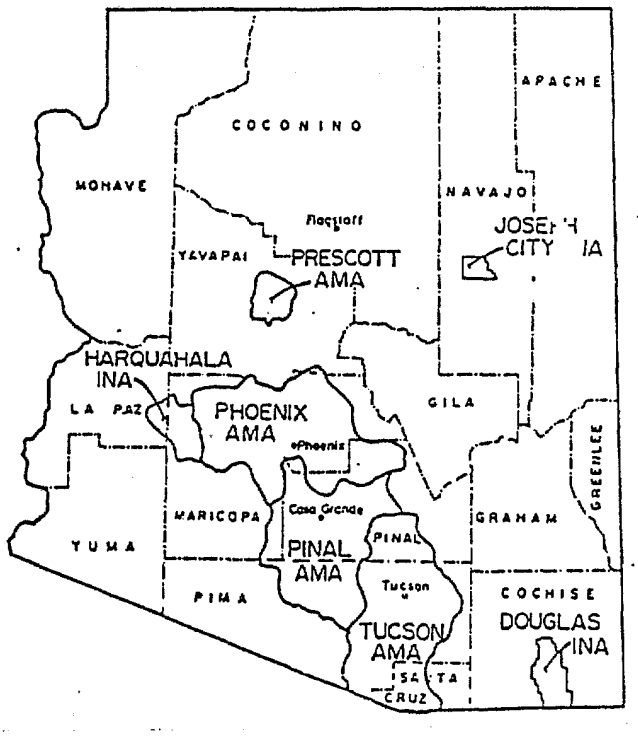
6. The drilling, deepening, or modification of this well shall be completed within one (1) year of the issuance of the drilling authority.

7. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

8. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

9. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.

10. If the proposed well is a non-exempt well and is located near the Colorado River and if the proposed well may pump Colorado River Water, proof must be submitted with this notice that the applicant has the legal right to use Colorado River Water. Alternately, evidence needs to be submitted that supports the contention that Colorado River water will not be withdrawn by the well. Persons near the Colorado River may wish to contact the Colorado River Management Division, Department of Water Resources at (602) 542-1960 to determine those Townships and Ranges which will be affected by these requirements or with questions regarding the proof of right.



RECEIPT

№ 5721

L. B. Drilling
P.O. Box 4166
Huachuca City, AZ 85616

Gloria Willson

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007
(602) 542-1581

ENTRY CODE 55

FILE NO. 55-538847 THRU

ITEM DESCRIPTION	RATE	AMOUNT
FILING FEE FOR NOI TO DRILL A WELL	10.00	10.00
REG. NO.55-538847		
FILE NO.D(24-23)13DAA		

PAID

CHECK NO. 2900 FEE ACCOUNT NO. _____ TOTAL $ 10.00

CHIT NO. _____ RECEIVED BY db DATE 04-19-93

IPS 1821 – Rev. 4/91

ARIZONA DEPARTMENT OF WATER RESOURCES

15 South 15th Avenue, Phoenix, Arizona 85007
Telephone (602) 542-1581
Fax (602) 256-0506

April 19, 1993

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

Gloria Willson
P.O. Box 425
Naco, AZ 85620

Registration No. 55-538847
File No. D(24-23)13DAA

Dear Ms. Willson:

Enclosed is a copy of the Notice of Intention (NOI) to drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized. **In no case may the replacement well be more than 660 feet from the well it is replacing.**

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593, the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

If the information you provided indicates your well is near the Colorado river. If, in the future, it is determined that water from your well is supplied from the river and you do not have a perfected water right to Colorado River water established prior to 1929, the U.S. Bureau of Reclamation may require you to cease pumping or enter into a contract for use of colorado river water.

Sincerely,

db

Dorothy Boggs
Groundwater Permit Specialist

db
Enclosures

EXEMPT WELL
WELL REGISTRATION NO.

55-538847

DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

EXEMPT WELL

THIS DRILLING CARD SHALL BE IN THE POSSESSION OF THE DRILLER BEFORE DRILLING OPERATIONS COMMENCE

AUTHORIZED DRILLER L. B. Drilling LICENSE NO. 344
(Unless superceded by notification of change of well driller)

Notice of Intention to X **Drill** ____ **Deepen** ____ **Replace** ____ **Modify** a well has been filed with the Department by:

Gloria Willson	P.O. Box 425	Naco	AZ	85620
Name	Address	City	State	Zip

This well is to be located in: Township 24S Range 23E Section 13 NE 1/4 NE 1/4 SE 1/4

This authorization to X Drill ____ Deepen ____ Replace ____ Modify the above well expires at midnight on 04-18-94.

PURSUANT TO A.R.S. § 45-600, THE DRILLER SHALL FILE, ON THE PRESCRIBED DEPARTMENT FORM, A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

DWR-55-54-3/91

by **Deputy Director**

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED
JUN 14 1982
DEP'T. OF
WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 647847
FILE NO. D(24-24)18
FILED 6-14-82 (DATE) AT 5 PM (TIME)
INA
AMA

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☒
NON-EXEMPT WELL — $10.00 ☐

1. Name of Registrant:
Helen Braun Moroyoqui
P.O Box 535 (Address) Naco (City) Arizona (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
N/A (File Number) 35- (Control Number)

3. a. The well is located within the ____ ¼ ____ ¼ ____ ¼, Section 18, of Township 24 S N/S, Range R24 E/W, G & SRB & M, in the County of Cochise.
b. If in a subdivision: Name of subdivision (Parcel 102-57-122 and Parcel 102-57-123), Lot No. ____, Address ____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic.

5. If for irrigation use, number of acres irrigated from well ____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 180 ft. feet
b. Diameter of casing 8" inches
c. Depth of casing 120" feet
d. Type of casing Welded casing steel .
e. Maximum pump capacity 25 Static Op. sl gallons per minute.
f. Depth to water 130 feet below land surface.
g. Date well completed June (Month) 18 (Day) 69 (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒xx
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE ____ SIGNATURE OF REGISTRANT Helen Braun Moroyoqui

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

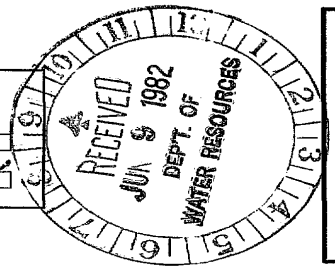
DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 ☑



FOR OFFICE USE ONLY
REGISTRATION NO. 55- 618611
FILE NO. D(24-24)17 aa
FILED 6-9-82 (DATE) AT 9:30 (TIME)
INA —
AMA —

1. Name of Registrant:
Alice J. Noble
El Rancho Motel Rt.1 Hwy. 92,, ~~Bis~~ Bisbee, Az. 85603
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the NE NE by M&B beg. 308'W of NE cor. of NE 4 Wof NE cpr ¼ ¼ ¼, Section 17, of Township 24 N/S, Range E 24 E/W, G & SRB & M, in the County of Cochise of NE4 W 205' S 850'E 205' N 850'to beg.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well N/A feet
b. Diameter of casing Partially hand Dug inches
c. Depth of casing N/A feet
d. Type of casing N/A .
e. Maximum pump capacity N/A gallons per minute.
f. Depth to water N/A feet below land surface.
g. Date well completed N/A (Month) (Day) (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6-8-82 SIGNATURE OF REGISTRANT Alice J. Noble

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Alice Noble
El Rancho Apt. Motel
Hwy 92
Bisbee AZ 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	618611
	THRU

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing Wells	10.00	10.00
					File No. D(24-24)17aa		

WAITER PAYMENT
GUESTS 1
CHK NO 817
55-I 10.00
TAX 0.00
TOTL 10.00
GEN.CHEK 10.00

1707 A 14:14

Check No. 817
8-26-82 im

TOTAL $ 10.00

MICROFILMED

ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

3550 N. Central Avenue
Phoenix, Arizona 85012

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-212483

AUTHORIZED DRILLER: DRIVER DRILLING COMPANY LICENSE NO: 177

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: RUSSELL NOTEMAN 7041 S JAXEL HEREFORD, AZ 85615

THE WELL(S) IS/ARE TO BE LOCATED IN THE:
SW ¼ OF THE SW ¼ OF THE NW ¼ SECTION 2 TOWNSHIP 24 SOUTH RANGE 24 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 101-41-005

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 1ST DAY OF JUNE, 2007

WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue, Phoenix, Arizona 85012
Telephone (602) 771-8500
Fax (602) 771-8691

June 05, 2006

Janet Napolitano
Governor

Herbert R. Guenther
Director

RUSSELL NOTEMAN
7041 S JAXEL
HEREFORD, AZ 85615

Registration No. 55-212483
File No. D(24-24) 2 BCC

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well that you recently filed with this Department pursuant to A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed or otherwise provided a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card, which must be displayed on the drill rig during drilling.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the proposed well, you may not proceed with drilling until you file an amended NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the amended NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DWR form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed is a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55) within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at <http://www.water.az.gov/adwr/content/forms/default.htm#NOI>.

Sincerely,

Tiffany Hancock

Tiffany Hancock
NOI Unit
Water Management Support Section

Enclosures

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA	B 76 SB
RECEIVED DATE 6/2/06	WS 11
ISSUED DATE 6/5/06	WQARF CERCLA

FILE NUMBER D(24 24)2BCC
WELL REGISTRATION NUMBER 55 - 212483

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
☒ Field Inspection Performed
☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ R.S.

TELEPHONE NUMBER: 520-432-9442

DATE: June 1, 2006

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE June 1 2006
BY Carlos Diaz R.S.

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz R.S.

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

☒ Exempt
(Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)

☐ Non-Exempt
(Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 10 Gallons Per Minute

Proposed Action

CHECK ONE

☒ Drill New Well
☐ Deepen
☐ Replace
☐ Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 -

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	2	NW ¼	SW ¼	SW ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
101	41	005	5

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: COCHISE

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: RUSSELL NOTEMAN

MAILING ADDRESS: 7041 JAXEL RS

CITY / STATE / ZIP CODE: HEREFORD AZ 85615

CONTACT PERSON NAME AND TITLE: RUSS OWNER cell 5202663076

TELEPHONE NUMBER: 520 8038044

FAX: 803-8045

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL

MAILING ADDRESS: SAME

CITY / STATE / ZIP CODE

CONTACT PERSON NAME AND TITLE

TELEPHONE NUMBER

FAX

RECEIVED JUN - 2 2006 GROUNDWATER MGT

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-816).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55-212483

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: DRIVER DRILLING

DWR LICENSE NUMBER: 177

ROC LICENSE CATEGORY: K-53

TELEPHONE NUMBER: 520-459-3496

FAX: 520-459-8328

MAILING ADDRESS: P.O.BOX 4345

CITY / STATE / ZIP CODE: HUACHUCA CITY AZ 85616

SECTION 6. WATER / SITE INFORMATION

Principal Use **of Water** (CHECK ONE)	***Other Uses*** **of Water** (CHECK ALL THAT APPLY)
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☒ Domestic	☒ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify):*	☐ Other *(please specify):*

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

DATE CONSTRUCTION IS TO BEGIN:

Borehole			Casing													
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (T)				PERFORATION TYPE (T)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	20	12.25	+1	20	8.5	X*										Cement
20	400	8	0	400	5.5		X							X		

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

RECEIVED
JUN - 2 2006

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: RUSSELL NOTEMAN

SIGNATURE OF WELL OWNER: [signature] DATE: 5/9/06

SIGNATURE OF LANDOWNER, IF APPLICABLE (SEE INSTRUCTIONS) DATE:

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 212483

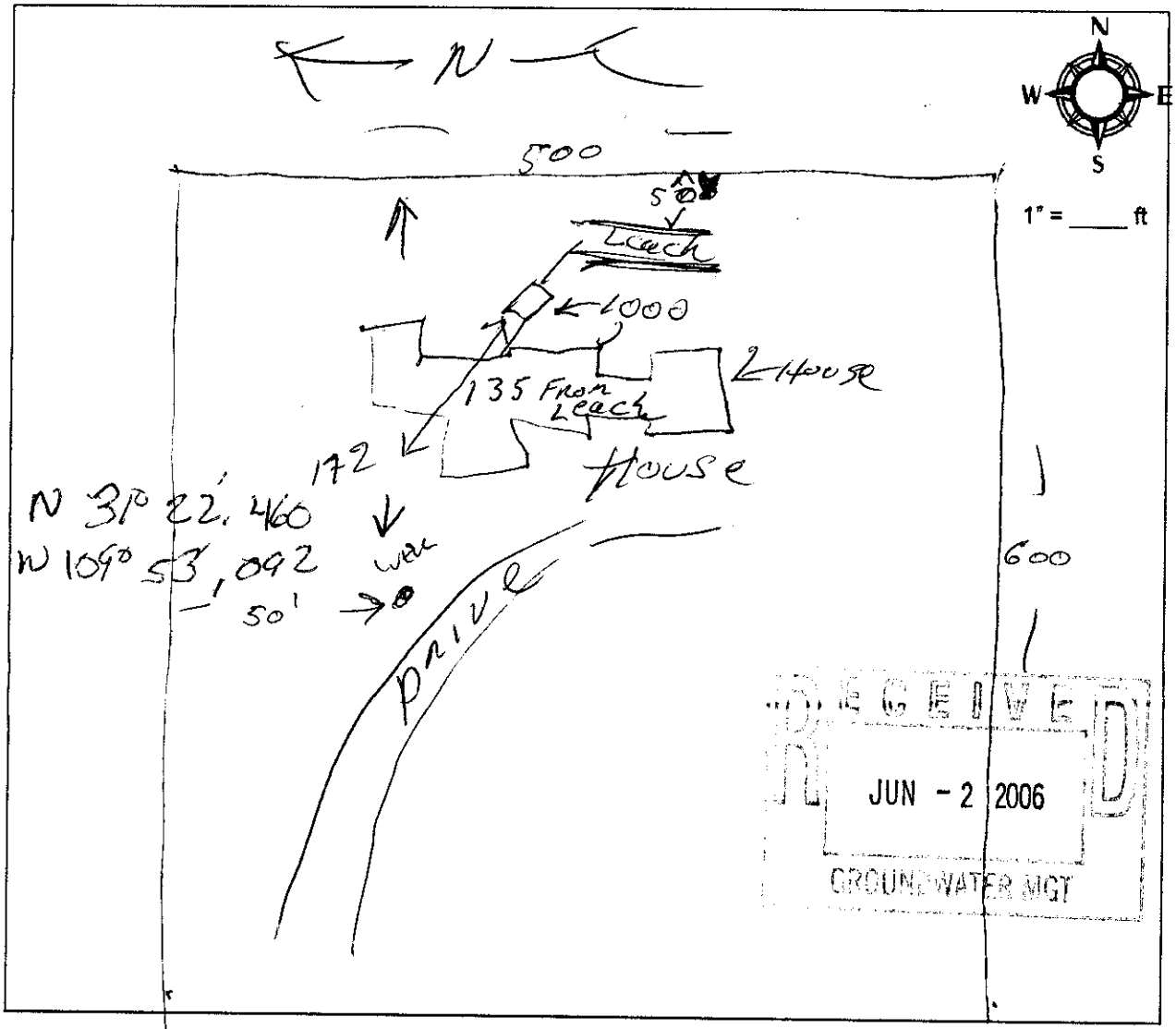
CHECK ONE: ☒ FILING MANUALLY
☐ FILING ELECTRONICALLY* *DRILLER'S E-MAIL ADDRESS: _____

*COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL CODE	COUNTY APPROVAL CODE
If applicant is filing this NOI electronically via the ADWR website and County approval is required, please indicate approval by providing a County Approval Code.	

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER BOOK	MAP	PARCEL
Russell Noteman	101	41	005 (54C

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



RECEIVED
JUN - 2 2006
GROUNDWATER MGT

COUNTY OR LOCAL AUTHORITY NAME AND TITLE	Official County or Local Seal or Stamp
CARLOS DIAZ R.S.	APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
COUNTY OR LOCAL AUTHORITY SIGNATURE	DATE June 1, 2006
TELEPHONE NUMBER 520-432-9442	BY Carlos Diaz R.S.
DATE June 1, 2006	

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA		B	SB
RECEIVED	DATE	WS	
ISSUED	DATE	WQARF	CERCLA

FILE NUMBER

WELL REGISTRATION NUMBER
55 - 212483

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

☒ County or Local Health Authority Recommends Approval
(pursuant to A.R.S. § 45-596 (G) and (F))
☒ Field Inspection Performed
☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE
ARLOS DIAZ RS

TELEPHONE NUMBER | DATE

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE June 1 2006
BY [illegible] RS

COUNTY OR LOCAL AUTHORITY SIGNATURE [illegible] RS

[redacted]

DRIVER DRILLING, INC. 01-02
PH. 520-459-3496
P.O. BOX 4345
HUACHUCA CITY, AZ 85616

4964

Date 5-24-06

91-170/1221 AZ
8524

Pay to the Order of ADWR

$ 100.00

One Hundred & 00/100 — Dollars

Bank of America

ACH R/T 122101706

For [redacted]

MP

© Clarke American

160 ACRE	40 ACRE	10 ACRE
NW ¼	SW ¼	SW ¼

PARCEL	# OF ACRES
005	5

160 ACRE	40 ACRE	10 ACRE
¼	¼	¼

SE

SECTION 3. OWNER INFORMATION

Well Owner		Landowner (if different from Well Owner)
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL
RUSSELL NOTEMAN		
MAILING ADDRESS		MAILING ADDRESS
7041 JOXEL RS		Same
CITY / STATE / ZIP CODE		CITY / STATE / ZIP CODE
Hereford AZ 85615		
CONTACT PERSON NAME AND TITLE		CONTACT PERSON NAME AND TITLE
Russ owner-C COLC 5202663076		
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER / FAX
520 8038044	803-804-5	

RECEIVED
JUN – 2 2006
GROUNDWATER MGT

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-816).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 9 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 627682
FILE NO. D(24-24)19bab
FILED JUN 9 1982 (DATE) AT 1 PM (TIME)
INA
AMA

1. Name of Registrant:
Naco Water Co. & Salim Dominguez
128D Street (Address) Naco (City) Az. (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the NW ¼ NE ¼ NW ¼, Section 19, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision ____, Lot No. 412, 12 Block, Address Naco, Az.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial) municipal.

5. If for irrigation use, number of acres irrigated from well ____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 215 feet
b. Diameter of casing 8 inches
c. Depth of casing 215 feet
d. Type of casing steel.
e. Maximum pump capacity 75 gallons per minute.
f. Depth to water 140 feet below land surface.
g. Date well completed Sept. (Month) 24 (Day) 1951 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6-8-82 SIGNATURE OF REGISTRANT Naco Water Co. & Salim Dominguez By Wilford R. Richardson
Wilford R. Richardson, Attorney

RICHARDSON & MORTENSEN
ATTORNEYS AT LAW
BOX 247
SAFFORD AZ 85546

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	627681
	THRU
55	627690

FOR: CLARK, DOMINGUEZ, MAYBERRY, MCKEEN, SMITHSON & WATSON

(10)

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing Wells	10.00	100.00
					File Numbers:		
					B CLARK - - - - - D(8-17)17 dcd S DOMINGUEZ - - - D(24-24)19 bab		
					D(24-24)18 cd D(24-24)18 add D(24-24)10 dcb		
					J MAYBERRY- - - - D(18-21)6 abb D(17-21)31 ada		
					J MCKEEN - - - - D(8-26)7 aaa C SMITHSON - - - D(8-26)7 aad		
					W WATSON - - - - D(10-16)16 dac		

WAITER	PAYMENT
GUESTS	10
CHK NO	3381
55-I	100.00
TAX	0.00
TOTL	100.00
GEN.CHEK	100.00

4554 A 14:17

11/19/82 jc Check No. 3381 TOTAL $ 100.00

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 9 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 627683
FILE NO. D(24-24)18cd
FILED JUN 9 1982 (DATE) AT 1pm (TIME)
INA
AMA

1. Name of Registrant:
Naco Water Co. & Salim Dominguez
128D Street (Address) Naco (City) Az. (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the ____ ¼ SE ¼ SW ¼, Section 18, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision ____, Lot No. 313, Address Block 21, Naco, Az.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
municipal

5. If for irrigation use, number of acres irrigated from well ____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 210 feet
b. Diameter of casing 8 inches
c. Depth of casing 210 feet
d. Type of casing steel .
e. Maximum pump capacity 175 gallons per minute.
f. Depth to water 131.4 feet below land surface.
g. Date well completed Aug. 2 (Month) (Day) 1959 (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6/8/82 SIGNATURE OF REGISTRANT Naco Water Co. & Salim Dominguez
By Wilford R. Richardson
Wilford R. Richardson, Attorney

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

RICHARDSON & MORTENSEN
ATTORNEYS AT LAW
BOX 247
SAFFORD AZ 85546

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	627681
	THRU
55	627690

FOR: CLARK, DOMINGUEZ, MAYBERRY, MCKEEN, SMITHSON & WATSON

(10)

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing Wells	10.00	100.00
					File Numbers:		
					B CLARK - - - - - D(8-17)17 dcd S DOMINGUEZ - - - D(24-24)19 bab		
					D(24-24)18 cd D(24-24)18 add D(24-24)10 dcb		
					J MAYBERRY- - - - D(18-21)6 abb D(17-21)31 ada		
					J MCKEEN - - - - D(8-26)7 aaa C SMITHSON - - - D(8-26)7 aad		
					W WATSON - - - - D(10-16)16 dac		

WRITER PAYMENT
GUESTS 10
CHK NO 3381
55-I 100.00
TAX 0.00
TOTL 100.00
GEN.CHEK 100.00

4554 A 14:17

11/19/82 jc Check No. 3381 TOTAL $ 100.00

MICROFILMED

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

RECEIVED
JUN 17 1997
RECORDS MGT

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. WEBER DRILLING COMPANY
RTE 1 BOX 276B
ST DAVID AZ 85630-9721

ENTERED JUN 17 1997

2. Owner Name: NACO WATER CO LLC
Address: NACO AZ 85620
City State Zip

3. Location: 24 N/S 24 E/W 18 ¼ SE ¼ NE ¼ SW ¼
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55- 562944 (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 312 ft.
7. Type of casing STEEL
8. Diameter and length of casing 8 in. from 0 to 20.6 in from 0 to 312
9. Method of sealing at reduction points WELDED
10. Perforated from 212 to 312 ,from _____ to _____ from _____ to _____
11. Size of cuts 48X8 Number of cuts per foot 4
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started JUNE 10 1997
Month Day Year
15. Date completed JUNE 11 1997
Month Day Year
16. Depth to water 150 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
GROUND LEVEL
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DWR-55-55-7/95 (Rev.)

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-562944
File No. D(24-24)18 CAD
Received _____ **By** _____
Entered _____ **By** _____

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	150	CALICHIE
150	190	ALLUVIAL
190	210	CALICHIE
210	312	ALLUVIAL
		FIRST WATER 150'
		SECOND WATER 210'
		STATIC 150'

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: WEBER DRILLING

RT. 1 BOX 276B
Street

ST. DAVID, AZ. 85630
City State Zip

520-720-4800
Phone No.

X [signature]
Signature of Driller

6-13-97
Date

RECEIVED

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division, 500 North Third Street
Phoenix, Arizona 85004 (602) 417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

RECEIVED
JUN - 3 1997
GROUNDWATER MGT

Section § 45-596, A.R.S., provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Departme

IF PARCEL IS 20 ACRES OR LESS, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BELOW, BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES.

SALIM S. DOMINGUEZ P.O.BOX 307, NACO AZ 85620
Land Owner's Name / Address / City / State / Zip

Telephone (520) 432-4397

County: COCHISE

COUNTY ASSESSOR'S PARCEL ID INFORMATION:
102 57 105 0.08AC
BOOK MAP PARCEL No. of Acres of Parcel

OFFICIAL SEAL

Well/Land Location:
SE 1/4 NE 1/4 SW 1/4 of Section 18 Township 24 S N/S Range 24 E E/W
10AC 40ac 160ac

SW. PART LOTS 301 thru 311 BLK 21 NACO TWN. SITE

COUNTY OR LOCAL AUTHORITY ENDORSEMENT
Check one: Recommend Approval ✓: Insufficient information to make determination _____: Variance required _____ (Explanation attached). Cochise County

DATE 6-2-97 AUTHORIZED SIGNATURE Ronald Nunez, DIR. ENV. Health

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH

1. Section § 45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section § 45-596(D), provides that the Department has 15 days after the receipt of a complete and correct notice of intention to record the notice and mail the duplicate to the owner.
3. Fill out this form and site plan in DUPLICATE and send WITH $10.00 FEE to 500 N. 3rd St., Phoenix, AZ 85004. USE BLACK OR BLUE INK.
4. For specific instructions, limitations and conditions, see the reverse side of this form.
5. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
6. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. Owner of well:
NACO WATER CO. LLC
Name
P.O. BOX 307
Mailing Address
NACO AZ 85620
City State Zip
Telephone: 1-800-315-5333

2. Action requested: Drill New Well _____ Deepen _____ Modify _____ Replace X
For a replacement well provide: Maximum capacity of the original well 120 gallons per minute; distance from the original well 30 feet.
Well Registration No. 55- 627683

3. Construction will start about:
Month JUNE Year 1997

4. DESCRIPTION OF PROPOSED WELL:
Diameter 8 inches
Depth 300 feet
Type of Casing STEEL

5. Design Pump Capacity:
140 gallons per minute

6. Lessee of Land of wellsite:
Name
N/A
Mailing Address
City State Zip
Telephone:

7. Principal use of water:(be specific)

8. Other uses of water:(be specific)

9. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated:

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. 0(24-24) KCAd By MB
Filed 6-3-97 By MB
Input By
DUPLICATE MAILED
Date 6-5-97 By MB
Registration 55- 562949
AMA/INA
W/S II S/B

10. PLACE OF USE (Legal Description of Land):
Township 24 S N/S Range 24 E E/W
Section 18 1/4 SW 1/4 SE 1/4
NACO TOWNSITE

11. Type of well: Exempt _____ Non-Exempt X
Residential X Commercial X

12. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks? YES _____ NO X

13. DRILLING FIRM:
WEBER DRILLING CO.
Firm Name
Rte. 1, Box 276 B
Mailing Address
ST. DAVID AZ 85630
City State 9721 Z
272
DWR License
A-4
ROC License Classification

ENTERED JUN 9 1997

Lillian M. Dominguez
Typed or Printed Name of Owner or Lessee

Lillian M Dominguez
Signature [ ] Land Owner [ ] Lessee of Wellsite

6-2-97
DATE

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. If any water from a proposed well on a parcel of land of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant shall submit a site plan to scale of the property with the county assessor's parcel identification number. The site plan:

   a. Will be on a 8½"x11" piece of plain paper with representation of the locations of all structures, septic tank or sewer systems and proximity of adjacent lot lines to scale.
   b. Must show the proposed well location and the location of any septic or sewer system that is either located on the property or within one hundred feet of the proposed well site.
   c. Shall demonstrate to the director's satisfaction that the well will not be drilled within one hundred feet of any septic or sewer system.
   d. Must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Before approval, the health authority shall review the plan and determine whether the proposed well location complies with applicable state and local laws regarding the placement of wells. If so, the health authority shall endorse the site plan and the proposed well placement.

2. Endorsement by the county/local authority is based solely on the best available judgement that this well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. Information brought to light at a future date may render this determination invalid.

3. If a well which was originally drilled as an exploration well; a monitor well, a piezometer well or for any use other than domestic use and is later proposed to be converted to use for domestic purposes, as defined in § 45-454, the well owner shall file a notice of intention to drill and comply with the requirements prescribed pursuant to this section before the well is converted and any water from that well used for domestic purposes.

4. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

5. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an Irrigation Non-Expansion Area or Active Management Area to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

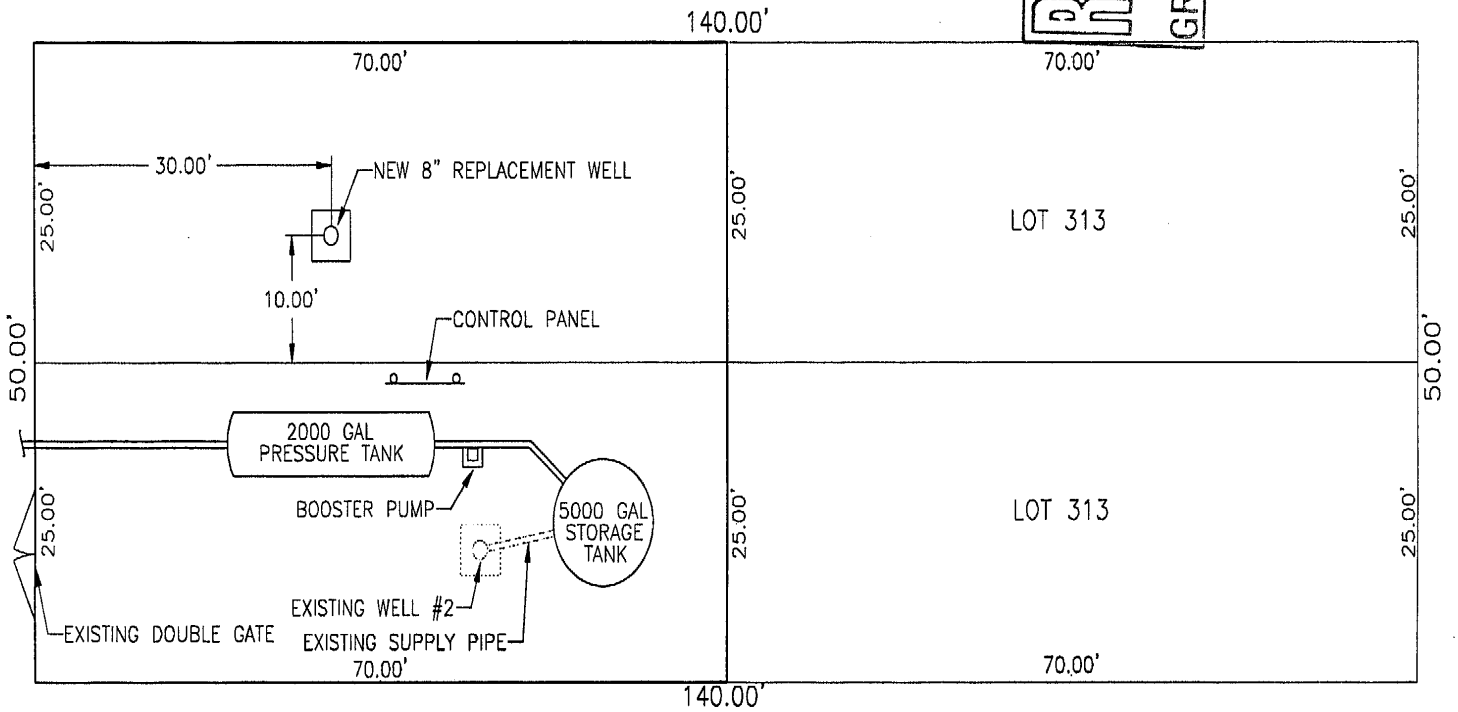
6. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of the notice (§ 45-596.E.).

7. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this notice.

8. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

9. If an individual other than the land owner or lessee signs this Notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific Notice on their behalf, shall accompany the Notice.

RECEIVED
JUN - 3 1997
GROUNDWATER MGT



LEGAL DESCRIPTION

THE WEST 70.00' OF LOTS 311 AND 313, OF BLOCK 21, NACO TOWNSITE, COCHISE COUNTY, ARIZONA.

N NORTH

PREPARED BY:

BUCK LEWIS ENGINEERING, INC.

PLANNERS ENGINEERS

TUCSON
P.O. BOX 85150
TUCSON, ARIZONA 85745
(602) 624-4402

SIERRA VISTA
P.O. BOX 1690
SIERRA VISTA, ARIZONA 85636
(520) 459-1122

NACO WATER COMPANY
WELL SITE #2

WELL RELOCATION

DWG:
XREFS:

SHEET 1 OF 1

JOB#:

6/2/97

GROUNDWATER MANAGEMENT SUPPORT SECTION

VERBAL AUTHORIZATION TO DRILL

IN ACCORDANCE WITH A.A.C. R12-15-810.C.

DRILLING FIRM: Weber Drilling Co. #272

WELL OWNER: NACO Water Co.

TYPE OF WELL: Municipal

LEGAL DESCRIPTION: D(24-24)18 cad

IF FOR DEEPENING OR REPLACEMENT OF AN EXISTING WELL, LIST THE ADWR REGISTRATION NUMBER 55- 627683

IN AN ACTIVE MANAGEMENT AREA (AMA) OR IRRIGATION NON-EXPANSION AREA (INA), SAME OWNER, SAME LEGAL DESCRIPTION, MORE THAN ONE WELL, REQUIRES A DIFFERENT PURPOSE FOR THE PROPOSED REPLACEMENT WELL. LIST THE DIFFERENT WELL USE: _____

NOTICE OF INTENT FILED IN ACCORDANCE WITH A.R.S. §45-596.F. & G.? X **YES** _____ **NO**

WELL DRILLED WITHIN 100 FEET OF SEPTIC SYSTEM OR HAZARDOUS WASTE SITE? _____ **YES** X **NO**

DATE OF VERBAL AUTHORIZATION: 6/4/97 **TIME:** 5:00 PM

BY: M. Bacc **TO:** D. Weber

REASON FOR VERBAL AUTHORIZATION: Well grout only.

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

June 5, 1997

NACO WATER CO LLC
P.O. BOX 307
NACO, AZ 85620

Registration No. 55-562944
File No. D(24-24)18 CAD

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill/deepen/modify/replace a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Toni M. Bergeman

Toni M. Bergeman
Water Resource Technician
Groundwater Management Support Section

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-562944

AUTHORIZED DRILLER: WEBER DRILLING COMPANY LICENSE NO: 272

NOTICE OF INTENTION TO DRILL A REPLACEMENT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: NACO WATER CO LLC P.O. BOX 307 NACO, AZ 85620

The well(s) is/are to be located in the:

SE 1/4 of the NE 1/4 of the SW 1/4 Section 18 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 2ND DAY OF JUNE, 1998.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

Arizona Department of Water Resources

500 North Third Street
PHOENIX AZ 85004

Invoice Number : **32380**

4:51 PM, 6/4/97

Customer Name : E. H. LEWIS DEPOSIT 6-3-97

Fee Type	Description	Quantity	Price	ExtendedPrice
4279-06	Notice of Intent to Drill a Well	1	$10.00	$10.00

SubTotal:	$10.00
Tax :	$0.00
Total:	**$10.00**
Cash Tendered :	$0.00
Check Tendered :	$10.00
Total Amount Tendered :	$10.00
Change :	$0.00
Method of Payment :	CHECK
Check Number :	2983

THIS IS YOUR RECEIPT ---- "Thank You" Az Department of Water Resources

Register : DRAWER1 **Cashier :** WRPAB

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 9 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 627684
FILE NO. D(24-24)18add
FILED JUN 9 1982 (DATE) AT 1pm (TIME)
INA
AMA

1. Name of Registrant:
Naco Water Co. & Salim Dominguez
128D Street (Address) Naco (City) Az. (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the SE¼ SE¼ NE¼, Section 18, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Country Club, Lot No. 35, Address Naco, Az.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial) municipal.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 179 feet
b. Diameter of casing 8 inches
c. Depth of casing 160 feet
d. Type of casing steel .
e. Maximum pump capacity 35 gallons per minute.
f. Depth to water 94 feet below land surface.
g. Date well completed (Month) (Day) 1930 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6/8/82 SIGNATURE OF REGISTRANT By Naco Water Co. & Salim Dominguez
Wilford R. Richardson
Wilford R. Richardson, Attorney

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

RICHARDSON & MORTENSEN
ATTORNEYS AT LAW
BOX 247
SAFFORD AZ 85546

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

FOR: CLARK, DOMINGUEZ, MAYBERRY, MCKEEN, SMITHSON & WATSON

(10)

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	627681
	THRU
55	627690

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing Wells	10.00	100.00
					File Numbers:		
					B CLARK - - - - - D(8-17)17 dcd S DOMINGUEZ - - - D(24-24)19 bab		
					D(24-24)18 cd D(24-24)18 add D(24-24)10 dcb		
					J MAYBERRY- - - - D(18-21)6 abb D(17-21)31 ada		
					J MCKEEN - - - - D(8-26)7 aaa C SMITHSON - - - D(8-26)7 aad		
					W WATSON - - - - D(10-16)16 dac		

WAITER PAYMENT
GUESTS 10
CHK NO 3381
55-I 100.00
TAX 0.00
TOTL 100.00
GEN.CHEK 100.00

4554 A 14:17

11/19/82 jc Check No. 3381 TOTAL $ 100.00

MICROFILMED

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

RECEIVED JUN 25 2004 Information Management

Well Driller Report and Well Log

- Review instructions prior to completing form.
- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

FILE NUMBER: D(24-24) 18 ADD
WELL REGISTRATION NUMBER: 55- 203321
PERMIT NUMBER (IF ISSUED):

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: NACO WATER CO
MAILING ADDRESS: PO BOX 85160
CITY / STATE / ZIP: TUCSON, AZ 85754
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-623-5172
FAX:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	18	SE 1/4	SE 1/4	NE 1/4

LATITUDE: ° , "N
LONGITUDE: ° , "W
LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level
METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☐ Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ GPS : ☐ Survey-Grade

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
918	2	370

COUNTY WHERE WELL IS LOCATED: PIMA

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME: WEBER DRILLING
DWR LICENSE NUMBER: 272
TELEPHONE NUMBER: 520-720-4800
FAX:

ANSWERED JUN 2 8 2004

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED: 6/20/04
DATE WELL CONSTRUCTION COMPLETED: 6/22/04
IF FLOWING WELL, METHOD OF FLOW REGULATION: ☐ Valve ☐ Other

Drill Method

CHECK ONE
- ☑ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development

CHECK ONE
- ☑ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Water Level Information

STATIC WATER LEVEL: 140 Feet Below Land Surface
DATE MEASURED: 6/22/04

Method of Sealing at Reduction Points

CHECK ONE
- ☐ None
- ☐ Packed
- ☐ Swedged
- ☑ Welded
- ☐ Other (please specify)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 203321

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Borehole			Installed Casing												
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (X)				PERFORATION TYPE (X)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	12 1/4	0	20	8 5/8	✓										
0	252	8	0	252	6 5/8	✓				✓						
252	312	8	252	312		✓								✓		1/8 x 8

Installed Annular Material												
DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)								FILTER PACK		
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	20		✓									

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
312	Feet Below Land Surface	312	Feet Below Land Surface

DWR-55-55B-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 203321

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	312	VOLCANIC CONGLOMERET	FIRST WATER 150'

Well Driller Report and Well Log

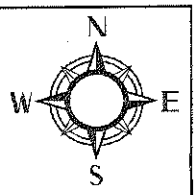
WELL REGISTRATION NUMBER
55- 203321

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER BOOK	MAP	PARCEL
NACO WATER CO	918	2	370

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.

SAME AS PERMIT



1" = _____ ft

I state that this notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
WEBER DRILLING	[signature]	6-23-04

DWR-55-55 (Rev. 10/11/01)

ARIZONA DEPARTMENT OF WATER RESOURCES
WATER MANAGEMENT SUPPORT SECTION
500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-203321

AUTHORIZED DRILLER: WEBER DRILLING LICENSE NO: 272

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: NACO WATER CO PO BOX 85160 TUCSON, AZ 85754

The well(s) is/are to be located in the:

SE ¼ of the SE ¼ of the NE ¼ Section 18 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1 Assessor Parcel No: 918-2-370

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 10TH DAY OF MAY, 2005

5/10/04

WATER MANAGEMENT SUPPORT SECTION

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458, Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $50 FEE

RECEIVED APR 26 2004

RECEIVED MAY 11 2004

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $50.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA		P	SB
		710	
RECEIVED	DATE	WS	
4-26-04		11	
ISSUED	DATE	WQARF	CERCLA
5-12-04			

FILE NUMBER: D(24-24)18ADD
WELL REGISTRATION NUMBER: 55 - 203321

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☒ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE April 23 2004
BY Carlos Diaz

COUNTY OR LOCAL AUTHORITY NAME AND TITLE	
Carlos Diaz Env. Hlth Spec I	
TELEPHONE NUMBER	DATE
520-432-9442	April 23, 2004

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

☒ Exempt
(Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (See instructions.)

☐ Non-Exempt
(Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (See instructions.)

DESIGN PUMP CAPACITY: 35 Gallons Per Minute

Proposed Action

CHECK ONE

☒ Drill New Well
☐ Deepen
☐ Replace
☐ Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 - 627684

MAXIMUM CAPACITY OF ORIGINAL WELL: 35 Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: 30x30 Feet Lot #35

Location of Well

WELL LOCATION ADDRESS (IF ANY): Country Club Estates Lot #35

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	18	A ¼	D ¼	D ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
918	02	370 3	1/3 acre

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: NACO WATER Co.; Salim Dominguez
MAILING ADDRESS: PO Box 85160
CITY / STATE / ZIP CODE: Tucson, Az, 85754
CONTACT PERSON NAME AND TITLE: Raymond Maldonado Field Supervisor
TELEPHONE NUMBER: 520-623-5172
FAX: 520-792-0377

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: Salim Dominguez
MAILING ADDRESS: 10050 E. Discovery DR.
CITY / STATE / ZIP CODE: Tucson Az 85748
CONTACT PERSON NAME AND TITLE: Salim Dom
TELEPHONE NUMBER: 520-623-5172
FAX: 520-792-0377

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?			If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

GPS N 31° 20'. 710
W 109° 56'. 195

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 203321

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: Weber Drilling

DWR LICENSE NUMBER: 272

ROC LICENSE CATEGORY: C53-A4

TELEPHONE NUMBER: 520-720-4800

FAX: 1-520-720-4059

MAILING ADDRESS: 453 Mecham Dr.

CITY / STATE / ZIP CODE: St. David, AZ. 85630

RECEIVED
MAY 11 2004
GROUNDWATER MGT

RECEIVED
APR 26 2004
GROUNDWATER MGT

SECTION 6. WATER / SITE INFORMATION

Principal Use of Water (CHECK ONE)	*Other Uses* of Water (CHECK ALL THAT APPLY)
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☐ Domestic	☐ Domestic
☒ Municipal	☒ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify)*:	☐ Other *(please specify)*:

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

DATE CONSTRUCTION IS TO BEGIN:

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	12"
0	350	8"

Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T) STEEL	MATERIAL TYPE (T) PVC	MATERIAL TYPE (T) ABS	MATERIAL TYPE (T) IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T) BLANK OR NONE	PERFORATION TYPE (T) WIRE WRAP	PERFORATION TYPE (T) SHUTTER SCREEN	PERFORATION TYPE (T) MILLS KNIFE	PERFORATION TYPE (T) SLOTTED	PERFORATION TYPE (T) IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	20	8 5/8	X*				X						Cement
0	310	6 3/8	X				X						
310	350	6 3/8	X								X		

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: Raymond Maldonado Field Supervisor

SIGNATURE OF WELL OWNER: Calvin L. Fox Jr. — DATE: 4/13/2004

SIGNATURE OF LANDOWNER, IF APPLICABLE (SEE INSTRUCTIONS): Calvin L. Fox Jr. — DATE: 4/13/2004

Notice of Intent to Drill, Deepen, Replace or Modify a Well

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GROUNDWATER MGT.

WELL REGISTRATION NUMBER
55 - 203321

CHECK ONE: ☐ FILING MANUALLY
☐ FILING ELECTRONICALLY*

*COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL CODE: N/A

If applicant is filing this NOI electronically via the ADWR website and County approval is required, please indicate approval by providing a County Approval Code.

COUNTY APPROVAL CODE *

WELL SITE PLAN

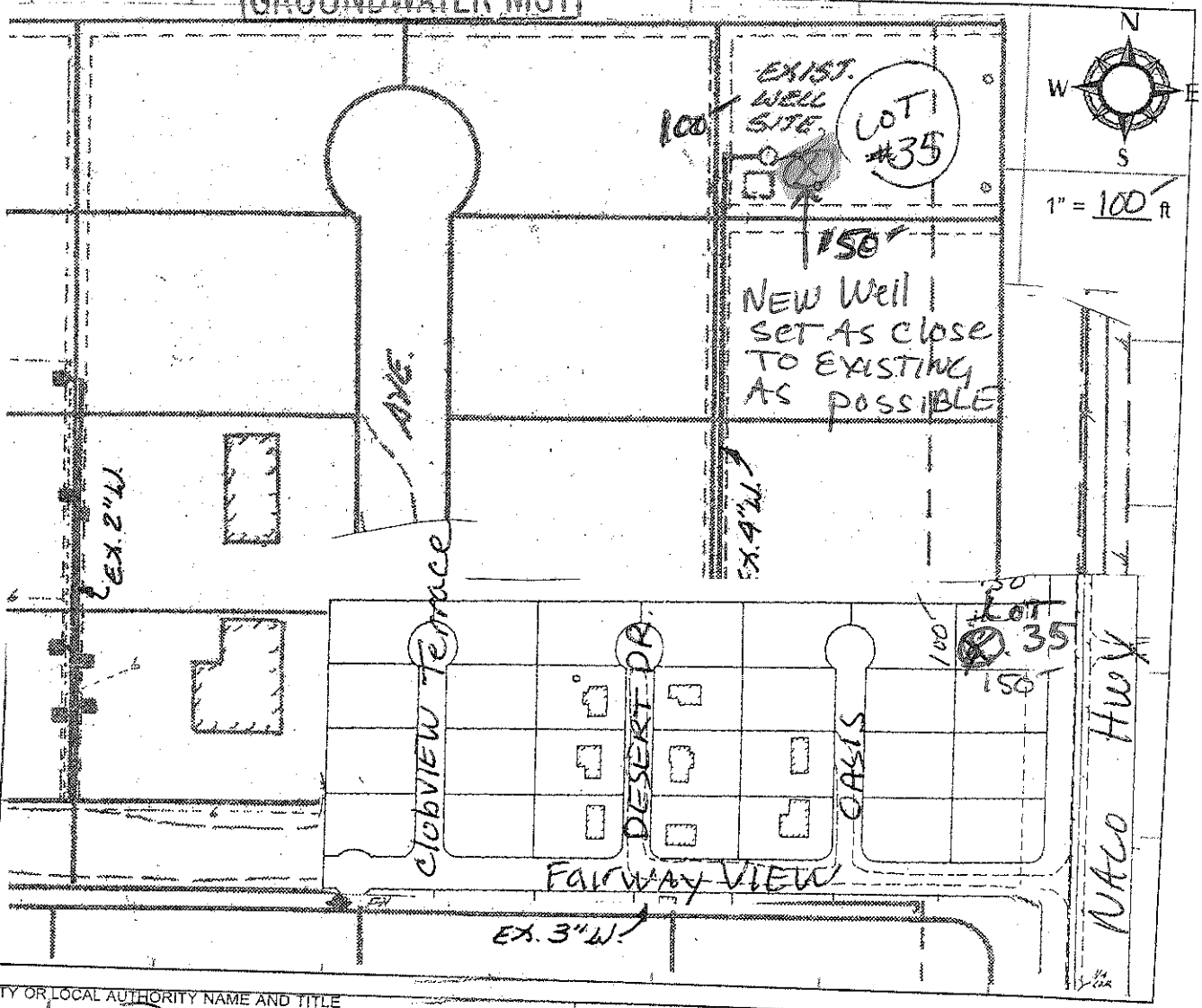
NAME OF WELL OWNER
NACO Water Co. & Salim Dominguez

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
918	02	370 3

RECEIVED
APR 26 2004
GROUNDWATER MGT.

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE
Carlos Diaz ENV Hlth Spec I

COUNTY OR LOCAL AUTHORITY SIGNATURE
Carlos Diaz

TELEPHONE NUMBER
520-432-9442

DATE
April 23, 2004

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION

DATE April 23 04

BY Carlos Diaz

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax www.water.az.gov

RECEIVED MAY 1 1 2004 GROUNDWATER MGT APR 2 0 2004

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $50 FEE

AMA / INA	B	SB
RECEIVED DATE	WS	
ISSUED DATE	WQARF	CERCLA

FILE NUMBER

WELL REGISTRATION NUMBER

55-

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $50.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

[X] County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
[X] Field Inspection Performed
[ ] Site Plan Review Only
... Determination

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE April 23 2004
BY [signature]

NACO WATER COMPANY, LLC 10/94
P.O. BOX 307
NACO, AZ 85620

BANK OF AMERICA
91-170/1221

1405

PAY TO THE ORDER OF AZ Dept of Water Resources 4/15/2004

Fifty and 00/100********** $ **50.00

AZ Dept of Water Resources
PO Box 458
Phoenix AZ 85001-0458

DOLLARS

MO Notice of Intent to Drill

[redacted]

SECURITY FEATURES INCLUDED. DETAILS ON BACK.

SECTION 3. Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: NACO WATER Co	Salim Dumit
MAILING ADDRESS: PO Box 85160	MAILING ADDRESS: 10050 E Discovery DR.
CITY / STATE / ZIP CODE: TUCSON, AZ, 85754	CITY / STATE / ZIP CODE: TUCSON, AZ 85748
CONTACT PERSON NAME AND TITLE: Raymond Maldonado Field Supervisor	CONTACT PERSON NAME AND TITLE: Ray Maldonado Field Supervisor
TELEPHONE NUMBER: 520-623-5172 FAX: 520-792-0377	TELEPHONE NUMBER: 520-623-5172 FAX: 520-792-0377

SECTION 4. Questions

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?			If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

GPS N 31° 20'. 710
W 109° 56'. 195

RECEIVED
MAY 1 1 2004
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
Water Management Support Section – NOI Unit
500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

JANET NAPOLITANO
Governor

HERB GUENTHER
Director

April 28, 2004

PLEASE RETURN
ALL PAPERS

NACO WATER CO
PO BOX 85160
TUCSON, AZ 85754

Re: Well Registry Number: 55-203321
File (Location) Number: D(24-24)18ADD

Dear Applicant:

The Department of Water Resources recently received your Notice of Intent (NOI) to Drill, Deepen, Replace or Modify a Well. However, our review indicates that the NOI is incomplete under the Groundwater Management Act for the following reason(s):

- **NEED CORRECT FILING FEE WELL BEING USED FOR MUNICIPAL IS A $150 FEE. WELL OUTSIDE AMA BEING USED FOR DOMESTIC ONLY IS A $50 OTHERWISE THE FEE IS $150. NEED AN ADDITIONAL FEE OF $100 FOR YOUR APPLICATION TO BE PROCESS.**
- **NEED LANDOWNER SIGNATURE OR LETTER OF AUTHORIZATION.**
- **NEED TO FILE AN ABANDONMENT APPLICATION IF REPLACING. BUT BECAUSE YOUR OUTSIDE AND ACTIVE MANAGEMENT AREA YOUR CAN CHOOSE TO KEEP THE OLD WELL AND JUST APPLY FOR A NEW WELL.**

PLEASE CALL MONICA ORTIZ AT 602-417-2400 EXT. 7148 WITH ANY QUESTIONS.

In accordance with Arizona Revised Statutes (A.R.S.) § 45-596, Paragraph D, the Department is mailing this "statement of determination" as a request for information necessary to make the NOI complete and correct. Please provide the Department with the additional information and resubmit the corrected NOI form and any attachments (if applicable) to ADWR. The Department's substantive review time frame is suspended until all requested information is provided. If the Department does not receive the necessary information within sixty (60) days, the application may be denied. You would then have to re-initiate the NOI process and pay a new filing fee to receive a drilling authority for this location.

RECEIVED
NOV 1 1 2004
GROUNDWATER MGT

ATTACH THIS NOTICE WHEN RESUBMITTING THE COMPLETED NOI AND RETURN TO:

WATER MANAGEMENT SUPPORT SECTION
PO BOX 458
PHOENIX, ARIZONA 85001-0458

YOU MAY ALSO CONTACT YOUR DRILLER OR COUNTY ASSESSOR'S OFFICE FOR ASSISTANCE PERTAINING TO THE NECESSARY INFORMATION THAT IS REQUIRED TO COMPLETE YOUR APPLICATION.

PLEASE RETURN ALL PAPERS

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax • www.water.az.gov

RECEIVED
APR 26 2004
AZ DEPT OF WATER RESOURCES
PHOENIX AMA

RECEIVED
MAY 11 2004
AZ DEPT OF WATER RESOURCES
PHOENIX AMA

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $50 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the applicable filing fee. For a well located within an AMA or INA, the fee is $150.00. If a well not located within an AMA or INA, the fee is $50.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596

** PLEASE PRINT CLEARLY **

AMA / INA	B	88
RECEIVED DATE	WS	76
ISSUED DATE	INCARE	CERCLA

FILE NUMBER

WELL REGISTRATION NUMBER
55 -

SECTION 1 - COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☒ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION

DATE April 23 2004

BY Carlos Diaz

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: Carlos Diaz Env. Hlth Spec I

TELEPHONE NUMBER: 520-432-9442

DATE: April 23, 2004

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz

SECTION 2 - REGISTRY INFORMATION

Well Type

CHECK ONE

☒ Exempt
(Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)

☐ Non-Exempt
(Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 35 Gallons Per Minute

Proposed Action

CHECK ONE

☒ Drill New Well
☐ Deepen
☐ Replace
☐ Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 - 627684

MAXIMUM CAPACITY OF ORIGINAL WELL: 35 Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: 30x30 Feet Lot #35

Location of Well

WELL LOCATION ADDRESS (IF ANY): Country Club Estates Lot #35

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	18	A ¼	D ¼	D ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
918	02	370 3	1/3 acre

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3 - OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: NACO WATER Co; Salim Dominquez

MAILING ADDRESS: PO Box 85160

CITY / STATE / ZIP CODE: Tucson, Az, 85754

CONTACT PERSON NAME AND TITLE:

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: Salim Dominquez

MAILING ADDRESS: 10050 E Discovery Dr.

CITY / STATE / ZIP CODE: Tucson, Az 85748

CONTACT PERSON NAME AND TITLE:

1422

NACO WATER COMPANY, LLC 10/94
P.O. BOX 307
NACO, AZ 85620

BANK OF AMERICA
91-170/1221

5/11/2004

PAY TO THE ORDER OF: AZ Dept of Water Resources

$ **100.00

One Hundred and 00/100**********

DOLLARS

AZ Dept of Water Resources
PO Box 458
Phoenix AZ 85001-0458

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

May 12, 2004

Janet Napolitano
Governor

Herb Guenther
Director

NACO WATER CO
PO BOX 85160
TUCSON, AZ 85754

Registration No. 55- 203321
File No. D(24-24) 18 ADD

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Pump Installation Completion Report is to be submitted when pump equipment is installed. The drilling card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the drilling card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended drilling card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a Pump Installation Completion Report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate Well Drillers Report and Well Log within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

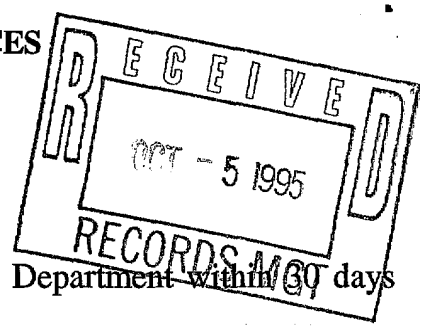
Sincerely,

Monica Ortiz

Monica Ortiz
NOI Unit
Water Management Support Section

Enclosures

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004



WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. WEBER DRILLING
RTE 1 BOX 276B
ST DAVID, AZ 85630

2. Owner Name: SOUTHERN PACIFIC TRANS. CO.
Address: NACO AZ
Street City State Zip

3. Location: 24 N/S 24 E/W 10 ¼ ¼ ¼
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55-551849 (Required)

5. Permit No. (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 462 ft.
7. Type of casing STEEL
8. Diameter and length of casing 10 in. from 0 to 20.8 in from 0 to 462
9. Method of sealing at reduction points WELDED
10. Perforated from 322 to 462 ,from to from to
11. Size of cuts 1/8 x 2 1/2" Number of cuts per foot 20
12. If screen was installed: Length ft. Diam in. Type
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started AUG 22 1995
Month Day Year
15. Date completed AUG 24 1995
Month Day Year
16. Depth to water 375 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
GROUND LEVEL
18. If flowing well, state method of flow regulation:
19. Remarks:

DWR-55-55-7/95 (Rev.)

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-551849
File No. D(24-24)10 DDD
Received By
Entered ENTERED OCT 10 1995 By

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	19	CALICHE
19	375	LIMESTONE
375	440	SAND STONE
440	462	LIMESTONE
		FIRST WATER 375'
		2Nd WATER 420'
		STATIC 280'

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: Ronald E. Weber

WEBER DRILLING
Street RT. 1 BOX 276B
City ST. DAVID, AZ. 85630 State Zip Phone No.

Signature of Driller 10/2/95 Date

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001- 0458
FOR INFORMATION: CALL MONICA ORTIZ AT (602)417-2470

RECEIVED
DEC 10 1999
GROUNDWATER MGT

REQUEST FORM TO CHANGE WELL INFORMATION
OWNERSHIP * DRILLER

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-045. In accordance with A.R.S. § 45-113, please submit the applicable fee. NOTE: A.R.S. §45-593 (C) requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)

NOTE: If the location of the proposed well changes after drilling authority has been issued, **attach a $10.00 reissue fee for each** of the drilling authorities to be changed.

WELL REGISTRATION NO. 55-_____ **FILE NO:**_____

I/We request the following well information be changed: _____

_____

Date_____ Signature of Current Well Owner_____
***Note: This information is on your copy of the Notice of Intent to Drill.**

2. STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, G. L. PINKER, state that ~~I am~~ the ~~Previous~~/New Owner of the well described below: UNION PACIFIC RAILROAD COMPANY IS

SE ¼ SE ¼ SE ¼ of Section 10 Township 24 N/S Range 24 E/W
10 Acre 40 Acre 160 Acre
Assessor's tax parcel number of the parcel on which the well is located: Book_____ Map_____ Parcel_____.

Well Registration No. 55- 551849 File No. 0(24-24)10 DDD (if known)

SOUTHERN PACIFIC
PRINT Previous Owner's Name

1200 CORPORATE CENTER
Mailing Address
MONTEREY PARK CA 91754
City State Zip

UNION PACIFIC RAILROAD CO.
1416 DODGE ST RM 930
OMAHA NE 68179
(402) 271- 6572 (JOEL STRAFELDA)

_____ _____
Telephone Number Telephone Number

Signature of ~~Previous~~/New Well Owner _____ **Date** 11/24/99

DWR 55-71a (Rev 1/99)

ANSWERED DEC 13 1999

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
FOR INFORMATION: CALL MONICA ORTIZ AT (602)417-2470

3. REQUEST TO CHANGE WELL DRILLER **$10.00 FEE REQUIRED FOR EACH WELL**

This request must be received by this Department and the Drill Authorization issued to the new drilling firm prior to the start of drilling or the completion of the well listed below.

Well Registration No. 55- _____ **File No.** _____

_____ _____

Original Well Driller **New Well Driller**

_____ _____

Mailing Address **Mailing Address**

_____ _____

City State Zip **City State Zip**

_____ _____

Telephone Number **Telephone Number**

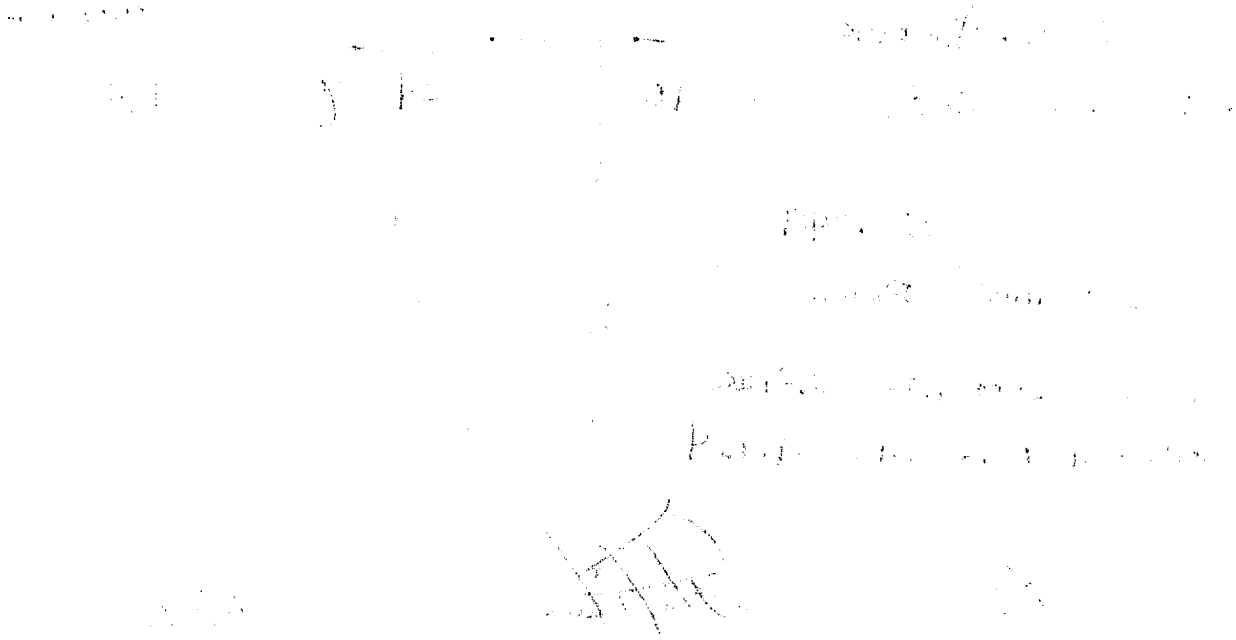
_____ _____

ADWR License Number **ADWR License Number ROC License Category**

_____ _____

Typed or Printed Name of Well Owner **Signature of Well Owner Date**

The fee charged for a change of well ownership and/or reissue of a drill card is authorized by R12-15-151, effective June 30, 1994.



ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division, 500 North Third Street
Phoenix, Arizona 85004 (602) 417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

RECEIVED AUG 10 1995 GROUNDWATER MGT

Section § 45-596, A.R.S., provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Departmen

IF PARCEL IS 20 ACRES OR LESS, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BELOW, BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES.

Southern Pacific TRANS. Co. (Land Owner's Name) 1200 CORPORATE CENTER DR. Suite 100, (Address) Monterey (City) CA (State) 91754 (Zip)

Telephone (213) 980-6939

County: Cochise

COUNTY ASSESSOR'S PARCEL ID INFORMATION:

102 (BOOK) 43 (MAP) 009 (PARCEL) UNK (No. of Acres of Parcel)

Well/Land Location: SE (10AC) 1/4 SE (40ac) 1/4 SE (160ac) 1/4 of Section 10 Township 24 S N/S Range 24 E E/W

APPROVED BY THE COCHISE COUNTY HEALTH DEPT. OFFICIAL SEAL DATE 8-9-95 BY [signature] Sanitarian

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

Check one:
Recommend Approval ✓ ; Insufficient information to make determination ____ ; Variance required ____ (Explanation attached).

DATE 8-9-95 AUTHORIZED SIGNATURE [signature]

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH

1. Section § 45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section § 45-596(D), provides that the Department has **15 days after** the receipt of a **complete and correct** notice of intention to record the notice and mail the duplicate to the owner.
3. Fill out this form and site plan in **DUPLICATE** and send **WITH $10.00 FEE** to 500 N. 3rd St., Phoenix, AZ 85004. **USE BLACK OR BLUE INK.**
4. For specific instructions, limitations and conditions, see the reverse side of this form.
5. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
6. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. **Owner of well:** Same as land owner
Name
Mailing Address
City State Zip
Telephone:

2. **Action requested:** Drill New Well ____ ; Deepen ____ Modify ____ Replace X
For a replacement well provide: Maximum capacity of the original well 175 gallons per minute; distance from the original well 30 feet.
Well Registration No. 55- ~~[illegible]~~ 55-626702 & 55-627685 DUP. FILE

3. **Construction will start about:** Month ASAP Year 1995

4. **DESCRIPTION OF PROPOSED WELL:**
Diameter 8 inches
Depth 450 feet
Type of Casing steel

5. **Design Pump Capacity:** 120 gallons per minute

6. **Lessee of Land of wellsite:** NACO WATER Co.
Name
P.O. Box 307
Mailing Address
NACO AZ 85620
City State Zip
Telephone: 1-800-315-5333

7. **Principal use of water:** (be specific) Water Co. distribution

8. **Other uses of water:** (be specific) NONE

9. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated: N/A

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. D(24-24)10 ddd By SV
Filed 8-10-95 By SV
Input ____ By ____
DUPLICATE MAILED
Date 9-8-95 By SV
Registration 55- 551849
AMA/INA
W/S S/B
ENTERED SEP 18 1995

10. **PLACE OF USE** (Legal Description of Land):
Township 24 S N/S Range 24 E E/W
Section 10 1/4 SE 1/4 SE 1/4 SE
11 SW SW SW

11. **Type of well:** Exempt ____ Non-Exempt X
Residential ____ Commercial X

12. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks? YES ____ NO X

13. **DRILLING FIRM:**
Weber Drilling Co
Firm Name
Rte 1, Box 276 B
Mailing Address
St. David AZ 85630
City State Zip
272
DWR License
A-4
ROC License Classification

LILLIAN M. DOMINGUEZ
NACO WATER CO
Typed or Printed Name of Owner or Lessee

Lillian M. Dominguez
Signature [ ] Land Owner [X] Lessee of Wellsite

8/9/95
DATE

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. If any water from a proposed well on a parcel of land of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant shall submit a site plan to scale of the property with the county assessor's parcel identification number. The site plan:

   a. Will be on a 8½"x11" piece of plain paper with representation of the locations of all structures, septic tank or sewer systems and proximity of adjacent lot lines to scale.
   b. Must show the proposed well location and the location of any septic or sewer system that is either located on the property or within one hundred feet of the proposed well site.
   c. Shall demonstrate to the director's satisfaction that the well will not be drilled within one hundred feet of any septic or sewer system.
   d. Must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Before approval, the health authority shall review the plan and determine whether the proposed well location complies with applicable state and local laws regarding the placement of wells. If so, the health authority shall endorse the site plan and the proposed well placement.

2. Endorsement by the county/local authority is based solely on the best available judgement that this well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. Information brought to light at a future date may render this determination invalid.

3. If a well which was originally drilled as an exploration well; a monitor well, a piezometer well or for any use other than domestic use and is later proposed to be converted to use for domestic purposes, as defined in § 45-454, the well owner shall file a notice of intention to drill and comply with the requirements prescribed pursuant to this section before the well is converted and any water from that well used for domestic purposes.

4. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

5. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an Irrigation Non-Expansion Area or Active Management Area to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

6. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of the notice (§ 45-596.E.).

7. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this notice.

8. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

9. If an individual other than the land owner or lessee signs this Notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific Notice on their behalf, shall accompany the Notice.

VERBAL AUTHORIZATION

DRILLER: Weber Drilling #272

OWNER: Naco Water Co.

TYPE OF WELL: Municipal

LEGAL: D(24-24)10 ddd

IF DEEPENING OR (REPLACING:) Will verify which well *

Registration No. 55- ? 626702 or 627685 (Might be duplicates of each other)

IN AN A-M-A, OR I-N-A, SAME OWNER, SAME LEGAL, MORE THAN ONE WELL, REQUIRES DIFFERENT PURPOSE:

NO. 23 or NO. 24 ON NOTICE OF INTENT:

WITHIN 100 FEET ____ YES X NO.

DATE OF VERBAL: 8/10/95 BY: M. Bell

TIME: 4:00 pm TO: D. Webber

REASON FOR VERBAL: Water company well failed. Ding need for new well.

* 9/6/95

According to Don Webber of Weber Drilling, #272, there is only one well at the above legal description. Both well files (55-626702 & 627685) reflect the same general well data. Will adjust the files accordingly.

Mike Bell

Al-
Said this looks
Fine.
[illegible]

GRUNDFOS®

PHONE (209) 292-8000 • FAX (209) 291-1357
2555 CLOVIS AVENUE
CLOVIS, CALIFORNIA 93612

Don Webber
520-
405-0884
(Mobile)



Rc NACO
H_2O Co
603-7657 MOBILE

"Pumping to Please..."

BUCK LEWIS
ENGINEERING
INC.

PLANNERS • ENGINEERS • SURVEYORS

TUCSON
P.O. Box 85160, 85754
Tel. (602) 624-4402
Tel. (602) 622-2115

SIERRA VISTA
1201 E. Fry Blvd.
Suite 3, 85635
P.O. Box 1690, 85636
Tel. (602) 459-1122

RECEIVED
AUG 10 1995
GROUNDWATER MGT

August 9, 1995

Rosemary Lopez, Operations Division
Arizona Dept. of Water Resources
500 North Third Street
Phoenix, AZ 85004-3903

Dear Ms. Lopez,

Enclosed, in duplicate, is an application to replace an existing well which has essentially failed, (Well Reg. # 55-627685). I request therefore that you consider this an emergency request for approval.

I am faxing this letter along with a copy of the completed application. The original Notice of Intention and a $10 fee check is being sent via FEDEX today.

Thank you for your assistance in this rather urgent matter.

Sincerely,

E. H. "Buck" Lewis

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

September 8, 1995

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

SOUTHERN PACIFIC TRANS. CO
1200 CORPORATE CENTER DR SUITE 100
MONTEREY, CA 91754

Registration No. 55-551849
File No. D(24-24)10 DDD

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill/deepen/replace/modify a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized. **In no case may the replacement well be more than 660 feet from the well it is replacing.**

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593, the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future. If, in the future, it is determined that water from your well is supplied from the river and you do not have a perfected water right to Colorado River water established prior to 1929, the U.S. Bureau of Reclamation may require you to cease pumping or enter into a contract for use of colorado river water.

Sincerely,

Sylvia Valdez
Water Resource Technician
Groundwater Section

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-551849

AUTHORIZED DRILLER: WEBER DRILLING COMPANY LICENSE NO: 272

NOTICE OF INTENTION TO DRILL A NON-EXEMPT WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: SOUTHERN PACIFIC TRANS. CO.

The well(s) is/are to be located in the:

SE 1/4 of the SE 1/4 of the SE 1/4 Section 10 Township 24 SOUTH Range 24 EAST

No. of Wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 9TH DAY OF AUGUST, 1996.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

RECEIPT № 22821

EH LEWIS
3533 SHAWNEE SV
SIERRA VISTA, AZ 85635

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
500 NORTH THIRD STREET
PHOENIX, ARIZONA 85004
(602) 417-2405

ENTRY CODE 55

FILE NO. FOR SOUTHERN PACIFIC **THRU**

ITEM DESCRIPTION	RATE	AMOUNT
NOI FEE		10.00
551849		

CHECK NO. 2787 FEE ACCOUNT NO. _____ TOTAL $ 10.00

CHIT NO. _____ RECEIVED BY SV DATE 9-7-95

IPS 1821 – Rev. 4/91

FedEx
Federal Express

USE THIS AIRBILL FOR SHIPMENTS WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII.
USE THE INTERNATIONAL AIR WAYBILL FOR SHIPMENTS TO PUERTO RICO AND ALL NON U.S. LOCATIONS
QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE
TRACKING NUMBER

3341565544

3 3 4 1 5 6 5 5 4 4

4287M 3341565544

SENDER'S FEDERAL EXPRESS ACCOUNT NUMBER
1782-1463-2

Date
8-9-95

From (Your Name) Please Print
BUCK LEWIS

Your Phone Number (Very Important)
(602-)459-1122

Company
BUCK LEWIS ENGINEERING

Department/Floor No.

1201 E FRY BLVD STE 3

City
SIERRA VISTA

State
AZ

ZIP Required
8 5 6 3 5

To (Recipient's Name) Please Print
ROSEMARY LOPEZ

Recipient's Phone Number (Very Important)
(502)417-2470

Company
AZ. DEPT WATER RESOURCES

Department/Floor No.
OPERATIONS

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes)
500 NORTH THIRD STREET

City
PHOENIX

State
AX

ZIP Required
85004-3903

(Optional) BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.)
SOUTHERN PACIFIC TRANS CO

XX

Bill Credit Card
Exp Date

IF HOLD AT FEDEX LOCATION, Print FEDEX Address Here
Street Address
City
State
ZIP Required

SERVICES

DELIVERY AND SPECIAL HANDLING

Weekday Service
HOLD AT FEDEX LOCATION WEEKDAY
DELIVER WEEKDAY

Saturday Service
HOLD AT FEDEX LOCATION SATURDAY
DELIVER SATURDAY

Special Handling
DANGER
DRY ICE

12 HOLIDAY DELIVERY (Extra Charge)

Freight Service
TWO-DAY FREIGHT**

XX

PACKAGES
WEIGHT
Total
Total

DIM SHIPMENT (Charges)

X
Received At
Regular Stop
On-Call Stop
Station

Emp. No.
Date
Street Address
City
State
Zip
Received By
X
Date/Time Received
FedEx Employee Number

Release Signature

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 4/94
PART #145412 EXEM 9/94
FORMAT #160

160

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U.S.A.

DESTINATION COPY

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 9 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11 13

FOR OFFICE USE ONLY	
REGISTRATION NO. 55-	627696
FILE NO.	D(24-24)11d
FILED (DATE)	JUN 9 1982 AT (TIME) 1 pm
INA	
AMA	

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

1. Name of Registrant:
Dominguez, Salim and Naco Water Co.
128D Street (Address) Naco (City) Arizona (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35- (Control Number)

3. a. The well is located within the ____¼ ____¼ SE~~xx~~¼ 1/2, Section 11, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Dillard, Lot No. portion 4, Address Bisbee Junction, Az.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
domestic.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
_____ (Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 175 feet
b. Diameter of casing 10 inches
c. Depth of casing 86 feet
d. Type of casing steel .
e. Maximum pump capacity under 35 gallons per minute.
f. Depth to water 104 feet below land surface.
g. Date well completed _____ (Month) _____ (Day) 1960 (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6/8/82 SIGNATURE OF REGISTRANT By Naco Water Co. & Salim Dominguez
Wilford R. Richardson, Attorney

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

CHANGE OF WELL INFORMATION

Well Registration No. 55-627696 File No. D(24-24)11D
(location)

I/We request the following well information be changed:

Change water shed to: Whitewater Draw

Date: _____ Signature of Current Well Owner _____

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, _____, state that I am (no longer) the (new)
(please print)
owner of the well described below:

Township _____ Range _____ Section _____; _____ ¼ _____ ¼ _____ ¼

Well Registration No.55- _____ File No. _____
(location)

PRINT Previous Owner's Name	PRINT New Owner's Name
Address	Address
City State Zip	City State Zip

MICROFILMED JAN 21 1991

Dated: _____ Signature of New Owner _____

ENTERED JAN 21 1991

NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

DWR-55-71-3/90

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004
WELL DRILLER REPORT

RECEIVED
SEP 28 1999
RECORDS MGT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. WEBER DRILLING
453 EAST MECHAM DRIVE
SAINT DAVID, AZ 85630-6235

2. Owner Name: NACO WATER CO.
Address: TUCSON (City) AZ (State) 85754 (Zip)

3. Location: 24 N/S 24 E/W 18 ¼ NE ¼ SW ¼ SW
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55- 575700 (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 410 ft.
7. Type of casing STEEL
8. Diameter and length of casing 10 in. from 0 to 20, 8" in from 0 to 340
9. Method of sealing at reduction points WELDED BOREHOLE 10" 340-410
10. Perforated from 180 to 279, from 302 to 340 from _____ to _____
11. Size of cuts 4"X8" Number of cuts per foot 4
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started SEPT (Month) 13 (Day) 1999 (Year)
15. Date completed SEPT (Month) 15 (Day) 1999 (Year)
16. Depth to water 140 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
GROUND LEVEL
18. If flowing well, state method of flow regulation: _____

19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-575700
File No. D(24-24) 18 CCA
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

ENTERED SEP 29 1999

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	130	ALLUVIAL
130	240	VOLCANIC CONGLOMORET
240	340	ALLUVIAL
340	410	ALLUVIAL WITH HIGH CLAY CONTENT
		FIRST WATER 140'
		STATIC 130'

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: WEBER DRILLING

453 EAST MECHAM DRIVE

Street

SAINT DAVID, AZ 85630-6235 1-520-720-4800

City State Zip Phone No.

X Daniel E. Weber 9-20-99

Signature of Driller Date

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-575700

AUTHORIZED DRILLER: WEBER DRILLING LICENSE NO: 272

NOTICE OF INTENTION TO DRILL A NON-EXEMPT WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: NACO WATER CO PO BOX 85160 TUCSON, AZ 85754

The well(s) is/are to be located in the:

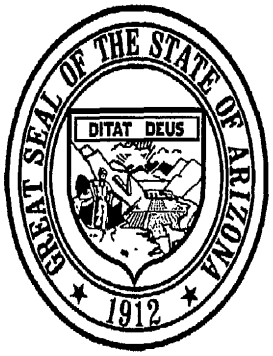
NE 1/4 of the SW 1/4 of the SW 1/4 Section 18 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 28TH DAY OF JUNE, 2000.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING



ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ (602)417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

RECEIVED JUN 29 1999 GROUNDWATER MGT

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. Naco Water Co. P.O. Box 85160 Tucson Az 85754
LANDOWNER'S NAME CURRENT MAILING ADDRESS CITY STATE ZIP

B. TELEPHONE NO. (520) 623-5172

COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN Cochise COUNTY D. Part of 102 BOOK 57 MAP 189 PARCEL E. 0.14 # OF ACRES

OFFICIAL SEAL OR STAMP

RECEIVED JUL 12 1999 GROUNDWATER MGT

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NE ¼ SW ¼ SW ¼ OF SECTION 18 TOWNSHIP 24 N/S RANGE 24 E/W
10AC 40AC 160AC

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL ✓ ; INSUFFICIENT INFORMATION TO MAKE DETERMINATION _____ ; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE 6-17-99 AUTHORIZED SIGNATURE _____ TITLE _____

1. OWNER OF WELL:
Naco Water Co.
NAME
P.O. Box 85160
CURRENT MAILING ADDRESS
Tucson AZ 85754
CITY STATE ZIP

TELEPHONE NUMBER (520) 623-5172

2. ACTION REQUESTED:
DRILL NEW WELL X DEEPEN _____
MODIFY _____ REPLACE _____

WELL REGISTRATION NO 55- _____

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL _____ GALLONS PER MINUTE;

DISTANCE FROM THE ORIGINAL WELL: _____ FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH July 1 YEAR 1999

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: Steel
DIAMETER: 12 " DEPTH: 20 '

DOWNHOLE CASING: Steel
DIAMETER: 8 " DEPTH: 400 '

5. DESIGN PUMP CAPACITY:
130 GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
N/A
NAME
_____
CURRENT MAILING ADDRESS
_____
CITY STATE ZIP

TELEPHONE: _____

7. PRINCIPLE USE OF WATER: (BE SPECIFIC)
Water Co. Service Area

8. OTHER USES OF WATER: (BE SPECIFIC).
N/A

9. IF USE INCLUDES IRRIGATION, STATE TO NEAREST TENTH, THE NUMBER OF ACRES TO BE IRRIGATED: _____

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55- 575700
DATE FILED 6/18/99
FILE NO. D(24-24)18CCA
AMA/INA —
W/S 11 S/B —
PROCESSED BY BO
DATE MAILED 7-20-99

10. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NE ¼ SW ¼ SW ¼ SECTION 18
10AC 40AC 160AC
TWNSHP 24 N/S RNG 24 E/W

11. TYPE OF WELL (CHECK ONE):
EXEMPT _____ NON-EXEMPT X

12. CHECK ONE:
RESIDENTIAL _____ COMMERCIAL X

13. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES _____ NO X

14. DRILLING FIRM:
Weber Drilling Co.
NAME
Rte1 Box 276 B
MAILING ADDRESS
St. David AZ 85630
CITY STATE ZIP
(520) 720-4800
TELEPHONE NO.
272
DWR LICENSE NUMBER
A-4
ROC LICENSE CATEGORY

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

Salim S. Dominguez — Salim S. Dominguez — 6/16/99
15. TYPE OR PRINT NAME AND TITLE 16. SIGNATURE OF LANDOWNER/LESSEE OF WELL SITE 17. DATE

DWR 55-40 (REV 1/99)

APPLICATION GUIDELINES

In accordance with Arizona Revise Statutes ("A.R.S.") §§ 41-1008 and 1079, the Department of Water Resources (Department) provides the following information regarding the application review process for authority to drill.

NECESSARY STEPS & INSTRUCTIONS TO OBTAIN DRILLING AUTHORITY

1. Pursuant to A.R.S. § 45-596, a person may not drill, cause to be drilled, deepen or modify any well for which a permit is not required without first filing a Notice of Intent to Drill with the Department. Only a well drilling contractor licensed in the State of Arizona or a single well licensee (a person licensed to drill or modify one exempt well on his or her own property) is authorized to drill, deepen or modify a well. Drilling may not begin until the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, and which authorizes the drilling of the specific well in a specific location. To assist you in understanding the requirements for this application, copies of A.R.S. § 45-596 and Arizona Administrative Code ("A.A.C.") R12-15-810 are available at the Department bookstore (602-417-2450 x7127).
2. If replacing, deepening or modifying an existing well, provide the registration number of the existing well in item 2. A replacement well is one located no more than 660 feet from the original well and that is not expected to annually withdraw more groundwater than historically withdrawn from the original well.
3. Information to complete items 3, 4, 5 and 14 may be available from your driller.
4. Information to complete items 10 and 13 may be available from your County Assessor's Office.
5. An exempt well, referred to in Item 11, means a well with a pump with a maximum capacity of not more than thirty-five gallons per minute used primarily for domestic purposes, including the noncommercial irrigation of less than two acres of land.
6. If any water from a proposed well on a parcel of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant must submit a well site plan of the property. The plan must be on an 8½" x 11" piece of plain paper with representation of the locations of all structures and proximity of adjacent lot lines, to scale. It must include the county assessor's parcel identification number. The plan must show the proposed well location and the location of any septic tank or sewer system that is either located on the property or within one hundred feet of the proposed well site, as well as indicating the measured shortest distance between the proposed well and existing septic tank system. **The plan must demonstrate that the well will not be drilled within one hundred feet of any septic or sewer system.**
7. The site plan must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Endorsement by the county/local authority is based solely on the best available judgement that the proposed well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. In areas where there is no local or county authority that controls installation of septic tanks or sewer systems, or if the health authority is unable to determine whether the proposed well location complies with state and local requirements, the applicant must apply for approval directly to the Department of Water Resources.
8. If an individual other than the land owner or lessee signs this notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific notice on his or her behalf, must accompany the notice.
9. Please mail **two original Notices** with **original signatures** and **two site plans** and, in accordance with A.R.S. § 45-113, a **check or money order (no cash) in the amount of $10.00** to P. O. Box 458, Phoenix Arizona, 85001-0458, or hand deliver to 500 North Third Street, Phoenix, Arizona.
10. Arizona Revised Statute § 45-596(D) provides that the Director of the Department is to determine whether or not all information required on this form has been submitted. If not, the person filing the Notice will be notified, and the drilling or modification of the well may **not** proceed.
11. This form is not applicable for non-exempt wells (those yielding more than thirty-five gallons per minute) within an Active Management Area. Contact Groundwater Management for further information regarding the appropriate notice to file with the Department.

TIME FRAME FOR REVIEW OF YOUR APPLICATION

Within 15 days after receipt of your Notice of Intention, the Arizona Department of Water Resources ("Department") will determine whether your application should be granted or denied, unless this time is extended for lack of a complete application. If your application is incomplete, the Department will notify you in writing and will specify what information is necessary to make the application complete. Until the missing information is received, the time frame for review of your application will be suspended. Your application will not be complete until all of the requested information is received. If you do not supply the missing information within sixty (60) days, the Department may deem your application withdrawn and close the file.

At the end of its review, the Department will send you written notice either granting or denying your application for drilling authority. If your application is approved, the Drill Card will be mailed directly to the drilling company. If denied, the Department's notice will state justification for the denial and an explanation of your right to appeal.

CONSTRUCTION AND FOLLOW UP REQUIREMENTS

1. Construction and abandonment standards for wells, including abandonment, must be in accordance with Department Regulations. A.R.S. § 45-594 and Arizona Administrative Code R12-15-811 require the well to be constructed with a twenty foot steel surface seal casing, including a one foot steel stickup and one and one-half inches of grout seal, unless a variance is granted **(see A.R.S. § 45-596 (G) for procedure to follow in requesting a variance).**
2. Pursuant to § 45-596(E), the drilling, deepening or modification of the well must be completed within one year of the date of the Notice of Intent. If the well is not completed within one year, a new Notice of Intent must be filed before proceeding with further construction.
3. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use is later proposed to be converted to use for domestic purposes as defined in § 45-454, the well owner must file a Notice of Intention to Drill and comply with the requirements of § 45-596 before the well is converted and any water from that well is used for domestic purposes.
4. Within thirty days after installation of pumping equipment, the registered well owner must file a Completion Report with the Department. The person to whom a well is registered also must notify the Department of a change in ownership or a change in data relating to this well.

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division, 500 North Third Street
Phoenix, Arizona 85004 (602) 417-2470

RECEIVED
JUN 18 1999
GROUNDWATER MGT

NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

Section § 45-596, A.R.S., provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Departme

IF PARCEL IS 20 ACRES OR LESS, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BELOW, BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES.

Naco Water Co. | P.O. Box 85160 | Tucson | AZ | 85754
Land Owner's Name | Address | City | State | Zip

Telephone 520-623-5172

County: Cochise

COUNTY ASSESSOR'S PARCEL ID INFORMATION:
part of 102 | 57 | 189 | 0.14 (well site only)
BOOK | MAP | PARCEL | No. of Acres of Parcel

Well/Land Location:
NE 1/4 SW 1/4 SW 1/4 of Section 18 Township 24 N/S Range 24 E/W
10AC 40ac 160ac
(See Attached well site)

OFFICIAL SEAL

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

Check one:
Recommend Approval ✓ ; Insufficient information to make determination ____ ; Variance required ____ (Explanation attached)

DATE 6-17-99 AUTHORIZED SIGNATURE [signature]

RECEIVED
JUN 29 1999
GROUNDWATER MGT

RECEIVED
JUL 12 1999
GROUNDWATER MGT

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH

1. Section § 45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section § 45-596(D), provides that the Department has 15 days after the receipt of a complete and correct notice of intention to record the notice and mail the duplicate to the owner.
3. Fill out this form and site plan in DUPLICATE and send WITH $10.00 FEE to 500 N. 3rd St., Phoenix, AZ 85004. USE BLACK OR BLUE INK
4. For specific instructions, limitations and conditions, see the reverse side of this form.
5. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
6. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. **Owner of well:**
Naco Water Co.
Name
P.O. Box 85160
Mailing Address
Tucson AZ 85754
City State Zip
Telephone: (520) 623-5172

2. **Action requested:** Drill New Well X ; Deepen ____ Modify ____ Replace ____
For a replacement well provide: Maximum capacity of the original well ____ gallons per minute; distance from the original well ____ feet.
Well Registration No. 55- ____

3. **Construction will start about:**
Month July 1 Year 1999

4. **DESCRIPTION OF PROPOSED WELL:**
Diameter 8 inches
Depth 400 feet
Type of Casing Steel

5. **Design Pump Capacity:**
130 gallons per minute

6. **Lessee of Land of wellsite:**
N/A
Name
Mailing Address
City State Zip
Telephone:

7. **Principal use of water:(be specific)**
Water Co. Service Area Source

8. **Other uses of water:(be specific)**
N/A

9. **If use includes irrigation, state to nearest tenth, the number of acres to be irrigated:** ____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. ____ By ____
Filed ____ By ____
Input ____ By ____
DUPLICATE MAILED
Date ____ By ____
Registration 55- ____
AMA/INA ____
W/S ____ S/B ____

10. **PLACE OF USE (Legal Description of Land):**
Township 24 N/S Range 24 E/W
Section 18 1/4 SW 1/4 ____ 1/4 ____

11. **Type of well:** Exempt ____ Non-Exempt X
Residential X Commercial X

12. **Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks?** YES ____ NO X

13. **DRILLING FIRM:**
WEBER DRILLING Co
Firm Name
Rte. 1 Box 276 B
Mailing Address
St. David AZ 85630
City State Z
272
DWR License
A-4
ROC License Classification

Salim S. Dominguez
Typed or Printed Name of Owner or Lessee

[signature]
Signature [X] Land Owner [ ] Lessee of Wellsite

June 16, 1999
DATE

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. If any water from a proposed well on a parcel of land of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant shall submit a site plan to scale of the property with the county assessor's parcel identification number. The site plan:

   a. Will be on a 8½"x11" piece of plain paper with representation of the locations of all structures, septic tank or sewer systems and proximity of adjacent lot lines to scale.
   b. Must show the proposed well location and the location of any septic or sewer system that is either located on the property or within one hundred feet of the proposed well site.
   c. Shall demonstrate to the director's satisfaction that the well will not be drilled within one hundred feet of any septic or sewer system.
   d. Must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Before approval, the health authority shall review the plan and determine whether the proposed well location complies with applicable state and local laws regarding the placement of wells. If so, the health authority shall endorse the site plan and the proposed well placement.

2. Endorsement by the county/local authority is based solely on the best available judgement that this well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. Information brought to light at a future date may render this determination invalid.

3. If a well which was originally drilled as an exploration well; a monitor well, a piezometer well or for any use other than domestic use and is later proposed to be converted to use for domestic purposes, as defined in § 45-454, the well owner shall file a notice of intention to drill and comply with the requirements prescribed pursuant to this section before the well is converted and any water from that well used for domestic purposes.

4. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

5. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an Irrigation Non-Expansion Area or Active Management Area to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

6. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of the notice (§ 45-596.E.).

7. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this notice.

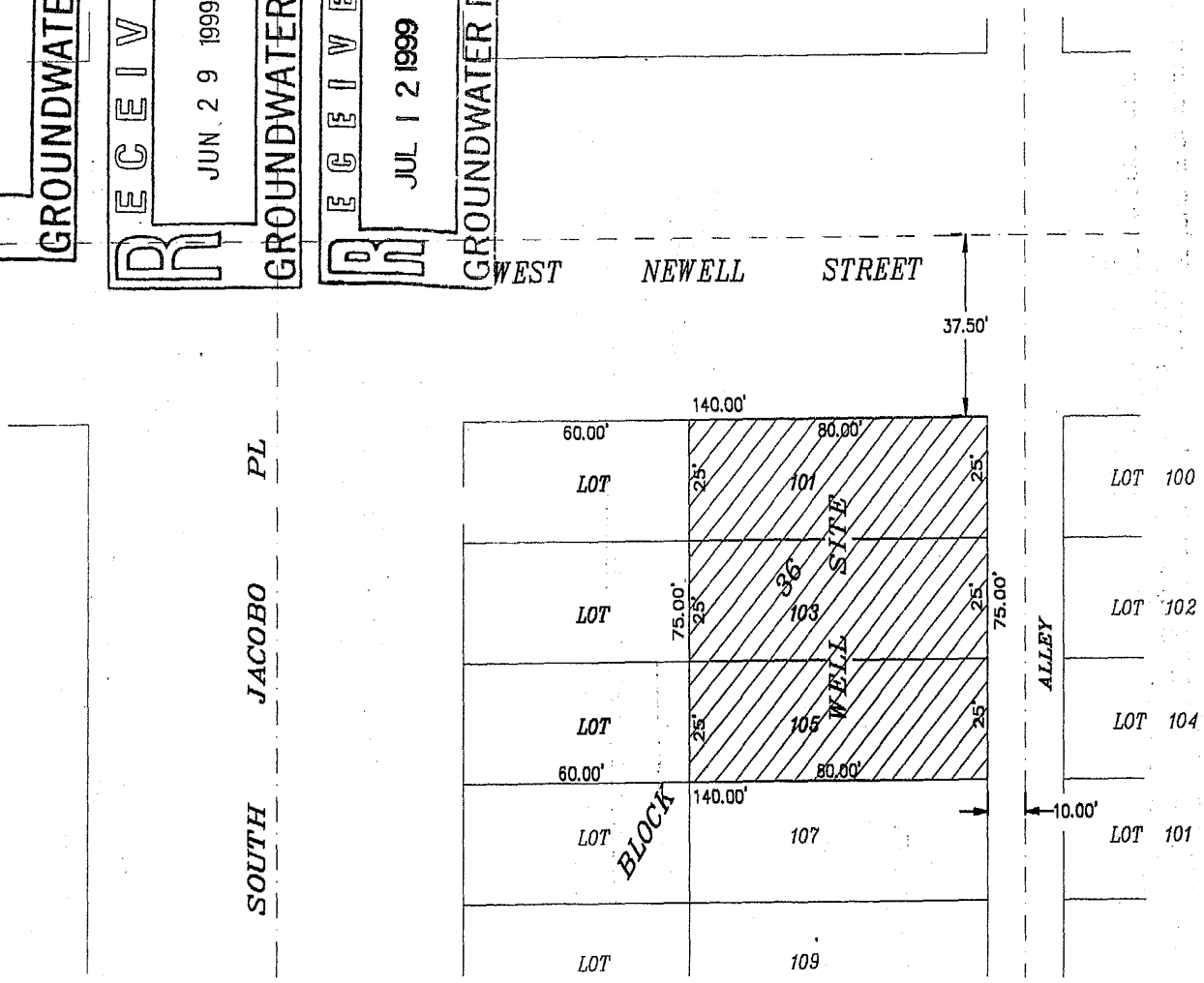
8. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

9. If an individual other than the land owner or lessee signs this Notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific Notice on their behalf, shall accompany the Notice.

RECEIVED
JUN 18 1999
GROUNDWATER MGT

RECEIVED
JUN 29 1999
GROUNDWATER MGT

RECEIVED
JUL 12 1999
GROUNDWATER MGT



LEGAL DESCRIPTION

THE EAST 80.00 FEET OF LOTS 101, 103 AND 105 OF BLOCK 36 OF THE NACO TOWNSITE AS RECORDED IN BOOK 1 OF MAPS, AT PAGE 391, IN THE COCHISE COUNTY RECORDER'S OFFICE.

N

SCALE 1" = 40'

WELL SITE – EXHIBIT "A"

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division, 500 North Third Street
Phoenix, Arizona 85004 (602) 417-2470

RECEIVED JUN 18 1999 GROUNDWATER MGT

NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

Section § 45-596, A.R.S., provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Departme

IF PARCEL IS 20 ACRES OR LESS, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BELOW, BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES.

Naco Water Co. (Land Owner's Name) P.O. Box 85160 (Address) Tucson (City) AZ (State) 85754 (Zip)

Telephone 520-623-5172

County: Cochise

COUNTY ASSESSOR'S PARCEL ID INFORMATION:
Part of 102 (BOOK) 57 (MAP) 189 (PARCEL) 0.14 (well site only) (No. of Acres of Parcel)

Well/Land Location:
NE 1/4 (10AC) SW 1/4 (40ac) SW 1/4 (160ac) of Section 18 Township 24 N/S Range 24 E/W
(See Attached well Site)

OFFICIAL SEAL COCHISE COUNTY HEALTH DEPARTMENT

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

Check one:
Recommend Approval V ; Insufficient information to make determination ____ ; Variance required ____ (Explanation attached).

DATE 6-17-99 AUTHORIZED SIGNATURE Chad Mowry

RECEIVED JUN 29 1999 GROUNDWATER MGT

RECEIVED JUL 12 1999 GROUNDWATER MGT

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH

1. Section § 45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section § 45-596(D), provides that the Department has 15 days after the receipt of a complete and correct notice of intention to record the notice and mail the duplicate to the owner.
3. Fill out this form and site plan in DUPLICATE and send WITH $10.00 FEE to 500 N. 3rd St., Phoenix, AZ 85004. USE BLACK OR BLUE INK
4. For specific instructions, limitations and conditions, see the reverse side of this form.
5. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
6. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. Owner of well.
Naco Water Co. (Name)
P.O. Box 85160 (Mailing Address)
Tucson AZ 85754 (City State Zip)
Telephone (520) 623-5172

2. Action requested: Drill New Well X ; Deepen ____ Modify ____ Replace ____
For a replacement well provide: Maximum capacity of the original well ____ gallons per minute; distance from the original well ____ feet.
Well Registration No. 55- ____

3. Construction will start about:
Month July 1 Year 1999

4. DESCRIPTION OF PROPOSED WELL:
Diameter 8 inches
Depth 400 feet
Type of Casing Steel

5. Design Pump Capacity:
130 gallons per minute

6. Lessee of Land of wellsite:
N/A (Name)
(Mailing Address)
(City State Zip)
Telephone:

7. Principal use of water:(be specific)
Water Co. Service Area Source

8. Other uses of water:(be specific)
N/A

9. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated: ____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. D(24-24)18 CCA By SV
Filed 6-29-99 By SV
Input ____ By ____
DUPLICATE MAILED
Date 7-30-99 By SV
Registration 55- 595700
AMA/INA ____
W/S 11 S/B ____
M.D.

10. PLACE OF USE (Legal Description of Land):
Township 24 N/S Range 24 E/W
Section 18 1/4 SW 1/4 ____ 1/4 ____

11. Type of well: Exempt ____ Non-Exempt X
Residential X Commercial X

12. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks? YES ____ NO X

13. DRILLING FIRM:
WEBER DRILLING Co (Firm Name)
Rte. 1 Box 276 B (Mailing Address)
St. David AZ 85630 (City State Z)
272 (DWR License)
A-4 (ROC License Classification)

Salim S. Dominguez
Typed or Printed Name of Owner or Lessee

Salim S. Dominguez
Signature [X] Land Owner [ ] Lessee of Wellsite

June 16, 1999
DATE

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. If any water from a proposed well on a parcel of land of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant shall submit a site plan to scale of the property with the county assessor's parcel identification number. The site plan:

   a. Will be on a 8½"x11" piece of plain paper with representation of the locations of all structures, septic tank or sewer systems and proximity of adjacent lot lines to scale.
   b. Must show the proposed well location and the location of any septic or sewer system that is either located on the property or within one hundred feet of the proposed well site.
   c. Shall demonstrate to the director's satisfaction that the well will not be drilled within one hundred feet of any septic or sewer system.
   d. Must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Before approval, the health authority shall review the plan and determine whether the proposed well location complies with applicable state and local laws regarding the placement of wells. If so, the health authority shall endorse the site plan and the proposed well placement.

2. Endorsement by the county/local authority is based solely on the best available judgement that this well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. Information brought to light at a future date may render this determination invalid.

3. If a well which was originally drilled as an exploration well; a monitor well, a piezometer well or for any use other than domestic use and is later proposed to be converted to use for domestic purposes, as defined in § 45-454, the well owner shall file a notice of intention to drill and comply with the requirements prescribed pursuant to this section before the well is converted and any water from that well used for domestic purposes.

4. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

5. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an Irrigation Non-Expansion Area or Active Management Area to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

6. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of the notice (§ 45-596.E.).

7. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this notice.

8. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

9. If an individual other than the land owner or lessee signs this Notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific Notice on their behalf, shall accompany the Notice.

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

July 20, 1999

JANE DEE HULL
Governor

RITA P. PEARSON
Director

NACO WATER CO
PO BOX 85160
TUCSON, AZ 85754

Registration No. 55-575700
File No.D(24-24) 18 CCA

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Sylvia Valdez
Water Resource Technician
Groundwater Management Support Section

RECEIVED
JUL 12 1999
GROUNDWATER MGT

MEMO

TO: ADWR ***DATE:*** 7/8/99

FROM: Naco Water Co. ***JOB:***

SUBJECT: N.O.I. Ref #55-575700

Revised per your letter and telephone conversation 6/8/99.

-Southwestern Utility Management

PUT IT IN WRITING!

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

RECEIVED
JUL 12 1999
GROUNDWATER MGT

July 6, 1999

JANE DEE HULL
Governor

RITA P. PEARSON
Director

NACO WATER COMPANY
PO BOX 85160
TUCSON AZ 85754

Assigned Referenced Number: 55-575700

Dear Applicant:

The Department of Water Resources recently received your Notice of Intent to drill/deepen replace or modify a well. However, our review indicates that the filing(s) is incomplete under the Groundwater Management Act for the following reason(s):

Book, Map, and Parcel Number:	____	**ItemNo. (11.)Type of Well Exempt or Non-exempt**	____
Number of Acres:	____	**ItemNo. (12.)Residential or Commercial:**	✓
Requires site plan:	____	**ItemNo.(13.)Please Check Yes or No**	____
Requires Filing Fee $10.00	✓	**Item No.(14.)Drilling Firm:**	____
Incomplete Legal Description:		**Requires signature:**	____
Requires County Approval	____	**Requires reverse side of form:**	____
Item No. (1.) Owner of well:	____	**Requires letter of authorization:**	____
		Requires duplicate filing:	____
Item No. (2.) Action Requested:	____		
Item No. (3.) Construction date:	____	**Inside an AMA Only one exempt well may be drilled or used to serve the same non-irrigation use at the same location.**	____
Item No. (4.) Description of Proposed well:	____		
Item No. (5.) Design Pump Capacity:	____	**Renewal of driller license is required:**	____
Item No. (6.) Lessee of Land of Wellsite:	____		
		ItemNo.(4.)Must reference the "steel" surface seal	____
Item No. (7.) Principal Use of Water:	____		
Item No. (8.) Other uses of Water:	____	**Other reason:**	____
Item No. (9.) Irrigated acres:	✓		
ItemNo. (10.) Place of Use:	____	**Initials:**	

In accordance with A.R.S § 45-596; Paragraph D, this application is being returned as a "statement of determination", requesting information necessary to make it correct and complete. If the necessary information is not received by the Department within sixty (60) days, the application may be denied. You would then have to re-initiate the N.O.I. process to receive a drilling authority for this location. If you have any questions, please contact the Groundwater Management Support Section at (602) 417-2470. **ATTACH THIS CHECK LIST WHEN RESUBMITTING THE COMPLETED NOTICE OF INTENT AND RETURN TO THE BOX 458, PHOENIX, ARIZONA 85004-3003. YOU MAY ALSO CONTACT YOUR DRILLER OR COUNTY ASSESSORS OFFICE FOR ASSISTANCE PERTAINING TO THE NECESSARY INFORMATION THAT IS REQUIRED TO COMPLETE YOUR APPLICATION.**

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

July 6, 1999

JANE DEE HULL
Governor

RITA P. PEARSON
Director

NACO WATER COMPANY
PO BOX 85160
TUCSON AZ 85754

Assigned Referenced Number: 55-575700

Dear Applicant:

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Book, Map, and Parcel Number:	_____	**ItemNo. (11.)Type of Well Exempt or Non-exempt**	_____
Number of Acres:	_____	**ItemNo. (12.)Residential or Commercial:**	✓
Requires site plan:	_____	**ItemNo.(13.)Please Check Yes or No**	_____
Requires Filing Fee $10.00	_	**Item No.(14.)Drilling Firm:**	_____
Incomplete Legal Description:		**Requires signature:**	_____
Requires County Approval	_____	**Requires reverse side of form:**	_____
Item No. (1.) Owner of well:	_____	**Requires letter of authorization:**	_____
		Requires duplicate filing:	_____
Item No. (2.) Action Requested:	_____		
Item No. (3.) Construction date:	_____	**Inside an AMA Only one exempt well may be drilled or used to serve the same non-irrigation use at the same location.**	_____
Item No. (4.) Description of Proposed well:	_____		
Item No. (5.) Design Pump Capacity:	_____	**Renewal of driller license is required:**	_____
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Item No. (7.) Principal Use of Water:	_____		
Item No. (8.) Other uses of Water:	_____	**Other reason:**	_____
			_____
Item No. (9.) Irrigated acres:	_____		_____
ItemNo. (10.) Place of Use:	✓	**Initials:**	

In accordance with A.R.S § 45-596; Paragraph D, this application is being returned as a "statement of determination", requesting information necessary to make it correct and complete. If the necessary information is not received by the Department within sixty (60) days, the application may be denied. You would then have to re-initiate the N.O.I. process to receive a drilling authority for this location. If you have any questions, please contact the Groundwater Management Support Section at (602) 417-2470.

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ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ (602)417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

RECEIVED
JUN 29 1999
GROUNDWATER MGT

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. Naco Water Co. P.O.Box 85160 Tucson Az 85754
LANDOWNER'S NAME | CURRENT MAILING ADDRESS | CITY | STATE | ZIP

B. TELEPHONE NO (520)-623-5172

COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN Cochise COUNTY D. Part of 102 (BOOK) 57 (MAP) 189 (PARCEL) E. 0.14 (# OF ACRES)

OFFICIAL SEAL OR STAMP

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NE ¼ SW ¼ SW ¼ OF SECTION 18 TOWNSHIP 24 N/S RANGE 24 E/W
10AC 40AC 160AC

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL ✓; INSUFFICIENT INFORMATION TO MAKE DETERMINATION _____; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE 6-17-99 AUTHORIZED SIGNATURE _____ TITLE _____

1. OWNER OF WELL:
Naco Water Co.
NAME
P.O. Box 85160
CURRENT MAILING ADDRESS
Tucson Az 85754
CITY STATE ZIP

TELEPHONE NUMBER (520) 623-5172

2. ACTION REQUESTED:
DRILL NEW WELL X DEEPEN _____
MODIFY _____ REPLACE _____

WELL REGISTRATION NO 55-_____

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL _____ GALLONS PER MINUTE;

DISTANCE FROM THE ORIGINAL WELL: _____ FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH July YEAR 1999

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: 12 STEEL
DIAMETER: 12" " DEPTH: 20 '

DOWNHOLE CASING: Steel
DIAMETER: 8" " DEPTH: 400 '

5. DESIGN PUMP CAPACITY:
130 GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
N/A
NAME
_____
CURRENT MAILING ADDRESS
_____ _____ _____
CITY STATE ZIP

TELEPHONE: _____

7. PRINCIPLE USE OF WATER: (BE SPECIFIC)
Water Co. Service Area

8. OTHER USES OF WATER: (BE SPECIFIC).
N/A

9. IF USE INCLUDES IRRIGATION, STATE TO NEAREST TENTH, THE NUMBER OF ACRES TO BE IRRIGATED: _____

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55-575706
DATE FILED 6/18/99
FILE NO. D(24-24)18 CCA
AMA/INA —
W/S 11 S/B —
PROCESSED BY _____
DATE MAILED _____
M.O. _____

10. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
_____ ¼ _____ ¼ SW ¼ SECTION 18
10AC 40AC 160AC
TWNSHP 24 N/S RNG 24 E/W

11. TYPE OF WELL (CHECK ONE):
EXEMPT _____ NON-EXEMPT X

12. CHECK ONE:
RESIDENTIAL X COMMERCIAL X

13. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES _____ NO X

14. DRILLING FIRM:
Weber Drilling Co
NAME
Rte 1, Box 276 B
MAILING ADDRESS
St. David Az 85630
CITY STATE ZIP
(520) 720-4800
TELEPHONE NO.
272
DWR LICENSE NUMBER
A-4
ROC LICENSE CATEGORY

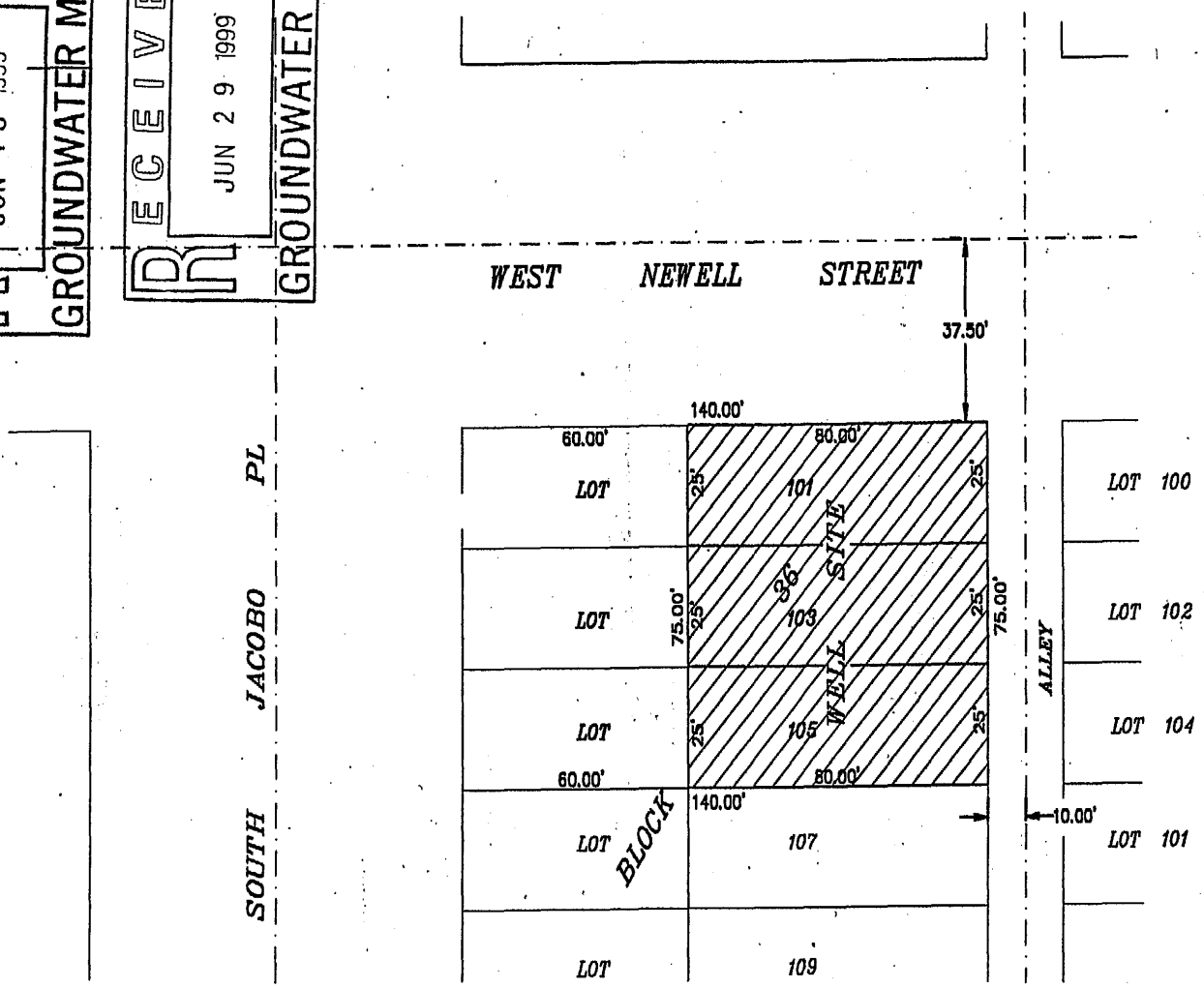
I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596. IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

Salim S. Dominguez — 15. TYPE OR PRINT NAME AND TITLE
16. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE
6/16/99 — 17. DATE

DWR 55-40 (REV 1/99)

RECEIVED
JUN 18 1999
GROUNDWATER MGT

RECEIVED
JUN 29 1999
GROUNDWATER MGT



LEGAL DESCRIPTION

THE EAST 80.00 FEET OF LOTS 101, 103 AND 105 OF BLOCK 36 OF THE NACO TOWNSITE AS RECORDED IN BOOK 1 OF MAPS, AT PAGE 391, IN THE COCHISE COUNTY RECORDER'S OFFICE.

N

SCALE 1" = 40'

WELL SITE – EXHIBIT "A"

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

RECEIVED
JUN 29 1999
GROUNDWATER MGT

June 24, 1999

JANE DEE HULL
Governor

RITA P. PEARSON
Director

NACO WATER CO
0 O BOX 85160
TUCSON, AZ 85754

Assigned Referenced Number: 55-575700

PLEASE RETURN ALL PAPERS

Dear Applicant:

The Department of Water Resources recently received your Notice of Intent to drill/deepen replace or modify a well. However, our review indicates that the filing(s) is incomplete under the Groundwater Management Act for the following reason(s):

Book, Map, and Parcel Number: ____
Number of Acres: ____
Requires site plan: ____

Requires Filing Fee $10.00
Incomplete Legal Description: needs direction
Requires County Approval ____

Item No. (1.) Owner of well: ____

Item No. (2.) Action Requested: ____
Item No. (3.) Construction date: ____

Item No. (4.) Description of Proposed well: ____
Item No. (5.) Design Pump Capacity: ____
Item No. (6.) Lessee of Land of Wellsite: ____

Item No. (7.) Principal Use of Water: ____
Item No. (8.) Other uses of Water: ____

Item No. (9.) Irrigated acres:
ItemNo. (10.) Place of Use: needs direction

ItemNo. (11.)Type of Well Exempt or Non-exempt ____
ItemNo. (12.)Residential or Commercial: ____
ItemNo.(13.)Please Check Yes or No ____

Item No.(14.)Drilling Firm: ____
Requires signature: ____
Requires reverse side of form: ____

Requires letter of authorization: ____
Requires duplicate filing: 2 original ✓

Inside an AMA Only one exempt well may be drilled or used to serve the same non-irrigation use at the same location. ____

Renewal of driller license is required: ____

ItemNo.(4.)Must reference the "steel" surface seal ____

Other reason: Nor S ? E or W ?

Initials: bjs

In accordance with A.R.S § 45-596; Paragraph D, this application is being returned as a "statement of determination", requesting information necessary to make it correct and complete. If the necessary information is not received by the Department within sixty (60) days, the application may be denied. You would then have to re-initiate the N.O.I. process to receive a drilling authority for this location. If you have any questions, please contact the Groundwater Management Support Section at (602) 417-2470.
ATTACH THIS CHECK LIST WHEN RESUBMITTING THE COMPLETED NOTICE OF INTENT AND RETURN TO THE BOX 458, PHOENIX, ARIZONA 85004-3003. YOU MAY ALSO CONTACT YOUR DRILLER OR COUNTY ASSESSORS OFFICE FOR ASSISTANCE PERTAINING TO THE NECESSARY INFORMATION THAT IS REQUIRED TO COMPLETE YOUR APPLICATION.

Completed per your instructions 6/28/99
Thanks for your help.
Buck Lewis

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

June 24, 1999

JANE DEE HULL
Governor

RITA P. PEARSON
Director

NACO WATER CO
0 O BOX 85160
TUCSON, AZ 85754

Send back
New forms
direction on
legal

Assigned Referenced Number: 5

SE RETURN
APERS

Dear Applicant:

The Department of Water Resources recently received your Notice of Intent to drill/deepen replace or modify a well. However, our review indicates that the filing(s) is incomplete under the Groundwater Management Act for the following reason(s):

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Requires Filing Fee $10.00 ____
Incomplete Legal Description: ____
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Item No. (1.) Owner of well: ____

Item No. (2.) Action Requested: ____
Item No. (3.) Construction date: ____

Item No. (4.) Description of Proposed well: ____
Item No. (5.) Design Pump Capacity: ____
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Item No. (8.) Other uses of Water: ____

Item No. (9.) Irrigated acres: ____
ItemNo. (10.) Place of Use: ____

ItemNo. (11.)Type of Well Exempt or Non-exempt ____
ItemNo. (12.)Residential or Commercial: ____
ItemNo.(13.)Please Check Yes or No ____

Item No.(14.)Drilling Firm: ____
Requires signature: ____
Requires reverse side of form: ____

Requires letter of authorization: ____
Requires duplicate filing: 2 original ✓

Inside an AMA Only one exempt well may be drilled or used to serve the same non-irrigation use at the same location. ____

Renewal of driller license is required: ____

ItemNo.(4.)Must reference the "steel" surface seal ____

Other reason: ____

Initials: lop

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ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division, 500 North Third Street
Phoenix, Arizona 85004 (602) 417-2470

RECEIVED
JUN 18 1999
GROUNDWATER MGT

NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

Section § 45-596, A.R.S., provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department

IF PARCEL IS 20 ACRES OR LESS, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BELOW, BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES.

Naco Water Co. (Land Owner's Name) P.O. Box 85160 (Address) Tucson (City) AZ (State) 85754 (Zip)

Telephone 520-623-5172

County: Cochise

COUNTY ASSESSOR'S PARCEL ID INFORMATION:
Part of 102 (BOOK) 57 (MAP) 189 (PARCEL) 0.14 (No. of Acres of Parcel) (well site only)

Well/Land Location:
NE (10AC) 1/4 SW (40ac) 1/4 SW (160ac) 1/4 of Section 18 Township 24 N/S Range 24 E/W
(See Attached well site)

OFFICIAL SEAL COCHISE COUNTY HEALTH DIVISION

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

Check one:
Recommend Approval V : Insufficient information to make determination ____ : Variance required ____ (Explanation attached).

DATE 6-17-99 AUTHORIZED SIGNATURE [signature]

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH

1. Section § 45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section § 45-596(D), provides that the Department has 15 days after the receipt of a complete and correct notice of intention to record the notice and mail the duplicate to the owner.
3. Fill out this form and site plan in DUPLICATE and send WITH $10.00 FEE to 500 N. 3rd St., Phoenix, AZ 85004. USE BLACK OR BLUE INK
4. For specific instructions, limitations and conditions, see the reverse side of this form.
5. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
6. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. Owner of well.
Naco Water Co. (Name)
P.O. Box 85160 (Mailing Address)
Tucson AZ 85754 (City State Zip)
Telephone (520) 623-5172

2. Action requested: Drill New Well X ; Deepen ____ Modify ____ Replace ____
For a replacement well provide: Maximum capacity of the original well ____ gallons per minute; distance from the original well ____ feet.
Well Registration No. 55- ____

3. Construction will start about:
Month July 7 Year 1999

4. DESCRIPTION OF PROPOSED WELL:
Diameter 8 inches
Depth 400 feet
Type of Casing Steel

5. Design Pump Capacity:
130 gallons per minute

6. Lessee of Land of wellsite:
N/A (Name)
(Mailing Address)
(City State Zip)
Telephone:

7. Principal use of water:(be specific)
Water Co. Service Area Source.

8. Other uses of water:(be specific)
N/A

9. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated: ____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. D(24-24)18 CCA By ____
Filed ____ By ____
Input ____ By ____
DUPLICATE MAILED
Date ____ By ____
Registration 55- ____
AMA/INA ____
W/S 11 S/B ____
M.O.

10. PLACE OF USE (Legal Description of Land):
Township 24 N/S Range 24
Section 18 1/4 SW 1/4 ____ 1/4

11. Type of well: Exempt ____ Non-Exempt X
Residential X Commercial X

12. Is the proposed wellsite within 100 feet of a septic system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks? YES ____ NO X

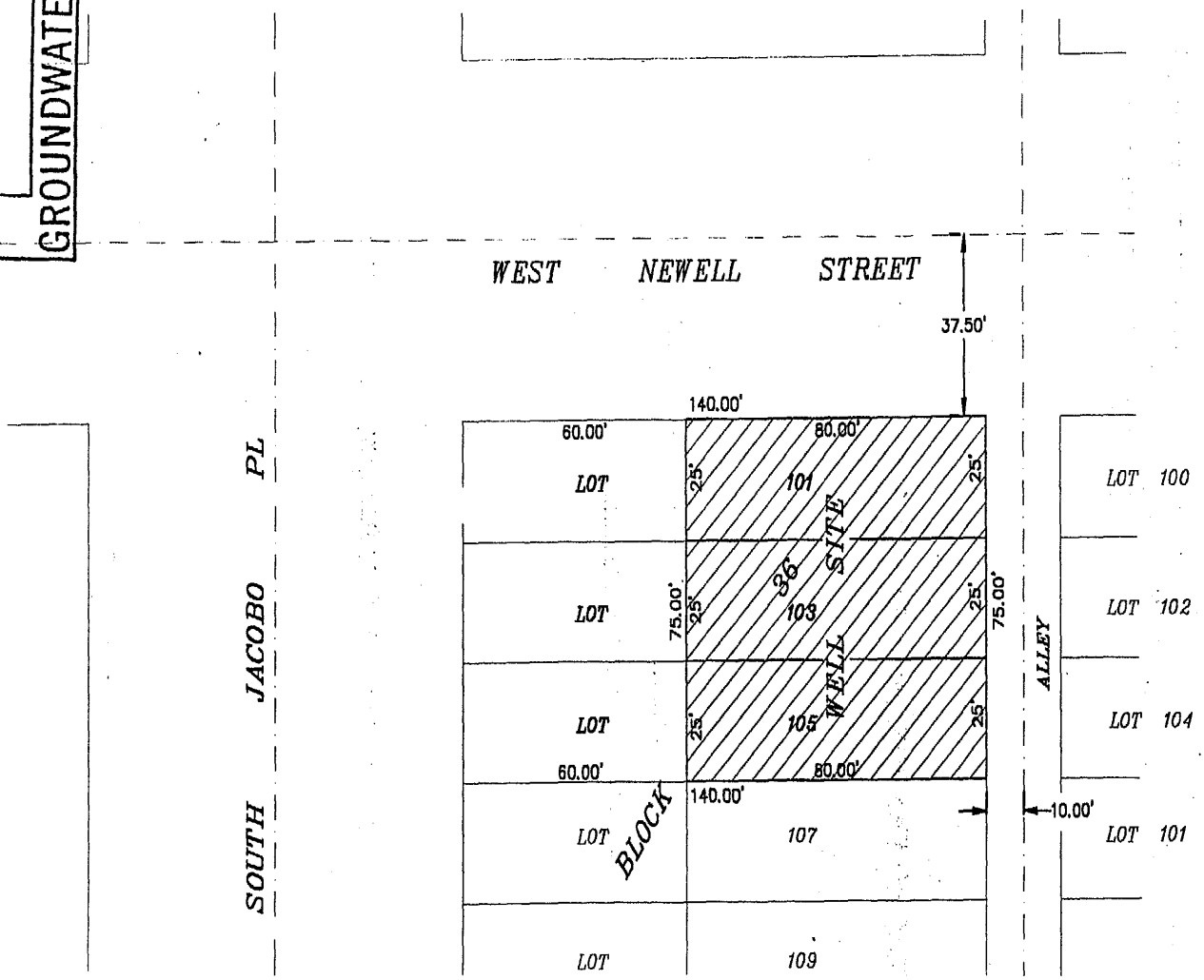
13. DRILLING FIRM:
WEBER DRILLING Co (Firm Name)
Rte. 1 Box 276 B (Mailing Address)
St. David AZ 85630 (City State)
DWR License 272
ROC License Classification A-4

Salim S. Dominguez
Typed or Printed Name of Owner or Lessee

Salim S. Dominguez
Signature [X] Land Owner [ ] Lessee of Wellsite

June 16, 1999
DATE

RECEIVED
JUN 18 1999
GROUNDWATER MG



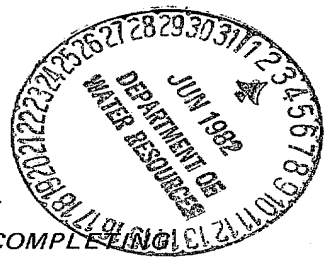
LEGAL DESCRIPTION

THE EAST 80.00 FEET OF LOTS 101, 103 AND 105 OF BLOCK 36 OF THE NACO TOWNSITE AS RECORDED IN BOOK 1 OF MAPS, AT PAGE 391, IN THE COCHISE COUNTY RECORDER'S OFFICE.

SCALE 1" = 40'

WELL SITE – EXHIBIT "A"

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☐

1 3

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 643436
FILE NO. D(24-24)11abc
FILED 6-3-82 (DATE) AT 11:15 (TIME)
INA
AMA

1. Name of Registrant:
ROBERT L. BROWN
RT#1 106 SWAN Rd. (Address) BISBEE (City), ARIZONA (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
— (File Number) 35- — (Control Number)

3. a. The well is located within the ~~NW~~ SW ¼ ~~NE~~ NW ¼ NE ¼, Section 11, of Township 24 N(S) Range 24 (E)W, G & SRB & M, in the County of COCHISE.
b. If in a subdivision: Name of subdivision —, Lot No. —, Address —.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC.

5. If for irrigation use, number of acres irrigated from well —0—.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 150 feet
b. Diameter of casing 8 inches
c. Depth of casing 150 feet
d. Type of casing STEEL.
e. Maximum pump capacity 20 gallons per minute.
f. Depth to water 67 feet below land surface.
g. Date well completed Aug. (Month) N/A (Day) 1966 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6/2/82 SIGNATURE OF REGISTRANT Robert L. Brown

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

OK

ABC

CHANGE OF WELL INFORMATION

Registration No. 55-643436

I request the following information be changed in Well File Number D(24-24) 11 as

FILED 6-3-82

NAME OF REGISTRANT, INCLOSED IS COPY OF DEATH CERTIFICATE, LETTERS TESTAMENTARY, (APPOINTING UNDERSIGNED AS PERSONAL REPRESENTATIVE) AND COPY OF CHANGE OF DEED OF REAL PROPERTY WHERE WELL IS LOCATED. REQUEST CHANGE BE MADE TO SHOW DORCAS A BROWN ~~AS OWNER OF RP~~ AS NEW OWNER.

Date 4-10, 1990 Doreen a Brown, AS Signature of Well Owner PERSONAL REPRESENTATIVE FOR ROBERT L. BROWN - DECEASED

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, DECEASED. state that I am (no longer) the

(new) owner of the well described below:

Township 24 S Range 4 E Section 11, NW ¼ NE ¼ ¼

Registration #55-643436 File No. ?

Doreen a Brown, PERSONAL REPRESENTATIVE FOR ROBERT L. BROWN	DORCAS A. BROWN
Previous Owner	New Owner
DECEASED	767 SARATOGA DR
Address	Address
City State Zip	SALINAS CA 93906
	City State Zip

NOTE: ARS 45-593 requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within 30 days after changes take place.

NOTE: SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP OR WELL DATA SUCH AS PUMP CAPACITY, ETC.

MICROFILMED
ENTERED APR 18 1990

APR 13 1990
CLERK

OK

RECEIVED
MAR 12 1991
OPERATIONS

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

CHANGE OF WELL INFORMATION

Well Registration No. 55- 643436 File No. D (24-24)11ab ABC
(location)

I/We request the following well information be changed: TO SHOW NEW OWNER OF WELL TO BE DALE G. OSBORN AND COLEEN A. OSBORN (~~SAHUARO~~ RESOURCES LTD)
301 15th Terrace, Bisbee, AZ 85603 (602)-432-4196

Date: 7-23-90 Signature of Current Well Owner Dorcas A Brown
INFO SENT TO NEW OWNER 2/7/91. Dorcas A Brown
(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, DORCAS A BROWN (please print) state that I am (no longer) the ~~(new)~~ owner of the well described below:

Township 24 S Range 24 E Section NW 1/4 ; NE 1/4 1/4 1/4

Well Registration No.55- 643436 File No. D (24-24) 11ab
(location)

DORCAS A BROWN
PRINT Previous Owner's Name

767 SARATOGA DR
Address

SALINAS | CA | 93906
City State Zip

Dale G. Osborn & Coleen A. Osborn, h/wJT
PRINT New Owner's Name

301 15th Terrace
Address

Bisbee | AZ | 85603
City State Zip

Dated: 3-10-91 Signature of New Owner Dale G. Osborn Coleen A. Osborn
Dale G. Osborn Coleen A. Osborn

MICROFILMED

ENTERED MAR 15 1991

NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

DWR-55-71-3/90

FILING FEE $10.00

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division
15 South 15th Avenue
Phoenix, Arizona 85007

FILING FEE $10.00

JUL - 2 1993

NOTICE OF INTENTION TO DRILL A WELL OUTSIDE OF AN ACTIVE MANAGEMENT AREA

Section §45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management, a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department.

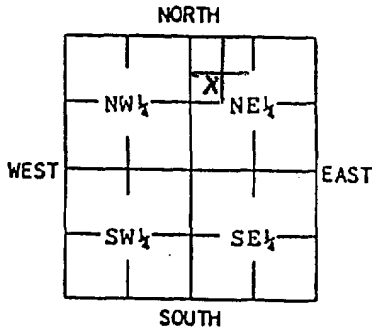
WELL/LAND LOCATION:

1. Township: 24 ☒N/S | 2. Range: 24 E/☒W | 3. Section: 11

4. SW 1/4 (10 Acre) NW 1/4 (40 Acre) NE 1/4 (160 Acre)

5. County Assessor's I.D.: 101 (Book) | 42 (Map) | 003-0 (Parcel)

6. County: COCHISE



INDICATE WELL LOCATION BY X
(Above diagram represents one 640 acre section)

7. Type of well: Exempt ✓ Non-exempt ____

8. Action Requested:
Drill New Well ____; or Deepen ✓
Replace ____ Modify ____
Well No. 55- 643436

9. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks?
Yes ____ No ✓

10. Will this proposed well pump Colorado River Water? Yes ____ No ✓
(See item 10 on reverse side)

11. Applicant: Owner ✓ Lessee ____
DALE G. OSBORN
SAHUARO RESOURCES, LTD.
Name
SWAN ROAD P.O. BOX 5027
Mailing Address
BISBEE, AZ. 85603
City / State / Zip
Telephone: 602-432-4196

12. Owner or Lessee of Land at wellsite:
SAME
Name
Mailing Address
City State Zip
Telephone:

13. Owner of well:
SAME
Name
Mailing Address
City State Zip
Telephone:

DO NOT WRITE IN THIS SPACE
Office Record
File No. D(24-24)11 ABC
Filed 7/2/93 By dh
Input ENTERED JUL 14 1993
Mailed 7/13/93 By dh
Registration No. 55-643436
INA ____
W/S 13 S/B ____

PLACE OF USE:

14. Township 24 ☒N/S
Range 24 E/☒W
15. Section 11
16. Legal description of land:
SW 1/4 (10 Acre) NW 1/4 (40 Acre) NE 1/4 (160 Acre)

DESCRIPTION OF PROPOSED WELL:

17. Diameter 8 inches
Depth 250 feet
Type of Casing STEEL
Design Pump Capacity:
20 gallons per minute

18. Estimate of total annual pumping:
1 acre feet

19. Principal use of water: (be specific)
DOMESTIC

20. Other uses intended: (be specific)
NONE

21. Number of Multiple Drinking Water connections, if any: 1
(See item 5 on reverse side)

22. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated:
-0-

23. Construction will start about:
JULY - 93
Month Year

DRILLING FIRM:

24. TANNER WELL SERVICE
Firm
7914 N. FRONTIER RD.
Mailing Address
McNEAL, AZ. 85617
City State Zip
133
DWR License Number
C-53
ROC License Classification

GENERAL INSTRUCTIONS

1. Fill out this form in DUPLICATE and send WITH $10.00 FEE to 15 South 15th Avenue, Phoenix, AZ 85007.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen, replace or modify a well outside of an Active Management Area.
4. If the well is a replacement, deepening or modification of an existing well, provide the registation number of the existing well in Item 8.
5. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.
6. Section §45-596(D), provides that the Director shall determine that all information required on form has been submitted. If not, the person filing will be notified, and the drilling, deepening, or modification of the well may not proceed.

MICROFILMED

I state that this Notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well as set forth on the reverse side of this form.

DALE G. OSBORN
Typed or printed name

Dale G. Osborn INDIVIDUALLY, AND AS PRES. OF SAHUARO RESOURCES
Signature of Owner / Lessee of wellsite

7-1-93
Date

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Receipt of this annotated Notice constitutes authorization to proceed in drilling, deepening, or modifying the well as set forth on this Notice.

2. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

3. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an INA or AMA to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 3 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to A.R.S. §45-434 or §45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of A.R.S. §45-437.

5. Multiple Drinking Water Connections mean other parcels of land being served by your well that are not owned by you. Each separate parcel is considered one connection.

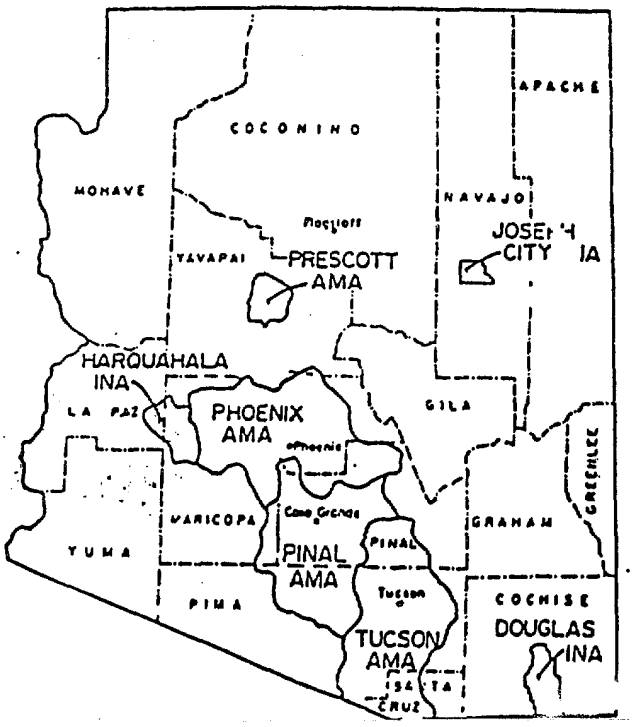
6. The drilling, deepening, or modification of this well shall be completed within one (1) year of the issuance of the drilling authority.

7. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

8. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

9. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.

10. If the proposed well is a non-exempt well and is located near the Colorado River and if the proposed well may pump Colorado River Water, proof must be submitted with this notice that the applicant has the legal right to use Colorado River Water. Alternately, evidence needs to be submitted that supports the contention that Colorado River water will not be withdrawn by the well. Persons near the Colorado River may wish to contact the Colorado River Management Division, Department of Water Resources at (602) 542-1960 to determine those Townships and Ranges which will be affected by these requirements or with questions regarding the proof of right.



RECEIPT

№ 7322

Sahuaro Resources, Ltd.
Dale G. Osborn
P.O. Box 5027
Bisbee, AZ 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007
(602) 542-1581

ENTRY CODE 55

FILE NO. 55-643436 **THRU**

ITEM DESCRIPTION	RATE	AMOUNT
FILING FEE FOR NOI TO DEEPEN A WELL	10.00	10.00
REG. NO.55-643436		
FILE NO.D(24-24)11ABC		

PAID

CHECK NO. 3855 FEE ACCOUNT NO. _____ TOTAL $ 10.00

CHIT NO. _____ RECEIVED BY db DATE 07-13-93

IPS 1821 – Rev. 4/91

ARIZONA DEPARTMENT OF WATER RESOURCES

15 South 15th Avenue, Phoenix, Arizona 85007
Telephone (602) 542-1581
Fax (602) 542-3383

July 13, 1993

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

Dale G. Osborn
Sahuro Resource, Ltd.
P. O. Box 5027
Bisbee, AZ 85603

Registration No. 55-643436
File No. D(24-24)11ABC

Dear Mr. Osborn:

Enclosed is a copy of the Notice of Intention (NOI) to deepen a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized. **In no case may the replacement well be more than 660 feet from the well it is replacing.**

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

ENCLOSED

Per ARS §45-593, the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

If the information you provided indicates your well is near the Colorado River; if in the future, it is determined that water from your well is supplied from the river and you do not have a perfected water right to Colorado River water established prior to 1929, the U.S. Bureau of Reclamation may require you to cease pumping or enter into a contract for use of Colorado River water.

Sincerely,

Dorothy Boggs
Groundwater Permit Specialist

db
Enclosures

MICROFILMED

EXEMPT WELL
WELL REGISTRATION NO.
55- 643436

DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

EXEMPT WELL

THIS DRILLING CARD SHALL BE IN THE POSSESSION OF THE DRILLER BEFORE DRILLING OPERATIONS COMMENCE

AUTHORIZED DRILLER Tanner Well Service LICENSE NO. 133
(Unless superceded by notification of change of well driller)

Notice of Intention to ____ **Drill** X **Deepen** ____ **Replace** ____ **Modify** a well has been filed with the Department by:

Dale G. Osborn Sahuaro Resources, Ltd. P.O. Box 5027 Bisbee AZ 85603

Name Address City State Zip

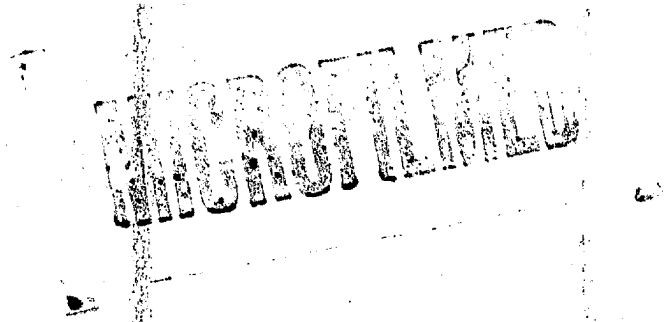
This well is to be located in: Township 24S Range 24E Section 11 SW 1/4 NW 1/4 NE 1/4

This authorization to ____ Drill X Deepen ____ Replace ____ Modify the above well expires at midnight on 07-12-94.

PURSUANT TO A.R.S. § 45-600, THE DRILLER SHALL FILE, ON THE PRESCRIBED DEPARTMENT FORM, A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

for **Deputy Director**

DWR-55-54-3/91



ARIZONA DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Name: DALE G. OSBORN-SAHUARO RESOURCES, LTD.
   Address: P.O BOX 5027 BISBEE, AZ. 85603
   Street City State Zip
2. Driller Name: JANNER WELL SERVICE
   Address: 7914 N. FRONTIER RD. McNEAL, AZ. 85617
   Street City State Zip
3. Location: 24 N/S (Township) 24 E/W (Range) 11 (Section) SW 1/4 (10-acre) NW 1/4 (40-acre) NE 1/4 (160-acre)
4. Well Registration No. 55- 643436 (Required)
5. Permit No. N/A (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 258 ft.
7. Type of casing PVC
8. Diameter and length of casing 6 in. from 0 to 258', _____ in from _____ to _____.
9. Method of sealing at reduction points N/A
10. Perforated from 122' to 258', from _____ to _____, from _____ to _____.
11. Size of cuts 1/8" x 6" Number of cuts per foot 3
12. If screen was installed: Length N/A ft. Diam _____ in. Type _____
13. Method of construction DRILLED
    (drilled, dug, driven, bored, jetted, etc)
14. Date started 7-22-93
    Month Day Year
15. Date completed 8-5-93
    Month Day Year
16. Depth to water 94 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
    FROM GROUND LEVEL
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
ENTERED AUG 23 1993
Re 55-643436
Fil D(24-24)11ABC
Re
En

DWR-55-55-7/91 (Rev.)

LOG OF WELL

1.

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encounterd, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
146	150	FILL
150	258	HARD RED ROCK

I hereby certify that this well was drilled by me (or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: Robert D. Tanner

7914 N. FRONTIER RD.
Street

McNEAL, Az. 85617
City State Zip

Date 8-9-93

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004
WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

RECEIVED
APR 18 2000
RECORDS MGT

1. L.B. DRILLING
P.O. BOX 4166
HUACHUCA CITY, AZ 85616-0166

2. Owner Name: Kristine Daniels
Address: PO Box 406 Bisbee, Az. 85603
City State Zip

3. Location: 24 N/S 24 E/W 12 ¼ SW ¼ NW ¼ SW
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55- 578819 (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 220 ft.
7. Type of casing Steel PVC
8. Diameter and length of casing Steel in. from 0 to 20, PVC in from 20 to 220
9. Method of sealing at reduction points _____
10. Perforated from 200 to 220, from _____ to _____ from _____ to _____
11. Size of cuts 1/8 Number of cuts per foot Three
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction drilled air
(drilled, dug, driven, bored, jetted, etc)
14. Date started Jan. 8 2000
Month Day Year
15. Date completed Jan. 10 2000
Month Day Year
16. Depth to water 68 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
ground level
18. If flowing well, state method of flow regulation: N/A
19. Remarks: blew 12 g.p.m.

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-578819
File No. D(24-24) 12 CBC
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	6"	Top soil brown sand
6"	206	redish brown sandstone Medium soft
206	216	grey broken medium firm sandstone water
216	220	redish brown firm drilling
		120 - 140 seep 1st H_2O
		dewatered in 30 minutes

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: L.B. DRILLING

P.O. BOX 4166
Street

HUACHUCA CITY, AZ 85616-0166 520-456-1657
City State Zip Phone No.

Larry Allen 1-11-00
Signature of Driller Date

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-578819

AUTHORIZED DRILLER: L.B. DRILLING LICENSE NO: 344

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: KRISTINE DANIELS PO BOX 406 BISBEE, AZ 85603

The well(s) is/are to be located in the:

SW 1/4 of the NW 1/4 of the SW 1/4 Section 12 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 22ND DAY OF DECEMBER, 2000.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ 602-417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

RECEIVED
DEC 23 1999
GROUNDWATER MGT

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. Kristine Daniels (LANDOWNER'S NAME) PO Box 406 (CURRENT MAILING ADDRESS) Bisbee (CITY) AZ (STATE) 85603 (ZIP)

B. TELEPHONE NO. 520 - 432 - 6000 COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN Cochise COUNTY D. 101 (BOOK) 39 (MAP) 0040 (PARCEL) E. 40 (# OF ACRES) OFFICIAL SEAL OR STAMP

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. SW ¼ (10AC) NW ¼ (40AC) SW ¼ (160AC) OF SECTION 12 TOWNSHIP 24 N(S) RANGE 24 E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL _____; INSUFFICIENT INFORMATION TO MAKE A DETERMINATION _____; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE _____ AUTHORIZED SIGNATURE _____ TITLE _____

1. OWNER OF WELL
Kristine Daniels
NAME
PO Box 406
CURRENT MAILING ADDRESS
Bisbee AZ 85603
CITY STATE ZIP
TELEPHONE NUMBER 520-432-6000

2. ACTION REQUESTED:
DRILL NEW WELL X DEEPEN N/A
MODIFY N/A REPLACE N/A
WELL REGISTRATION NO 55- NEW WELL

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL
N/A GALLONS PER MINUTE;
DISTANCE FROM THE ORIGINAL WELL:
N/A FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH DECEMBER YEAR 99

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: STEEL
DIAMETER: 4-6 " DEPTH: 0-20 '
DOWNHOLE CASING: PVC
DIAMETER: 4-6 " DEPTH: 20-175

5. DESIGN PUMP CAPACITY:
25 GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
N/A
NAME
N/A
CURRENT MAILING ADDRESS
N/A
CITY STATE ZIP
TELEPHONE: N/A - - -

7. PRINCIPAL USE OF WATER: (BE SPECIFIC)
DOMESTIC

8. OTHER USES OF WATER: (BE SPECIFIC).
N/A

JT

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55- 578819
DATE FILED 12-23-99
FILE NO. D(24-24)12 CBC
AMA/INA
W/S 13 S/B
PROCESSED BY M.O.
DATE MAILED 12-29-99
JT

9. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
SW ¼ (10AC) NW ¼ (40AC) SW ¼ (160AC) SECTION 12
TWNSHP 24 N(S) RNG 24 E/W

10. TYPE OF WELL (CHECK ONE):
EXEMPT X NON-EXEMPT _____

11. CHECK ONE:
RESIDENTIAL X STOCKWATER _____
OTHER N/A

12. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES _____ NO X

13. DRILLING FIRM:
LB Drilling
NAME
PO Box 4466
MAILING ADDRESS
Huachuca AZ. 85603
CITY STATE ZIP
520 - 456 - 1657
TELEPHONE NO.
344
DWR LICENSE NUMBER
A-4 C-53
ROC LICENSE CATEGORY

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

Kristine Daniels, owner — 14. TYPE OR PRINT NAME AND TITLE
15. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE
Dec 20th 1999 — 16. DATE

DWR 55-40 (REV 9/99)

APPLICATION GUIDELINES

In accordance with Arizona Revised Statutes ("A.R.S.") §§ 41-1008 and 1079, the Department of Water Resources (Department) provides the following information regarding the application review process for authority to drill.

NECESSARY STEPS & INSTRUCTIONS TO OBTAIN DRILLING AUTHORITY

1. Pursuant to A.R.S. § 45-596, a person may not drill, cause to be drilled, deepen or modify any well for which a permit is not required without first filing a Notice of Intent to Drill with the Department. Only a well drilling contractor licensed in the State of Arizona or a single well licensee (a person licensed to drill or modify one exempt well on his or her own property) is authorized to drill, deepen or modify a well. Drilling may not begin until the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, and which authorizes the drilling of the specific well in a specific location. To assist you in understanding the requirements for this application, copies of A.R.S. § 45-596 and Arizona Administrative Code ("A.A.C.") R12-15-810 are available at the Department bookstore (602-417-2450 x7127).
2. If replacing, deepening, or modifying an existing well, provide the registration number of the existing well in item 2. A replacement well is one located no more than 660 feet from the original well and that is not expected to annually withdraw more groundwater than historically withdrawn from the original well.
3. Information to complete items 3, 4, 5 and 13 may be available from your driller.
4. Information to complete items 9 and 12 may be available from your County Assessor's Office.
5. For item 10, in an Active Management Area, A.R.S § 45-454 only allows non-irrigation uses for "exempt" wells. If the proposed use includes the growing of 2 or more acres of plants for sale or human/animal consumption (irrigation use), the well does not qualify as an exempt well.
6. An exempt well, referred to in Item 10, means a well with a pump with a maximum capacity of not more than thirty-five gallons per minute and used for non-irrigation purposes.
7. For item 11, in an Active Management Area, A.R.S §45-454 allow up to 56 acre feet per year of pumping from a domestic (residential) or stock watering exempt well, and up to 10 acre ft per year from an exempt well used for other (usually commercial non-irrigation) purposes.
8. If any water from a proposed well on a parcel of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant must submit a well site plan of the property. The plan must be on an 8½" x 11" piece of plain paper with representation of the locations of all structures and proximity of adjacent lot lines, to scale. It must include the county assessor's parcel identification number. The plan must show the proposed well location and the location of any septic tank or sewer system that is either located on the property or within one hundred feet of the proposed well site, as well as indicating the measured shortest distance between the proposed well and existing septic tank system. **The plan must demonstrate that the well will not be drilled within one hundred feet of any septic or sewer system.**
9. The site plan must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Endorsement by the county/local authority is based solely on the best available judgement that the proposed well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. In areas where there is no local or county authority that controls installation of septic tanks or sewer systems, or if the health authority is unable to determine whether the proposed well location complies with state and local requirements, the applicant must apply for approval directly to the Department of Water Resources.
10. If an individual other than the land owner or lessee signs this notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific notice on his or her behalf, must accompany the notice.
11. Please mail **two original Notices** with **original signatures** and **two site plans** and, in accordance with A.R.S. § 45-113, a **check or money order (no cash) in the amount of $10.00** to P. O. Box 458, Phoenix Arizona, 85001-0458, or hand deliver to 500 North Third Street, Phoenix, Arizona.
12. Arizona Revised Statute § 45-596(D) provides that the Director of the Department is to determine whether or not all information required on this form has been submitted. If not, the person filing the Notice will be notified, and the drilling or modification of the well may **not** proceed.
13. This form is not applicable for non-exempt wells (those yielding more than thirty-five gallons per minute) within an Active Management Area. Contact Groundwater Management for further information regarding the appropriate notice to file with the Department.

TIME FRAME FOR REVIEW OF YOUR APPLICATION

Within 15 days after receipt of your Notice of Intention the Arizona Department of Water Resources ("Department") will determine whether your application should be granted or denied, unless this time is extended for lack of a complete application. If your application is incomplete, the Department will notify you in writing and will specify what information is necessary to make the application complete. Until the missing information is received, the time frame for review of your application will be suspended. Your application will not be complete until all of the requested information is received. If you do not supply the missing information within sixty (60) days, the Department may deem your application withdrawn and close the file.

At the end of its review, the Department will send you a written notice either granting or denying your application for drilling authority. If your application is approved, the Drill Card will be mailed directly to the drilling contractor. If denied, the Department's notice will state justification for the denial and an explanation of your right to appeal.

CONSTRUCTION AND FOLLOW UP REQUIREMENTS

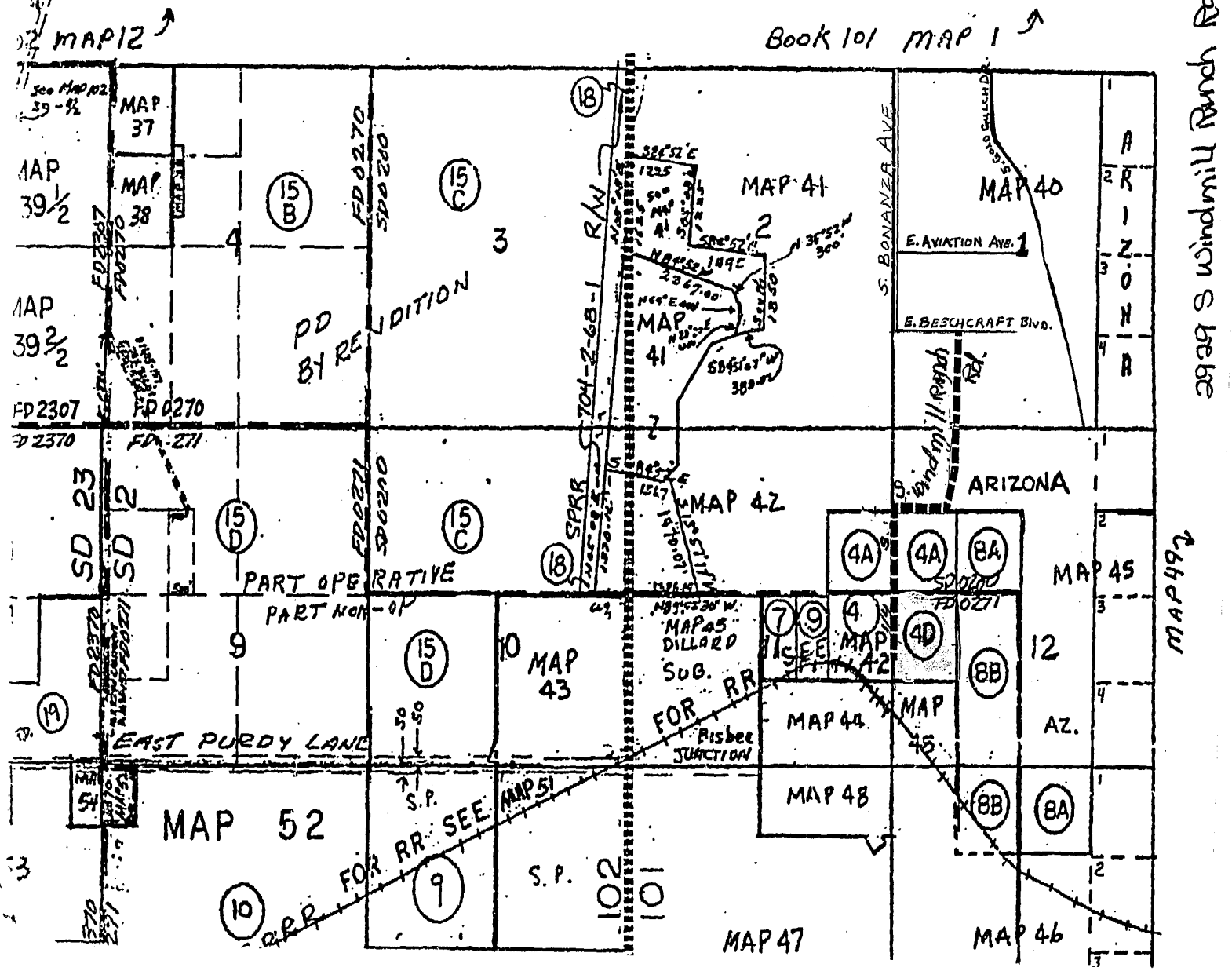
1. Construction and abandonment standards for wells, must be in accordance with Department Regulations. A.R.S. § 45-594 and Arizona Administrative Code R12-15-811 require the well to be constructed with a twenty foot steel surface seal casing, including a one foot steel stickup and one and one-half inches of grout seal around the casing from the surface to a depth of twenty feet, unless a variance is granted **(see A.R.S. § 45-596 (G) for procedure to follow in requesting a variance).**
2. Pursuant to § 45-596(E), the drilling, deepening or modification of the well must be completed within one year of the date of the Notice of Intent. If the well is not completed within one year, a new Notice of Intent must be filed before proceeding with further construction.
3. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use is later proposed to be converted to use for domestic purposes as defined in § 45-454, the well owner must file a Notice of Intention to Drill and comply with the requirements of § 45-596 before the well is converted and any water from that well is used for domestic purposes.
4. Within thirty days after installation of pumping equipment, the registered well owner must file a Completion Report with the Department. The person to whom a well is registered also must notify the Department of a change in ownership or a change in data relating to this well.

RECEIVED
DEC 23 1999
GROUNDWATER MGT

T. 24 R. 24 S. 12

BOOK 102-BOOK 101

MAP 36 MAP 39



RECEIVED
DEC 23 1999
GROUNDWATER NOT

BBB NW NW NW	BBA NE NW NW	BAB NW NE NW	BAA NE NE NW	ABB NW NW NE	ABA NE NW NE	AAB NW NE NE	AAA NE NE NE
BBC SW NW NW	BBD SE NW NW	BAC SW NE NW	BAD SE NE NW	ABC SW NW NE	ABD SE NW NE	AAC SW NE NE	AAD SE NE NE
BCB NW SW NW	BCA NE SW NW	BDB NW SE NW	BDA NE SE NW	ACB NW SW NE	ACA NE SW NE	ADB NW SE NE	ADA NE SE NE
BCC SW SW NW	BCD SE SW NW	BDC SW SE NW	BDD SE SE NW	ACC SW SW NE	ACD SE SW NE	ADC SW SE NE	ADD SE SE NE
CBB NW NW SW	CBA NE NW SW	CAB NW NE SW	CAA NE NE SW	DBB NW NW SE	DBA NE NW SE	DAB NW NE SE	DAA NE NE SE
CBC SW NW SW	CBD SE NW SW	CAC SW NE SW	CAD SE NE SW	DBC SW NW SE	DBD SE NW SE	DAC SW NE SE	DAD SE NE SE
CCB NW SW SW	CCA NE SW SW	CDB NW SE SW	CDA NE SE SW	DCB NW SW SE	DCA NE SW SE	DDB NW SE SE	DDA NE SE SE
CCC SW SW SW	CCD SE SW SW	CDC SW SE SW	CDD SE SE SW	DCC SW SW SE	DCD SE SW SE	DDC SW SE SE	DDD SE SE SE

41D

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Section 12

Township 24

Range 24

101-39-004D

RDWR TUCSON TEL:602-628-6759 Apr 26'99 8:43 No.001 P.03

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

December 29, 1999

JANE DEE HULL
Governor

RITA P. PEARSON
Director

KRISTINE DANIELS
PO BOX 406
BISBEE, AZ 85603

Registration No. 55-578819
File No.D(24-24) 12 CBC

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Monica Ortiz
Water Resource Technician
Groundwater Management Support Section

See attached sheet

STATE OF ARIZONA

ARIZONA WATER COMMISSION
WATER RIGHTS ADMINISTRATION

REPORT OF WELL DRILLER

This report should be prepared by the driller in all detail and filed with the Az. Water Commission following completion of the well.

1. OWNER Panagakos
Name
Address

2. Lessee or Operator
Name
Address

3. DRILLER
Name
Address

4. Location of well: Twp. 24 S Rge. 24E Section 10 SW ¼ SE ¼ SE ¼
10-acre sudivision

5. Intention to Drill File No. Permit No.

DESCRIPTION OF WELL

6. Total depth of hole ft.

7. Type of casing

8. Diameter and length of casing in. from to , in. from to , in. from to

9. Method of sealing at reduction points

10. Perforated from to , from to , from to , from to

11. Size of cuts Number of cuts per foot

12. If screen was installed: Length ft. Diam. in. Type

13. Method of construction
drilled, dug, driven, bored, jetted, etc.

14. Date started
Month Day Year

15. Date completed
Month Day Year

16. Depth to water ft.
If flowing well, so state.

17. Describe point from which depth measurements were made, and give sea-level elevation if available

18. If flowing well, state method of flow regulation

19. REMARKS:

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received by
Filed 7-17-80 by Curt
File No. D(24-24)10 ddc
35-76413

(Well Log to Appear on Reverse Side)

80-4-10



LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller.....
Name

.....
Address

Date.....

2-73

TO AVOID PAYMENT OF PENALTY AND INTEREST THIS PAYMENT MUST BE IN THE OFFICE OF THE STATE LAND DEPARTMENT ON OR BEFORE THE DUE DATE. DATE OF POSTAL STAMP NOT ACCEPTED AS DATE OF PAYMENT.

STATE OF ARIZONA
STATE LAND DEPARTMENT
1624 WEST ADAMS – 4th FLOOR – PHOENIX, ARIZONA 85007

OFFICE COPY

Alfred X. Panagakos
Lida M. Panagakos
R.R. 1,
Palestine, Illinois 62451

SECTION	TOWNSHIP	RANGE

44192

KIND ENTRY	LEASE-REFERENCE NO.
35	76413 00

	ACCOUNT NO. GRANT FUND	SUB	CARRYING CAPACITY	BILLING DESCRIPTION	RATE	ACRES	$	AMOUNT
14	312	32		Filing fee for Notice of Intention to Drill Well				3 00
				Water Rights GW				
				File # D(24-24)10 ddc		1	CK	
				Check #1507	0506		CK M	3.00+ 3.00+T
						5 03 79		

CERTIFICATE OF PURCHASE UNPAID BALANCE $	BILLING PERIOD FROM MO.	DAY	YR	TO MO.	DAY	YR	DATE BILLED MO.	DAY	YR.	DATE DUE MO.	DAY	YR.	TOTAL ACRES	TOTAL AMOUNT $
							05	03	79					3 00

IF PAYMENT IS MADE ON OR BEFORE THIS DATE → PAY THIS AMOUNT

SEE OTHER SIDE FOR LAW PERTAINING TO PENALTY AND INTEREST – A. R. S. SEC. 37-288.

RENTAL AMOUNT SUBJECT TO PENALTY AND INTEREST IF NOT PAID ON OR BEFORE DATE DUE ($)

5% PENALTY OF RENTAL AMOUNT - - - - - - - - - - - - $

TOTAL RENTAL AMOUNT PLUS PENALTY - - - - - - - - ($) TOTAL PENALTY AND INTEREST

10% INTEREST PER ANNUM OF RENTAL AMOUNT AND PENALTY – NUMBER OF DAYS DELINQUENT ( ) $ $

TOTAL AMOUNT DUE INCLUDING PENALTY AND INTEREST - - - - - - - - - - - - $

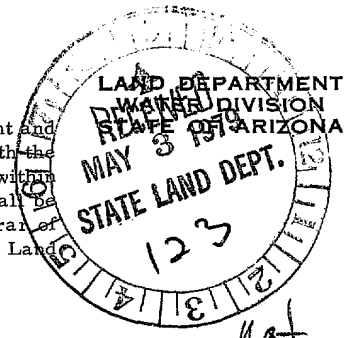
CASH RECEIVED $

BALANCE DUE OR OVERPAYMENT $

PENALTY AND INTEREST DISTRIBUTION	$

62

NOTICE OF INTENTION TO DRILL WELL



By Law, no person shall drill, or cause to be drilled, any well for the development and use of Ground Water in Arizona without first filing Notice of Intention to Drill with the State Land Department. The only exceptions are for those irrigation wells within critical Ground Water areas for which Drilling Permits are required. No well shall be drilled by other than the owner without the driller being licensed with the Registrar of Contractors. The driller's license number must be included before the State Land Department will process the filing.

FILING FEE $3.00

LOCATION OF WELL

North

West — NW¼ NE¼ — East

SW¼ SE¼ X

South

Indicate Well Location by X
(Above diagram represents one 640 acre section)

1. Twp. 24 S
2. Rge. 24 E
3. Section 10
4. SW ¼ SE ¼ SE ¼
   10-acre subdivision
5. Owner of Well Site
   ALFRED X. PANAGAKOS

INSTRUCTIONS

Fill out both copies and mail to Water Division, State Land Department, 1624 W. Adams, Phoenix, Arizona, 85007.

Duplicate will be returned to Filer, together with Drilling Card. 7641 3

DESCRIPTION OF WELL

6. Diameter 8 in. depth 200 ft.
7. Type of casing 10ga welded pipe
8. Estimated depth to water 131 ft.
9. Proposed use Household + Irrigation
10. Drilling will start about JULY 1957
    Month Year
11. Driller J. R. SHARP
    Name
    BISBEE, ARIZ.
    Address
    Driller's License No.
12. Water will be applied to use about
    JULY 1957
    Month Year
20. This notice filed by:
    Check one { Owner ☒ / Lessee ☐ / Driller ☐
    Name ALFRED X. PANAGAKOS
    Address RR1, PALESTINE, ILL. 62451

PLACE OF USE

Not State

13. Twp. 24
14. Rge. 24
15. Section 10
16.
    Legal Description of Land to be Irrigated or place of other use.
17. Acres (if irrigation) 4
18. Owner ALFRED X. PANAGAKOS
    Name
19. RR1 PALESTINE, ILL. 62451
    Address

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

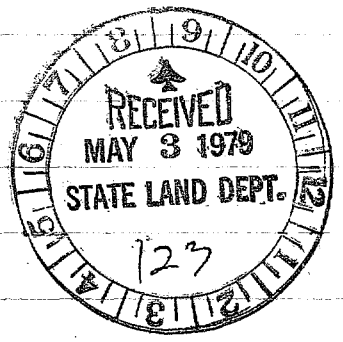
Received 5-3-79 By M
Filed 5-7-79 By M
Duplicate Mailed 5-7-79 By M
File Number D(24-24)10 ddc

4-30-79

Gentlemen;

We moved from our property in 1963 and are contemplating moving back in this a year or so. We understand that it is best that we now should have our well licensed and obtained this form from our driller, which we are now submitting.

Thank you
Sincerely,
Al. X. Panagakos
RR1
Palestine, Ill.



J. C. PUMP CO. [illegible] CONTRACTORS

File No. D(24-24)10 ddc

L O G

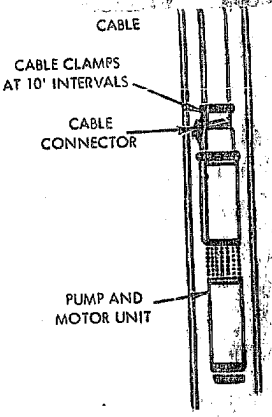
Al & Lid Panagakos Well ½ mile N.W. Bisbee Jct.

Depth	Formation
0-2	Top Soil
2-8	Red Gravelly Clay
8-80	Buff Gravelly Clay
80-100	Light Gray sandstone or Quartzite, very hard
100-144	Alternate thin bedded shale, sandstone and Conglomerate.
105	Seep of water
140-144	Increase in water in sandstone.
144-162	Hard Yellow Sandstone
162-168	Purplish brown shale
168- 203	Hard Yellow Sandstone
131	Static Water Level
204'9"	Bottom of 6 5/8" O.D. 10 ga. welded pipe.
141-200	⅜" x 6" perforations, two every two feet.

35 minute bailing test of 25 gpm showed no perceptible lowering of water table.

Well drilled in July of 1957

Quantity	Description	Price	
1	Pump Model HAM 9 H.P. 1 Voltage 230 Phase 1	332	00
200	Cable - Size 12 - 3/c .29	58	00
189	Drop Pipe - Size 1" Galv .40	75	60
1	Well Seal - Size 1" x 8"	15	00
X	Fittings Package - Size		
1	~~Pressure Tank - Size~~ Misc wiring etc	20	00
—	Lot of Discharge Pipe Nipples and Fittings	—	—
1	~~Discharge Pipe - Size~~ 1" T, Reid, 1¼ x 1 25 bush	2	99
	~~Slip Coupling~~	—	
1	~~Gate Valve~~ Lightning Arrestor	7	20
1	Splice kit	3	00
	OPTIONAL EQUIPMENT		
	Contactor (required with low water cut-out on 1 phase pumps larger than 1 H.P.)		
	Safety Switch 30 p.s.i. 3-55 + 35 = 1"	26	16
	Low Water Cut-Out Switch (includes wire and electrodes)	—	—
	Gate Valve and Pipe Nipple - Size (for tank outlet)		
1	HTH	3	50
		550	95



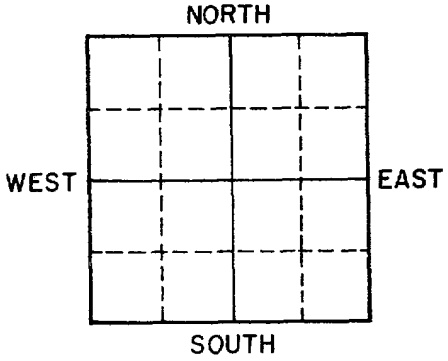
wired through control
[illegible]
Pressure [illegible]


RECEIVED
JUL 3 1980
ARIZONA WATER
COMMISSION

see attached sheet

ARIZONA WATER COMMISSION
WATER RIGHTS ADMINISTRATION
222 NORTH CENTRAL, SUITE 850
PHOENIX, ARIZONA 85004

Location of Well



(Indicate Well Location by a circle "o" in the above Section Plat)

File No. D(24-24)10 ddc
35-76413

REPORT OF EQUIPMENT INSTALLED

OWNER Panagakos

LOCATION OF WELL:

SW ¼ SE ¼ SE ¼, Sec. 10 Twp. 24S Rge. 24E

Date Well Completed: July 1957 Depth 200 ft

1. Well Test:

Discharge: _____ Date Well Tested: _____
(Gal. Per Min.)

Method of Discharge Measurement: _____
(weir, orifice, current meter, etc.)

Static Water Level: _____ ft. Drawdown _____ ft.

Total Pumping Lift _____ ft.

2. Equipment Installed:

Kind of Pump: _____
(turbine, centrifugal, etc.)

Kind of Power: _____ H.P. Rating of Motor _____
(Elec., Nat. Gas, Etc.)

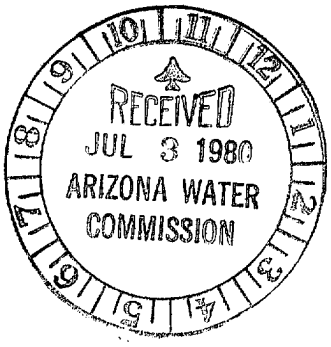
I HEREBY CERTIFY that all the above statements are true to the best of my knowledge and belief.

Alfred X. Panagakos
Signature

Date 6-25, 1980.

325 - Purdy Lane Pt 1
Address
Bisbee, Az - 85603

35-80-10


RECEIVED
JUL 3 1980
ARIZONA WATER
COMMISSION

KEL FOX, CH.
JOHN L. LEIBER, V. CH.
WESLEY E. STEINER
EXECUTIVE DIRECTOR
AND
STATE WATER ENGINEER
VICKIE MOONEY
SECRETARY

DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
222 North Central, Suite 850
Telephone (602) 255-1581

MEMBERS
PETER F. BIANCO
MARYBETH CARLILE
GLEN G. CURTIS
W. N. JACK SHAWVER
J. C. WETZLER
EXOFFICIO MEMBERS
JOE T. FALLINI
MARSHALL HUMPHREY

JUN 26 1980

76413 D-240-240-10DDCGS2 05-9

PANAGAKOS
RR 1
PALESTINE A X IL 62451

Re: Drilling of Well

Gentlemen:

Water Rights Administration, Department of Water Resources, is engaged in the process of bringing its well files up to date. These files indicate that a drilling card to drill a well was issued to you under file number as stated on address label, a year ago, and that the well has not been reported as completed.

Arizona Revised Statutes 45-596, 45-599, and 45-600 deal with Drilling of Wells and Filing of Log and Completion Report by the Driller.

Critical information included in these statutes requires that:

1. A well must be completed within one year of filing. If the well is not completed within one year, a new filing shall be made before proceeding with further construction.

2. Upon completion of drilling, a copy of the Well Driller Report shall be filed by the Driller with this Department within 30 days of completion of drilling.

3. Within 30 days after installation of pumping equipment, a Completion Report (Equipment Installed) shall be filed with this Department.

In the event the referenced well has been completed, please forward the Well Drillers and Completion Report of Equipment Installed to this Department within 30 days.

If no response is forthcoming, we will assume that the well is not completed and the related file retired as cancelled.

Yours very truly,

DEPARTMENT OF WATER RESOURCES

By: Richard A. Gessner
Richard A. Gessner, Chief
Records Section

BRUCE BABBITT
GOVERNOR

Arizona
State Land Department

1624 WEST ADAMS
PHOENIX, ARIZONA 85007
602 - 255 - 4634

OFFICE OF
STATE LAND COMMISSIONER

John M. Little
Acting

May 7, 1979

Mr. Alfred Panagakos
R.R. 1
Palestine, Illinois 62451

File No. D(24-24)10 ddc D & A
35-76413

Dear Sir:

This copy of Notice of Intention to Drill Well in Twp. 24 S, Rge. 24 E, Section 10, SW $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$, is returned to you for your file. Also enclosed are:

_____ WELL DRILLING CARD, which should be in the hands of
X the driller before construction of the well is started;

_____ REPORT OF WELL DRILLER form, which may be filled
X in by the driller but which you should make sure is mailed to us after completion of the well;

_____ REPORT OF EQUIPMENT INSTALLED form, which shall
X be filled in by you and sent to us after the installation of the pumping equipment;

_____ DIAGRAMS of recommended cement grout seal and pump installation, supplied by the Department of Health.

In the event it is necessary to change the location of the proposed well, you should obtain the written permission of the State Land Commissioner before proceeding with the drilling.

Very truly yours,

State Land Commissioner

By:

F. C. Ryan, Director
Water Rights Division

mm

21-72

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004
WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

RECEIVED
NOV 15 1999
RECORDS MGT

1. TANNER WELL SERVICE
7914 NORTH FRONTIER ROAD
MCNEAL, AZ 85617-9718

2. Owner Name: STEVE A. PARRA
Address: PO BOX 5363 BISBEE, AZ. 85603
City State Zip

3. Location: 24 ☒S 24 E/☐W 5 ¼ NW ¼ NW ¼ SE
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55- 576415 (Required)
5. Permit No. N/A (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 355 ft.
7. Type of casing STEEL + PVC
8. Diameter and length of casing 6 in. from -1 to 125'45 in from 115' to 355'
9. Method of sealing at reduction points 10' OVER LAP
10. Perforated from 255' to 355', from ____ to ____ from ____ to ____
11. Size of cuts 1/8" x 6" Number of cuts per foot 3
12. If screen was installed: Length N/A ft. Diam ____ in. Type ____
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started 9-23-99
Month Day Year
15. Date completed 10-6-99
Month Day Year
16. Depth to water 263 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
FROM GROUND LEVEL
18. If flowing well, state method of flow regulation: N/A

19. Remarks: ____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-576415
File No. D(24-24) 5 DBB
Received ____ By ____
Entered ____ By ____

DWR-55-55-7/95 (Rev.)

ENTERED NOV 15 1999

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	15	CONGLOMERATE
15	275	ROCK + BROWN CLAY
275	278	GRAVEL (HIT WATER 275' - ROSE TO 263')
278	340	ROCK + CLAY
340	350	SAND + GRAVEL
350	355	ROCK + CLAY

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: TANNER WELL SERVICE

7914 NORTH FRONTIER ROAD

Street

MCNEAL, AZ 85617-9718 520-642-3654

City State Zip Phone No.

Robert L Tanner 10-7-99

Signature of Driller Date

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-576414

AUTHORIZED DRILLER: SANTA CRUZ WELL & PUMP COMPANY LICENSE NO: 121

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: VIRGINIA MIRANDA 1560 SOUTH 8TH TUCSON, AZ 85713

The well(s) is/are to be located in the:

SE 1/4 of the SE 1/4 of the SW 1/4 Section 25 Township 21 SOUTH Range 10 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 21ST DAY OF JULY, 2000.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

RECEIVED
JUL 22 1999
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ (602)417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. STEVE A. PARRA (LANDOWNER'S NAME) P.O. Box 5363 (CURRENT MAILING ADDRESS) BISBEE (CITY) AZ. (STATE) 85603 (ZIP)

B. TELEPHONE NO. 520-432-7432 COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN COCHISE COUNTY D. 102 (BOOK) - 39 (MAP) - 013 (PARCEL) E. 1.05 (# OF ACRES)

OFFICIAL SEAL OR STAMP
C.C.H.S.S.
1415 W. Melody Lane, Bldg. A
Bisbee, Arizona 85603-3090

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NW ¼ (10AC) NW ¼ (40AC) SE ¼ (160AC) OF SECTION 5 TOWNSHIP 24 ☒ N/S RANGE 24 ☒ E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL ✓; INSUFFICIENT INFORMATION TO MAKE DETERMINATION _____; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE 7-19-99 AUTHORIZED SIGNATURE Steve Herbert TITLE Envir. Health Spec.

1. OWNER OF WELL:
STEVE A. PARRA
NAME
P.O. BOX 5363
CURRENT MAILING ADDRESS
BISBEE, AZ. 85603
CITY STATE ZIP
TELEPHONE NUMBER 520-432-7432

2. ACTION REQUESTED:
DRILL NEW WELL X DEEPEN _____
MODIFY _____ REPLACE _____

WELL REGISTRATION NO 55-_____

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL _____ GALLONS PER MINUTE;

DISTANCE FROM THE ORIGINAL WELL: _____ FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH AUGUST YEAR 1999

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: STEEL
DIAMETER: 6 " DEPTH: 20 '

DOWNHOLE CASING: PVC
DIAMETER: 6 " DEPTH: 400 '

5. DESIGN PUMP CAPACITY:
25 GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
NONE
NAME
CURRENT MAILING ADDRESS
CITY STATE ZIP
TELEPHONE: _____

7. PRINCIPLE USE OF WATER: (BE SPECIFIC)
DOMESTIC

8. OTHER USES OF WATER: (BE SPECIFIC).
NONE

9. IF USE INCLUDES IRRIGATION, STATE TO NEAREST TENTH, THE NUMBER OF ACRES TO BE IRRIGATED: 0

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55- 576415
DATE FILED 7/22/99
FILE NO. D(24-24)5 DBB
AMA/INA —
W/S 11 S/B —
PROCESSED BY bjo
DATE MAILED 7/27/99
bjo

10. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NW ¼ (10AC) NW ¼ (40AC) SE ¼ (160AC) SECTION 5
TWNSHP 24 ☒ N/S RNG 24 ☒ E/W

11. TYPE OF WELL (CHECK ONE):
EXEMPT X NON-EXEMPT _____

12. CHECK ONE:
RESIDENTIAL X COMMERCIAL _____

13. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES _____ NO X

14. DRILLING FIRM:
TANNER WELL SERVICE
NAME
29141 N. FRONTIER RD.
MAILING ADDRESS
McNEAL, AZ. 85617
CITY STATE ZIP
(520) 642-3654
TELEPHONE NO.
133
DWR LICENSE NUMBER
C-53
ROC LICENSE CATEGORY

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

STEVE A. PARRA	Steve A. Parra	7-15-99
15. TYPE OR PRINT NAME AND TITLE	16. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE	17. DATE

DWR 55-40 (REV 1/99)

APPLICATION GUIDELINES

In accordance with Arizona Revise Statutes ("A.R.S.") §§ 41-1008 and 1079, the Department of Water Resources (Department) provides the following information regarding the application review process for authority to drill.

NECESSARY STEPS & INSTRUCTIONS TO OBTAIN DRILLING AUTHORITY

1. Pursuant to A.R.S. § 45-596, a person may not drill, cause to be drilled, deepen or modify any well for which a permit is not required without first filing a Notice of Intent to Drill with the Department. Only a well drilling contractor licensed in the State of Arizona or a single well licensee (a person licensed to drill or modify one exempt well on his or her own property) is authorized to drill, deepen or modify a well. Drilling may not begin until the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, and which authorizes the drilling of the specific well in a specific location. To assist you in understanding the requirements for this application, copies of A.R.S. § 45-596 and Arizona Administrative Code ("A.A.C.") R12-15-810 are available at the Department bookstore (602-417-2450 x7127).
2. If replacing, deepening or modifying an existing well, provide the registration number of the existing well in item 2. A replacement well is one located no more than 660 feet from the original well and that is not expected to annually withdraw more groundwater than historically withdrawn from the original well.
3. Information to complete items 3, 4, 5 and 14 may be available from your driller.
4. Information to complete items 10 and 13 may be available from your County Assessor's Office.
5. An exempt well, referred to in Item 11, means a well with a pump with a maximum capacity of not more than thirty-five gallons per minute used primarily for domestic purposes, including the noncommercial irrigation of less than two acres of land.
6. If any water from a proposed well on a parcel of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant must submit a well site plan of the property. The plan must be on an 8½" x 11" piece of plain paper with representation of the locations of all structures and proximity of adjacent lot lines, to scale. It must include the county assessor's parcel identification number. The plan must show the proposed well location and the location of any septic tank or sewer system that is either located on the property or within one hundred feet of the proposed well site, as well as indicating the measured shortest distance between the proposed well and existing septic tank system. **The plan must demonstrate that the well will not be drilled within one hundred feet of any septic or sewer system.**
7. The site plan must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Endorsement by the county/local authority is based solely on the best available judgement that the proposed well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. In areas where there is no local or county authority that controls installation of septic tanks or sewer systems, or if the health authority is unable to determine whether the proposed well location complies with state and local requirements, the applicant must apply for approval directly to the Department of Water Resources.
8. If an individual other than the land owner or lessee signs this notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific notice on his or her behalf, must accompany the notice.
9. Please mail **two original Notices** with **original signatures** and **two site plans** and, in accordance with A.R.S. § 45-113, a **check or money order (no cash) in the amount of $10.00** to P. O. Box 458, Phoenix Arizona, 85001-0458, or hand deliver to 500 North Third Street, Phoenix, Arizona.
10. Arizona Revised Statute § 45-596(D) provides that the Director of the Department is to determine whether or not all information required on this form has been submitted. If not, the person filing the Notice will be notified, and the drilling or modification of the well may **not** proceed.
11. This form is not applicable for non-exempt wells (those yielding more than thirty-five gallons per minute) within an Active Management Area. Contact Groundwater Management for further information regarding the appropriate notice to file with the Department.

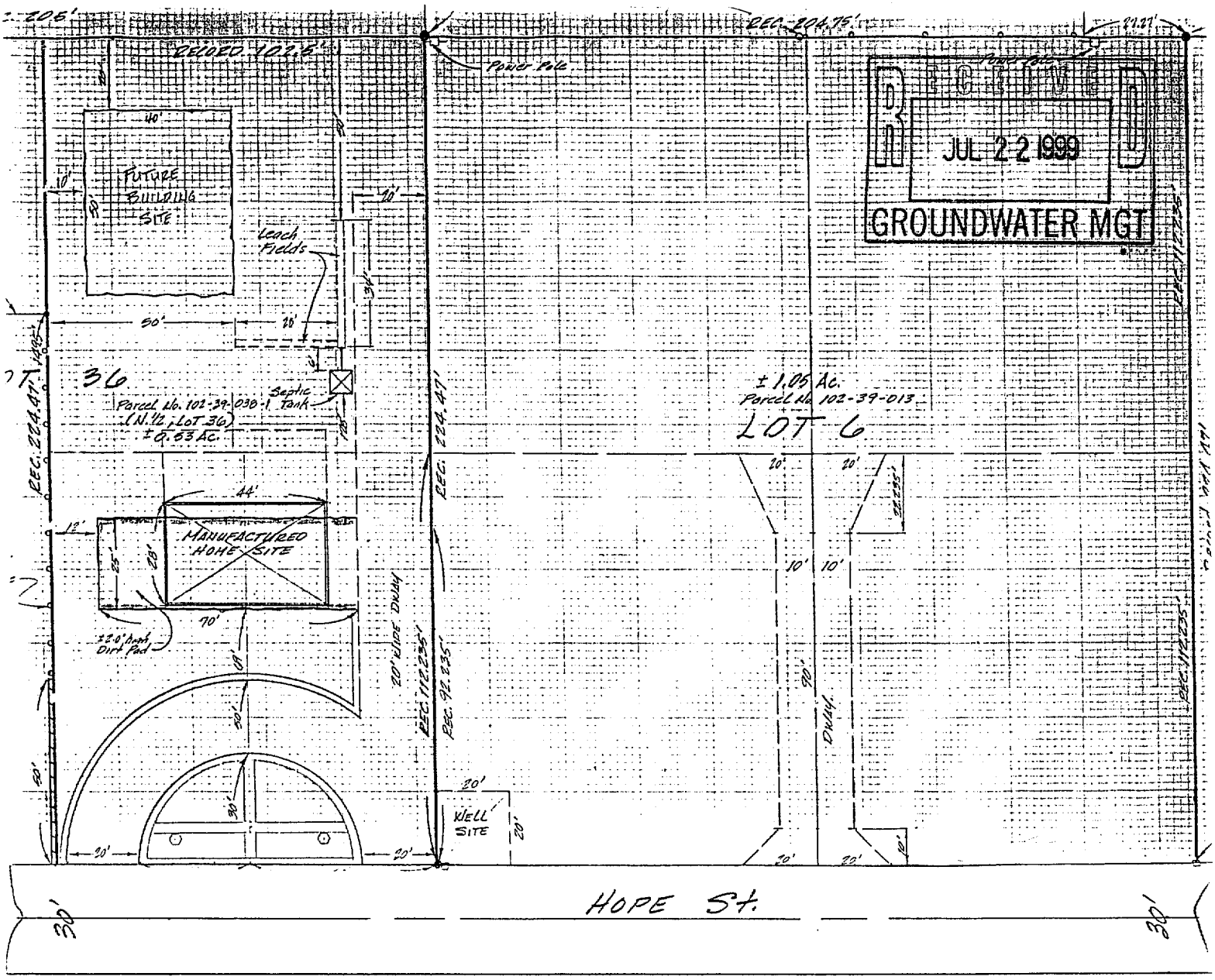
TIME FRAME FOR REVIEW OF YOUR APPLICATION

Within 15 days after receipt of your Notice of Intention, the Arizona Department of Water Resources ("Department") will determine whether your application should be granted or denied, unless this time is extended for lack of a complete application. If your application is incomplete, the Department will notify you in writing and will specify what information is necessary to make the application complete. Until the missing information is received, the time frame for review of your application will be suspended. Your application will not be complete until all of the requested information is received. If you do not supply the missing information within sixty (60) days, the Department may deem your application withdrawn and close the file.

At the end of its review, the Department will send you written notice either granting or denying your application for drilling authority. If your application is approved, the Drill Card will be mailed directly to the drilling company. If denied, the Department's notice will state justification for the denial and an explanation of your right to appeal.

CONSTRUCTION AND FOLLOW UP REQUIREMENTS

1. Construction and abandonment standards for wells, including abandonment, must be in accordance with Department Regulations. A.R.S. § 45-594 and Arizona Administrative Code R12-15-811 require the well to be constructed with a twenty foot steel surface seal casing, including a one foot steel stickup and one and one-half inches of grout seal, unless a variance is granted **(see A.R.S. § 45-596 (G) for procedure to follow in requesting a variance).**
2. Pursuant to § 45-596(E), the drilling, deepening or modification of the well must be completed within one year of the date of the Notice of Intent. If the well is not completed within one year, a new Notice of Intent must be filed before proceeding with further construction.
3. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use is later proposed to be converted to use for domestic purposes as defined in § 45-454, the well owner must file a Notice of Intention to Drill and comply with the requirements of § 45-596 before the well is converted and any water from that well is used for domestic purposes.
4. Within thirty days after installation of pumping equipment, the registered well owner must file a Completion Report with the Department. The person to whom a well is registered also must notify the Department of a change in ownership or a change in data relating to this well.



Site Plan of the N ½ of Lot 36 & Lot 6 of the Sunset Acres Subd. Located in the N.W. ¼, S.E. ¼ of Section 5, T. 24 S., R. 24 E., G. & S.R.M.

DRAWN BY: S. A. PARRA DATE: 7-14-99

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

July 27, 1999

JANE DEE HULL
Governor

RITA P. PEARSON
Director

STEVE A PARRA
P O BOX 5363
BISBEE, AZ 85603

Registration No. 55-576415
File No.D(24-24) 5 DBB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Barbara Sims

Barbara Sims
Water Resource Technician
Groundwater Management Support Section

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 9 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL – $10.00	☒

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 613395
FILE NO. D(24-24)18aaa
FILED 6-9-82 (DATE) AT 4 (TIME)
INA —
AMA —

1. Name of Registrant:
Shamrell, Richard
Box 4055 (Address) Bisbee (City) Az. (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ NE ¼ NE ¼, Section 18, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
irrigation.

5. If for irrigation use, number of acres irrigated from well 15.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 300 feet
b. Diameter of casing 6 inches
c. Depth of casing 300 feet
d. Type of casing steel .
e. Maximum pump capacity 200 gallons per minute.
f. Depth to water n/a feet below land surface.
g. Date well completed _____ (Month) _____ (Day) 1964 (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒.
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
Attach additional sheet if necessary.

9. DATE 6/3/82 SIGNATURE OF REGISTRANT Richard Shamrell By Wilford R. Richardson
Wilford R. Richardson, Attorney

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

JUN 11 1991

STATE OF ARIZONA } ss.
COUNTY OF COCHISE }

I hereby certify that the within instrument was filed and recorded in bo[illegible] at the request of

FEE # 910611234
OFFICIAL RECORDS
COCHISE COUNTY
DATE HOUR
06/11/91 8

FIDELITY NATIONAL TITLE
CHRISTINE RHODES-RECORDER
FEE : 12.00 PAGES : 3

Fee No.

Compared

Photostated

Fee:

For Tax Purposes:
102-56-038-0

When recorded, mail to:
Clarke and Patricia Raymond
3330 E. OAKHILL
SIERRA VISTA, AZ
85635

30-021;290-MH

Warranty Deed

For the consideration of Ten Dollars, and other valuable considerations, I or we,

CAROLINE RITA SHAMRELL; an unmarried woman; TIMOTHY J. SHAMRELL AND ANITA M. SHAMRELL; Husband and Wife

do hereby convey to

CLARKE RAYMOND AND PATRICIA B. RAYMOND, Husband and Wife, as Joint Tenants with the Right of Survivorship, as to an Und. 1/2 interest and LOREN F. BREWER AND JESSIE A.*

the following real property in Cochise County, Arizona

THE NORTH HALF OF THE NORTHEAST QUARTER OF THE NORTHEAST QUARTER OF SECTION 18, TOWNSHIP 24 SOUTH; RANGE 24 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, COCHISE COUNTY; ARIZONA.

EXCEPT THE EAST 330.00 FEET THEREOF.

*BREWER, Husband and Wife, as Joint Tenants with the Right of Survivorship, as to an undivided one-half interest.

JUL 1991

MICROFILMED

SUBJECT TO: Current taxes, assessments, reservations in patents and all easements, rights of way, encumbrances, liens, covenants, conditions and restrictions as may appear of record.

And I or we do warrant the title against all persons whomsoever subject to the matters above set forth.

Dated this 4th day of June, 1991

Caroline Rita Shamrell
CAROLINE RITA SHAMRELL

Timothy J. Shamrell
TIMOTHY J. SHAMRELL

Anita M. Shamrell
ANITA M. SHAMRELL

STATE OF ARIZONA
County of ~~COCHISE~~ Pima

This instrument was acknowledged before me this 6th day of June, 1991 by Caroline Rita Shamrell

Caroline Hite
Notary Public

My commission will expire My Commission Expires March 31, 1995

STATE OF Arizona
County of Pima

This instrument was acknowledged before me this 6th day of June, 1991 by Timothy J. Shamrell and Anita M. Shamrell

Caroline Hite
Notary Public

My commission will expire My Commission Expires March 31, 1995

COURTESY OF

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

OK

MAY 18 1992

CHANGE OF WELL INFORMATION

Well Registration No. 55- 613395 File No. D(24-24)18 AAA
(location)

I/We request the following well information be ~~changed.~~ RECORDED:
ONE QUARTER (1/4) INTEREST TRANSFERED TO
LOREN AND JESSIE BREWER, P.O. BOX 399
BIG TIMBER, MONTANA 59011

Date: 5/9/92 Signatures of Current Well Owners Clarke Raymond
Patricia B. Raymond

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

Patricia B. &
WE CLARKE RAYMOND, state that ~~I am~~ We are NOW ~~(no longer)~~ the 3/4 ~~(now)~~
(please print)
owners of the well described below:

____ ¼ ____ ¼ ____ ¼; Section ____ Township ____ Range ____
10 acre 40 acre 160 acre

Well Registration No.55- 613395 File No. D(24-24)18 AAA
(location)

Patricia B.
& CLARKE RAYMOND
PRINT ~~Previous~~ Present Owner's Names (3/4 interest)

LOREN AND JESSIE BREWER
PRINT New Owner's Name 1/4 INTEREST

P.O. BOX 1010
Address

P.O. BOX 399
Address

NACO | AZ. | 85620
City State Zip

BIG TIMBER | MT. | 59011
City State Zip

Dated 5-15-92 Signature of ~~New~~ PARTIAL Owner Lorin Brewer & Jessie G. Brewer

ENTERED MAY 28 1992

NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

DWR-55-71-11/90

D(24-24)18 AAA

Clarke Raymond
~~Sheridan, Montana 59749~~
Box 1010 NACO, Az. 85620

5/1/92

Arizona Dept. of Water Resources
Operations Division
15 S. 15th Ave.
Phoenix, Az. 85007

Sirs —

Herewith report the Transfer of a one-Quarter (1/4) interest in Well Registration # 55-WR-613395, File # D 24S - 24E, Section 18 AAA To LOREN and Jessie BREWER, Box 399, Big Timber, Montana 59011.

Clarke Raymond
Patricia B. Raymond } Dated — May 1, 1992

MICROFILMED

RECEIVED
MAY - 4 1992
OPERATIONS DIV.

ENTERED MAY 12 1992

OK

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

JUL 17 1991

CHANGE OF WELL INFORMATION

Well Registration No. 55- WR-613395 File No. D 24-24 18AAA (location)

I/We request the following well information be changed: _____

Date: 7/5/91 Signature of Current Well Owner Caroline R Shamrell
~~Clarke Raymond~~

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

WE, CLARKE & PATRICIA RAYMOND (please print), state that ~~I am~~ WE ARE (~~no longer~~) the (new) owners of the well described below:

Township 24S Range 24E Section 18 ; NE ¼ NE ¼ NE ¼

Well Registration No.55- WR 613395 File No. D 24-24 18AAA (location)

CAROLINE RITA SHAMRELL
PRINT Previous Owner's Name

CLARKE & PATRICIA RAYMOND
PRINT New Owner's Name

Box 4055
Address

3330 E. OAK HILL ST.
Address

BISBEE AZ 85603
City State Zip

SIERRA VISTA AZ. 85635
City State Zip

Dated: 7/3/'91 Signature of New Owner Clarke Raymond
Patricia B. Raymond

MICROFILMED

ENTERED JUL 17 1991

NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

DWR-55-71-3/90

Richardson and Mortensen
Box 247
Safford, AZ 85546

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	613366
	THRU
55	613381

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Fifteen (15) non exempt filing fees for Well registrations		150.00
					James Bingham D(17-21) 31 daa / Gary D. Curtis D(6-25) 36aba		
					~~James Bingham D (17-21) 31 daa~~ / ~~Gary D. Curtis D(6-25)25 dcc~~		
					Bowman D(18-21) 5caa / Milton D. Curtis D(18-21)33 aad		
					~~Bowman D(18-21) 5caa~~ / ~~Milton D. Curtis D(18-21) 33 aad~~		
					Gary D. Curtis D(6-25) 25cdd / Ernest H. Dykes D(11-18)3dcd		
					~~Gary D. Curtis D(6-25) 25dcd~~ / ~~Judith H. Dykes D(11-18)3dcb~~		
					Gary D. Curtis D(6-25)25dcb / Acel East D(16-20)27 dcc		
					~~Mt.Graham Comm.HospD(7-25)13 dad~~ / Richard Shamrell D(24-24) 18aaa		

WRITER	PAYMENT
GUESTS	15
CHK NO	3372
15@	10.00
55-I	150.00
TAX	0.00
TOTL	150.00
GEN.CHEK	150.00

~~# 603 A 15:10~~

Three checks TOTAL $ 150.00

$90.00 #3372 Richardson & Mortensen
$50.00 #970 Gary Curtis
$10.00 #1476 Acel W. East

MICROFILMED

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

STATE OF ARIZONA

DEPARTMENT OF
WATER RESOURCES

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner John W. Pool
Name
P.O. Box 4051 Bisbee, AZ 85603
Address

2. ~~Lessee or Operator~~
Name
J.R. SHARP GENERAL CONTRACTORS
BOX 4520 322 NACO HWY.
BISBEE, ARIZ. 85603 432-4597
Address

3. Driller
Name
J.R. SHARP GENERAL CONTRACTORS
BOX 4520 322 NACO HWY.
BISBEE, ARIZ. 85603 432-4597
Address

4. Location of well: NW SW NW S7 T24S R24E

5. Permit No. (if issued) _____

DESCRIPTION OF WELL

6. Total depth of hole 313'2" ft.
7. Type of Casing P.E. Steel 5 9/16 O.D. x .188
8. Diameter and length of casing 6 in. from 0 to 22, 5 9/16 in from 0 to 313.
9. Method of sealing at reduction points ✓
10. Perforated from 213 to 300, from _____ to _____, from _____ to _____
11. Size of cuts 1/4 x 6" Number of cuts per foot 2
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction _____ (drilled), dug, driven, bored, jetted, etc.
14. Date started 12-8-84 (Month-day-year)
15. Date completed 12-12-84 (Month-day-year)
16. Depth to water 174 ft. (If flowing well, so state.)
17. Describe point from which depth measurements were made, and give sea-level elevation if available.: Top of Casing
18. If flowing well, state method of flow regulation _____
19. REMARKS: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55-509518
Received _____ By _____
Entered 12-24-84 By AG
File No. D(24-24)7bcb

(Well log to appear on Reverse side)

RECEIVED
DEC 19 1984
DEPT. OF
WATER RESOURCES

DWR-55-6-5/83

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	313	Recent conglomerate with varying amounts of gravel and boulders.
0	22	6 5/8 O.D. x .188 P.E. Steel, grouted.
0	313	5 9/16 O.D. x .188 P.E. Steel
213	300	Perforated 2 1/4 x 6 slots per foot.
	174	Standing water level.

I hereby certify that this well was drilled by me (or under my supervison), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller J. R. Sharp
Name

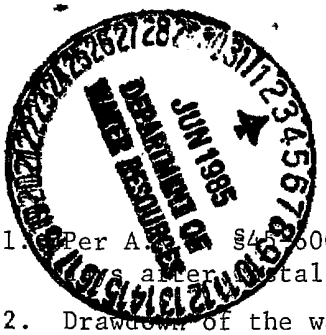
J. R. SHARP GENERAL CONTRACTORS
BOX 4520 322 NACO HWY.
BISBEE, ARIZ. 85603 432-4597

J. R. SHARP GENERAL CONTRACTORS
BOX 4520 322 NACO HWY.
BISBEE, ARIZ. 85603 432-4597
Address

City State Zip

Date 12-14-84

DEPARTMENT OF WATER RESOURCES
99 East Virginia
Phoenix, Arizona 85004



Registration No. 55-509518
Owner of Well Site POOL
File No. D(24-24)7bcb

COMPLETION REPORT

1. Per A.R.S. §45-600, the Completion Report to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24S	24E	7	NW ¼ SW ¼ NW ¼
Township	Range	Section	

EQUIPMENT INSTALLED:

Kind of pump Submersible
Turbine, centrifugal, etc.

Kind of power Electric
Electric, natural gas, gasoline, etc.

H.P. Rating of Motor 3

Pumping Capacity 30 Gallons per minute

Date installed 3-6-85

WELL TEST:

Test pumping capacity 30 Gallons per minute

Date Well Tested 3-6-85

Method of Discharge Measurement Volume
Weir, orifice, current meter, etc.

Static Groundwater Level 174 ft. Drawdown ? ft.

Total Pumping Lift _____ ft. Drawdown _____ lbs
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

5-15-, 1985
DATE

J. R. Sharp
Signature

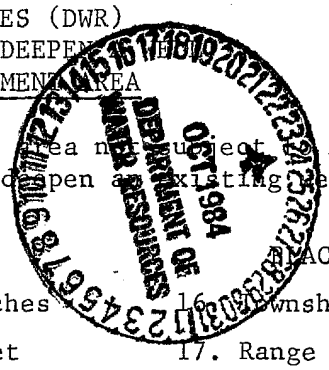
J. R. SHARP GENERAL CONTRACTORS
Address BOX 4520 322 NACO HWY.
BISBEE, ARIZ. 85603 432-4597

City State Zip

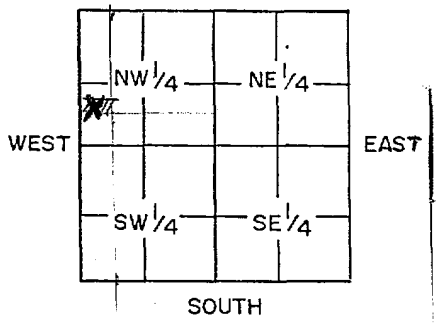
DWR-55-7-3/84

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL OR DEEPEN
OUTSIDE OF AN ACTIVE MANAGEMENT AREA



Section 45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management, a person may not drill or cause to be drilled any well or deepen an existing well without first filing a Notice of Intention to Drill with the Department.



INDICATE WELL LOCATION BY X
(Above diagram represents one 640 acre section)

WELL/LAND LOCATION:

1. Township 24S
2. Range 24E
3. Section 7
4. NW¼, SW¼, NW¼
   10 acre subdivision
5. County Cochise
6. Owner of well:
   John W Pool
   Name
   P.O.Box 4051
   Address
   Bisbee, AZ 85603
   City State Zip
   Telephone 432-2388
7. Owner of land:
   Same
   Name
   Address
   City State Zip

DESCRIPTION OF WELL:

8. Diameter 5 inches
   Depth 250 feet
9. Type of casing P.E.Steel
10. Design pump capacity:
    35 gallons per minute
11. Estimate of total annual pumping: 1 acre feet
12. Principal use of water:
    Domestic
    (Be Specific)
13. Other uses intended:
    None
    (Be Specific)
14. If for irrigation, state the number of acres to be irrigated:
    ✓ acres
15. Construction will start about:
    Dec. 84
    Month Year

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
FILE NO. D(24-24) 7bcb
FILED 10-24-84 BY sk
INPUT 10-24-84 BY
DUPLICATE MAILED 10-24-84 BY sk
REGISTRATION NO. 55-509518
INA
W/S 11 S/B

PLACE OF USE:

16. Township 24S
17. Range 24E
18. Section 7
19. Legal description of land S½ NW¼ SW¼ NW¼
20. Type well:
    ✓ Exempt
    ___ Non-Exempt
21. Action Requested:
    Drill ✓ Deepen Replace
    55-
22. This notice filed by:
    Owner ✓
    Lessee
    See #6
    Name
    Address
    City State Zip
    Telephone
23. Driller's Name:
    J.R. Sharp Gen. Contrs
    Name
    P.O.Box 4520
    Address
    Bisbee, AZ 85603
    City State Zip
    155 27262
    DWR License Number

GENERAL INSTRUCTIONS

1. Fill out this form in duplicate and send to 99 East Virginia, Suite 100, Phoenix, Az. 85004.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen or replace a well outside of an Active Management Area
4. If the well is a replacement or deepening of an existing well, state the registration number of the existing well in Item 21.
5. Construction standards for new and replacement wells and the deepening and abandonment of existing wells shall be in accordance with Department Rules and Regulations.

I state that this Notice is filed in compliance with ARS §45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well set forth on the reverse side of this form.

DATE 10-23-84 Signature of Person Filing John W Pool

DWR-55-41-10/83

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Upon receipt of the return of this annotated Notice, the owner is authorized to proceed in drilling or deepening the well as set forth on this Notice.

2. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

3. Only one exempt well may be drilled or used to serve the same use at the same location.

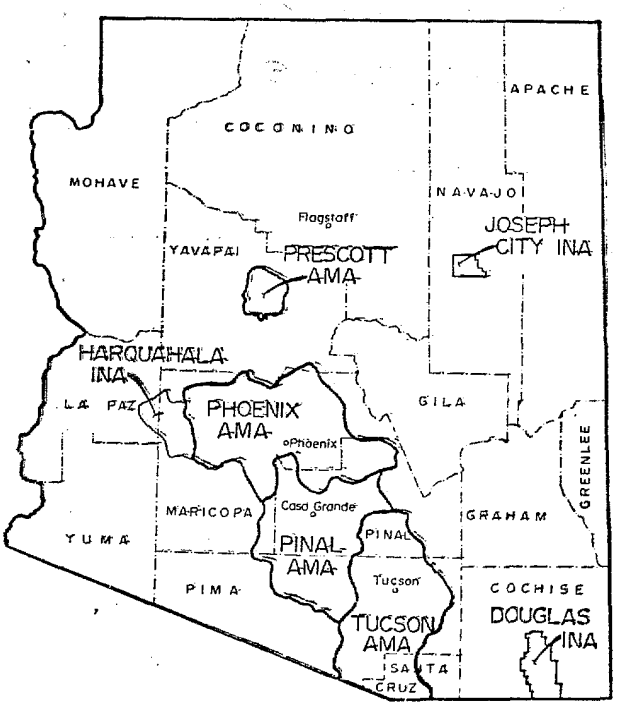
4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 2 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to ARS §45-434 or §45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of ARS §45-437.

5. The drilling or deepening of this well shall be completed within one (1) year of the date of this Notice.

6. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

7. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of the annotated copy of this Notice.

8. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.



¼ NW ¼ SW ¼ NW ¼ S

J R SHARP GENERAL CONTRACTORS
P O BOX 4520
BISBEE AZ 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	509518
	THRU

POOL

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEE FOR NOTICE OF INTENTION		10.00
					TO DRILL AN EXEMPT WELL	WRITER	PAYMENT
						~~SUCSTS~~	1
						CHK NO	10047
						55-I	10.00
						TAX	0.00
					FILE#D(24-24)7bcb Reg#55-509518	TOTL	10.00
						GEN.CHEK	10.00
						# 3278 A	12:13

CHECK#10047 10/24/84/ek

TOTAL $ 10.00

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 771-8500 • (800) 352-8488
(602) 771-8691 fax • www.azwater.gov

RECEIVED
SEP 7 - 2007
WATER MGMT

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

PAID 8-2-07 RCL #2010

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA	B	SB	FILE NUMBER
—	76		DC24-24218CCB
RECEIVED DATE: 9-7-07	WS: 11		WELL REGISTRATION NUMBER: 55-216425
ISSUED DATE: 9-10-07	WQARF	CERCLA	

CB

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

- [X] County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
  - [X] Field Inspection Performed
  - [ ] Site Plan Review Only
- [ ] Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ RS.

TELEPHONE NUMBER: 520-432-9442

DATE: Sept 5, 2007

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE Sept 5, 2007
BY Carlos Diaz R.S.

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz R.S.

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

- [X] Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)
- [ ] Non-Exempt (Pump has a maximum capacity of more than 35 gpm and the well is located outside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 20 Gallons Per Minute

Proposed Action

CHECK ONE

- [X] Drill New Well
- [ ] Deepen
- [ ] Replace
- [ ] Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 -

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY): 3710 Hillman

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	18	SW ¼	SW ¼	NW ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
102	57	183	.849 2±A

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Roberto + AIDA RAMIREZ

MAILING ADDRESS: PO Box 362

CITY / STATE / ZIP CODE: Naco Az 85620-0362

CONTACT PERSON NAME AND TITLE: AIDA RAMIREZ

TELEPHONE NUMBER: 520 432 7356

FAX:

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL:

MAILING ADDRESS:

CITY / STATE / ZIP CODE:

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER:

FAX:

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well (e.g., Lot 35 Well, Smith Well, etc.)?		X	PLEASE STATE
3. Is the proposed well a NEW well to be located within an Active Management Area? *(See instructions)*		X	Unless the well is a replacement well and the total number of operable exempt wells on the land is not increasing, you must also file a supplemental form A.R.S. § 45-454(C) & (D).
4. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

RECEIVED

SEP 7 - 2007

WATER MGMT

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 216425

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: Bradly Deming

DWR LICENSE NUMBER: 736

ROC LICENSE CATEGORY: C-53

TELEPHONE NUMBER: 520 456 2355

FAX:

MAILING ADDRESS: PO Box 4707

CITY / STATE / ZIP CODE: Huachuca City AZ 85616

DATE CONSTRUCTION IS TO BEGIN: Aug 2007

SECTION 6. WATER USE SITE INFORMATION

Principal Use of Water (CHECK ONE)	*Other Uses* of Water (CHECK ALL THAT APPLY)
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☒ Domestic	☐ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify)*:	☐ Other *(please specify)*:

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

Borehole			Casing														
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (T)				PERFORATION TYPE (T)							
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	20	12 1/4	0	20	8 5/8	X*				X						Cement
20	300	8"	10	250	6		X			X						
			250	300	6		X							X		

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: Aida Ramirez

SIGNATURE OF WELL OWNER: Aida Ramirez — DATE: 7-30-07

SIGNATURE OF LANDOWNER, IF APPLICABLE (SEE INSTRUCTIONS): Roberta K Fleming — DATE: 7-30-07

Notice of Intent to Drill, Deepen, Replace or Modify a Well

RECEIVED
SEP 7 - 2007
WATER MGMT

WELL REGISTRATION NUMBER
55- 216425

CHECK ONE: ☐ FILING MANUALLY
☐ FILING ELECTRONICALLY* *DRILLER'S E-MAIL ADDRESS

COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL NOT

If applicant is filing this NOI electronically via the ADWR website and County approval is required, please indicate approval by providing a County Approval Code.

COUNTY APPROVAL CODE

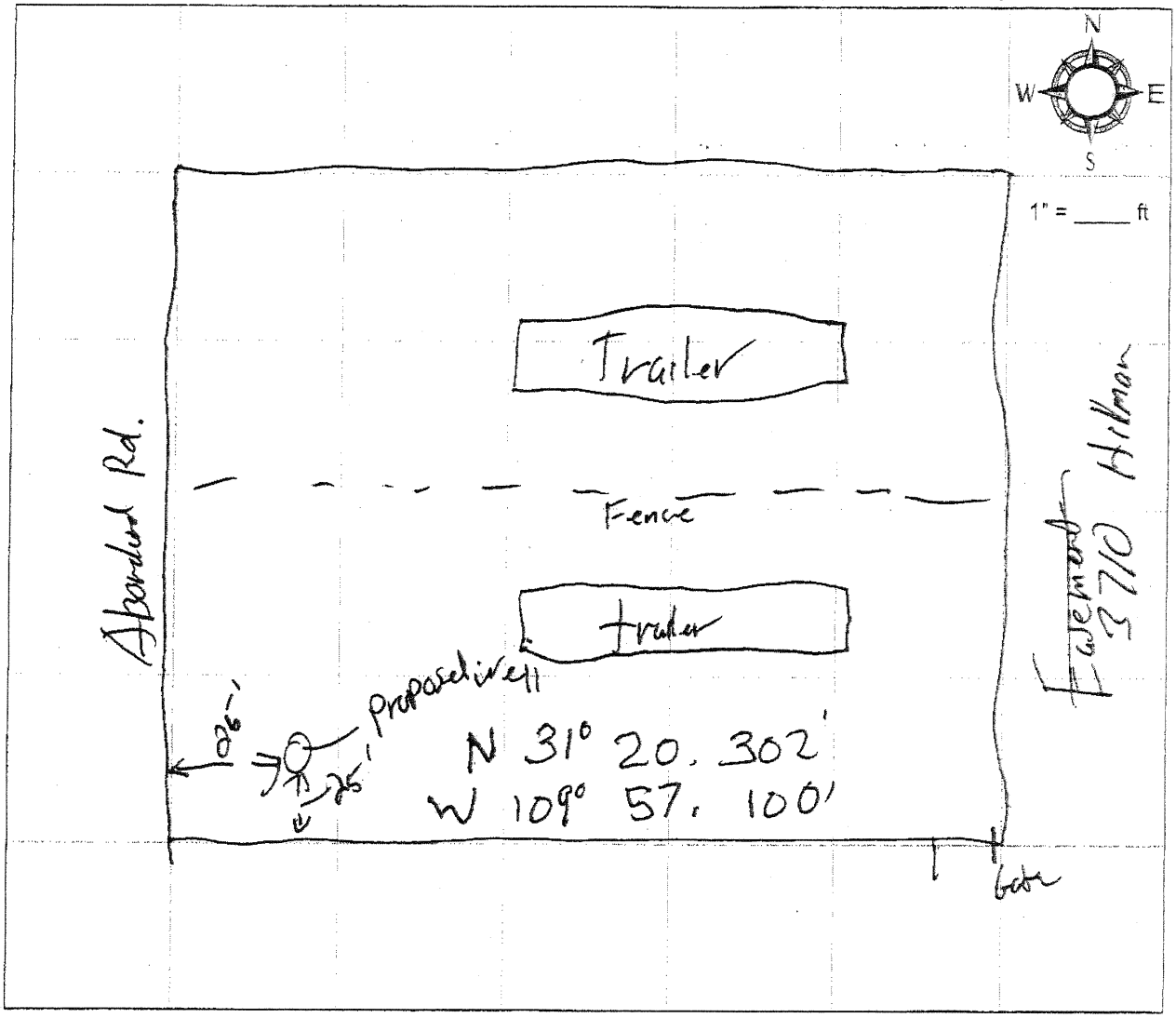
WELL SITE PLAN

NAME OF WELL OWNER
Roberto & Aida Ramirez

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
102	57	183 + 184

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE
Carlos Diaz R.S.

COUNTY OR LOCAL AUTHORITY SIGNATURE
Carlos Diaz R.S.

TELEPHONE NUMBER
520-432-9442

DATE
Sept 5, 2007

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
Official County or Local Seal or Stamp

DATE Sept 5 2007

BY Carlos Diaz R.S.

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue, Phoenix, Arizona 85012
Telephone (602) 771-8500
Fax (602) 771-8691

September 10, 2007

Janet Napolitano
Governor

Herbert R. Guenther
Director

ROBERTO & AIDA RAMIREZ
P O BOX 362
NACO, AZ 85620 - 0362

Registration No. 55-216425
File No. D(24-24) 18 CCB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well that you recently filed with this Department pursuant t A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed or otherwise provided drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card, which must be displayed on the drill rig during drilling. PLEASE NOTE The Authorization to drill this well **DOES NOT constitute or guarantee an approval to use the well for the purpose of withdrawing groundwater for transportation to an Active Management Area (AMA)** pursuant to A.R.S. § 45-55 45-553, 45-554 or 45-555(A). Groundwater **may not** be withdrawn from this well for these transportation purposes **without official prior approval from the Department.** Please contact the office in the AMA where the groundwater is to be transported to determine what additional forms are needed and for more information on this process.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drillir is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lo tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the proposed well, you may not proceed with drilling until you file an amended NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the amended NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DW form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed i a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55 within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at <http://www.water.az.gov/adwr/content/forms/default.htm#NOI>.

Sincerely,

Toni Bergeman

Toni Bergeman
NOI Unit
Water Management Support Section

Enclosures

ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

3550 N. Central Avenue
Phoenix, Arizona 85012

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-216425

AUTHORIZED DRILLER: BRADLY DRILLING LICENSE NO: 736

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: ROBERTO & AIDA RAMIREZ P O BOX 362 NACO, AZ 85620

THE WELL(S) IS/ARE TO BE LOCATED IN THE:
NW ¼ OF THE SW ¼ OF THE SW ¼ SECTION 18 TOWNSHIP 24 SOUTH RANGE 24 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 102-57-183

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 6TH DAY OF SEPTEMBER, 2008

J. Cason

WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

NOTICE! The Authorization to drill this well **DOES NOT constitute or guarantee an approval to use the well** for the purpose of withdrawing groundwater **for transportation to an Active Management Area (AMA)** pursuant to A.R.S. § 45-552, 45-553, 45-554 or 45-555(A) **without official prior approval from the Department**.

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

Printed: 9/7/2007 2:10:37 PM

Store 001
Sale Receipt
9/7/200
Page

Arizona Department of Water Resources

3550 N Central Ave
Phoenix AZ 85012

216425

Date: 9/7/2007
Cashier: WRPAB
Type: Mail

ROBERT R RAMIREZ
PO BOX 362
NACO,AZ 85620
520-432-7356

DCS/INV#	DESCRIPTION		ATTR	SIZE	QTY	PRICE	EXT PRI
F 72	4439-06	NOTICE OF INTENT TO DRILL WELL	15245		1	100.00	100.
				1 Unit(s)		Subtotal:	1(
						RECEIPT TOTAL:	1(
						Tendered:	1(

Check #: 100.00 # 2204

ROBERTO RAMIREZ
WELL OWNER

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004





REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

16 13

FOR OFFICE USE ONLY
REGISTRATION NO. 55-803742-L
FILE NO. D(24-24)11 dc
FILED 5-19-86 (DATE) AT 11:23 (TIME) am
INA Douglas
AMA

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☒
NON-EXEMPT WELL — $10.00 ☐

LATE FEE $10.00 ☐

1. Name of Registrant:
LAWRENCE E. RAY
P.O. Box 4324 (Address) BISBEE (City) ARIZONA (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
N/A (File Number) 35- N/A (Control Number)

3. a. The well is located within the ____ ¼ SW ¼ SE ¼, Section 11, of Township 24 N/S Range 24 E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision ____, Lot No. ____, Address ____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC.

5. If for irrigation use, number of acres irrigated from well N/A.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 100 feet
b. Diameter of casing 8 inches
c. Depth of casing N/A feet
d. Type of casing N/A.
e. Maximum pump capacity less than 35 gallons per minute.
f. Depth to water ~~100~~ 60 feet below land surface.
g. Date well completed N/A (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6 July 82 SIGNATURE OF REGISTRANT [signature]

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

D E S C R I P T I O N

PARCEL I:

That portion of the East one-half of the Southwest one-quarter of the Southeast one-quarter of Section 11, Township 24 South, Range 24 East, more particularly described as follows: BEGINNING at the Southwest corner of the said Southeast one-quarter; thence North along the West boundary thereof a distance of 416.00 feet, thence East 770.00 feet to the Southwest corner of a parcel of land conveyed to Arthur Jones by Deed recorded in Docket 274, Page 94; thence North along the West boundary of the said Jones parcel, a distance of 61.00 feet to the true point of beginning; thence continue North 198 feet; thence East 110.00 feet; thence Southwesterly in a straight line to a point which is located 94.80 feet East of the true point of beginning; thence West 94.80 feet to the true point of beginning.

D E S C R I P T I O N

PARCEL I:

That portion of the East one-half of the Southwest one-quarter of the Southeast one-quarter of Section 11, Township 24 South, Range 24 East, more particularly described as follows: BEGINNING at the Southwest corner of the said Southeast one-quarter; thence North along the West boundary thereof a distance of 416.00 feet, thence East 770.00 feet to the Southwest corner of a parcel of land conveyed to Arthur Jones by Deed recorded in Docket 274, page 94; thence North along the West boundary of the said Jones parcel, a distance of 61.00 feet to the true point of beginning; thence continue North 198 feet; thence East 110.00 feet; thence Southwesterly in a straight line to a point which is located 94.80 feet East of the true point of beginning; thence West 94.80 feet to the true point of beginning.

LAWRENCE E. RAY
P.O. BOX 4324
Bisbee, Az 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	803772-I
	THRU

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					LATE FEE FOR EXISTING WELL REGISTRATION	10.00	10.00
					1 EXEMPT WELL		
					FILE NO. R(24-24)11 dc		
					CHECK NO. 7575 5-20-86 sv		

WATER PAYMENT
GUESTS 1
CHK NO 7575
55-I 10.00
TAX 0.00
TOTL 10.00
GEN.CHEK 10.00

TOTAL $ # 1400 R 10.00 14:37-

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 22 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☐

11

FOR OFFICE USE ONLY
REGISTRATION NO. 55-648360-L
FILE NO. D(24-24)18dcd
FILED 6-22-82 (DATE) AT 10a (TIME)
INA —
AMA —

1. Name of Registrant:
JOSEFINA ALVAREZ DE MORA
117 C ST., (P.O. Box 25) NACO ARIZONA 85620
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the SE ¼ SW ¼ SE ¼, Section 18, of Township 24 N(S), Range 24 (E)W, G & SRB & M, in the County of COCHISE.

b. If in a subdivision: Name of subdivision TOWNSITE OF NACO, Lot No(s). 317, ~~Address~~ 319, 321, 323, BLOCK 19. 102-57.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC.

5. If for irrigation use, number of acres irrigated from well 0.

6. Owner of land on which well is located. If same as Item 1, check this box ☑

(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A) WELL DRILLED APPROXIMATELY 50 YEARS AGO. DATA N/A
a. Depth of Well _____ feet
b. Diameter of casing _____ inches
c. Depth of casing _____ feet
d. Type of casing _____.
e. Maximum pump capacity _____ gallons per minute.
f. Depth to water _____ feet below land surface.
g. Date well completed _____ (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☑
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6-18-82 SIGNATURE OF REGISTRANT Josefina A. Vda. de Mora

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

DATA ENTRY INPUT FORM

DATE 7/29/83

TO: _____

FROM: _____

NUMBER OF FILES 55 - 648360 2 FILE NOS: _____

TYPE INPUT TRANSACTION:

ADD	_____	_____
CHANGE	_____	_____
DELETE	_____	_____
CANCEL	_____	_____
ASSIGNMENT	_____	_____
ADDRESS CHANGE	✓	_____
PERMIT	_____	_____
C W R	_____	_____
STATUS CHANGE	_____	_____

FILE DISPOSITION _____

REMARKS: PO Box 25

Naco Az. 85620

MICROFILMED



CHANGE OF WELL INFORMATION

Registration No. 55-648360-L

I request that the following information be changed in Well File Number D(24-24)18 dcd

Date AUGUST 19, 1983, ~~19~~ Josefina Alvarez de Mora
Signature of Well Owner

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, JOSEFINA ALVAREZ DE MORA. state that I am (no longer) the

~~(new)~~ owner of the well described below:

Township 24S Range 24E Section 18, SE ¼ SW ¼ SE ¼

Registration #55-648360-L File No D (24-24) 18 dcd

	MANUEL R. RODRIGUEZ
Previous Owner	New Owner
	P.O. BOX 513
Address	Address
	NACO, ARIZONA 85620
City State Zip	City State Zip

NOTE: ARS 45-593 requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within 30 days after changes take place.

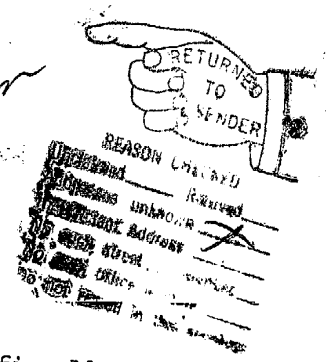
NOTE: SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP OR WELL DATA SUCH AS PUMP CAPACITY, ETC.

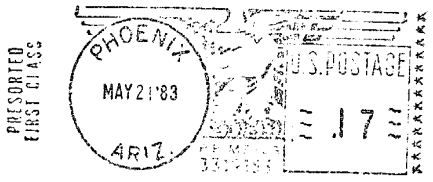
J.A.S.

MICROFILMED

State of Arizona
DEPARTMENT OF WATER RESOURCES
99 East Virginia Avenue
Phoenix, Arizona 85004

Unknown



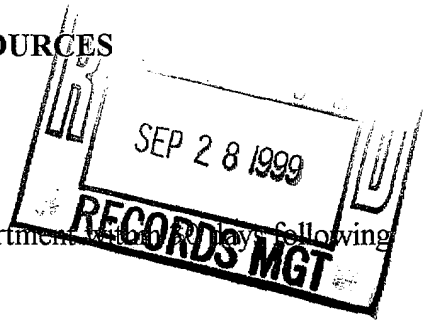


D(24.24)18ded

648360

Josefina Alvarez DeMora
117 C St, P.O. Box 35
Naco, Az. 85620

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004
WELL DRILLER REPORT



This report should be prepared by the driller in all detail and filed with the Department within 20 days following completion of the well.

1. WEBER DRILLING
453 MECHAM DRIVE
SAINT DAVID, AZ 85630

2. Owner Name: MILTON K LUNA
Address: NACO AZ 85620
City State Zip

3. Location: 24 N/S 24 E/W 18 ¼ SW ¼ SE ¼ NE
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55- 573596 (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 290 ft.
7. Type of casing STEEL
8. Diameter and length of casing 8 in. from 0 to 20, 6 in from 0 to 290
9. Method of sealing at reduction points WELDED
10. Perforated from 230' to 290, from _____ to _____ from _____ to _____
11. Size of cuts 1/8 x 8 Number of cuts per foot 4
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started SEPT 15 1999
Month Day Year
15. Date completed SEPT 16 1999
Month Day Year
16. Depth to water 140 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
GROUND LEVEL
18. If flowing well, state method of flow regulation: _____

19. Remarks: _____

ENTERED SEP 29 1999

DWR-55-55-7/95 (Rev.)

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-573596
File No. D(24-24) 18 ADC
Received _____ By _____
Entered _____ By _____

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	140	ALLUVIAL
140	290	VOLCANIC CONGLOMORET
		FIRST WATER 140'
		STATIC 130'

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: WEBER DRILLING

453 MECHAM DRIVE

Street

SAINT DAVID, AZ 85630 1-520-720-4800

City State Zip Phone No.

X Daniel E. Weber 9-20-99

Signature of Driller Date

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-573596

AUTHORIZED DRILLER: WEBER DRILLING LICENSE NO: 272

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: MILTON K LUNA 1598 W MULE DEER ST NACO, AZ 85620

The well(s) is/are to be located in the:

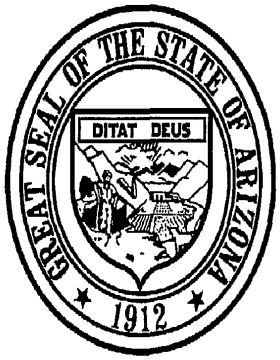
SW 1/4 of the SE 1/4 of the NE 1/4 Section 18 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 3RD DAY OF MARCH, 2000.

/s/ CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING



RECEIVED
MAR - 4 1999
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ (602)417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. MILTON K. LUNA - 1598 W MULE DEER ST. NACO, AZ. 85620-0265
LANDOWNER'S NAME CURRENT MAILING ADDRESS CITY STATE ZIP

B. TELEPHONE NO (520) 432-4077 COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN Cochise COUNTY D. 102 - 56 - 043 E. 4.00
BOOK MAP PARCEL # OF ACRES

OFFICIAL SEAL OR STAMP

C.C.H.S.S.
1415 W. Melody Lane, Bldg. A
Bisbee, Arizona 85603-3090

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. SW ¼ SE ¼ NE ¼ OF SECTION 18 TOWNSHIP 24 N(S) RANGE 24 (E)W
10AC 40AC 160AC

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL X ; INSUFFICIENT INFORMATION TO MAKE DETERMINATION _____; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE 3-1-99 AUTHORIZED SIGNATURE Steven Herbert TITLE Envir. Hlth Spec.

1. OWNER OF WELL:
MILTON K. LUNA
NAME
1598 W MULE DEER ST.
CURRENT MAILING ADDRESS
NACO, AZ. 85620-0265
CITY STATE ZIP
TELEPHONE NUMBER (520) 432-4077

2. ACTION REQUESTED:
DRILL NEW WELL V DEEPEN _____
MODIFY _____ REPLACE _____

WELL REGISTRATION NO 55- _____

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL
20 GALLONS PER MINUTE;
DISTANCE FROM THE ORIGINAL WELL:
41'4" FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH APRIL YEAR 99

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: STEEL
DIAMETER: 8 " DEPTH: 20'
DOWNHOLE CASING: 956 - 3/16" WALL STEEL
DIAMETER: 6 " DEPTH: 300'

5. DESIGN PUMP CAPACITY:
20 GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
NAME
CURRENT MAILING ADDRESS
CITY STATE ZIP
TELEPHONE:

7. PRINCIPLE USE OF WATER: (BE SPECIFIC)
DOMESTIC - Household - Yard - Trees

8. OTHER USES OF WATER: (BE SPECIFIC).
DOMESTIC - ANIMALS

9. IF USE INCLUDES IRRIGATION, STATE TO NEAREST TENTH, THE NUMBER OF ACRES TO BE IRRIGATED: _____

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55- 573596
DATE FILED 3-4-99
FILE NO. D(24-24)18 ADC
AMA/INA —
W/S 11 S/B —
PROCESSED BY bp
DATE MAILED 3/19/99

10. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
SW ¼ SE ¼ NE ¼ SECTION 18
10AC 40AC 160AC
TWNSHP 24 N(S) RNG 24 (E)W

11. TYPE OF WELL (CHECK ONE):
EXEMPT V NON-EXEMPT _____

12. CHECK ONE:
RESIDENTIAL V COMMERCIAL _____

13. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES _____ NO V

14. DRILLING FIRM:
NAME
WEBER DRILLING
MAILING ADDRESS
453 E. MECHAM DRIVE
CITY STATE ZIP
ST. DAVID, AZ. 85630
TELEPHONE NO.
(520) 720-4800
DWR LICENSE NUMBER 272
ROC LICENSE CATEGORY
C53

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

MILTON K. LUNA - OWNER — Milton K. Luna — Feb. 24-99
15. TYPE OR PRINT NAME AND TITLE 16. LANDOWNER/LESSEE OF WELLSITE 17. DATE

DWR 55-40 (REV 1/99)

APPLICATION GUIDELINES

In accordance with Arizona Revise Statutes ("A.R.S.") §§ 41-1008 and 1079, the Department of Water Resources (Department) provides the following information regarding the application review process for authority to drill.

NECESSARY STEPS & INSTRUCTIONS TO OBTAIN DRILLING AUTHORITY

1. Pursuant to A.R.S. § 45-596, a person may not drill, cause to be drilled, deepen or modify any well for which a permit is not required without first filing a Notice of Intent to Drill with the Department. Only a well drilling contractor licensed in the State of Arizona or a single well licensee (a person licensed to drill or modify one exempt well on his or her own property) is authorized to drill, deepen or modify a well. Drilling may not begin until the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, and which authorizes the drilling of the specific well in a specific location. To assist you in understanding the requirements for this application, copies of A.R.S. § 45-596 and Arizona Administrative Code ("A.A.C.") R12-15-810 are available at the Department bookstore (602-417-2450 x7127).
2. If replacing, deepening or modifying an existing well, provide the registration number of the existing well in item 2. A replacement well is one located no more than 660 feet from the original well and that is not expected to annually withdraw more groundwater than historically withdrawn from the original well.
3. Information to complete items 3, 4, 5 and 14 may be available from your driller.
4. Information to complete items 10 and 13 may be available from your County Assessor's Office.
5. An exempt well, referred to in Item 11, means a well with a pump with a maximum capacity of not more than thirty-five gallons per minute used primarily for domestic purposes, including the noncommercial irrigation of less than two acres of land.
6. If any water from a proposed well on a parcel of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant must submit a well site plan of the property. The plan must be on an 8½" x 11" piece of plain paper with representation of the locations of all structures and proximity of adjacent lot lines, to scale. It must include the county assessor's parcel identification number. The plan must show the proposed well location and the location of any septic tank or sewer system that is either located on the property or within one hundred feet of the proposed well site, as well as indicating the measured shortest distance between the proposed well and existing septic tank system. **The plan must demonstrate that the well will not be drilled within one hundred feet of any septic or sewer system.**
7. The site plan must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Endorsement by the county/local authority is based solely on the best available judgement that the proposed well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. In areas where there is no local or county authority that controls installation of septic tanks or sewer systems, or if the health authority is unable to determine whether the proposed well location complies with state and local requirements, the applicant must apply for approval directly to the Department of Water Resources.
8. If an individual other than the land owner or lessee signs this notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific notice on his or her behalf, must accompany the notice.
9. Please mail **two original Notices** with **original signatures** and **two site plans** and, in accordance with A.R.S. § 45-113, a **check or money order (no cash) in the amount of $10.00** to P. O. Box 458, Phoenix Arizona, 85001-0458, or hand deliver to 500 North Third Street, Phoenix, Arizona.
10. Arizona Revised Statute § 45-596(D) provides that the Director of the Department is to determine whether or not all information required on this form has been submitted. If not, the person filing the Notice will be notified, and the drilling or modification of the well may **not** proceed.
11. This form is not applicable for non-exempt wells (those yielding more than thirty-five gallons per minute) within an Active Management Area. Contact Groundwater Management for further information regarding the appropriate notice to file with the Department.

TIME FRAME FOR REVIEW OF YOUR APPLICATION

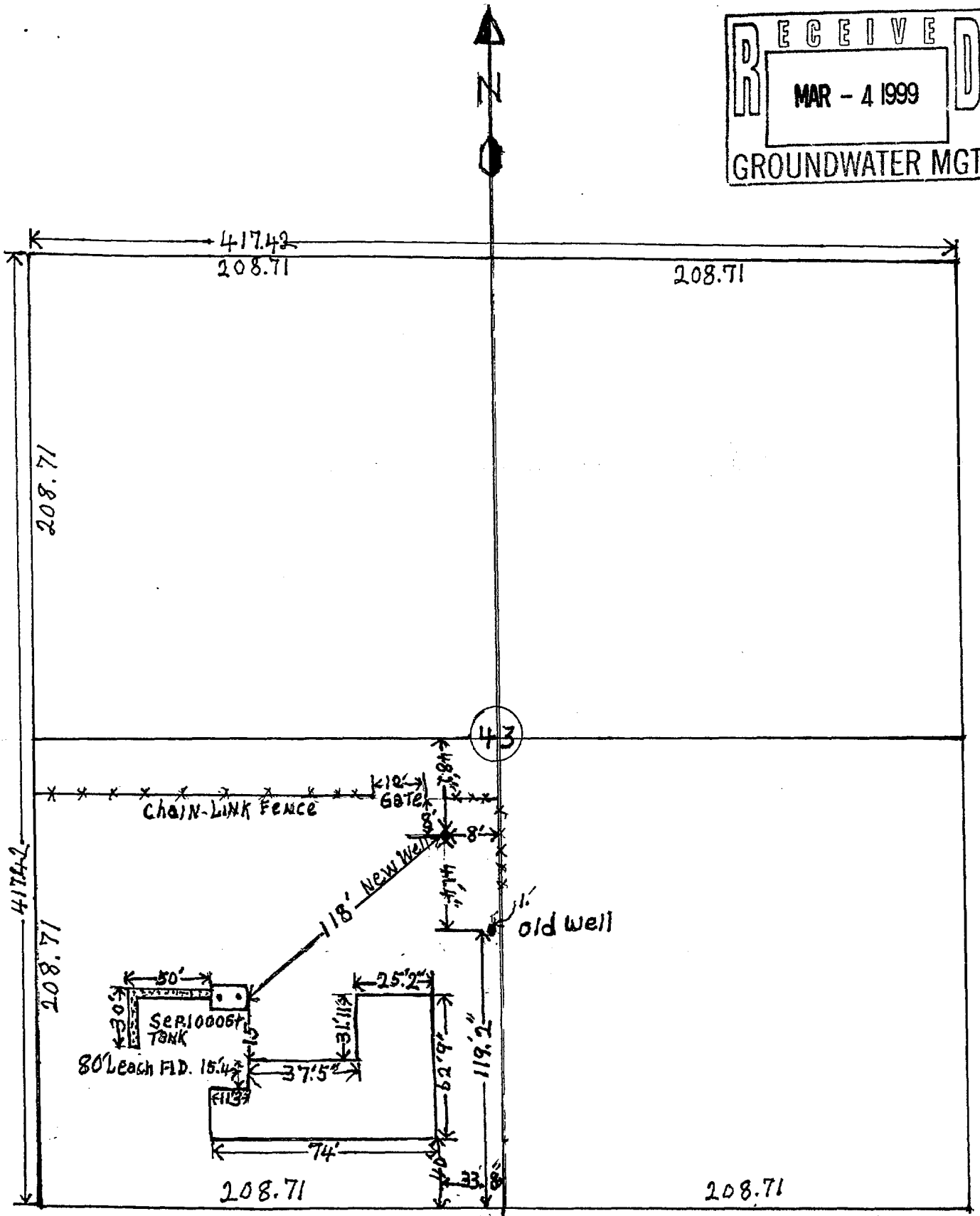
Within 15 days after receipt of your Notice of Intention, the Arizona Department of Water Resources ("Department") will determine whether your application should be granted or denied, unless this time is extended for lack of a complete application. If your application is incomplete, the Department will notify you in writing and will specify what information is necessary to make the application complete. Until the missing information is received, the time frame for review of your application will be suspended. Your application will not be complete until all of the requested information is received. If you do not supply the missing information within sixty (60) days, the Department may deem your application withdrawn and close the file.

At the end of its review, the Department will send you written notice either granting or denying your application for drilling authority. If your application is approved, the Drill Card will be mailed directly to the drilling company. If denied, the Department's notice will state justification for the denial and an explanation of your right to appeal.

CONSTRUCTION AND FOLLOW UP REQUIREMENTS

1. Construction and abandonment standards for wells, including abandonment, must be in accordance with Department Regulations. A.R.S. § 45-594 and Arizona Administrative Code R12-15-811 require the well to be constructed with a twenty foot steel surface seal casing, including a one foot steel stickup and one and one-half inches of grout seal, unless a variance is granted **(see A.R.S. § 45-596 (G) for procedure to follow in requesting a variance).**
2. Pursuant to § 45-596(E), the drilling, deepening or modification of the well must be completed within one year of the date of the Notice of Intent. If the well is not completed within one year, a new Notice of Intent must be filed before proceeding with further construction.
3. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use is later proposed to be converted to use for domestic purposes as defined in § 45-454, the well owner must file a Notice of Intention to Drill and comply with the requirements of § 45-596 before the well is converted and any water from that well is used for domestic purposes.
4. Within thirty days after installation of pumping equipment, the registered well owner must file a Completion Report with the Department. The person to whom a well is registered also must notify the Department of a change in ownership or a change in data relating to this well.

RECEIVED
MAR - 4 1999
GROUNDWATER MGT



ABOVE PLAT NOT TO SCALE
Measured WITH STEEL TAPE

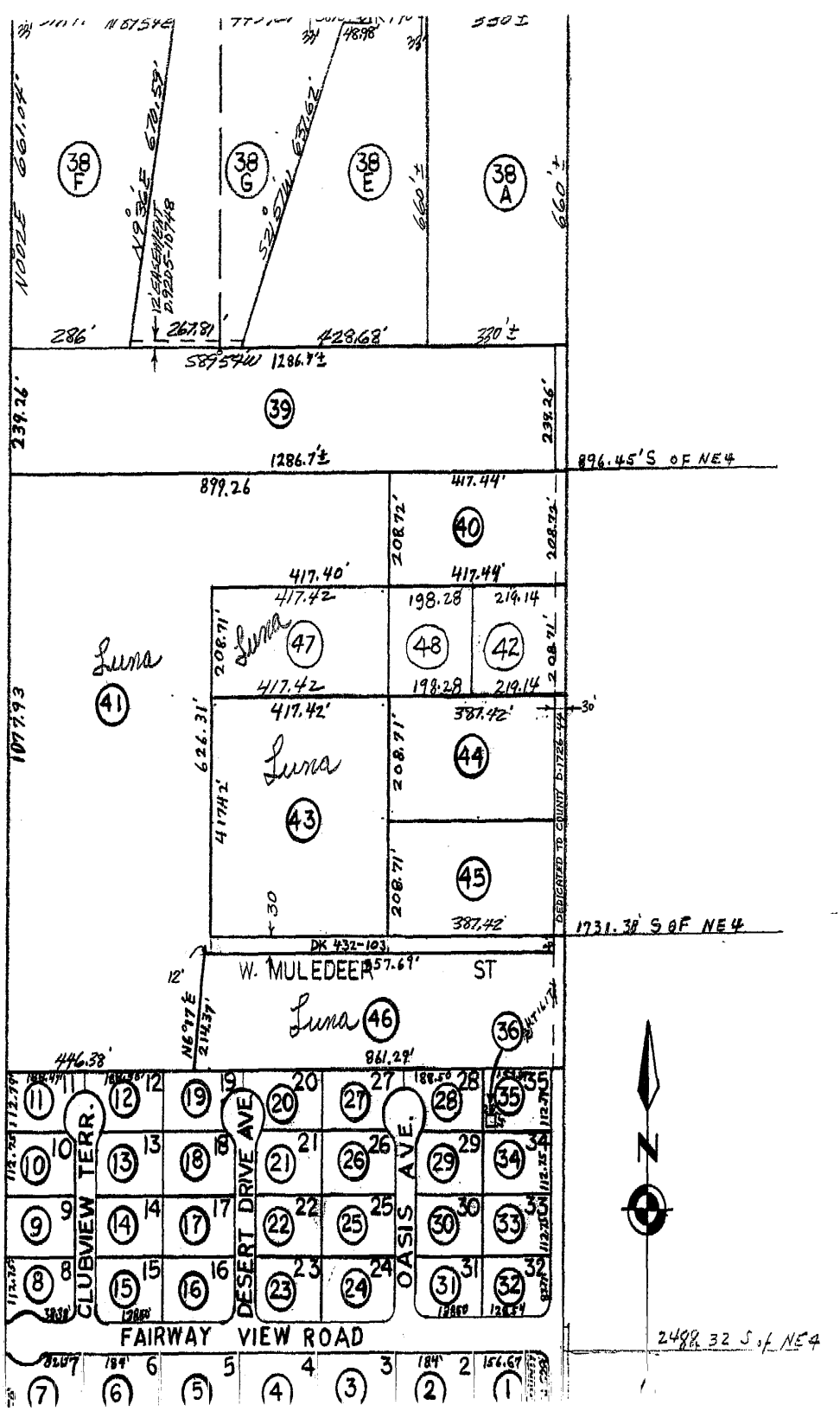
COCHISE COUNTY
PARCEL IDENTIFICATION
102-56-043
SEC 18 NE-TN 24-RNG 24

Sec 18 NE TN 24 Rng 24

RECEIVED
MAR - 4 1999
GROUNDWATER MGT

SEE MAP 36

PARCEL 2



ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

March 19, 1999

JANE DEE HULL
Governor

RITA P. PEARSON
Director

MILTON K LUNA
1598 W MULE DEER ST
NACO, AZ 85620

Registration No. 55-573596
File No.D(24-24) 18 ADC

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

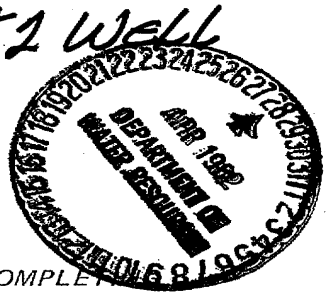
Sincerely,

Barbara Sims

Barbara Sims
Water Resource Technician
Groundwater Management Support Section

#1 Well

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 641801
FILE NO. D(24-24)18aad
FILED 4-28-82 (DATE) AT 11A (TIME)
INA
AMA

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☐

1. Name of Registrant: Milton K. Luna
P.O. Box 265 (Address) Naco (City), Az. (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
N/A (File Number) 35- N/A (Control Number)

3. a. The well is located within the SE ¼ NE ¼ NE ¼, Section 18NE,
of Township 24S N(S) Range 24E E(W), G & SRB & M, in the
County of Cochise.

b. If in a subdivision: Name of subdivision _____,
Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - (domestic) - municipal - industrial)
Domestic.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒

_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)

Well #1
See Accomp. Map.

a. Depth of Well 142' feet
b. Diameter of casing 6" inches
c. Depth of casing 142 feet
d. Type of casing 3/8" Weld-Steel .
e. Maximum pump capacity 20 gallons per minute.
f. Depth to water 92' feet below land surface.
g. Date well completed Prior to 1960 (Month) (Day) (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒.
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____

Attach additional sheet if necessary.

9. DATE 4-26-82 SIGNATURE OF REGISTRANT Milton K. Luna

MICROFILMED

#1 WELL

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED APR 28 1982 DEPT OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55-641803
FILE NO. D(24-24)18 dda
FILED 4-28-82 (DATE) AT 11A (TIME)
INA
AMA

1. Name of Registrant: MILTON K. LUNA
P.O. Box 265 (Address) NACO (City), AZ. (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
N/A (File Number) 35- N/A (Control Number)

3. a. The well is located within the NE ¼ SE ¼ SE4 ¼, Section 18 NE, of Township 24S N.S. Range 24E E.W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial) Domestic & irrigation.

5. If for irrigation use, number of acres irrigated from well 4.

6. Owner of land on which well is located. If same as Item 1, check this box ☒

_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A) WELL #1 See Accomp. Map.

a. Depth of Well 140' feet
b. Diameter of casing 6" inches
c. Depth of casing 140' feet
d. Type of casing 3/8" WALL - STEEL .
e. Maximum pump capacity 20 gallons per minute.
f. Depth to water 92 feet below land surface.
g. Date well completed Prior to (Month) (Day) 1960 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____

Attach additional sheet if necessary.

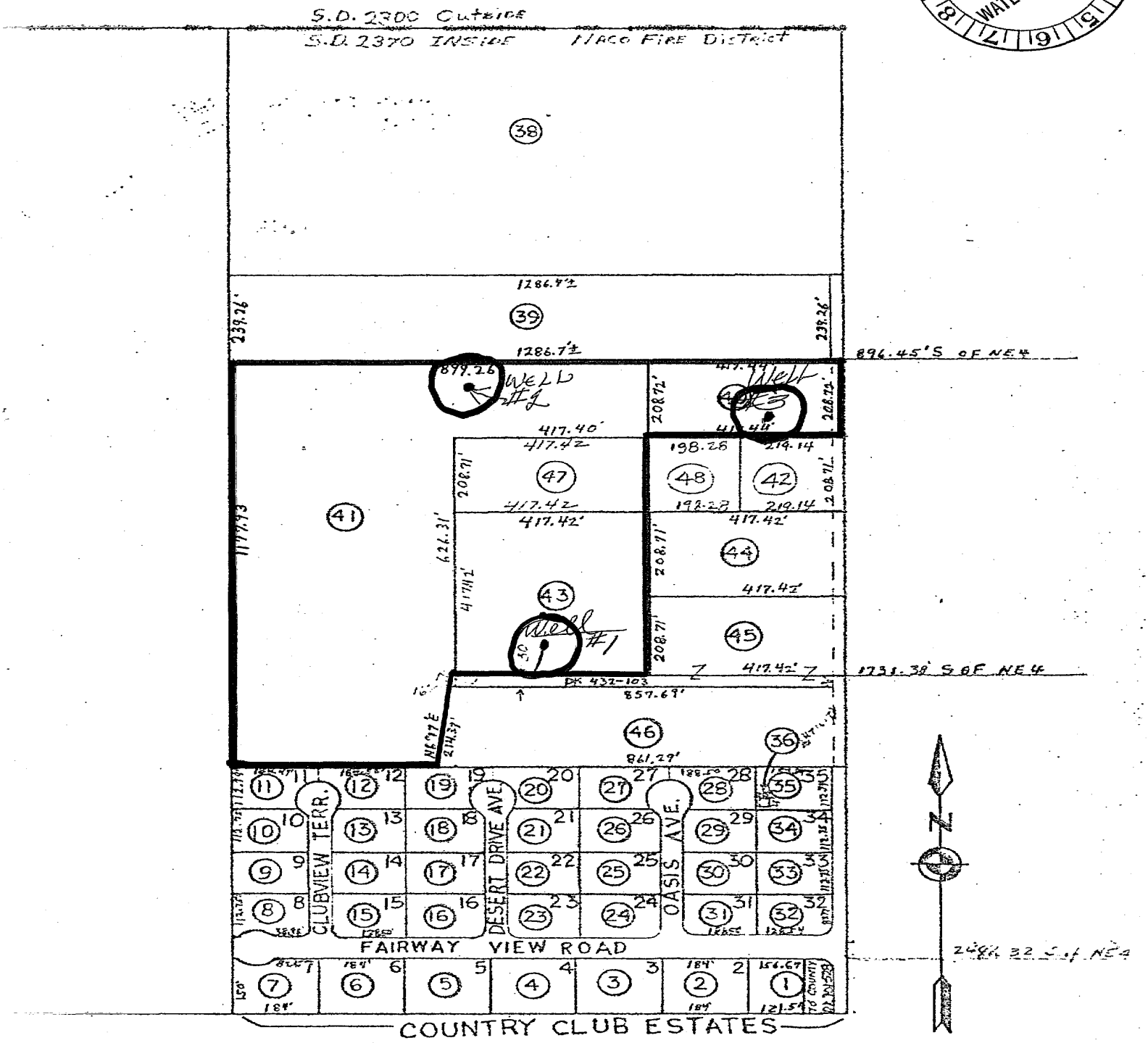
9. DATE 4-26-82 SIGNATURE OF REGISTRANT Milton K. Luna

MICROFILMED

SEC. 18NE TN. 24S RG 24E

BOOK 102
MAP 56

RECEIVED
APR 28 1982
DEPT
WATER RESOURCES



SCALE 1"= 300'

MICROFILMED

COUNTY ASSESSOR'S MAP

ENTERED
NOV 28 2007

ARIZONA DEPARTMENT OF WATER RESOURCES
Information Management Unit
P.O. Box 33589, Phoenix, Arizona 85067-3589
(602) 771-8527 * (800) 352-8488
www.water.az.gov

RECEIVED
NOV 26 2007
INFO MGMT

Well Driller Report and Well Log

MO

This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

FILE NUMBER: D(24-24) 18 BCD
WELL REGISTRATION NUMBER: 55- 216018
PERMIT NUMBER (IF ISSUED)

Mail To:

SECTION 1. DRILLING AUTHORIZATION

Drilling Firm

NAME	DWR LICENSE NUMBER
BRADLY DRILLING	736
ADDRESS: 562 E. HWY 82	TELEPHONE NUMBER: 520-456-2355
CITY/STATE/ZIP: HUACHUCA CITY, AZ 85616	FAX

SECTION 2. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: ERNEST ROGERS
MAILING ADDRESS: PO BOX 608
CITY / STATE / ZIP: NACO, AZ 85620
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-432-3861
FAX:
WELL NAME (e.g., MW-1, PZ-3, Lot 25 Well, Smith Well, etc.):

Location of Well

WELL LOCATION ADDRESS (IF ANY):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	18	SE 1/4	SW 1/4	NW 1/4

LATITUDE Degrees	Minutes	Seconds "N	LONGITUDE Degrees	Minutes	Seconds "W
°	'		°	'	

METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Hand-Held ☐ *GPS: Survey-Grade

LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level

METHOD OF ELEVATION (CHECK ONE): ☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Hand-Held ☐ *GPS: Survey-Grade

*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE): ☐ NAD-83 ☐ Other (please specify):

COUNTY: Cochise

ASSESSOR'S PARCEL ID NUMBER: BOOK 102 | MAP 57 | PARCEL 140

SECTION 3. WELL CONSTRUCTION DETAILS

Drill Method

CHECK ONE
- ☒ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development

CHECK ONE
- ☒ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Method of Sealing at Reduction Points

CHECK ONE
- ☐ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☒ Other (please specify): Native

Condition of Well

CHECK ONE
- ☒ Capped
- ☐ Pump Installed

Construction Dates

DATE WELL CONSTRUCTION STARTED: 9-10-07
DATE WELL CONSTRUCTION COMPLETED: 9-10-07

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
Bradly Drilling		10-15-07

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 216018

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

DEPTH OF BORING	DEPTH OF COMPLETED WELL
285 Feet Below Land Surface	285 Feet Below Land Surface

Water Level Information 9-10-07

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
145 Feet Below Land Surface	~~3:30PM~~	3:30PM	☐ Valve ☐ Other:

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	12 1/4

Installed Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (X) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (X) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	8 5/8	X				X						
5	240	6		X			X						
240	285	6		X							X		1/8

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (X) NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
0	20		X						NATIVE			

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 216018

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	2	Topsoil	
2	165	Clay	
165	285	Brown Rock	X

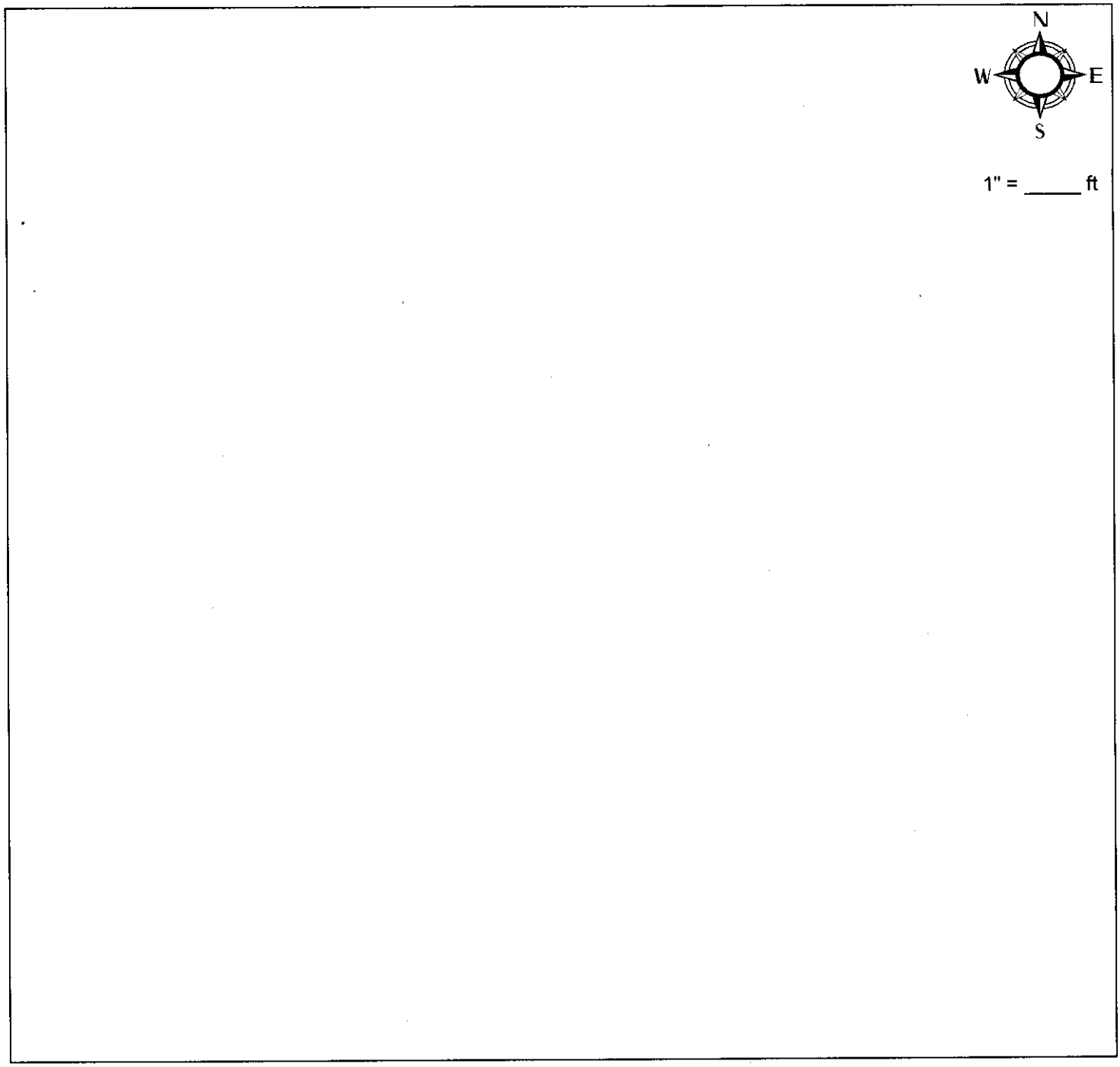
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 216018

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
ERNEST ROGERS	102	57	140

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

3550 N. Central Avenue
Phoenix, Arizona 85012

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-216018

AUTHORIZED DRILLER: BRADLY DRILLING LICENSE NO: 736

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: ERNEST ROGERS PO BOX 608 NACO, AZ 85620

THE WELL(S) IS/ARE TO BE LOCATED IN THE:
SE ¼ OF THE SW ¼ OF THE NW¼ SECTION 18 TOWNSHIP 24 SOUTH RANGE 24 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 102-57-140

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 27TH DAY OF JUNE, 2008

J. Cason

WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

NOTICE! The Authorization to drill this well **DOES NOT constitute or guarantee an approval to use the well** for the purpose of withdrawing groundwater **for transportation to an Active Management Area (AMA)** pursuant to A.R.S. § 45-552, 45-553, 45-554 or 45-555(A) **without official prior approval from the Department**.

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue, Phoenix, Arizona 85012
Telephone (602) 771-8500
Fax (602) 771-8691

August 14, 2007

Janet Napolitano
Governor

Herbert R. Guenther
Director

ERNEST ROGERS
PO BOX 608
NACO, AZ 85620

Registration No. 55-216018
File No. D(24-24) 18 BCD

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well that you recently filed with this Department pursuant to A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed or otherwise provided a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card, which must be displayed on the drill rig during drilling. **PLEASE NOTE:** The Authorization to drill this well **DOES NOT constitute or guarantee an approval to use the well for the purpose of withdrawing groundwater for transportation to an Active Management Area (AMA)** pursuant to A.R.S. § 45-552, 45-553, 45-554 or 45-555(A). Groundwater **may not** be withdrawn from this well for these transportation purposes **without official prior approval from the Department.** Please contact the office in the AMA where the groundwater is to be transported to determine what additional forms are needed and for more information on this process.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the proposed well, you may not proceed with drilling until you file an amended NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the amended NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DWR form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed is a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55) within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at <http://www.water.az.gov/adwr/content/forms/default.htm#NOI>.

Sincerely,

Toni Bergeman

Toni Bergeman
NOI Unit
Water Management Support Section

Enclosures

RECEIVED JUN 28 2007 WATER MGMT

RECEIVED AUG 13 2007

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 771-8500 • (800) 352-8488
(602) 771-8691 fax • www.azwater.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well
(Except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA	B SB
—	76
RECEIVED DATE	WS
10-28-07	11
ISSUED DATE	WQARF CERCLA
	—

FILE NUMBER: D(24-24)18 BCD
WELL REGISTRATION NUMBER: 55 - 216018

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☒ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

Official County or Local Seal or Stamp
APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE July 31, 2007
BY Carlos Diaz RS

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ R.S.

TELEPHONE NUMBER: 520-432-9442

DATE: July 31, 2007

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz R.S.

Lots are 25 x 114 150

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

☒ Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) *(See instructions.)*

☐ Non-Exempt (Pump has a maximum capacity of more than 35 gpm and the well is located outside an AMA.) *(See instructions.)*

DESIGN PUMP CAPACITY: 20 Gallons Per Minute

Proposed Action

CHECK ONE

☒ Drill New Well
☐ Deepen
☐ Replace
☐ Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 -

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY): 1820 W DOMINGUEZ ST

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	18	NW¼	SW¼	SE¼

COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 102 - MAP 57-140 PARCEL — # OF ACRES: 11 LOTS

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	18	¼	¼	¼

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: ERNEST M ROGERS

MAILING ADDRESS: PO BOX 608

CITY / STATE / ZIP CODE: NACO AZ. 85620

CONTACT PERSON NAME AND TITLE: SAME

TELEPHONE NUMBER: 5204323861

FAX:

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL:

MAILING ADDRESS:

CITY / STATE / ZIP CODE:

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER:

FAX:

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well (e.g., Lot 35 Well, Smith Well, etc.)?		X	PLEASE STATE
3. Is the proposed well a NEW well to be located within an Active Management Area? *(See instructions)*		X	Unless the well is a replacement well and the total number of operable exempt wells on the land is not increasing, you must also file a supplemental form A.R.S. § 45-454(C) & (D).
4. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

RECEIVED AUG 13 2007 WATER MGMT

RECEIVED JUN 28 2007 WATER MGMT

WELL REGISTRATION NUMBER 55- 216018

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: Bradly Drilling

DWR LICENSE NUMBER: 736

ROC LICENSE CATEGORY: C-53

TELEPHONE NUMBER: 520 456 2357

FAX:

MAILING ADDRESS: PO Box 4707

CITY / STATE / ZIP CODE: HC AZ 85616

DATE CONSTRUCTION IS TO BEGIN: ASAP

SECTION 6. WATER SITE INFORMATION

***Principal Use* of Water** CHECK ONE	***Other Uses* of Water** CHECK ALL THAT APPLY
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☒ Domestic	☐ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify):*	☐ Other *(please specify):*

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

Borehole			Casing													
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (T)				PERFORATION TYPE (T)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	20	12 1/4	0	20	8 5/8	X*				X						Cement
20	300	8 3/8	10	260	6		X			X						
			260	300	6		X							X		

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: ERNEST MARION ROGERS

SIGNATURE OF WELL OWNER: [signature] DATE: 6-26-07

SIGNATURE OF LANDOWNER, IF APPLICABLE (SEE INSTRUCTIONS): [signature] DATE: 6-26-07

RECEIVED RECEIVED

Notice of Intent to Drill, Deepen, Replace or Modify a Well

AUG 13 2007 JUN 28 2007

WATER MGMT WATER MGMT

WELL REGISTRATION NUMBER
55-216018

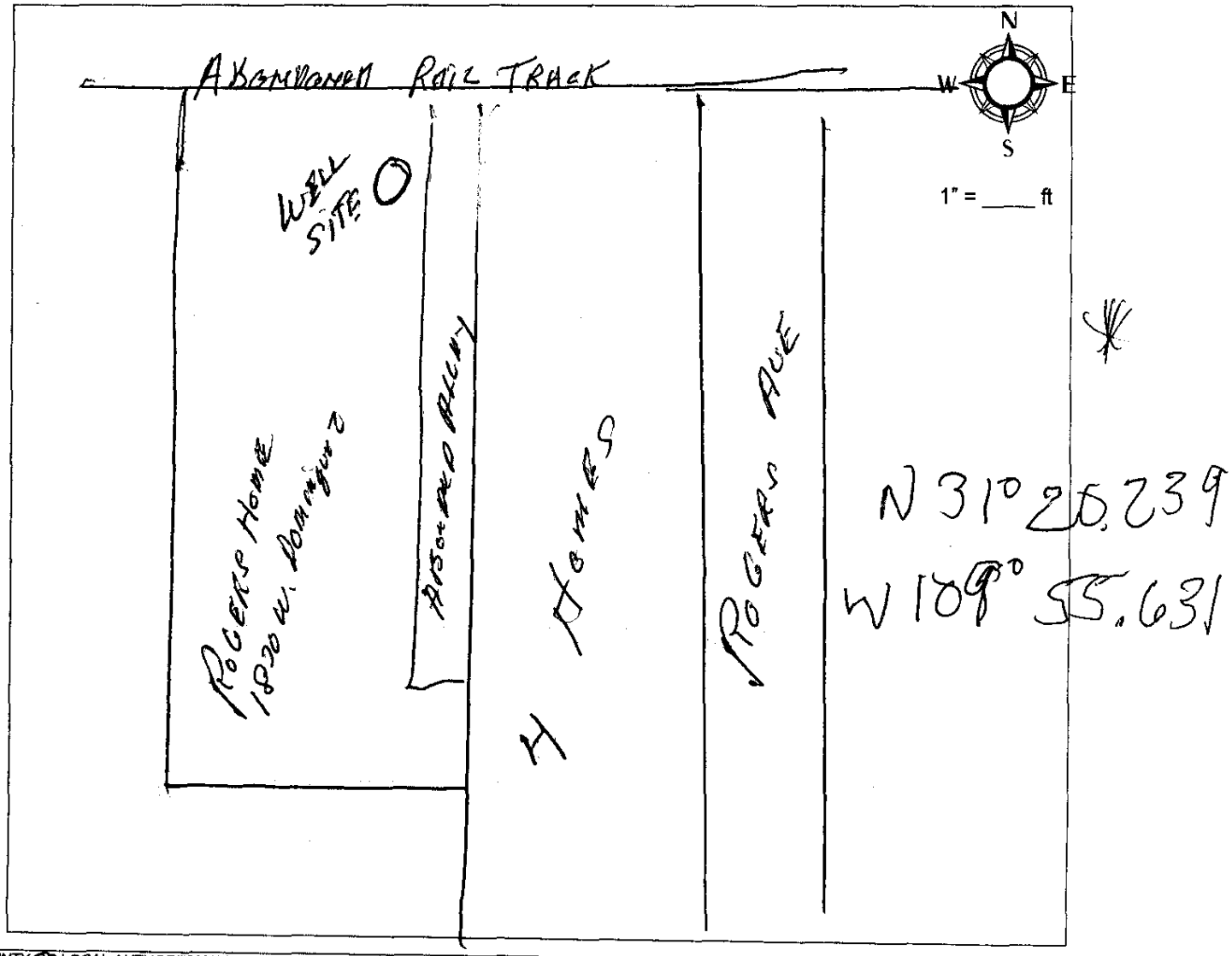
CHECK ONE: ☒ FILING MANUALLY
☐ FILING ELECTRONICALLY* *DRILLER'S E-MAIL ADDRESS

*COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL CODE	COUNTY APPROVAL CODE
If applicant is filing this NOI electronically via the ADWR website and County approval is required, please indicate approval by providing a County Approval Code.	

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
ERNEST M. ROGERS			102-51-140 5

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE	
Carlos Diaz R.S.	
COUNTY OR LOCAL AUTHORITY SIGNATURE	
Carlos Diaz R.S.	
TELEPHONE NUMBER	DATE
520-432-9442	July 31, 2007

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION

DATE July 31, 2007

BY Carlos Diaz R.S.

COUNTY OF COCHISE ARIZONA

ARIZONA DEPARTMENT OF WATER RESOURCES
Water Management Support Section – NOI Unit
3550 N Central Ave, Phoenix, Arizona 85012
Telephone (602) 771-8646
Fax (602) 771-8691

Janet Napolitano
Governor

Herbert R. Guenther
Director

July 10, 2007

PLEASE RETURN ALL PAPERS

Ernest M. Rogers
P.O. Box 608
Naco, AZ 85620

Re: Well Registry Number: 55-216018
File (Location) Number:

Dear Applicant:

The Department of Water Resources recently received your Notice of Intent (NOI) to Drill, Deepen, Replace or Modify a Well. However, our review indicates that the NOI is incomplete under the Groundwater Management Act for the following reason(s):

- **SECTION 1: COUNTY APPROVAL IS REQUIRED ON A PARCEL OF LAND OF 5 OR FEWER ACRES FOR WELLS BEING USED FOR DOMESTIC PURPOSES. UNDER SECTION 2 OF YOUR APPLICATION, THE NUMBER OF ACRES FOR THIS PARCEL WAS NOT ANSWERED. IF THE PARCEL OF LAND IS 5 OR FEWER ACRES, PLEASE COMPLETE ALL UNANSWERED QUESTIONS ON THE FORM AND FORWARD THE NOI FORM TO THE COCHISE COUNTY HEALTH AUTHORITY FOR APPROVAL.**
- **SECTION2: PLEASE COMEPLETE THE LEGAL DESCRIPTION OF THE WELL; WHICH IS THE TOWNSHIP, RANGE, SECTION AND 160, 40 AND 10 ACRE QUARTER LOCATION. IF THE WELL IS LOCATED IN AN ACTIVE MANAGEMENT AREA. AND THEREFORE, NEEDS AN AMA CERTIFICATION OF COMPLIANCE FORM "ARS 45-454 (C) & (D)". I HAVE ENCLOSED THE FORM SO PLEASE READ AND SIGN THE EXEMPT WELL CERTIFICATION OF COMPLIANCE FORM.**
- **SECTION 7: THE ANSWER FOR THE OUTER DIAMETER IS NOT CLEAR. PLEASE INDICATE THE NUMBER OF INCHES.**

IF YOU HAVE ANY QUESTIONS, PLEASE CALL DARLENE SUMPTER-KING AT 602-771-8646.

In accordance with Arizona Revised Statutes (A.R.S.) § 45-596, Paragraph D, the Department is mailing this "statement of determination" as a request for information necessary to make the NOI complete and correct. Please provide the Department with the additional information and resubmit the corrected NOI form and any attachments (if applicable) to ADWR. The Department's substantive review time frame is suspended until all requested information is provided. If the Department does not receive the necessary information within sixty (60) days, the application may be denied. You would then have to re-initiate the NOI process and pay a new filing fee to receive a drilling authority for this location.

WHEN RESUBMITTING THE COMPLETED FORM, RETURN TO:

WATER MANAGEMENT SUPPORT SECTION
NOI UNIT c/o DARLENE SUMPTER-KING
PO BOX 458
PHOENIX, ARIZONA 85001-0458

Printed: 6/28/2007 12:20:09 PM

216018

Store 0010
Sale Receipt #
6/28/2007
Page 1

Arizona Department of Water Resources

3550 N Central Ave
Phoenix AZ 85012

ROGERS BORDER SERVICE

3847 S TOWNER AVE
NACO,AZ 85620
520-432-3861

Date: 6/28/2007
Cashier: WRLXS
Type: Mail

DCS/INV#	DESCRIPTION		ATTR	SIZE	QTY	PRICE	EXT PRICE
F 72	4439-06	NOTICE OF INTENT TO DRILL WELL	15245		1	100.00	100.00
				1 Unit(s)		Subtotal:	100.00
						RECEIPT TOTAL:	**100.00**
						Tendered:	100.00

Check #: 100.00 # 3548

ERNEST M ROGERS

We Appreciate Your Business!

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED MAY 11 1982 DEPT WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	X
NON-EXEMPT WELL – $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 641750
FILE NO. D(24-24)18ddd
FILED 5-11-82 (DATE) AT 11 A (TIME)
INA
AMA

1. Name of Registrant: Mrs Mary W. Rollins
Naco Hwy P.O. Box 332 (Address) Naco (City), Arizona (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) N/A 35- N/A (Control Number)

3. a. The well is located within the NE ¼ SE ¼ SE4 ¼, Section 18NE, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision ND, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial) Domestic.

5. If for irrigation use, number of acres irrigated from well ND.

6. Owner of land on which well is located. If same as Item 1, check this box X
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 126 ft. feet
b. Diameter of casing 2 inch inches
c. Depth of casing N/A feet
d. Type of casing NA .
e. Maximum pump capacity N/A gallons per minute.
f. Depth to water N/A feet below land surface.
g. Date well completed N/A (Month) (Day) (Year) .

8. The place(s) of use of water. If same as Item 3, check this box X
_____ ¼ _____ ¼ _____ ¼, Section _____ Township _____ Range _____
_____ ¼ _____ ¼ _____ ¼, Section _____ Township _____ Range _____
Attach additional sheet if necessary.

9. DATE 5-8-82 SIGNATURE OF REGISTRANT Mary W. Rollins

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

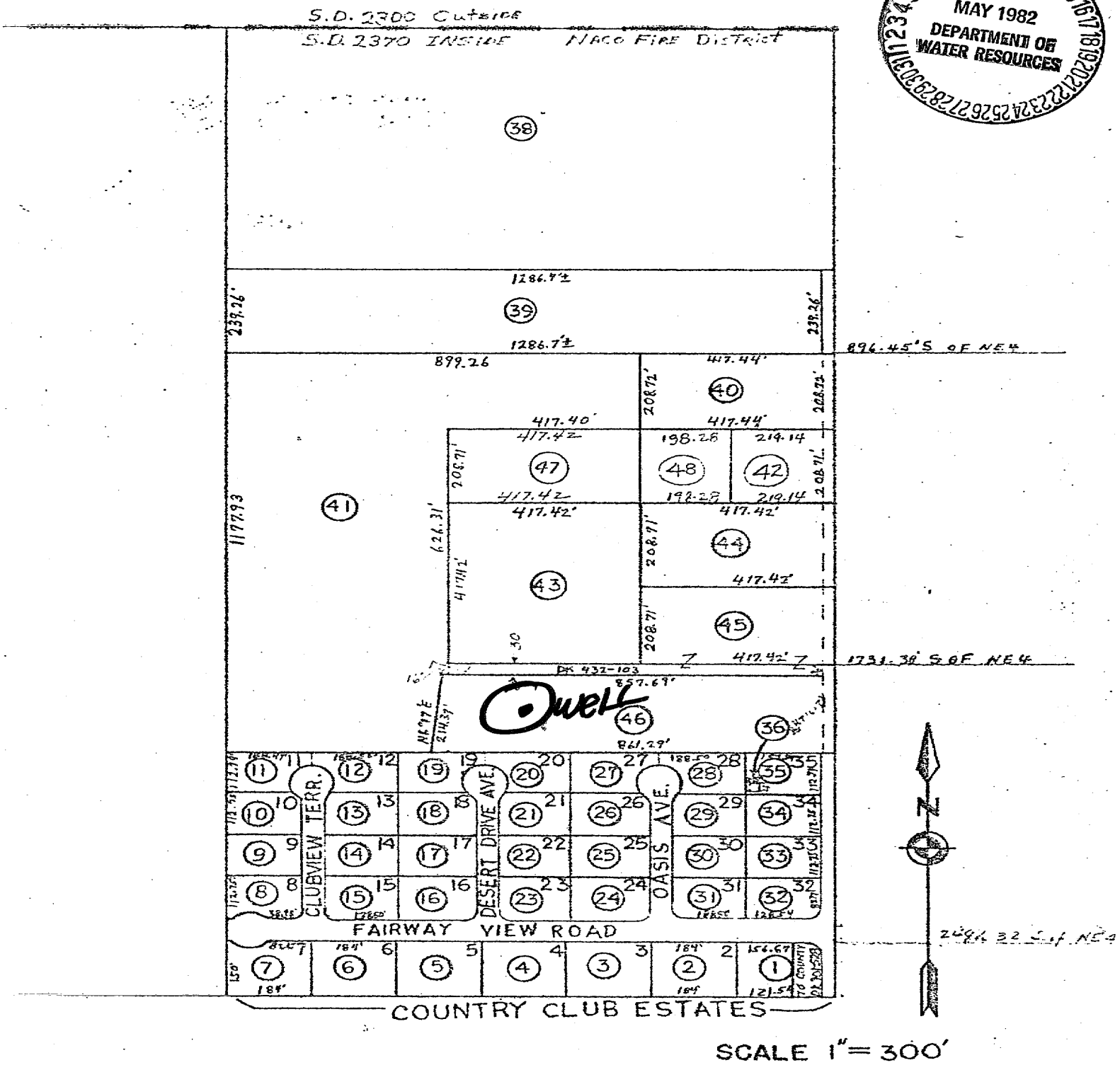
7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

BOOK 102
MAP 56

MAY 1982
DEPARTMENT OF WATER RESOURCES



SCALE 1"= 300'

MICROFILMED

COUNTY ASSESSOR'S MAP

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED AUG 26 1987 DEPT. OF WATER RESOURCES

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Richard Ross
Name
P.O. Box 305 Naco, Az 85620
Mailing Address

2. Driller Weber Drilling
Name
RT-1 Box 276B St. David, Az 85630
Mailing Address

3. Location of well: Twp 24S Rge 24E Sec. 6 SW¼, SW¼, NW¼

4. Permit No. 55-517526 (if issued)

DESCRIPTION OF WELL

5. Total depth of hole 425 ft.

6. Type of casing Steel

7. Diameter and length of casing 8 in. from 0 to 20, 6 in from 0 to 425.

8. Method of sealing at reduction points welded

9. Perforated from ____ to ____, from ____ to ____, from ____ to ____.

10. Size of cuts 8" x ⅛" Number of cuts per foot 4

11. If screen was installed: Length ____ ft. Diam ____ in. Type ____

12. Method of construction drilled
drilled, dug, driven, bored, jetted, etc.

13. Date started 4 (Month) 15 (Day) 87 (Year)

14. Date completed 4 (Month) 16 (Day) 87 (Year)

15. Depth to water 375 ft. (If flowing well, so state.)

16. Describe point from which depth measurements were made, and give sea-level elevation if available Ground Level

17. If flowing well, state method of flow regulation: ____

18. Remarks: ____

55-517526

D(24-24)6 bcc

ENTERED AUG 26 1987

Entered ____ By ____

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
		First water 375' Static 300
0	225	decomposed granite & limestone Conglomerate
225	300	muddy sandstone
300	375	volcanic rock
375	425	muddy sandstone

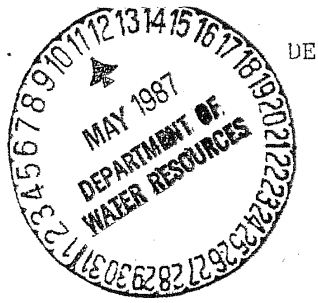
I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Donald G. Weber
Name

WEBER DRILLING
RT. 1 BOX 276B
ST. DAVID, AZ 85630
PHONE 586-4800

City State Zip

Date 8/20/87



DEPARTMENT OF WATER RESOURCES
99 East Virginia
Phoenix, Arizona 85004

55-517526
Registration No.
D(24-24)6 bcc

File No.

COMPLETION REPORT

1. Per A.R.S. §45-600, the Completion Report to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

245	24E	6	SW ¼ SW ¼ NW ¼
Township	Range	Section	

EQUIPMENT INSTALLED:

Kind of pump _____
Turbine, centrifugal, etc.

Kind of power Electric
Electric, natural gas, gasoline, etc.

H.P. Rating of Motor 3

Pumping Capacity 35
Gallons per minute

Date installed 4-10-87

Electricity is not turned on yet but will be 4/23/87

WELL TEST:

Test pumping capacity 35
Gallons per minute

Date Well Tested _____

X Method of Discharge Measurement _____
Weir, orifice, current meter, etc.

Static Groundwater Level _____ ft. Drawdown _____ ft.

Total Pumping Lift _____ ft. Drawdown _____ lbs
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

May 5, , 19 87
DATE

Richard Ross
Signature

209 Willson Road
Address

Naco, Arizona 85620
City State Zip

ENTERED MAY 14 1987

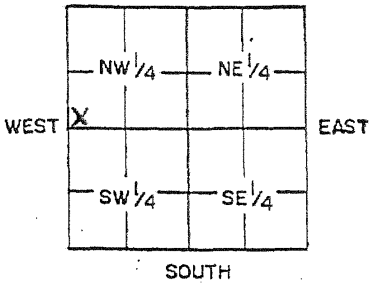
DWR-55-7-3/84

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL OR DEEPEN A WELL
OUTSIDE OF AN ACTIVE MANAGEMENT AREA

RECEIVED APR 9 1987 DEPT. OF WATER RESOURCES

Section 45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management, a person may not drill or cause to be drilled any well or deepen an existing well without first filing a Notice of Intention to Drill with the Department.



INDICATE WELL LOCATION BY X
(Above diagram represents one 640 acre section.)

WELL/LAND LOCATION:

1. Township 24 S N/S
2. Range 24 E E/W
3. Section 6
4. SW ¼, SW ¼, NW ¼
   10 acre subdivision
5. County Cochise
6. Owner of well:
   Richard Ross
   Name
   P.O. Box 305
   Mailing address
   Naco, AZ 85620
   City State Zip
   Telephone 432-5965
7. Owner of land:
   Richard Ross
   Name
   P.O. Box 305
   Mailing Address
   Naco AZ 85620
   City State Zip

DESCRIPTION OF WELL:

8. Diameter 6 inches
   Depth 400 feet
9. Type of casing Steel
10. Design pump capacity:
    35 gallons per minute
11. Estimate of total annual pumping: N/A acre feet
12. Principal use of water:
    Two homes
    (Be Specific)
13. Other uses intended:
    Trees
    (Be Specific)
14. If for irrigation, state the number of acres to be irrigated:
    N/A acres
15. Construction will start about:
    4/87
    Month Year

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
FILE NO. D(24-24)6 bcc
FILED 4-9-87 BY SV
INPUT ENTERED APR 16 1987 BY
DUPLICATE MAILED 4-15-87 BY SV
REGISTRATION NO. 55-517526
INA
W/S 13 S/B

PLACE OF USE:

16. Township 24 S N/S
17. Range 24E E/W
18. Section 6
19. Legal description of land SW ¼ SW ¼ NW ¼
20. Type well:
    ✓ Exempt
    ___ Non-Exempt
21. Action Requested:
    Drill ✓ Deepen ___ Replace ___
    55-
22. This notice filed by:
    Owner ✓
    Lessee ___
    Name
    Address
    City State Zip
    Telephone
23. Drilling Firm: Weber Drilling
    Name
    RT 1 Box 2760
    Address
    St. David AZ 85630
    City State Zip
    (272) 55605
    DWR License Number

24, Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials: Yes ___ No ✓

GENERAL INSTRUCTIONS

1. Fill out this form in duplicate and send to 99 East Virginia, Suite 100, Phoenix, Az. 85004.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen or replace a well outside of an Active Management Area
4. If the well is a replacement or deepening of an existing well, state the registration number of the existing well in Item 21.
5. Construction standards for new and replacement wells and the deepening and abandonment of existing wells shall be in accordance with Department Rules and Regulations.

I state that this Notice is filed in compliance with ARS §45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well set forth on the reverse side of this form.

DATE 4-2-87 Signature of Person Filing Richard Ross

DWR-55-41-8/86 (Revised)

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Upon receipt of the return of this annotated Notice, the owner is authorized to proceed in drilling or deepening the well as set forth on this Notice.

2. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

3. Only one exempt well may be drilled or used to serve the same use at the same location.

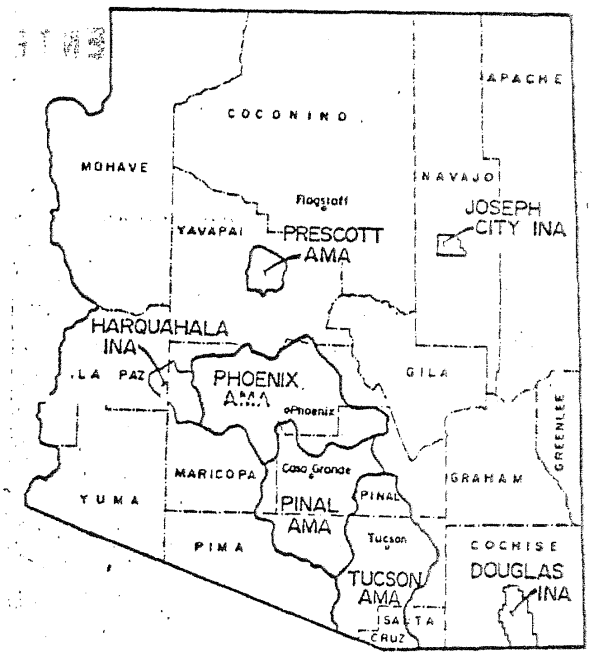
4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 2 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to ARS §45-434 or §45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of ARS §45-437.

5. The drilling or deepening of this well shall be completed within one (1) year of the date of this Notice.

6. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

7. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of the annotated copy of this Notice.

8. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.



STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner David G. Ruiz
P.O. Bx 4205 Bisbee, Az 85603
Name / Mailing Address

2. Driller L. B. DRILLING
Box 4166
Huachuca City, AZ 85616
Name / Mailing Address

3. Location of well: 1-24 S R-24 E S-4 SW x SW x NW

4. Permit No. _____ (If issued)

DESCRIPTION OF WELL

5. Total depth of hole 312 ft.
6. Type of casing PVC
7. Diameter and length of casing 6 in. from 0 to 312, ____ in from ____ to ____.
8. Method of sealing at reduction points _____
9. Perforated from 312 to 252, from ____ to ____, from ____ to ____.
10. Size of cuts 1/8 Number of cuts per foot Three
11. If screen was installed: Length ____ ft. Diam ____ in. Type _____
12. Method of construction drilled air
drilled, dug, driven, bored, jetted, etc
13. Date started May (Month) 28 (Day) 1991 (Year)
14. Date completed May (Month) 29 (Day) 1991 (Year)
15. Depth to water 254 ft. (If flowing well, so state)
16. Describe point from which depth measurements were made, and give sea-level elevation if available ground level
17. If flowing well, state method of flow regulation: N/A
18. Remarks: blew 15 gpm

AUG - 9 1991

DO NOT WRITE IN THIS SPACE

REG. No. 55-531770
File No. D(24-24)4 BCC
Entered _____ by _____
ENTERED AUG 13 1991

DWR-55-55-2/89

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	5	Fill dirt Topsoil
5	265	brown sandy clay
265	285	clayey sand w/gravel cemented 1st water 4 gpm
285	512	redish brown Sedimentary cracks [illegible] water

I hereby certify that this well was drilled by me (or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller [signature]

Name L. B. DRILLING

Box 4166

Address Huachuca City, AZ 85616

City State Zip

Date 8-5-91

DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

Registration No. 55-531770
D(24-24)4 BCC

File No. _____

COMPLETION REPORT

1. Per **A.R.S. §45-600**, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24	24	H	SW SW NW
Township	Range	Section	¼ ¼ ¼

EQUIPMENT INSTALLED:

Kind of pump Sub
Turbine, centrifugal, etc.

Kind of power Electric H.P. Rating of Motor 3/4
Electric, natural gas, gasoline, etc.

Pumping Capacity 10 Date pump installed: 9July 91
Gallons per minute

WELL TEST:

Test pumping capacity 10 Date Well Tested: 9July 91
Gallons per minute

Method of Discharge Measurement Clock & Bucket
Weir, orifice, current meter, etc.

Static Groundwater Level 259 ft. Drawdown 0 ft.

Total Pumping Lift 259 ft. Drawdown _____ lbs.
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

David G. Ruiz
Print Well Owner's Name

July 23, 1991, 1991
Date

David G Ruiz
Signature of Well Owner or Agent

P.O. Box 4205
Address

Bisbee AZ 85603
City State Zip

RECEIVED
JUL 26 1991

DWR-55-56-2/88

ENTERED JUL 30 1991

FILING FEE $10.00

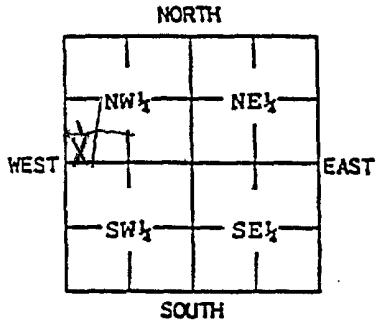
FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)

NOTICE OF INTENTION TO DRILL A WELL OUTSIDE OF AN ACTIVE MANAGEMENT AREA

MAY - 7 1991

Section §45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management, a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department.



INDICATE WELL LOCATION BY X

(Above diagram represents one 640 acre section)

WELL/LAND LOCATION

24 N(S) | 24 E(W) | 4

1. Township | 2. Range | 3. Section

4. SW 1/4 SW 1/4 NW 1/4

10 acre sub-division

5. County Cochise

6. Owner of well: X DAVID G RUIZ

Name P.O. Box 4205

Mailing Address

Bisbee AZ 85603

City State Zip

Telephone: 602-432-4122

7. Owner of land: SAME

Name

Mailing Address

City State Zip

Telephone No.

DESCRIPTION OF PROPOSED WELL

8. Diameter 6 inches

Depth 250 feet

9. Type of Casing PVC

10. Design Pump Capacity:

40 gallons per minute

11. Estimate of total annual pumping:

1.6 acre feet

12. Principal use of water:(be specific)

Irrigation Lawn

13. Other uses intended:(be specific)

domestic

14. Number of Multiple Drinking Water connections, if any: TWO

15. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated: 2 Ac.

16. Construction will start about:

May / 1991

Month Year

DO NOT WRITE IN THIS SPACE

Office Record

File No. D(24-24)4 BCC

Filed 5-7-91 By EL

Input ENTERED MAY 9 1991 By

Duplicate

Mailed 5-9-91 By EL

Registration No. 55-531720

INA

W/S 11 S/B

PLACE OF USE

17. Township 24 N(S)

18. Range 24 E(W)

19. Section 4

20. Legal description of land:

a. SW 1/4 SW 1/4 NW 1/4

10 acre sub-division

b. County Assessor's I.D.

102 | 38 | 002-3

Book | Map | Parcel

21. Type well:

Exempt ____ Non-exempt X

22. Action Requested:

Drill New Well X : or

Deepen ___ Replace ___ Modify ___

Well No. 55-

23. Applicant: Owner X Lessee ___

David G. Ruiz

Name

P.O. Box 4205

Mailing Address

Bisbee, AZ 85603

City State Zip

Telephone: 432-4122

DRILLING FIRM

L. B. DRILLING

24. Firm Name

BOX 4166

HUACHUCA CITY, AZ 85616

Mailing Address

D. W. R. LIC. #344

R. O. C. LIC. #076141-00 (A4

#058233-006 (C-53

City State Zip

L. B. DRILLING

DWR License Number

BOX 4166

HUACHUCA CITY, AZ 85616

D. W. R. LIC. #344

Type of contractor License

R. O. C. LIC. #076141-00 (A4

#058233-006 (C-53

25. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes ____ No X

GENERAL INSTRUCTIONS

1. Fill out this form in DUPLICATE and send WITH $10.00 FEE to 15 South 15th Avenue, Phoenix, AZ 85007.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen, replace or modify a well outside of an Active Management Area.
4. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in Item 21.
5. Construction standards for wells, including abandonment, shall be in accordance with Department Rules and Regulations.

I state that Notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well as set forth on the reverse side of this form.

May 3 / 91

Date

David G. Ruiz

Signature of well owner/lessee

DWR 55-40-4/90 (Rev.)

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Receipt of this annotated Notice constitutes authorization to proceed in drilling, deepening, or modifying the well as set forth on this Notice.

2. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well.

3. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

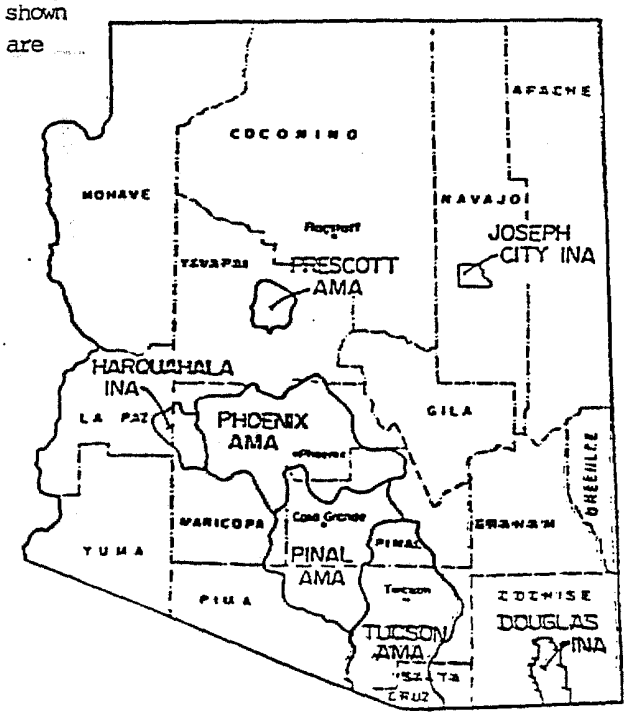
4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 3 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to A.R.S. § 45-434 or § 45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of A.R.S. § 45-437.

5. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of this Notice.

6. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

7. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of the annotated copy of this Notice.

8. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.



THIS IS NOT A BILL

L.B. Drilling
P.O. Box 4166
Huachuca City, AZ. 85616

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

R E C E I P T

KIND ENTRY 55
FILE REFERENCE NO. 531770 THRU

David G. Ruiz

ITEM DESCRIPTION	RATE	AMOUNT
FILING FEE FOR NOI		10.00
REG. NO. 55-531770		
FILE NO.D(24-24)4 BCC		

PAID

CHECK NO 1480 RECEIVED BY EL DATE 05-08-91 TOTAL $ 10.00

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
3550 N.Central Avenue * Phoenix, Arizona 85012
(602) 771-8500 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

RECEIVED JUL 14 2006

FILE NUMBER: D(24-24) 18 ADC
WELL REGISTRATION NUMBER: 55- 210865
PERMIT NUMBER (IF ISSUED):

SECTION 1. DRILLING AUTHORIZATION

Drilling Firm

NAME	DWR LICENSE NUMBER
BRADLY DRILLING	736
ADDRESS	TELEPHONE NUMBER
PO Box 4707	520-456-2355
CITY/STATE/ZIP	FAX
HUACHUCA CITY, AZ 85616	

SECTION 2. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: ROBERT & ELIZABETH SCHWARTZ
MAILING ADDRESS: 2003 BRUSH WOOD DR
CITY / STATE / ZIP: SIERRA VISTA, AZ 85650
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-458-4311
FAX:
WELL NAME:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE 1/4	40 ACRE 1/4	10 ACRE 1/4

LATITUDE: ° ' "N
LONGITUDE: ° ' "W
LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level
METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☐ Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ GPS : ☐ Survey-Grade
COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 102 MAP 56 PARCEL 009
COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. WELL CONSTRUCTION DETAILS

Drill Method

CHECK ONE
- ☒ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development

CHECK ONE
- ☒ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☒ Other (please specify)

Condition of Well

CHECK ONE
- ☐ Capped
- ☒ Pump Installed

Method of Sealing at Reduction Points

CHECK ONE
- ☐ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☒ Other (please specify)

NATIVE

Condition of Well

DATE WELL CONSTRUCTION STARTED: 6-10-06
DATE WELL CONSTRUCTION COMPLETED: 6-11-06

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
Bradly Drilling		6-11-06

DWR-55-55-10/01 (Rev.)

ENTERED JUL 21 2006

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 210865

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

DEPTH OF BORING	DEPTH OF COMPLETED WELL
305' Feet Below Land Surface	305' Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
123' Feet Below Land Surface	6-11-06	NOON	☐ Valve ☐ Other:

Borehole / Installed Casing

Borehole DEPTH FROM SURFACE FROM (feet)	Borehole DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)	Installed Casing DEPTH FROM SURFACE FROM (feet)	Installed Casing DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (X) STEEL	MATERIAL TYPE (X) PVC	MATERIAL TYPE (X) ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (X) BLANK OR NONE	PERFORATION TYPE (X) WIRE WRAP	PERFORATION TYPE (X) SHUTTER SCREEN	PERFORATION TYPE (X) MILLS KNIFE	PERFORATION TYPE (X) SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	12¼	0	20	8⅝	X				X						
20	305	8"	10	260	6		X			X						
			260	305	6		X							X		1/8"

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (X) NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
0	20		X									
20	305								NATIVE			

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 210865

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	18	Top Soil	
18	35	Clay	
35	68	Sand Clay	
68	105	Clay	
105	195	Clay Some Sand	
195	215	Sand	X
215	230	Clay	
230	240	Sand	X
240	305	Sand & Clay Layers	X

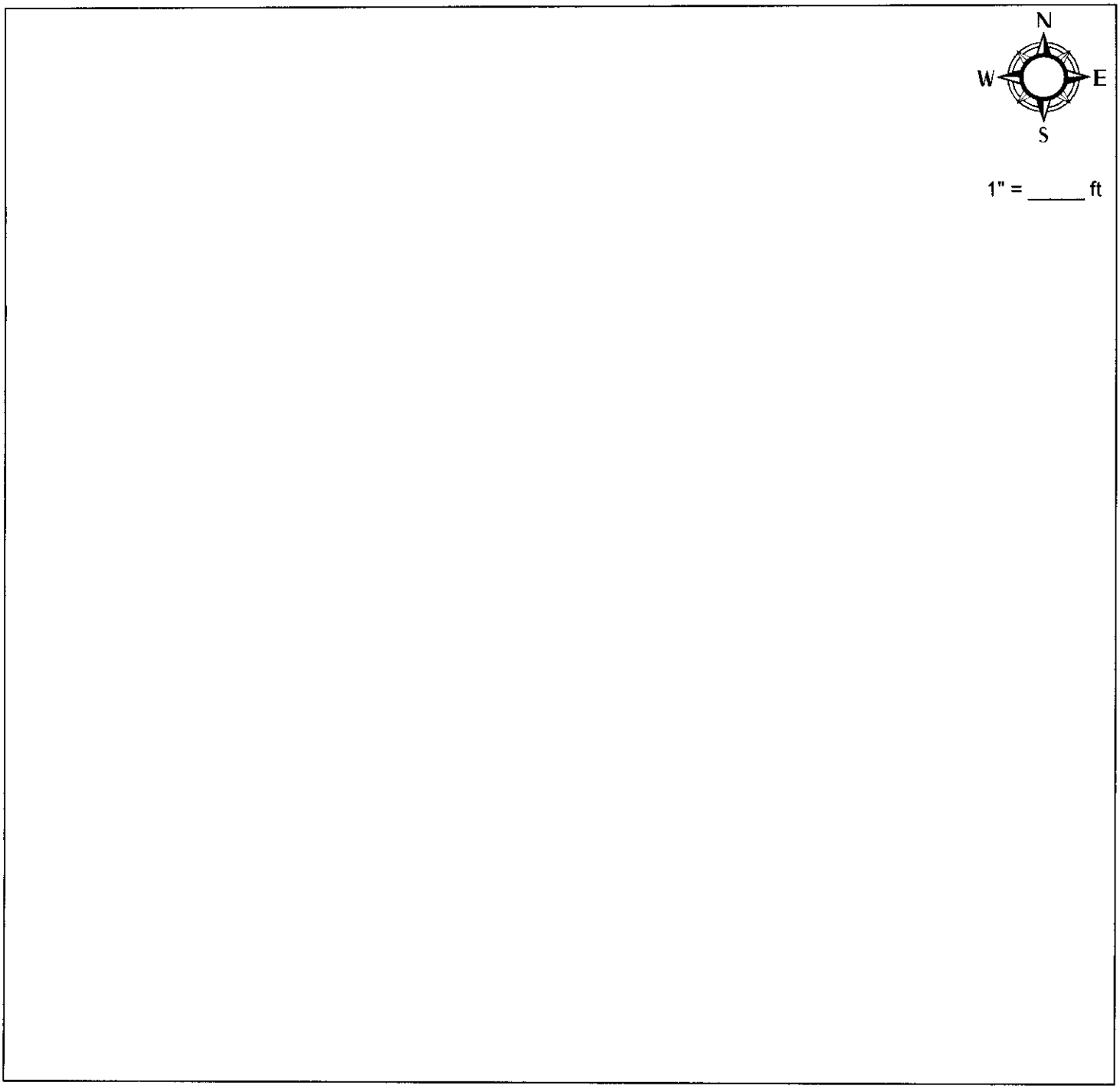
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 210865

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
ROBERT & ELIZABETH SCHWARTZ	102	56	009

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
3550 N. Central Avenue * Phoenix, Arizona 85012
(602) 771-8500 * (800) 352-8488
www.water.az.gov

Pump Installation Completion Report

RECEIVED
JUN 29 2006
INFORMATION MANAGEMENT

- Review instructions prior to completing form
- The registered well owner should file this report with the Department within 30 days following installation of pump equipment

** PLEASE PRINT CLEARLY **

FILE NUMBER: **D(24-24) 18 ADC**
WELL REGISTRATION NUMBER: **55-** 210865

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL
ROBERT & ELIZABETH SCHWARTZ

MAILING ADDRESS
2003 BRUSH WOOD DR

CITY / STATE / ZIP
SIERRA VISTA, AZ 85650

CONTACT PERSON NAME AND TITLE
ROBERT SCHWARTZ

TELEPHONE NUMBER
520-458-4311

FAX

Location of Well

WELL LOCATION ADDRESS (IF KNOWN)
3466 S. CLUBVIEW TERRACE BISBEE, AZ. 85603

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	18	NE 1/4	SE 1/4	SW 1/4

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
102	56	009

COUNTY WHERE WELL IS LOCATED
COCHISE

SECTION 2. EQUIPMENT INSTALLED

DATE PUMP INSTALLED

Pump Type
CHECK ONE

- ☐ Air Lift
- ☐ Bucket
- ☐ Centrifugal
- ☐ Jet
- ☐ Piston
- ☐ Rotary
- ☒ Submersible
- ☐ Turbine
- ☐ Other (please specify)

Power Type
CHECK ONE

- ☐ Diesel Engine
- ☒ Electric Motor
- ☐ Gasoline Engine
- ☐ Hand
- ☐ Natural Gas
- ☐ Windmill
- ☐ Other (please specify)

RATED PUMP CAPACITY: 16 Gallons Per Minute

HORSE POWER RATING OF MOTOR: 2 HP.

SECTION 3. WELL TEST

Pump Test Data

DATE WELL TESTED

STATIC WATER LEVEL (A): 130 Feet Below Land Surface

PUMPING WATER LEVEL (B): 285 Feet Below Land Surface

DRAWDOWN [(B) - (A)]: 155

TEST PUMPING RATE: 16 GPM Gallons Per Minute

DURATION OF PUMP TEST (Minimum 4 Hours): 4 hr Hours

TOTAL PUMPING LIFT: 285 Feet

FOR FLOWING WELL, MEASURED SHUT IN HEAD ☐ FT ☐ PSI

Method of Discharge Measurement

CHECK ONE

- ☐ Bailer
- ☒ Bucket - Barrel - Stopwatch
- ☐ Current
- ☐ Estimated - Air Lift
- ☐ Gauge
- ☐ Meter
- ☐ Orifice
- ☐ Volume
- ☐ Weir - Flume
- ☐ Other (please specify)

Method of Measuring Water Level

CHECK ONE

- ☐ Air Line
- ☒ Electric Measuring Line (Sounder)
- ☐ Steel Tape
- ☐ Other (please specify)

ENTERED JUL 14 2006

I HEREBY CERTIFY *that the above statements are true to the best of my knowledge and belief according to* A.R.S § 45-600(B)

SIGNATURE OF WELL OWNER: Robert Schwartz Elizabeth Schwartz

DATE: 6/20/06

DWR-55-56 (Rev. 10/11/01)

ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

3550 N. Central Avenue
Phoenix, Arizona 85012

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-210865

AUTHORIZED DRILLER: BRADLY DRILLING LICENSE NO: 736

NOTICE OF INTENTION TO DRILL A NON-EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: ROBERT & ELIZABETH SCHWARTZ 2003 BRUSH WOOD DR SIERRA VISTA, AZ 85650

THE WELL(S) IS/ARE TO BE LOCATED IN THE:
SW ¼ OF THE SE ¼ OF THE NE ¼ SECTION 18 TOWNSHIP 24 SOUTH RANGE 24 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 102-56-009

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 22ND DAY OF JANUARY, 2007

WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax www.water.az.gov

JAN 2 3 2006

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

FEB - 6 2006

AMA / INA	B	SB
—	76	
RECEIVED DATE 1-23-06	WS 11	
ISSUED DATE 2-7-06	WQARF	CERCLA —

FILE NUMBER D(24-24)18ADC

WELL REGISTRATION NUMBER 55 - 210865

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

- [X] County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
  - [X] Field Inspection Performed
  - [ ] Site Plan Review Only
- [ ] Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ R.S.

TELEPHONE NUMBER: 520-432-9442

DATE: JAN 18, 2006

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION

DATE Jan 19 2006

BY Carlos Diaz R.S.

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz R.S.

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

- [ ] Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)
- [✓] Non-Exempt (Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 50 Gallons Per Minute

Proposed Action

CHECK ONE

- [✓] Drill New Well
- [ ] Deepen
- [ ] Replace
- [ ] Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 -

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY): 3466 S. CLUBVIEW TERRACE. BIZBEE AZ. 85603

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	18	NE ¼	SE ¼	SW ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
102	56	009	½

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: COCHISE

SECTION 3. OWNER INFORMATION

Well Owner		**Landowner** (if different from Well Owner)	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	ROBERT ELIZABETH SCHWARTZ	FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL	ROBERT ELIZABETH
MAILING ADDRESS	2003 BRUSHWOOD DRIVE	MAILING ADDRESS	2003 BRUSHWOOD DRIVE
CITY / STATE / ZIP CODE	SIERRA VISTA, AZ. 85650	CITY / STATE / ZIP CODE	SIERRA VISTA, AZ. 85650
CONTACT PERSON NAME AND TITLE	ROBERT SCHWARTZ	CONTACT PERSON NAME AND TITLE	ROBERT SCHWARTZ
TELEPHONE NUMBER	520-458-4311	TELEPHONE NUMBER	520-458-4311
FAX		FAX	

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		✓	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		✓	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		✓	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 210865

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: BRADLEY DRILLING

DWR LICENSE NUMBER: 736

ROC LICENSE CATEGORY: C-53

TELEPHONE NUMBER: 520-456-2355

FAX: 520-456-0247

MAILING ADDRESS: PO BOX 4707

CITY / STATE / ZIP CODE: HUACHUCA CITY, AZ. 85616

RECEIVED JAN 23 2006 GROUNDWATER MGT

SECTION 6. WATER / SITE INFORMATION

Principal Use **of Water** (CHECK ONE)	***Other Uses*** **of Water** (CHECK ALL THAT APPLY)
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☑ Domestic	☑ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify)*:	☐ Other *(please specify)*:

RECEIVED FEB - 6 2006 GROUNDWATER MGT

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

DATE CONSTRUCTION IS TO BEGIN: FEB 2006

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	12 1/4
20 ~~300~~	300	8

Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	20	8 5/8	X*				X						Cement
10	260	6		X			X						
260	300	6		X							X		

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: ROBERT SCHWARTZ — OWNER

SIGNATURE OF WELL OWNER: Robert Schwartz Gabriella Schwartz — DATE: 1-10-2006

SIGNATURE OF LANDOWNER, IF APPLICABLE (SEE INSTRUCTIONS): Robert Schwartz Gabriella Schwartz — DATE: 1-10-2006

RECEIVED
FEB - 6 2006

RECEIVED
JAN 23 2006

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 210865

CHECK ONE: ☒ FILING MANUALLY ☐ FILING ELECTRONICALLY*

*DRILLER'S E-MAIL ADDRESS:

COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL CODE

If applicant is filing this NOI electronically via the ADWR website and County approval is required, please indicate approval by providing a County Approval Code.

COUNTY APPROVAL CODE

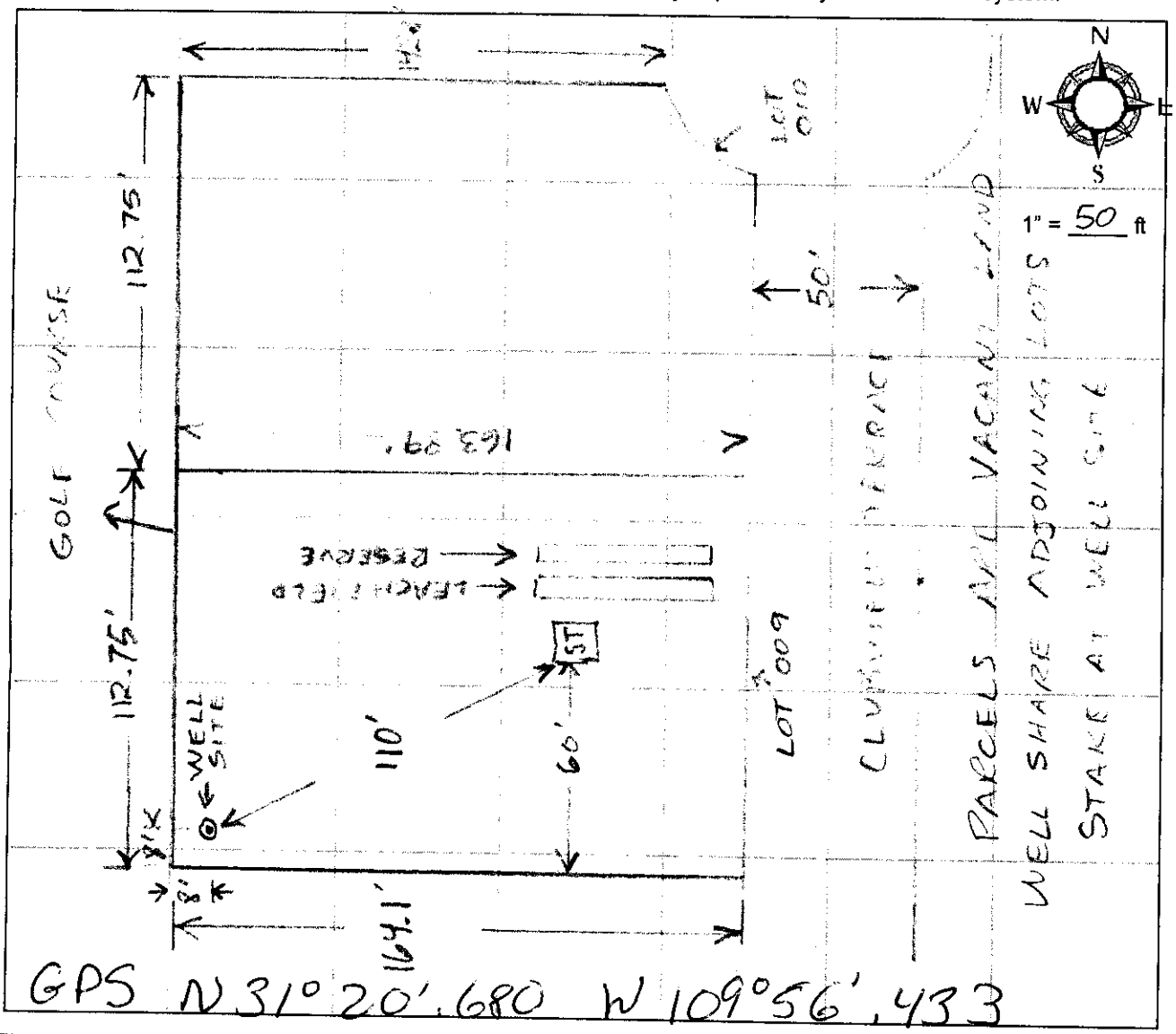
WELL SITE PLAN

NAME OF WELL OWNER
ROBERT SCHWARTZ

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
102	56	009

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE
CARLOS DIAZ RS

COUNTY OR LOCAL AUTHORITY SIGNATURE
Carlos Diaz RS

TELEPHONE NUMBER
520-432-9442

DATE
Jan 18, 2006

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION

DATE Jan 18, 2006

BY Carlos Diaz RS

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

RECEIVED FEB - 6 2006 GROUNDWATER MGT.

- Review instructions prior to completing form. Use black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

JAN 23 2006

** PLEASE PRINT CLEARLY **

AMA / INA		B	SB
RECEIVED	DATE	WS	
ISSUED	DATE	WQARF	CERCLA

FILE NUMBER

WELL REGISTRATION NUMBER

55 - 210865

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

- [X] County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
  - [X] Field Inspection Performed
  - [ ] Site Plan Review Only
- [ ] Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE

Carlos Diaz RS

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION

DATE Jan 19 2006

BY Carlos Diaz RS

COUNTY SIGNATURE

Carlos Diaz RS

ROBERT SCHWARTZ
ELIZABETH A SCHWARTZ
2003 BRUSHWOOD
SIERRA VISTA, AZ 85650

754

date 1-10-2006 91-574/1221 963

PAY to the order of ADRW $150.00

One Hundred Fifty + 00/100 dollars

Compass Bank
Sierra Vista, Arizona

for WELL PERMIT

[redacted]

PLACE. BISBEE AZ. 85603

160 ACRE	40 ACRE	10 ACRE
¼	¼	¼

MBER

PARCEL	# OF ACRES
009	½

ERENT FROM LOCATION OF WELL)

160 ACRE	40 ACRE	10 ACRE
¼	¼	¼

Gallons Per Minute

SECTION 3. OWNER INFORMATION

Well Owner		**Landowner** (if different from Well Owner)	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL	
ROBERT ELIZABETH SCHWARTZ		ROBERT ELIZABETH	
MAILING ADDRESS		MAILING ADDRESS	
2003 BRUSHWOOD DRIVE		2003 BRUSHWOOD DRIVE	
CITY / STATE / ZIP CODE		CITY / STATE / ZIP CODE	
SIERRA VISTA, AZ. 85650		SIERRA VISTA, AZ. 85650	
CONTACT PERSON NAME AND TITLE		CONTACT PERSON NAME AND TITLE	
ROBERT SCHWARTZ		ROBERT SCHWARTZ	
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX
520-458-4311		520-458-4311	

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		✓	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		✓	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		✓	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

ARIZONA DEPARTMENT OF WATER RESOURCES
Water Management Support Section – NOI Unit
3550 N Central Ave, 2nd Fl., Phoenix, Arizona 85012-2105
Telephone (602) 771-8646
Fax (602) 771-8691

RECEIVED
FEB - 6 2006
GROUNDWATER MGT

JANET NAPOLITANO
Governor

HERB GUENTHER
Director

PLEASE RETURN ALL PAPERS

January 27, 2006

ROBERT & ELIZABETH SCHWARTZ
2003 BRUSHWOOD DR
SIERRA VISTA, AZ 85650

Re: Well Registry Number: 55-210865
File (Location) Number: D(24-24)18

Dear Applicant:

The Department of Water Resources recently received your Notice of Intent (NOI) to Drill, Deepen, Replace or Modify a Well. However, our review indicates that the NOI is incomplete under the Groundwater Management Act for the following reason(s):

- **NEED ALL QUARTERS SEE ATTACHED SHEET FOR BREAKDOWN OR CONTACT YOUR COUNTY ASSESSORS OFFICE FOR THIS INFORMATION.**

PLEASE CALL MONICA ORTIZ AT 602-771-8643 WITH ANY QUESTIONS.

In accordance with Arizona Revised Statutes (A.R.S.) § 45-596, Paragraph D, the Department is mailing this "statement of determination" as a request for information necessary to make the NOI complete and correct. Please provide the Department with the additional information and resubmit the corrected NOI form and any attachments (if applicable) to ADWR. The Department's substantive review time frame is suspended until all requested information is provided. If the Department does not receive the necessary information within sixty (60) days, the application may be denied. You would then have to re-initiate the NOI process and pay a new filing fee to receive a drilling authority for this location.

ATTACH THIS NOTICE WHEN RESUBMITTING THE COMPLETED NOI AND RETURN TO:

WATER MANAGEMENT SUPPORT SECTION
PO BOX 458
PHOENIX, ARIZONA 85001-0458

YOU MAY ALSO CONTACT YOUR DRILLER OR COUNTY ASSESSOR'S OFFICE FOR ASSISTANCE PERTAINING TO THE NECESSARY INFORMATION THAT IS REQUIRED TO COMPLETE YOUR APPLICATION.

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue, Phoenix, Arizona 85012
Telephone (602) 771-8500
Fax (602) 771-8691

February 07, 2006

Janet Napolitano
Governor

Herbert R. Guenther
Director

ROBERT & ELIZABETH SCHWARTZ
2003 BRUSH WOOD DR
SIERRA VISTA, AZ 85650

Registration No. 55-210865
File No. D(24-24) 18 ADC

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well that you recently filed with this Department pursuant to A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed or otherwise provided a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card, which must be displayed on the drill rig during drilling.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the proposed well, you may not proceed with drilling until you file an amended NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the amended NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DWR form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed is a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55) within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at <http://www.water.az.gov/adwr/content/forms/default.htm#NOI>.

Sincerely,

Monica Ortiz

Monica Ortiz
NOI Unit
Water Management Support Section

Enclosures

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 14 1982 DEP'T. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55-649994
FILE NO. D(24-24)18dcc
FILED 6-14-82 AT 3p
(DATE) (TIME)
INA —
AMA —

1. Name of Registrant:
Shafer, Earnest E.
315 I St. PO. BOX 545 Naco Arizona 85620
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
D(24-24)18 dcc (File Number) 35- (Control Number)

3. a. The well is located within the SW ¼ SW ¼ SE ¼, Section 18, of Township 24(S) N/S, Range 24(E) E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
domestice.

5. If for irrigation use, number of acres irrigated from well none.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 162 feet
b. Diameter of casing 8 inches
c. Depth of casing 162 feet
d. Type of casing welded, steel .
e. Maximum pump capacity 30, static 0 psi gallons per minute.
f. Depth to water 120 feet below land surface.
g. Date well completed July (Month) 15 (Day) 1966 (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE June 12/82 SIGNATURE OF REGISTRANT Earnest E Shafer

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

PAID 10/11/96 SU

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street - Phoenix, Arizona 85004-3903
Phone (602) 417-2470

RECEIVED OCT 10 1996 GROUNDWATER MGT.

NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE READ SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS ON REVERSE SIDE OF THIS FORM BEFORE COMPLETING.

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES.

S. STARK / D. CAMPBELL | P.O. 4325 | BISBEE | AZ | 85603-4325
Land Owner's Name | Current Mailing Address | City | State | Zip

Telephone No. 520-432-3672

COUNTY ASSESSOR'S PARCEL ID INFORMATION:

Well Located in COCHISE County | 101 (BOOK) 43 (MAP) 005 (PARCEL) 2+ (# of Acres)

APPROVED BY THE COCHISE COUNTY HEALTH DEPT. OFFICIAL SEAL OR STAMP
DATE 10-7-96
BY [signature] Sanitarian

Well/Land Location (must be completed as requested):

NE NW ¼ SE ¼ SW ¼ of Section 11 Township 24 N/S Range 24 E/W
10AC 40AC 160AC

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

Check one:
Recommend Approval ✓; Insufficient Information to Make Determination ___; Variance Required ___ (Explanation attached)

DATE 10-7-96 AUTHORIZED SIGNATURE [signature] TITLE D.A. Environmental Health

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH ADWR

1. Section §45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section §45-596(d) provides that the Department has 15 days after the receipt of a complete and correct notice of intention to record the notice and mail duplicate to owner. Drill card will be mailed directly to drilling firm as stated in item #14.
3. Please mail two original notices with original signatures, a site plan in DUPLICATE, and a check or money order (no cash) in the amount of $10.00 to P.O. Box 458, Phoenix, Arizona 85001-0458 or hand deliver to 500 North Third Street, Phoenix, Arizona 85004-3903. USE BLACK OR BLUE INK.
4. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
5. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. Owner of well:
S. STARK / D CAMPBELL
Name
P.O. 4325
Current Mailing Address
BISBEE AZ 85603-4325
City State Zip
Telephone No. 520-432-3672

2. Action requested: Drill New Well ___; Deepen ✓ Modify ___ Replace ___.
For a replacement well provide: Maximum capacity of the original well 30 gallons per minute; distance from the original well ___ feet.
Well Registration No. 55- 643481

3. Construction will start about:
Month 10 Year 96

4. Description of proposed well:
Diameter 6 11 inches
Depth 190' feet
Type of Casing STEEL

5. Design pump capacity:
APPROX 15 gallons per minute

6. Lessee of land of wellsite:
NONE
Name
Current Mailing Address
City State Zip
Telephone No.

7. Principal Use of Water; (be specific):
HOME

8. Other uses of Water; (be specific):
NONE

9. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated; NONE

FOR DEPARTMENT USE ONLY
File No. D(24-24)11 cdbb
Filed 10-10-96 By SU
Input ___ By ___
DUPLICATE MAILED
Date 11-7-96
Registration 55- 643481
AMA/INA ___
W/S 11 S/B ___

ENTERED NOV 19 1996

10. Place of Use (Legal Description of Land):
NW¼ SE¼ SW¼ Section 11
10 AC 40AC 160AC
Township 24 N/S Range 24 E/W

11. Type of Well (Check One):
Exempt ✓ Non-Exempt ___

12. Check One:
Residential ✓ Commercial ___

13. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous materials or petroleum storage areas and tanks? Yes ___ No ✓

14. Drilling Firm:
OASIS DRILLING
Name
P.O. 436
Mailing Address
ANIMAS N.M. 88020
City State Zip
Telephone No. 327
DWR License Number 53
ROC License Category L53

RECEIVED NOV 4 1996 GROUNDWATER MGT

I State that this Notice is filed in compliance with A.R.S. §§45-595 and 45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations and conditions set forth on the reverse side of this form.

DON CAMPBELL | [signature] | 10/4/96
Typed or Printed Name and Title | Signature [ ] Land Owner [ ] Lessee of Wellsite, Title | Date

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Pursuant to Section §45-596, Arizona Revised Statutes, provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department.
2. If any water from a proposed well on a parcel of land of twenty or fewer acres will be used for domestic purposes, as defined in §45-454, the applicant shall submit a site plan to scale of the property with the county assessor's parcel identification number. The site plan:

   a. Will be on a 8½"x11" piece of plain paper with representation of the locations of all structures, septic tank or sewer systems and proximity of adjacent lot lines to scale.

   b. Must show the proposed well location and the location of any septic or sewer system that is either located on the property or within one hundred feet of the proposed well site.

   c. Shall demonstrate to the Director's satisfaction that the well will not be drilled within one hundred feet of any septic or sewer system.

   d. Must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Before approval, the health authority shall review the plan and determine whether the proposed well location complies with applicable state and local laws regarding the placement of wells. If so, the health authority shall endorse the site plan and the proposed well placement.

3. Endorsement by the county/local authority is based on the best available judgement that this well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. Information brought to light at a future date may render this determination invalid.

4. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use and is later proposed to be converted to use for domestic purposes, as defined in section §45-454, the well owner shall file a notice of intention to drill and comply with the requirements prescribed pursuant to this section before the well is converted and any water from that well used for domestic purposes.

5. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

6. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an Irrigation Non-Expansion Area or Active Management Area to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

7. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of the notice (§45-596.E.).

8. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this notice.

9. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

10. If an individual other than the land owner or lessee signs this Notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific Notice on their behalf, shall accompany the Notice.

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

November 7, 1996

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

STARK/CAMPBELL
PO BOX 4325
BISBEE AZ 85603-4325

Registration No. 55-643481
File No. D(24-24)11 CDB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill/deepen/modify/replace a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Sylvia Valdez
Water Resource Technician
Groundwater Management Support Section

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470

REQUEST FORM TO CHANGE WELL INFORMATION OWNERSHIP * DRILLER * VARIANCE

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-0458 or hand deliver to the above address with applicable fee. NOTE: **A.R.S. §45-593.C** requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)

NOTE: If the location of the proposed well changes after drilling authority has been issued, **attach a $10.00 reissue fee for each well.**

WELL REGISTRATION NO. 55-_____ **FILE NO:**_____

If known, I/We request the following well information be changed:_____

_____

Date_____ **Signature of Current Well Owner**_____

2. STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I,_____, state that I am the **Previous/New Owner** of the well described below:

_____¼ _____¼ _____¼ of Section_____ Township_____ Range_____
10 Acre 40 Acre 160 Acre

Assessor's tax parcel number of the parcel on which the well is located: Book_____ Map_____ Parcel_____.

Well Registration No. 55-_____ File No._____(if known)

_____ _____
PRINT Previous Owner's Name **PRINT** New Owner's Name

_____ _____
Mailing Address Mailing Address

_____ _____
City State Zip City State Zip

_____ _____
Telephone Number Telephone Number

Signature of Previous/New Well Owner_____ **Date**_____

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470 Fax (602) 417-2422

3. REQUEST TO CHANGE WELL DRILLER $10.00 FEE REQUIRED FOR EACH WELL

This request must be received by this Department and the Drill Card issued to the new drilling firm prior to the drilling or completion of any well.

Well Registration No. 55-_____ **File No.**_____

Original Well Driller	**New Well Driller**
Mailing Address	**Mailing Address**
Telephone Number	**Telephone Number**
ADWR License Number	**ADWR License Number**
R.O.C. License Category	**R.O.C. License Category**
Typed or Printed Name of Well Owner	**Signature of Well Owner** **Date**

The fee charge for well ownership and reissue of drill card is authorized by R12-15-151, effective June 30, 1994.

4. REISSUE OF DRILLING AUTHORITY FOR VARIANCE REQUEST: ($10.00 EACH WELL)

NOTE: If extraordinary or unusual conditions exist, after the initial drilling authority has been issued, the well owner or well driller may request a variance from the provisions of R12-15-811.

WELL REGISTRATION NO. 55-_____ **FILE NO:**_____

I/WE REQUEST THE FOLLOWING WELL DRILLING AUTHORITY BE REISSUED PER THE ATTACHED VARIANCE REQUEST:

_____

Signature of Well Owner/Well Driller_____ **Date**_____

STATE OF ARIZONA
ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470

COMPLETION REPORT
(Pump Installation Report)

1. **Per A.R.S. § 45-600, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.**

2. **Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation. For a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.**

3. **The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.**

4. **The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.**

REGISTRATION NO: 55-_____ **FILE NO: _____**

LOCATION OF THE WELL:

_____ N/S _____ E/W _____ ¼ _____ ¼ _____ ¼ _____
Township Range Section 10-acre 40-acre 160-acre

EQUIPMENT INSTALLED:

Kind of pump_____ Kind of power_____
Turbine, submersible, centrifugal, etc. (Electric, natural gas, gasoline, etc.

H.P. Rating of Motor_____ Pumping Capacity_____ Date Pump Installed_____

WELL TEST:

Test pumping capacity_____ Date Well Tested:_____
Gallons per minute

Method of Discharge Measurement_____
Weir, orifice, current meter, etc.

Static Groundwater Level_____ ft. Drawdown_____ ft.

Total Pumping Lift_____ ft. Drawdown_____ lbs.
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

_____
Print Well Owner's Name Address City State Zip

_____
Signature of Well Owner Phone Number Date

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470

RECEIVED
NOV - 4 1996
RECORDS MGT

REQUEST FORM TO CHANGE WELL INFORMATION
OWNERSHIP * DRILLER * VARIANCE

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-0458 or hand deliver to the above address with applicable fee. NOTE: A.R.S. §45-593.C requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. **CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)**

NOTE: If the location of the proposed well changes after drilling authority has been issued, **attach a $10.00 reissue fee for each well.**

WELL REGISTRATION NO. 55- 643481 **FILE NO:** _____

If known, I/We request the following well information be changed: _____

_____

Date 10/30/96 **Signature of Current Well Owner** D D Campbell

2. **STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)**

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, D. CAMPBELL / S. STARK, state that I am the ~~Previous~~/New **Owner** of the well described below:

NW ¼ (10 Acre) SE ¼ (40 Acre) SW ¼ (160 Acre) of Section 11 Township 24 S Range 24 E

Assessor's tax parcel number of the parcel on which the well is located: Book 101 Map 43 Parcel 005.

Well Registration No. 55- 643481	File No. _____ (if known)
FRED BAKER **PRINT** Previous Owner's Name	D. CAMPBELL / S. STARK **PRINT** New Owner's Name
_____ Mailing Address	PO # 4325 Mailing Address
_____ City State Zip	BISBEE AZ 85603-4325 City State Zip
_____ Telephone Number	520 432-3892 Telephone Number

Signature of ~~Previous~~/New Well Owner D D Campbell **Date** 10/31/96

DWR 55-71 (Rev 6/96)

ENTERED NOV - 7 1996

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470 Fax (602) 417-2422

3. REQUEST TO CHANGE WELL DRILLER — $10.00 FEE REQUIRED FOR EACH WELL

This request must be received by this Department and the Drill Card issued to the new drilling firm prior to the drilling or completion of any well.

Well Registration No. 55-_____ **File No.**_____

Original Well Driller	**New Well Driller**
Mailing Address	**Mailing Address**
Telephone Number	**Telephone Number**
ADWR License Number	**ADWR License Number**
R.O.C. License Category	**R.O.C. License Category**
Typed or Printed Name of Well Owner	**Signature of Well Owner** **Date**

The fee charge for well ownership and reissue of drill card is authorized by R12-15-151, effective June 30, 1994.

4. REISSUE OF DRILLING AUTHORITY FOR VARIANCE REQUEST: ($10.00 EACH WELL)

NOTE: If extraordinary or unusual conditions exist, after the initial drilling authority has been issued, the well owner or well driller may request a variance from the provisions of R12-15-811.

WELL REGISTRATION NO. 55-_____ **FILE NO:**_____

I/WE REQUEST THE FOLLOWING WELL DRILLING AUTHORITY BE REISSUED PER THE ATTACHED VARIANCE REQUEST:

_____

Signature of Well Owner/Well Driller_____ **Date**_____

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-643481

AUTHORIZED DRILLER: OASIS DRILLING LICENSE NO: 327

NOTICE OF INTENTION TO DEEPEN AN EXISTING WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: STARK/CAMPBELL

The well(s) is/are to be located in the:

NW 1/4 of the SE 1/4 of the SW 1/4 Section 11 Township 24 SOUTH Range 24 EAST

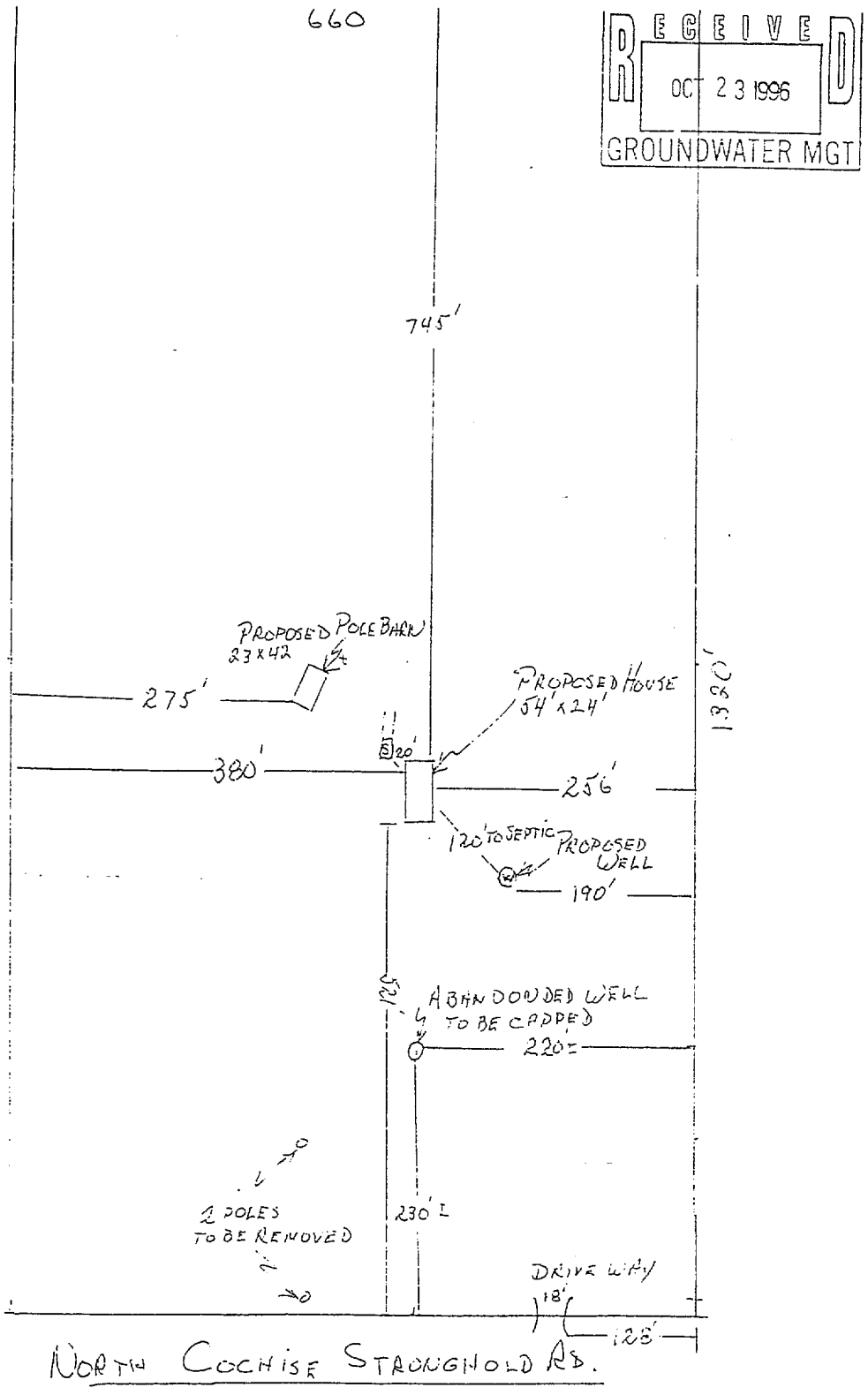
No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 9TH DAY OF OCTOBER, 1997.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912


660
RECEIVED
OCT 23 1996
GROUNDWATER MGT
745'
PROPOSED POLE BARN
23 x 42
275'
PROPOSED HOUSE
54' x 24'
20'
380'
256'
1330'
120' TO SEPTIC
PROPOSED WELL
190'
125'
ABANDONED WELL
TO BE CAPPED
220'
2 POLES
TO BE REMOVED
230'
DRIVE WAY
18'
125'
NORTH COCHISE STRONGHOLD RD.

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. OASIS DRILLING
   PO 436
   ANIMAS NM 88020

2. Owner Name:_____
   Address:_____
   City **State** **Zip**

3. Location:_____N/S _____E/W _____ ¼ _____ ¼ _____ ¼ _____
   Township **Range** **Section** **10-acre** **40-acre** **160-acre**

4. Well Registration No. 55-_____ (Required)
5. Permit No._____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole_____ft.
7. Type of casing_____
8. Diameter and length of casing_____in. from_____to_____,_____in from_____to_____
9. Method of sealing at reduction points_____
10. Perforated from_____to_____,from_____to_____ from_____to_____
11. Size of cuts_____ Number of cuts per foot_____
12. If screen was installed: Length_____ft. Diam_____in. Type_____
13. Method of construction_____
    (drilled, dug, driven, bored, jetted, etc)
14. Date started_____
    Month **Day** **Year**
15. Date completed_____
    Month **Day** **Year**
16. Depth to water_____ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
    _____
18. If flowing well, state method of flow regulation:_____
19. Remarks:_____
    _____
    _____
    _____
    _____

DWR-55-55-7/95 (Rev.)

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-643481
File No. D(24-24)11 CDB
Received_____**By**_____
Entered_____**By**_____

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name:_____

_____
Street

_____
City State Zip Phone No.

_____
Signature of Driller Date

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-643481

AUTHORIZED DRILLER: OASIS DRILLING LICENSE NO: 327

NOTICE OF INTENTION TO DEEPEN AN EXISTING WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: STARK/CAMPBELL

The well(s) is/are to be located in the:

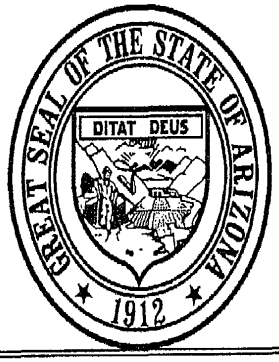
NW 1/4 of the SE 1/4 of the SW 1/4 Section 11 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 9TH DAY OF OCTOBER, 1997.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING



PAID 10/11/96 SU

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street - Phoenix, Arizona 85004-3903
Phone (602) 417-2470

RECEIVED OCT 10 1996 GROUNDWATER MGT

NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE READ SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS ON REVERSE SIDE OF THIS FORM BEFORE COMPLETING.

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES.

S. STARK/D. CAMPBELL — Land Owner's Name
PO. #4325 — Current Mailing Address
BISBEE — City
AZ — State
85603 — Zip

Telephone No. 520-432-3672

COUNTY ASSESSOR'S PARCEL ID INFORMATION:

Well Located in Cochise County — BOOK 101 — MAP 43 — PARCEL 05 — # of Acres 2+

Well/Land Location (must be completed as requested):

NW ¼ SE ¼ SW ¼ of Section 11 Township 24 N/S Range 24 E/W
10AC 40AC 160AC

OFFICIAL SEAL OR STAMP

APPROVED BY THE COCHISE COUNTY HEALTH DEPT. DATE 10-7-96 BY [signature] Sanitarian

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

Check one:
Recommend Approval ✓; Insufficient Information to Make Determination ___; Variance Required ___ (Explanation attached)

DATE 10-7-96 AUTHORIZED SIGNATURE [signature] TITLE DIR. Environmental Health

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH ADWR

1. Section §45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section §45-596(d) provides that the Department has 15 days after the receipt of a complete and correct notice of intention to record the notice and mail duplicate to owner. Drill card will be mailed directly to drilling firm as stated in item #14.
3. Please mail two original notices with original signatures, a site plan in DUPLICATE, and a check or money order (no cash) in the amount of $10.00 to P.O. Box 458, Phoenix, Arizona 85001-0458 or hand deliver to 500 North Third Street, Phoenix, Arizona 85004-3903. USE BLACK OR BLUE INK.
4. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
5. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. Owner of well:
S. STARK/D. CAMPBELL
Name
PO. 4325
Current Mailing Address
BISBEE AZ 85603
City State Zip
Telephone No. 432-3672

2. Action requested: Drill New Well ___; Deepen X Modify ___ Replace ___.
For a replacement well provide: Maximum capacity of the original well 20 gallons per minute; distance from the original well 196 feet.
Well Registration No.55- 643481

3. Construction will start about:
Month 10 Year 96

4. Description of proposed well:
Diameter 6" inches
Depth 196 feet
Type of Casing IRON

5. Design pump capacity:
Approx 15 gallons per minute

6. Lessee of land of wellsite:
Name
NONE
Current Mailing Address
City State Zip
Telephone No. ___

7. Principal Use of Water; (be specific):
HOME

8. Other uses of Water; (be specific):
NONE

9. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated; NONE

FOR DEPARTMENT USE ONLY
File No. D(24-24)11 cdb
Filed 10-10-96 By SU
Input ___ By ___
DUPLICATE MAILED
Date 11-7-96
Registration 55- 643481
AMA/INA ___
W/S 11 S/B ___

10. Place of Use (Legal Description of Land):
NW ¼ SE ¼ SW ¼ Section 11
10 AC 40AC 160AC
Township 24 N/S Range 24 E/W

11. Type of Well (Check One):
Exempt ✓ Non-Exempt ___

12. Check One:
Residential ✓ Commercial ___

13. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous materials or petroleum storage areas and tanks? Yes ___ No ✓

14. Drilling Firm:
OASIS DRILLING
Name
PO. 436
Mailing Address
ANIMAS N.M. 88020
City State Zip
Telephone No. 327
DWR License Number
C 53 of L 53
ROC License Category

RECEIVED NOV 4 1996 GROUNDWATER MGT

I State that this Notice is filed in compliance with A.R.S. §§45-595 and 45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations and conditions set forth on the reverse side of this form.

DON CAMPBELL — Typed or Printed Name and Title
[signature] — Signature [X] Land Owner [ ] Lessee of Wellsite, Title
10/7/96 — Date

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Pursuant to Section §45-596, Arizona Revised Statutes, provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department.

2. If any water from a proposed well on a parcel of land of twenty or fewer acres will be used for domestic purposes, as defined in §45-454, the applicant shall submit a site plan to scale of the property with the county assessor's parcel identification number. The site plan:

   a. Will be on a 8½"x11" piece of plain paper with representation of the locations of all structures, septic tank or sewer systems and proximity of adjacent lot lines to scale.

   b. Must show the proposed well location and the location of any septic or sewer system that is either located on the property or within one hundred feet of the proposed well site.

   c. Shall demonstrate to the Director's satisfaction that the well will not be drilled within one hundred feet of any septic or sewer system.

   d. Must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Before approval, the health authority shall review the plan and determine whether the proposed well location complies with applicable state and local laws regarding the placement of wells. If so, the health authority shall endorse the site plan and the proposed well placement

3. Endorsement by the county/local authority is based on the best available judgement that this well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. Information brought to light at a future date may render this determination invalid.

4. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use and is later proposed to be converted to use for domestic purposes, as defined in section §45-454, the well owner shall file a notice of intention to drill and comply with the requirements prescribed pursuant to this section before the well is converted and any water from that well used for domestic purposes.

5. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

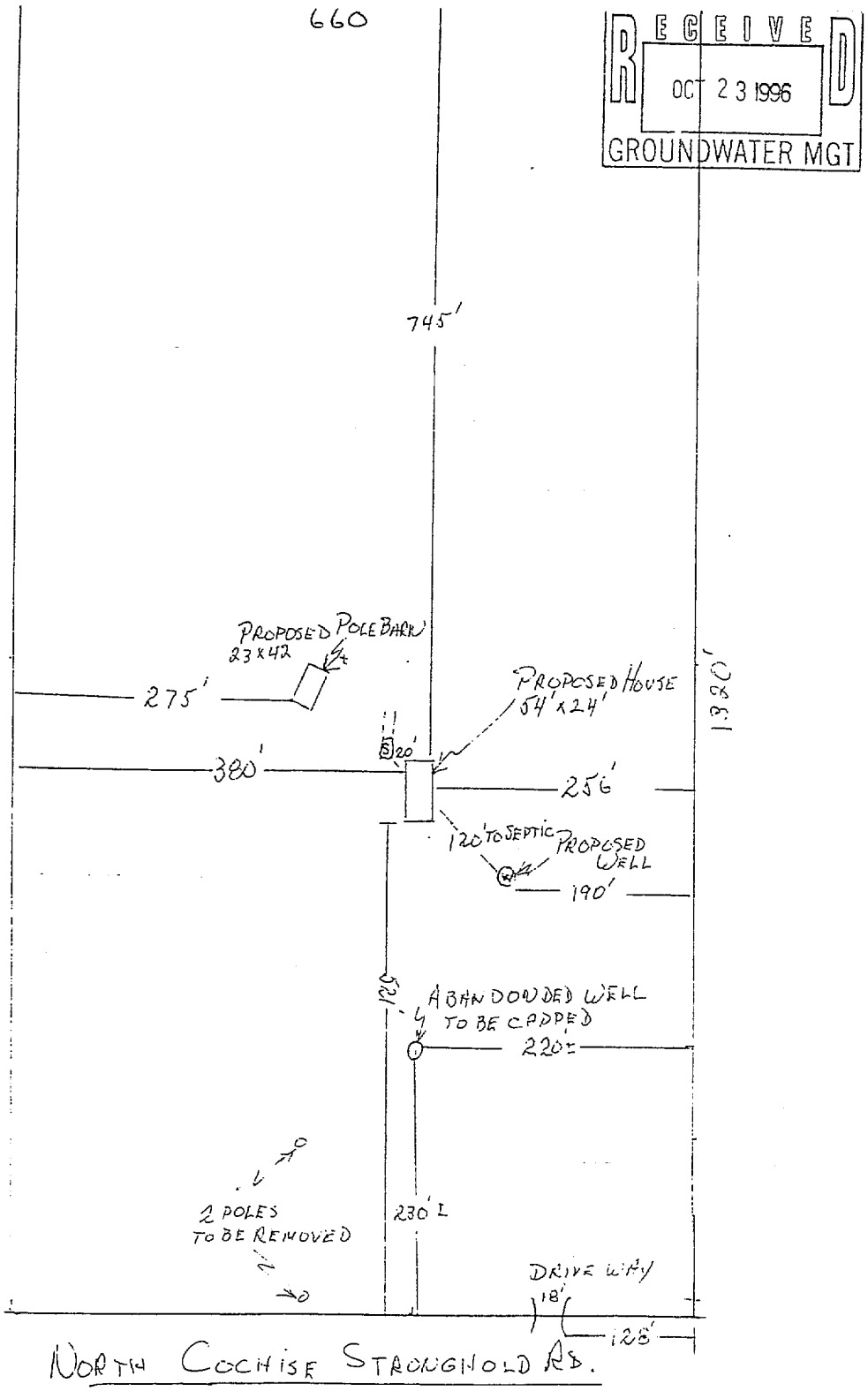
6. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an Irrigation Non-Expansion Area or Active Management Area to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

7. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of the notice (§45-596.E.).

8. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this notice.

9. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

10. If an individual other than the land owner or lessee signs this Notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific Notice on their behalf, shall accompany the Notice.


660
RECEIVED
OCT 23 1996
GROUNDWATER MGT
745'
PROPOSED POLE BARN
23x42
275'
PROPOSED HOUSE
54'x24'
20'
380'
256'
1320'
120' TO SEPTIC
PROPOSED WELL
190'
ABANDONED WELL
TO BE CAPPED
220±
230'±
2 POLES
TO BE REMOVED
DRIVE WAY
18'
125'
NORTH COCHISE STRONGHOLD RD.

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

November 7, 1996

STARK/CAMPBELL
PO BOX 4325
BISBEE AZ 85603-4325

Registration No. 55-643481
File No. D(24-24)11 CDB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill/deepen/modify/replace a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Sylvia Valdez
Water Resource Technician
Groundwater Management Support Section

Records Management Unit-Operations Division
Arizona Department of Water Resources
500 North Third Street
Phoenix, Arizona 85004

REQUEST FOR FILES AND COPIES OF FILES

FOR Carlane / Mr. Campbell DATE OF REQUEST 10-28-96

NAME _____ COPY OF DOCUMENT ( )

ADDRESS _____ REQUEST OF FILE (X)

CITY _____ STATE _____ ZIP _____

PHONE 520-432-3672

COMPLETE FILE (X)
TYPE OF DOCUMENT ( ) _____

_____

	REGISTRATION OR FILE NO.	ACTIVE/INACTIVE	LEGAL DESCRIPTION (FOR WELLS)
1.	D(24-24)11 CDB	55-643481	Box # 202 Archives
2.	Mr. Campbell has applied to deepen this well.		
3.			
4.	This file destroyed - Spoke w/Mr. Campbell		
5.	the VA had reposed this well & Mr. Campbell bought		
6.	it from VA - no registration paperwork was ever		
7.	given him. Mr. Baker is now		2/96
8.	deceased. Reconstruct this file		stayed
9.	Carlane		OF
10.	11-4-96		

ONLY TEN FILES PER SHEET

NO. OF COPIES _____ @ $.25 PER COPY - TOTAL FEE _____

MICROFICHE COPIES _____ @ $.30 PER COPY - TOTAL FEE _____

CERTIFIED COPIES _____ @ $2.75
DATE COMPLETED _____ BY _____

D 240 240 11 CDB WR 643481 FILE TYPE: REGISTRATION WELL TYPE: EXEMPT
DATE ISSUED: 01 26 984 PLANNED PUMP CAP:

NAME: BAKER IN CARE OF:
801 BORDER RD
BISBEE AZ 85603

ACCURACY: NOT VERIFIED WATER USES:
AREA: OUTSIDE
SUB-BASIN:
WATERSHED: SAN PEDRO RIVER WELL USES:
COUNTY: COCHISE
OWNER: PRIVATE DRILLER:

WELL DPTH: CASE DIAM: CASE DPTH: METH DET:
PUMP CAP: FINISH: ACRES IRR: YIELD:
DRAW DOWN: WATER LVL: LIFT: POWER:
DATE COMPLETED:
POU #1: POU #2:

STATUS: DATA OWN LOG N CRT N PQ NBR: IPQ STATUS: CANCELLED

ENTER - READ NEXT RECORD CLEAR TO RETURN TO SELECTION CRITERIA
4B A ↑ =-=PC LINE 2 COL 22

ARIZONA DEPARTMENT OF WATER RESOURCES
WATER WELL SCHEDULE
"55" WELLS UPDATE

D 240 240 11 CDB WR 643481

NAME: BAKER IN CARE OF:
801 BORDER RD
BISBEE AZ 85603
ACC: 1 FILE TYPE: R AREA: SB: WTR SHED: 11
WELL TYPE: E CNTY: 02 OWNER: P WTR USE:
WLL USE: ISSUED: 01 26 984 DRILLER:
I PUMP CAP: CHANGED: DATA OWN LOG N CRT N
PQ NUMBER: IPQ STATUS: CXL
WELL DEPTH: CASE DIAM: DEPTH: FN:
R PUMP CAP: WTR LVL:
COMP: ACRES IRR:
YIELD: MD: LT: PT: DRAW DOWN:
POU #1: POU #2:

HIT ENTER KEY TO COMPLETE ACTION HIT CLEAR KEY TO CANCEL ACTION

4B A ↑ =-=PC LINE 7 COL 17

State of Arizona
DEPARTMENT OF WATER RESOURCES
99 E. Virginia Avenue, Phoenix, Arizona 85004

BRUCE BABBITT, Governor
WESLEY E. STEINER, Director

000219

October 3, 1983

no Tel. #
listed

Mr. Baker
801 Border Rd.
Bisbee, Arizona 85603

Dear Mr. Baker:

We wrote to you on March 24, 1983, June 24, 1983 and again on July 21, 1983 regarding your well registration. We know that you did, in fact, register your well, but we do not have a copy of the well registration in our files. Until we have a copy of the registration form, we are not able to input the information into our computer.

We are enclosing a set of the well registration forms for your use in the event that you are not able to locate a copy of the original form. Please complete the forms and return two copies to us. We will complete both copies and return one copy to you for your files.

The Groundwater Management Act passed on June 12, 1980 states that a person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing in duplicate with the Department of Water Resources. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

For your future use, a Change of Well Information form will be enclosed should it become needed. Per A.R.S. 45-593, the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate.

Yours truly,

Marge Watson

Marge Watson
Chief, Groundwater Section

MW:lm
Enclosure

0 0 6 2 1 9

State of Arizona

DEPARTMENT OF WATER RESOURCES

99 E. Virginia Avenue, Phoenix, Arizona 85004

BRUCE BABBITT, Governor
WESLEY E. STEINER, Director

July 21, 1983

Mr. Baker
801 Border Rd.
Bisbee, Arizona 85603

Dear Mr. Baker:

We are in the process of purifying the 51,953 wells that were registered to comply with the Arizona Groundwater Management Act that was passed on June 12, 1980. Of these 51,953 wells registered, only 24 problem areas remain.

Our review indicates that we inadvertently did not keep a copy of your well registration form or that we simply lost it. We wrote to you on March 24, 1983 and again on June 24, 1983, asking for your help in obtaining a copy for our empty file folder. In order to input the information on your well into our computer and thus to assure that you were timely filed and in compliance with the law, we must have a copy of the form with our stamp which shows the original date received.

Your cooperation in this matter will be greatly appreciated and again we apologize for any inconvenience this may have caused you.

If you have any questions, please contact me at the above address or call at 602-255-1581.

Sincerely,

Marge Watson

Marge Watson
Chief, Groundwater Section

MW:lm

State of Arizona

DEPARTMENT OF WATER RESOURCES

99 E. Virginia Avenue, Phoenix, Arizona 85004

BRUCE BABBITT, Governor
WESLEY E. STEINER, Director

June 24, 1983

Mr. Baker
801 Border Road
Bisbee, Arizona 85603

Re: 55-643481
D(24-24)11 cbd

Dear Mr. Baker:

In regard to the above referenced Registration of Existing Well file, it appears that we have no copy of the Well Registration for our files.

Please send us a copy of the Registration form which was returned to you.

If you have any questions, please contact me at the above address or at 602-255-1581.

Sincerely,

Marge Watson

Marge Watson
Chief, Groundwater Section

MW:ct

0062219

State of Arizona

DEPARTMENT OF WATER RESOURCES

99 E. Virginia Avenue, Phoenix, Arizona 85004

BRUCE BABBITT, Governor
WESLEY E. STEINER, Director

3/24/83

#33-3907

MR BAKER
801 BORDER RD
BISBEE AZ 85603

DEAR MR BAKER:

Recently, in reviewing our files, it has been discovered that your application for well registration is missing from the folder. In order to assure your best interests, it is necessary for us to retain a copy of your application for our files for future reference.

Kindly send us a copy for our records. I am enclosing a stamped addressed envelope for your use.

I anticipate your cooperation and greatly appreciate it.

May I apologize for any inconvenience this may cause you.

Sincerely,

Ellen Kane

ELLEN KANE
OPERATIONS DIV

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

RECEIVED
FEB - 3 2004
Information Management

FILE NUMBER: D(24-24) 3 ADA
WELL REGISTRATION NUMBER: 55- 201531
PERMIT NUMBER (IF ISSUED):

- Review instructions prior to completing form
- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: SUNBELT MARKETING INC

MAILING ADDRESS: PO BOX 4006

CITY / STATE / ZIP: BISBEE, AZ 85603

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER: 520-432-7864

FAX:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24 S	24 E	3	NE 1/4	SE 1/4	NE 1/4

LATITUDE				LONGITUDE			
31 °	22 .	521	"N	109 °	53 .	121	"W

LAND SURFACE ELEVATION AT WELL: 4773 31.26 7.2 Feet Above Sea Level

METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☒ Hand-Held
☐ USGS Quad Map ☐ Conventional Survey ☒ GPS : ☐ Survey-Grade

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
101	41	007C

COUNTY WHERE WELL IS LOCATED: COCHISE

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME: TANNER WELL SERVICE

DWR LICENSE NUMBER: 133

TELEPHONE NUMBER: 520-642-3654

FAX: 520- 803-7400

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED: 1-12-04

DATE WELL CONSTRUCTION COMPLETED: 1-15-04

IF FLOWING WELL, METHOD OF FLOW REGULATION: ☐ Valve ☐ Other

Drill Method

CHECK ONE

- ☒ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development

CHECK ONE

- ☒ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Method of Sealing at Reduction Points

CHECK ONE

- ☒ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☐ Other (please specify)

Water Level Information

STATIC WATER LEVEL: 296 Feet Below Land Surface

DATE MEASURED: 1-19-04

ANSWERED FEB - 3 2004

DWR-55-55-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 201531

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	12
20	380	8

Installed Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (X) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (X) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	$8\frac{5}{8}$	X				X						
20	380	$6\frac{5}{8}$		X			X						
300	380	$6\frac{5}{8}$		X							X		$\frac{1}{8}$" X 6"

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (X) NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
0	20			X								

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
380	Feet Below Land Surface	380	Feet Below Land Surface

DWR-55-55B-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 201531

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	2	TOP SOIL	
2	320	RED CLAY & ROCK	
320	380	RED CLAY & CONGLOMERATE	X

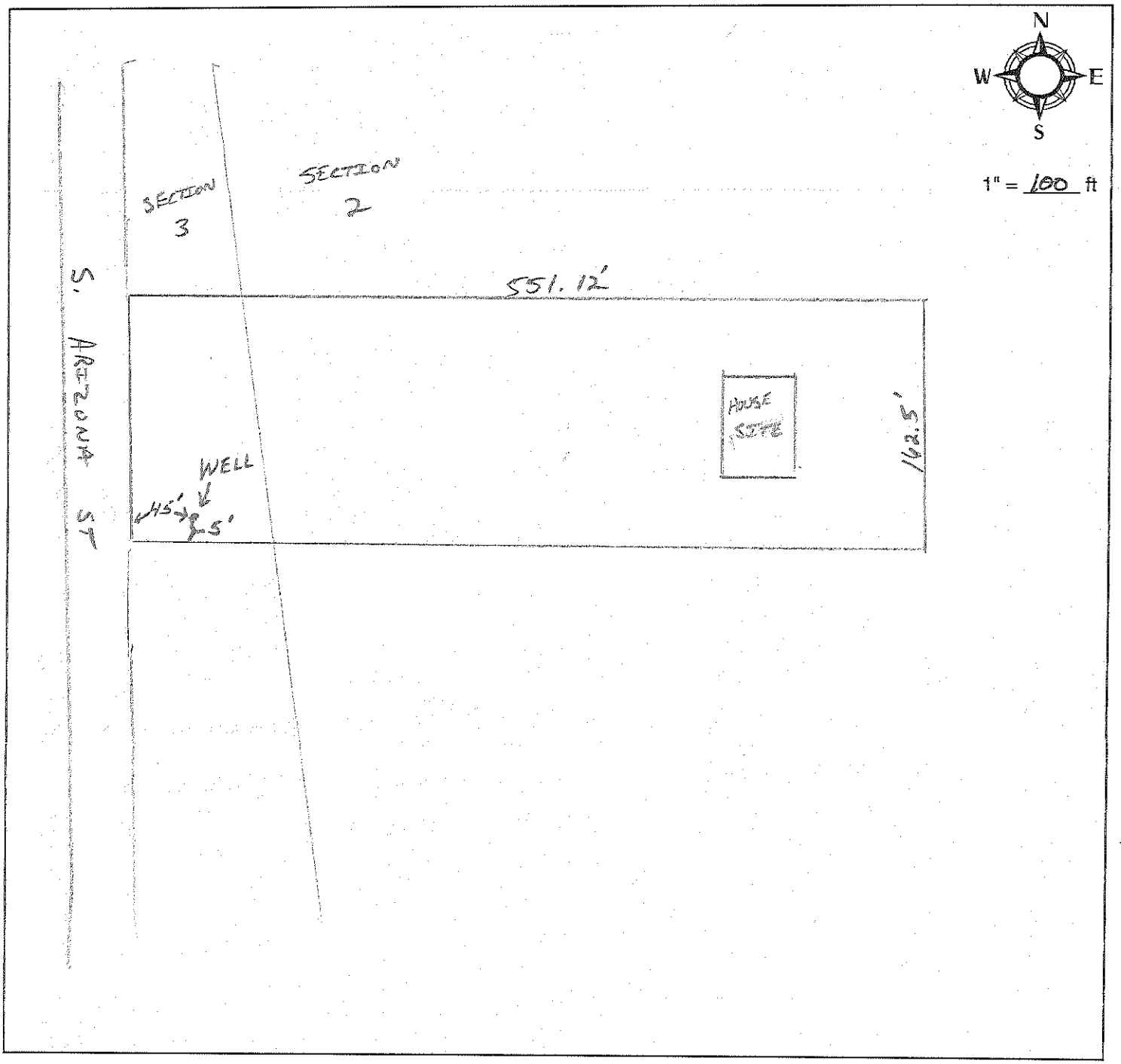
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 201531

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER BOOK	MAP	PARCEL
SUNBELT MARKETING INC	101	41	007C

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



I state that this notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
TANNER WELL SERVICE, L.L.C.	Matthew L. Tanner	1-31-04

DWR-55-55 (Rev. 10/11/01)

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-201531

AUTHORIZED DRILLER: TANNER WELL SERVICE LICENSE NO: 133

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: SUNBELT MARKETING INC PO BOX 4006 BISBEE, AZ 85603

The well(s) is/are to be located in the:

NE ¼ of the SE ¼ of the NE ¼ Section 3 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 2ND DAY OF DECEMBER, 2004

Shannon L Reg

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

December 04, 2003

Janet Napolitano
Governor

Herb Guenther
Director

SUNBELT MARKETING INC
PO BOX 4006
BISBEE, AZ 85603

Registration No. 55-201531
File No. D(24-24) 3 ADA

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Pump Installation Completion Report is to be submitted when pump equipment is installed. The drilling card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the drilling card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended drilling card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a Pump Installation Completion Report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate Well Drillers Report and Well Log within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Sharon Ward

Sharon Ward
NOI Unit
Water Management Support Section

Enclosures

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

RECEIVED DEC - 3 2003

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $50 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $50.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA		B	SE
RECEIVED DATE	12/3/03	WS	No
ISSUED DATE	12/4/03	WCARE	CERCLA

FILE NUMBER D24-24 23 ADA
WELL REGISTRATION NUMBER 55- 201531

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY ENDORSEMENT (If applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 before submission to the Department of Water Resources. You must also attach a site plan (see instructions).

CHECK ONE

☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☒ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION

DATE Dec 1, 2003

BY Carlos Diaz

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ ENV. HLTH SPEC I

TELEPHONE NUMBER: 520-432-9442

DATE: Dec 01, 2003

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

☒ Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)

☐ Non-Exempt (Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 25 Gallons Per Minute

Proposed Action

CHECK ONE

☒ Drill New Well
☐ Deepen
☐ Replace
☐ Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 -

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24 S	24 E	3	NE ¼	SE ¼	NE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
101	41	007C	2

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: COCHISE

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: SUNBELT MARKETING INC.

MAILING ADDRESS: P.O. BOX 4006

CITY / STATE / ZIP CODE: BISBEE AZ. 85603

CONTACT PERSON NAME AND TITLE: DON LAEDING

TELEPHONE NUMBER: 520-432-7864

FAX:

Landowner (If different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL:

MAILING ADDRESS:

CITY / STATE / ZIP CODE:

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER:

FAX:

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 201631

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: TANNER WELL SERVICE, L.L.C.

DWR LICENSE NUMBER: 133

ROC LICENSE CATEGORY: C-53

TELEPHONE NUMBER: 520-378-1606

FAX: 520-803-7400

MAILING ADDRESS: 7914 N. FRONTIER RD.

CITY / STATE / ZIP CODE: McNeal, Az. 85617

SECTION 6. WATER / SITE INFORMATION

Principal Use of Water (CHECK ONE)	Other Uses of Water (CHECK ALL THAT APPLY)
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☒ Domestic	☒ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify):*	☐ Other *(please specify):*

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

DATE CONSTRUCTION IS TO BEGIN: DECEMBER 2003

Borehole: DEPTH FROM SURFACE FROM (feet)	Borehole: DEPTH FROM SURFACE TO (feet)	Borehole: BOREHOLE DIAMETER (inches)	Casing: DEPTH FROM SURFACE FROM (feet)	Casing: DEPTH FROM SURFACE TO (feet)	Casing: OUTER DIAMETER (inches)	Casing: MATERIAL TYPE (T) STEEL	Casing: MATERIAL TYPE (T) PVC	Casing: MATERIAL TYPE (T) ABS	Casing: MATERIAL TYPE (T) IF OTHER TYPE, DESCRIBE	Casing: PERFORATION TYPE (T) BLANK OR NONE	Casing: PERFORATION TYPE (T) WIRE WRAP	Casing: PERFORATION TYPE (T) SHUTTER SCREEN	Casing: PERFORATION TYPE (T) MILLS KNIFE	Casing: PERFORATION TYPE (T) SLOTTED	Casing: PERFORATION TYPE (T) IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	20	12	0	20	8 5/8	X*										Cement
20	320	8	0	240	6		X			X						
			240	320	6		X							X		

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DEC - 3 2003
WATER MGT

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: Don Lacey Pres.

SIGNATURE OF WELL OWNER OR LANDOWNER:

DATE: 11/26/03

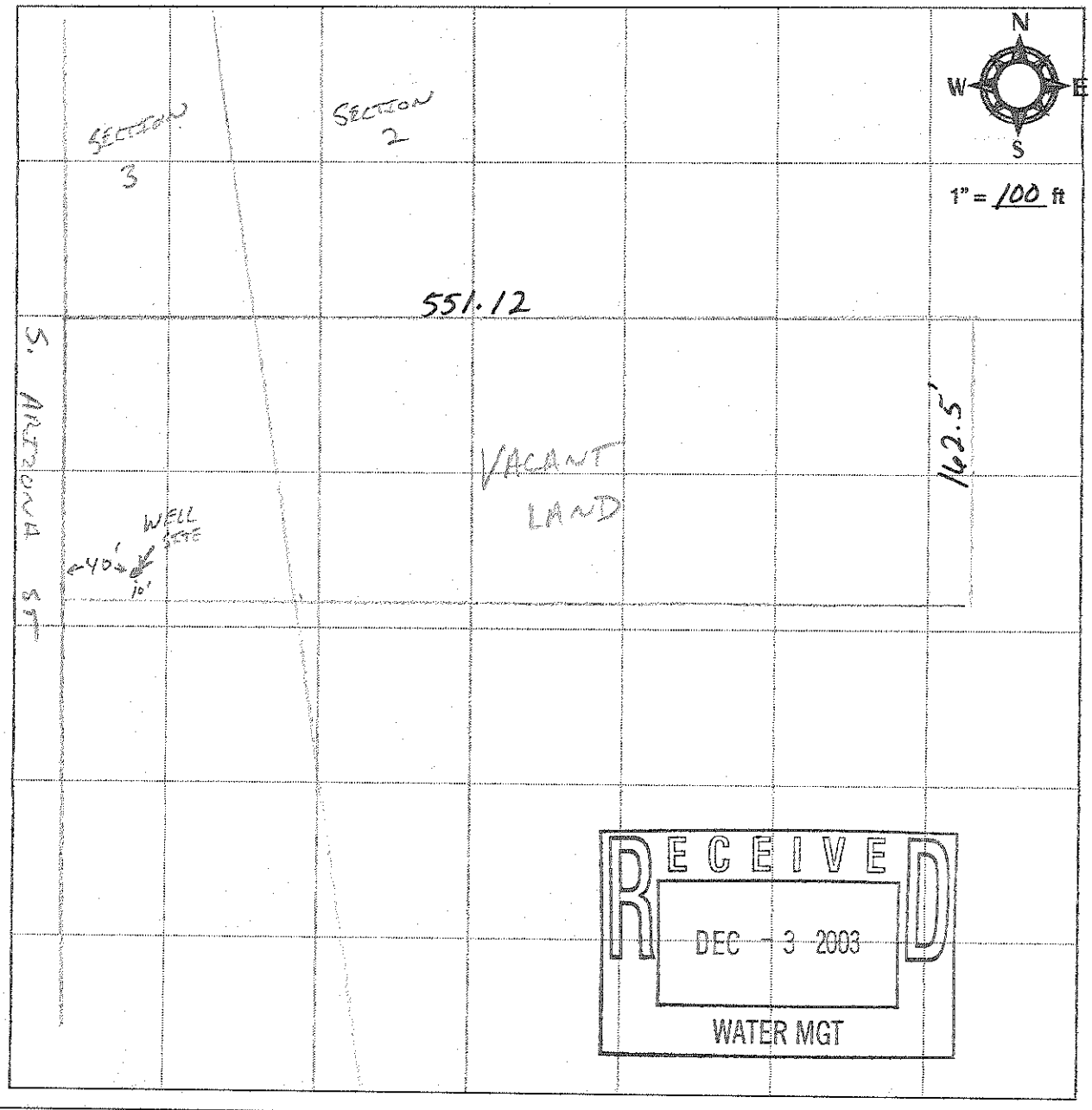
Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER 55-201531

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
SUNBELT MARKETING / DON LEADING	101	41	007C

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



RECEIVED
DEC - 3 2003
WATER MGT

COUNTY OR LOCAL AUTHORITY NAME AND TITLE	Official County or Local Seal or Stamp
Carlos Diaz Env Hlth Spec I	APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz	DATE Dec 1, 2003
TELEPHONE NUMBER: 520-432-9442 DATE: Dec 01, 2003	BY Carlos Diaz

DWR 55-40 (REVISED 05/01/03) Page 3 of 3

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

RECEIVED
DEC - 3 2003
WATER MGT.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $50 FEE

AMA / INA		B	SB
RECEIVED	DATE	WS	
ISSUED	DATE	WQARF	CERCLA

FILE NUMBER

WELL REGISTRATION NUMBER

55 - 901531

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $50.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY ENDORSEMENT (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 before submission to the Department of Water Resources. You must also attach a site plan (see instructions).

CHECK ONE

- [X] County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
  - [X] Field Inspection Performed
  - [ ] Site Plan Review Only
- [ ] Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ ENV. HLth Spec I

TELEPHONE NUMBER: 520-432-9442

DATE: Dec 01, 2003

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION

DATE Dec 1, 2003

BY Carlos Diaz

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

- [X] Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)
- [ ] Non-Exempt (Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 25 Gallons Per Minute

Proposed Action

CHECK ONE

- [X] Drill New Well
- [ ] Deepen
- [ ] Replace
- [ ] Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 -

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24 S	24 E	3	NE ¼	SE ¼	NE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
101	41	007C	2

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: COCHISE

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: SUNBELT MARKETING INC.

MAILING ADDRESS: P.O. BOX 4006

CITY / STATE / ZIP CODE: BISBEE AZ. 85603

CONTACT PERSON NAME AND TITLE: DON LAEDING

TELEPHONE NUMBER: 520-432-7864

FAX:

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL:

MAILING ADDRESS:

CITY / STATE / ZIP CODE:

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER:

FAX:

SECTION 4.

...ariance (A.A.C. R12-15-818).

...n Active Management Area, you must ...m 55-40A.

...UNBELT MARKETING, INC. 05-96
...O BOX 4006 520-432-7864
...SBEE, AZ 85603-4006

91-170
2533 1221 AZ

2987

Date 11/11/03

...ay to the ...rder of A.D.W.R. $ 50.00

Fifty Dollars and one Dollars

Bank of America

D(34-24)17 BCB

RECEIVED
JAN 30 2006
INFORMATION MANAGEMENT

Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Request to Change Well Information

FILE NUMBER

WELL REGISTRATION NUMBER
55 - 588270

- Review instructions prior to completing form in back or blue ink.
- Mail this completed form with Notice:
  - Check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL

MAILING ADDRESS

CITY / STATE / ZIP CODE

Location of Well

WELL LOCATION ADDRESS (IF ANY)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	17	NW ¼	SW ¼	NW ¼

LATITUDE

Pioneer Title Agency, Inc.
P.O. BOX 1900
Sierra Vista, AZ 85636

NATIONAL BANK OF ARIZONA
1160 E. Fry Blvd.
Sierra Vista, Arizona 85635
91-532/1221

NO. 696527

FILE NUMBER	DATE	AMOUNT
00911557 - 006 DB	01/23/06	$10.00

PAY TEN DOLLARS and no/100

TO THE ORDER OF ARIZONA DEPARTMENT OF WATER
P.O. BOX 458
PHOENIX, AZ 85004

[redacted] ACCOUNT

ANSWERED FEB 0 1 2006

[redacted]

SECTION 2. STATEMENT OF CHANGE OF WELL OWNERSHIP ($10 Fee Required)

$10 FEE

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

Previous Well Owner		New Well Owner	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL EARNEST ROGERS		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL SUNNYSIDE HOLDINGS, LLC	
MAILING ADDRESS P.O. BOX 608		MAILING ADDRESS P.O. BOX 1303	
CITY / STATE / ZIP CODE NACO, AZ 85620		CITY / STATE / ZIP CODE HEREFORD, AZ 85615	
CONTACT PERSON NAME AND TITLE		CONTACT PERSON NAME AND TITLE	
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required)

NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE	SIGNATURE OF WELL OWNER
Ernest Rogers	

D(24-24)17 BCB

Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

RECEIVED
JAN 30 2006
INFORMATION MANAGEMENT

Request to Change Well Information

- Review instructions prior to completing form in back or blue ink.
- Requirement Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

** PLEASE PRINT CLEARLY **

FILE NUMBER

WELL REGISTRATION NUMBER
55 – 588270

SECTION 1. REGISTRY INFORMATION

Well Owner		Location of Well					
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		WELL LOCATION ADDRESS (IF ANY)					
MAILING ADDRESS		TOWNSHIP (N/S): 24S	RANGE (E/W): 24E	SECTION: 17	160 ACRE: NW ¼	40 ACRE: SW ¼	10 ACRE: NW ¼
CITY / STATE / ZIP CODE		LATITUDE: ° Degrees	' Minutes	"N Seconds	LONGITUDE: ° Degrees	' Minutes	"W Seconds
CONTACT PERSON NAME AND TITLE		COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK	MAP	PARCEL			
TELEPHONE NUMBER	FAX	COUNTY WHERE WELL IS LOCATED					

Type of Request (CHECK ONE)

- ☐ Change of Well Drilling Contractor *(Fill out Section 2)*
- ☐ ☑☑ Change of Well Ownership *(Fill out Section 3)*
- ☐ Change of Well Information *(location, use, etc.) (Fill out Section 4)*

SECTION 2. REQUEST TO CHANGE WELL DRILLING CONTRACTOR ($10 Fee Required)

- If drilling or abandoning a well, the Department must receive this request and issue authorization to the new drilling form prior to the commencement of well drilling or abandonment.

$10 FEE

Current Well Drilling Contractor		New Well Drilling Contractor	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	
DWR LICENSE NUMBER		DWR LICENSE NUMBER	ROC LICENSE CATEGORY
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP ($10 Fee Required)

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

$10 FEE

Previous Well Owner		New Well Owner	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: EARNEST ROGERS		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: SUNNYSIDE HOLDINGS, LLC	
MAILING ADDRESS: P.O. BOX 608		MAILING ADDRESS: P.O. BOX 1303	
CITY / STATE / ZIP CODE: NACO, AZ 85620		CITY / STATE / ZIP CODE: HEREFORD, AZ 85615	
CONTACT PERSON NAME AND TITLE		CONTACT PERSON NAME AND TITLE	
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required)

NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE	SIGNATURE OF WELL OWNER
Ernest Rogers	[signature]

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458 - PHOENIX ARIZONA 85001-0458
Phone 602-417-2470

RECEIVED
SEP 6 2001
RECORDS MGT

COMPLETION REPORT
(Pump Installation Report)

A. Per A.R.S. § 45-600.B, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.

B. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operations. For a flowing well the shut-in pressure should be measured in feet above the land surface or in pounds per square inch at the land surface.

C. The static groundwater level should be measured in feet from the land surface immediately prior to the capacity test.

D. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well be measuring the natural flow at the land surface.

E. Items 1 and 2 are available from the Notice of Intent to Drill.

F. Items 3 and 4 may be available from the driller.

1. REGISTRATION NO: 55- 588270 **FILE NO:** D(24-24)17 BCB

2. LOCATION OF THE WELL:

24 N/S	24 E/W	17	¼ NW	¼ SW	¼ NW
Township	Range	Section	10-acre	40-acre	160-acre

3. EQUIPMENT INSTALLED:

Kind of pump SUBMERSIBLE (Turbine, Submersible, Centrifugal, etc.) **Kind of power** ELEC. (Electric, natural gas, gasoline, etc.)

H.P. Rating of Motor 1 **Pumping Capacity** 10 **Date Pump Installed** 8/28/01

4. WELL TEST:

Test pumping capacity 10 Gallons per minute **Date Well Tested** 8/28/01

Method of Discharge Measurement ORIFICE (Weir, orifice, current meter, etc.)

Static Groundwater Level 115 ft. **Drawdown** 125 ft.

Total Pumping Lift 160 ft. **Drawdown** — lbs (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

ERNEST ROGERS	P.O Box 608	NACO	AZ	85620
Print Well Owner's Name	Address	City	State	Zip

[signature]	432-3861	8/30/01
Signature of Well Owner	Phone Number	Date

ANSWERED SEP 2001

DWR 55-56 (Rev 1/99)

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street
Phoenix, Arizona 85004

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

RECEIVED
SEP 6 2001
RECORDS MGT

1. JS & K DRILLING, INC.
2235 N. RANCH TRAIL
HUACHUCA CITY, AZ 85616-8283

2. Owner Name: ERNEST ROGERS
Address: NACO (City) AZ (State) 85620 (Zip)

3. Location: 24 N(S) 24 E(W) 17 (Section) ¼ NW (10-acre) ¼ SW (40-acre) ¼ NW (160-acre)
(Township) (Range)

4. Well Registration No. 55-588270 (Required) N 31° 20.732

5. Permit No. _____ (If Issued) W 109° 56.089

DESCRIPTION OF WELL

6. Total depth of hole 200 ft.
7. Type of casing PVC
8. Diameter and length of casing 8 in. from 0' to 20', 6 in from 10' to 200'
9. Method of sealing at reduction points NATIVE SOIL
10. Perforated from 160 to 200, from — to _____ from _____ to _____
11. Size of cuts 1/8 Number of cuts per foot 2
12. If screen was installed: Length — ft. Diam _____ in. Type _____
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started AUG (Month) 27 (Day) 01 (Year)
15. Date completed AUG (Month) 28 (Day) 01 (Year)
16. Depth to water 115 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea_level elevation if available
TOP OF SURFACE 4594'
18. If flowing well, state method of flow regulation: —
19. Remarks: —

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55- 588270
File No. D(24-24) 17 BCB
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

RECEIVED SEP 7 2001

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	4	Top Soil
4	58	Clay
58	165	Rocky Clay
165	200	Gravel w/Small Clay Layers

I hereby certify that this well was drilled by me (or under by supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: JS & K DRILLING, INC.

2235 N. RANCH TRAIL
Street

HUACHUCA CITY, AZ 85616-8283 456-2355
City State Zip Phone No.

Signature of Driller 8/29/01
Date

pd ck #2158

RECEIVED
AUG 2 2001
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ 602-417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. ERNEST M ROGERS (LANDOWNER'S NAME) P.O. BOX 608 (CURRENT MAILING ADDRESS) NACO (CITY) AZ (STATE) 85620 (ZIP)

B. TELEPHONE NO. 432-3861 COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN COCHISE COUNTY D. 102-53-019-020-021 (BOOK-MAP-PARCEL) E. 16 (# OF ACRES) OFFICIAL SEAL OR STAMP

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NW ¼ (10AC) SW ¼ (40AC) NW ¼ (160AC) OF SECTION 17 TOWNSHIP 24 N/S RANGE 24 E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL X; INSUFFICIENT INFORMATION TO MAKE A DETERMINATION ____; VARIANCE REQUIRED ____ (EXPLANATION ATTACHED)

H. DATE 7/30/01 AUTHORIZED SIGNATURE John Titan TITLE Env. Health Spec.

1. OWNER OF WELL:
NAME ERNEST M ROGERS
CURRENT MAILING ADDRESS P.O. BOX 608 NACO 85620
CITY STATE ZIP
TELEPHONE NUMBER 432-3861

2. ACTION REQUESTED:
DRILL NEW WELL X DEEPEN ____
MODIFY ____ REPLACE ____

WELL REGISTRATION NO 55-____

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL ____ GALLONS PER MINUTE;

DISTANCE FROM THE ORIGINAL WELL: ____ FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH SEPT YEAR 01

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: STEEL
DIAMETER: 8 " DEPTH: 20 '
DOWNHOLE CASING: PVC
DIAMETER: 6 " DEPTH: 160 '

5. DESIGN PUMP CAPACITY:
15 GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
NAME
CURRENT MAILING ADDRESS
CITY STATE ZIP
TELEPHONE: - -

7. PRINCIPAL USE OF WATER: (BE SPECIFIC)
DOMESTIC

8. OTHER USES OF WATER: (BE SPECIFIC).

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55-588270
DATE FILED 8-2-01
FILE NO. D(24-24)17 BCB
AMA/INA ____
W/S 11 S/B 76
PROCESSED BY KB
DATE MAILED 8-6-01
mo.

9. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NW ¼ (10AC) SW ¼ (40AC) NW ¼ (160AC) SECTION 17
TWNSHP 24 N/S RNG 24 E/W

10. TYPE OF WELL (CHECK ONE):
EXEMPT X NON-EXEMPT ____

11. CHECK ONE:
RESIDENTIAL X STOCKWATER ____
OTHER ____

12. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES ____ NO X

13. DRILLING FIRM:
JS & K DRILLING, INC.
NAME
2235 N. RANCH TR.
MAILING ADDRESS
HUACHUCA CITY AZ 85616
CITY STATE ZIP
520 456-2855
TELEPHONE NO.
565
IDWR LICENSE NUMBER
C53
ROC LICENSE CATEGORY

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

ERNEST M ROGERS — 14. TYPE OR PRINT NAME AND TITLE
15. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE
7/27/01 — 16. DATE

DWR 55-40 (REV 9/99)

APPLICATION GUIDELINES

In accordance with Arizona Revised Statutes ("A.R.S.") §§ 41-1008 and 1079, the Department of Water Resources (Department) provides the following information regarding the application review process for authority to drill.

NECESSARY STEPS & INSTRUCTIONS TO OBTAIN DRILLING AUTHORITY

1. Pursuant to A.R.S. § 45-596, a person may not drill, cause to be drilled, deepen or modify any well for which a permit is not required without first filing a Notice of Intent to Drill with the Department. Only a well drilling contractor licensed in the State of Arizona or a single well licensee (a person licensed to drill or modify one exempt well on his or her own property) is authorized to drill, deepen or modify a well. Drilling may not begin until the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, and which authorizes the drilling of the specific well in a specific location. To assist you in understanding the requirements for this application, copies of A.R.S. § 45-596 and Arizona Administrative Code ("A.A.C.") R12-15-810 are available at the Department bookstore (602-417-2450 x7127).
2. If replacing, deepening, or modifying an existing well, provide the registration number of the existing well in item 2. A replacement well is one located no more than 660 feet from the original well and that is not expected to annually withdraw more groundwater than historically withdrawn from the original well.
3. Information to complete items 3, 4, 5 and 13 may be available from your driller.
4. Information to complete items 9 and 12 may be available from your County Assessor's Office.
5. For item 10, in an Active Management Area, A.R.S § 45-454 only allows non-irrigation uses for "exempt" wells. If the proposed use includes the growing of 2 or more acres of plants for sale or human/animal consumption (irrigation use), the well does not qualify as an exempt well.
6. An exempt well, referred to in Item 10, means a well with a pump with a maximum capacity of not more than thirty-five gallons per minute and used for non-irrigation purposes.
7. For item 11, in an Active Management Area, A.R.S §45-454 allow up to 56 acre feet per year of pumping from a domestic (residential) or stock watering exempt well, and up to 10 acre ft per year from an exempt well used for other (usually commercial non-irrigation) purposes.
8. If any water from a proposed well on a parcel of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant must submit a well site plan of the property. The plan must be on an 8½" x 11" piece of plain paper with representation of the locations of all structures and proximity of adjacent lot lines, to scale. It must include the county assessor's parcel identification number. The plan must show the proposed well location and the location of any septic tank or sewer system that is either located on the property or within one hundred feet of the proposed well site, as well as indicating the measured shortest distance between the proposed well and existing septic tank system. **The plan must demonstrate that the well will not be drilled within one hundred feet of any septic or sewer system.**
9. The site plan must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Endorsement by the county/local authority is based solely on the best available judgement that the proposed well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. In areas where there is no local or county authority that controls installation of septic tanks or sewer systems, or if the health authority is unable to determine whether the proposed well location complies with state and local requirements, the applicant must apply for approval directly to the Department of Water Resources.
10. If an individual other than the land owner or lessee signs this notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific notice on his or her behalf, must accompany the notice.
11. Please mail **two original Notices** with **original signatures** and **two site plans** and, in accordance with A.R.S. § 45-113, a **check or money order (no cash) in the amount of $10.00** to P. O. Box 458, Phoenix Arizona, 85001-0458, or hand deliver to 500 North Third Street, Phoenix, Arizona.
12. Arizona Revised Statute § 45-596(D) provides that the Director of the Department is to determine whether or not all information required on this form has been submitted. If not, the person filing the Notice will be notified, and the drilling or modification of the well may **not** proceed.
13. This form is not applicable for non-exempt wells (those yielding more than thirty-five gallons per minute) within an Active Management Area. Contact Groundwater Management for further information regarding the appropriate notice to file with the Department.

TIME FRAME FOR REVIEW OF YOUR APPLICATION

Within 15 days after receipt of your Notice of Intention the Arizona Department of Water Resources ("Department") will determine whether your application should be granted or denied, unless this time is extended for lack of a complete application. If your application is incomplete, the Department will notify you in writing and will specify what information is necessary to make the application complete. Until the missing information is received, the time frame for review of your application will be suspended. Your application will not be complete until all of the requested information is received. If you do not supply the missing information within sixty (60) days, the Department may deem your application withdrawn and close the file.

At the end of its review, the Department will send you a written notice either granting or denying your application for drilling authority. If your application is approved, the Drill Card will be mailed directly to the drilling contractor. If denied, the Department's notice will state justification for the denial and an explanation of your right to appeal.

CONSTRUCTION AND FOLLOW UP REQUIREMENTS

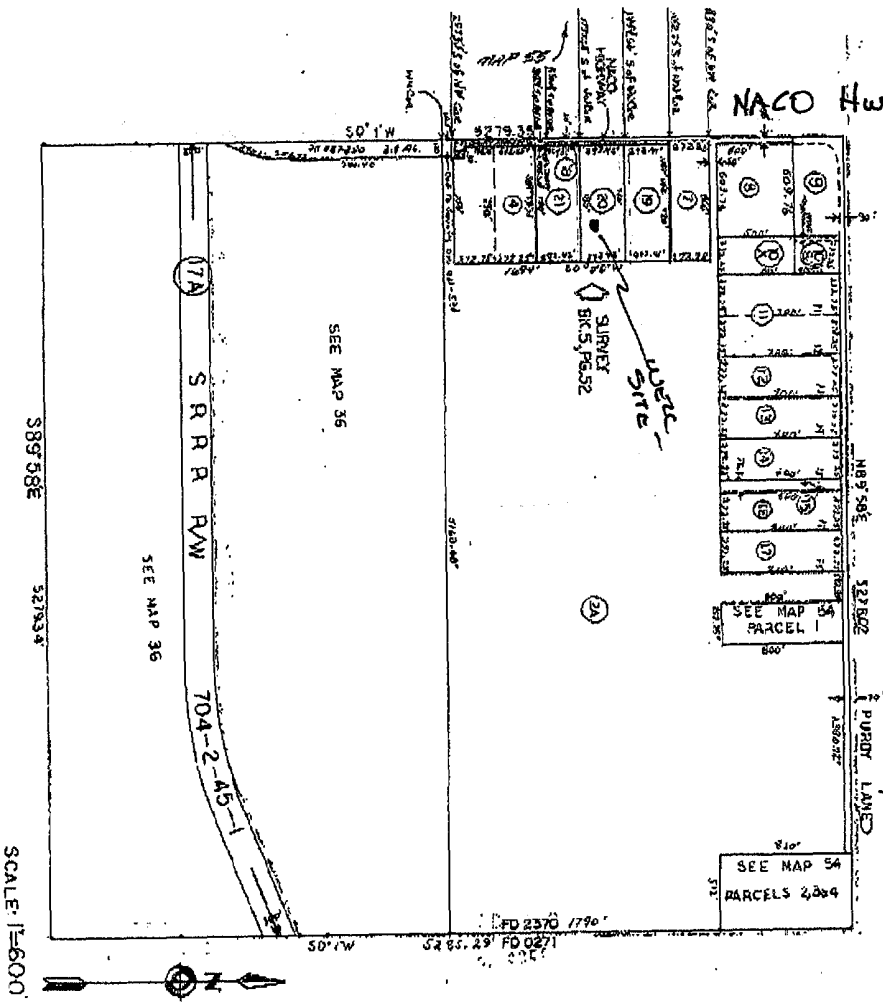
1. Construction and abandonment standards for wells, must be in accordance with Department Regulations. A.R.S. § 45-594 and Arizona Administrative Code R12-15-811 require the well to be constructed with a twenty foot steel surface seal casing, including a one foot steel stickup and one and one-half inches of grout seal around the casing from the surface to a depth of twenty feet, unless a variance is granted **(see A.R.S. § 45-596 (G) for procedure to follow in requesting a variance).**
2. Pursuant to § 45-596(E), the drilling, deepening or modification of the well must be completed within one year of the date of the Notice of Intent. If the well is not completed within one year, a new Notice of Intent must be filed before proceeding with further construction.
3. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use is later proposed to be converted to use for domestic purposes as defined in § 45-454, the well owner must file a Notice of Intention to Drill and comply with the requirements of § 45-596 before the well is converted and any water from that well is used for domestic purposes.
4. Within thirty days after installation of pumping equipment, the registered well owner must file a Completion Report with the Department. The person to whom a well is registered also must notify the Department of a change in ownership or a change in data relating to this well.

RECEIVED
AUG 2 2001
GROUNDWATER MGT

1-800-345-7334

SEC 17 TN 24 RG 24

BOOK 102
MAP 53



COUNTY ASSESSOR'S MAP

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

August 07, 2001

JANE DEE HULL
Governor
JOSEPH C. SMITH
Director

ERNEST ROGERS
PO BOX 608
NACO, AZ 85620

Registration No. 55-588270
File No. D(24-24) 17 BCB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

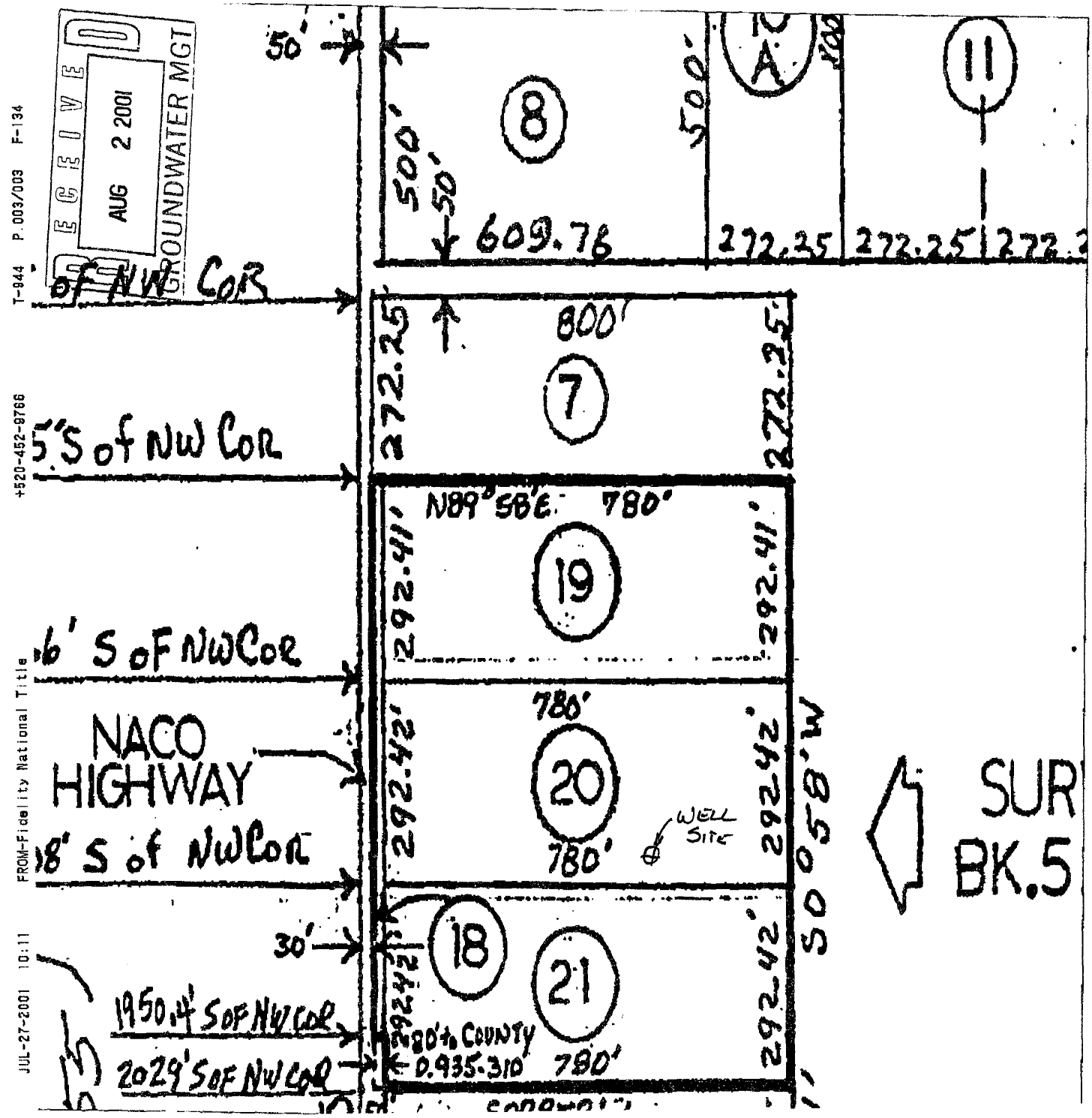
Toni Bergeman

Toni Bergeman
Water Resource Technician
Groundwater Management Support Section

Enclosures

RECEIVED
AUG 2 2001
GROUNDWATER MGT

JUL-27-2001 10:11 FROM-Fidelity National Title +520-452-9766 T-944 P.003/003 F-134



Pd ck "2152

RECEIVED
AUG 2 2001
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ 602-417-2478
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. ERNEST M ROGERS (LANDOWNER'S NAME) P.O. BOX 608 (CURRENT MAILING ADDRESS) NACO (CITY) AZ (STATE) 85620 (ZIP)

B. TELEPHONE NO. 432-3861 COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN COCHISE COUNTY D. 102-53-019-020-021 (BOOK-MAP-PARCEL) E. 16 (# OF ACRES) OFFICIAL SEAL OR STAMP

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NW ¼ (10AC) SW ¼ (40AC) NW ¼ (160AC) OF SECTION 17 TOWNSHIP 24 N/S RANGE 24 E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL X ; INSUFFICIENT INFORMATION TO MAKE A DETERMINATION _____ ; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE 7/30/01 AUTHORIZED SIGNATURE John T. Tam TITLE Env. Health Spec.

OWNER OF WELL:

AME ERNEST M ROGERS
JRRENT MAILING ADDRESS P.O. BOX 608 NACO
TY STATE ZIP 85620
ELEPHONE NUMBER 432-3861

6. LESSEE OF LAND OF WELLSITE:

NAME
CURRENT MAILING ADDRESS
CITY STATE ZIP
TELEPHONE: - -

9. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NW ¼ (10AC) SW ¼ (40AC) NW ¼ (160AC) SECTION ____
TWNSHP _____ N/S RNG _____ E/W

10. TYPE OF WELL (CHECK ONE):
EXEMPT X NON-EXEMPT _____

TATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND
3 LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

ERNEST M ROGERS (14. TYPE OR PRINT NAME AND TITLE) (15. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE) 7/27/01 (16. DATE)

VR 55-40 (REV 9/99)

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-588270

AUTHORIZED DRILLER: JS & K DRILLING, INC. LICENSE NO: 565

NOTICE OF INTENTION TO DRILL A EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: ERNEST ROGERS PO BOX 608 NACO, AZ 85620

The well(s) is/are to be located in the:

NW ¼ of the SW ¼ of the NW ¼ Section 17 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 1ST DAY OF AUGUST, 2002

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner *Phelps Dodge Corporation*
   Name
   Copper Queen Branch, Bisbee, AZ 85603
   Mailing Address

2. Driller *B-J Drilling Company, Inc.*
   Name
   P.O. Box 815, Benson, AZ 85602
   Mailing Address

3. Location of well: *Twp 24S, Rge 24E, Section 1: SW¼, SW¼, SW¼*

4. Permit No. (if issued) *55-522817*

DESCRIPTION OF WELL

5. Total depth of hole *817'* ft.
6. Type of casing *Steel & plastic*
7. Diameter and length of casing *6"* in. from *+1'* to *20'*, *4" steel* from *0* to *411' & 4" Plastic from 411' to 817'.*
8. Method of sealing at reduction points *Cemented*
9. Perforated from *757'* to *817'*, from _____ to _____, from _____ to _____.
10. Size of cuts *.125 x 1¼"* Number of cuts per foot *160*
11. If screen was installed: Length _____ ft. Diam _____ in. Type _____
12. Method of construction *Drilled*
    drilled, dug, driven, bored, jetted, etc.
13. Date started *1/17/89*
    Month Day Year
14. Date completed *1/20/89*
    Month Day Year
15. Depth to water *625' static* ft. (If flowing well, so state.)
16. Describe point from which depth measurements were made, and give sea-level elevation if available *top of casing*
17. If flowing well, state method of flow regulation: _____
18. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
REG. NO. 55-522817
File No. D(24-24)1ccc
Entered ENTERED MAR 07 1989

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	80	Interlayered gravel and brown silt/clay, alluvium of Glance Conglomerate
80	815	Grey-maroon schist conglomerate. Glance conglomerate

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Robert D. Jackson
Name

B-J Drilling Company, Inc.
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

Date 2/24/89

DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

Registration No. 55-52281.7

File No. D(24-24)1ccc

TM-8

COMPLETION REPORT

1. Per **A.R.S. §45-600**, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24S	24E	1	SW SW SW
Township	Range	Section	¼ ¼ ¼

EQUIPMENT INSTALLED:

Kind of pump: Submersible
(Turbine, centrifugal, etc.)

Kind of power: Electric (Electric, natural gas, gasoline, etc.) H.P. Rating of Motor: 3 HP

Pumping Capacity: 7 (Gallons per minute) Date pump installed: 1/20/89

WELL TEST:

Test pumping capacity: 7* (Gallons per minute) Date Well Tested: 2/18/89

* Broke suction after 20 minutes.

Method of Discharge Measurement: Timed volume
(Weir, orifice, current meter, etc.)

Static Groundwater Level 591 ft. Drawdown 207 ft.

Total Pumping Lift 798 ft. Drawdown _____ lbs. (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

3/01/89
Date

RECEIVED
MAR 2 1989
DEPT. OF WATER RESOURCES

Phelps Dodge Corporation
Print Well Owner's Name

Robert A. Jackson
Signature of Well Owner or Agent

B-J Drilling Company, Inc.
P.O. Box 813
Address

Benson, AZ 85602
City State

ENTERED MAR 16 1989

DWR-55-7-11/88

MONITOR/PIEZOMETER WELL

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL
MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

RECEIVED OCT 28 1988 DEPT OF WATER RESOURCES

RECEIVED OCT 31 1988 HYDROLOGY DIV.

Section 45-596, Arizona Revised Statutes and Rule R12-15-809 provide: Prior to drilling a monitor or piezometer well, the well owner or lessee shall file a Notice of Intention to Drill on a form provided by the Department.

WELL/LAND LOCATION

1. Township 24 N/S
   Range 24 E/W
   Section 1
   List 10-acre subdivision
   SW ¼, SW ¼, SW ¼

2. County Cochise

3. Applicant:
   Phelps Dodge Corp.
   Name
   Copper Queen Branch
   Address
   Bisbee, AZ 85603
   City State Zip

4. Lance Pape
   NAME OF CONTACT PERSON
   Phone: 602 432-5342
   Agency: Phelps Dodge Corp.

5. Owner of well:
   Phelps Dodge Corp.
   Name
   Copper Queen Branch
   Address
   Bisbee, AZ 85603
   City State Zip

6. Purpose of well drilled pursuant to this Notice:
   Monitor X
   Piezometer

7. Owner of land:
   Horacio OreGiron
   Name
   245 N. Stewart
   Address
   Tucson, AZ 85716
   City State Zip
   Telephone number

8. Construction will start:
   October 1988
   Month Day Year

9. Period well will remain in use: indef. months/years

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

File No. D(24-24)1ccc

Filed 10-28-88 By

Input ENTERED NOV 07 1988 By

Duplicate Mailed 11-7-88 By

Registration No. 55-522817

AMA/INA

W/S 14 S/B

10. For monitoring wells, is pump equipment to be installed? Yes

(a) If so, what will be the design pump capacity?
10 gallons per minute

(b) Type of pump (submersible, turbine, etc.)
Submersible

(c) What use will be made of the water?
Sampling only

11. Proposed method of abandonment of well after project is completed:
Fill to total depth with cement grout after PVC removal

12. Drilling firm:
BJ Drilling Co., Inc.
Name
P.O. Box 815
Address
Benson, AZ 85602
City State Zip
DWR #25 A-4
DWR License Number

(continued on reverse)

GENERAL INSTRUCTIONS

ill out this form in duplicate and mail to Department of Water Resources, Suite 100, 99 East irginia, Phoenix, Arizona 85004. Filing fee must accompany Notice.

state that this Notice is filed in compliance with Rule R12-15-809 and is complete and orrect to the best of my knowledge and belief and that I understand the conditions set forth n the reverse side of this form.

ATE 10/24/88 Donald A. Stallwell
Signature of Applicant

NOV 1988 HYDROLOGY APPROVED

13. Is this well to monitor existing contamination? Yes Potential contamination? ___
Please explain SO_4 and TDS in Bisbee-Naco area

14. If construction plans have been coordinated with Az. Dept. Health Services, Environmental Health Division, who is the agency contact? None
If construction plans have been coordinated with Az. Dept. Water Resources, Hydrology/ Remedial Action Division, who is the division contact? None

15. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air rotary

b) Borehole diameters:
10 inches from 0 feet to 20 feet
6 inches from 20 feet to 100 feet
___ inches from ___ feet to ___ feet

c) Casing materials (PVC, steel, stainless steel, etc.):
material Steel diameter 6 inches from 0 feet to 20 feet
material PVC diameter 4 inches from 0 feet to 100 feet
material ___ diameter ___ inches from ___ feet to ___ feet

d) Method of sealing at reductions None

e) Annular seal materials (cement, grout, etc.) and method of placement(tremied,circulated:)
material Grout method Poured from 0 feet to 20 feet
material ___ method ___ from ___ feet to ___ feet
material ___ method ___ from ___ feet to ___ feet

f) Gravel packs (state material, and whether natural or artificial):
material None from ___ feet to ___ feet
material ___ from ___ feet to ___ feet

g) Perforations (if pre-manufactured, please give specs of perforations or screens):
type Factory slotted PVC from 50 feet to 100 feet
type ___ from ___ feet to ___ feet

h) Method of well development (bail, air lift, surge) Air lift

i) Will surface or conductor casing extending above grade be used to protect the aquifer from additional surface contaminants during drilling and construction? Yes

16. Include detailed construction diagram, if available.

7. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes__ No X
If yes, a request for a variance must accompany this application pursuant to R12-15-820.

CONDITIONS

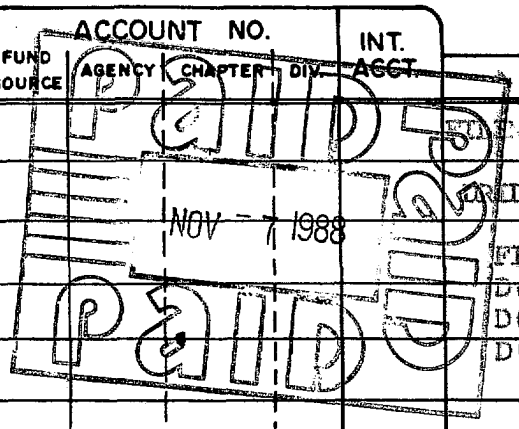
I. Construction and abandonment standards for all wells shall be in accordance with DWR rules R12-15-811 and R12-15-816.
II. Drilling of the well shall be completed within one (1) year after the date of Notice.
III. A Well Driller Report, DWR-55-6-5/83, is required within 30 days of completion of drilling. A Completion Report, DWR-55-7-3/83, is required to be filed with the Department within 10 days after installation of pump equipment for monitor wells.
IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the minimum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual amount of 10 acre feet total.
V. Special construction standards required pursuant to R12-15-821: ___

PHELPS DODGE CORP
P O BOX 50427
TUCSON AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	522815
	THRU
55	522817



ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEES FOR NOTICES OF INTENTION TO DRILL WELLS	10.00	30.00
					FILE# REGISTRATION#		
					~~D(24-24) 18aab 55-522815~~		
					D(24-24) 7bbc 55-522816		
					D(24-24) 1ccc 55-522817		

11/7/88/ek
CK#1333

TOTAL $ 30.00

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner *Phelps Dodge Corporation*
   Name
   Copper Queen Branch, Bisbee, AZ 85603
   Mailing Address
2. Driller *B-J Drilling Company, Inc.*
   Name
   P.O. Box 815, Benson, AZ 85602
   Mailing Address
3. Location of well: *Twp 24S, Rge 24E, Section 6: SW¼,SW¼,NW¼*
4. Permit No. (if issued) *55-522699*

DESCRIPTION OF WELL

5. Total depth of hole *325'* ft.
6. Type of casing *Steel & Plastic*
7. Diameter and length of casing *6"* in. from *+1'* to *19'*, *4* in from *+1'* to *325'*.
8. Method of sealing at reduction points *Cemented*
9. Perforated from *260'* to *320'*, from _____ to _____, from _____ to _____.
10. Size of cuts *.125 x 1¼"* Number of cuts per foot *160*
11. If screen was installed: Length _____ ft. Diam _____ in. Type _____
12. Method of construction *Drilled*
    drilled, dug, driven, bored, jetted, etc.
13. Date started *1/10/89*
    Month Day Year
14. Date completed *1/11/89*
    Month Day Year
15. Depth to water *265' static* ft. (If flowing well, so state.)
16. Describe point from which depth measurements were made, and give sea-level elevation if available *Top of casing*
17. If flowing well, state method of flow regulation: _____
18. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

REG. NO 55-522699

File No. D(24-24)6bcc

Entered _____ By _____

ENTERED MAR 07 1989

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	220	Interlayered gravel with interbedded limestone pebble caliche and tan-brown silt/clay. Alluvium

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Robert A. Jackson
Name

B-J Drilling Company, Inc.
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

Date 2/24/89

DEPARTMENT OF WATER RESOURCES
15 South 15th Ave., Phoenix, AZ 85007

Registration No. 55-522699

File No. D(24-24)6bcc

COMPLETION REPORT TM-15

1. Per A.R.S. §45-600, the Completion Report to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24S	24E	6	SW ¼	SW ¼	NW ¼
Township	Range	Section			

EQUIPMENT INSTALLED:

Kind of pump Submersible
(Turbine, centrifugal, etc.)

Kind of power Electric (Electric, natural gas, gasoline, etc.) H.P. Rating of Motor 1½ HP

Pumping Capacity ____ (Gallons per minute) Date installed 2/03/89

WELL TEST:

Test pumping capacity 13 (Gallons per minute) Date Well Tested 2/03/89

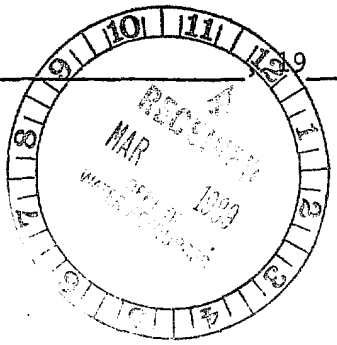
Method of Discharge Measurement Timed volume
(Weir, orifice, current meter, etc.)

Static Groundwater Level 265 ft. Drawdown 1 ft.

Total Pumping Lift 270 ft. Drawdown ____ lbs (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

2/26/89
DATE



Robert A. Jackson
Signature B-J Drilling Company, Inc.

P.O. Box 815
Address

Benson, AZ 85602
City State Zip

ENTERED MAR 07 1989

DWR-55-7-3/84

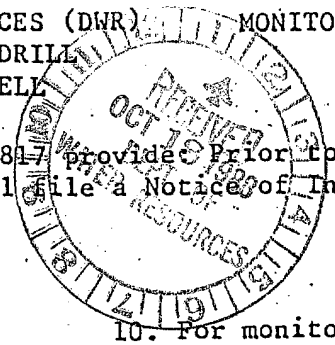
MONITOR/PIEZOMETER WELL

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL
MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

TM-15



Section 45-596, Arizona Revised Statutes and Rule R12-15-817 provide: Prior to drilling a monitor or piezometer well, the well owner or lessee shall file a Notice of Intention to Drill on a form provided by the Department.

WELL/LAND LOCATION

1. Township 24 N/S
   Range 24 E/W
   Section 6
   List 10-acre subdivision
   SW ¼, SW ¼, NW ¼

2. County Cochise

3. Applicant:
   Phelps Dodge Corp.
   Name
   Copper Queen Branch
   Address
   Bisbee, AZ 85603
   City State Zip

4. Lance Pape
   NAME OF CONTACT PERSON
   Phone: 602-432-5342
   Agency: Phelps Dodge Corp.

5. Owner of well:
   Phelps Dodge Corp.
   Name
   Copper Queen Branch
   Address
   Bisbee, AZ 85603
   City State Zip

6. Purpose of well drilled pursuant to this Notice:
   Monitor X
   Piezometer

7. Owner of land:
   Charles R. Miller-Trustee
   Name
   P.O. Box 613
   Address
   Naco, AZ 85620
   City State Zip
   Telephone number

8. Construction will start:
   October 1988
   Month Day Year

9. Period well will remain in use: indef. months/years

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

File No. D(24-24)6bcc
Filed 10-18-88 By ek
Input ENTERED OCT 25 1988 By
Duplicate Mailed 10-21-88 By ek
Registration No. 55-522699
AMA/INA —
W/S 14 S/B

10. For monitoring wells, is pump equipment to be installed? Yes

(a) If so, what will be the design pump capacity?
10 gallons per minute

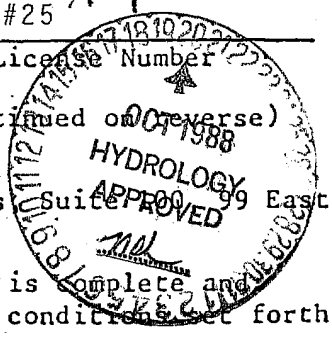
(b) Type of pump (submersible, turbine, etc.)
Submersible

(c) What use will be made of the water?
Sampling only

11. Proposed method of abandonment of well after project is completed:
Fill to total depth with cement grout after PVC removal

12. Drilling firm:
BJ Drilling Co., Inc.
Name
P.O. Box 815
Address
Benson, AZ 85602
City State Zip
DWR #25 A-4
DWR License Number

(continued on reverse)



GENERAL INSTRUCTIONS

Fill out this form in duplicate and mail to Department of Water Resources, Suite 99 East Virginia, Phoenix, Arizona 85004. Filing fee must accompany Notice.

I state that this Notice is filed in compliance with Rule R12-15-809 and is complete and correct to the best of my knowledge and belief and that I understand the conditions set forth on the reverse side of this form.

DATE 10/14/88

Donald A. Stallwell
Signature of Applicant

13. Is this well to monitor existing contamination? Yes Potential contamination? ___
Please explain SO_4 and TDS in Bisbee-Naco area

14. If construction plans have been coordinated with Az. Dept. Health Services, Environmental Health Division, who is the agency contact? None
If construction plans have been coordinated with Az. Dept. Water Resources; Hydrology/ Remedial Action Division, who is the division contact? None

15. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air rotary

b) Borehole diameters:
10 inches from 0 feet to 20 feet
6 inches from 20 feet to 370 feet
___ inches from ___ feet to ___ feet

c) Casing materials (PVC, steel, stainless steel, etc.):
material Steel diameter 6 inches from 0 feet to 20 feet
material PVC diameter 4 inches from 0 feet to 370 feet
material ___ diameter ___ inches from ___ feet to ___ feet

d) Method of sealing at reductions ___

e) Annular seal materials (cement, grout, etc.) and method of placement(tremied,circulated:)
material Grout method poured from 0 feet to 20 feet
material ___ method ___ from ___ feet to ___ feet
material ___ method ___ from ___ feet to ___ feet

f) Gravel packs (state material, and whether natural or artificial):
material None from ___ feet to ___ feet
material ___ from ___ feet to ___ feet

g) Perforations (if pre-manufactured, please give specs of perforations or screens):
type Factory slotted from 320 feet to 370 feet
type ___ from ___ feet to ___ feet

h) Method of well development (bail, air lift, surge) Air lift

i) Will surface or conductor casing extending above grade be used to protect the aquifer from additional surface contaminants during drilling and construction? Yes

16. Include detailed construction diagram, if available.

17. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes__ No X
If yes, a request for a variance must accompany this application pursuant to R12-15-820.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with DWR rules R12-15-811 and R12-15-816.
II. Drilling of the well shall be completed within one (1) year after the date of Notice.
III. A Well Driller Report, DWR-55-6-5/83, is required within 30 days of completion of drilling. A Completion Report, DWR-55-7-3/83, is required to be filed with the Department within 10 days after installation of pump equipment for monitor wells.
IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the minimum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual amount of 10 acre feet total.
V. Special construction standards required pursuant to R12-15-821: ___

PHELPS DODGE CORP
P O BOX 50427
TUCSON AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	522693
	THRU
55	~~8888~~ 5227000

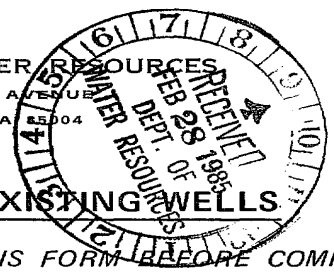
PAID
OCT 21 1988
PAID

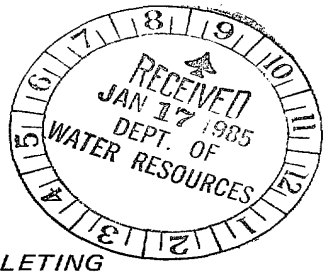
ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM	DESCRIPTION	RATE	$ AMOUNT
					FILING FEES FOR NOTICES OF INTENTION TO		10.00	80.00
					DRILL WELLS			
					FILE#	REGISTRATION#		
					D(24-24)2bcc	55-522693		
					D(24-24)21aab	55-522694		
					D(24-24)14bca	55-522695		
					D(24-24)5bdc	55-522696		
					D(24-24)20bab	55-522697		
					D(24-24)8bcc	55-522698		
					D(24-24)6bcc	55-522699		
					D(24-24)16aca	55-522700		

TOTAL $ 80.00

10/21/88/ek
CK#1330

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004





REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
~~EXEMPT WELL (NO CHARGE)~~	☐
NON-EXEMPT WELL — $10.00	☑

LATE FEE $10.00 ☑

FOR OFFICE USE ONLY

REGISTRATION NO. 55- 802236-2
FILE NO. D(24-24)18 db
FILED 4-26-85 (DATE) AT am (TIME)
INA —
AMA —

1. Name of Registrant:
City of Bisbee ATTN: Nellie Hodges, City Clerk/Treasurer
118 Arizona Street (Address) Bisbee (City) AZ (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law: Information unavailable
(File Number) 35- None on file (Control Number)

3. a. The well is located within the NW ¼ SE ¼ ¼, Section 18, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

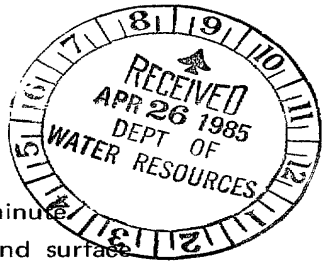
b. If in a subdivision: Name of subdivision N/A, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Golf Course Irrigation.

5. If for irrigation use, number of acres irrigated from well 80.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)



a. Depth of Well 222' feet
b. Diameter of casing 10 3/4" O.D. inches
c. Depth of casing 222' feet
d. Type of casing Steel.
e. Maximum pump capacity 600 gallons, approximately gallons per minute
f. Depth to water 90' to 100' feet below land surface
g. Date well completed Feb. (Month) 14 (Day) 1934 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
Attach additional sheet if necessary.

9. DATE 1/9/85 SIGNATURE OF REGISTRANT Nellie Hodges

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

CITY OF BISBEE
118 ARIZONA ST
BISBEE AZ 85603

ATTN: NELLIE HODGES

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
XX	
	THRU
55	802237-L

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					LATE FEE	10.00	20.00
					EXISTING WELL REGISTRATION FEE	10.00	20.00
					2 NON-EXEMPT WELLS		
					FILE NO. D(23-24)8 bba		
					D(24-24)18 db		
					CHECK NO. 009446 4/29/85 kg		

WATER PAYMENT
GUESTS 1
CHK NO 9446
55-I 40.00
TAX 0.00
TOTL 40.00
GEN.CHEK 40.00

~~W 6793 A 11429~~

TOTAL $ 40.00

MICROFILMED

D(24-24) 18 BCC

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

WELL DRILLER REPORT

RECEIVED
APR 16 1998
RECORDS MGT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. ARIZONA DRILLING LLP
501 PATTON STREET
HUACHUCA CITY, AZ 85616

2. Owner Name: TURQUOISE VALLEY INC.
Address: NACO (City) AZ (State) 85620 (Zip)

3. Location: 24 N(S) 24 E(W) 18 ¼ SW ¼ SW ¼ NW
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55- **567713** (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 200 ft.
7. Type of casing STEEL
8. Diameter and length of casing 10 in. from 0 to 22 , 8 in from 0 to 144
9. Method of sealing at reduction points —
10. Perforated from 80 to 144 ,from — to _____ from _____ to _____
11. Size of cuts 1/4 Number of cuts per foot 3
12. If screen was installed: Length — ft. Diam _____ in. Type _____
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started April (Month) 9 (Day) 98 (Year)
15. Date completed April (Month) ~~8~~ 14 (Day) 98 (Year)
16. Depth to water 100 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
STATIC
18. If flowing well, state method of flow regulation: —

19. Remarks: —

ENTERED APR 24 1998

DWR-55-55-7/95 (Rev.)

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-567713
File No. D(24-24) 18 BCC
Received _____ By _____
Entered _____ By _____

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	12	Top Soil (Sandy)
12	20	Gravel & Clay
20	35	Clay
35	40	Gravel & Clay
40	130	Sandy Clay
130	142	Gravel
142	160	Cemented Conglomerate
160	200	Gravel & Conglomerate

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: ARIZONA DRILLING LLP

501 PATTON STREET
Street

HUACHUCA CITY, AZ 85616 456-2355
City State Zip Phone No.

Van Michael 4-15-98
Signature of Driller Date

ARIZONA DEPARTMENT OF WATER RESOURCES

NO FEE REQUIRED

GROUNDWATER MANAGEMENT SUPPORT SECTION
P O BOX 458, PHOENIX, ARIZONA 85001-0458
(602) 417-2470

NO FEE REQUIRED
JUN 17 1998

NOTICE OF INTENT TO ABANDON A WELL

A.R.S. §45-594, R12-15-816: Well abandonment shall be performed only by a licensed well drilling contractor or single well licensee. The owner of a well shall file a Notice of Intent to Abandon the well prior to abandonment.

1. Well Location:

24	24	18
Township	Range	Section
S.W. ¼	S.W. ¼	N.W. ¼
10 Acre	40 Acre	160 Acre

2. Position Location of the Well on the Land:
Latitude 31 ° 20 ' 50 " N
Longitude 109 ° 56 ' 15 " W

3. County: Cochise

County Assessor's ID: 102 (Book) 36 (Map) 002A (Parcel)

4. Well Registration Number:
55- 567713

5. Well Owner: Turquoise Valley Inc.
Name
Box 727
Current Mailing Address
NACO AZ. 85620
City State Zip
520 432 3025.
Telephone

FOR DEPARTMENT USE ONLY
File No. _____
Registration No: 55- _____
Filed _____ By _____ Mailed _____ By _____
AMA/INA _____ W/S _____ S/B _____

6. Owner of the Land: Turquoise Valley Inc.
Name
Box 727
Current Mailing Address
NACO AZ. 85620
City State Zip
520 432 3025
Telephone

7. Type of Well being Abandoned:
(Examples: Domestic, Stock, Irrigation, Municipal, Monitor, Geotechnical, Mineral Exploration, etc.)
Please state: Irrigation

DESCRIPTION OF WELL TO BE ABANDONED:

8. Well Diameter 10, 8, 6" inches
9. Well Depth 200 feet
10. Type of Casing STEEL
11. Abandonment will begin: Month 06 Year 98
12. Reason for abandonment: Poorly Drilled / Insufficient H_2O & Diameter.
13. Materials and methods to be used to abandon the well: Cement, pursuant to R-12-15-816.

14. To your knowledge, is there any information that exists which indicates that the water in this well may be or is contaminated?
Yes _____ No ✓. If yes, explain on an attached sheet.

15. Licensed Driller performing abandonment: Firm Name: WEBER DRILLING CO. License No. 272
Address RTE 1 BOX 276 B City ST. DAVID State AZ. Zip 85630-9721

GENERAL INSTRUCTIONS

1. This form is to be used to obtain authority to abandon a well.
2. If this well has just been discovered pursuant to A.R.S. §45-593.D., and has not been registered, this form will serve to register the well when properly abandoned and reported.
3. Fill out this form in DUPLICATE and send to P O Box 458, Phoenix, Arizona, 85001-0458
4. Construction standards for abandonment shall be in accordance with Department Rules and Regulations.

I state that this Notice is filed in compliance with A.R.S. §45-594 and A.A.C. R12-15-816 and is complete and correct to the best of my knowledge and belief.

16. Signature of Well Owner: [signature] Date 6-9-98

DWR 55-38 (Rev 4/98)

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

June 19, 1998

JANE DEE HULL
Governor

RITA P. PEARSON
Director

TURQUOISE VALLEY INC
PO BOX 727
NACO, AZ 85620

Registration No. 55-567713
File No.D(24-24) 18 BCC

Dear Applicant:

Enclosed is a copy of the Notice of Intent (NOI) to Abandon a Well. This NOI, which was recently filed with this Department is being returned to you as evidence of your compliance with ARS §45-594; R12-15-816. The enclosed Well Owners Notification of Abandonment is to be submitted when the well has been properly abandoned. The Well Abandonment Card and Abandonment Completion Report forms have been sent to your driller. He may not begin abandonment until he has received the Well Abandonment Card. If you change drillers, you must supply this Department with the new driller's identity. Well abandonments shall be performed only by a licensed well drilling contractor or single well licensee.

ARS §45-594; R12-15-816(K) requires the registered well owner to submit a Well Owners Notification of Abandonment form within thirty (30) days after the abandonment of the well. It also requires the driller to furnish this Department a complete and accurate Well Abandonment Report within thirty (30) days after completion of abandonment. You should insist, and ensure, that both of these are done.

Sincerely,

Kay McNeely
Water Resource Technician
Groundwater Management Support Section

Enclosures

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street - Phoenix, Arizona 85004-3903
Phone (602) 417-2470

RECEIVED MAR 11 1998

NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE READ SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS ON REVERSE SIDE OF THIS FORM BEFORE COMPLETING.

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES.

Land Owner's Name	Current Mailing Address	City	State	Zip
TURQUOISE VALLEY INC.	Box 727	NACO	AZ	85620

Telephone No. 432-3025

COUNTY ASSESSOR'S PARCEL ID INFORMATION:

Well Located in COCHISE County

BOOK	MAP	PARCEL	# of Acres
102	36	002A	80

OFFICIAL SEAL OR STAMP

Well/Land Location (must be completed as requested):

SW ¼ (10AC) SW ¼ (40AC) NW ¼ (160AC) of Section 18 Township 24 N(S) Range 24 E(W)

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

Check one:

Recommend Approval____; Insufficient Information to Make Determination___; Variance Required____(Explanation attached)

DATE_____ AUTHORIZED SIGNATURE_____ TITLE_____

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH ADWR

1. Section §45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section §45-596(d) provides that the Department has 15 days after the receipt of a complete and correct notice of intention to record the notice and mail duplicate to owner. Drill card will be mailed directly to drilling firm as stated in item #14.
3. Please mail two original notices with original signatures, a site plan in DUPLICATE, and a check or money order (no cash) in the amount of $10.00 to P.O. Box 458, Phoenix, Arizona 85001-0458 or hand deliver to 500 North Third Street, Phoenix, Arizona 85004-3903. USE BLACK OR BLUE INK.
4. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
5. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. Owner of well:
   TURQUOISE VALLEY INC.
   Name
   Box 727
   Current Mailing Address
   NACO AZ 85620
   City State Zip
   Telephone No. 432-3025

2. Action requested: Drill New Well X; Deepen____ Modify____ Replace____.
   For a replacement well provide: Maximum capacity of the original well _____ gallons per minute; distance from the original well_____ feet.
   Well Registration No.55-_____

3. Construction will start about:
   Month MAY Year 98

4. Description of proposed well:
   Diameter 8 inches
   Depth 200 feet
   Type of Casing STEEL

5. Design pump capacity:
   100 gallons per minute

6. Lessee of land of wellsite:
   N/A
   Name
   _____
   Current Mailing Address
   _____
   City State Zip
   Telephone No._____

7. Principal Use of Water; (be specific):
   GOLF COURSE

8. Other uses of Water; (be specific):
   N/A

9. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated;_____

FOR DEPARTMENT USE ONLY

File No. D(24-24)18BCC
Filed 03/11/98 By BJS
Input_____ By___
DUPLICATE MAILED
Date 03/26/98
Registration 55-567713
AMA/INA_____
W/S 11 S/B___

10. Place of Use (Legal Description of Land):
    SW ¼ (10 AC) SW ¼ (40AC) NW ¼ (160AC) Section 18
    Township 24 N(S) Range 24 E(W)

11. Type of Well (Check One):
    Exempt____ Non-Exempt X

12. Check One:
    Residential____ Commercial X

13. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous materials or petroleum storage areas and tanks? Yes____ No X

14. Drilling Firm:
    Arizona Drilling LLP
    Name
    501 Patton St.
    Mailing Address
    Huachuca City, Az. 85616
    City State Zip
    (520) - 456-2355
    Telephone No.
    613
    DWR License Number
    C-53
    ROC License Category

I State that this Notice is filed in compliance with A.R.S. §§45-595 and 45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations and conditions set forth on the reverse side of this form.

PETER LAWSON / PRESIDENT — Typed or Printed Name and Title

Signature [ ] Land Owner [ ] Lessee of Wellsite, Title

MAR. 6/98. — Date

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Pursuant to Section §45-596, Arizona Revised Statutes, provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department.

2. If any water from a proposed well on a parcel of land of twenty or fewer acres will be used for domestic purposes, as defined in §45-454, the applicant shall submit a site plan to scale of the property with the county assessor's parcel identification number. The site plan:

   a. Will be on a 8½"x11" piece of plain paper with representation of the locations of all structures, septic tank or sewer systems and proximity of adjacent lot lines to scale.

   b. Must show the proposed well location and the location of any septic or sewer system that is either located on the property or within one hundred feet of the proposed well site.

   c. Shall demonstrate to the Director's satisfaction that the well will not be drilled within one hundred feet of any septic or sewer system.

   d. Must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Before approval, the health authority shall review the plan and determine whether the proposed well location complies with applicable state and local laws regarding the placement of wells. If so, the health authority shall endorse the site plan and the proposed well placement.

3. Endorsement by the county/local authority is based on the best available judgement that this well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. Information brought to light at a future date may render this determination invalid.

4. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use and is later proposed to be converted to use for domestic purposes, as defined in section §45-454, the well owner shall file a notice of intention to drill and comply with the requirements prescribed pursuant to this section before the well is converted and any water from that well used for domestic purposes.

5. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

6. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an Irrigation Non-Expansion Area or Active Management Area to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

7. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of the notice (§45-596.E.).

8. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this notice.

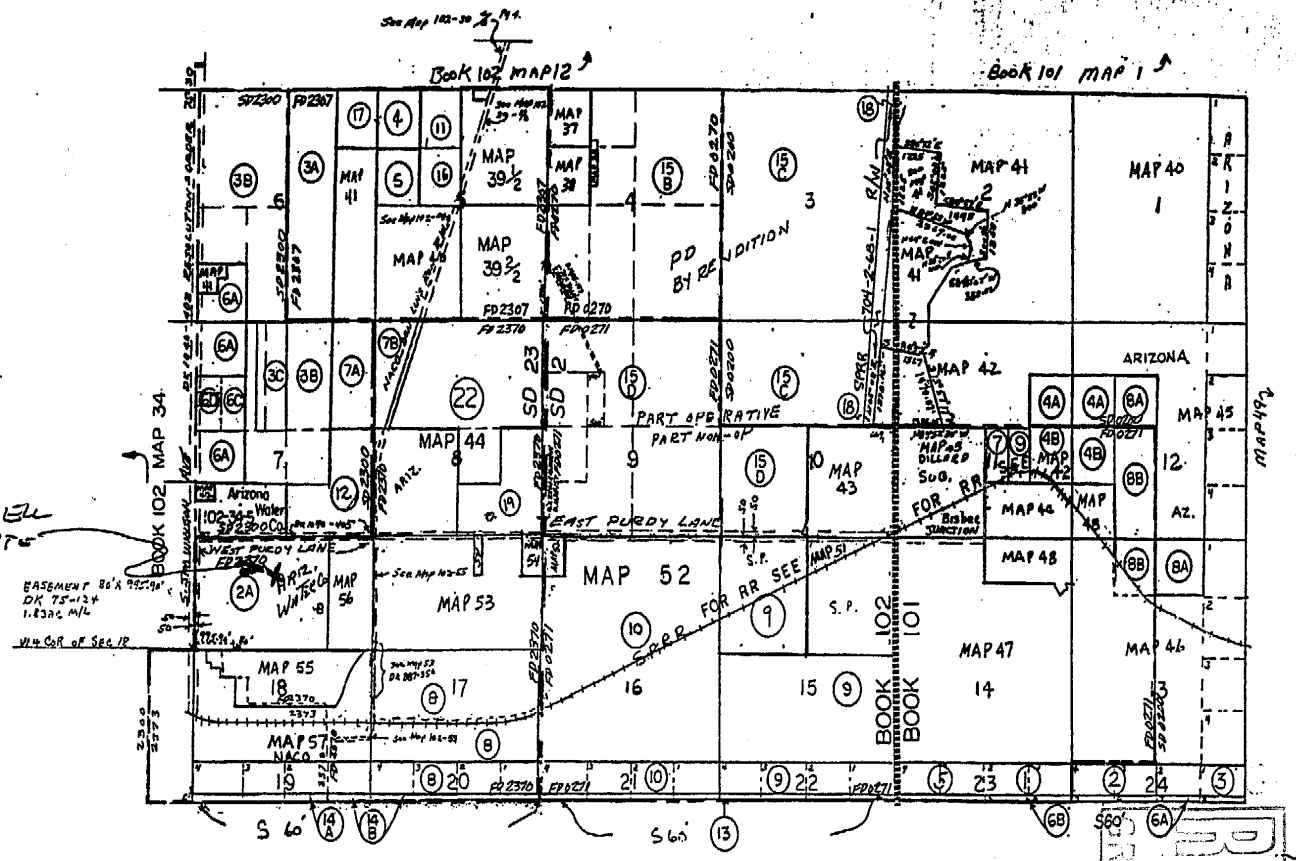
9. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

10. If an individual other than the land owner or lessee signs this Notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific Notice on their behalf, shall accompany the Notice.

TRW-REDI
1-800-345-7334

TWP 24 RGE 24

BOOK 102-BOOK 101
MAP 36 MAP 39



REPUBLIC OF MEXICO

MAR 1 1988

THIS DESCRIPTION IS FROM OLD MISSING RECORDS AND DOES NOT CONSTITUTE A SURVEY

SCALE 1"=2640'

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

JANE DEE HULL
Governor

RITA P. PEARSON
Director

March 26, 1998

TURQUOISE VALLEY INC
PO BOX 727
NACO, AZ 85620

Registration No. 55-567713
File No.D(24-24) 18 BCC

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Sylvia Valdez
Water Resource Technician
Groundwater Management Support Section

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-567713

AUTHORIZED DRILLER: ARIZONA DRILLING LLP LICENSE NO: 613

NOTICE OF INTENTION TO DRILL A NON-EXEMPT WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: TURQUOISE VALLEY INC PO BOX 727 NACO, AZ 85620

The well(s) is/are to be located in the:

SW 1/4 of the SW 1/4 of the NW 1/4 Section 18 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 10TH DAY OF MARCH, 1999.

for CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

ABANDON

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL ABANDON OPERATIONS

WELL REGISTRATION NO: 55-567713

AUTHORIZED DRILLER: WEBER DRILLING LICENSE NO: 272

NOTICE OF INTENTION TO ABANDON A NON-EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: TURQUOISE VALLEY INC PO BOX 727 NACO, AZ 85620

The well(s) is/are to be located in the:

SW 1/4 of the SW 1/4 of the NW 1/4 Section 18 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 16TH DAY OF JUNE, 1999.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A WELL ABANDONMENT COMPLETION REPORT WITHIN 30 DAYS OF COMPLETION OF ABANDONMENT

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

RECEIVED
AUG - 4 1999
RECORDS MGT

1. WEBER DRILLING
ROUTE 1 BOX 276B
SAINT DAVID, AZ 85630-9721

2. Owner Name: PETER J LAWSON
Address: NACO (City) AZ (State) 85620 (Zip)

3. Location: 24 N/S 24 E/W 18 (Section) ¼ NE (10-acre) ¼ SW (40-acre) ¼ NE (160-acre)
(Township) (Range)

4. Well Registration No. 55- **568875** (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 330 ft.
7. Type of casing STEEL
8. Diameter and length of casing 8 in. from 0 to ~~330~~ 206 in from 0 to 330
9. Method of sealing at reduction points WELDED
10. Perforated from 166 to 320, from _____ to _____ from _____ to _____
11. Size of cuts 1/8 x 8 Number of cuts per foot 4
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started JUNE (Month) ~~13~~ 13 (Day) 1998 (Year)
15. Date completed JUNE (Month) ~~14~~ 14 (Day) 1998 (Year)
16. Depth to water 140 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
GROUND LEVEL
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-568875
File No. D(24-24) 18 ACA
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

ANSWERED AUG 4 1999

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	140	CALICHE
140	320	VOLCANIC CONGLOMORET
320	330	CLAY
		FIRST WATER 140'
		STATIC 120'

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: WEBER DRILLING

ROUTE 1 BOX 276B
Street

SAINT DAVID, AZ 85630-9721 520-720-4800
City State Zip Phone No.

X Signature of Driller 8-2-99
Date

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

MAIL TO: P. O. BOX 458 - PHOENIX ARIZONA 85001-0458
Phone (602) 417-2470

RECEIVED
AUG 13 1998
RECORDS MGT

COMPLETION REPORT
(Pump Installation Report)

1. **Per A.R.S. § 45-6000, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.**

2. **Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operations. For a flowing well the shut-in pressure should be measured in feet above the land surface or in pounds per square inch at the land surface.**

3. **The static groundwater level should be measured in feet from the land surface immediately prior to the capacity test.**

4. **The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well be measuring the natural flow at the land surface.**

REGISTRATION NO: 55- 568875 **FILE NO:** D(24-24)18 ACA

LOCATION OF THE WELL:

24 N/S	24 E/W	18	¼ NE	¼ SW	¼ NE
Township	Range	Section	10-acre	40-acre	160-acre

EQUIPMENT INSTALLED:

Kind of pump Sub. (Turbine, Submersible, Centrifugal, etc.) Kind of power Elect (Electric, natural gas, gasoline, etc.)

H.P. Rating of Motor 75 Pumping Capacity 500 gpm Date Pump Installed 6-24-98

WELL TEST:

Test pumping capacity 500 Gallons per minute Date Well Tested 6-21-98

Method of Discharge Measurement _____ (Weir, orifice, current meter, etc.)

Static Groundwater Level _____ ft. Drawdown _____ ft.

Total Pumping Lift _____ ft. Drawdown _____ lbs (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Peter J Lawson	1791 West Newell Rd	Naco	Az	85620
Print Well Owner's Name	Address	City	State	Zip

Signature of Well Owner — 520-432-3025 (Phone Number) — Date

DWR 55-56 (Rev 11/97)

ANSWERED SEP 0 4 1998

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street - Phoenix, Arizona 85004-3903
Phone (602) 417-2470

JUN - 2 1998

NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE READ SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS ON REVERSE SIDE OF THIS FORM BEFORE COMPLETING.

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES.

Peter J. Lawson — P.O.Box 727 — Naco — Az. — 85620-0727
Land Owner's Name — Current Mailing Address — City — State — Zip

1791 Newell Road

Telephone No. 529-432-3025

COUNTY ASSESSOR'S PARCEL ID INFORMATION: county could not (verbal given) verify (8 numbers) JB

Well Located In Cochise County — 9805 (BOOK) — (MAP) — (PARCEL) — 80 (# of Acres) — page 151-43

OFFICIAL SEAL OR STAMP

Well/Land Location (must be completed as requested): Recording date 5/20/98

~~SW~~ NE ¼ ~~SW~~ SW ¼ ~~NW~~ NE ¼ of Section 18 Township 24S N/S Range 24E E/W
10AC 40AC 160AC

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

Check one:
Recommend Approval____; Insufficient Information to Make Determination___; Variance Required____(Explanation attached)

DATE_____ AUTHORIZED SIGNATURE_____ TITLE_____

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH ADWR

1. Section §45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section §45-596(d) provides that the Department has 15 days after the receipt of a complete and correct notice of intention to record the notice and mail duplicate to owner. Drill card will be mailed directly to drilling firm as stated in item #14.
3. Please mail two original notices with original signatures, a site plan in DUPLICATE, and a check or money order (no cash) in the amount of $10.00 to P.O. Box 458, Phoenix, Arizona 85001-0458 or hand deliver to 500 North Third Street, Phoenix, Arizona 85004-3903. USE BLACK OR BLUE INK.
4. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
5. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. Owner of well: Turquoise Valley Inc
Peter J. Lawson
Name
P.O.Box 727
Current Mailing Address
Naco, AZ. 85620-0727
City State Zip
Telephone No. 520-432-3025

2. Action requested: Drill New Well ____; Deepen____ Modify____ Replace X
For a replacement well provide: Maximum capacity of the original well 100 gallons per minute; distance from the original well 10 feet.
Well Registration No.55- 567713

3. Construction will start about:
Month June Year 1998

4. Description of proposed well:
Diameter 12" inches
Depth 300 feet
Type of Casing Steel

5. Design pump capacity:
500 gallons per minute

6. Lessee of land of wellsite:
Peter J. Lawson
Name
P.O.Box 727
Current Mailing Address
Naco AZ 85620-0727
City State Zip
Telephone No. 520-432-3025

7. Principal Use of Water; (be specific):
Golf Course

8. Other uses of Water; (be specific):
IFrrigation

9. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated; 80

FOR DEPARTMENT USE ONLY
File No. D(24-24)18ACA
Filed 6-2-98 By KM
Input _____ By ____
DUPLICATE MAILED
Date 6-19-98 KM
Registration 55- 568875
AMA/INA —
W/S 11 S/B —

10. Place of Use (Legal Description of Land): ~~NE~~ NE ¼ ~~SW~~ SW ¼ ~~NW~~ NE ¼ Section 18
10 AC 40AC 160AC
Township 24S N/S Range 24E E/W

11. Type of Well (Check One):
Exempt X Non-Exempt ✓ JB

12. Check One:
Residential____ Commercial X

13. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous materials or petroleum storage areas and tanks? Yes____ No X

14. Drilling Firm:
Weber Drilling
Name
Rt 1 Box 276B
Mailing Address
St. David, AZ 85630
City State Zip
520-720-4800
Telephone No.
272
DWR License Number
A4
ROC License Category

I State that this Notice is filed in compliance with A.R.S. §§45-595 and 45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations and conditions set forth on the reverse side of this form.

Peter Lawson / President — [signature] — 6-1-98
Typed or Printed Name and Title — Signature [ ] Land Owner [ ] Lessee of Wellsite, Title — Date

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Pursuant to Section §45-596, Arizona Revised Statutes, provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department.

2. If any water from a proposed well on a parcel of land of twenty or fewer acres will be used for domestic purposes, as defined in §45-454, the applicant shall submit a site plan to scale of the property with the county assessor's parcel identification number. The site plan:

   a. Will be on a 8½"x11" piece of plain paper with representation of the locations of all structures, septic tank or sewer systems and proximity of adjacent lot lines to scale.

   b. Must show the proposed well location and the location of any septic or sewer system that is either located on the property or within one hundred feet of the proposed well site.

   c. Shall demonstrate to the Director's satisfaction that the well will not be drilled within one hundred feet of any septic or sewer system.

   d. Must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Before approval, the health authority shall review the plan and determine whether the proposed well location complies with applicable state and local laws regarding the placement of wells. If so, the health authority shall endorse the site plan and the proposed well placement.

3. Endorsement by the county/local authority is based on the best available judgement that this well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. Information brought to light at a future date may render this determination invalid.

4. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use and is later proposed to be converted to use for domestic purposes, as defined in section §45-454, the well owner shall file a notice of intention to drill and comply with the requirements prescribed pursuant to this section before the well is converted and any water from that well used for domestic purposes.

5. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

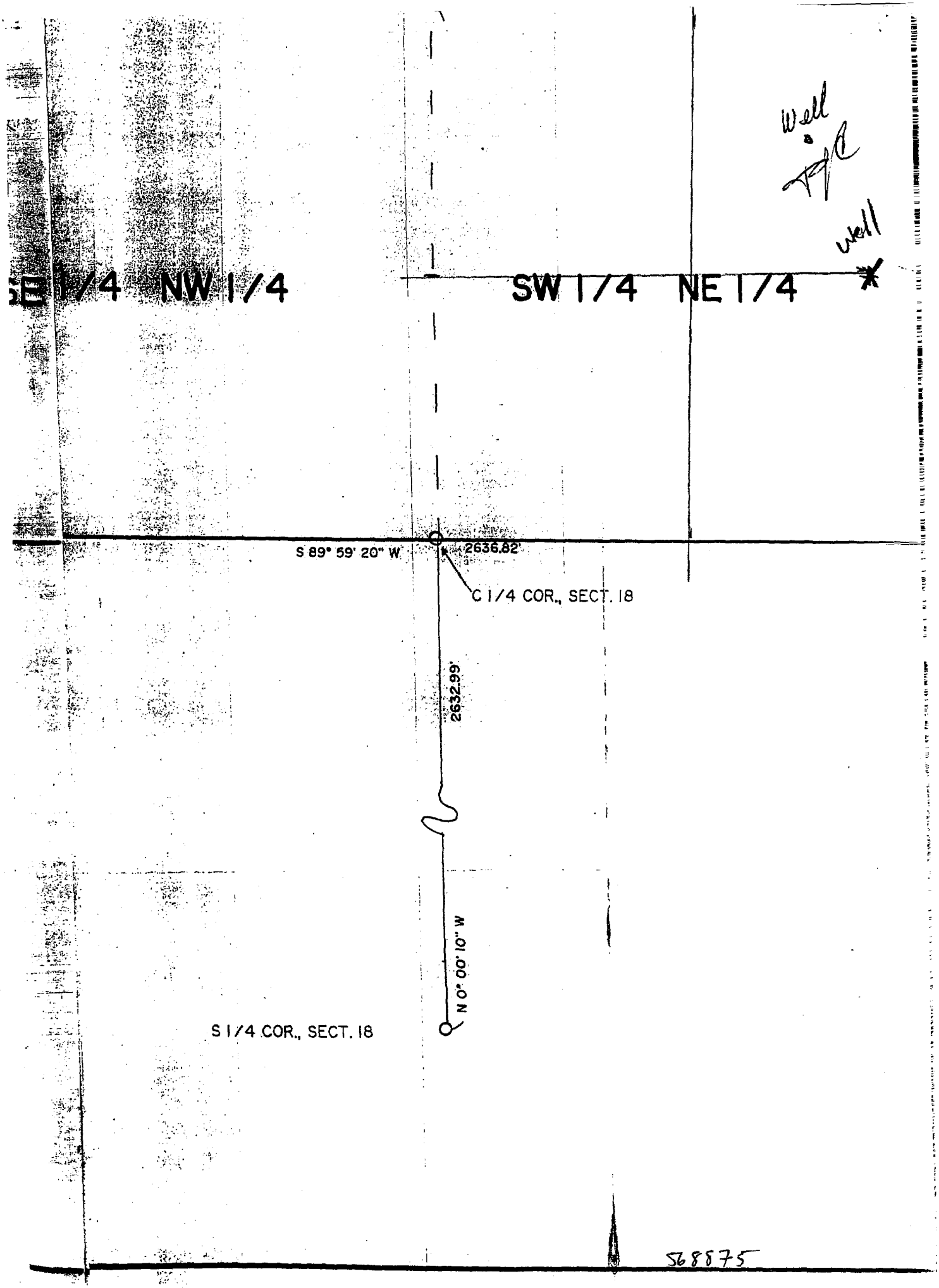
6. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an Irrigation Non-Expansion Area or Active Management Area to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

7. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of the notice (§45-596.E.).

8. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this notice.

9. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

10. If an individual other than the land owner or lessee signs this Notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific Notice on their behalf, shall accompany the Notice.



568875

BOOK PAGE

GROUNDWATER MANAGEMENT SUPPORT SECTION

VERBAL AUTHORIZATION TO DRILL

IN ACCORDANCE WITH A.A.C. R12-15-810.C.

DRILLING FIRM: Weber Drilling #272

WELL OWNER: Peter J. Lawson

TYPE OF WELL: ~~Non~~ Exempt - Commercial (Golf Course)

LEGAL DESCRIPTION: NE, SW, NE, Sec 18, T24S, R24E

IF FOR DEEPENING OR REPLACEMENT OF AN EXISTING WELL, LIST THE ADWR REGISTRATION NUMBER 55- 567713

IN AN ACTIVE MANAGEMENT AREA (AMA) OR IRRIGATION NON-EXPANSION AREA (INA), SAME OWNER, SAME LEGAL DESCRIPTION, MORE THAN ONE WELL, REQUIRES A DIFFERENT PURPOSE FOR THE PROPOSED REPLACEMENT WELL. LIST THE DIFFERENT WELL USE: _____

NOTICE OF INTENT FILED IN ACCORDANCE WITH A.R.S. §45-596.F. & G.? N/A **YES**_____ **NO**

WELL DRILLED WITHIN 100 FEET OF SEPTIC SYSTEM OR HAZARDOUS WASTE SITE?_____ **YES** X **NO**

DATE OF VERBAL AUTHORIZATION: June 3, 1998 **TIME:** 3:00 p.m.

BY: Al Ramsey **TO:** Don Weber

REASON FOR VERBAL AUTHORIZATION: Original well was not drilled deep enough and cased deep enough. Hole to be replaced. May Abandon the old hole.

Turquoise Valley, Inc.

1791 Newell Road
P.O.Box 727
Naco, Az. 85620-0727
520-432-3025 office
520-432-7233 fax

DATE: 6-3-98 # OF PAGES 2
COMPANY: Az Dept of WATER Resources

ATTEN: Tim Casey
FAX: 602-417-2422 PHONE:
FROM:

SUBJECT: New Well

We made a mistake on the legal Description of LAND

NE ¼ of SW ¼ of NE ¼ - Sec 18 Twn 24S - R24E

instead of SW ¼ SW ¼ NW ¼ Sec 18 Twn 24S R24E

Thank you for bring this to our Attention





Recording Requested by:
FIRST AMERICAN TITLE

When recorded mail to:

TURQUOISE VALLEY, INC.
PETER LAWSON, PRESIDENT
1791 Newell Rd., P.O. Box 727
Naco, AZ 85620

FEE # 980515143
OFFICIAL RECORDS
COCHISE COUNTY
DATE HOUR
5/20/98 11
REQUEST OF
PIONEER TITLE AGENCY
CHRISTINE RHODES-RECORDER
FEE : 12.00 PAGES : 2

CORPORATION
WARRANTY DEED

Escrow No. 281-196-302288
Title No. 00717451

KNOW ALL MEN BY THESE PRESENTS: THAT

ROSEMEAD PROPERTIES, INC., a Nevada corporation

for the consideration of TEN AND NO/100 DOLLARS, and other valuable considerations, the GRANTOR herein does hereby convey to

TURQUOISE VALLEY, INC., an Arizona Corporation

the GRANTEE.

the following described real property situate in Cochise County, Arizona:

PARCEL I:
The Southeast quarter of the Northwest quarter; and the Southwest quarter of the Northeast quarter of Section 18, Township 24 South, Range 24 East of the Gila and Salt River Base and Meridian, Cochise County, Arizona.
PARCEL II:
An easement for ingress and egress to the real property described in Parcel I above, described as follows: The East 20.00 feet of the Northwest quarter of the Northeast quarter of Section 18, Township 24 South, Range 24 East of the Gila and Salt River Base and Meridian, Cochise County, Arizona. Grantee covenants and agrees, upon request by Grantor, to quitclaim this easement to Grantor, Rosemead Properties, Inc., provided Grantor grants to Grantee an alternative easement without additional cost to Grantee.

The real property described herein shall be used exclusively as a golf course and no improvements of any kind shall be constructed or maintained thereon except such improvements as may be directly and solely used for golf course purposes. Grantee further agrees that should the real property be used other than exclusively for golf course purposes or if improvements of any kind other than directly and solely for golf course purposes are constructed or maintained thereon, title to the real property shall, at Grantor's option, revert to Grantor or its successors, assigns, or transferees.

Grantor and Grantee agree that the foregoing covenants, restrictions, and reversion shall be covenants running with the land and shall be binding on Grantee and its successors, assigns, or transferees with respect to the real property or any part thereof, and such covenants shall inure to the benefit of and shall be enforceable by Grantor and its successors, assigns, or transferees.

SUBJECT TO: Existing taxes, assessments, liens, encumbrances, covenants, conditions, restrictions, rights of way and easements of record.

And the GRANTOR does warrant the title against all persons whomsoever, subject to the matters above set forth.

IN WITNESS WHEREOF, the GRANTOR has caused its corporate name to be signed by the undersigned officers.

DATED: 5-5-98

ROSEMEAD PROPERTIES, INC., a Nevada corporation

M. L. Whitehead

By: M. L. Whitehead
As Its: Vice President

T J Ryan

By: T. J. Ryan
As Its: Secretary

Run Date: 06/03/1998

WELL REGISTRY REPORT - WELLS55

Location D 24 0 24 0 18 B C C **WR** 567713 **AMA** NOT WITHIN ANY AMA OR INA

Name TURQUOISE VALLEY INC
PO BOX 727

NACO AZ 85620

File Type NEW WELLS (INTENTS OR APPLICATIONS)
Application/Issue Date 03/11/1998

Owner OWNER
Driller Nbr 613
Driller Name ARIZONA DRILLING LLP
Driller Phone 520-456-2355
County COCHISE
GPM

Well Type NON-EXEMPT
SubBasin NO SUBBASIN
Watershed SAN PEDRO RIVER
Water Uses DOMESTIC
Well Uses WATER PRODUCTION
Discharge Method NO DISCHARGE METHOD LISTED
Power NO POWER CODE LISTED

Well Depth	200.00	**Case Diam**	10.00	**Tested Cap**	0.00
Pump Cap.	0.00	**Case Depth**	144.00	**CRT**	I
Draw Down	0.00	**Water Level**	100.00	**Log**	X
Completed		**Acres Irrig**	0.00	**Finish**	NO CASING CODE LISTED

Comments

Current Action

04/24/1998	750	WELL LOG RECEIVED

Action History

04/14/1998	755	WELL CONSTRUCTION COMPLETED
03/27/1998	550	DRILLING AUTHORITY ISSUED
03/11/1998	150	NOI RECEIVED FOR A NEW PRODUCTION WELL

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

JANE DEE HULL
Governor

RITA P. PEARSON
Director

June 19, 1998

PETER J LAWSON
P O BOX 727
NACO, AZ 85620

Registration No. 55-568875
File No.D(24-24) 18 ACA

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to replace a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Kay McNeely
Water Resource Technician
Groundwater Management Support Section

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-568875

AUTHORIZED DRILLER: WEBER DRILLING **LICENSE NO: 272**

NOTICE OF INTENTION TO REPLACE A NON-EXEMPT WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: PETER J LAWSON P O BOX 727 NACO, AZ 85620

The well(s) is/are to be located in the:

NE 1/4 of the SW 1/4 of the NE 1/4 Section 18 Township 24 SOUTH Range 24 EAST

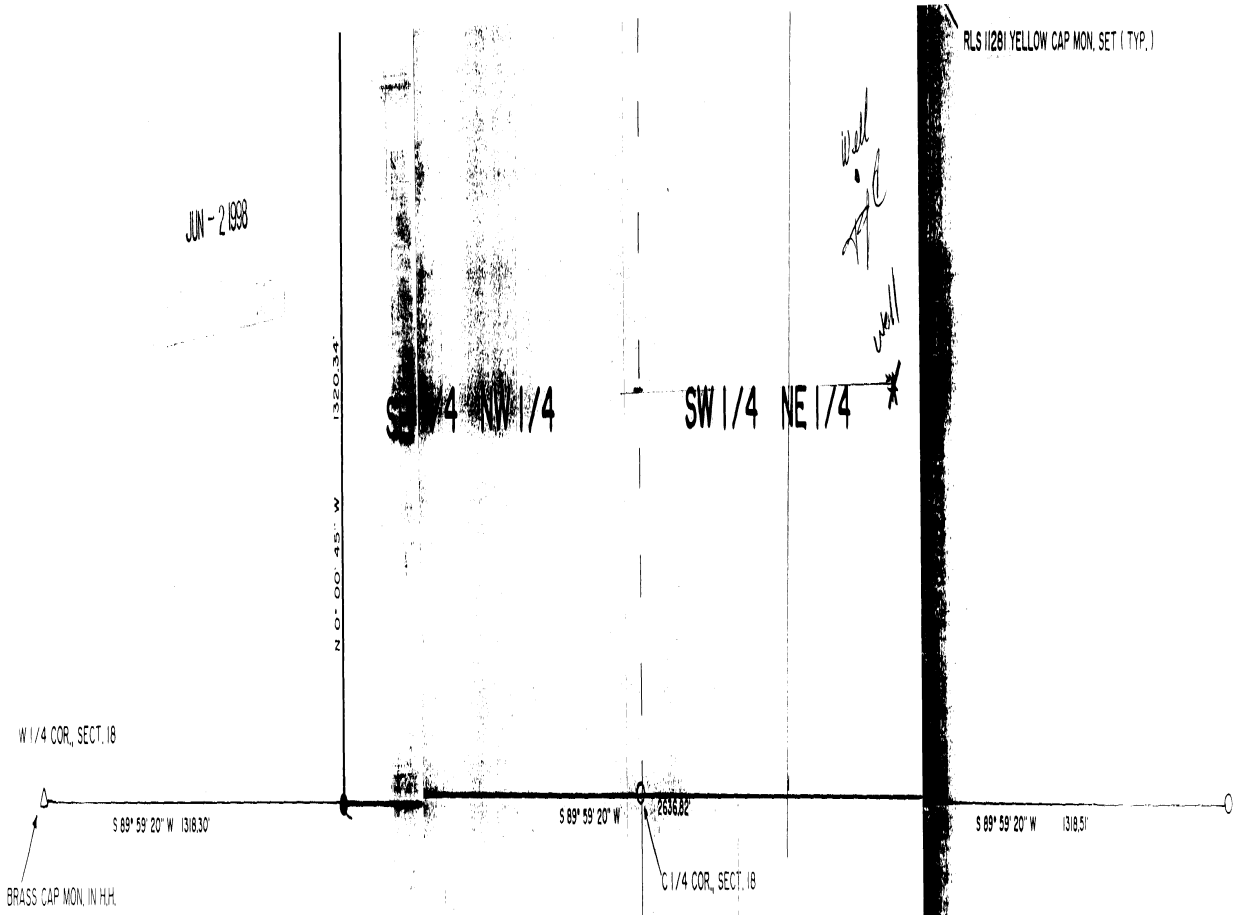
No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 1ST DAY OF JUNE, 1999.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912



RECORDATION

THIS PLAT WAS RECORDED AT THE REQUEST OF BISBEE ENGINEERING ON THIS__DAY OF____199__IN BOOK__OF SURVEYS AT PAGE___ THEREIN.

CHRISTINE RHODES, COCHISE COUNTY RECORDER

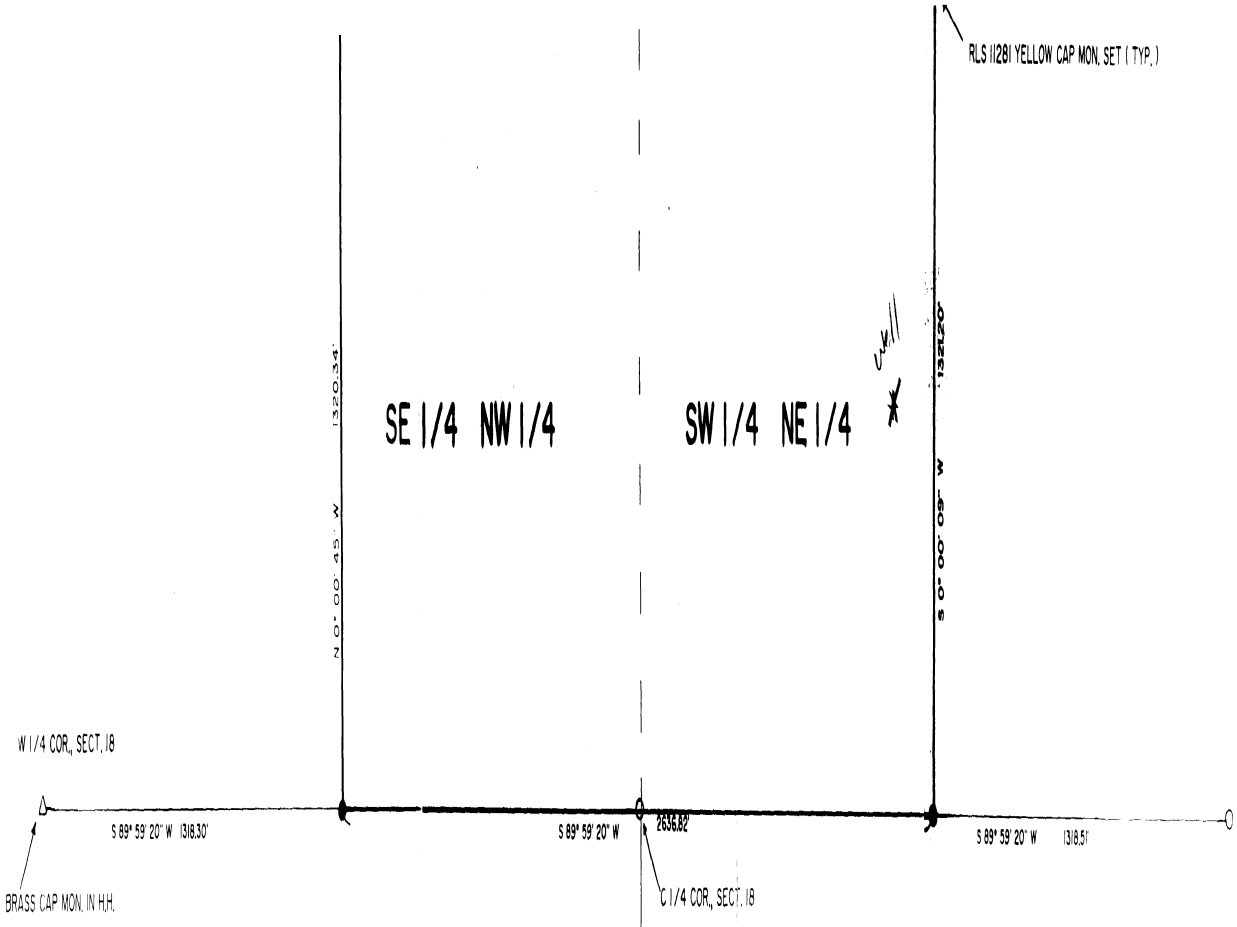
FEE#_____

REGISTERED LAND SURVEYOR ... 12/9/97 DATE SIGNED

BOUNDARY SURVEY OF SW 1/4, NE AND SE 1/4, NW 1/4, SECTION 18, T 24 S, R 24 E, G & SRB & M, CO CO., AZ.

Bisbee Engineer
P.O. Box 1555, Bisbee, AZ
(520) 432-4800

BOOK PAGE



RECORDATION

THIS PLAT WAS RECORDED AT THE REQUEST OF BISBEE ENGINEERING ON THIS__DAY OF____199__IN BOOK__OF SURVEYS AT PAGE___ THEREIN.

CHRISTINE RHODES, COCHISE COUNTY RECORDER

FEE# _____

BOUNDARY SURVEY OF SW 1/4, NE AND SE 1/4, NW 1/4, SECTION 18, T 24 S, R 24 E, G & SRB & M, COCHISE CO., AZ.

12/8/97

Bisbee Engineering
P.O. Box 1555, Bisbee, AZ
(520) 432-4800

SB875

BOOK PAGE

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY	
REGISTRATION NO. 55-	645050
FILE NO.	D(24-24)18
FILED (DATE)	6-10-82
AT (TIME)	11A
INA	
AMA	✓

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

1. Name of Registrant:
GUSTAVO E. VALENZUELA
P.O. Box 14 (Address) NACO (City), AZ (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35- _____ (Control Number)

3. a. The well is located within the ____¼ ____¼ ____¼, Section 18, of Township NACO 24 ~~N/S~~, Range 24 ~~E/W~~, G & SRB & M, in the County of COCHISE.

b. If in a subdivision: Name of subdivision NACO, ARIZONA, Lot No. 507, Address BLOCK 7 —

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 167 feet
b. Diameter of casing 6 inches
c. Depth of casing 150 feet
d. Type of casing STEEL.
e. Maximum pump capacity — gallons per minute.
f. Depth to water 115 feet below land surface.
g. Date well completed _____ (Month) _____ (Day) 1947 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6/8/82 SIGNATURE OF REGISTRANT Gustavo E Valenzuela

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

ARIZONA DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

DEPARTMENT OF WR
AUG 3 - 1994
OPERATIONS DIV.

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Name: M. Rozzano and P. WEED
   Address: 1443 W. Hull Ranch Rd. (Street) Bisbee (City) / Az. (State) 85603 (Zip)
2. Driller Name: L.B. Drilling
   Address: Box 4166 (Street) Huachuca City (City) / Az. (State) 85616 (Zip)
3. Location: 24 N/S (Township) 24 E/W (Range) 5 (Section) SW 1/4 (10-acre) SW1/4 (40-acre) SW 1/4 (160-acre)
4. Well Registration No. 55-544535 (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 320 ft.
7. Type of casing pvc
8. Diameter and length of casing 6 in. from 0 to 320, _____ in from _____ to _____.
9. Method of sealing at reduction points _____
10. Perforated from 320 to 280, from _____ to _____, from _____ to _____.
11. Size of cuts 1/8 Number of cuts per foot three
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction drilled a'n
    (drilled, dug, driven, bored, jetted, etc)
14. Date started July (Month) 8 (Day) 1994 (Year)
15. Date completed July (Month) 9 (Day) 1994 (Year)
16. Depth to water 226 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
    ground level
18. If flowing well, state method of flow regulation: N/A
19. Remarks: blew 30 gpm.

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-544535
File No. D(24-24)5ccc
Received _____ By _____
Entered ENTERED AUG 8 1994

DWR-55-55-7/91 (Rev.)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encounterd, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	9	grey black Top soil
9	65	redish brown gravelly clay
65	165	light grey sandy clay
165	210	redish brown gravelly clay 170 - 210 rocks
210	270	brown gravelly rocks & clay
270	317	cemented grey sand gravel Rocks 1st water
317	320	redish brown Conglomerate

I hereby certify that this well was drilled by me (or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: Larry Lee

L. B. DRILLING

Street Box 4166

Huachuca City, AZ 85616

City State Zip

Date 7-30-94

ARIZONA DEPARTMENT OF WATER RESOURCES

DEPARTMENT OF WR
AUG 1 - 1994
OPERATIONS DIV.

15 South 15th Avenue
Phoenix, Arizona 85007

Registration No. 55-544535

File No.

COMPLETION REPORT

1. Per **A.R.S. § 45-600**, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24 N/S	24 E/W	5	SW 1/4	SW 1/4	SW 1/4
Township	Range	Section	10-acre	40-acre	160-acre

EQUIPMENT INSTALLED:

Kind of pump: Submersible
Turbine, centrifugal, etc.

Kind of power: Electric — H.P. Rating of Motor: 3 Hp.
Electric, natural gas, gasoline, etc.

Pumping Capacity: 20 Gallons per minute — Date pump installed: 7-8-94

WELL TEST:

Test pumping capacity: 24 Gallons per minute — Date Well Tested: 7-8-94

Method of Discharge Measurement: Orifice
Weir, orifice, current meter, etc.

Static Groundwater Level: 225' ft. Drawdown: 15' ft.

Total Pumping Lift: ft. Drawdown: lbs.
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Peggy A. WEED
MARY E. ROZZANO
Print Well Owner's Name

Mary E. Rozzano
Signature of Well Owner or Agent

1443 W. Hull Ranch Rd.
Address

Bisbee AZ 85603
City State Zip

Mary E. Rozzano, 1994 AUG 8
Date

ENTERED AUG 8 1994

DWR-55-56-7/91 (Rev.)

FILING FEE $10.00

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division
15 South 15th Avenue
Phoenix, Arizona 85007

DEPARTMENT COPY

JUN 28 1994 MR

OPERATIONS DIV

NOTICE OF INTENTION TO DRILL A WELL OUTSIDE OF AN ACTIVE MANAGEMENT AREA

Section §45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management, a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department.

WELL/LAND LOCATION:

24 N/S | 24 E/W | 5
1. Township | 2. Range | 3. Section

4. SW 1/4 (10 Acre) SW 1/4 (40 Acre) SW 1/4 (160 Acre)

5. County Assessor's I.D.
102 | 40 | 0028
Book | Map | Parcel

6. County Cochise

NORTH
NW¼ NE¼
WEST EAST
SW¼ SE¼ X
SOUTH

INDICATE WELL LOCATION BY X
(Above diagram represents one 640 acre section)

7. Type of well:
Exempt X Non-exempt ____

8. Action Requested:
Drill New Well X ; or Deepen ____
Replace ____ Modify ____
Well No. 55-____

9. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks?
Yes ____ No X

10. Will this proposed well pump Colorado River Water? Yes ____ No X
(See item 10 on reverse side)

11. Applicant: Owner X Lessee ____
Name: Mary Rozzano & Peggy Weed
Mailing Address: 1443 W Hull Ranch Rd
City: Bisbee State: Az Zip: 85603
Telephone: 602-432-4889

12. Owner or Lessee of Land at wellsite:
Name: Same
Mailing Address: ____
City ____ State ____ Zip ____
Telephone: ____

13. Owner of well:
Name: Same
Mailing Address: ____
City ____ State ____ Zip ____
Telephone: ____

DO NOT WRITE IN THIS SPACE
Office Record
File No. D(24-24)5CCC
Filed 6-28-94 By mk
Input ENTERED JUL - 7 1994
Mailed 7-6-94 By mk
Registration No. 55-544535
INA ____
W/S 13 S/B ____

PLACE OF USE:
14. Township 24 N/S
Range 24 E/W
15. Section 5
16. Legal description of land:
SW 1/4 (10 Acre) SW 1/4 (40 Acre) SW 1/4 (160 Acre)

DESCRIPTION OF PROPOSED WELL:
17. Diameter 6 inches
Depth 300 feet
Type of Casing PVC
Design Pump Capacity: 25 gallons per minute
18. Estimate of total annual pumping: 1.8 acre feet
19. Principal use of water: (be specific) domestic
20. Other uses intended: (be specific) livestock
21. Number of Multiple Drinking Water connections, if any: None
(See item 5 on reverse side)
22. If use includes irrigation, state to nearest tenth the number of acres to be irrigated: N/A
23. Construction will start about: ____
Month ____ Year ____

DRILLING FIRM:
24. ____
Firm: L. B. DRILLING
Mailing Address: BOX 4166
City: HUACHUCA CITY, AZ 85616 Zip
D. W. R. LIC. #344
R. O. C. LIC. #076141-005(A44 #058233-006(C-53
DWR License Number ____
ROC License classification ____

GENERAL INSTRUCTIONS

1. Fill out this form in DUPLICATE and send WITH $10.00 FEE to 15 South 15th Avenue, Phoenix, AZ 85007.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen, replace or modify a well outside of an Active Management Area.
4. If the well is a replacement, deepening or modification of an existing well, provide the registation number of the existing well in Item 8.
5. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.
6. Section §45-596(D), provides that the Director shall determine that all information required on form has been submitted. If not, the person filing will be notified, and the drilling, deepening, or modification of the well may not proceed.

I state that this Notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well as set forth on the reverse side of this form.

Mary E Rozzano & Peggy Weed — Typed or printed name

Mary E. Rozzano — Signature [ ] Land Owner [ ] Lessee of wellsite

June 26, 1994 — Date

Peggy A. Weed

DWR-55-40 9/92 (Rev.)

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Receipt of this annotated Notice constitutes authorization to proceed in drilling, deepening, or modifying the well as set forth on this Notice.

2. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

3. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an INA or AMA to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 3 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to A.R.S. §45-434 or §45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of A.R.S. §45-437.

5. Multiple Drinking Water Connections mean other parcels of land being served by your well that are not owned by you. Each separate parcel is considered one connection.

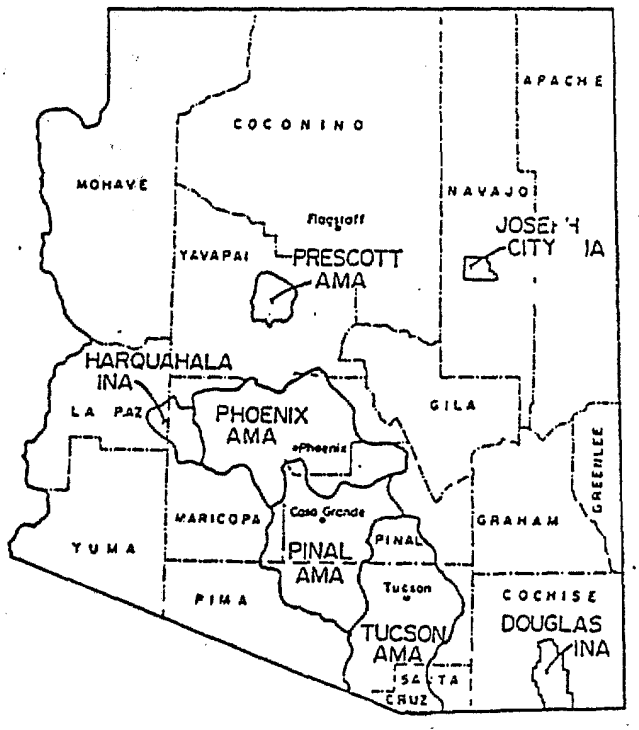
6. The drilling, deepening, or modification of this well shall be completed within one (1) year of the issuance of the drilling authority.

7. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

8. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

9. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.

10. If the proposed well is a non-exempt well and is located near the Colorado River and if the proposed well may pump Colorado River Water, proof must be submitted with this notice that the applicant has the legal right to use Colorado River Water. Alternately, evidence needs to be submitted that supports the contention that Colorado River water will not be withdrawn by the well. Persons near the Colorado River may wish to contact the Colorado River Management Division, Department of Water Resources at (602) 542-1960 to determine those Townships and Ranges which will be affected by these requirements or with questions regarding the proof of right.



ARIZONA DEPARTMENT OF WATER RESOURCES

15 South 15th Avenue, Phoenix, Arizona 85007
Telephone (602) 542-1581
Fax (602) 542-3383

July 5, 1994

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

M. ROZZANO & P.WOOD
1443 W. HULL RANCH RD.
BISBEE, AZ. 85603

Registration No. 55-544535
File No. D(24-24)5CCC

Dear Applicant:

Enclosed is a copy of the Notice of Intention (NOI) to drill/deepen or replace a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized. **In no case may the replacement well be more than 660 feet from the well it is replacing.**

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593, the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed

a Change of Well Information Form should it be needed in the future.

If, in the future, it is determined that water from your well is supplied from the Colorado River and you do not have a perfected water right to Colorado River water established prior to 1929, the U.S. Bureau of Reclamation may require you to cease pumping or enter into a contract for use of Colorado River water.

Sincerely,

Ellen Kane
Water Resource Tech I

ek
Enclosures

RECEIPT

13162

L B DRILLING
P O BOX 4166
HUACHUCA CITY, AZ. 85616

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007
(602) 542-1581

ENTRY CODE 55

FILE NO. D(24-24)5ccc 544535 **THRU**

ITEM DESCRIPTION	RATE	AMOUNT
FILI'G FEE FOR NOI TO DRILL WELL		$10.00
7/5/94/ek CK# #4062		$10.00

PAID
5 1994
PAID

CHECK NO. _____ FEE ACCOUNT NO. _____ TOTAL $ _____

CHIT NO. _____ RECEIVED BY _____ DATE _____

IPS 1821 – Rev. 4/91

ARIZONA DEPARTMENT OF WATER RESOURCES

OPERATIONS DIVISION

15 South 15th Avenue
Phoenix, Arizona 85007-3223
Phone (602) 542-1581

DUPLICATE

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO. 55-544535

AUTHORIZED DRILLER: L B DRILLING LICENSE NO. 344

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

Owner of Well(s)
M. ROZZANO & P. WEED 1443 W. HULL RANCH RD. BISBEE AZ 85603

The well(s) is/are to be located in:

SW 1/4	SW1/4	SW 1/4	Section	5	Township	24.0 SOUTH	Range	24.0 EAST
10 acre	40 acre	160 acre						

NUMBER OF WELLS IN PROJECT: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON JUL 6TH, 1995

THE DRILLER SHALL FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING.

CHIEF, OPERATIONS DIVISION

DRLCRD-0993

#3 WELL

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED APR 28 1982 DEPT OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55-641802
FILE NO. D(24-24)18aad
FILED 4-28-82 (DATE) AT 11A (TIME)
INA
AMA

1. Name of Registrant: MILTON K. LUNA
P.O. Box 265 (Address) NACO (City) Az. (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
N/A (File Number) 35- N/A (Control Number)

3. a. The well is located within the SE ¼ NE ¼ NE¼, Section 18NE, of Township 24S N.(S.) Range 24E (E.)W., G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - (domestic) - municipal - industrial)
Domestic.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☐
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
Well #3 See Accomp. Map.
a. Depth of Well 200' feet
b. Diameter of casing 6" inches
c. Depth of casing 200' feet
d. Type of casing 3/8" wall - Steel .
e. Maximum pump capacity 25 gallons per minute.
f. Depth to water NA feet below land surface.
g. Date well completed Prior to (Month) (Day) 1960 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
Attach additional sheet if necessary.

9. DATE 4-26-82 SIGNATURE OF REGISTRANT Milton K. Luna

MICROFILMED

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

RECEIVED
AUG 14 1995
GROUNDWATER MGT

CHANGE OF WELL INFORMATION

Well Registration No. 55- 641802 File No. D(24-24)18AAD (location)

I/~~We~~ request the following well information be changed:

THE WELL IS LOCATED WITHIN THE SE 1/4, NE 1/4, NE 4 SECTION 18 NE OF TOWNSHIP 24 S S, RANGE 24 E, G+ SRB.+M, IN COCHISE COUNTY.

- NEW OWNERSHIP -

Date: 9 AUG. 95 Signature of Current Well Owner Peter T. Grout

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, PETER T. GROUT (please print), state that I am (~~no longer~~) the (new) owner of the well described below:

SE 1/4 NE 1/4 NE 1/4: Section 18NE Township 24S Range 24E
10 acre 40 acre 160 acre

Well Registration No.55- 641802 File No. D(24-24)18AAD (location)

James H. & Ann Babbe
PRINT Previous Owner's Name
JAMES H AND ANN BABBE
P.O. Box 212 Bisbee, AZ 85603
Address
City State Zip

PETER T. GROUT
PRINT New Owner's Name
PETER GROUT
3316 Naco Hwy, Bisbee, AZ 85603
Address
City State Zip

Dated: 9 AUG. 95 Signature of New Owner Peter T. Grout

ENTERED SEP 13 1995

NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

RECEIVED
AUG 29 1995
GROUNDWATER MGT

DWR-55-71-11/90

RECEIPT № 22619

Peter Grout
3316 Naco Highway
Bisbee, AZ 85603

Seller/Buyer: Babbe/Grout

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
500 NORTH THIRD STREET
PHOENIX, ARIZONA 85004
(602) 417-2405

ENTRY CODE 55

FILE NO. THRU

ITEM DESCRIPTION	RATE	AMOUNT
Filing fee for Change of Well Ownership		10.00
Reg. No. 55-641802 D(24-24)18 AAD		

PAID

CHECK NO. 156 FEE ACCOUNT NO. _____ TOTAL $ 10.00

CHIT NO. _____ RECEIVED BY Liz DATE 8-31-95

IPS 1821 – Rev. 4/91

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 14 1982 DEP'T. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

RECEIVED JUN 14 DEP'T. OF WATER RESOURCES

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 ☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 648361
FILE NO. D(24-24)17
FILED 6-14-82 (DATE) AT 4 P (TIME)
INA —
AMA —

1. Name of Registrant:
Thomas James Willson
Box 425 (Address) Naco (City) Ariz (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the ____¼ ____¼ ____¼, Section 17, of Township ~~Naco~~ 24 N/S, Range 24 E/W, G & SRB & M, in the County of Cochise.
b. If in a subdivision: Name of subdivision ____, Lot No. ____, Address ____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic.

5. If for irrigation use, number of acres irrigated from well ____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 1607 ft feet
b. Diameter of casing 6 in inches
c. Depth of casing 1607 ft feet
d. Type of casing ____.
e. Maximum pump capacity ____ gallons per minute.
f. Depth to water ____ feet below land surface.
g. Date well completed ____ (Month) ____ (Day) 1929 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____

Attach additional sheet if necessary.

9. DATE Jun 12-82 SIGNATURE OF REGISTRANT Thomas James Willson

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 14 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 648362
FILE NO. D(24-24)17bbb
FILED 6-14-82 (DATE) AT 4 (TIME) P
INA —
AMA —

1. Name of Registrant:
Thomas James Willson
Box 426 (Address) Mesa (City) Ariz (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35- _____ (Control Number)

3. a. The well is located within the NW ¼ NW ¼ NW ¼, Section 17, of Township ~~Mesa~~ 24 N/S, Range 24 E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Chase L Purdy, Lot No. 10, Address Purdy Lane 102-53.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Stockwater.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☐
_____ (Address) _____ (City) _____ (State) _____ (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 180 FT feet
b. Diameter of casing 6 in inches
c. Depth of casing 180 FT feet
d. Type of casing _____.
e. Maximum pump capacity _____ gallons per minute.
f. Depth to water _____ feet below land surface.
g. Date well completed _____ (Month) _____ (Day) 1947 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE Jun 12-82 SIGNATURE OF REGISTRANT Thomas James Willson

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

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INSTRUCTIONS FOR REGISTRATION QUESTIONS

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2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Arizona Department of Water Resources
Records Management Section
500 N. 3rd Street • Phoenix, Arizona 85004
(602) 417-2405 • (800) 352-8488
www.water.az.gov

Pump Installation Completion Report

D(24-24)18 CBB

- Review instructions prior to completing form in black or blue ink.
- The registered well owner should file this report with the Department within 30 days following installation of pump equipment.

RECEIVED
APR 22 2005
Information Management

FILE NUMBER

WELL REGISTRATION NUMBER
55 - 205126

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
PAUL CHARLES & ARDIS H. ZANDER

MAILING ADDRESS
P.O. Box 222

CITY / STATE / ZIP CODE
NACO, AZ. 85620-0222

CONTACT PERSON NAME AND TITLE

TELEPHONE NUMBER
520-432-6149

FAX

Location of Well

WELL LOCATION ADDRESS (IF ANY)
3535 METZLER

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	18	SW¼	NW¼	NW¼

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
102	57	309-0

COUNTY WHERE WELL IS LOCATED
COCHISE

SECTION 2. EQUIPMENT INSTALLED

ANSWERED APR 28 2005

DATE PUMP INSTALLED
2-25-05

Pump Type
CHECK ONE

- ☐ Air Lift
- ☐ Bucket
- ☐ Centrifugal
- ☐ Jet
- ☐ Piston
- ☐ Rotary
- ☒ Submersible
- ☐ Turbine
- ☐ Other (*please specify*):

Power Type
CHECK ONE

- ☐ Diesel Engine
- ☒ Electric Motor
- ☐ Gasoline Engine
- ☐ Hand
- ☐ Natural Gas
- ☐ Windmill
- ☐ Other (*please specify*):

RATED PUMP CAPACITY
106 GPM Gallons Per Minute

HORSE POWER RATING OF MOTOR
1 HP

SECTION 3. PUMP TEST

Pump Test Data

DATE WELL TESTED
2-14-05

STATIC WATER LEVEL (A)
95 Feet Below Land Surface

PUMPING WATER LEVEL (B)
240 Feet Below Land Surface

DRAWDOWN [(B) – (A)]
145 Feet Below Land Surface

TEST PUMPING RATE
106 GPM Gallons Per Minute

DURATION OF PUMP TEST (Minimum 4 Hours)
4 hrs Hours

TOTAL PUMPING LIFT
240 Feet

FOR FLOWING WELL, MEASURED SHUT IN HEAD ☐ FT ☐ PSI

Method of Discharge Measurement
CHECK ONE

- ☐ Bailer
- ☒ Bucket – Barrel – Stopwatch
- ☐ Current
- ☐ Estimated – Air Lift
- ☐ Gauge
- ☐ Meter
- ☐ Orifice
- ☐ Volume
- ☐ Weir – Flume
- ☐ Other (*please specify*):

Method of Measuring Water Level
CHECK ONE

- ☐ Air Line
- ☒ Electric Measuring Line (Sounder)
- ☐ Steel Tape
- ☐ Other (*please specify*):

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief according to A.R.S. § 45-600(B).

SIGNATURE OF WELL OWNER
Paul Zander

DATE
4-1-05

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

FILE NUMBER: D(24-24) 18 CBB
WELL REGISTRATION NUMBER: 55- 205126
PERMIT NUMBER (IF ISSUED)

This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

RECEIVED MAR 08 2005
Information Management

SECTION 1. DRILLING AUTHORIZATION

Drilling Firm

NAME	DWR LICENSE NUMBER
BRADLY DRILLING	736
ADDRESS	TELEPHONE NUMBER
403 N. HUACHUCA BLVD	520-456-2355
CITY/STATE/ZIP	FAX
HUACHUCA CITY, AZ 85616	520 456 2355

SECTION 2. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: M/M ZANDER
MAILING ADDRESS: PO BOX 222
CITY / STATE / ZIP: NACO, AZ 85620
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-432-6149
FAX:
WELL NAME:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE 1/4	40 ACRE 1/4	10 ACRE 1/4

LATITUDE: 31° 20· 52" N
LONGITUDE: 109° 57· 13" W
LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level
METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☐ Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ GPS : ☐ Survey-Grade
COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 102 MAP 57 PARCEL 309
COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. WELL CONSTRUCTION DETAILS

Drill Method

CHECK ONE
- ☐ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☒ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development

CHECK ONE
- ☒ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Condition of Well

CHECK ONE
- ☐ Capped
- ☒ Pump Installed

Method of Sealing at Reduction Points

CHECK ONE
- ☒ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☐ Other (please specify)

NATIVE

Condition of Well

DATE WELL CONSTRUCTION STARTED: 2-7-05
DATE WELL CONSTRUCTION COMPLETED: 2-10-05

I state that this notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
Bradly Drilling		2/25/05

DWR-55-55-10/01 (Rev.)

ENTERED MAR 29 2005

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 205126

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

DEPTH OF BORING	DEPTH OF COMPLETED WELL
280' Feet Below Land Surface	280' Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
165 Feet Below Land Surface	2-15-05	NOON	☐ Valve ☐ Other:

Borehole / Installed Casing

Borehole: DEPTH FROM SURFACE FROM (feet)	Borehole: DEPTH FROM SURFACE TO (feet)	Borehole: BOREHOLE DIAMETER (inches)	Installed Casing: DEPTH FROM SURFACE FROM (feet)	Installed Casing: DEPTH FROM SURFACE TO (feet)	Installed Casing: OUTER DIAMETER (inches)	MATERIAL TYPE (X): STEEL	MATERIAL TYPE (X): PVC	MATERIAL TYPE (X): ABS	MATERIAL TYPE (X): IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (X): BLANK OR NONE	PERFORATION TYPE (X): WIRE WRAP	PERFORATION TYPE (X): SHUTTER SCREEN	PERFORATION TYPE (X): MILLS KNIFE	PERFORATION TYPE (X): SLOTTED	PERFORATION TYPE (X): IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	8 5/8	0	20	8 5/8	X				X						
20	280	8"	10	220	6"		X			X						
			220	260	6"		X							X		1/8"

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (X): NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE: GROUT	BENTONITE: CHIPS	BENTONITE: PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK: SAND	FILTER PACK: GRAVEL	FILTER PACK: SIZE
0	20		X									
20	240	X							NATIVE			

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 205126

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	6	Top Soil	
6	55	Sand & Gravel	
55	145	Sand Gravel & Clay	
145	280	Layer Sand Gravels & Clays	X

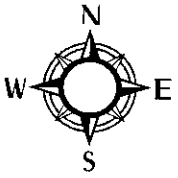
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 205126

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
M/M ZANDER	102	57	309

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



1" = _____ ft

Notice of Intent to Drill, Deepen, Replace or Modify a Well

SEP - 9 2004

WELL REGISTRATION NUMBER
55 - 205126

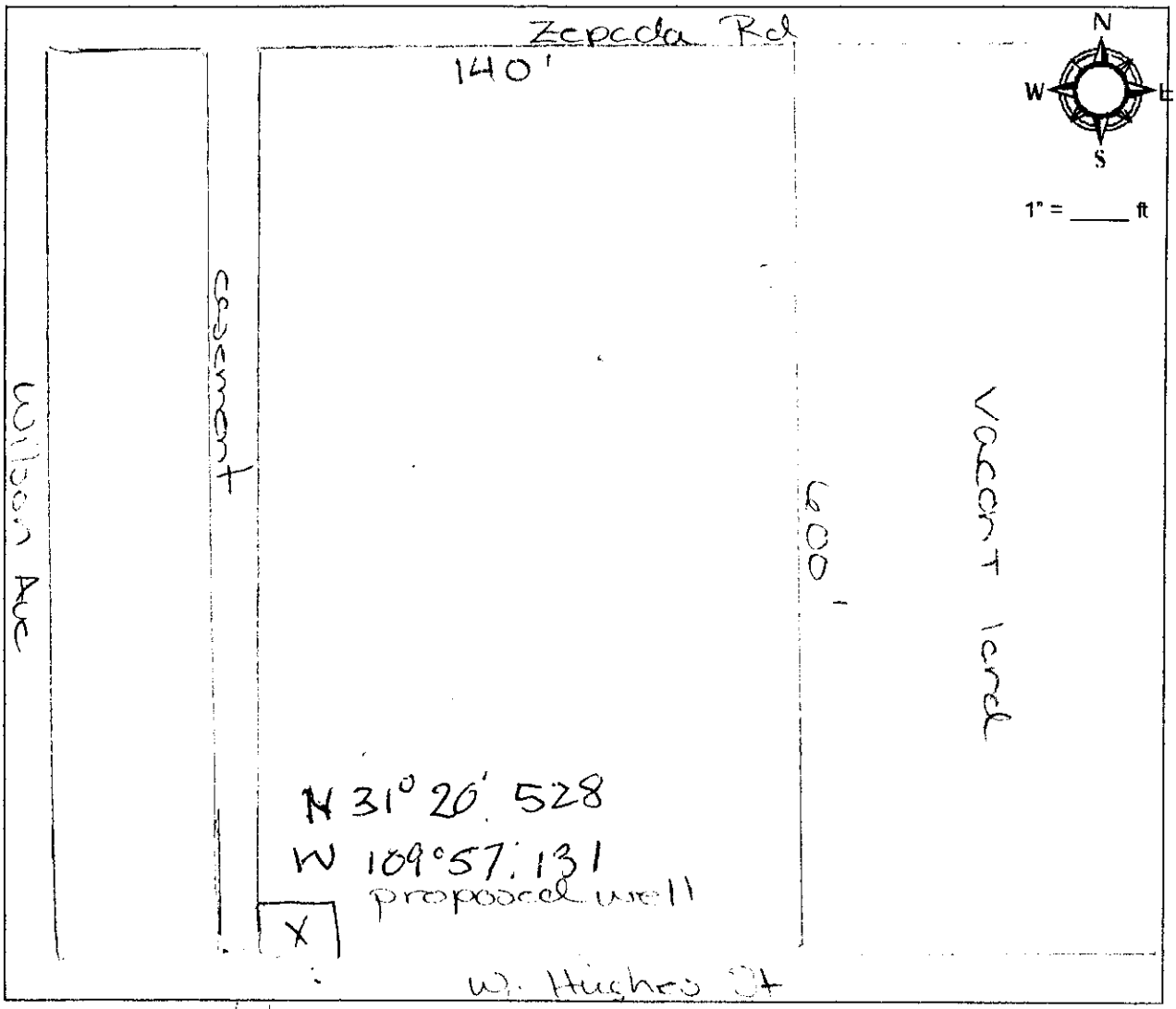
CHECK ONE: ☒ FILING MANUALLY
☐ FILING ELECTRONICALLY* *DRILLER'S E-MAIL ADDRESS:

*COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL CODE	COUNTY APPROVAL CODE
If applicant is filing this NOI electronically via the ADWR website and County approval is required, please indicate approval by providing a County Approval Code	

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
M M Zercher	102	57	309 - 0

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE	Official County or Local Seal or Stamp
COUNTY OR LOCAL AUTHORITY SIGNATURE	APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH
TELEPHONE NUMBER: 520-432-9442	DATE: Sept 8, 2004
DATE: Sept 8, 2004	

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-205126

AUTHORIZED DRILLER: BRADLY DRILLING LICENSE NO: 736

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: M/M ZANDER PO BOX 222 NACO, AZ 85620

The well(s) is/are to be located in the:

NW ¼ of the NW ¼ of the SW ¼ Section 18 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1 Assessor Parcel No: 102-57-309

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 8TH DAY OF SEPTEMBER, 2005

Shannon L Rey

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax www.water.az.gov

SEP – 9 2004

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $75 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $75.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA	B	SB
		76
RECEIVED DATE	WS	
9-9-04		11
ISSUED DATE	WQARF	CERCLA
9-13-04		

FILE NUMBER: D24-24 18 CBB
WELL REGISTRATION NUMBER: 55 - 205126

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☐ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: Cake Diaz R.S.

TELEPHONE NUMBER: 520 432-9442

DATE: Sept 8, 2004

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY
ENVIRONMENTAL HEALTH DIVISION
DATE Sept 8 2004
BY Cake Diaz R.S.

COUNTY OR LOCAL AUTHORITY SIGNATURE: Cake Diaz R.S.

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

☒ Exempt
(Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)

☐ Non-Exempt
(Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 20 Gallons Per Minute

Proposed Action

CHECK ONE

☒ Drill New Well
☐ Deepen
☐ Replace
☐ Modify

If Deepening, Replacing or Modifying:
ORIGINAL WELL REGISTRATION NUMBER: 55 -
MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute
DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	18	SW ¼	NW ¼	NW ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
102	57	309-0	4.29

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	18	SW ¼	NW ¼	NW ¼

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: M/M Zander
MAILING ADDRESS: P.O. Box 222
CITY / STATE / ZIP CODE: Naco, Az. 85620-0222
CONTACT PERSON NAME AND TITLE: Paul Zander
TELEPHONE NUMBER: (520) 432-6149
FAX:

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL:
MAILING ADDRESS:
CITY / STATE / ZIP CODE:
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER:
FAX:

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 205126

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: Bradly Drilling, Inc

DWR LICENSE NUMBER: #736

ROC LICENSE CATEGORY: C53 #184176 #4 #184175

TELEPHONE NUMBER: (520) 456-2355

FAX:

MAILING ADDRESS: 403 N Hurchuca Blvd

CITY / STATE / ZIP CODE: Hurchuca City AZ 85616

SEP - 9 2004

SECTION 6. WATER / SITE INFORMATION

Principal Use **of Water** CHECK ONE	***Other Uses*** **of Water** CHECK ALL THAT APPLY
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☑ Domestic	☐ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify):*	☐ Other *(please specify):*

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

DATE CONSTRUCTION IS TO BEGIN: 9/15/04

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	10"
20	200	8"

Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	20'	6 5/8"	X*										Cement
20	160	6 5/8"		X									
160	200	6 5/8"		X									

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: PAUL C. ZANDER

SIGNATURE OF WELL OWNER: Paul C Zander — DATE: 8-19-04

SIGNATURE OF LANDOWNER, IF APPLICABLE (SEE INSTRUCTIONS) — DATE:

Notice of Intent to Drill, Deepen, Replace or Modify a Well

SEP - 9 2004

WELL REGISTRATION NUMBER
55 - 205126

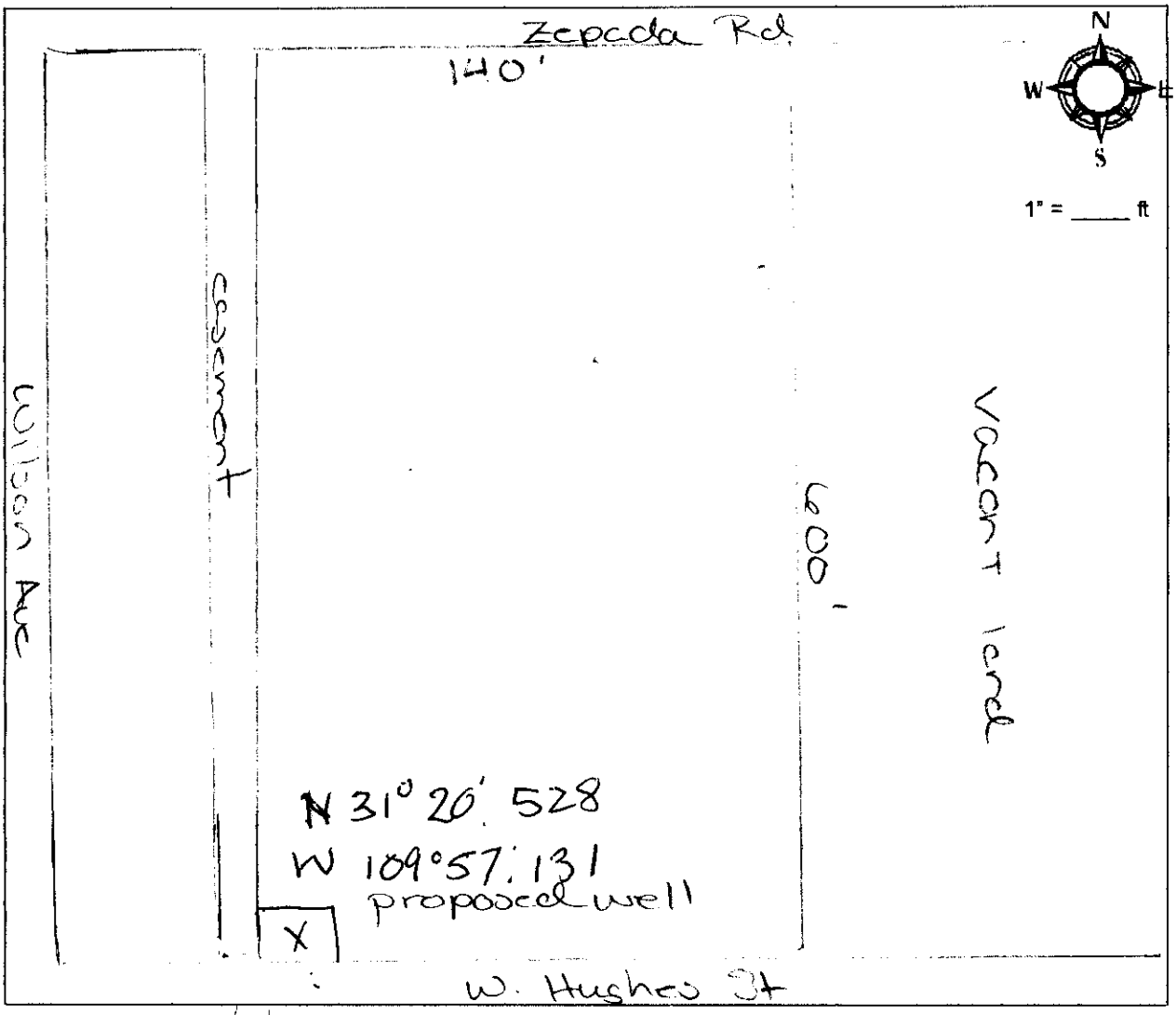
CHECK ONE: ☒ FILING MANUALLY
☐ FILING ELECTRONICALLY* *DRILLER'S E-MAIL ADDRESS:

*COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL CODE	COUNTY APPROVAL CODE
If applicant is filing this NOI electronically via the ADWR website and County approval is required, please indicate approval by providing a County Approval Code	

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
M M Zepeda	102	57	309-0

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE	Official County or Local Seal or Stamp
COUNTY OR LOCAL AUTHORITY SIGNATURE	APPROVED BY THE COCHISE CO... ENVIRONMENTAL HEALTH
TELEPHONE NUMBER: 520-432-9442	DATE: Sept 8, 2004
DATE: Sept 8, 2004	BY: R.S.

ARIZONA DEPARTMENT OF WATER RESOURCES
WATER MANAGEMENT SUPPORT SECTION - NOI UNIT
500 North Third Street, Phoenix, Arizona 85004
Telephone 602 417-2470
Fax 602 417-2422

JANET NAPOLITANO
Governor

HERB GUENTHER
Director

October 12, 2004

PAUL & ARDIS ZANDER
PO BOX 222
NACO AZ 85620-0222

Re: NOI to Drill 55-205126

Dear Applicant:

Enclosed please find a refund check in the amount of seventy-five dollars ($75.00). The Department is refunding a portion of the NOI filing fees because of overpayment on your part. The appropriate filing fee for a well not located within an AMA or INA, is $75 if the well will be used solely for domestic purposes and will have a pump with a maximum capacity of not more than 35 gallons per minute.

If you have any questions about the refund, please contact Jeannie Aguilar of the Water Management Support Section at 602-417-2470.

Sincerely,

Jeannie Aguilar

Jeannie Aguilar
NOI Unit

Enclosures

ARIZONA DEPARTMENT OF WATER RESOURCES
WATER MANAGEMENT SUPPORT SECTION –
NOI UNIT

MEMORANDUM

DATE: October 12, 2004

TO: **LIHUA LI, FINANCIAL SERVICES**

FROM: **JEANNIE AGUILAR, WATER MANAGEMENT SUPPORT SECTION**

RE: **REFUND**

APPLICATION: **WELL REGISTRATION NUMBER 55-205126**

DUE TO OVERPAYMENT OF $75.00, PLEASE PREPARE A REFUND CHECK MADE PAYABLE TO:

PAUL & ARDIS ZANDER
PO BOX 222
NACO AZ 85620-0222

ENCLOSED ARE COPIES OF THE NOI AND CHECK #1001 IN THE AMOUNT OF $150.00. PLEASE PROVIDE ME WITH A COPY OF THE REFUND CHECK FOR FUTURE REFERENCE.

CC: FILE

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

September 13, 2004

Janet Napolitano
Governor

Herb Guenther
Director

M/M ZANDER
PO BOX 222
NACO, AZ 85620 - 0222

Registration No. 55- 205126
File No. D(24-24) 18 CBB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well that you recently filed with this Department pursuant to A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed or otherwise provided a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card, which must be displayed on the drill rig during drilling.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the proposed well, you may not proceed with drilling until you file an amended NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the amended NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DWR form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed is a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55) within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at <http://www.water.az.gov/adwr/content/forms/default.htm#NOI>.

Sincerely,

Jeannie Aguilar

Jeannie Aguilar
NOI Unit
Water Management Support Section

Enclosures

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $75 FEE

- ❖ Review instructions prior to completing form in black or blue ink.
- ❖ You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $75.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- ❖ Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA		6	SB
RECEIVED	DATE	WS	
ISSUED	DATE	WQARF	CERCLA

FILE NUMBER

WELL REGISTRATION NUMBER

55 - 205126

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

SEP - 8 2004

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☐ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE
Mike Dunn R.S.

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY
ENVIRONMENTAL HEALTH DIVISION
DATE Sept 8 2004
BY Mike Dunn R.S.

SIGNATURE Mike Dunn R.S.

PAUL ZANDER
ARDIS ZANDER
P.O. BOX 222
NACO, AZ 85620-0222

[redacted] 1001

Date 9/8/04

Pay to the Order of ADWR $150 00/xx

One hundred fifty & no/xx Dollars

WELLS FARGO
Wells Fargo Bank, N.A.
2187 El Mercado Loop
Sierra Vista, AZ 85635
wellsfargo.com

Memo [redacted]

160 ACRE	40 ACRE	10 ACRE
¼	¼	¼

PARCEL B09-0 # OF ACRES

NT FROM LOCATION OF WELL)

160 ACRE	40 ACRE	10 ACRE
SW ¼	NW ¼	NW ¼

SECTION 3. OWNER INFORMATION

Well Owner	**Landowner** (if different from Well Owner)
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL M/M Zander	FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL
MAILING ADDRESS P.O. Box 222	MAILING ADDRESS
CITY / STATE / ZIP CODE Naco, AZ 85620-0222	CITY / STATE / ZIP CODE
CONTACT PERSON NAME AND TITLE	CONTACT PERSON NAME AND TITLE
TELEPHONE NUMBER (520) 432-6149 / FAX	TELEPHONE NUMBER / FAX

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

APPENDIX C

ANALYTICAL LABORATORY REPORTS FROM ACZ LABORATORIES, INC.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

February 19, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67529

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 05, 2008. This project has been assigned to ACZ's project number, L67529. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67529. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 19, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: ROGERSE

ACZ Sample ID: ***L67529-01***
Date Sampled: *02/04/08 09:40*
Date Received: *02/05/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	4.6		*	mg/L	0.5	3	02/09/08 19:38	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: RAMIREZ

ACZ Sample ID: ***L67529-02***
Date Sampled: *02/04/08 11:00*
Date Received: *02/05/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	7.6		*	mg/L	0.5	3	02/09/08 20:32	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: ZANDER

ACZ Sample ID: ***L67529-03***
Date Sampled: *02/04/08 15:00*
Date Received: *02/05/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	5.7		*	mg/L	0.5	3	02/09/08 20:50	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67529***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240236													
WG240236ICV	ICV	02/09/08 14:30	WI080128-8	50.1		51.88	mg/L	103.6	90	110			
WG240236ICB	ICB	02/09/08 14:48				U	mg/L		-1.5	1.5			
L67529-01AS	AS	02/09/08 19:56	WI080128-9	30	4.6	33.74	mg/L	97.1	90	110			
L67529-01DUP	DUP	02/09/08 20:14			4.6	4.59	mg/L				0.2	20	RA
WG240236ICV1	ICV	02/11/08 18:09	WI080128-8	50.1		51.63	mg/L	103.1	90	110			
WG240236ICB1	ICB	02/11/08 18:27				U	mg/L		-1.5	1.5			
WG240236LFB	LFB	02/11/08 18:45	WI080128-9					106.2	90	110			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67529***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67529-01	WG240236	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67529-02	WG240236	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67529-03	WG240236	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67529***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67529
Date Received: 2/5/2008
Received By:
Date Printed: 2/5/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5428	3.6	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67529
Date Received: 2/5/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67529-01	ROGERSE									X		
L67529-02	RAMIREZ									X		
L67529-03	ZANDER									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67529

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: DAN SIMPSON
Company: HYDRO GEO CHEM INC
E-mail: DANS@HGCINC.COM
Address: 51 W. WETMORE Rd
TUCSON AZ 85705
Telephone: (520) 293-1500 X133

Copy of Report to:

Name: JIM NORRIS
Company: HGC
E-mail: JIMN@HGCINC.COM
Telephone: (520) 293-1500 x112

Invoice to:

Name: JIM NORRIS
Company: HYDRO GEO CHEM
E-mail: JIMN@HGCINC.COM
Address: 51 W. WETMORE RD
TUCSON AZ 85705
Telephone (520) 293 1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ✓ / NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: SO4-IC
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: MARK ARNESON
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO4-I							
ROGERSE	02/04/2008 0940	GW	1	✓							
RAMIREZ	02/04/2008 1100	GW	1	✓							
ZANDER	02/04/2008 1500	GW	1	✓							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	1604: 2/4/08	KR	2-5-08 10:73

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Revised Analytical Report

Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road, Suite 101
Tucson, AZ 85705

March 4, 2008

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67530

Dan Simpson:

Enclosed are revised analytical reports for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 05, 2008 and reported on February 19, 2008. Refer to the case narrative for an explanation of the changes. This project was assigned to ACZ's project number, L67530. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67530. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all the requirements of NELAC.

This report should be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 19, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years. Please notify your Project Manager if you have other needs.

If you have any questions, please contact your Project Manager or Customer Service Representative.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

Hydro Geo Chem, Inc.

March 04, 2008

Project ID: 872001.0
ACZ Project ID: L67530

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 1 ground water sample from Hydro Geo Chem, Inc. on February 5, 2008. The sample was received in good condition. Upon receipt, the sample custodian removed the sample from the cooler, inspected the contents, and logged the sample into ACZ's computerized Laboratory Information Management System (LIMS). The sample was assigned ACZ LIMS project number L67530. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

This sample was analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. This project has been revised to include an analysis for Fluoride which was originally missed.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: GARNER635

ACZ Sample ID: ***L67530-01***
Date Sampled: *02/04/08 12:10*
Date Received: *02/05/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	39.2			mg/L	0.2	1	02/11/08 22:14	wfg
Magnesium, dissolved	M200.7 ICP	8.2			mg/L	0.2	1	02/11/08 22:14	wfg
Potassium, dissolved	M200.7 ICP	2.8		*	mg/L	0.3	2	02/11/08 22:14	wfg
Sodium, dissolved	M200.7 ICP	65.0		*	mg/L	0.3	2	02/11/08 22:14	wfg

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		182			mg/L	2	20	02/06/08 0:00	lcp
Carbonate as CaCO3			U		mg/L	2	20	02/06/08 0:00	lcp
Hydroxide as CaCO3			U		mg/L	2	20	02/06/08 0:00	lcp
Total Alkalinity		182			mg/L	2	20	02/06/08 0:00	lcp
Cation-Anion Balance	Calculation								
Cation-Anion Balance		5.8			%			03/03/08 0:00	calc
Sum of Anions		4.9			meq/L	0.1	0.5	03/03/08 0:00	calc
Sum of Cations		5.5			meq/L	0.1	0.5	03/03/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	13.7			mg/L	0.5	3	02/09/08 21:08	aml
Fluoride	SM4500F-C	0.2	B	*	mg/L	0.1	0.5	02/28/08 11:26	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.68			mg/L	0.02	0.1	03/03/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.69		*	mg/L	0.02	0.1	02/05/08 18:29	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.01	B	*	mg/L	0.01	0.05	02/05/08 18:29	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	290			mg/L	10	20	02/06/08 15:02	lcp
Sulfate	300.0 - Ion Chromatography	37.8		*	mg/L	0.5	3	02/09/08 21:08	aml
TDS (calculated)	Calculation	284			mg/L	10	50	03/03/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.02						03/03/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67530***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240091													
WG240091PBW1	PBW	02/06/08 14:09				U	mg/L		-20	20			
WG240091LCSW2	LCSW	02/06/08 14:20	WC080131-1	820		811.3	mg/L	98.9	90	110			
L67534-01DUP	DUP	02/06/08 17:01			490	497	mg/L				1.4	20	
WG240091PBW2	PBW	02/06/08 17:07				U	mg/L		-20	20			
WG240091LCSW5	LCSW	02/06/08 17:20	WC080131-1	820		815.1	mg/L	99.4	90	110			
WG240091LCSW8	LCSW	02/06/08 18:29	WC080131-1	820		810.5	mg/L	98.8	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240225													
WG240225ICV	ICV	02/11/08 19:57	II080115-3	100		98.37	mg/L	98.4	95	105			
WG240225ICB	ICB	02/11/08 20:01				U	mg/L		-0.6	0.6			
WG240225LFB	LFB	02/11/08 20:17	II080125-1	67.97008		71.81	mg/L	105.6	85	115			
L67521-02AS	AS	02/11/08 21:24	II080125-1	67.97008	10	83.24	mg/L	107.8	85	115			
L67521-02ASD	ASD	02/11/08 21:28	II080125-1	67.97008	10	83.83	mg/L	108.6	85	115	0.71	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240236													
WG240236ICV	ICV	02/09/08 14:30	WI080128-8	19.98		20.48	mg/L	102.5	90	110			
WG240236ICB	ICB	02/09/08 14:48				U	mg/L		-1.5	1.5			
WG240236LFB	LFB	02/09/08 15:06	WI080128-9	30		31.21	mg/L	104	90	110			
L67529-01AS	AS	02/09/08 19:56	WI080128-9	30	23.2	52.44	mg/L	97.5	90	110			
L67529-01DUP	DUP	02/09/08 20:14			23.2	23.51	mg/L				1.3	20	
WG240236ICV1	ICV	02/11/08 18:09	WI080128-8	19.98		20.65	mg/L	103.4	90	110			
WG240236ICB1	ICB	02/11/08 18:27				U	mg/L		-1.5	1.5			

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240886													
WG240886ICV	ICV	02/28/08 11:14	WC080227-1	2		1.97	mg/L	98.5	90	110			
WG240886ICB	ICB	02/28/08 11:19				U	mg/L		-0.3	0.3			
WG240886LFB1	LFB	02/28/08 11:24	WC080226-1	5		5.24	mg/L	104.8	90	110			
L67530-01AS	AS	02/28/08 11:29	WC080226-1	5	.2	6.26	mg/L	121.2	90	110			M1
L67530-01DUP	DUP	02/28/08 11:31			.2	.21	mg/L				4.9	20	RA
WG240886LFB2	LFB	02/28/08 12:51	WC080226-1	5		4.93	mg/L	98.6	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240225													
WG240225ICV	ICV	02/11/08 19:57	II080115-3	100		100.71	mg/L	100.7	95	105			
WG240225ICB	ICB	02/11/08 20:01				U	mg/L		-0.6	0.6			
WG240225LFB	LFB	02/11/08 20:17	II080125-1	54.96908		59.26	mg/L	107.8	85	115			
L67521-02AS	AS	02/11/08 21:24	II080125-1	54.96908	1.9	62.77	mg/L	110.7	85	115			
L67521-02ASD	ASD	02/11/08 21:28	II080125-1	54.96908	1.9	63.98	mg/L	112.9	85	115	1.91	20	

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67530***

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240054													
WG240054ICV	ICV	02/05/08 18:18	WI071212-1	2.416		2.401	mg/L	99.4	90	110			
WG240054ICB	ICB	02/05/08 18:19				U	mg/L		-0.06	0.06			
WG240054LFB	LFB	02/05/08 18:23	WI070911-4	2		1.961	mg/L	98.1	90	110			
L67496-01AS	AS	02/05/08 18:26	WI070911-4	2	.12	2.118	mg/L	99.9	90	110			
L67526-01DUP	DUP	02/05/08 18:28			.07	.069	mg/L				1.4	20	RA

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240054													
WG240054ICV	ICV	02/05/08 18:18	WI071212-1	.609		.633	mg/L	103.9	90	110			
WG240054ICB	ICB	02/05/08 18:19				U	mg/L		-0.03	0.03			
WG240054LFB	LFB	02/05/08 18:23	WI070911-4	1		1.028	mg/L	102.8	90	110			
L67496-01AS	AS	02/05/08 18:26	WI070911-4	1	.02	1.024	mg/L	100.4	90	110			
L67526-01DUP	DUP	02/05/08 18:28			U	U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240225													
WG240225ICV	ICV	02/11/08 19:57	II080115-3	20		21.05	mg/L	105.3	95	105			
WG240225ICB	ICB	02/11/08 20:01				U	mg/L		-0.9	0.9			
WG240225LFB	LFB	02/11/08 20:17	II080125-1	99.76186		112.8	mg/L	113.1	85	115			
L67521-02AS	AS	02/11/08 21:24	II080125-1	99.76186	.9	118	mg/L	117.4	85	115			M1
L67521-02ASD	ASD	02/11/08 21:28	II080125-1	99.76186	.9	120.95	mg/L	120.3	85	115	2.47	20	M1

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240101													
WG240101PBW	PBW	02/06/08 15:00				U	mg/L		-20	20			
WG240101LCSW	LCSW	02/06/08 15:01	PCN28840	260		272	mg/L	104.6	80	120			
L67537-02DUP	DUP	02/06/08 15:15			620	614	mg/L				1	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240225													
WG240225ICV	ICV	02/11/08 19:57	II080115-3	100		104.05	mg/L	104.1	95	105			
WG240225ICV	ICV	02/11/08 19:57	II080115-3	100		101.7	mg/L	101.7	95	105			
WG240225ICB	ICB	02/11/08 20:01				U	mg/L		-6	6			
WG240225ICB	ICB	02/11/08 20:01				U	mg/L		-0.9	0.9			
WG240225LFB	LFB	02/11/08 20:17	II080125-1	98.21624		108.7	mg/L	110.7	85	115			
WG240225LFB	LFB	02/11/08 20:17	II080125-1	98.21624		110.3	mg/L	112.3	85	115			
L67521-02AS	AS	02/11/08 21:24	II080125-1	98.21624	3.4	115.1	mg/L	113.7	85	115			
L67521-02ASD	ASD	02/11/08 21:28	II080125-1	98.21624	3.4	118.17	mg/L	116.9	85	115	2.63	20	MA

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67530***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240236													
WG240236ICV	ICV	02/09/08 14:30	WI080128-8	50.1		51.88	mg/L	103.6	90	110			
WG240236ICB	ICB	02/09/08 14:48				U	mg/L		-1.5	1.5			
L67529-01AS	AS	02/09/08 19:56	WI080128-9	30	4.6	33.74	mg/L	97.1	90	110			
L67529-01DUP	DUP	02/09/08 20:14			4.6	4.59	mg/L				0.2	20	RA
WG240236ICV1	ICV	02/11/08 18:09	WI080128-8	50.1		51.63	mg/L	103.1	90	110			
WG240236ICB1	ICB	02/11/08 18:27				U	mg/L		-1.5	1.5			
WG240236LFB	LFB	02/11/08 18:45	WI080128-9					106.2	90	110			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67530***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67530-01	WG240225	Potassium, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Sodium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG240886	Fluoride	SM4500F-C	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240054	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240236	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67530***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67530
Date Received: 2/5/2008
Received By:
Date Printed: 2/5/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5428	3.6	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67530
Date Received: 2/5/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67530-01	GARNER635		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67530

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc.
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd. Tucson, AZ 85705
Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Address: 51 W. Wetmore Rd Tucson, AZ 85737
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES X / NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ca Na Mg K	TDS $SO_4^{=}$ NO_3^- Cl^- F^-	Alk					
GARNER635	2/4/08: 1210	GW	3	X	X	X					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	2/4/08.1604	WPL	2/5/08 10:33

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

February 19, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67560

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 06, 2008. This project has been assigned to ACZ's project number, L67560. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67560. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 19, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: RUIZ

ACZ Sample ID: ***L67560-01***
Date Sampled: *02/05/08 08:50*
Date Received: *02/06/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	263		*	mg/L	3	10	02/11/08 19:03	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: BLOMMER

ACZ Sample ID: ***L67560-02***
Date Sampled: *02/05/08 10:20*
Date Received: *02/06/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	206		*	mg/L	3	10	02/11/08 19:21	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: NOTEMAN

ACZ Sample ID: ***L67560-03***
Date Sampled: *02/05/08 12:15*
Date Received: *02/06/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	310		*	mg/L	10	50	02/11/08 19:39	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67560***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240236													
WG240236ICV	ICV	02/09/08 14:30	WI080128-8	50.1		51.88	mg/L	103.6	90	110			
WG240236ICB	ICB	02/09/08 14:48				U	mg/L		-1.5	1.5			
L67529-01AS	AS	02/09/08 19:56	WI080128-9	30	4.6	33.74	mg/L	97.1	90	110			
L67529-01DUP	DUP	02/09/08 20:14			4.6	4.59	mg/L				0.2	20	RA
WG240236ICV1	ICV	02/11/08 18:09	WI080128-8	50.1		51.63	mg/L	103.1	90	110			
WG240236ICB1	ICB	02/11/08 18:27				U	mg/L		-1.5	1.5			
WG240236LFB	LFB	02/11/08 18:45	WI080128-9					106.2	90	110			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67560***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67560-01	WG240236	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67560-02	WG240236	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67560-03	WG240236	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67560-04	WG240236	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67560-05	WG240236	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67560***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67560
Date Received: 2/6/2008
Received By:
Date Printed: 2/6/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5435	0.3	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67560
Date Received: 2/6/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67560-01	RUIZ									X		
L67560-02	BLOMMER									X		
L67560-03	NOTEMAN									X		
L67560-04	MARTIN									X		
L67560-05	CAMPBELL									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67560

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: DAN SIMPSON
Company: HGC
E-mail: DANS@HGCINC.COM
Address: 51 WEST WETMORE ROAD SUIT 101 TUCSON AZ 85705
Telephone: (520) 293 1500 X133

Copy of Report to:

Name: JIM NORRIS
Company: HYDRO GEO CHEM
E-mail: JIMN@HGCINC.COM
Telephone: (520) 293 1500 X 112

Invoice to:

Name: JIM NORRIS
Company: HYDRO GEO CHEM
E-mail: JIMN@HGCINC.COM
Address: 51 W. WETMORE RD #101 293 1500 X 112
Telephone: (520) 293 1500 X 112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ✓ NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: SO4--IC
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: ALI PANDAMOUZ
Are any samples NRC licensable material?

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO4--							
RUIZ	02/05/2008-0850	GW		✓							
BLOMMER	02/05/2008-1020	GW		✓							
NOTEMAN	02/05/2008-1215	GW		✓							
MARTIN	02/05/2008-1350	GW		✓							
CAMPBELL	02/05/2008-1525	GW		✓							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Ali Pandamouz	02/05/2008-1640		2-6-08 11:20

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

February 20, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67573

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 07, 2008. This project has been assigned to ACZ's project number, L67573. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67573. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 20, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: KEEFER

ACZ Sample ID: ***L67573-01***
Date Sampled: *02/06/08 09:00*
Date Received: *02/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	6.8		*	mg/L	0.5	3	02/09/08 23:32	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: FRANCO

ACZ Sample ID: ***L67573-02***
Date Sampled: *02/06/08 11:36*
Date Received: *02/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	670			mg/L	10	50	02/15/08 12:41	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: PIONKE

ACZ Sample ID: ***L67573-03***
Date Sampled: *02/06/08 10:17*
Date Received: *02/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	394			mg/L	5	30	02/15/08 13:36	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67573***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240236													
WG240236ICV	ICV	02/09/08 14:30	WI080128-8	50.1		51.88	mg/L	103.6	90	110			
WG240236ICB	ICB	02/09/08 14:48				U	mg/L		-1.5	1.5			
L67529-01AS	AS	02/09/08 19:56	WI080128-9	30	4.6	33.74	mg/L	97.1	90	110			
L67529-01DUP	DUP	02/09/08 20:14			4.6	4.59	mg/L				0.2	20	RA
WG240236ICV1	ICV	02/11/08 18:09	WI080128-8	50.1		51.63	mg/L	103.1	90	110			
WG240236ICB1	ICB	02/11/08 18:27				U	mg/L		-1.5	1.5			
WG240236LFB	LFB	02/11/08 18:45	WI080128-9					106.2	90	110			
WG240303													
WG240303ICV	ICV	02/13/08 13:23	WI080128-8	50.1		51.45	mg/L	102.7	90	110			
WG240303ICB	ICB	02/13/08 13:41				U	mg/L		-1.5	1.5			
WG240303LFB	LFB	02/13/08 13:59	WI080128-9	30		29.94	mg/L	99.8	90	110			
WG240303ICV1	ICV	02/15/08 12:05	WI080128-8	50.1		46.41	mg/L	92.6	90	110			
WG240303ICB1	ICB	02/15/08 12:23				.63	mg/L		-1.5	1.5			
L67573-02AS	AS	02/15/08 12:59	WI080128-9	600	670	1293	mg/L	103.8	90	110			
L67573-02DUP	DUP	02/15/08 13:18			670	627	mg/L				6.6	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67573***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67573-01	WG240236	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67573***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67573
Date Received: 2/7/2008
Received By:
Date Printed: 2/7/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5451	0.2	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67573
Date Received: 2/7/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67573-01	KEEFER									X		
L67573-02	FRANCO									X		
L67573-03	PIONKE									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67573

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc.
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd Tucson AZ 85705
Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: Hydro Geo Chem Inc
E-mail: jimn@hgcinc.com
Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: Hydro Geo Chem Inc.
E-mail: jimn@hgcinc.com
Address: 51 W. Wetmore Rd Tucson AZ 85737
Telephone: (520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES X / NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: SO4-IC
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	1 SO4							
KEEFER	2-6-08:0900	GW	1	X							
FRANKO	2-6-08:1136	GW	1	X							
PIONKE	2-6-08:1017	GW	1	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	1634: 2-6-08	WRL	2-7-08 10:43

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Revised Analytical Report

Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road, Suite 101
Tucson, AZ 85705

March 4, 2008

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67574

Dan Simpson:

Enclosed are revised analytical reports for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 07, 2008 and reported on February 20, 2008. Refer to the case narrative for an explanation of the changes. This project was assigned to ACZ's project number, L67574. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67574. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all the requirements of NELAC.

This report should be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 20, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years. Please notify your Project Manager if you have other needs.

If you have any questions, please contact your Project Manager or Customer Service Representative.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Hydro Geo Chem, Inc.

March 04, 2008

Project ID: 872001.0
ACZ Project ID: L67574

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 2 ground water samples from Hydro Geo Chem, Inc. on February 7, 2008. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L67574. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. This project has been revised to include an analysis for Fluoride which was originally missed.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: BIMA

ACZ Sample ID: ***L67574-01***
Date Sampled: *02/06/08 15:50*
Date Received: *02/07/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	224			mg/L	0.2	1	02/12/08 2:40	wfg
Magnesium, dissolved	M200.7 ICP	48.4			mg/L	0.2	1	02/12/08 2:40	wfg
Potassium, dissolved	M200.7 ICP	12.4			mg/L	0.3	2	02/12/08 2:40	wfg
Sodium, dissolved	M200.7 ICP	65.9			mg/L	0.3	2	02/12/08 2:40	wfg

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		510			mg/L	2	20	02/14/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	02/14/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/14/08 0:00	jlf
Total Alkalinity		510		*	mg/L	2	20	02/14/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.1			%			03/03/08 0:00	calc
Sum of Anions		18.0			meq/L	0.1	0.5	03/03/08 0:00	calc
Sum of Cations		18.4			meq/L	0.1	0.5	03/03/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	105			mg/L	3	10	02/15/08 13:54	aml
Fluoride	SM4500F-C	0.1	B	*	mg/L	0.1	0.5	02/28/08 11:34	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	6.8			mg/L	0.1	0.5	03/03/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	6.8			mg/L	0.1	0.5	02/07/08 18:31	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/07/08 18:16	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	980			mg/L	10	20	02/13/08 15:47	cas
Sulfate	300.0 - Ion Chromatography	210			mg/L	3	10	02/15/08 13:54	aml
TDS (calculated)	Calculation	1000			mg/L	10	50	03/03/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.98						03/03/08 0:00	calc

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: SUNBELT

ACZ Sample ID: ***L67574-02***
Date Sampled: *02/06/08 14:25*
Date Received: *02/07/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	56.6			mg/L	0.2	1	02/12/08 2:44	wfg
Magnesium, dissolved	M200.7 ICP	7.9			mg/L	0.2	1	02/12/08 2:44	wfg
Potassium, dissolved	M200.7 ICP	2.4			mg/L	0.3	2	02/12/08 2:44	wfg
Sodium, dissolved	M200.7 ICP	40.7			mg/L	0.3	2	02/12/08 2:44	wfg

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		183			mg/L	2	20	02/14/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	02/14/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/14/08 0:00	jlf
Total Alkalinity		183		*	mg/L	2	20	02/14/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.0			%			03/03/08 0:00	calc
Sum of Anions		5.2			meq/L	0.1	0.5	03/03/08 0:00	calc
Sum of Cations		5.3			meq/L	0.1	0.5	03/03/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	34.2			mg/L	0.5	3	02/13/08 15:48	aml
Fluoride	SM4500F-C	0.8		*	mg/L	0.1	0.5	02/28/08 11:37	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.02			mg/L	0.02	0.1	03/03/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.02			mg/L	0.02	0.1	02/07/08 18:19	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/07/08 18:19	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	270			mg/L	10	20	02/13/08 15:48	cas
Sulfate	300.0 - Ion Chromatography	18.7			mg/L	0.5	3	02/13/08 15:48	aml
TDS (calculated)	Calculation	280			mg/L	10	50	03/03/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.96						03/03/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67574***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240436													
WG240436PBW1	PBW	02/14/08 16:49				25.4	mg/L		-20	20			B4 B7
WG240436LCSW2	LCSW	02/14/08 17:01	WC080131-1	820		850.9	mg/L	103.8	90	110			
L67612-01DUP	DUP	02/14/08 18:19			39	36.3	mg/L				7.2	20	
WG240436PBW2	PBW	02/14/08 20:47				U	mg/L		-20	20			
WG240436LCSW5	LCSW	02/14/08 20:58	WC080131-1	820		854.8	mg/L	104.2	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240286													
WG240286ICV	ICV	02/12/08 1:38	II080115-3	100		98.94	mg/L	98.9	95	105			
WG240286ICB	ICB	02/12/08 1:42				U	mg/L		-0.6	0.6			
WG240286LFB	LFB	02/12/08 1:58	II080209-4	67.97008		68.63	mg/L	101	85	115			
L67490-01AS	AS	02/12/08 2:11	II080209-4	67.97008	63.3	131.1	mg/L	99.7	85	115			
L67490-01ASD	ASD	02/12/08 2:15	II080209-4	67.97008	63.3	130.44	mg/L	98.8	85	115	0.5	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240303													
WG240303ICV	ICV	02/13/08 13:23	WI080128-8	19.98		20.4	mg/L	102.1	90	110			
WG240303ICB	ICB	02/13/08 13:41				U	mg/L		-1.5	1.5			
WG240303LFB	LFB	02/13/08 13:59	WI080128-9	30		30	mg/L	100	90	110			
L67573-02AS	AS	02/13/08 14:35	WI080128-9	30	22.3	51.85	mg/L	98.5	90	110			
L67573-02DUP	DUP	02/13/08 14:53			22.3	22.38	mg/L				0.4	20	
WG240303ICV1	ICV	02/15/08 12:05	WI080128-8	19.98		18.41	mg/L	92.1	90	110			
WG240303ICB1	ICB	02/15/08 12:23				U	mg/L		-1.5	1.5			

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240886													
WG240886ICV	ICV	02/28/08 11:14	WC080227-1	2		1.97	mg/L	98.5	90	110			
WG240886ICB	ICB	02/28/08 11:19				U	mg/L		-0.3	0.3			
WG240886LFB1	LFB	02/28/08 11:24	WC080226-1	5		5.24	mg/L	104.8	90	110			
L67530-01AS	AS	02/28/08 11:29	WC080226-1	5	.2	6.26	mg/L	121.2	90	110			M1
L67530-01DUP	DUP	02/28/08 11:31			.2	.21	mg/L				4.9	20	RA
WG240886LFB2	LFB	02/28/08 12:51	WC080226-1	5		4.93	mg/L	98.6	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240286													
WG240286ICV	ICV	02/12/08 1:38	II080115-3	100		101.87	mg/L	101.9	95	105			
WG240286ICB	ICB	02/12/08 1:42				U	mg/L		-0.6	0.6			
WG240286LFB	LFB	02/12/08 1:58	II080209-4	54.96908		55.97	mg/L	101.8	85	115			
L67490-01AS	AS	02/12/08 2:11	II080209-4	54.96908	30.9	87.98	mg/L	103.8	85	115			
L67490-01ASD	ASD	02/12/08 2:15	II080209-4	54.96908	30.9	87.52	mg/L	103	85	115	0.52	20	

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67574***

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240178													
WG240178ICV	ICV	02/07/08 18:09	WI071212-1	2.416		2.477	mg/L	102.5	90	110			
WG240178ICB	ICB	02/07/08 18:10				U	mg/L		-0.06	0.06			
WG240178LFB	LFB	02/07/08 18:15	WI070911-4	2		2.03	mg/L	101.5	90	110			
L67574-02DUP	DUP	02/07/08 18:20			2.02	2.049	mg/L				1.4	20	
L67574-01AS	AS	02/07/08 18:33	WI070911-4	10	6.8	17.7	mg/L	109	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240178													
WG240178ICV	ICV	02/07/08 18:09	WI071212-1	.609		.615	mg/L	101	90	110			
WG240178ICB	ICB	02/07/08 18:10				U	mg/L		-0.03	0.03			
WG240178LFB	LFB	02/07/08 18:15	WI070911-4	1		1.01	mg/L	101	90	110			
L67574-01AS	AS	02/07/08 18:18	WI070911-4	1	U	.994	mg/L	99.4	90	110			
L67574-02DUP	DUP	02/07/08 18:20			U	U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240286													
WG240286ICV	ICV	02/12/08 1:38	II080115-3	20		20.81	mg/L	104.1	95	105			
WG240286ICB	ICB	02/12/08 1:42				U	mg/L		-0.9	0.9			
WG240286LFB	LFB	02/12/08 1:58	II080209-4	99.76186		103.27	mg/L	103.5	85	115			
L67490-01AS	AS	02/12/08 2:11	II080209-4	99.76186	4.8	114.3	mg/L	109.8	85	115			
L67490-01ASD	ASD	02/12/08 2:15	II080209-4	99.76186	4.8	113.45	mg/L	108.9	85	115	0.75	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240388													
WG240388PBW	PBW	02/13/08 15:45				U	mg/L		-20	20			
WG240388LCSW	LCSW	02/13/08 15:46	PCN28840	260		288	mg/L	110.8	80	120			
L67637-01DUP	DUP	02/13/08 16:00			3440	3536	mg/L				2.8	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240286													
WG240286ICV	ICV	02/12/08 1:38	II080115-3	100		103.13	mg/L	103.1	95	105			
WG240286ICB	ICB	02/12/08 1:42				U	mg/L		-0.9	0.9			
WG240286LFB	LFB	02/12/08 1:58	II080209-4	98.21624		101.41	mg/L	103.3	85	115			
L67490-01AS	AS	02/12/08 2:11	II080209-4	98.21624	97.8	200.73	mg/L	104.8	85	115			
L67490-01ASD	ASD	02/12/08 2:15	II080209-4	98.21624	97.8	199.08	mg/L	103.1	85	115	0.83	20	

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67574***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240303													
WG240303ICV	ICV	02/13/08 13:23	WI080128-8	50.1		51.45	mg/L	102.7	90	110			
WG240303ICB	ICB	02/13/08 13:41				U	mg/L		-1.5	1.5			
WG240303LFB	LFB	02/13/08 13:59	WI080128-9	30		29.94	mg/L	99.8	90	110			
WG240303ICV1	ICV	02/15/08 12:05	WI080128-8	50.1		46.41	mg/L	92.6	90	110			
WG240303ICB1	ICB	02/15/08 12:23				.63	mg/L		-1.5	1.5			
L67573-02AS	AS	02/15/08 12:59	WI080128-9	600	670	1293	mg/L	103.8	90	110			
L67573-02DUP	DUP	02/15/08 13:18			670	627	mg/L				6.6	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67574***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67574-01	WG240886	Fluoride	SM4500F-C	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240178	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240436	Total Alkalinity	SM2320B - Titration	B7	Target analyte detected in prep / method blank at or above acceptance limit. Sample value is > 10X the concentration in the method blank.
L67574-02	WG240886	Fluoride	SM4500F-C	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240178	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240436	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.

ACZ Laboratories, Inc.
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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67574***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67574
Date Received: 2/7/2008
Received By:
Date Printed: 2/8/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5451	0.2	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

Labels were switched at login. Samples IDs were changed in seedback to match the labels on the bottles, because analyses were in progress. Client IDs are backwards from COC

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67574
Date Received: 2/7/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67574-01	BIMA		Y									
L67574-02	SUNBELT		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67574

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: DAN SIMPSON
Company: HYDRO GEO CHEM
E-mail: DANJ@HGCINC.COM
Address: 51 WEST WETMORE RD #101 TUCSON AZ 85705
Telephone: (520) 293 1500 X133

Copy of Report to:

Name: JIM NORRIS
Company: HYDRO GEO CHEM
E-mail: JIMN@HGCINC.COM
Telephone: (520) 293 1500 X 112

Invoice to:

Name: JIM NORRIS
Company: HYDRO GEO CHEM
E-mail: ~~JIMNORRIS~~ JIMN@HGCINC.COM
Address: 51 WEST WETMORE RD TUCSON AZ 85705
Telephone: (520) 293 1500 X 133

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ✓ NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: ALI PANDAMOUZ
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ca-Mg-Na-K	TDS SO4-- NO2-NO3-Cl-F	ALK					
SUNBELT	02/06/2008 1425	GW	3	✓	✓	✓					
BIMA	02/06/2008 1550	GW	3	✓	✓	✓					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
[signature]	02/06/2008 1635	WPL	2-7-08 10:40

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

February 20, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67599

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 08, 2008. This project has been assigned to ACZ's project number, L67599. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67599. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 20, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: ROGERS

ACZ Sample ID: ***L67599-01***
Date Sampled: *02/07/08 14:20*
Date Received: *02/08/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	138			mg/L	1	5	02/15/08 14:12	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67599***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240303													
WG240303ICV	ICV	02/13/08 13:23	WI080128-8	50.1		51.45	mg/L	102.7	90	110			
WG240303ICB	ICB	02/13/08 13:41				U	mg/L		-1.5	1.5			
WG240303LFB	LFB	02/13/08 13:59	WI080128-9	30		29.94	mg/L	99.8	90	110			
WG240303ICV1	ICV	02/15/08 12:05	WI080128-8	50.1		46.41	mg/L	92.6	90	110			
WG240303ICB1	ICB	02/15/08 12:23				.63	mg/L		-1.5	1.5			
L67573-02AS	AS	02/15/08 12:59	WI080128-9	600	670	1293	mg/L	103.8	90	110			
L67573-02DUP	DUP	02/15/08 13:18			670	627	mg/L				6.6	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67599***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67599***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67599
Date Received: 2/8/2008
Received By:
Date Printed: 2/8/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5455	0.3	16

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67599
Date Received: 2/8/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67599-01	ROGERS									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67599

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: DAN SIMPSON
Company: HYDRO GEO CHEM
E-mail: DANS@HGCINC.COM
Address: 51 W. WETMORE RD #101
TUCSON AZ 85705
Telephone: (520) 293-1500 X133

Copy of Report to:

Name: JIM NORRIS
Company: HYDRO GEO CHEM
E-mail: JIMN@HGCINC.COM
Telephone: (520) 293-1500 X112

Invoice to:

Name: JIM NORRIS
Company: HYDRO GEO CHEM
E-mail: JIMN@HGCINC.COM
Address: 51 W. WETMORE RD #101
TUCSON AZ 85705
Telephone: (520) 293-1500 X112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: SO4--
Project/PO #: 872601.0
Reporting state for compliance testing: AZ
Sampler's Name: ALI PENDAMALI
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO4--							
ROGERS	02/07/2008 1420	GW	1	✓							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	02/08/08 1420		2.8.08 10:29

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 03, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67605

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 09, 2008. This project has been assigned to ACZ's project number, L67605. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67605. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 03, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: EAST

ACZ Sample ID: ***L67605-01***
Date Sampled: *02/08/08 09:00*
Date Received: *02/09/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	59.9			mg/L	0.2	1	02/12/08 3:29	wfg
Magnesium, dissolved	M200.7 ICP	24.3			mg/L	0.2	1	02/12/08 3:29	wfg
Potassium, dissolved	M200.7 ICP	2.5			mg/L	0.3	2	02/12/08 3:29	wfg
Sodium, dissolved	M200.7 ICP	31.6			mg/L	0.3	2	02/12/08 3:29	wfg

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		227			mg/L	2	20	02/14/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	02/14/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/14/08 0:00	jlf
Total Alkalinity		227		*	mg/L	2	20	02/14/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.4			%			03/03/08 0:00	calc
Sum of Anions		6.1			meq/L	0.1	0.5	03/03/08 0:00	calc
Sum of Cations		6.4			meq/L	0.1	0.5	03/03/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	31.2			mg/L	0.5	3	02/13/08 17:54	aml
Fluoride	SM4500F-C	0.4	B	*	mg/L	0.1	0.5	02/28/08 11:42	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	6.3			mg/L	0.1	0.5	03/03/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	6.3			mg/L	0.1	0.5	02/09/08 16:21	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/09/08 16:14	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	320			mg/L	10	20	02/15/08 16:03	cas
Sulfate	300.0 - Ion Chromatography	10.6			mg/L	0.5	3	02/13/08 17:54	aml
TDS (calculated)	Calculation	325			mg/L	10	50	03/03/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.98						03/03/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67605***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240436													
WG240436PBW1	PBW	02/14/08 16:49				25.4	mg/L		-20	20			B4 BF
WG240436LCSW2	LCSW	02/14/08 17:01	WC080131-1	820		850.9	mg/L	103.8	90	110			
L67612-01DUP	DUP	02/14/08 18:19			39	36.3	mg/L				7.2	20	
WG240436PBW2	PBW	02/14/08 20:47				U	mg/L		-20	20			
WG240436LCSW5	LCSW	02/14/08 20:58	WC080131-1	820		854.8	mg/L	104.2	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240286													
WG240286ICV	ICV	02/12/08 1:38	II080115-3	100		98.94	mg/L	98.9	95	105			
WG240286ICB	ICB	02/12/08 1:42				U	mg/L		-0.6	0.6			
WG240286LFB	LFB	02/12/08 1:58	II080209-4	67.97008		68.63	mg/L	101	85	115			
L67601-02AS	AS	02/12/08 3:00	II080209-4	67.97008	17.9	87.36	mg/L	102.2	85	115			
L67601-02ASD	ASD	02/12/08 3:04	II080209-4	67.97008	17.9	88.42	mg/L	103.8	85	115	1.21	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240303													
WG240303ICV	ICV	02/13/08 13:23	WI080128-8	19.98		20.4	mg/L	102.1	90	110			
WG240303ICB	ICB	02/13/08 13:41				U	mg/L		-1.5	1.5			
WG240303LFB	LFB	02/13/08 13:59	WI080128-9	30		30	mg/L	100	90	110			
L67573-02AS	AS	02/13/08 14:35	WI080128-9	30	22.3	51.85	mg/L	98.5	90	110			
L67573-02DUP	DUP	02/13/08 14:53			22.3	22.38	mg/L				0.4	20	
L67605-03AS	AS	02/13/08 18:49	WI080128-9	30	12.6	41.8	mg/L	97.3	90	110			
L67605-03DUP	DUP	02/13/08 19:09			12.6	12.55	mg/L				0.4	20	
WG240303ICV1	ICV	02/15/08 12:05	WI080128-8	19.98		18.41	mg/L	92.1	90	110			
WG240303ICB1	ICB	02/15/08 12:23				U	mg/L		-1.5	1.5			

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240886													
WG240886ICV	ICV	02/28/08 11:14	WC080227-1	2		1.97	mg/L	98.5	90	110			
WG240886ICB	ICB	02/28/08 11:19				U	mg/L		-0.3	0.3			
WG240886LFB1	LFB	02/28/08 11:24	WC080226-1	5		5.24	mg/L	104.8	90	110			
L67530-01AS	AS	02/28/08 11:29	WC080226-1	5	.2	6.26	mg/L	121.2	90	110			M1
L67530-01DUP	DUP	02/28/08 11:31			.2	.21	mg/L				4.9	20	RA
WG240886LFB2	LFB	02/28/08 12:51	WC080226-1	5		4.93	mg/L	98.6	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240286													
WG240286ICV	ICV	02/12/08 1:38	II080115-3	100		101.87	mg/L	101.9	95	105			
WG240286ICB	ICB	02/12/08 1:42				U	mg/L		-0.6	0.6			
WG240286LFB	LFB	02/12/08 1:58	II080209-4	54.96908		55.97	mg/L	101.8	85	115			
L67601-02AS	AS	02/12/08 3:00	II080209-4	54.96908	3.5	61.27	mg/L	105.1	85	115			
L67601-02ASD	ASD	02/12/08 3:04	II080209-4	54.96908	3.5	61.99	mg/L	106.4	85	115	1.17	20	

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67605***

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240244													
WG240244ICV	ICV	02/09/08 16:07	WI071212-1	2.416		2.448	mg/L	101.3	90	110			
WG240244ICB	ICB	02/09/08 16:08				U	mg/L		-0.06	0.06			
WG240244LFB	LFB	02/09/08 16:12	WI070911-4	2		2.027	mg/L	101.4	90	110			
L67605-02DUP	DUP	02/09/08 16:17			1.82	1.823	mg/L				0.2	20	
L67605-01AS	AS	02/09/08 16:26	WI070911-4	10	6.3	16.38	mg/L	100.8	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240244													
WG240244ICV	ICV	02/09/08 16:07	WI071212-1	.609		.62	mg/L	101.8	90	110			
WG240244ICB	ICB	02/09/08 16:08				U	mg/L		-0.03	0.03			
WG240244LFB	LFB	02/09/08 16:12	WI070911-4	1		1.023	mg/L	102.3	90	110			
L67605-01AS	AS	02/09/08 16:15	WI070911-4	1	U	.999	mg/L	99.9	90	110			
L67605-02DUP	DUP	02/09/08 16:17			U	U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240286													
WG240286ICV	ICV	02/12/08 1:38	II080115-3	20		20.81	mg/L	104.1	95	105			
WG240286ICB	ICB	02/12/08 1:42				U	mg/L		-0.9	0.9			
WG240286LFB	LFB	02/12/08 1:58	II080209-4	99.76186		103.27	mg/L	103.5	85	115			
L67601-02AS	AS	02/12/08 3:00	II080209-4	99.76186	1.2	108.54	mg/L	107.6	85	115			
L67601-02ASD	ASD	02/12/08 3:04	II080209-4	99.76186	1.2	110.31	mg/L	109.4	85	115	1.62	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240485													
WG240485PBW	PBW	02/15/08 16:00				U	mg/L		-20	20			
WG240485LCSW	LCSW	02/15/08 16:01	PCN28840	260		274	mg/L	105.4	80	120			
L67633-04DUP	DUP	02/15/08 16:15			9070	9164	mg/L				1	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240286													
WG240286ICV	ICV	02/12/08 1:38	II080115-3	100		103.13	mg/L	103.1	95	105			
WG240286ICB	ICB	02/12/08 1:42				U	mg/L		-0.9	0.9			
WG240286LFB	LFB	02/12/08 1:58	II080209-4	98.21624		101.41	mg/L	103.3	85	115			
L67601-02AS	AS	02/12/08 3:00	II080209-4	98.21624	4.6	109.57	mg/L	106.9	85	115			
L67601-02ASD	ASD	02/12/08 3:04	II080209-4	98.21624	4.6	110.8	mg/L	108.1	85	115	1.12	20	

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67605***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240303													
WG240303ICV	ICV	02/13/08 13:23	WI080128-8	50.1		51.45	mg/L	102.7	90	110			
WG240303ICB	ICB	02/13/08 13:41				U	mg/L		-1.5	1.5			
WG240303LFB	LFB	02/13/08 13:59	WI080128-9	30		29.94	mg/L	99.8	90	110			
L67605-03AS	AS	02/13/08 18:49	WI080128-9	30	32.9	61.17	mg/L	94.2	90	110			
L67605-03DUP	DUP	02/13/08 19:09			32.9	32.87	mg/L				0.1	20	
WG240303ICV1	ICV	02/15/08 12:05	WI080128-8	50.1		46.41	mg/L	92.6	90	110			
WG240303ICB1	ICB	02/15/08 12:23				.63	mg/L		-1.5	1.5			
L67573-02AS	AS	02/15/08 12:59	WI080128-9	600	670	1293	mg/L	103.8	90	110			
L67573-02DUP	DUP	02/15/08 13:18			670	627	mg/L				6.6	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67605***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67605-01	WG240886	Fluoride	SM4500F-C	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240244	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240436	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.
L67605-02	WG240886	Fluoride	SM4500F-C	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240244	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240436	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.
L67605-03	WG240886	Fluoride	SM4500F-C	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240244	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240436	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.
L67605-04	WG240886	Fluoride	SM4500F-C	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240244	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240436	Total Alkalinity	SM2320B - Titration	BF	Target analyte in prep / method blank at or above the acceptance criteria. Target analyte was not detected in the sample [< MDL].

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Lab Filtration	SM 3030 B
Lab Filtration & Acidification	SM 3030 B

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67605
Date Received: 2/9/2008
Received By:
Date Printed: 2/9/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
2004	1.4	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

For sample#4 had to pour off a green and a white from the raw.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67605
Date Received: 2/9/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67605-01	EAST		Y									
L67605-02	TM-14		Y									
L67605-03	DUP020808		Y									
L67605-04	FB020808									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67605

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd Tucson AZ 85705
Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc
Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc.
E-mail: Jimn@hgcinc.com
Address: 51 W. Wetmore Rd Tucson AZ 85705
Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ca Na Mg K	TDS SO4 NO3-NO2-Cl-F	Alk
EAST	02/08/2008 0800	GW	3	✓	✓	✓
TM-14	02/08/2008 1125	GW	3	✓	✓	✓
DUP020808	02/08/2008	GW	3	✓	✓	✓
FB020808	02/08/2008	GW	1	✓	✓	✓

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
[signature]	02/08/08 1430	[signature]	2.9.08 11:50

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

February 27, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67606

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 09, 2008. This project has been assigned to ACZ's project number, L67606. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67606. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 27, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: SCHWARTZ

ACZ Sample ID: ***L67606-01***
Date Sampled: *02/08/08 10:30*
Date Received: *02/09/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	158			mg/L	1	5	02/15/08 14:30	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67606***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240303													
WG240303ICV	ICV	02/13/08 13:23	WI080128-8	50.1		51.45	mg/L	102.7	90	110			
WG240303ICB	ICB	02/13/08 13:41				U	mg/L		-1.5	1.5			
WG240303LFB	LFB	02/13/08 13:59	WI080128-9	30		29.94	mg/L	99.8	90	110			
L67605-03AS	AS	02/13/08 18:49	WI080128-9	30	32.9	61.17	mg/L	94.2	90	110			
L67605-03DUP	DUP	02/13/08 19:09			32.9	32.87	mg/L				0.1	20	
WG240303ICV1	ICV	02/15/08 12:05	WI080128-8	50.1		46.41	mg/L	92.6	90	110			
WG240303ICB1	ICB	02/15/08 12:23				.63	mg/L		-1.5	1.5			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67606***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67606***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67606
Date Received: 2/9/2008
Received By:
Date Printed: 2/9/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
2004	1.4	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67606
Date Received: 2/9/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67606-01	SCHWARTZ									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67606

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: DAN SIMPSON
Company: HYDRO GEO CHEM
E-mail: dans@hgcinc.com
Address: 31 W WETMORE RD #101
TUCSON, AZ, 85705
Telephone: (520) 293-1500 X133

Copy of Report to:

Name: JIM NORRIS
Company: HYDROGEO CHEM
E-mail: JIMN@hgcinc.com
Telephone: (520) 293-1500 X112

Invoice to:

Name: JIM NORRIS
Company: HYDRO GEO CHEM
E-mail: JIMN@hgcinc.com
Address: 51 W. WETMORE RD
#TUCSON AZ 85705
Telephone: (520) 293-1500 X112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

YES ✓
NO

PROJECT INFORMATION

Quote #: SOY-- IC
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: ALI PANDAMOUZ
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SOY-1							
SCHWARTZ	02/08/2008 1030	GW	1	✓							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
[signature]	02/08/08 1430	[signature]	2.9.08 11:58

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

February 29, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67649

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 13, 2008. This project has been assigned to ACZ's project number, L67649. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67649. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 29, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: PARRA

ACZ Sample ID: ***L67649-01***
Date Sampled: *02/11/08 13:30*
Date Received: *02/13/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	178			mg/L	0.2	1	02/13/08 21:46	erf
Magnesium, dissolved	M200.7 ICP	50.4			mg/L	0.2	1	02/13/08 21:46	erf
Potassium, dissolved	M200.7 ICP	4.4			mg/L	0.3	2	02/13/08 21:46	erf
Sodium, dissolved	M200.7 ICP	31.6		*	mg/L	0.3	2	02/13/08 21:46	erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		177			mg/L	2	20	02/15/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	02/15/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/15/08 0:00	jlf
Total Alkalinity		177			mg/L	2	20	02/15/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		8.2			%			02/29/08 0:00	calc
Sum of Anions		12.3			meq/L	0.1	0.5	02/29/08 0:00	calc
Sum of Cations		14.5			meq/L	0.1	0.5	02/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	33.4			mg/L	0.5	3	02/20/08 19:09	aml/ccp
Fluoride	SM4500F-C	0.1	B	*	mg/L	0.1	0.5	02/28/08 12:02	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	4.17			mg/L	0.04	0.2	02/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	4.17	H	*	mg/L	0.04	0.2	02/13/08 17:43	aml/pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		HU	*	mg/L	0.01	0.05	02/13/08 18:27	aml/pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	880			mg/L	10	20	02/13/08 16:05	cas
Sulfate	300.0 - Ion Chromatography	360			mg/L	10	50	02/21/08 13:26	aml/ccp
TDS (calculated)	Calculation	783			mg/L	10	50	02/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.12						02/29/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67649***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240436													
WG240436PBW2	PBW	02/14/08 20:47				U	mg/L		-20	20			
WG240436LCSW5	LCSW	02/14/08 20:58	WC080131-1	820		854.8	mg/L	104.2	90	110			
L67649-01DUP	DUP	02/15/08 9:01			177	197.6	mg/L				11	20	
WG240540													
WG240540PBW1	PBW	02/18/08 16:27				U	mg/L		-20	20			
WG240540LCSW2	LCSW	02/18/08 16:38	WC080131-1	820		831.6	mg/L	101.4	90	110			
L67660-03DUP	DUP	02/18/08 18:08			164	155.4	mg/L				5.4	20	
WG240540PBW2	PBW	02/18/08 19:16				U	mg/L		-20	20			
WG240540LCSW5	LCSW	02/18/08 19:28	WC080131-1	820		857.9	mg/L	104.6	90	110			
WG240540PBW3	PBW	02/18/08 23:03				U	mg/L		-20	20			
WG240540LCSW8	LCSW	02/18/08 23:15	WC080131-1	820		867.2	mg/L	105.8	90	110			
WG240540PBW5	PBW	02/19/08 11:41				U	mg/L		-20	20			
WG240540LCSW14	LCSW	02/19/08 11:53	WC080131-1	820		832	mg/L	101.5	90	110			
WG240540LCSW17	LCSW	02/19/08 15:01	WC080131-1	820		882.6	mg/L	107.6	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240401													
WG240401ICV	ICV	02/13/08 20:17	II080115-3	100		101.22	mg/L	101.2	95	105			
WG240401ICB	ICB	02/13/08 20:21				U	mg/L		-0.6	0.6			
WG240401LFB	LFB	02/13/08 20:35	II080209-4	67.97008		70.32	mg/L	103.5	85	115			
L67643-01AS	AS	02/13/08 21:35	II080209-4	67.97008	.3	69.52	mg/L	101.8	85	115			
L67643-01ASD	ASD	02/13/08 21:39	II080209-4	67.97008	.3	70.37	mg/L	103.1	85	115	1.22	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240628													
WG240628ICV	ICV	02/20/08 16:08	WI080220-1	19.98		20.1	mg/L	100.6	90	110			
WG240628ICB	ICB	02/20/08 16:26				U	mg/L		-1.5	1.5			
WG240628LFB	LFB	02/20/08 16:44	WI080128-9	30		29.95	mg/L	99.8	90	110			
L67648-01AS	AS	02/20/08 18:33	WI080128-9	30	27.9	56.16	mg/L	94.2	90	110			
L67648-01DUP	DUP	02/20/08 18:51			27.9	27.89	mg/L				0	20	

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240886													
WG240886ICV	ICV	02/28/08 11:14	WC080227-1	2		1.97	mg/L	98.5	90	110			
WG240886ICB	ICB	02/28/08 11:19				U	mg/L		-0.3	0.3			
WG240886LFB1	LFB	02/28/08 11:24	WC080226-1	5		5.24	mg/L	104.8	90	110			
L67530-01AS	AS	02/28/08 11:29	WC080226-1	5	.2	6.26	mg/L	121.2	90	110			M1
L67530-01DUP	DUP	02/28/08 11:31			.2	.21	mg/L				4.9	20	RA
L67649-03AS	AS	02/28/08 12:10	WC080226-1	5	.1	5.29	mg/L	103.8	90	110			
L67649-03DUP	DUP	02/28/08 12:13			.1	.13	mg/L				26.1	20	RA
WG240886LFB2	LFB	02/28/08 12:51	WC080226-1	5		4.93	mg/L	98.6	90	110			

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67649***

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240401													
WG240401ICV	ICV	02/13/08 20:17	II080115-3	100		102.17	mg/L	102.2	95	105			
WG240401ICB	ICB	02/13/08 20:21				U	mg/L		-0.6	0.6			
WG240401LFB	LFB	02/13/08 20:35	II080209-4	54.96908		57.27	mg/L	104.2	85	115			
L67643-01AS	AS	02/13/08 21:35	II080209-4	54.96908	U	56.48	mg/L	102.7	85	115			
L67643-01ASD	ASD	02/13/08 21:39	II080209-4	54.96908	U	57.29	mg/L	104.2	85	115	1.42	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240387													
WG240387ICV	ICV	02/13/08 16:53	WI071212-1	2.416		2.435	mg/L	100.8	90	110			
WG240387ICB	ICB	02/13/08 16:55				U	mg/L		-0.06	0.06			
WG240387LFB	LFB	02/13/08 17:00	WI070911-4	2		2.057	mg/L	102.9	90	110			
L67611-01AS	AS	02/13/08 17:02	WI070911-4	2	.52	2.387	mg/L	93.4	90	110			
L67611-02DUP	DUP	02/13/08 17:05			U	U	mg/L				0	20	RA
L67652-02AS	AS	02/13/08 17:49	WI070911-4	2	.24	2.159	mg/L	96	90	110			
L67652-03DUP	DUP	02/13/08 17:52			.07	.075	mg/L				6.9	20	RA

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240387													
WG240387ICV	ICV	02/13/08 16:53	WI071212-1	.609		.606	mg/L	99.5	90	110			
WG240387ICB	ICB	02/13/08 16:55				U	mg/L		-0.03	0.03			
WG240387LFB	LFB	02/13/08 17:00	WI070911-4	1		1.017	mg/L	101.7	90	110			
L67611-01AS	AS	02/13/08 17:02	WI070911-4	1	U	.931	mg/L	93.1	90	110			
L67611-02DUP	DUP	02/13/08 17:05			U	U	mg/L				0	20	RA
L67652-02AS	AS	02/13/08 17:49	WI070911-4	1		.942	mg/L	94.2	90	110			
L67652-03DUP	DUP	02/13/08 17:52				U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240401													
WG240401ICV	ICV	02/13/08 20:17	II080115-3	20		20.31	mg/L	101.6	95	105			
WG240401ICB	ICB	02/13/08 20:21				U	mg/L		-0.9	0.9			
WG240401LFB	LFB	02/13/08 20:35	II080209-4	99.76186		102.86	mg/L	103.1	85	115			
L67643-01AS	AS	02/13/08 21:35	II080209-4	99.76186	.7	102.86	mg/L	102.4	85	115			
L67643-01ASD	ASD	02/13/08 21:39	II080209-4	99.76186	.7	104.98	mg/L	104.5	85	115	2.04	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240388													
WG240388PBW	PBW	02/13/08 15:45				U	mg/L		-20	20			
WG240388LCSW	LCSW	02/13/08 15:46	PCN28840	260		288	mg/L	110.8	80	120			
L67654-01DUP	DUP	02/13/08 16:14			4390	4312	mg/L				1.8	20	

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67649***

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240401													
WG240401ICV	ICV	02/13/08 20:17	II080115-3	100		98.7	mg/L	98.7	95	105			
WG240401ICV	ICV	02/13/08 20:17	II080115-3	100		101.24	mg/L	101.2	95	105			
WG240401ICB	ICB	02/13/08 20:21				U	mg/L		-6	6			
WG240401ICB	ICB	02/13/08 20:21				U	mg/L		-0.9	0.9			
WG240401LFB	LFB	02/13/08 20:35	II080209-4	98.21624		100.71	mg/L	102.5	85	115			
WG240401LFB	LFB	02/13/08 20:35	II080209-4	98.21624		98.6	mg/L	100.4	85	115			
L67643-01AS	AS	02/13/08 21:35	II080209-4	98.21624	U	101.14	mg/L	101	85	115			
L67643-01ASD	ASD	02/13/08 21:39	II080209-4	98.21624	U	102.39	mg/L	102.3	85	115	2.35	20	
WG240420													
WG240420ICV	ICV	02/14/08 14:47	II080115-3	100		98.5	mg/L	98.5	95	105			
WG240420ICV	ICV	02/14/08 14:47	II080115-3	100		99.1	mg/L	99.1	95	105			
WG240420ICB	ICB	02/14/08 14:50				U	mg/L		-0.9	0.9			
WG240420LFB	LFB	02/14/08 15:04	II080209-4	98.21624		101.4	mg/L	103.2	85	115			
WG240420LFB	LFB	02/14/08 15:04	II080209-4	98.21624		101.69	mg/L	103.5	85	115			
L67643-01AS	AS	02/14/08 16:13	II080209-4	98.21624	.4	105.66	mg/L	107.2	85	115			
L67643-01ASD	ASD	02/14/08 16:16	II080209-4	98.21624	.4	105.83	mg/L	107.3	85	115	0.16	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240628													
WG240628ICV	ICV	02/20/08 16:08	WI080220-1	50.1		50.64	mg/L	101.1	90	110			
WG240628ICB	ICB	02/20/08 16:26				U	mg/L		-1.5	1.5			
WG240628LFB	LFB	02/20/08 16:44	WI080128-9	30		30.49	mg/L	101.6	90	110			
WG240628ICV1	ICV	02/21/08 11:56	WI080220-1	50.1		50.19	mg/L	100.2	90	110			
WG240628ICB1	ICB	02/21/08 12:14				U	mg/L		-1.5	1.5			
L67648-01AS	AS	02/21/08 12:50	WI080128-9	600	520	1146	mg/L	104.3	90	110			
L67648-01DUP	DUP	02/21/08 13:08			520	486	mg/L				6.8	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67649***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67649-01	WG240401	Sodium, dissolved	M200.7 ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
	WG240886	Fluoride	SM4500F-C	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240387	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67649-02	WG240401	Sodium, dissolved	M200.7 ICP	BB	Target analyte detected in calibration blank at or above acceptance limit. Sample value was > 10X the concentration in the calibration blank.
	WG240886	Fluoride	SM4500F-C	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240387	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67649-03	WG240886	Fluoride	SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240387	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67649***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67649
Date Received: 2/13/2008
Received By:
Date Printed: 2/13/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5477	1.5	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67649
Date Received: 2/13/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67649-01	PARRA		Y									
L67649-02	GALLANT		Y									
L67649-03	POWER		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

L67649

CHAIN of CUSTODY

Report to:

Name: DAN SIMPSON	Address: 51 W. Wetmore Rd. Tucson AZ 85705
Company: HYDRO GEO CHEM Inc	
E-mail: dans@hgcinc.com	Telephone: (520) 293-1500 x 133

Copy of Report to:

Name: Jim Norris	E-mail: jimn@hgcinc.com
Company: Hydro Geo Chem Inc	Telephone: (520) 293-1500 x 112

Invoice to:

Name: Jim Norris	Address: 51 W. Wetmore Rd Tucson AZ 85705
Company: Hydro Geo Chem Inc	
E-mail: jimn@hgcinc.com	Telephone: (520) 293-1500 x 112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES: X NO:

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW

Project/PO #: 872001.6

Reporting state for compliance testing: AZ

Sampler's Name: Kim Wilson

Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ca Na Mg K	TDS SO4 NO3 Cl F	Alk					
PARRA	2/11/08 13:30	GW	3	✓	✓	✓					
GALLANT	2/11/08 15:40	GW	3	✓	✓	✓					
POWER	2/12/08 9:20	GW	3	✓	✓	✓					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Kim Wilson	2/12/08 16:35	KW LRC	2-13-08 11:12

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

February 29, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67668

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 14, 2008. This project has been assigned to ACZ's project number, L67668. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67668. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 29, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Case Narrative

Hydro Geo Chem, Inc.

February 29, 2008

Project ID: 872001.0
ACZ Project ID: L67668

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 3 ground water samples from Hydro Geo Chem, Inc. on February 14, 2008. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L67668. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Samples were received outside the EPA recommended temperature of 0-6 degrees C.

Holding Times

Any analyses not performed within EPA recommended holding times have been qualified with an "H" flag.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: SWAN-OLD

ACZ Sample ID: ***L67668-02***
Date Sampled: *02/13/08 13:15*
Date Received: *02/14/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	77.5		*	mg/L	0.2	1	02/14/08 20:07	aeh/erf
Magnesium, dissolved	M200.7 ICP	11.1		*	mg/L	0.2	1	02/14/08 20:07	aeh/erf
Potassium, dissolved	M200.7 ICP	3.3			mg/L	0.3	2	02/14/08 20:07	aeh/erf
Sodium, dissolved	M200.7 ICP	14.1			mg/L	0.3	2	02/14/08 20:07	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		213			mg/L	2	20	02/18/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	02/18/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/18/08 0:00	jlf
Total Alkalinity		213			mg/L	2	20	02/18/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		0.0			%			02/29/08 0:00	calc
Sum of Anions		5.4			meq/L	0.1	0.5	02/29/08 0:00	calc
Sum of Cations		5.4			meq/L	0.1	0.5	02/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	10.3			mg/L	0.5	3	02/20/08 20:58	aml/ccp
Fluoride	SM4500F-C	0.3	B	*	mg/L	0.1	0.5	02/28/08 12:18	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	5.51			mg/L	0.06	0.3	02/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	5.51		*	mg/L	0.06	0.3	02/14/08 21:01	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/14/08 20:52	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	320			mg/L	10	20	02/16/08 13:43	cas
Sulfate	300.0 - Ion Chromatography	24.1			mg/L	0.5	3	02/20/08 20:58	aml/ccp
TDS (calculated)	Calculation	293			mg/L	10	50	02/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.09						02/29/08 0:00	calc

Arizona license number: AZ0102

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: SWAN-NEW-TM-8

ACZ Sample ID: ***L67668-03***
Date Sampled: *02/13/08 14:05*
Date Received: *02/14/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	43.4		*	mg/L	0.2	1	02/14/08 20:11	aeh/erf
Magnesium, dissolved	M200.7 ICP	21.4		*	mg/L	0.2	1	02/14/08 20:11	aeh/erf
Potassium, dissolved	M200.7 ICP	4.9			mg/L	0.3	2	02/14/08 20:11	aeh/erf
Sodium, dissolved	M200.7 ICP	35.5			mg/L	0.3	2	02/14/08 20:11	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		204			mg/L	2	20	02/18/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	02/18/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/18/08 0:00	jlf
Total Alkalinity		204			mg/L	2	20	02/18/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		0.0			%			02/29/08 0:00	calc
Sum of Anions		5.6			meq/L	0.1	0.5	02/29/08 0:00	calc
Sum of Cations		5.6			meq/L	0.1	0.5	02/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	32.1		*	mg/L	0.5	3	02/20/08 21:16	aml/ccp
Fluoride	SM4500F-C	0.3	B	*	mg/L	0.1	0.5	02/28/08 12:21	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	5.30			mg/L	0.06	0.3	02/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	5.30		*	mg/L	0.06	0.3	02/14/08 21:02	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/14/08 20:54	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	310			mg/L	10	20	02/16/08 13:44	cas
Sulfate	300.0 - Ion Chromatography	12.6		*	mg/L	0.5	3	02/20/08 21:16	aml/ccp
TDS (calculated)	Calculation	296			mg/L	10	50	02/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.05						02/29/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67668***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240540													
WG240540PBW1	PBW	02/18/08 16:27				U	mg/L		-20	20			
WG240540LCSW2	LCSW	02/18/08 16:38	WC080131-1	820		831.6	mg/L	101.4	90	110			
WG240540PBW2	PBW	02/18/08 19:16				U	mg/L		-20	20			
WG240540LCSW5	LCSW	02/18/08 19:28	WC080131-1	820		857.9	mg/L	104.6	90	110			
L67670-03DUP	DUP	02/18/08 20:45			194	197.7	mg/L				1.9	20	
WG240540PBW3	PBW	02/18/08 23:03				U	mg/L		-20	20			
WG240540LCSW8	LCSW	02/18/08 23:15	WC080131-1	820		867.2	mg/L	105.8	90	110			
WG240540PBW5	PBW	02/19/08 11:41				U	mg/L		-20	20			
WG240540LCSW14	LCSW	02/19/08 11:53	WC080131-1	820		832	mg/L	101.5	90	110			
WG240540LCSW17	LCSW	02/19/08 15:01	WC080131-1	820		882.6	mg/L	107.6	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240430													
WG240430ICV	ICV	02/14/08 18:03	II080115-3	100		96.65	mg/L	96.7	95	105			
WG240430ICB	ICB	02/14/08 18:07				U	mg/L		-0.6	0.6			
WG240430LFB	LFB	02/14/08 18:24	II080209-4	67.97008		69.26	mg/L	101.9	85	115			
L67666-01AS	AS	02/14/08 19:34	II080209-4	67.97008	469	511.15	mg/L	62	85	115			M3
L67666-01ASD	ASD	02/14/08 19:38	II080209-4	67.97008	469	517.32	mg/L	71.1	85	115	1.2	20	M3

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240628													
WG240628ICV	ICV	02/20/08 16:08	WI080220-1	19.98		20.1	mg/L	100.6	90	110			
WG240628ICB	ICB	02/20/08 16:26				U	mg/L		-1.5	1.5			
WG240628LFB	LFB	02/20/08 16:44	WI080128-9	30		29.95	mg/L	99.8	90	110			
L67648-01AS	AS	02/20/08 18:33	WI080128-9	30	27.9	56.16	mg/L	94.2	90	110			
L67648-01DUP	DUP	02/20/08 18:51			27.9	27.89	mg/L				0	20	
L67668-03AS	AS	02/20/08 21:34	WI080213-1	50	32.1	58.57	mg/L	52.9	90	110			M2
L67668-03DUP	DUP	02/20/08 21:52			32.1	32.13	mg/L				0.1	20	

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240886													
WG240886ICV	ICV	02/28/08 11:14	WC080227-1	2		1.97	mg/L	98.5	90	110			
WG240886ICB	ICB	02/28/08 11:19				U	mg/L		-0.3	0.3			
WG240886LFB1	LFB	02/28/08 11:24	WC080226-1	5		5.24	mg/L	104.8	90	110			
L67649-03AS	AS	02/28/08 12:10	WC080226-1	5	.1	5.29	mg/L	103.8	90	110			
L67649-03DUP	DUP	02/28/08 12:13			.1	.13	mg/L				26.1	20	RA
WG240886LFB2	LFB	02/28/08 12:51	WC080226-1	5		4.93	mg/L	98.6	90	110			

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67668***

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240430													
WG240430ICV	ICV	02/14/08 18:03	II080115-3	100		100.17	mg/L	100.2	95	105			
WG240430ICB	ICB	02/14/08 18:07				U	mg/L		-0.6	0.6			
WG240430LFB	LFB	02/14/08 18:24	II080209-4	54.96908		58.01	mg/L	105.5	85	115			
L67666-01AS	AS	02/14/08 19:34	II080209-4	54.96908	354	401.3	mg/L	86	85	115			
L67666-01ASD	ASD	02/14/08 19:38	II080209-4	54.96908	354	398.29	mg/L	80.6	85	115	0.75	20	M3

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240451													
WG240451ICV	ICV	02/14/08 20:40	WI071212-1	2.416		2.395	mg/L	99.1	90	110			
WG240451ICB	ICB	02/14/08 20:41				U	mg/L		-0.06	0.06			
WG240451LFB	LFB	02/14/08 20:45	WI070911-4	2		2.035	mg/L	101.8	90	110			
L67667-01AS	AS	02/14/08 20:47	WI070911-4	2	U	2.135	mg/L	106.8	90	110			
L67667-02DUP	DUP	02/14/08 20:50			U	U	mg/L				0	20	RA

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240451													
WG240451ICV	ICV	02/14/08 20:40	WI071212-1	.609		.618	mg/L	101.5	90	110			
WG240451ICB	ICB	02/14/08 20:41				U	mg/L		-0.03	0.03			
WG240451LFB	LFB	02/14/08 20:45	WI070911-4	1		1.065	mg/L	106.5	90	110			
L67667-01AS	AS	02/14/08 20:47	WI070911-4	1	U	1.118	mg/L	111.8	90	110			M1
L67667-02DUP	DUP	02/14/08 20:50			U	U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240430													
WG240430ICV	ICV	02/14/08 18:03	II080115-3	20		19.81	mg/L	99.1	95	105			
WG240430ICB	ICB	02/14/08 18:07				U	mg/L		-0.9	0.9			
WG240430LFB	LFB	02/14/08 18:24	II080209-4	99.76186		103.99	mg/L	104.2	85	115			
L67666-01AS	AS	02/14/08 19:34	II080209-4	99.76186	18.5	126.71	mg/L	108.5	85	115			
L67666-01ASD	ASD	02/14/08 19:38	II080209-4	99.76186	18.5	122.91	mg/L	104.7	85	115	3.04	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240504													
WG240504PBW	PBW	02/16/08 13:30				U	mg/L		-20	20			
WG240504LCSW	LCSW	02/16/08 13:31	PCN28840	260		306	mg/L	117.7	80	120			
L67668-03DUP	DUP	02/16/08 13:45			310	308	mg/L				0.6	20	

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67668***

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240430													
WG240430ICV	ICV	02/14/08 18:03	II080115-3	100		98.07	mg/L	98.1	95	105			
WG240430ICB	ICB	02/14/08 18:07				U	mg/L		-0.9	0.9			
WG240430LFB	LFB	02/14/08 18:24	II080209-4	98.21624		101.78	mg/L	103.6	85	115			
L67666-01AS	AS	02/14/08 19:34	II080209-4	98.21624	144	244.55	mg/L	102.4	85	115			
L67666-01ASD	ASD	02/14/08 19:38	II080209-4	98.21624	144	236.82	mg/L	94.5	85	115	3.21	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240628													
WG240628ICV	ICV	02/20/08 16:08	WI080220-1	50.1		50.64	mg/L	101.1	90	110			
WG240628ICB	ICB	02/20/08 16:26				U	mg/L		-1.5	1.5			
WG240628LFB	LFB	02/20/08 16:44	WI080128-9	30		30.49	mg/L	101.6	90	110			
L67668-03AS	AS	02/20/08 21:34	WI080213-1	50	12.6	39.09	mg/L	53	90	110			M2
L67668-03DUP	DUP	02/20/08 21:52			12.6	12.58	mg/L				0.2	20	
WG240628ICV1	ICV	02/21/08 11:56	WI080220-1	50.1		50.19	mg/L	100.2	90	110			
WG240628ICB1	ICB	02/21/08 12:14				U	mg/L		-1.5	1.5			
L67648-01AS	AS	02/21/08 12:50	WI080128-9	600	520	1146	mg/L	104.3	90	110			
L67648-01DUP	DUP	02/21/08 13:08			520	486	mg/L				6.8	20	

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Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67668***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67668-01	WG240430	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Magnesium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG240886	Fluoride	SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240451	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67668-02	WG240430	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Magnesium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG240886	Fluoride	SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240451	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67668-03	WG240430	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Magnesium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG240628	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG240886	Fluoride	SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240451	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240628	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67668***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67668
Date Received: 2/14/2008
Received By:
Date Printed: 2/14/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
2115	6.8	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67668
Date Received: 2/14/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67668-01	WALKER		Y									
L67668-02	SWAN-OLD		Y									
L67668-03	SWAN-NEW-TM-8		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67668

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem (HGC)
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd
Tucson AZ 85705
Telephone: (520) 293 1500 x 133

Copy of Report to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Telephone: (520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Address: as above
Telephone: (520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES: X / NO:
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB - GW
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: Kim Wilson + Ali Pandamouz
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ca, Na, Mg, K	TDS SO4 NO2 NO3 Cl F	ALK					
WALKER	2/13/08 10:55	GW	✓	✓	✓	✓					
SWAN - OLD	2/13/08 13:15	GW	✓	✓	✓	✓					
SWAN - NEW - TM-8	2/13/08 14:05	GW	✓	✓	✓	✓					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Kim Wilson	16:30 2/13/08	WPL	2-14-08 10:58

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 11, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67684

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 15, 2008. This project has been assigned to ACZ's project number, L67684. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67684. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 11, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

Hydro Geo Chem, Inc.

March 11, 2008

Project ID: 872001.0
ACZ Project ID: L67684

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 1 ground water sample from Hydro Geo Chem, Inc. on February 15, 2008. The sample was received in good condition. Upon receipt, the sample custodian removed the sample from the cooler, inspected the contents, and logged the sample into ACZ's computerized Laboratory Information Management System (LIMS). The sample was assigned ACZ LIMS project number L67684. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were not performed within EPA recommended holding times.

1. The TDS analysis was completed past the hold time of 7 days due to a login error. There will be no charge for the analysis.

Sample Analysis

This sample was analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: WEED

ACZ Sample ID: ***L67684-01***
Date Sampled: *02/14/08 15:10*
Date Received: *02/15/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	35.6		*	mg/L	0.2	1	02/27/08 12:47	aeh/erf
Magnesium, dissolved	M200.7 ICP	14.5		*	mg/L	0.2	1	02/27/08 12:47	aeh/erf
Potassium, dissolved	M200.7 ICP	2.2		*	mg/L	0.3	2	02/27/08 12:47	aeh/erf
Sodium, dissolved	M200.7 ICP	30.0		*	mg/L	0.3	2	02/27/08 12:47	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		162			mg/L	2	20	02/28/08 0:00	cas
Carbonate as CaCO3		5	B		mg/L	2	20	02/28/08 0:00	cas
Hydroxide as CaCO3			U		mg/L	2	20	02/28/08 0:00	cas
Total Alkalinity		168		*	mg/L	2	20	02/28/08 0:00	cas
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.9			%			03/10/08 0:00	calc
Sum of Anions		3.9			meq/L	0.1	0.5	03/10/08 0:00	calc
Sum of Cations		4.3			meq/L	0.1	0.5	03/10/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	9	B	*	mg/L	5	30	03/06/08 19:27	aml/ccp
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.72			mg/L	0.04	0.2	03/10/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.72	H	*	mg/L	0.04	0.2	02/29/08 18:09	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.02	0.1	02/29/08 18:09	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	230	H	*	mg/L	10	20	02/26/08 8:45	cas
Sulfate	300.0 - Ion Chromatography	11.1		*	mg/L	0.5	3	02/20/08 22:10	aml/ccp
TDS (calculated)	Calculation	212			mg/L	10	50	03/10/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.08						03/10/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67684***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240956													
WG240956PBW1	PBW	02/28/08 16:33				25.6	mg/L		-20	20			B4
WG240956LCSW2	LCSW	02/28/08 16:45	WC080131-1	820		822	mg/L	100.2	90	110			
L67721-05DUP	DUP	02/28/08 18:40			1260	1253.1	mg/L				0.5	20	
WG240956PBW2	PBW	02/28/08 20:11				U	mg/L		-20	20			
WG240956LCSW5	LCSW	02/28/08 20:24	WC080131-1	820		824.2	mg/L	100.5	90	110			
WG240956PBW3	PBW	02/28/08 23:13				U	mg/L		-20	20			
WG240956LCSW8	LCSW	02/28/08 23:25	WC080131-1	820		826.4	mg/L	100.8	90	110			
WG240956LCSW11	LCSW	02/29/08 1:11	WC080131-1	820		832	mg/L	101.5	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240847													
WG240847ICV	ICV	02/27/08 12:17	II080115-3	100		95.88	mg/L	95.9	95	105			
WG240847ICB	ICB	02/27/08 12:21				U	mg/L		-0.6	0.6			
WG240847LFB	LFB	02/27/08 12:34	II080214-5	67.97008		68.5	mg/L	100.8	85	115			
L67741-01AS	AS	02/27/08 12:54	II080214-5	339.8504	507	810.5	mg/L	89.3	85	115			
L67741-01ASD	ASD	02/27/08 13:03	II080214-5	339.8504	507	824	mg/L	93.3	85	115	1.65	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	19.98		20.32	mg/L	101.7	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG240853LFB	LFB	03/06/08 15:32	WI080128-9	30		29.36	mg/L	97.9	90	110			
L67673-03AS	AS	03/06/08 16:44	WI080306-2	30	16.4	44.77	mg/L	94.6	90	110			
L67673-03DUP	DUP	03/06/08 17:02			16.4	16.45	mg/L				0.3	20	

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240847													
WG240847ICV	ICV	02/27/08 12:17	II080115-3	100		97.91	mg/L	97.9	95	105			
WG240847ICB	ICB	02/27/08 12:21				U	mg/L		-0.6	0.6			
WG240847LFB	LFB	02/27/08 12:34	II080214-5	54.96908		56.29	mg/L	102.4	85	115			
L67741-01AS	AS	02/27/08 12:54	II080214-5	274.8454	429	687.3	mg/L	94	85	115			
L67741-01ASD	ASD	02/27/08 13:03	II080214-5	274.8454	429	689.1	mg/L	94.6	85	115	0.26	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241004													
WG241004ICV	ICV	02/29/08 18:02	WI071212-1	2.416		2.262	mg/L	93.6	90	110			
WG241004ICB	ICB	02/29/08 18:04				U	mg/L		-0.06	0.06			
WG241004LFB	LFB	02/29/08 18:07	WI070911-4	2		1.903	mg/L	95.2	90	110			
L67684-01AS	AS	02/29/08 18:10	WI070911-4	4	1.72	5.535	mg/L	95.4	90	110			
L67904-01DUP	DUP	02/29/08 18:12			2.95	2.946	mg/L				0.1	20	

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67684***

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241004													
WG241004ICV	ICV	02/29/08 18:02	WI071212-1	.609		.593	mg/L	97.4	90	110			
WG241004ICB	ICB	02/29/08 18:04				U	mg/L		-0.03	0.03			
WG241004LFB	LFB	02/29/08 18:07	WI070911-4	1		.987	mg/L	98.7	90	110			
L67684-01AS	AS	02/29/08 18:10	WI070911-4	2	U	1.913	mg/L	95.7	90	110			
L67904-01DUP	DUP	02/29/08 18:12			.04	.043	mg/L				7.2	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240847													
WG240847ICV	ICV	02/27/08 12:17	II080115-3	20		19.97	mg/L	99.9	95	105			
WG240847ICB	ICB	02/27/08 12:21				U	mg/L		-0.9	0.9			
WG240847LFB	LFB	02/27/08 12:34	II080214-5	99.76186		104.14	mg/L	104.4	85	115			
L67741-01AS	AS	02/27/08 12:54	II080214-5	498.8093	28	549.5	mg/L	104.5	85	115			
L67741-01ASD	ASD	02/27/08 13:03	II080214-5	498.8093	28	547.2	mg/L	104.1	85	115	0.42	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240825													
L67784-01DUP	DUP	02/26/08 9:11			720	726	mg/L				0.8	20	
WG240825LCSW	LCSW	02/26/08 9:42	PCN28838	260		294	mg/L	113.1	80	120			
WG240825PBW	PBW	02/26/08 9:45				U	mg/L		-20	20			

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240847													
WG240847ICV	ICV	02/27/08 12:17	II080115-3	100		99.05	mg/L	99.1	95	105			
WG240847ICB	ICB	02/27/08 12:21				U	mg/L		-0.9	0.9			
WG240847LFB	LFB	02/27/08 12:34	II080214-5	98.21624		102.19	mg/L	104	85	115			
L67741-01AS	AS	02/27/08 12:54	II080214-5	491.0812	133	639.5	mg/L	103.1	85	115			
L67741-01ASD	ASD	02/27/08 13:03	II080214-5	491.0812	133	635.6	mg/L	102.3	85	115	0.61	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240628													
WG240628ICV	ICV	02/20/08 16:08	WI080220-1	50.1		50.64	mg/L	101.1	90	110			
WG240628ICB	ICB	02/20/08 16:26				U	mg/L		-1.5	1.5			
WG240628LFB	LFB	02/20/08 16:44	WI080128-9	30		30.49	mg/L	101.6	90	110			
L67668-03AS	AS	02/20/08 21:34	WI080213-1	50	12.6	39.09	mg/L	53	90	110			M2
L67668-03DUP	DUP	02/20/08 21:52			12.6	12.58	mg/L				0.2	20	
WG240628ICV1	ICV	02/21/08 11:56	WI080220-1	50.1		50.19	mg/L	100.2	90	110			
WG240628ICB1	ICB	02/21/08 12:14				U	mg/L		-1.5	1.5			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67684***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67684-01	WG240847	Calcium, dissolved	M200.7 ICP	QA	Sample container with preservation type specified by the method was not available for analysis. Alternate sample container was used.
		Magnesium, dissolved	M200.7 ICP	QA	Sample container with preservation type specified by the method was not available for analysis. Alternate sample container was used.
		Potassium, dissolved	M200.7 ICP	QA	Sample container with preservation type specified by the method was not available for analysis. Alternate sample container was used.
		Sodium, dissolved	M200.7 ICP	QA	Sample container with preservation type specified by the method was not available for analysis. Alternate sample container was used.
	WG241202	Chloride	M300.0 - Ion Chromatography	DJ	Sample dilution required due to insufficient sample.
	WG241004	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	C4	Confirmatory analysis was past holding time.
			M353.2 - Automated Cadmium Reduction	DJ	Sample dilution required due to insufficient sample.
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	C4	Confirmatory analysis was past holding time.
			M353.2 - Automated Cadmium Reduction	DJ	Sample dilution required due to insufficient sample.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240825	Residue, Filterable (TDS) @180C	160.1 / SM2540C	H1	Sample analysis performed past holding time.
	WG240628	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG240956	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.
			SM2320B - Titration	QA	Sample container with preservation type specified by the method was not available for analysis. Alternate sample container was used.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67684***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67684
Date Received: 2/15/2008
Received By:
Date Printed: 2/15/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
1996	1.8	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67684
Date Received: 2/15/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67684-01	HULL									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67684

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem (HGC)
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd
Tucson AZ 85705
Telephone: (520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Telephone: (520) 293-1500 x 112

Invoice to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Address: above
Telephone: above

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: KW & AP
Are any samples NRC licensable material?

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO4
~~HILL~~ WEED SW 3-11-08	2/14/08	GW	1	✓

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Kim Wilson	2/14/08 16:30	[illegible]	2-15-08 11:34

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

February 29, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872002.2
ACZ Project ID: L67685

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 15, 2008. This project has been assigned to ACZ's project number, L67685. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67685. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 29, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: COOPER

ACZ Sample ID: ***L67685-01***
Date Sampled: *02/14/08 10:00*
Date Received: *02/15/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	47.9			mg/L	0.2	1	02/18/08 19:45	aeh/erf
Magnesium, dissolved	M200.7 ICP	13.8			mg/L	0.2	1	02/18/08 19:45	aeh/erf
Potassium, dissolved	M200.7 ICP	2.2			mg/L	0.3	2	02/18/08 19:45	aeh/erf
Sodium, dissolved	M200.7 ICP	25.3			mg/L	0.3	2	02/18/08 19:45	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		154			mg/L	2	20	02/19/08 0:00	jlf
Carbonate as CaCO3		9	B		mg/L	2	20	02/19/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/19/08 0:00	jlf
Total Alkalinity		163		*	mg/L	2	20	02/19/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.1			%			02/29/08 0:00	calc
Sum of Anions		4.6			meq/L	0.1	0.5	02/29/08 0:00	calc
Sum of Cations		4.7			meq/L	0.1	0.5	02/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	17.5		*	mg/L	0.5	3	02/20/08 22:29	aml/ccp
Fluoride	SM4500F-C	0.3	B	*	mg/L	0.1	0.5	02/28/08 12:23	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.82			mg/L	0.02	0.1	02/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.82		*	mg/L	0.02	0.1	02/15/08 18:59	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/15/08 18:59	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	270			mg/L	10	20	02/20/08 9:58	ear
Sulfate	300.0 - Ion Chromatography	33.0		*	mg/L	0.5	3	02/20/08 22:29	aml/ccp
TDS (calculated)	Calculation	254			mg/L	10	50	02/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.06						02/29/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: PALMER 819

ACZ Sample ID: ***L67685-02***
Date Sampled: *02/14/08 13:50*
Date Received: *02/15/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	31.9			mg/L	0.2	1	02/19/08 22:22	aeh/erf
Magnesium, dissolved	M200.7 ICP	27.1			mg/L	0.2	1	02/19/08 22:22	aeh/erf
Potassium, dissolved	M200.7 ICP	5.4			mg/L	0.3	2	02/19/08 22:22	aeh/erf
Sodium, dissolved	M200.7 ICP	50.1			mg/L	0.3	2	02/19/08 22:22	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		235			mg/L	2	20	02/19/08 0:00	jlf
Carbonate as CaCO3		15	B		mg/L	2	20	02/19/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/19/08 0:00	jlf
Total Alkalinity		251		*	mg/L	2	20	02/19/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.5			%			02/29/08 0:00	calc
Sum of Anions		5.8			meq/L	0.1	0.5	02/29/08 0:00	calc
Sum of Cations		6.1			meq/L	0.1	0.5	02/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	11.3		*	mg/L	0.5	3	02/20/08 22:47	aml/ccp
Fluoride	SM4500F-C	0.4	B	*	mg/L	0.1	0.5	02/28/08 12:35	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.13			mg/L	0.02	0.1	02/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.13		*	mg/L	0.02	0.1	02/15/08 19:04	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/15/08 19:04	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	300			mg/L	10	20	02/20/08 10:00	ear
Sulfate	300.0 - Ion Chromatography	15.9		*	mg/L	0.5	3	02/20/08 22:47	aml/ccp
TDS (calculated)	Calculation	308			mg/L	10	50	02/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.97						02/29/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67685***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240540													
WG240540PBW1	PBW	02/18/08 16:27				U	mg/L		-20	20			
WG240540LCSW2	LCSW	02/18/08 16:38	WC080131-1	820		831.6	mg/L	101.4	90	110			
WG240540PBW2	PBW	02/18/08 19:16				U	mg/L		-20	20			
WG240540LCSW5	LCSW	02/18/08 19:28	WC080131-1	820		857.9	mg/L	104.6	90	110			
WG240540PBW3	PBW	02/18/08 23:03				U	mg/L		-20	20			
WG240540LCSW8	LCSW	02/18/08 23:15	WC080131-1	820		867.2	mg/L	105.8	90	110			
WG240540PBW4	PBW	02/19/08 8:33				29.5	mg/L		-20	20			B4
WG240540LCSW11	LCSW	02/19/08 8:45	WC080131-1	820		856	mg/L	104.4	90	110			
L67689-01DUP	DUP	02/19/08 10:19			508	507.8	mg/L				0	20	
WG240540PBW5	PBW	02/19/08 11:41				U	mg/L		-20	20			
WG240540LCSW14	LCSW	02/19/08 11:53	WC080131-1	820		832	mg/L	101.5	90	110			
WG240540LCSW17	LCSW	02/19/08 15:01	WC080131-1	820		882.6	mg/L	107.6	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240487													
WG240487ICV	ICV	02/18/08 18:30	II080115-3	100		94.57	mg/L	94.6	95	105			
WG240487ICB	ICB	02/18/08 18:34				U	mg/L		-0.6	0.6			
WG240487LFB	LFB	02/18/08 18:50	II080214-5	67.97008		66.94	mg/L	98.5	85	115			
L67670-03AS	AS	02/18/08 19:26	II080214-5	67.97008	68.1	132.12	mg/L	94.2	85	115			
L67670-03ASD	ASD	02/18/08 19:29	II080214-5	67.97008	68.1	132.19	mg/L	94.3	85	115	0.05	20	
WG240577													
WG240577ICV	ICV	02/19/08 21:25	II080115-3	100		96.13	mg/L	96.1	95	105			
WG240577ICB	ICB	02/19/08 21:29				U	mg/L		-0.6	0.6			
WG240577LFB	LFB	02/19/08 21:44	II080214-5	67.97008		69.65	mg/L	102.5	85	115			
L67670-03AS	AS	02/19/08 21:55	II080214-5	67.97008	71.8	138.32	mg/L	97.9	85	115			
L67670-03ASD	ASD	02/19/08 21:59	II080214-5	67.97008	71.8	137.81	mg/L	97.1	85	115	0.37	20	
L67685-02AS	AS	02/19/08 22:26	II080214-5	67.97008	31.9	99.1	mg/L	98.9	85	115			
L67685-02ASD	ASD	02/19/08 22:29	II080214-5	67.97008	31.9	98.06	mg/L	97.3	85	115	1.05	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240628													
WG240628ICV	ICV	02/20/08 16:08	WI080220-1	19.98		20.1	mg/L	100.6	90	110			
WG240628ICB	ICB	02/20/08 16:26				U	mg/L		-1.5	1.5			
WG240628LFB	LFB	02/20/08 16:44	WI080128-9	30		29.95	mg/L	99.8	90	110			
L67668-03AS	AS	02/20/08 21:34	WI080213-1	50	32.1	58.57	mg/L	52.9	90	110			M2
L67668-03DUP	DUP	02/20/08 21:52			32.1	32.13	mg/L				0.1	20	

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67685***

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240886													
WG240886ICV	ICV	02/28/08 11:14	WC080227-1	2		1.97	mg/L	98.5	90	110			
WG240886ICB	ICB	02/28/08 11:19				U	mg/L		-0.3	0.3			
WG240886LFB1	LFB	02/28/08 11:24	WC080226-1	5		5.24	mg/L	104.8	90	110			
L67649-03AS	AS	02/28/08 12:10	WC080226-1	5	.1	5.29	mg/L	103.8	90	110			
L67649-03DUP	DUP	02/28/08 12:13			.1	.13	mg/L				26.1	20	RA
WG240886LFB2	LFB	02/28/08 12:51	WC080226-1	5		4.93	mg/L	98.6	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240487													
WG240487ICV	ICV	02/18/08 18:30	II080115-3	100		96.43	mg/L	96.4	95	105			
WG240487ICB	ICB	02/18/08 18:34				U	mg/L		-0.6	0.6			
WG240487LFB	LFB	02/18/08 18:50	II080214-5	54.96908		54.86	mg/L	99.8	85	115			
L67670-03AS	AS	02/18/08 19:26	II080214-5	54.96908	7.2	63.33	mg/L	102.1	85	115			
L67670-03ASD	ASD	02/18/08 19:29	II080214-5	54.96908	7.2	64.09	mg/L	103.5	85	115	1.19	20	
WG240577													
WG240577ICV	ICV	02/19/08 21:25	II080115-3	100		98.02	mg/L	98	95	105			
WG240577ICB	ICB	02/19/08 21:29				U	mg/L		-0.6	0.6			
WG240577LFB	LFB	02/19/08 21:44	II080214-5	54.96908		56.43	mg/L	102.7	85	115			
L67670-03AS	AS	02/19/08 21:55	II080214-5	54.96908	7.6	66.62	mg/L	107.4	85	115			
L67670-03ASD	ASD	02/19/08 21:59	II080214-5	54.96908	7.6	66.86	mg/L	107.8	85	115	0.36	20	
L67685-02AS	AS	02/19/08 22:26	II080214-5	54.96908	27.1	83.15	mg/L	102	85	115			
L67685-02ASD	ASD	02/19/08 22:29	II080214-5	54.96908	27.1	82.29	mg/L	100.4	85	115	1.04	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240496													
WG240496ICV	ICV	02/15/08 18:46	WI071212-1	2.416		2.435	mg/L	100.8	90	110			
WG240496ICB	ICB	02/15/08 18:47				U	mg/L		-0.06	0.06			
WG240496LFB	LFB	02/15/08 18:51	WI070911-4	2		1.942	mg/L	97.1	90	110			
L67680-01AS	AS	02/15/08 18:53	WI070911-4	2	.21	2.256	mg/L	102.3	90	110			
L67681-01DUP	DUP	02/15/08 18:56			.09	.088	mg/L				2.2	20	RA

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240496													
WG240496ICV	ICV	02/15/08 18:46	WI071212-1	.609		.621	mg/L	102	90	110			
WG240496ICB	ICB	02/15/08 18:47				U	mg/L		-0.03	0.03			
WG240496LFB	LFB	02/15/08 18:51	WI070911-4	1		.98	mg/L	98	90	110			
L67680-01AS	AS	02/15/08 18:53	WI070911-4	1		1.001	mg/L	100.1	90	110			
L67681-01DUP	DUP	02/15/08 18:56			U	U	mg/L				0	20	RA

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67685***

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240487													
WG240487ICV	ICV	02/18/08 18:30	II080115-3	20		20.46	mg/L	102.3	95	105			
WG240487ICB	ICB	02/18/08 18:34				U	mg/L		-0.9	0.9			
WG240487LFB	LFB	02/18/08 18:50	II080214-5	99.76186		104.25	mg/L	104.5	85	115			
L67670-03AS	AS	02/18/08 19:26	II080214-5	99.76186	1.6	109.56	mg/L	108.2	85	115			
L67670-03ASD	ASD	02/18/08 19:29	II080214-5	99.76186	1.6	111.26	mg/L	109.9	85	115	1.54	20	
WG240577													
WG240577ICV	ICV	02/19/08 21:25	II080115-3	20		19.86	mg/L	99.3	95	105			
WG240577ICB	ICB	02/19/08 21:29				U	mg/L		-0.9	0.9			
WG240577LFB	LFB	02/19/08 21:44	II080214-5	99.76186		103.96	mg/L	104.2	85	115			
L67670-03AS	AS	02/19/08 21:55	II080214-5	99.76186	1.6	112.98	mg/L	111.6	85	115			
L67670-03ASD	ASD	02/19/08 21:59	II080214-5	99.76186	1.6	113.47	mg/L	112.1	85	115	0.43	20	
L67685-02AS	AS	02/19/08 22:26	II080214-5	99.76186	5.4	114.93	mg/L	109.8	85	115			
L67685-02ASD	ASD	02/19/08 22:29	II080214-5	99.76186	5.4	113.98	mg/L	108.8	85	115	0.83	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240612													
WG240612PBW	PBW	02/20/08 9:50				U	mg/L		-20	20			
WG240612LCSW	LCSW	02/20/08 9:51	PCN28840	260		284	mg/L	109.2	80	120			
L67708-01DUP	DUP	02/20/08 10:10			380	390	mg/L				2.6	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240487													
WG240487ICV	ICV	02/18/08 18:30	II080115-3	100		100.82	mg/L	100.8	95	105			
WG240487ICV	ICV	02/18/08 18:30	II080115-3	100		96.7	mg/L	96.7	95	105			
WG240487ICB	ICB	02/18/08 18:34				U	mg/L		-0.9	0.9			
WG240487LFB	LFB	02/18/08 18:50	II080214-5	98.21624		101.59	mg/L	103.4	85	115			
WG240487LFB	LFB	02/18/08 18:50	II080214-5	98.21624		98.3	mg/L	100.1	85	115			
L67670-03AS	AS	02/18/08 19:26	II080214-5	98.21624	13.4	116.19	mg/L	104.7	85	115			
L67670-03ASD	ASD	02/18/08 19:29	II080214-5	98.21624	13.4	117.31	mg/L	105.8	85	115	0.96	20	
WG240577													
WG240577ICV	ICV	02/19/08 21:25	II080115-3	100		99.03	mg/L	99	95	105			
WG240577ICV	ICV	02/19/08 21:25	II080115-3	100		97.1	mg/L	97.1	95	105			
WG240577ICB	ICB	02/19/08 21:29				U	mg/L		-0.9	0.9			
WG240577ICB	ICB	02/19/08 21:29				U	mg/L		-6	6			
WG240577LFB	LFB	02/19/08 21:44	II080214-5	98.21624		100.7	mg/L	102.5	85	115			
WG240577LFB	LFB	02/19/08 21:44	II080214-5	98.21624		100.92	mg/L	102.8	85	115			
L67670-03AS	AS	02/19/08 21:55	II080214-5	98.21624	13.7	120.52	mg/L	108.8	85	115			
L67670-03ASD	ASD	02/19/08 21:59	II080214-5	98.21624	13.7	120.81	mg/L	109.1	85	115	0.24	20	
L67685-02AS	AS	02/19/08 22:26	II080214-5	98.21624	50.1	151.43	mg/L	103.2	85	115			
L67685-02ASD	ASD	02/19/08 22:29	II080214-5	98.21624	50.1	150.1	mg/L	101.8	85	115	0.88	20	

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67685***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240628													
WG240628ICV	ICV	02/20/08 16:08	WI080220-1	50.1		50.64	mg/L	101.1	90	110			
WG240628ICB	ICB	02/20/08 16:26				U	mg/L		-1.5	1.5			
WG240628LFB	LFB	02/20/08 16:44	WI080128-9	30		30.49	mg/L	101.6	90	110			
L67668-03AS	AS	02/20/08 21:34	WI080213-1	50	12.6	39.09	mg/L	53	90	110			M2
L67668-03DUP	DUP	02/20/08 21:52			12.6	12.58	mg/L				0.2	20	
WG240628ICV1	ICV	02/21/08 11:56	WI080220-1	50.1		50.19	mg/L	100.2	90	110			
WG240628ICB1	ICB	02/21/08 12:14				U	mg/L		-1.5	1.5			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67685***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67685-01	WG240628	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG240886	Fluoride	SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240496	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240628	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG240540	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.
L67685-02	WG240628	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG240886	Fluoride	SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240496	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240628	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG240540	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67685***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67685
Date Received: 2/15/2008
Received By:
Date Printed: 2/15/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
1996	1.8	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67685
Date Received: 2/15/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67685-01	COOPER		Y									
L67685-02	PALMER 819		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67685

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd
Company: Hydro Geo Chem (HGC)	Tucson AZ 85705
E-mail: dans@hgcinc.com	Telephone: (520) 293-1500 x 133

Copy of Report to:

Name: Jim Norris	E-mail: jimn@hgcinc.com
Company: HGC	Telephone: (520) 293-1500 x 112

Invoice to:

Name: Jim Norris	Address: above
Company: HGC	
E-mail: jimn@hgcinc.com	Telephone: above

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB - GW

Project/PO #: 872002.2

Reporting state for compliance testing: AZ

Sampler's Name: KW + AP

Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ca Na Mg K	TDS $SO_4^{=}$ NO_2^- NO_3^- Cl^- F^-	ALK					
COOPER	2/14/08 10:00	GW	3	✓	✓	✓							
PALMER 819	2/14/08 13:50	GW	3	✓	✓	✓							

Matrix | SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Kevin Wilson	2/14/08 16:30	[illegible]	2-15-08 11:34

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

February 27, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

cc: Jim Norris

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

Project ID: 872001.0
ACZ Project ID: L67713

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 16, 2008. This project has been assigned to ACZ's project number, L67713. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67713. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 27, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: RAY

ACZ Sample ID: ***L67713-01***
Date Sampled: *02/15/08 10:30*
Date Received: *02/16/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	159		*	mg/L	3	10	02/21/08 14:02	aml/ccp

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67713***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240628													
WG240628ICV	ICV	02/20/08 16:08	WI080220-1	50.1		50.64	mg/L	101.1	90	110			
WG240628ICB	ICB	02/20/08 16:26				U	mg/L		-1.5	1.5			
WG240628LFB	LFB	02/20/08 16:44	WI080128-9	30		30.49	mg/L	101.6	90	110			
L67668-03AS	AS	02/20/08 21:34	WI080213-1	50	12.6	39.09	mg/L	53	90	110			M2
L67668-03DUP	DUP	02/20/08 21:52			12.6	12.58	mg/L				0.2	20	
WG240628ICV1	ICV	02/21/08 11:56	WI080220-1	50.1		50.19	mg/L	100.2	90	110			
WG240628ICB1	ICB	02/21/08 12:14				U	mg/L		-1.5	1.5			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67713***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67713-01	WG240628	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67713***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67713
Date Received: 2/16/2008
Received By:
Date Printed: 2/16/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5500	4.3	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67713
Date Received: 2/16/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67713-01	RAY									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67713

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem (HGC)
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd
Tucson AZ 85705
Telephone: (520) 293-1500 x 133

Copy of Report to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Telephone: (520) [redacted] 293-1500 x 112

Invoice to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Address: above
Telephone: (520) 293-1500 x 112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

YES: X
NO:

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: KW + AP
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO_4							
RAY	2/15/08 10:30	GW	1	✓							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Kim Wilson	2/15/08 13:45	[illegible]	2.16.08 11:36

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

February 29, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872002.2
ACZ Project ID: L67714

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 16, 2008. This project has been assigned to ACZ's project number, L67714. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67714. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after March 29, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: WEISKOPF

ACZ Sample ID: ***L67714-01***
Date Sampled: *02/15/08 08:40*
Date Received: *02/16/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	218		*	mg/L	0.2	1	02/20/08 1:48	aeh/wfg
Magnesium, dissolved	M200.7 ICP	31.4		*	mg/L	0.2	1	02/20/08 1:48	aeh/wfg
Potassium, dissolved	M200.7 ICP	4.3			mg/L	0.3	2	02/20/08 1:48	aeh/wfg
Sodium, dissolved	M200.7 ICP	35.7		*	mg/L	0.3	2	02/20/08 1:48	aeh/wfg

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		177			mg/L	2	20	02/28/08 0:00	cas
Carbonate as CaCO3			U		mg/L	2	20	02/28/08 0:00	cas
Hydroxide as CaCO3			U		mg/L	2	20	02/28/08 0:00	cas
Total Alkalinity		177		*	mg/L	2	20	02/28/08 0:00	cas
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-0.3			%			02/29/08 13:34	calc
Sum of Anions		15.3			meq/L	0.1	0.5	02/29/08 13:34	calc
Sum of Cations		15.2			meq/L	0.1	0.5	02/29/08 13:34	calc
Chloride	M300.0 - Ion Chromatography	33.1		*	mg/L	0.5	3	02/21/08 1:12	aml/ccp
Fluoride	SM4500F-C	0.2	B	*	mg/L	0.1	0.5	02/28/08 12:49	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	4.74			mg/L	0.06	0.3	02/29/08 13:34	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	4.74			mg/L	0.06	0.3	02/16/08 17:30	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/16/08 17:13	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	1010		*	mg/L	10	20	02/21/08 10:40	ear
Sulfate	300.0 - Ion Chromatography	500		*	mg/L	5	30	02/21/08 14:20	aml/ccp
TDS (calculated)	Calculation	950			mg/L	10	50	02/29/08 13:34	calc
TDS (ratio - measured/calculated)	Calculation	1.06						02/29/08 13:34	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67714***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240956													
WG240956PBW1	PBW	02/28/08 16:33				25.6	mg/L		-20	20			B4
WG240956LCSW2	LCSW	02/28/08 16:45	WC080131-1	820		822	mg/L	100.2	90	110			
L67721-05DUP	DUP	02/28/08 18:40			1260	1253.1	mg/L				0.5	20	
WG240956PBW2	PBW	02/28/08 20:11				U	mg/L		-20	20			
WG240956LCSW5	LCSW	02/28/08 20:24	WC080131-1	820		824.2	mg/L	100.5	90	110			
WG240956PBW3	PBW	02/28/08 23:13				U	mg/L		-20	20			
WG240956LCSW8	LCSW	02/28/08 23:25	WC080131-1	820		826.4	mg/L	100.8	90	110			
WG240956LCSW11	LCSW	02/29/08 1:11	WC080131-1	820		832	mg/L	101.5	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240529													
WG240529ICV	ICV	02/19/08 23:43	II080115-3	100		96.83	mg/L	96.8	95	105			
WG240529ICB	ICB	02/19/08 23:46				U	mg/L		-0.6	0.6			
WG240529LFB	LFB	02/20/08 0:02	II080214-5	67.97008		68.62	mg/L	101	85	115			
L67710-08AS	AS	02/20/08 1:02	II080214-5	67.97008	519	520.24	mg/L	1.8	85	115			M3
L67710-08ASD	ASD	02/20/08 1:06	II080214-5	67.97008	519	537.39	mg/L	27.1	85	115	3.24	20	M3

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240628													
WG240628ICV	ICV	02/20/08 16:08	WI080220-1	19.98		20.1	mg/L	100.6	90	110			
WG240628ICB	ICB	02/20/08 16:26				U	mg/L		-1.5	1.5			
WG240628LFB	LFB	02/20/08 16:44	WI080128-9	30		29.95	mg/L	99.8	90	110			
L67668-03AS	AS	02/20/08 21:34	WI080213-1	50	32.1	58.57	mg/L	52.9	90	110			M2
L67668-03DUP	DUP	02/20/08 21:52			32.1	32.13	mg/L				0.1	20	

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240886													
WG240886ICV	ICV	02/28/08 11:14	WC080227-1	2		1.97	mg/L	98.5	90	110			
WG240886ICB	ICB	02/28/08 11:19				U	mg/L		-0.3	0.3			
WG240886LFB1	LFB	02/28/08 11:24	WC080226-1	5		5.24	mg/L	104.8	90	110			
L67649-03AS	AS	02/28/08 12:10	WC080226-1	5	.1	5.29	mg/L	103.8	90	110			
L67649-03DUP	DUP	02/28/08 12:13			.1	.13	mg/L				26.1	20	RA
WG240886LFB2	LFB	02/28/08 12:51	WC080226-1	5		4.93	mg/L	98.6	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240529													
WG240529ICV	ICV	02/19/08 23:43	II080115-3	100		99.29	mg/L	99.3	95	105			
WG240529ICB	ICB	02/19/08 23:46				U	mg/L		-0.6	0.6			
WG240529LFB	LFB	02/20/08 0:02	II080214-5	54.96908		56.2	mg/L	102.2	85	115			
L67710-08AS	AS	02/20/08 1:02	II080214-5	54.96908	328	346.22	mg/L	33.1	85	115			M3
L67710-08ASD	ASD	02/20/08 1:06	II080214-5	54.96908	328	361.7	mg/L	61.3	85	115	4.37	20	M3

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67714***

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240509													
WG240509ICV	ICV	02/16/08 16:54	WI071212-1	2.416		2.404	mg/L	99.5	90	110			
WG240509ICB	ICB	02/16/08 16:55				U	mg/L		-0.06	0.06			
WG240509LFB	LFB	02/16/08 16:59	WI070911-4	2		1.938	mg/L	96.9	90	110			
L67710-07AS	AS	02/16/08 17:01	WI070911-4	2	.77	2.761	mg/L	99.6	90	110			
L67710-08DUP	DUP	02/16/08 17:04			2.32	2.336	mg/L				0.7	20	

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240509													
WG240509ICV	ICV	02/16/08 16:54	WI071212-1	.609		.622	mg/L	102.1	90	110			
WG240509ICB	ICB	02/16/08 16:55				U	mg/L		-0.03	0.03			
WG240509LFB	LFB	02/16/08 16:59	WI070911-4	1		.997	mg/L	99.7	90	110			
L67710-07AS	AS	02/16/08 17:01	WI070911-4	1	U	1.002	mg/L	100.2	90	110			
L67710-08DUP	DUP	02/16/08 17:04			U	U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240529													
WG240529ICV	ICV	02/19/08 23:43	II080115-3	20		20.61	mg/L	103.1	95	105			
WG240529ICB	ICB	02/19/08 23:46				U	mg/L		-0.9	0.9			
WG240529LFB	LFB	02/20/08 0:02	II080214-5	99.76186		105.63	mg/L	105.9	85	115			
L67710-08AS	AS	02/20/08 1:02	II080214-5	99.76186	7.4	115.1	mg/L	108	85	115			
L67710-08ASD	ASD	02/20/08 1:06	II080214-5	99.76186	7.4	121.2	mg/L	114.1	85	115	5.16	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240653													
WG240653PBW	PBW	02/21/08 10:25				U	mg/L		-20	20			
WG240653LCSW	LCSW	02/21/08 10:26	PCN28840	260		286	mg/L	110	80	120			
L67723-03DUP	DUP	02/21/08 10:48			40	48	mg/L				18.2	20	RA

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240529													
WG240529ICV	ICV	02/19/08 23:43	II080115-3	100		99.8	mg/L	99.8	95	105			
WG240529ICV	ICV	02/19/08 23:43	II080115-3	100		102.57	mg/L	102.6	95	105			
WG240529ICB	ICB	02/19/08 23:46				U	mg/L		-0.9	0.9			
WG240529LFB	LFB	02/20/08 0:02	II080214-5	98.21624		103.79	mg/L	105.7	85	115			
WG240529LFB	LFB	02/20/08 0:02	II080214-5	98.21624		102.3	mg/L	104.2	85	115			
L67710-08AS	AS	02/20/08 1:02	II080214-5	98.21624	251	325.39	mg/L	75.7	85	115			MA
L67710-08ASD	ASD	02/20/08 1:06	II080214-5	98.21624	251	343.21	mg/L	93.9	85	115	5.33	20	

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67714***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240628													
WG240628ICV	ICV	02/20/08 16:08	WI080220-1	50.1		50.64	mg/L	101.1	90	110			
WG240628ICB	ICB	02/20/08 16:26				U	mg/L		-1.5	1.5			
WG240628LFB	LFB	02/20/08 16:44	WI080128-9	30		30.49	mg/L	101.6	90	110			
L67668-03AS	AS	02/20/08 21:34	WI080213-1	50	12.6	39.09	mg/L	53	90	110			M2
L67668-03DUP	DUP	02/20/08 21:52			12.6	12.58	mg/L				0.2	20	
WG240628ICV1	ICV	02/21/08 11:56	WI080220-1	50.1		50.19	mg/L	100.2	90	110			
WG240628ICB1	ICB	02/21/08 12:14				U	mg/L		-1.5	1.5			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67714***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67714-01	WG240529	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Magnesium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
		Sodium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG240628	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG240886	Fluoride	SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240509	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240653	Residue, Filterable (TDS) @180C	160.1 / SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240628	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG240956	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.

ACZ Laboratories, Inc.
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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67714***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67714
Date Received: 2/16/2008
Received By:
Date Printed: 2/16/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5500	4.3	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67714
Date Received: 2/16/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67714-01	WEISKOPF		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67714

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc (HGC)
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd
Tucson AZ 85705
Telephone: (520) 293-1500 x 133

Copy of Report to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Telephone: (520) 293-1500 x 112

Invoice to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Address: above
Telephone: above

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses?
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

YES: X
NO:

PROJECT INFORMATION

Quote #: FM CQB - GW
Project/PO #: 872002.2
Reporting state for compliance testing: AZ
Sampler's Name: AP + KW
Are any samples NRC licensable material?

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Na, Ca, Mg, K	TDS SO_4^{2-} NO_2^- NO_3^- F^- Cl^-	ALK					
WEISKOPF	2/15/08 8:40	GW	3	✓	✓	✓					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Kim Wilson	2/15/08 13:45	MS	2-16-08 11:30

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 10, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872002.2
ACZ Project ID: L67789

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 21, 2008. This project has been assigned to ACZ's project number, L67789. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67789. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 10, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: DODSON

ACZ Sample ID: ***L67789-01***
Date Sampled: *02/20/08 11:50*
Date Received: *02/21/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	111			mg/L	0.2	1	02/22/08 18:19	aeh/erf
Magnesium, dissolved	M200.7 ICP	37.5			mg/L	0.2	1	02/22/08 18:19	aeh/erf
Potassium, dissolved	M200.7 ICP	12.3			mg/L	0.3	2	02/25/08 15:14	aeh/erf
Sodium, dissolved	M200.7 ICP	41.2			mg/L	0.3	2	02/25/08 15:14	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		252			mg/L	2	20	02/26/08 0:00	jlf
Carbonate as CaCO3		14	B		mg/L	2	20	02/26/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	02/26/08 0:00	jlf
Total Alkalinity		266			mg/L	2	20	02/26/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		0.0			%			03/07/08 0:00	calc
Sum of Anions		10.8			meq/L	0.1	0.5	03/07/08 0:00	calc
Sum of Cations		10.8			meq/L	0.1	0.5	03/07/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	129		*	mg/L	1	5	03/06/08 21:52	aml/ccp
Fluoride	SM4500F-C	0.3	B	*	mg/L	0.1	0.5	02/28/08 15:06	cas
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	10.7			mg/L	0.1	0.5	03/07/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	10.7			mg/L	0.1	0.5	02/21/08 21:22	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/21/08 20:57	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	590			mg/L	10	20	02/27/08 11:48	cas
Sulfate	300.0 - Ion Chromatography	54		*	mg/L	1	5	03/06/08 21:52	aml/ccp
TDS (calculated)	Calculation	598			mg/L	10	50	03/07/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.99						03/07/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67789***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240781													
WG240781PBW2	PBW	02/25/08 15:18				U	mg/L		-20	20			
WG240781LCSW5	LCSW	02/25/08 15:30	WC080131-1	820		860.2	mg/L	104.9	90	110			
WG240781PBW3	PBW	02/25/08 18:42				U	mg/L		-20	20			
WG240781LCSW8	LCSW	02/25/08 18:54	WC080131-1	820		870.7	mg/L	106.2	90	110			
WG240781PBW4	PBW	02/25/08 22:14				U	mg/L		-20	20			
WG240781LCSW11	LCSW	02/25/08 22:28	WC080131-1	820		884.8	mg/L	107.9	90	110			
L67820-03DUP	DUP	02/26/08 8:57			639	694.9	mg/L				8.4	20	
WG240781LCSW14	LCSW	02/26/08 9:10	WC080131-1	820		882.2	mg/L	107.6	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240749													
WG240749ICV	ICV	02/22/08 17:26	II080115-3	100		96.63	mg/L	96.6	95	105			
WG240749ICB	ICB	02/22/08 17:30				U	mg/L		-0.6	0.6			
WG240749LFB	LFB	02/22/08 17:45	II080214-5	67.97008		67.7	mg/L	99.6	85	115			
L67784-01AS	AS	02/22/08 17:53	II080214-5	67.97008	141	201.17	mg/L	88.5	85	115			
L67784-01ASD	ASD	02/22/08 17:56	II080214-5	67.97008	141	201.28	mg/L	88.7	85	115	0.05	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	19.98		20.32	mg/L	101.7	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG240853LFB	LFB	03/06/08 15:32	WI080128-9	30		29.36	mg/L	97.9	90	110			
L67781-05AS	AS	03/06/08 21:16	WI080306-2	30	U	30.39	mg/L	101.3	90	110			
L67781-05DUP	DUP	03/06/08 21:34			U	U	mg/L				0	20	RA

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240886													
WG240886ICV	ICV	02/28/08 11:14	WC080227-1	2		1.97	mg/L	98.5	90	110			
WG240886ICB	ICB	02/28/08 11:19				U	mg/L		-0.3	0.3			
WG240886LFB1	LFB	02/28/08 11:24	WC080226-1	5		5.24	mg/L	104.8	90	110			
WG240886LFB2	LFB	02/28/08 12:51	WC080226-1	5		4.93	mg/L	98.6	90	110			
L67779-08AS	AS	02/28/08 14:09	WC080226-1	5	U	4.81	mg/L	96.2	90	110			
L67779-08DUP	DUP	02/28/08 14:16			U	U	mg/L				0	20	RA

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240749													
WG240749ICV	ICV	02/22/08 17:26	II080115-3	100		99.42	mg/L	99.4	95	105			
WG240749ICB	ICB	02/22/08 17:30				U	mg/L		-0.6	0.6			
WG240749LFB	LFB	02/22/08 17:45	II080214-5	54.96908		55.35	mg/L	100.7	85	115			
L67784-01AS	AS	02/22/08 17:53	II080214-5	54.96908	28.4	83.37	mg/L	100	85	115			
L67784-01ASD	ASD	02/22/08 17:56	II080214-5	54.96908	28.4	83.86	mg/L	100.9	85	115	0.59	20	

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67789***

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240705													
WG240705ICV	ICV	02/21/08 19:55	WI071212-1	2.416		2.435	mg/L	100.8	90	110			
WG240705ICB	ICB	02/21/08 19:57				U	mg/L		-0.06	0.06			
WG240705LFB1	LFB	02/21/08 20:01	WI070911-4	2		1.968	mg/L	98.4	90	110			
WG240705LFB2	LFB	02/21/08 20:40	WI070911-4	2		1.902	mg/L	95.1	90	110			
L67779-11DUP	DUP	02/21/08 20:49			1.06	1.046	mg/L				1.3	20	
L67779-10AS	AS	02/21/08 21:21	WI070911-4	2	.16	2.119	mg/L	98	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240705													
WG240705ICV	ICV	02/21/08 19:55	WI071212-1	.609		.626	mg/L	102.8	90	110			
WG240705ICB	ICB	02/21/08 19:57				U	mg/L		-0.03	0.03			
WG240705LFB1	LFB	02/21/08 20:01	WI070911-4	1		1.023	mg/L	102.3	90	110			
WG240705LFB2	LFB	02/21/08 20:40	WI070911-4	1		1.035	mg/L	103.5	90	110			
L67779-11DUP	DUP	02/21/08 20:49			.05	.051	mg/L				2	20	RA
L67779-10AS	AS	02/21/08 21:21	WI070911-4	1	U	1.041	mg/L	104.1	90	110			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240797													
WG240797ICV	ICV	02/25/08 14:33	II080115-3	20		19.95	mg/L	99.8	95	105			
WG240797ICB	ICB	02/25/08 14:37				U	mg/L		-0.9	0.9			
WG240797LFB	LFB	02/25/08 14:49	II080214-5	99.76186		101.04	mg/L	101.3	85	115			
L67741-01AS	AS	02/25/08 14:55	II080214-5	99.76186	27.5	131.58	mg/L	104.3	85	115			
L67741-01ASD	ASD	02/25/08 14:59	II080214-5	99.76186	27.5	131.58	mg/L	104.3	85	115	0	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240892													
WG240892PBW	PBW	02/27/08 11:45				U	mg/L		-20	20			
WG240892LCSW	LCSW	02/27/08 11:46	PCN28838	260		276	mg/L	106.2	80	120			
L67798-03DUP	DUP	02/27/08 12:00			1570	1584	mg/L				0.9	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240797													
WG240797ICV	ICV	02/25/08 14:33	II080115-3	100		97.3	mg/L	97.3	95	105			
WG240797ICV	ICV	02/25/08 14:33	II080115-3	100		99.41	mg/L	99.4	95	105			
WG240797ICB	ICB	02/25/08 14:37				U	mg/L		-6	6			
WG240797ICB	ICB	02/25/08 14:37				U	mg/L		-0.9	0.9			
WG240797LFB	LFB	02/25/08 14:49	II080214-5	98.21624		101.64	mg/L	103.5	85	115			
WG240797LFB	LFB	02/25/08 14:49	II080214-5	98.21624		99.1	mg/L	100.9	85	115			
L67741-01AS	AS	02/25/08 14:55	II080214-5	98.21624	134	229.68	mg/L	104.5	85	115			
L67741-01AS	AS	02/25/08 14:55	II080214-5	98.21624	134	223.8	mg/L	98.6	85	115			
L67741-01ASD	ASD	02/25/08 14:59	II080214-5	98.21624	134	224.7	mg/L	99.5	85	115	0.4	20	
L67741-01ASD	ASD	02/25/08 14:59	II080214-5	98.21624	134	231.17	mg/L	106.1	85	115	0.4	20	

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67789***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	50.1		50.51	mg/L	100.8	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG240853LFB	LFB	03/06/08 15:32	WI080128-9	30		30.26	mg/L	100.9	90	110			
L67781-05AS	AS	03/06/08 21:16	WI080306-2	30	U	29.59	mg/L	98.6	90	110			
L67781-05DUP	DUP	03/06/08 21:34			U	U	mg/L				0	20	RA

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67789***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67789-01	WG241202	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240886	Fluoride	SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240705	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG241202	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67789***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67789
Date Received: 2/21/2008
Received By:
Date Printed: 2/21/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5539	3.8	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67789
Date Received: 2/21/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67789-01	DODSON		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L67789

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc.
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd. Tucson, AZ 85705
Telephone: 520) 293-1500 X132

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Telephone: 520) 293-1500 x 112

Invoice to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Address: 51 W. Wetmore Rd. Tucson, AZ 85705
Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES X / NO

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 8720022
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ca Na Mg K	TDS, SO4, NO3-N, Cl, F	Alk						
DODSON	2/20/08: 1150	GW	3	X	X	X						

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	2/20/08: 1615		2-21-08 11:3

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 10, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67790

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 21, 2008. This project has been assigned to ACZ's project number, L67790. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67790. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 10, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Tony Antalek has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: MOORE

ACZ Sample ID: ***L67790-01***
Date Sampled: *02/20/08 10:45*
Date Received: *02/21/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	7.1		*	mg/L	0.5	3	03/06/08 22:46	aml/ccp

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: MCCONNELL265

ACZ Sample ID: ***L67790-02***
Date Sampled: *02/20/08 13:50*
Date Received: *02/21/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	720		*	mg/L	30	100	03/06/08 23:04	aml/ccp

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: POOL

ACZ Sample ID: ***L67790-03***
Date Sampled: *02/20/08 14:50*
Date Received: *02/21/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	134		*	mg/L	1	5	03/06/08 23:23	aml/ccp

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67790***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	50.1		50.51	mg/L	100.8	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG240853LFB	LFB	03/06/08 15:32	WI080128-9	30		30.26	mg/L	100.9	90	110			
L67781-05AS	AS	03/06/08 21:16	WI080306-2	30	U	29.59	mg/L	98.6	90	110			
L67781-05DUP	DUP	03/06/08 21:34			U	U	mg/L				0	20	RA

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67790***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67790-01	WG241202	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67790-02	WG241202	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67790-03	WG241202	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67790***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67790
Date Received: 2/21/2008
Received By:
Date Printed: 2/21/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5539	3.8	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67790
Date Received: 2/21/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67790-01	MOORE									X		
L67790-02	MCCONNELL265									X		
L67790-03	POOL									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L67790

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd
Company: Hydro Geo Chem Inc.	Tucson AZ 85705
E-mail: dans@hgcinc.com	Telephone: (520) 293-1500 x133

Copy of Report to:

Name: Jim Norris	E-mail: jimn@hgcinc.com
Company: HGC Inc.	Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris	Address: 51 W. Wetmore Rd.
Company: HGC Inc.	Tucson AZ 85705
E-mail: jimn@hgcinc.com	Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: 504-IC
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO_4^-							
MOORE	2/20/08: 1045	GW	1	X							
MCCONNELL 265	2/20/08: 1350	GW	1	X							
POOL	2/20/08: 1450	GW	1	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
[signature]	2/20/08: 1615	[signature]	2-21-08 11:31

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 07, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872002.2
ACZ Project ID: L67843

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 26, 2008. This project has been assigned to ACZ's project number, L67843. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67843. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 07, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Tony Antalek has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: OSBORN

ACZ Sample ID: ***L67843-01***
Date Sampled: *02/25/08 14:30*
Date Received: *02/26/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	84.4			mg/L	0.2	1	02/28/08 17:57	aeh/erf
Magnesium, dissolved	M200.7 ICP	15.4			mg/L	0.2	1	02/28/08 17:57	aeh/erf
Potassium, dissolved	M200.7 ICP	4.3			mg/L	0.3	2	02/28/08 17:57	aeh/erf
Sodium, dissolved	M200.7 ICP	25.2			mg/L	0.3	2	02/28/08 17:57	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		246			mg/L	2	20	02/28/08 0:00	ear/cas
Carbonate as CaCO3		29			mg/L	2	20	02/28/08 0:00	ear/cas
Hydroxide as CaCO3			U		mg/L	2	20	02/28/08 0:00	ear/cas
Total Alkalinity		275		*	mg/L	2	20	02/28/08 0:00	ear/cas
Cation-Anion Balance	Calculation								
Cation-Anion Balance		0.8			%			03/07/08 0:00	calc
Sum of Anions		6.6			meq/L	0.1	0.5	03/07/08 0:00	calc
Sum of Cations		6.7			meq/L	0.1	0.5	03/07/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	18.2		*	mg/L	0.5	3	03/01/08 0:52	aml
Fluoride	M300.0 - Ion Chromatography	0.3	B		mg/L	0.1	0.5	03/01/08 0:52	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	3.76			mg/L	0.02	0.1	03/07/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	3.76			mg/L	0.02	0.1	02/26/08 17:47	ccp
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/26/08 17:47	ccp
Residue, Filterable (TDS) @180C	160.1 / SM2540C	370			mg/L	10	20	02/28/08 11:01	cas
Sulfate	300.0 - Ion Chromatography	16.4			mg/L	0.5	3	03/01/08 0:52	aml
TDS (calculated)	Calculation	357			mg/L	10	50	03/07/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.04						03/07/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67843***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240850													
WG240850PBW2	PBW	02/27/08 20:27				U	mg/L		-20	20			
WG240850LCSW5	LCSW	02/27/08 20:40	WC080131-1	820		816.8	mg/L	99.6	90	110			
WG240850PBW3	PBW	02/27/08 23:55				U	mg/L		-20	20			
WG240850LCSW8	LCSW	02/28/08 0:08	WC080131-1	820		851.3	mg/L	103.8	90	110			
L67847-05DUP	DUP	02/28/08 3:10			U	U	mg/L				0	20	RA
WG240850LCSW11	LCSW	02/28/08 3:23	WC080131-1	820		869.4	mg/L	106	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240946													
WG240946ICV	ICV	02/28/08 16:42	II080115-3	100		96.11	mg/L	96.1	95	105			
WG240946ICB	ICB	02/28/08 16:46				U	mg/L		-0.6	0.6			
WG240946LFB	LFB	02/28/08 17:02	II080214-5	67.97008		69.29	mg/L	101.9	85	115			
L67772-01AS	AS	02/28/08 17:10	II080214-5	67.97008	7.1	74.3	mg/L	98.9	85	115			
L67772-01ASD	ASD	02/28/08 17:14	II080214-5	67.97008	7.1	76.93	mg/L	102.7	85	115	3.48	20	
L67851-01AS	AS	02/28/08 18:05	II080214-5	67.97008	.6	72.66	mg/L	106	85	115			
L67851-01ASD	ASD	02/28/08 18:09	II080214-5	67.97008	.6	71.49	mg/L	104.3	85	115	1.62	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240998													
WG240998ICV	ICV	02/29/08 21:50	WI080220-1	19.98		20.4	mg/L	102.1	90	110			
WG240998ICB	ICB	02/29/08 22:09				U	mg/L		-1.5	1.5			
WG240998LFB	LFB	02/29/08 22:27	WI080128-9	30		29.83	mg/L	99.4	90	110			
L67721-03DUP	DUP	02/29/08 23:03			22	21.7	mg/L				1.4	20	RA
L67837-02AS	AS	03/03/08 12:26	WI080128-9	150	106	256.1	mg/L	100.1	90	110			

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240998													
WG240998ICV	ICV	02/29/08 21:50	WI080220-1	4		3.94	mg/L	98.5	90	110			
WG240998ICB	ICB	02/29/08 22:09				U	mg/L		-0.3	0.3			
WG240998LFB	LFB	02/29/08 22:27	WI080128-9	1.5		1.44	mg/L	96	90	110			
L67721-03DUP	DUP	02/29/08 23:03			9.2	9.09	mg/L				1.2	20	
L67837-02AS	AS	02/29/08 23:39	WI080128-9	1.5	.1	1.58	mg/L	98.7	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240946													
WG240946ICV	ICV	02/28/08 16:42	II080115-3	100		96.42	mg/L	96.4	95	105			
WG240946ICB	ICB	02/28/08 16:46				U	mg/L		-0.6	0.6			
WG240946LFB	LFB	02/28/08 17:02	II080214-5	54.96908		56.19	mg/L	102.2	85	115			
L67772-01AS	AS	02/28/08 17:10	II080214-5	54.96908	10.7	63.74	mg/L	96.5	85	115			
L67772-01ASD	ASD	02/28/08 17:14	II080214-5	54.96908	10.7	66.92	mg/L	102.3	85	115	4.87	20	
L67851-01AS	AS	02/28/08 18:05	II080214-5	54.96908	U	57.9	mg/L	105.3	85	115			
L67851-01ASD	ASD	02/28/08 18:09	II080214-5	54.96908	U	57.28	mg/L	104.2	85	115	1.08	20	

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67843***

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240851													
WG240851ICV	ICV	02/26/08 17:23	WI071212-1	2.416		2.444	mg/L	101.2	90	110			
WG240851ICB	ICB	02/26/08 17:25				U	mg/L		-0.06	0.06			
WG240851LFB	LFB	02/26/08 17:28	WI070911-4	2		1.911	mg/L	95.6	90	110			
L67843-01DUP	DUP	02/26/08 17:49			3.76	3.741	mg/L				0.5	20	
L67843-01AS	AS	02/26/08 18:08	WI070911-4	10	3.5	13.58	mg/L	100.8	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240851													
WG240851ICV	ICV	02/26/08 17:23	WI071212-1	.609		.623	mg/L	102.3	90	110			
WG240851ICB	ICB	02/26/08 17:25				U	mg/L		-0.03	0.03			
WG240851LFB	LFB	02/26/08 17:28	WI070911-4	1		.967	mg/L	96.7	90	110			
L67843-01DUP	DUP	02/26/08 17:49			U	U	mg/L				0	20	RA
L67843-01AS	AS	02/26/08 17:50	WI070911-4	1	U	1.026	mg/L	102.6	90	110			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240946													
WG240946ICV	ICV	02/28/08 16:42	II080115-3	20		19.78	mg/L	98.9	95	105			
WG240946ICB	ICB	02/28/08 16:46				U	mg/L		-0.9	0.9			
WG240946LFB	LFB	02/28/08 17:02	II080214-5	99.76186		104.94	mg/L	105.2	85	115			
L67772-01AS	AS	02/28/08 17:10	II080214-5	99.76186	.9	107.94	mg/L	107.3	85	115			
L67772-01ASD	ASD	02/28/08 17:14	II080214-5	99.76186	.9	115.4	mg/L	114.8	85	115	6.68	20	
L67851-01AS	AS	02/28/08 18:05	II080214-5	99.76186	.6	108.52	mg/L	108.2	85	115			
L67851-01ASD	ASD	02/28/08 18:09	II080214-5	99.76186	.6	107.24	mg/L	106.9	85	115	1.19	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240937													
WG240937PBW	PBW	02/28/08 10:45				U	mg/L		-20	20			
WG240937LCSW	LCSW	02/28/08 10:46	PCN28838	260		292	mg/L	112.3	80	120			
L67871-01DUP	DUP	02/28/08 11:14			1150	1150	mg/L				0	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240946													
WG240946ICV	ICV	02/28/08 16:42	II080115-3	100		97.2	mg/L	97.2	95	105			
WG240946ICV	ICV	02/28/08 16:42	II080115-3	100		98.84	mg/L	98.8	95	105			
WG240946ICB	ICB	02/28/08 16:46				U	mg/L		-6	6			
WG240946ICB	ICB	02/28/08 16:46				U	mg/L		-0.9	0.9			
WG240946LFB	LFB	02/28/08 17:02	II080214-5	98.21624		103.59	mg/L	105.5	85	115			
WG240946LFB	LFB	02/28/08 17:02	II080214-5	98.21624		102.7	mg/L	104.6	85	115			
L67851-01AS	AS	02/28/08 18:05	II080214-5	98.21624	.4	104.97	mg/L	106.5	85	115			
L67851-01ASD	ASD	02/28/08 18:09	II080214-5	98.21624	.4	103.5	mg/L	105	85	115	1.41	20	

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L67843***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240083													
WG240083ICV	ICV	02/07/08 16:57	WI080128-8	50.1		50.44	mg/L	100.7	90	110			
WG240083ICB	ICB	02/07/08 17:15				U	mg/L		-1.5	1.5			
WG240083ICV1	ICV	02/09/08 11:47	WI080128-8	50.1		51.13	mg/L	102.1	90	110			
WG240083ICB1	ICB	02/09/08 12:05				U	mg/L		-1.5	1.5			
WG240998													
WG240998ICV	ICV	02/29/08 21:50	WI080220-1	50.1		52.15	mg/L	104.1	90	110			
WG240998ICB	ICB	02/29/08 22:09				U	mg/L		-1.5	1.5			
WG240998LFB	LFB	02/29/08 22:27	WI080128-9	30		29.71	mg/L	99	90	110			
L67721-03DUP	DUP	02/29/08 23:03			39	37.6	mg/L				3.7	20	
L67837-02AS	AS	03/03/08 12:26	WI080128-9	150	90	238.9	mg/L	99.3	90	110			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67843***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67843-01	WG240998	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240851	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240850	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
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Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67843***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67843
Date Received: 2/26/2008
Received By:
Date Printed: 2/26/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5556	5.5	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L67843
Date Received: 2/26/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67843-01	OSBORN		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67843

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem (HGC)
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd #101 Tucson AZ 85705
Telephone: (520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Telephone: (520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Address: above
Telephone: above

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 872002.7
Reporting state for compliance testing: AZ
Sampler's Name: KW + MA
Are any samples NRC licensable material?

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ca Na Mg K	TDS SO4 NO2 NO3 Cl F	Alk						
Osborn	2/25/08 14:30	GW	3	✓	✓	✓						

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Kim Wilson	2/28/08 4:30		2:26:0810:12

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 13, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872002.0
ACZ Project ID: L67881

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 28, 2008. This project has been assigned to ACZ's project number, L67881. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67881. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 13, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.0
Sample ID: TM-15

ACZ Sample ID: ***L67881-02***
Date Sampled: *02/27/08 10:07*
Date Received: *02/28/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	32.9			mg/L	0.2	1	03/03/08 14:12	aeh/erf
Magnesium, dissolved	M200.7 ICP	18.0			mg/L	0.2	1	02/29/08 18:38	aeh/erf
Potassium, dissolved	M200.7 ICP	2.0			mg/L	0.3	2	02/29/08 18:38	aeh/erf
Sodium, dissolved	M200.7 ICP	32.4			mg/L	0.3	2	02/29/08 18:38	aeh/erf

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		181			mg/L	2	20	03/04/08 0:00	jlfr
Carbonate as CaCO3		2	B		mg/L	2	20	03/04/08 0:00	jlfr
Hydroxide as CaCO3			U		mg/L	2	20	03/04/08 0:00	jlfr
Total Alkalinity		183			mg/L	2	20	03/04/08 0:00	jlfr
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.5			%			03/13/08 12:36	calc
Sum of Anions		4.2			meq/L	0.1	0.5	03/13/08 12:36	calc
Sum of Cations		4.6			meq/L	0.1	0.5	03/13/08 12:36	calc
Chloride	M300.0 - Ion Chromatography	7.1			mg/L	0.5	3	03/07/08 19:19	aml
Fluoride	M300.0 - Ion Chromatography	0.4	B		mg/L	0.1	0.5	03/07/08 19:19	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.56			mg/L	0.02	0.1	03/13/08 12:36	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.56			mg/L	0.02	0.1	02/28/08 18:25	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	02/28/08 18:25	pjb
Residue, Filterable (TDS) @180C	160.1 / SM2540C	220			mg/L	10	20	02/29/08 11:24	cas
Sulfate	300.0 - Ion Chromatography	14.0			mg/L	0.5	3	03/07/08 19:19	aml
TDS (calculated)	Calculation	224			mg/L	10	50	03/13/08 12:36	calc
TDS (ratio - measured/calculated)	Calculation	0.98						03/13/08 12:36	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872002.0

ACZ Project ID: ***L67881***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241115													
WG241115PBW1	PBW	03/04/08 17:29				U	mg/L		-20	20			
WG241115LCSW2	LCSW	03/04/08 17:42	WC080131-1	820		866.9	mg/L	105.7	90	110			
L67884-06DUP	DUP	03/04/08 18:38			58	57.7	mg/L				0.5	20	
WG241115PBW2	PBW	03/04/08 20:01				U	mg/L		-20	20			
WG241115LCSW5	LCSW	03/04/08 20:13	WC080131-1	820		866.3	mg/L	105.6	90	110			
WG241115PBW3	PBW	03/04/08 23:02				U	mg/L		-20	20			
WG241115LCSW8	LCSW	03/04/08 23:14	WC080131-1	820		847.8	mg/L	103.4	90	110			
WG241115LCSW11	LCSW	03/05/08 1:55	WC080131-1	820		872.8	mg/L	106.4	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241029													
WG241029ICV	ICV	03/03/08 12:54	II080115-3	100		99.25	mg/L	99.3	95	105			
WG241029ICB	ICB	03/03/08 12:57				U	mg/L		-0.6	0.6			
WG241029LFB	LFB	03/03/08 13:10	II080214-5	67.97008		71.99	mg/L	105.9	85	115			
L67879-01AS	AS	03/03/08 14:00	II080214-5	67.97008	39.7	110.37	mg/L	104	85	115			
L67879-01ASD	ASD	03/03/08 14:03	II080214-5	67.97008	39.7	110.88	mg/L	104.7	85	115	0.46	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	19.98		20.32	mg/L	101.7	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241250													
WG241250ICV	ICV	03/07/08 13:17	WI080220-1	19.98		20.24	mg/L	101.3	90	110			
WG241250ICB	ICB	03/07/08 13:35				U	mg/L		-1.5	1.5			
WG241250LFB	LFB	03/07/08 13:53	WI080306-2	30		29.36	mg/L	97.9	90	110			
WG241250ICV1	ICV	03/10/08 15:05	WI080220-1	19.98		20.03	mg/L	100.3	90	110			
WG241250ICB1	ICB	03/10/08 15:23				U	mg/L		-1.5	1.5			
L67881-01AS	AS	03/10/08 17:12	WI080306-2	30	7.1	37.78	mg/L	102.3	90	110			
L67881-01DUP	DUP	03/10/08 17:30			7.1	7.04	mg/L				0.8	20	

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241250													
WG241250ICV	ICV	03/07/08 13:17	WI080220-1	4		4.07	mg/L	101.8	90	110			
WG241250ICB	ICB	03/07/08 13:35				U	mg/L		-0.3	0.3			
WG241250LFB	LFB	03/07/08 13:53	WI080306-2	1.5		1.56	mg/L	104	90	110			
L67881-01AS	AS	03/07/08 18:43	WI080306-2	1.5	.3	2.31	mg/L	134	90	110			M1
L67881-01DUP	DUP	03/07/08 19:01			.3	.79	mg/L				89.9	20	RA
WG241250ICV1	ICV	03/10/08 15:05	WI080220-1	4		3.91	mg/L	97.8	90	110			
WG241250ICB1	ICB	03/10/08 15:23				U	mg/L		-0.3	0.3			

Hydro Geo Chem, Inc.
Project ID: 872002.0

ACZ Project ID: ***L67881***

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240989													
WG240989ICV	ICV	02/29/08 16:40	II080115-3	100		98.03	mg/L	98	95	105			
WG240989ICB	ICB	02/29/08 16:44				U	mg/L		-0.6	0.6			
WG240989LFB	LFB	02/29/08 16:59	II080214-5	54.96908		56.8	mg/L	103.3	85	115			
L67878-02AS	AS	02/29/08 18:00	II080214-5	54.96908	13.3	69.81	mg/L	102.8	85	115			
L67878-02ASD	ASD	02/29/08 18:04	II080214-5	54.96908	13.3	69.12	mg/L	101.5	85	115	0.99	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240966													
WG240966ICV	ICV	02/28/08 17:57	WI071212-1	2.416		2.406	mg/L	99.6	90	110			
WG240966ICB	ICB	02/28/08 17:58				U	mg/L		-0.06	0.06			
WG240966LFB	LFB	02/28/08 17:59	WI070911-4	2		2.005	mg/L	100.3	90	110			
L67881-01DUP	DUP	02/28/08 18:23			.96	1.003	mg/L				4.4	20	
L67874-08AS	AS	02/28/08 18:41	WI070911-4	40	25.9	68.2	mg/L	105.8	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240966													
WG240966ICV	ICV	02/28/08 17:57	WI071212-1	.609		.614	mg/L	100.8	90	110			
WG240966ICB	ICB	02/28/08 17:58				U	mg/L		-0.03	0.03			
WG240966LFB	LFB	02/28/08 17:59	WI070911-4	1		1.018	mg/L	101.8	90	110			
L67874-08AS	AS	02/28/08 18:21	WI070911-4	1	.07	1.088	mg/L	101.8	90	110			
L67881-01DUP	DUP	02/28/08 18:23			U	U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240989													
WG240989ICV	ICV	02/29/08 16:40	II080115-3	20		20.2	mg/L	101	95	105			
WG240989ICB	ICB	02/29/08 16:44				U	mg/L		-0.9	0.9			
WG240989LFB	LFB	02/29/08 16:59	II080214-5	99.76186		105.41	mg/L	105.7	85	115			
L67878-02AS	AS	02/29/08 18:00	II080214-5	99.76186	4.7	111.17	mg/L	106.7	85	115			
L67878-02ASD	ASD	02/29/08 18:04	II080214-5	99.76186	4.7	110.59	mg/L	106.1	85	115	0.52	20	

Residue, Filterable (TDS) @180C 160.1 / SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240990													
WG240990PBW	PBW	02/29/08 11:00				U	mg/L		-20	20			
WG240990LCSW	LCSW	02/29/08 11:01	PCN28838	260		294	mg/L	113.1	80	120			
L67883-03DUP	DUP	02/29/08 11:29			130	138	mg/L				6	20	

Hydro Geo Chem, Inc.
Project ID: 872002.0

ACZ Project ID: ***L67881***

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG240989													
WG240989ICV	ICV	02/29/08 16:40	II080115-3	100		99.1	mg/L	99.1	95	105			
WG240989ICV	ICV	02/29/08 16:40	II080115-3	100		100.39	mg/L	100.4	95	105			
WG240989ICB	ICB	02/29/08 16:44				U	mg/L		-6	6			
WG240989ICB	ICB	02/29/08 16:44				U	mg/L		-0.9	0.9			
WG240989LFB	LFB	02/29/08 16:59	II080214-5	98.21624		102.9	mg/L	104.8	85	115			
WG240989LFB	LFB	02/29/08 16:59	II080214-5	98.21624		103.03	mg/L	104.9	85	115			
L67878-02AS	AS	02/29/08 18:00	II080214-5	98.21624	8.9	111.04	mg/L	104	85	115			
L67878-02ASD	ASD	02/29/08 18:04	II080214-5	98.21624	8.9	110.72	mg/L	103.7	85	115	0.29	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	50.1		50.51	mg/L	100.8	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241250													
WG241250ICV	ICV	03/07/08 13:17	WI080220-1	50.1		51.6	mg/L	103	90	110			
WG241250ICB	ICB	03/07/08 13:35				U	mg/L		-1.5	1.5			
WG241250LFB	LFB	03/07/08 13:53	WI080306-2	30		30.95	mg/L	103.2	90	110			
WG241250ICV1	ICV	03/10/08 15:05	WI080220-1	50.1		50.62	mg/L	101	90	110			
WG241250ICB1	ICB	03/10/08 15:23				.77	mg/L		-1.5	1.5			
L67881-01AS	AS	03/10/08 17:12	WI080306-2	30	13.9	43.35	mg/L	98.2	90	110			
L67881-01DUP	DUP	03/10/08 17:30			13.9	13.79	mg/L				0.8	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67881***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L67881-01	WG241250	Fluoride	M300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG240966	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L67881-02	WG240966	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67881***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.0

ACZ Project ID: L67881
Date Received: 2/28/2008
Received By:
Date Printed: 2/28/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
2100	2.3	16

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.0

ACZ Project ID: L67881
Date Received: 2/28/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67881-01	TM-6		Y									
L67881-02	TM-15		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67881

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd
Company: Hydro Geo Chem (HGC)	Tucson AZ 85705
E-mail: dans@hgcinc.com	Telephone: (520) 293-1500 x 133

Copy of Report to:

Name: James Norris	E-mail: jimn@hgcinc.com
Company: HGC	Telephone: (520) 293-1500 x 112

Invoice to:

Name: James Norris	Address: 51 W. Wetmore Rd
Company: above	Tucson AZ 85705
E-mail: jimn@hgcinc.com	Telephone: (520) 293-1500 x 112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES: X, NO:

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW

Project/PO #: 872002.0

Reporting state for compliance testing: AZ

Sampler's Name: MA + KW

Are any samples NRC licensable material?

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Ca Na Mg ✓	TDS SO_4^{-} NO_3^{-} F^{-} Cl^{-}	Alk					
TM-6	2/27/08 8:45	GW		✓	✓	✓					
TM-15	2/27/08 10:07	GW		✓	✓	✓					

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Kevin Wilson	2/27/08 16:35		02/28/08 11:0

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 13, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.1
ACZ Project ID: L67882

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on February 28, 2008. This project has been assigned to ACZ's project number, L67882. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67882. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 13, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.1
Sample ID: FULTZ

ACZ Sample ID: ***L67882-01***
Date Sampled: *02/27/08 15:45*
Date Received: *02/28/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	152			mg/L	5	30	03/10/08 17:48	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.1
Sample ID: BANKS 986

ACZ Sample ID: ***L67882-02***
Date Sampled: *02/27/08 14:30*
Date Received: *02/28/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	44			mg/L	3	10	03/10/08 18:06	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.1
Sample ID: HOBAN

ACZ Sample ID: ***L67882-03***
Date Sampled: *02/27/08 12:15*
Date Received: *02/28/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	510			mg/L	10	50	03/10/08 18:24	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.1

ACZ Project ID: ***L67882***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	50.1		50.51	mg/L	100.8	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241250													
WG241250ICV	ICV	03/07/08 13:17	WI080220-1	50.1		51.6	mg/L	103	90	110			
WG241250ICB	ICB	03/07/08 13:35				U	mg/L		-1.5	1.5			
WG241250LFB	LFB	03/07/08 13:53	WI080306-2	30		30.95	mg/L	103.2	90	110			
WG241250ICV1	ICV	03/10/08 15:05	WI080220-1	50.1		50.62	mg/L	101	90	110			
WG241250ICB1	ICB	03/10/08 15:23				.77	mg/L		-1.5	1.5			
L67881-01AS	AS	03/10/08 17:12	WI080306-2	30	13.9	43.35	mg/L	98.2	90	110			
L67881-01DUP	DUP	03/10/08 17:30			13.9	13.79	mg/L				0.8	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67882***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67882***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.1

ACZ Project ID: L67882
Date Received: 2/28/2008
Received By:
Date Printed: 2/28/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
2100	2.3	16

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.1

ACZ Project ID: L67882
Date Received: 2/28/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67882-01	FULTZ									X		
L67882-02	BANKS									X		
L67882-03	HOBAN									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L67882

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd Tucson AZ 85705
Company: Hydro Geo Chem (HGC)	
E-mail: dans@hgcinc.com	Telephone: (520) 293-1500 x 133

Copy of Report to:

Name: Jim Norris	E-mail: jimn@hgcinc.com
Company: HGC	Telephone: (520) 293-1500 x 112

Invoice to:

Name: Jim Norris	Address: above
Company: HGC	
E-mail: jimn@hgcinc.com	Telephone: above

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB - GW

Project/PO #: 872001.1

Reporting state for compliance testing: AZ

Sampler's Name: KWilson/MAmeson

Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO4 -
FULTZ	2/27/08 15:45	GW	1	✓
BANKS	2/27/08 14:30	GW	1	✓
HOBAN	2/27/08 12:15	GW	1	✓

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Kris Wilson	16:35 2/27/08		2.28.0811:01

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 13, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L67989

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on March 05, 2008. This project has been assigned to ACZ's project number, L67989. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L67989. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 13, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: COOPER C

ACZ Sample ID: ***L67989-01***
Date Sampled: *03/04/08 09:00*
Date Received: *03/05/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	880			mg/L	10	50	03/10/08 20:31	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L67989***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	50.1		50.51	mg/L	100.8	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241250													
WG241250ICV	ICV	03/07/08 13:17	WI080220-1	50.1		51.6	mg/L	103	90	110			
WG241250ICB	ICB	03/07/08 13:35				U	mg/L		-1.5	1.5			
WG241250LFB	LFB	03/07/08 13:53	WI080306-2	30		30.95	mg/L	103.2	90	110			
WG241250ICV1	ICV	03/10/08 15:05	WI080220-1	50.1		50.62	mg/L	101	90	110			
WG241250ICB1	ICB	03/10/08 15:23				.77	mg/L		-1.5	1.5			
L67881-01AS	AS	03/10/08 17:12	WI080306-2	30	13.9	43.35	mg/L	98.2	90	110			
L67881-01DUP	DUP	03/10/08 17:30			13.9	13.79	mg/L				0.8	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67989***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L67989***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67989
Date Received: 3/5/2008
Received By:
Date Printed: 3/5/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5594	3.2	16

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L67989
Date Received: 3/5/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L67989-01	COOPER C									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L67989

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd
Company: Hydro Geo Chem Inc.	Tucson, AZ 85705
E-mail: dans@hgcinc.com	Telephone: 520) 293-1500 x173

Copy of Report to:

Name: Jim Norris	E-mail: Jimn@hgcinc.com
Company: HGC Inc.	Telephone: 520) 293-1500X112

Invoice to:

Name: Jim Norris	Address: 51 W. Wetmore Rd
Company: HGC Inc.	Tucson, AZ 85705
E-mail: Jimn@hgcinc.com	Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: 504-IC

Project/PO #: 872001.0

Reporting state for compliance testing: AZ

Sampler's Name: Mark Arneson

Are any samples NRC licensable material? N/O

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	1 504								
COOPER C	3/4/08: 9:00	GW	1	X								

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	3/4/08: 1630	WPL	3-5-08 11:05

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 12, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L68020

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on March 06, 2008. This project has been assigned to ACZ's project number, L68020. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L68020. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 12, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: HOWARD

ACZ Sample ID: ***L68020-01***
Date Sampled: *03/04/08 18:10*
Date Received: *03/06/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	571			mg/L	5	30	03/11/08 20:35	aml/ccp

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: METZLER

ACZ Sample ID: ***L68020-02***
Date Sampled: *03/05/08 10:10*
Date Received: *03/06/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	317			mg/L	5	30	03/11/08 20:53	aml/ccp

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L68020***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	50.1		50.51	mg/L	100.8	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241326													
WG241326ICV	ICV	03/10/08 21:26	WI080220-1	50.1		51.43	mg/L	102.7	90	110			
WG241326ICB	ICB	03/10/08 21:44				U	mg/L		-1.5	1.5			
WG241326LFB	LFB	03/10/08 22:02	WI080306-2	30		32.41	mg/L	108	90	110			
WG241326ICV1	ICV	03/11/08 16:21	WI080220-1	50.1		50.87	mg/L	101.5	90	110			
WG241326ICB1	ICB	03/11/08 16:39				.91	mg/L		-1.5	1.5			
L68017-03AS	AS	03/11/08 18:28	WI080306-2	150	76	219.8	mg/L	95.9	90	110			
L68017-03DUP	DUP	03/11/08 18:46			76	73.7	mg/L				3.1	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L68020***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L68020***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L68020
Date Received: 3/6/2008
Received By:
Date Printed: 3/6/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
2111	1.6	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L68020
Date Received: 3/6/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L68020-01	HOWARD									X		
L68020-02	METZLER									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L68020

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro GeoChem Inc.
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd Tucson, AZ 85705
Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.
E-mail: Jims@hgcinc.com
Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc
E-mail: Jims@hgc.inc.com
Address: 51 W. Wetmore Rd Tucson, AZ 85705
Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

YES: X
NO:

PROJECT INFORMATION

Quote #: SO4-TC
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: [redacted]
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO4 -
HOWARD	3/4/08: 1810	GW	1	X
METZLER	3/5/08: 1010	GW	1	X

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
[redacted]	3/5/08: 1610	WL	3-6-08 10:41

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 12, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L68039

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on March 07, 2008. This project has been assigned to ACZ's project number, L68039. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L68039. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 12, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: CHAMBERS

ACZ Sample ID: ***L68039-01***
Date Sampled: *03/06/08 09:50*
Date Received: *03/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	7.7			mg/L	0.5	3	03/11/08 21:29	aml/ccp

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: DUP030608

ACZ Sample ID: ***L68039-02***
Date Sampled: *03/06/08 00:00*
Date Received: *03/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	7.7			mg/L	0.5	3	03/11/08 21:47	aml/ccp

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: FB030608

ACZ Sample ID: ***L68039-03***
Date Sampled: *03/06/08 00:00*
Date Received: *03/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	0.9	B		mg/L	0.5	3	03/11/08 22:05	aml/ccp

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L68039***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	50.1		50.51	mg/L	100.8	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241326													
WG241326ICV	ICV	03/10/08 21:26	WI080220-1	50.1		51.43	mg/L	102.7	90	110			
WG241326ICB	ICB	03/10/08 21:44				U	mg/L		-1.5	1.5			
WG241326LFB	LFB	03/10/08 22:02	WI080306-2	30		32.41	mg/L	108	90	110			
WG241326ICV1	ICV	03/11/08 16:21	WI080220-1	50.1		50.87	mg/L	101.5	90	110			
WG241326ICB1	ICB	03/11/08 16:39				.91	mg/L		-1.5	1.5			
L68017-03AS	AS	03/11/08 18:28	WI080306-2	150	76	219.8	mg/L	95.9	90	110			
L68017-03DUP	DUP	03/11/08 18:46			76	73.7	mg/L				3.1	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L68039***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L68039***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L68039
Date Received: 3/7/2008
Received By:
Date Printed: 3/7/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5609	2	17

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L68039
Date Received: 3/7/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L68039-01	CHAMBERS									X		
L68039-02	DUP030608									X		
L68039-03	FB030608									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L68039

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc.
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd Tucson, AZ 85705
Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Address: 51 W. Wetmore Rd. Tucson, AZ 85705
Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: 504-IC
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	$SO_4^{=}$
CHAMBERS	3/6/08 : 9:50	GW	1	X
DUP030608	3/6/08	GW	1	X
FB030608	3/6/08	GW	1	X

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	3/6/08 : 1500	MB	3.7.08 10:03

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

March 21, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L68145

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on March 13, 2008. This project has been assigned to ACZ's project number, L68145. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L68145. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 21, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: EPPELE 641

ACZ Sample ID: ***L68145-01***
Date Sampled: *03/11/08 13:30*
Date Received: *03/13/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	21.7			mg/L	0.5	3	03/19/08 19:31	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L68145***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG241202													
WG241202ICV	ICV	03/06/08 14:56	WI080220-1	50.1		50.51	mg/L	100.8	90	110			
WG241202ICB	ICB	03/06/08 15:14				U	mg/L		-1.5	1.5			
WG241583													
WG241583ICV1	ICV	03/19/08 17:24	WI080220-1	50.1		50.2	mg/L	100.2	90	110			
WG241583ICB1	ICB	03/19/08 17:43				U	mg/L		-1.5	1.5			
WG241583LFB2	LFB	03/19/08 18:01	WI080306-2	30		29.95	mg/L	99.8	90	110			
L68019-02AS	AS	03/19/08 18:55	WI080306-2	300	482	771.9	mg/L	96.6	90	110			
L68019-02DUP	DUP	03/19/08 19:13			482	453.5	mg/L				6.1	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L68145***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L68145***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L68145
Date Received: 3/13/2008
Received By:
Date Printed: 3/13/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5651	1.2	19

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L68145
Date Received: 3/13/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L68145-01	EPPELE									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L68145

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd
Company: Hydro Geo Chem Inc.	Tucson, AZ 85705
E-mail: dans@hgcinc.	Telephone (520) 293-1500 x 133

Copy of Report to:

Name: Jim Norris	E-mail: jimn@hgcinc.com
Company: HGC Inc.	Telephone: 520) 293-1500 x 112

Invoice to:

Name: Jim Norris	Address: 51 W. Wetmore Rd
Company: Hydro Geo Chem Inc.	Tucson, AZ 85705
E-mail: jimn@hgcinc.com	Telephone: (520) 293-1500 x 112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: SO4-IC

Project/PO #: 872001.0

Reporting state for compliance testing: AZ

Sampler's Name: M. Arneson

Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO4 -
EPPELE	3-11-08:1330	GW	1	X

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	3-12-08:1350	WPC	3-13-08 10:5

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

April 08, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872001.0
ACZ Project ID: L68297

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on March 21, 2008. This project has been assigned to ACZ's project number, L68297. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L68297. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after May 08, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872001.0
Sample ID: ANDERSON

ACZ Sample ID: ***L68297-01***
Date Sampled: *03/20/08 11:35*
Date Received: *03/21/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	431			mg/L	8	40	04/05/08 18:34	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic QC Summary

Hydro Geo Chem, Inc.
Project ID: 872001.0

ACZ Project ID: ***L68297***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG242493													
WG242493ICV	ICV	04/04/08 11:39	WI080318-6	50.1		50.15	mg/L	100.1	90	110			
WG242493ICB	ICB	04/04/08 11:57				U	mg/L		-1.5	1.5			
WG242493LFB	LFB	04/04/08 12:15	WI080306-2	30		29.44	mg/L	98.1	90	110			
L68295-01AS	AS	04/05/08 16:10	WI080306-2	150	123	275	mg/L	101.3	90	110			
L68295-01DUP	DUP	04/05/08 16:28			123	119.4	mg/L				3	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L68297***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L68297***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L68297
Date Received: 3/21/2008
Received By:
Date Printed: 3/21/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (℃)	Rad (µR/hr)
NA5711	0	21

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872001.0

ACZ Project ID: L68297
Date Received: 3/21/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L68297-01	ANDERSON									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L68297

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd Tucson, AZ 85705
Telephone: (520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Telephone: (520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Address: 51 W. Wetmore Rd. Tucson, AZ 85705
Telephone: (520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: SO4-TC
Project/PO #: 872001.0
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO_4^-
ANDERSON	3/20/08 : 1135	GW	1	X

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	3/20/08 : 1615	[illegible]	3-21-08 10:30

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

April 23, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872002.2
ACZ Project ID: L68800

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on April 22, 2008. This project has been assigned to ACZ's project number, L68800. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L68800. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after May 23, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872002.2
Sample ID: PANAGAKOS

ACZ Sample ID: ***L68800-01***
Date Sampled: *04/21/08 09:15*
Date Received: *04/22/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	375.4 - Turbidimetric	410		*	mg/L	20	100	04/22/08 16:39	lbn

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 872002.2

ACZ Project ID: ***L68800***

Sulfate 375.4 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG243272													
WG243272ICB	ICB	04/22/08 15:46				U	mg/L		-3	3			
WG243272ICV	ICV	04/22/08 15:46	WI080402-2	20.04		21.5	mg/L	107.3	90	110			
WG243272ICB1	ICB	04/22/08 15:55				U	mg/L		-3	3			
WG243272ICV1	ICV	04/22/08 15:55	WI080402-2	20.04		20.4	mg/L	101.8	90	110			
WG243272LFB	LFB	04/22/08 16:23	WI080211-1	10		9	mg/L	90	90	110			
L68772-04AS	AS	04/22/08 16:36	SO4TURB5	10	142	155.1	mg/L	131	90	110			M3
L68772-03DUP	DUP	04/22/08 16:39			360	364	mg/L				1.1	20	
WG243272ICB1	ICB	04/23/08 7:56				U	mg/L		-3	3			
WG243272ICV1	ICV	04/23/08 7:56	WI080402-2	20.04		20.3	mg/L	101.3	90	110			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L68800***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68800-01	WG243272	Sulfate	375.4 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

Wet Chemistry

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.

Sulfate	375.4 - Turbidimetric

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L68800
Date Received: 4/22/2008
Received By:
Date Printed: 4/22/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
1947	3.5	21

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872002.2

ACZ Project ID: L68800
Date Received: 4/22/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L68800-01	PANAGAKOS									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro GeoChem Inc.
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd Tucson, AZ 85705
Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Address: 51 W. Wetmore Rd Tucson, AZ 85705
Telephone: 520) 293-1500x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES X NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: 504-IC
Project/PO #: 8720022
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	1 SO4
PANAGAKOS	4/21/08: 9:15	GW	1	X
ROGERS-803	4/21/08: 10:10	GW	1	X
SCHWARTZ	4/21/08: 11:52	GW	1	X
BLOMMER	4/21/08: 13:15	GW	1	X
RAY	4/21/08: 14:50	GW	1	X
FULTZ	4/21/08: 15:35	GW	1	X

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

*PANAGAKOS – Rush Results 24 hr Turnaround SO_4^-

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4/21/08: 16:40	WPL	4-22-08 10:41

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

APPENDIX D

HYDRO GEO CHEM, INC. GROUNDWATER SAMPLING FORMS

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	ANDERSON	Date:	3-20-08
ADWR No.	613396	Weather:	clear
Location:	3272 Naco Hwy S, Bisbee, AZ	Collected By:	MH

WELL DATA

Well Depth (ft bis):	236	Static Water Level (ft bmp):	145.46
Casing Diameter (in):	8"	Date/Time:	3-20-08 10:05
Well Use:	all domestic purposes	Point of Measurement:	TOC
3 Casing Volumes:	236x3 = 709	GPS:	12R 601134 utm 3468816
		Elevation:	4596

FIELD SAMPLING DATA

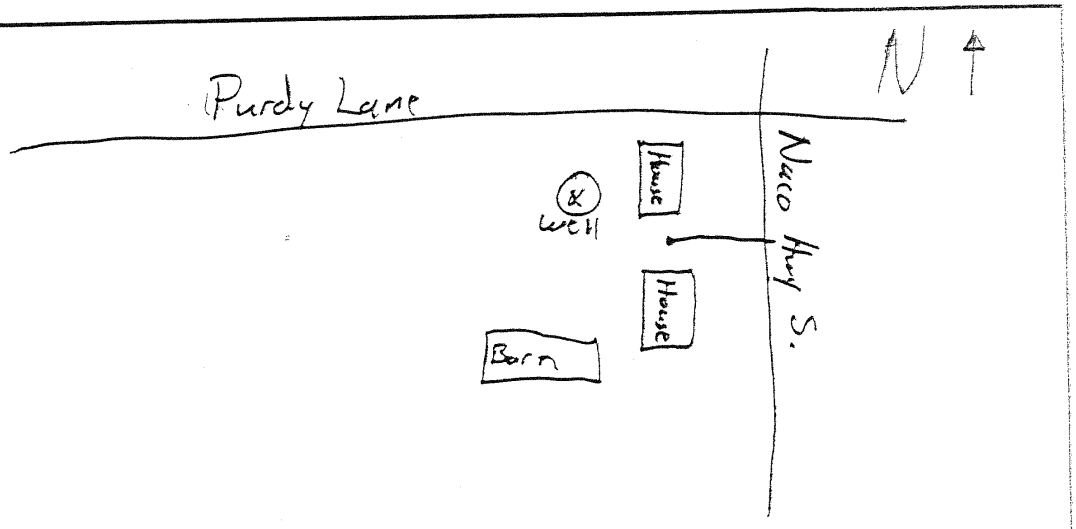
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1010	10	0	7.27	18.0	1154	clear	No	open bib at 1010
1015	"	50	7.25	20.5	1150	"	"	
1030	"	200	7.21	21.5	1176	"	"	
1045	"	350	7.24	21.6	1179	"	"	
1100	"	500	7.27	21.6	1180	"	"	
1115	"	650	7.24	21.2	1169	"	"	
1130	"	800	7.25	21.1	1176	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
ANDERSON	11:35	Plastic	250ml	1	300.0	None	Filtered

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	870001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	BANKS	Date:	2/27/08
ADWR No.	55 - 647986	Weather:	Sunny
Location:	620 E Mulberry Lane	Collected By:	MA & KW

WELL DATA

Well Depth (ft bls):	435.8 (owner)	Static Water Level (ft bmp):	~~122.97~~ ← unreliable cant get good reading obstructed
Casing Diameter (in):	6'	Date/Time:	2/27/08 13:21
Well Use:	domestic	Point of Measurement:	T.O.C
3 Casing Volumes:	1 casing 334 x 3 = 1002	GPS:	12R 0606982 UTM 3469205
		Elevation:	4654

FIELD SAMPLING DATA

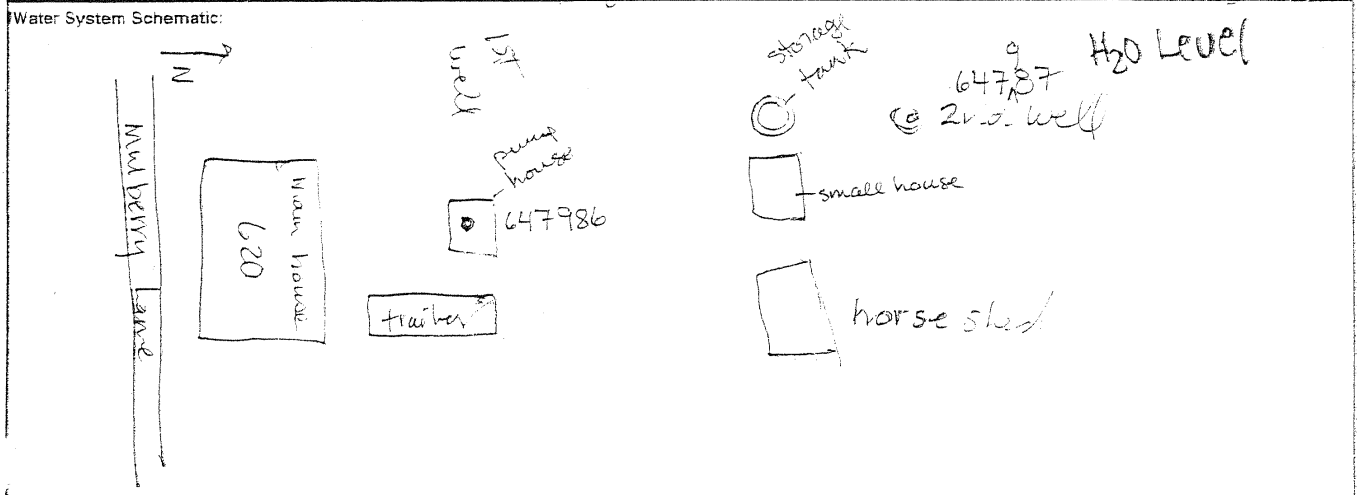
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
14:06	8	0	7.49	21.7	990	none	none	
14:10	8	82	7.51	21.7	991	"	"	
14:15	"	72	7.51	21.9	990	"	"	
14:20	"	122	7.53	21.8	986	"	"	
14:25	"	162	7.53	21.8	980	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
BANKS	14:30	plastic	250	1	300.0	N	filtered

Additional Comments: *ADWR Reg. existing well, reports well depth @ 445' bls. 435.8' is written on pump house. Poss obstruction 143.9. Very dirty. We are using 208' WL from other well for purge time calculation. 2 households using this well

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	ANDERSON	Date:	3-20-08
ADWR No.	613396	Weather:	clear
Location:	3272 Naco Hwy S, Bisbee, AZ	Collected By:	MA

WELL DATA

Well Depth (ft bls):	236	Static Water Level (ft bmp):	145.46
Casing Diameter (in):	~~8~~"	Date/Time:	3-20-08 10:05
Well Use:	all domestic purposes	Point of Measurement:	TOC
3 Casing Volumes:	236x3 = 709	GPS:	12R 601134 UTM 3468816
		Elevation:	4596

FIELD SAMPLING DATA

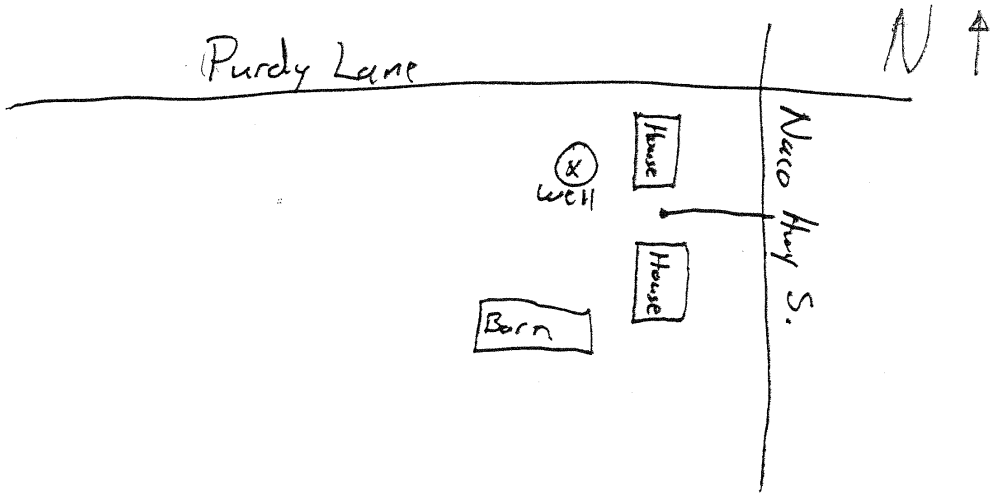
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1010	10	0	7.27	16.0	1154	clear	No	open bib at 1010
1015	"	50	7.25	20.5	1150	"	"	
1030	"	200	7.21	21.5	1176	"	"	
1045	"	350	7.24	21.6	1179	"	"	
1100	"	500	7.27	21.6	1180	"	"	
1115	"	650	7.24	21.2	1169	"	"	
1130	"	800	7.25	21.1	1176	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
ANDERSON	11:35	Plastic	250ml	1	300.0	None	Filtered

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	870001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	BANKS	Date:	2/27/08
ADWR No.	55 - 647986	Weather:	sunny,
Location:	620 E Mulberry Lane	Collected By:	MA & KW

WELL DATA

Well Depth (ft bls):	435.8 (owner)	Static Water Level (ft bmp):	~~122.97~~ ← unreliable can't get good reading obstructed
Casing Diameter (in):	6"	Date/Time:	2/27/08 13:21
Well Use:	domestic	Point of Measurement:	T.O.C
3 Casing Volumes:	1 casing 334 x 3 = 1002	GPS:	12R 0606982 UTM 3469205
		Elevation:	4654

FIELD SAMPLING DATA

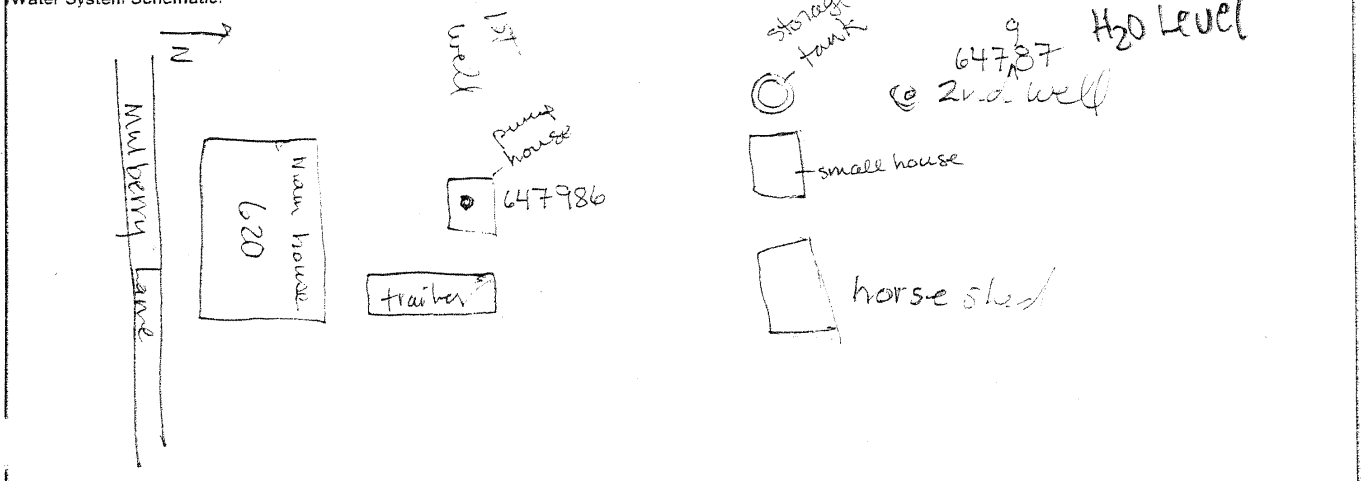
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
14:06	8	0	7.49	21.7	990	none	none	
14:10	8	32	7.51	21.7	991	"	"	
14:15	"	72	7.51	21.9	990	"	"	
14:20	"	122	7.53	21.8	986	"	"	
14:25	"	162	7.53	21.8	980	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
BANKS	14:30	plastic	250	1	300.0	N	filtered

Additional Comments: *ADWR keep existing wells reports well depth @ 445' bls. 435.8' is written on pump house. Pass obstruction 143.9. Very dirty. We are using 208' WL from other well for purge time calculation. 2 households using this well

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	55-577927	Date:	2-6-08
ADWR No.	BIMA	Weather:	CLEAR
Location:	Arizona St, Bisbee Junction	Collected By:	API MA

WELL DATA

Well Depth (ft bls):	460'	Static Water Level (ft bmp):	OBSTRUCTION AT 350ft
Casing Diameter (in):	4"	Date/Time:	2-6-08 1500
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	~~ap~~ 78 X 3 = 234	GPS: UTM:	3471859 12R 0606003
	234 ÷ 10 = 24 Min	Elevation:	4794

FIELD SAMPLING DATA

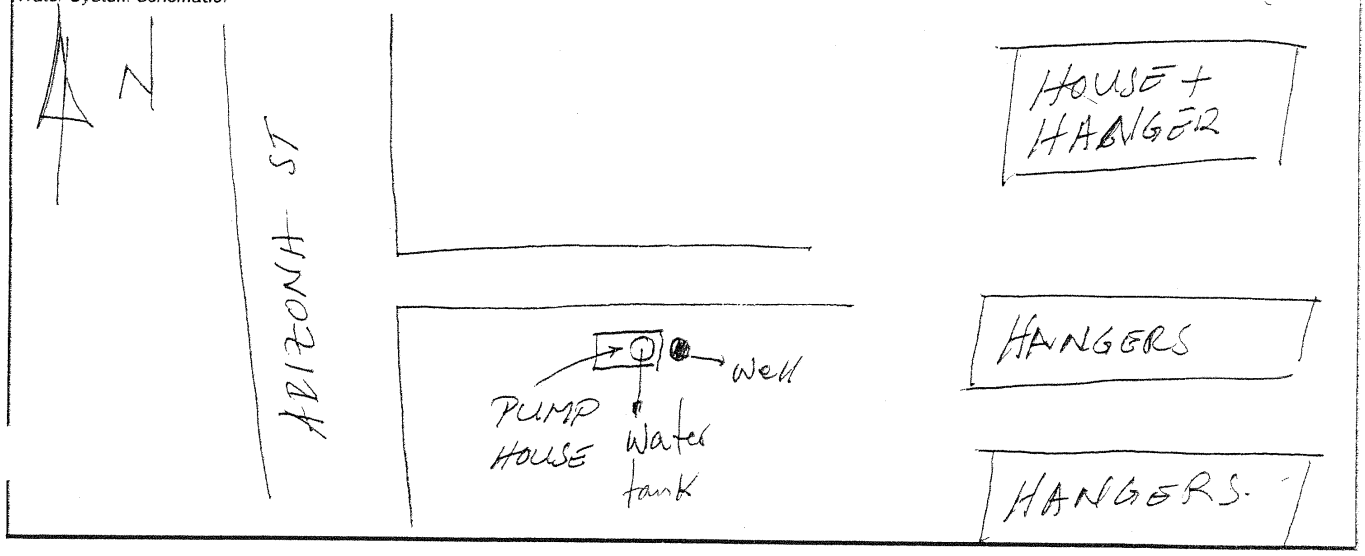
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1523	10		6.79	17.8	1330	CLEAR	N	—
1524	"		6.65	18.5	1335	"	"	—
1527	"		6.68	20.3	1342	"	"	—
1532	"		6.66	21.1	1324	"	"	—
1536	"		6.68	22.0	1342	"	"	—
1545	"		6.69	22.2	1335	"	"	—
	TOTAL DISCHARGE = 980 G.							

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
BIMA	1550	PLASTIC	125/250/500	3	300-0	Y/N/N	—
							—

Additional Comments: Mr. Sievold indicated well depth is 460' and well casing is 4"

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001-0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	BLOMMER	Date:	02/05/2008
ADWR No.	~~645536~~ 633472	Weather:	CLEAR
Location:	Barnett Rd San Jose	Collected By:	AP / MA

WELL DATA

Well Depth (ft bls):	350	Static Water Level (ft bmp):	Obstruction at 277'
Casing Diameter (in):	6"	Date/Time:	2-5-08 10:00
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	will purge for stabil.	GPS: UTM	347532 12 R 0602726
		Elevation:	4764 (ft)

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1000	10		7.34	17.0	720	CLEAR	N	SOME SEDIMENT
1005	"		7.47	17.8	716	"	"	"
1010	"		7.45	20.2	717	"	"	"
1015	"		7.43	20.2	714	CLOUDY	N	BROWNISH and SEDIMENT

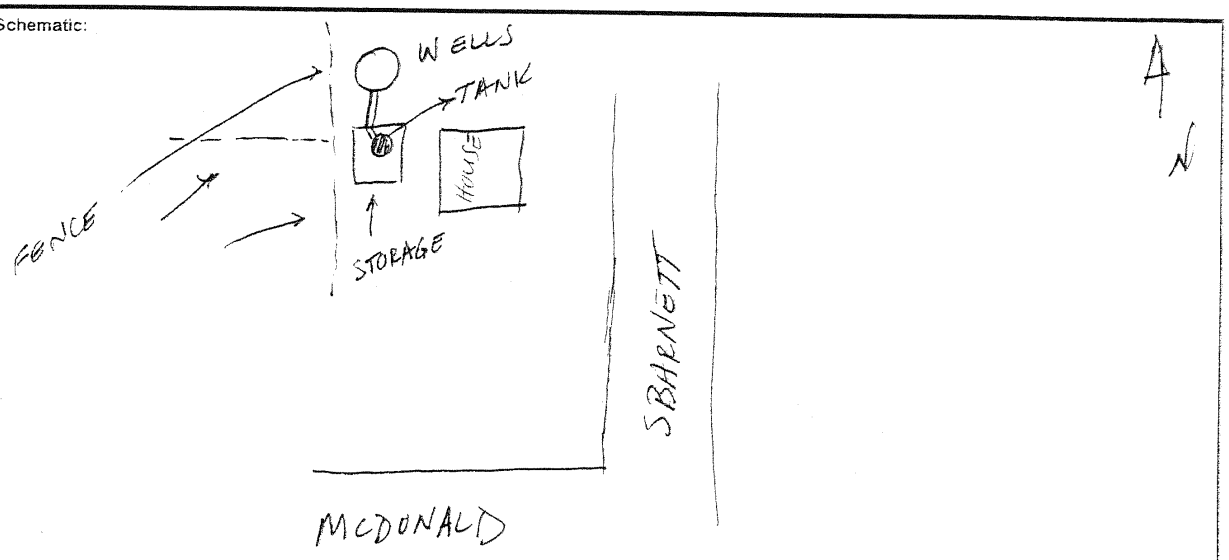
TOTAL DISCHARGE = 2006.

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
BLOMMER	1020	PLASTIC	250	1	300.0	N	—

Additional Comments: ONLY ONE WELL WAS FOUND ON THE PROPERTY AND IT WAS IDED AS "BLOMMER"

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	CHAMBERS	Date:	3-6-08
ADWR No.	55-629807	Weather:	sunny, cool
Location:	3792 S. Towner	Collected By:	KW + MA

WELL DATA

Well Depth (ft bls):	245	Static Water Level (ft bmp):	— unable to measure
Casing Diameter (in):	6	Date/Time:	due to well design
Well Use:	domestic	Point of Measurement:	—
3 Casing Volumes:	unknown	GPS:	UTM 3467385 x 0600024
		Elevation:	4592

FIELD SAMPLING DATA

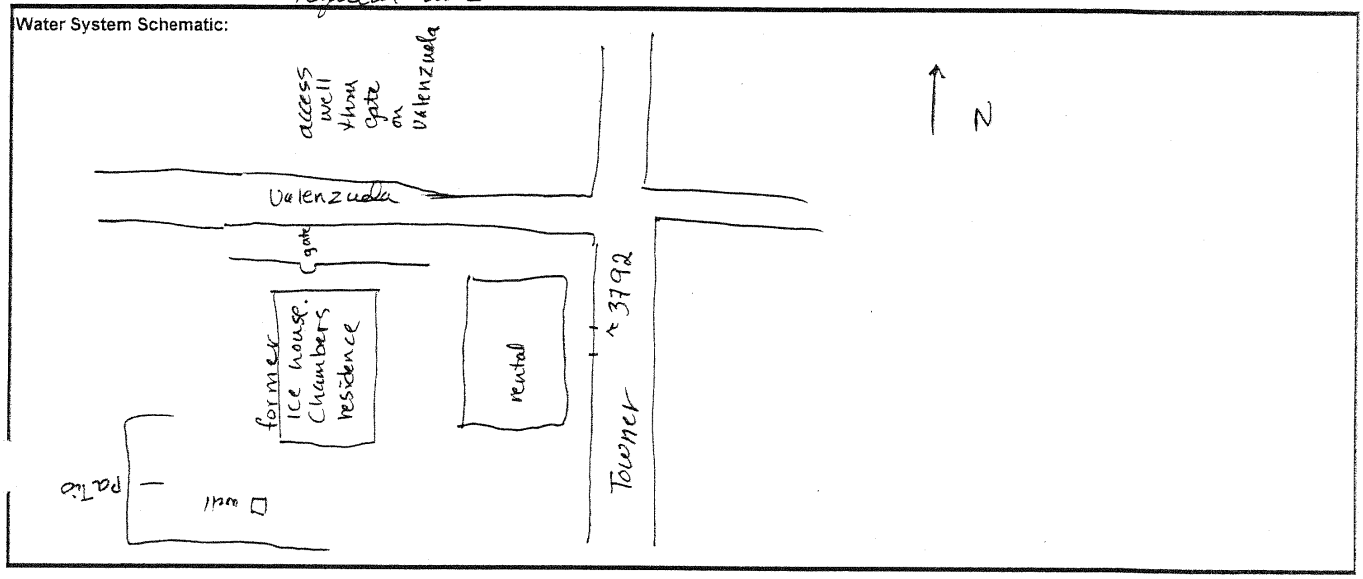
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
930	5	0	7.43	13.1	415	~~Non~~ clear	None	
932	5	10	7.60	16.4	411	"	"	
937	5	35	7.70	17.4	408	"	"	
942	5	60	7.72	17.5	408	"	"	
947	5	85	7.73	17.8	408	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
CHAMBERS	0950	plastic	250	1	300.0	N	filtered
DUP030608	"	"	"	1	300.0	N	"

Additional Comments: FB030608 — Former Sloan property. Old address before the big re-numbering was 221 D Street. D Street now is Towner. Purge for stability. Well in regular use

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	COOPER, Charles	Date:	03/04/08
ADWR No.	55-637069	Weather:	sunny, cool
Location:	1497 W. Purdy Lane	Collected By:	KW + MA

WELL DATA

Well Depth (ft bls):	220	Static Water Level (ft bmp):	155.08 bTS
Casing Diameter (in):	6	Date/Time:	03/04/08 8:03
Well Use:	domestic	Point of Measurement:	T.O.C.
3 Casing Volumes:	95.4x3=286	GPS:	12R 0601350 E 3468915
		Elevation:	4607

FIELD SAMPLING DATA

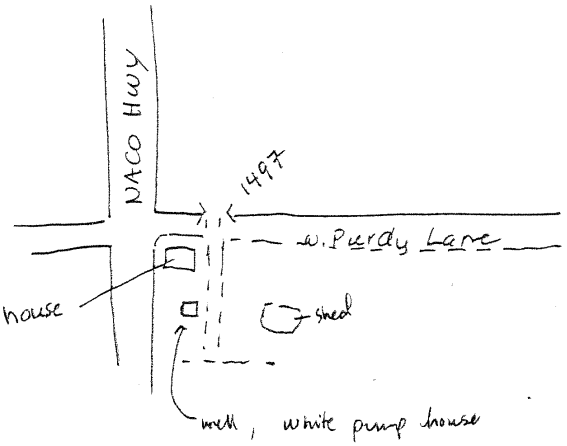
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
8:22	6	6	6.95	19.5	1902	clear	none	few light brown flakes
8:26	"	30	7.01	19.9	1914	"	"	very few flakes
8:30	"	54	7.02	19.9	1914	"	"	" " "
8:34	"	78	7.05	20.4	1908	"	"	" " "
8:41	"	120	7.05	20.0	1910	"	"	no more flakes
8:48	"	162	7.03	20.9	1909	"	"	"
8:55	"	204	7.02	20.8	1892	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
COOPER, C	9:00	plastic	250	1	300.0	N	filtered

Additional Comments: Family of 4, well is well used. When pump is on it pushes water into leaking u.g. pipe behind shed as well as hose. Discharge is therefore greater overall than 7gpm from bib

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	COOPER, Teresa	Date:	2-14-08
ADWR No.	55- 623564	Weather:	windy, pt cloudy
Location:	2171 S. Naco Hwy San Jose	Collected By:	KW & AP

WELL DATA

Well Depth (ft bls):	325	Static Water Level (ft bmp):	unable to measure
Casing Diameter (in):	6"	Date/Time:	2-14-08
Well Use:	domestic	Point of Measurement:	—
3 Casing Volumes:		GPS:	UTM 3471687 12R 0602138
		Elevation:	4759

FIELD SAMPLING DATA

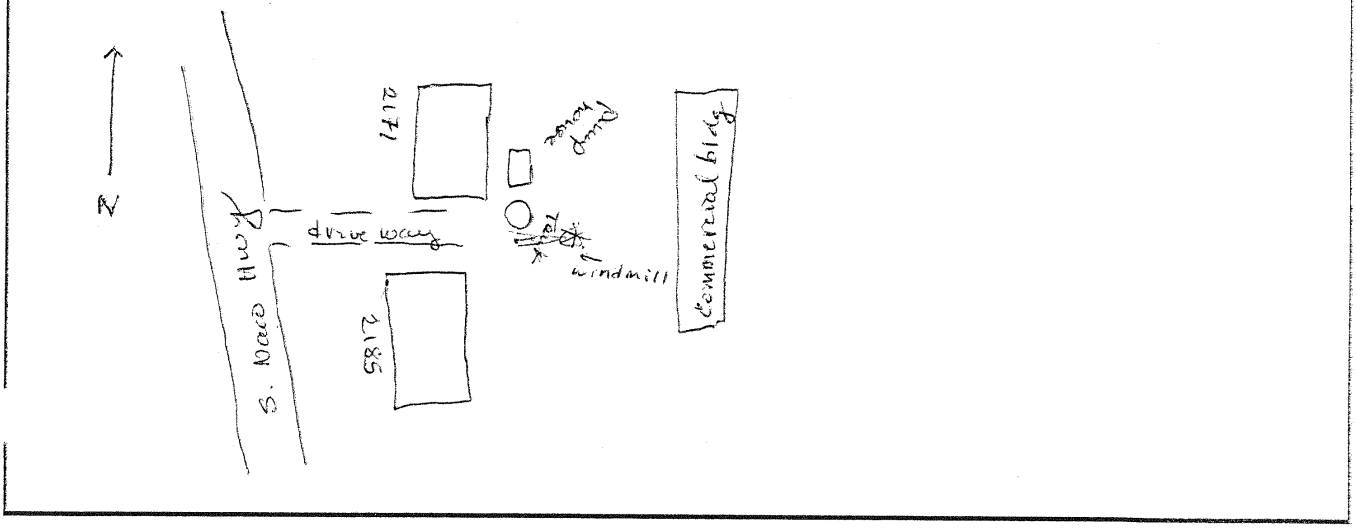
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
9:53	—	—	7.63	14.1	371	clear	none	composite sal
								few brown flakey
								sediments

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
COOPER	10:00	plastic	HS/HP/SO⁴	3	300.0	Y/N/N	composite

Additional Comments: No access to take WL or sample from well head. Will take composite sample from storage tank. Pressure tank on/off ~ every 5 minutes. 3 people + one commercial venture using this well

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
ell ID:	Dodson	Date:	2/28/08
ADWR No.	55-644927	Weather:	Overcast, Windy
Location:	235 Purdy Lane Bisbee AZ 85603	Collected By:	Arneson / Thomson

WELL DATA

Well Depth (ft bls):	200' bls	Static Water Level (ft bmp):	74' bls measured on 6-2002
Casing Diameter (in):	6"	Date/Time:	2/28/08 / NA
Well Use:	Domestic Supply	Point of Measurement:	Top of Casing
3 Casing Volumes:	587 gal	GPS:	12R 0622599 UTM 3469065
		Elevation:	4644 amsl

FIELD SAMPLING DATA

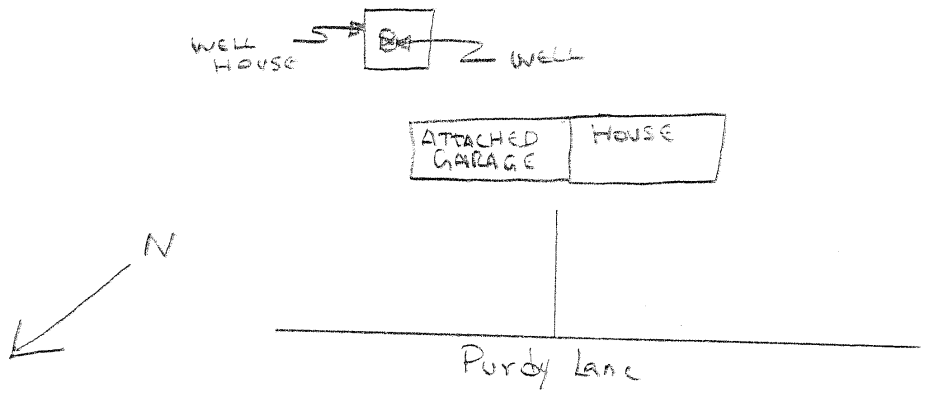
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (uScm)	Color	Odor	Comments
1136	3	3	7.48	14.1	879	Clear	None	1135 opened back up
1140	3	15	7.56	17.6	868			
1144	3	27	7.60	18.1	858			
1147	3	36	7.61	17.8	857	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
DODSON	1150	Plastic	1L/1L	3	300.0	HNO3 None	

Additional Comments: Could not sound well as probe was too large for access hole in well can. → Purged well until Ph/EC and Temp parameters stabilized

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	EAST	Date:	02/08/2008
ADWR No.	599796	Weather:	CLEAR
Location:	BISBEE JUNCTION	Collected By:	AP/MA

WELL DATA

Well Depth (ft bis):	125(ft)	Static Water Level (ft bmp):	50.20
Casing Diameter (in):	6"	Date/Time:	02/08/2008
Well Use:		Point of Measurement:	TOC
3 Casing Volumes:	110 x 3 = 330 ÷ 15 = 22 min	GPS: UTM:	3468713 12R 0607076
		Elevation:	

FIELD SAMPLING DATA

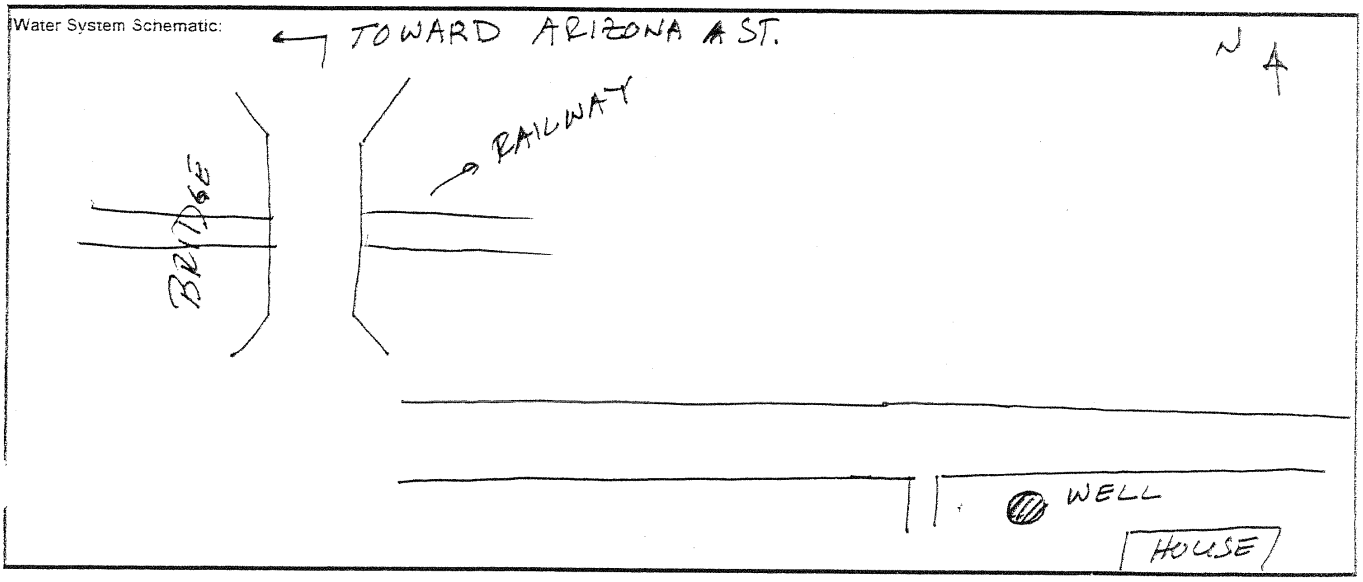
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
0839	15	15	7.07	17.4	562	CLEAR	N	
0841	"	45	7.27	19.1	423	"	"	
0845	"	105	7.42	19.6	416	"	"	
0848	"	150	7.46	19.8	420	"	"	
0856	"	180	7.45	19.9	423	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
EAST	0900	PLASTIC	125/250 500	3	300.0	Y/N/N	-

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	822001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	55-805641-L	Date:	3-11-08
ADWR No.	EPPELE	Weather:	clear, breezy
Location:	8 Mulberry Lane, Bisbee, AZ	Collected By:	MA

WELL DATA

Well Depth (ft bls):	265	Static Water Level (ft bmp):	29.52
Casing Diameter (in):	8"	Date/Time:	3-11-08
Well Use:	Domestic drinking water / Irrigation	Point of Measurement:	TOC
3 Casing Volumes:	615 = 1 case vol.	GPS:	12R 0607159 UTM 3469230
	3 casing Vol = 1845 gal = 205 min	Elevation:	4640

FIELD SAMPLING DATA

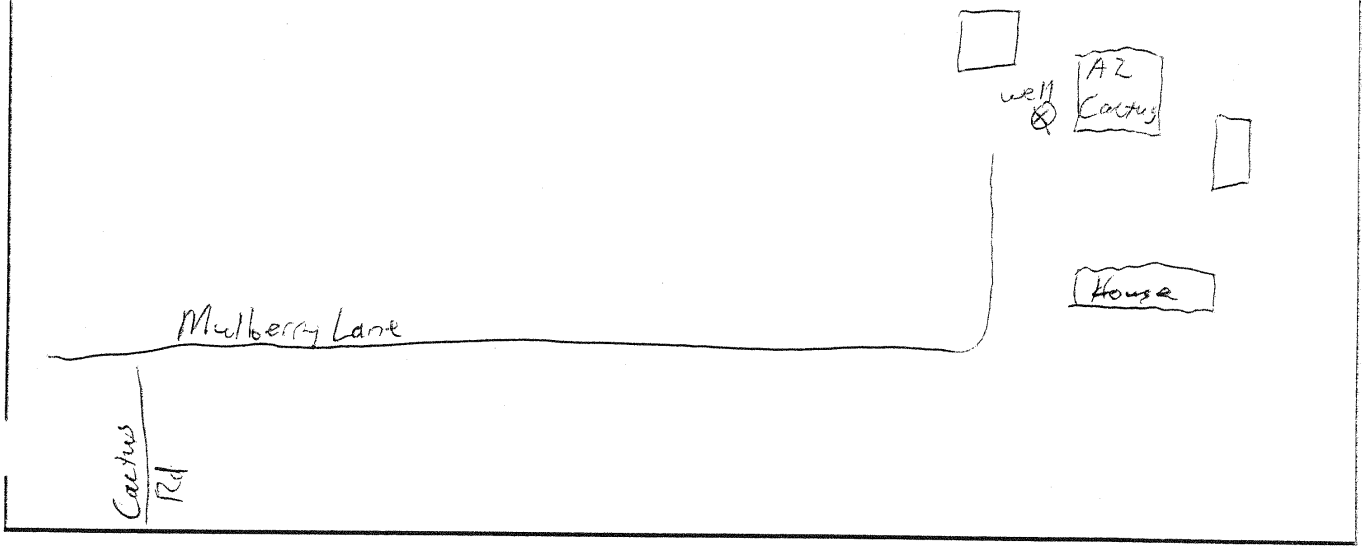
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1143	9	9	7.00	15.6	744	Clear	None	
1146	9	36	7.26	20.1	742			
1151	9	81	7.45	21.2	752			
1203	9	189	7.42	21.6	757			
1212	9	270	7.41	21.3	759			
1243	9	675	7.53	21.4	722			
1255	16	979	7.88	21.4	644	Slight tan	None	
1256	well pumped dry				Recovery			
1330			7.98	21.4	646			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
EPPELE 641	1330	Plastic	250 ml	1	300.0	None	Filtered 30f

Additional Comments: Difficult to determine casing dia. but is between 7" and 9"

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	FRANCO	Date:	02/06/2008
ADWR No.	500101	Weather:	CLEAR
Location:	3245 S. Franco Loop Bisbee, AZ	Collected By:	API MA

WELL DATA

Well Depth (ft bis):	200'	Static Water Level (ft bmp):	NA
Casing Diameter (in):	6"	Date/Time:	02/06/2008
Well Use:	DOMESTIC	Point of Measurement:	-
3 Casing Volumes:	59X3=177÷25=8 min	GPS: UTM	3468828 12R 0602851
		Elevation:	4619

FIELD SAMPLING DATA

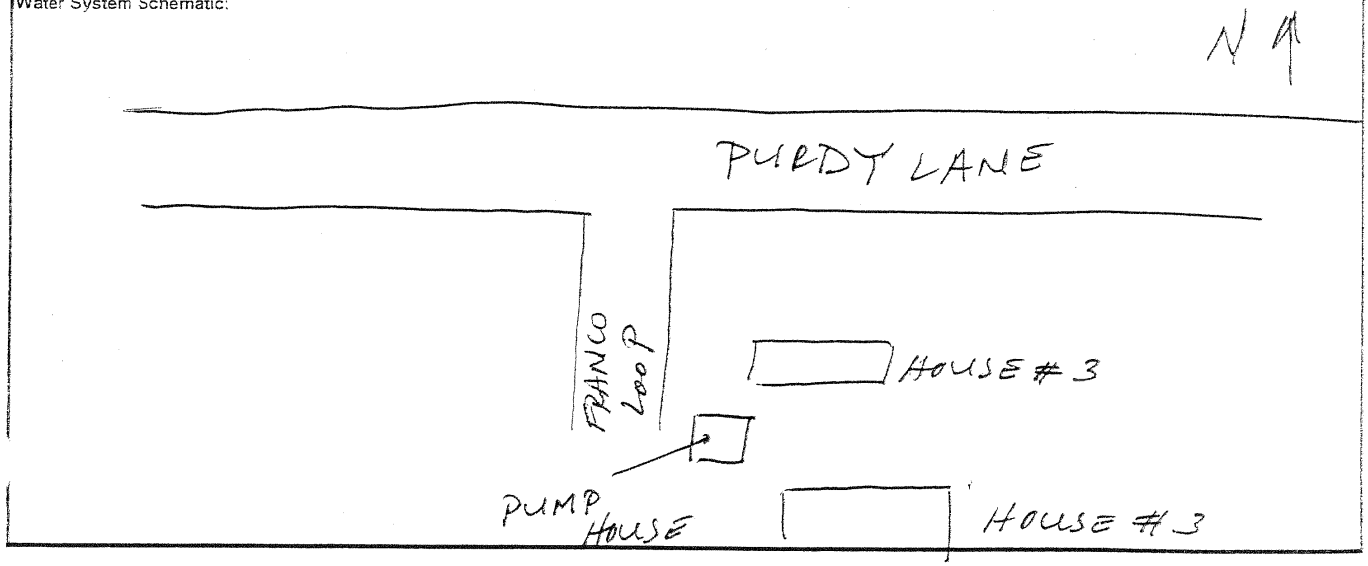
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1128	25		7.48	21.3	1306	~~CLEAR~~ Gray	N	—
1131	"		7.49	20.1	1300	CLEAR	"	—
1134	"		7.47	19.6	1301	"	"	—
TOTAL DISCHARGE = 2006.								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
FRANCO	1136	PLASTIC	250	1	300.0	N	

Additional Comments: DUE TO LACK OF A DIRECT OUTLET, A BIB FROM THE HOUSE #3 WAS USED - THE WATER IS USED BY FOUR HOUSES ON THIS PROPERTY
A piece of Rope is blocking hole for w/l measurements - could not remove

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	FULTZ	Date:	2/27/08
ADWR No.	55- 212447	Weather:	Sunny
Location:	694 E Border Rd Bisbee Junction	Collected By:	KW & MA

WELL DATA

Well Depth (ft bls):	300	Static Water Level (ft bmp):	unable to measure - port hole too tight
Casing Diameter (in):	8	Date/Time:	2/27/08 —
Well Use:	domestic	Point of Measurement:	T.O.C
3 Casing Volumes:	460 gal = 1 casing x3 = 1379	GPS:	12R 0607151 x UTM 3469068
		Elevation:	4694

FIELD SAMPLING DATA

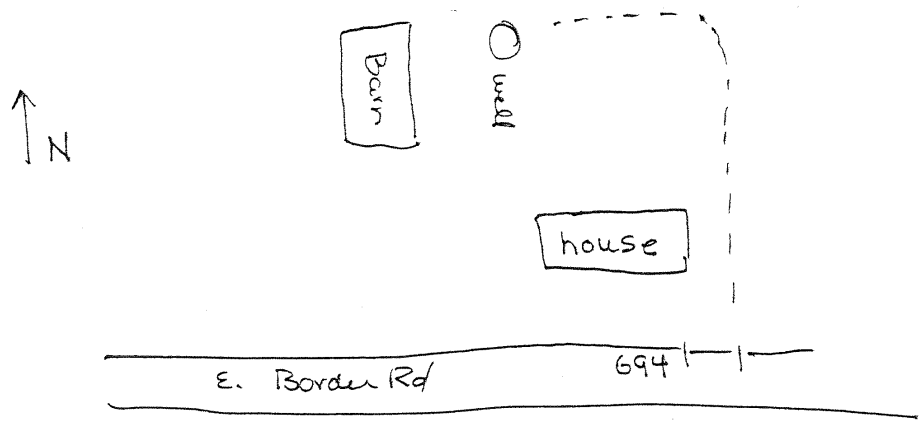
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
15:13	10gpm	10	6.73	18.7	1813	none	none	
15:18		60	6.76	20.6	1824	"	"	
15:23		110	6.78	21.3	1837	"	"	
15:28		160	6.80	21.8	1822	"	"	
15:33		210	6.81	21.7	1818	"	"	
15:38		260	7.03	21.2	1809	"	"	
15:42		310	6.76	21.2	1816	"	"	
15:45		340	6.76	21.1	1827	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
FULTZ	15:45	plastic	250	1	300.0	N	filtered

Additional Comments: 2nd GPS reading 12R 0607151. 2006 WL of 124' used for casing volume calculations. House is still connected to NWC. Well drilled in 2006 - used for animals irrigation + some human drinking

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	GARNER 635	Date:	02/04/2008
ADWR No.	55-587635	Weather:	CLOUDY - WINDY
Location:	1027 W. PURDY LANE Bisbee, AZ	Collected By:	AP/MA

WELL DATA

Well Depth (ft bls):	680	Static Water Level (ft bmp):	193.20
Casing Diameter (in):	12"	Date/Time:	02/04/2008
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	2960X3 = 8580 @ 20gpm	GPS: UTM:	3468972 12R 0602664
730 min purge		Elevation:	4616

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
11:45	20	100	7.71	18.1	473	CLEAR	N	Open b.h at 11:40
11:50	"	200	7.68	21.0	474	"	"	
11:55	"	300	7.70	21.3	478	"	"	
12:00	"	400	7.67	21.3	476	"	"	
12:05	"	500	7.61	22.7	479	"	"	
TOTAL DISCHARGE =						500 G.		

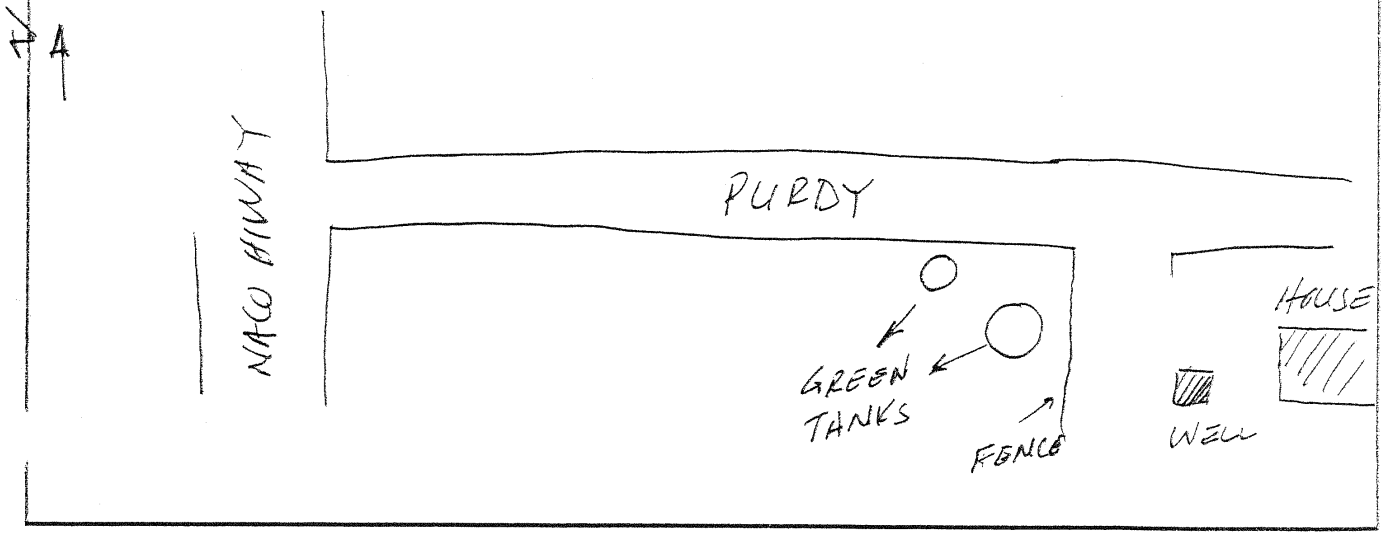
SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
GARNER635	1210	PLASTIC	125/250	1/1	300.0	Y/N	
GARNER635	1210	PLASTIC	500	1	300.0	N	

Additional Comments:

* AKA GW-47

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
ell ID:	HOBAN	Date:	2/27/08
ADWR No.	805290 805290	Weather:	sunny, breezy
Location:	1385 W. Purdy Lane	Collected By:	KW + MA

WELL DATA

Well Depth (ft bls):	316	Static Water Level (ft bmp):	163.05
Casing Diameter (in):	6	Date/Time:	2/27/08 11:09
Well Use:	domestic	Point of Measurement:	T.O.C.
3 Casing Volumes:	225gal x 3 = 675 gal	GPS:	WTM 346887 8 12R 0601706
	45 min	Elevation:	4588

FIELD SAMPLING DATA

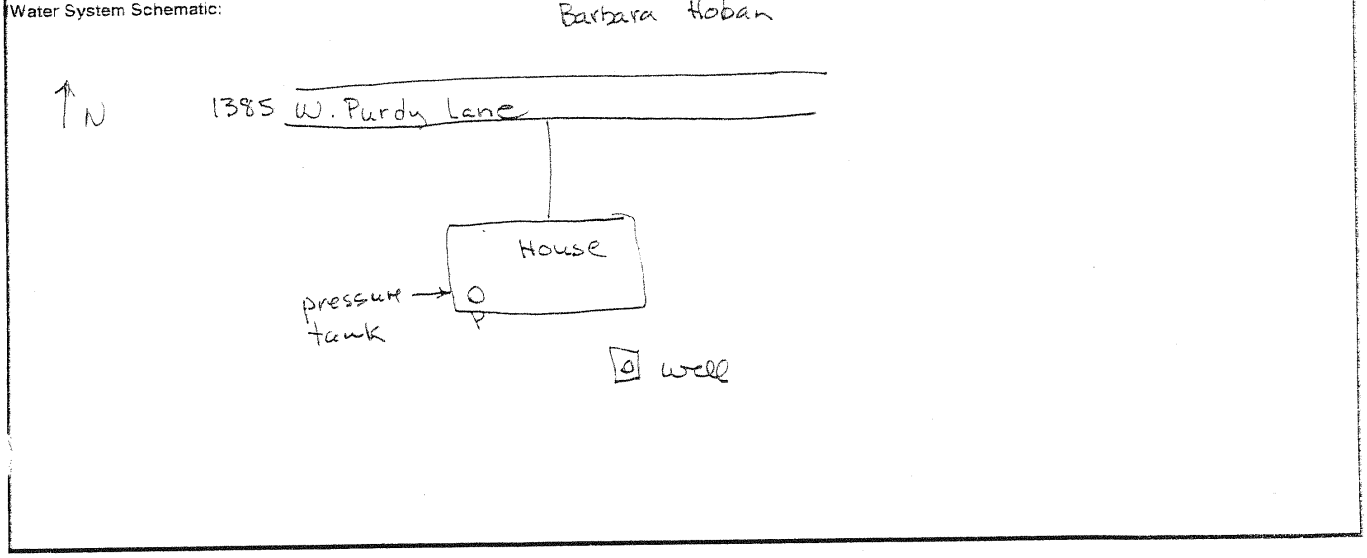
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
11:26	15	45	7.03	19.7	1317	clear	none	
11:31		120	7.00	21.4	1304	"	"	
11:36		795	6.99	21.7	1266	"	"	
11:41		270	7.03	21.5	1283	"	"	
11:46		345	6.98	21.9	1335	"	"	
11:51		420	7.00	21.9	1376	"	"	
11:56		495	6.92	22.2	1377	"	"	
12:01		570	6.94	22.1	1369	"	"	
12:06		645	6.93	22.2	1362	"	"	
12:11		720	6.93	22.1	1359			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
HOBAN	12:15	plastic	250	1	300.0	N	filtered

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	HOWARD	Date:	3-4-08
ADWR No.	No Record	Weather:	Sunny, Cool
Location:	3269 S. Naco Hwy	Collected By:	MH/KW

WELL DATA

Well Depth (ft bls):	est 200' per owner	Static Water Level (ft bmp):	150.10
Casing Diameter (in):	6"	Date/Time:	3-4-08
Well Use:	domestic	Point of Measurement:	TOC
3 Casing Volumes:	733 x 3 = 220	GPS:	601291 N 3468769 E
		Elevation:	4595

FIELD SAMPLING DATA

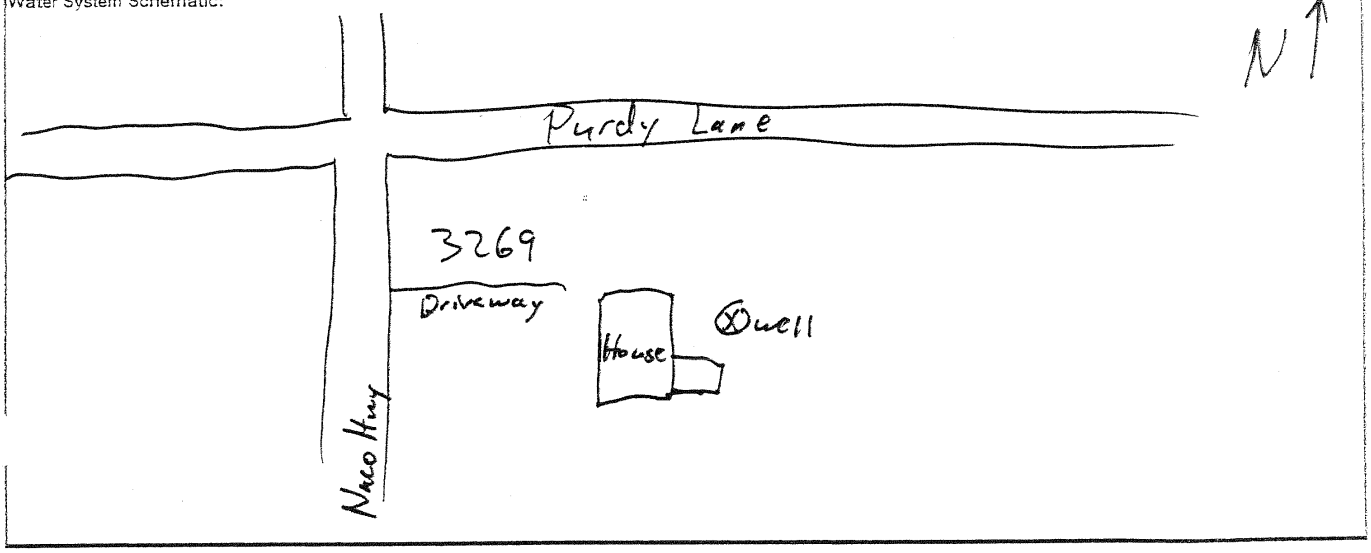
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
17:52	10	16	6.96	20.0	1259	Clear	No	
17:54	"	30	7.03	20.4	1199	"	"	
17:58	"	70	7.04	20.6	1267	"	"	
18:01	"	100	7.06	20.5	1288	"	"	
18:04	"	130	7.06	20.4	1280	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
HOWARD	18:10	Plastic	250	1	300.0	N	

Additional Comments: Receiving bottled water for drinking. Well is in regular use.

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	~~AP 209744~~ KEEFER	Date:	02/06/2008
ADWR No.	209744	Weather:	CLEAR
Location:	Naco, AZ	Collected By:	AP/MA

WELL DATA

Well Depth (ft bis):	250'	Static Water Level (ft bmp):	134.67
Casing Diameter (in):	NA	Date/Time:	02/06/2008
Well Use:	Domestic	Point of Measurement:	toc
3 Casing Volumes:	PURGED TILL STABILITY	GPS: UTM:	346812 mE 3599881
		Elevation:	4567

FIELD SAMPLING DATA

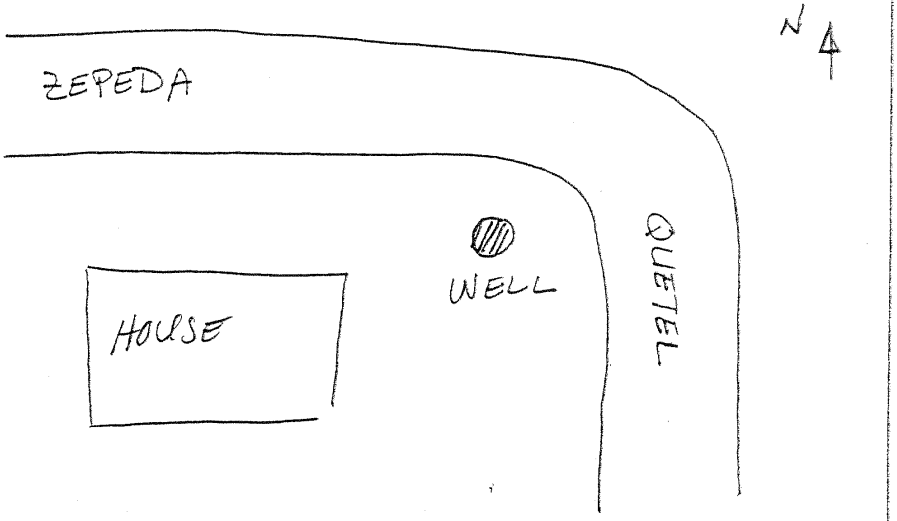
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
0946	14	14	6.75	12.5	396	clear	None	open bib at 845
0450	"	70	7.29	17.2	354	"	"	
0452	"		7.53	19.1	372	"	"	
0855	"		7.71	16.9	367	"	"	
0858	"		7.70	19.0	378	"	"	
TOTAL		~~GAL~~ DISCHARGE =					~~286~~ 336	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
KEEFER	0900	Plastic	250	1	300.0	None	

Additional Comments: This is the only well on this property

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	MCCONNELL 268 Virgin	Date:	2/22/08
ADWR No.	55-570268	Weather:	Cloudy
Location:	1463 Purdy Lane Bisbee, AZ 85603	Collected By:	Arnason / Thompson

WELL DATA

Well Depth (ft bls):	216	Static Water Level (ft bmp):	156.15
Casing Diameter (in):	6"	Date/Time:	2-22-08 / 13:15
Well Use:	Domestic (not currently in use)	Point of Measurement:	Top of Casing
3 Casing Volumes:	264 gal	GPS:	12R 0601463 UTM 3460944
		Elevation:	4604' AMSL

FIELD SAMPLING DATA

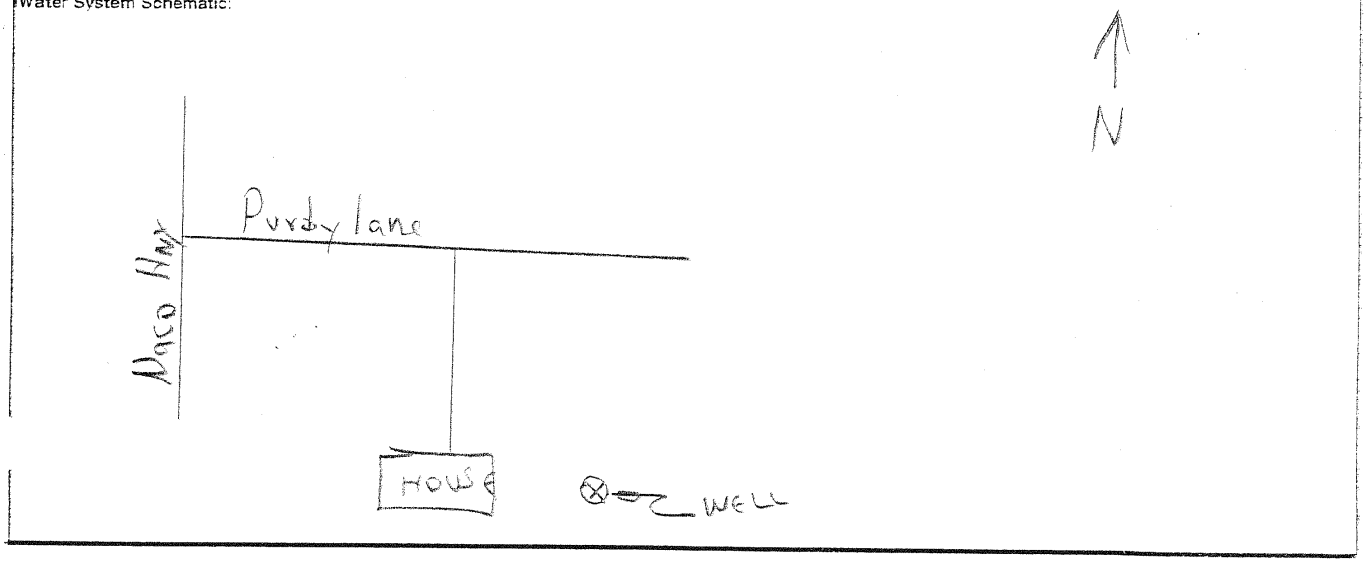
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (uScm)	Color	Odor	Comments
1330	10	10	7.21	16.2	1424	Clear	None	ON at 1320
1337	10	40	7.26	19.7	1437	"	"	
1337	10	80	7.19	21.1	1435	"	"	
1343	10	140	7.21	21.1	1435	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
MCCONNELL 268	1350	Plastic	250	1	300.0	None	Filtered

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	~~Olivarria~~ (Metzler)	Date:	03-05-08
ADWR No.	35-71891 no 55 reg #	Weather:	sunny breezy cool
Location:	2313 Sunflower St Bisbee (SJ area)	Collected By:	MA + KW

WELL DATA

Well Depth (ft bls):	351	Static Water Level (ft bmp):	288.30
Casing Diameter (in):	6	Date/Time:	03.05.08 9:10
Well Use:	domestic	Point of Measurement:	T.O.C
3 Casing Volumes:	92.5 gal x 3 = 277.6	GPS:	12R 0602094 utm 3471380
yard is flooding - parameters stable		Elevation:	4733

FIELD SAMPLING DATA

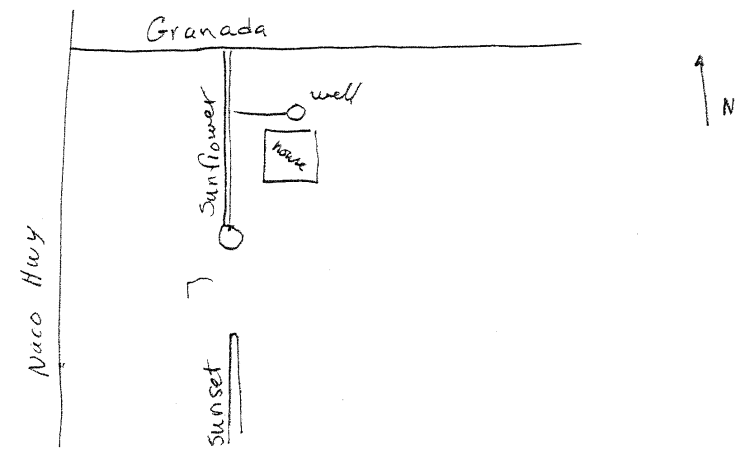
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
9:34	5	0	7.26	19.2	1046	clear	none	
9:39	"	25	7.25	21.0	1071	"	"	
9:44	"	50	7.26	21.5	1058	"	"	
9:49	"	75	7.25	21.9	1063	"	"	
9:54	"	100	7.27	21.5	1055	"	"	
9:59	"	125	7.26	21.7	1071	"	"	
10:04	"	150	7.27	21.6	1055			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
METZLER	10:10	plastic	250	1	300.0	N	

Additional Comments: D.24.24.5 dbb 35-71891 Metzler & Olivarria residence. Well used well by several family members. Parameters stable, yard flooding

Water System Schematic:



Sunset + Sunflower do not connect to one another but are N-S extensions

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

oject No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	TM-15 MILLER	Date:	2/27/08
ADWR No.	522699	Weather:	sunny breezy
Location:	D-24-24-6 bcc Willson Road	Collected By:	MA + KW

WELL DATA

Well Depth (ft bls):	325	Static Water Level (ft bmp):	294.90
Casing Diameter (in):	4"	Date/Time:	2/27/08 9:20
Well Use:	monitoring (Domestic)	Point of Measurement:	T.O.C
3 Casing Volumes:	30 x 3 = 90 (161)	GPS:	UTM 3471436 12R 0599618
22 gal x 3 = 61 = 3 Casing V	9 min purge	Elevation:	4765

FIELD SAMPLING DATA

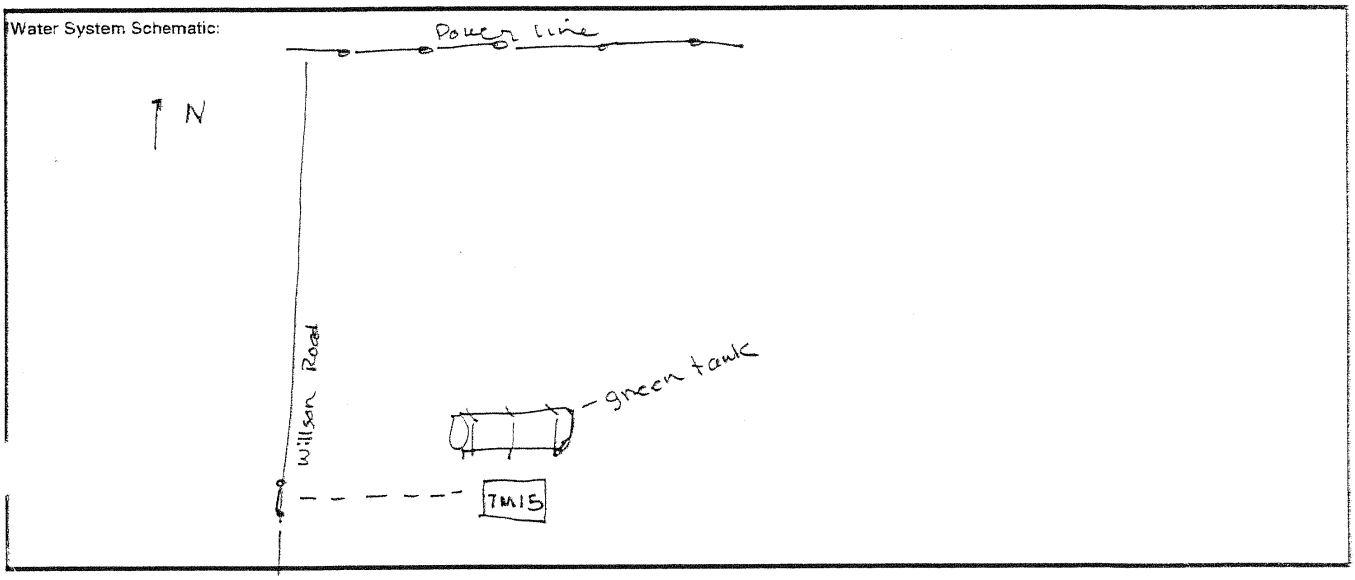
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
9:56	7	0	7.71	18.9	345	clear	none	
9:58		14	7.89	21.2	348	"	"	
10:01		35	7.81	21.7	346	"	"	
10:04		63	7.73	21.8	344	"	"	
10:06	70	77	7.66	21.9	344	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
TM-15 MILLER	10:07	plastic	125/250/250	3	300.0	Y/N/N	

Additional Comments: Sounder hung up @ 147'

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872021.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	Moore	Date:	2-20-08
ADWR No.	55-539947	Weather:	Clear
Location:	3606 Wilson Road Naco, AZ	Collected By:	Arnason / Thompson

WELL DATA

Well Depth (ft bls):	220	Static Water Level (ft bmp):	6/26/97 = 125' bloc (historic)
Casing Diameter (in):	6	Date/Time:	2-20-08 / NA
Well Use:	Domestic Supply	Point of Measurement:	Top of Casing
3 Casing Volumes:	419 gallons	GPS:	12R 0549560 UTM 3467945
		Elevation:	4574 AMSL

FIELD SAMPLING DATA

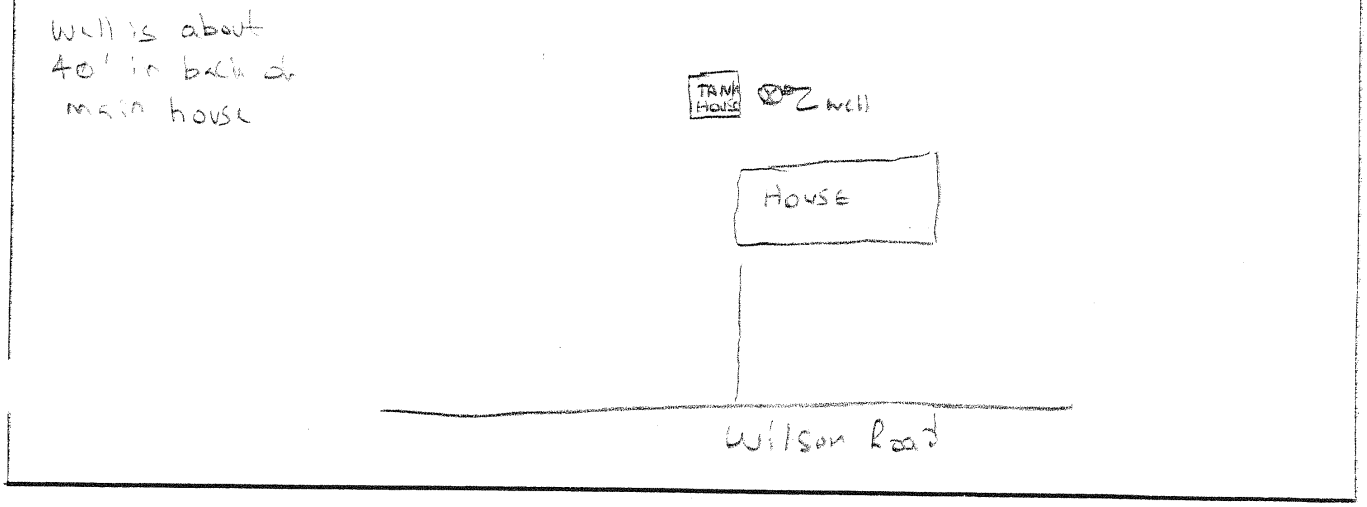
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1023	6	6	7.18	21.6	371	Clear	None	Pump on at 1022
1024	6	12 30	7.46	22.3	360	"	"	
1027	6	24	7.59	22.3	358	"	"	
1031	6	54 OK	7.63	22.2	363	"	"	
1035	6	78 OK	7.7	22.2	366	"	"	
1040	6	102 OK	7.69	22.2	362	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
Moore	1045	Plastic	250ml	1	300.1	None	

Additional Comments: Unable to Sound well. Sounder dont go narrow. We were looking for keys and pulled on cell contact box

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	87 2001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	NOTEMAN	Date:	02/05/2008
ADWR No.	212483	Weather:	CLEAR
Location:	Arizona St., Bisbee Junction	Collected By:	AD/MA

WELL DATA

Well Depth (ft bls):	470	Static Water Level (ft bmp):	330 (12-30-07)
Casing Diameter (in):	5	Date/Time:	02/05/2008
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	143 X 3 = 429 G 429 ÷ 10 = 43 min	GPS: UTM:	371575 12 R 0606045
		Elevation:	

FIELD SAMPLING DATA

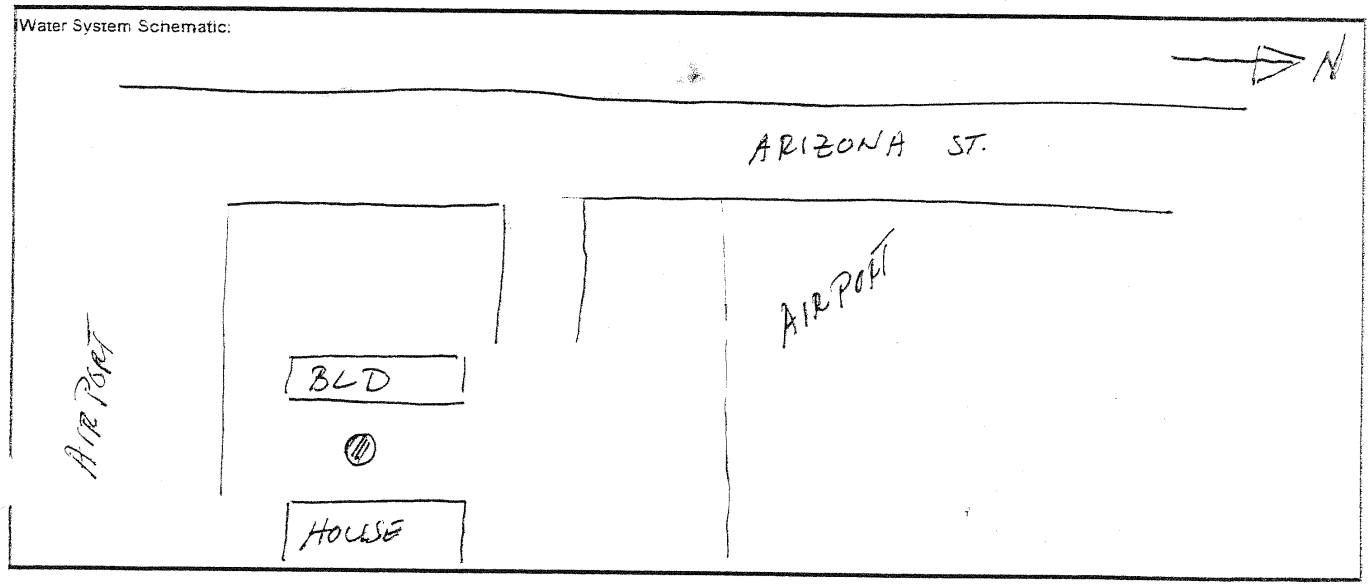
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1155	10		6.74	12.2	1311	CLEAR	N	—
1200	"		6.71	19.9	1323			
1205	"		6.70	18.9	1307			
1210	"		6.70	19.9	1317			
TOTAL DISCHARGE = 200 G.								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
NOTEMAN	1215	PLASTIC	250	1	300	N	

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	Osborn	Date:	02/25/08
ADWR No.	643436	Weather:	Sunny, windy
Location:	2429 S. Swan Rd Bb AZ	Collected By:	MA + KW

WELL DATA

Well Depth (ft bis):	258	Static Water Level (ft bmp):	obstructed @ 5.5'
Casing Diameter (in):	8	Date/Time:	02/25/07 14:05
Well Use:	domestic	Point of Measurement:	~~obstructed @ 5.5~~ TOC
3 Casing Volumes:	est 73 x 22l	GPS:	UTM 347 0274 12R 0607030
		Elevation:	4712

FIELD SAMPLING DATA

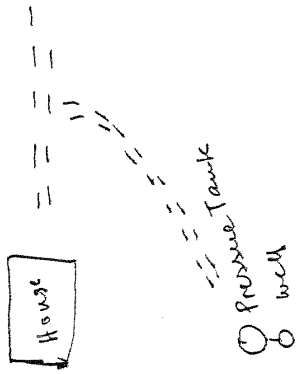
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
14:12	10	10	7.07	21.8	508	none	none	
14:15	10	40	7.31	22.2	506	"	"	
14:18	10	70	7.34	22.2	512	"	"	
14:21	10	100	7.34	22.5	510	"	"	
14:24	10	130	7.36	22.4	508	"	"	
14:27	10	160	7.35	22.4	508	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
OSBORNE	14.30	Plastic	125/250/250	3	300.0	Y/N/N	

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	PALMER	Date:	2-14-08
ADWR No.	55-578819	Weather:	windy + sunny
Location:	D-24-24-12 cbc of Beechcraft Rd	Collected By:	KW + AP

WELL DATA

Well Depth (ft bls):	220	Static Water Level (ft bmp):	cannot access
Casing Diameter (in):	6	Date/Time:	2-14-08 13:20
Well Use:	domestic	Point of Measurement:	—
3 Casing Volumes:	THE SAMPLE WAS TAKEN FROM THE TANK.	GPS:	UTM 3469485 12R 0607775
		Elevation:	4652

FIELD SAMPLING DATA

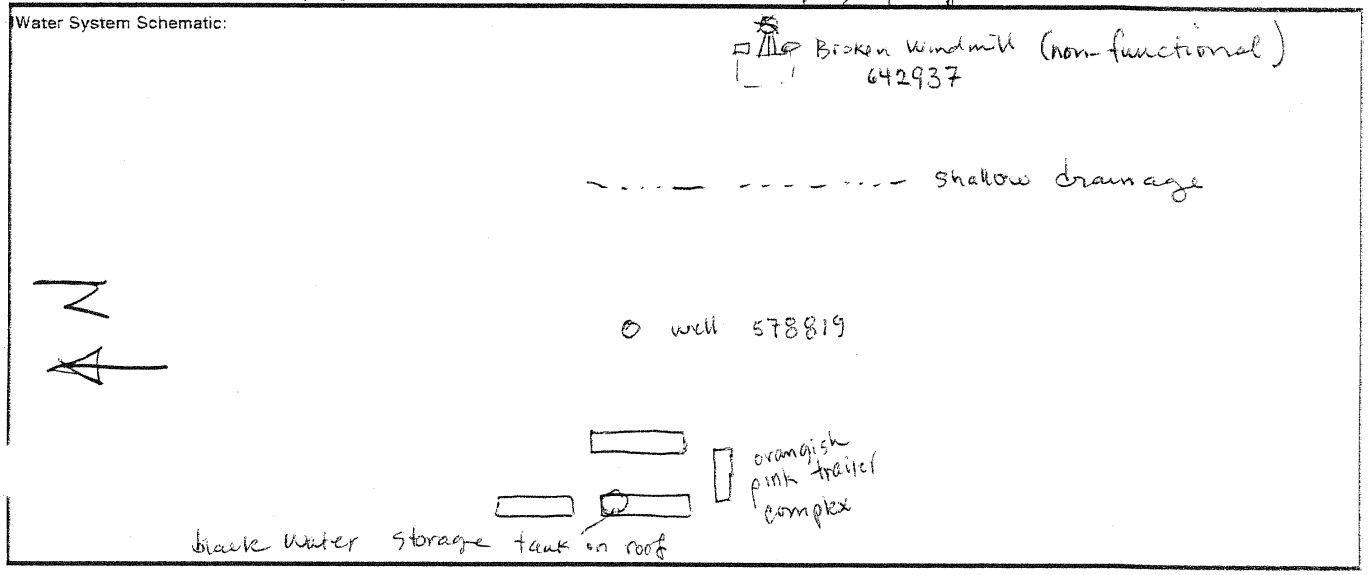
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
13:40	—	NA	7.91	17.5	435	none	none	composite spl

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
PALMER 819	13:50	plastic	125/250/500	3	300.0	Y/N/N	composite from tank

Additional Comments: Note we are running full suite on water from 578819 because 642937 stated to be regional GWM well is non-functional. 578819 may lie on or outside 1 mile radius based on topography

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720022	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	PANAGAKOS	Date:	4-21-08
ADWR No.	35-76413	Weather:	Clear
Location:	500 Purdy Lane	Collected By:	MH

WELL DATA

Well Depth (ft bls):	200'	Static Water Level (ft bmp):	No Access
Casing Diameter (in):	8"	Date/Time:	4-21-08 / 8:40
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	NA	GPS:	3469317 12R 0605307
		Elevation:	4694

FIELD SAMPLING DATA

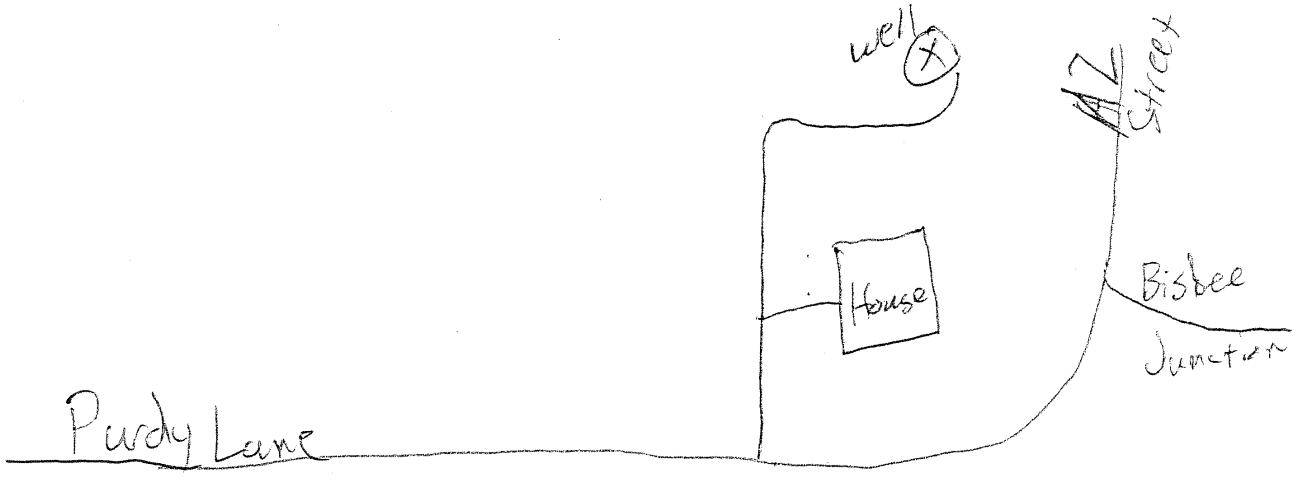
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
9:01	4gpm	4	6.73	20.5	1226	Clear	None	open bib at 9:00
9:04	"	16	6.77	20.6	1235	"	"	Pump is on
9:07	"	28	6.79	20.5	1236	"	"	
9:10	"	40	6.79	20.5	1232	"	"	
9:13	"	52	6.80	20.5	1228	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
PANAGAKOS	9:15	Plastic	250 ml	1	300.0	None	Filtered

Additional Comments: Pump cycled twice during purge, and was running upon arrival

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	87a001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	PARRA	Date:	02/11/2008
ADWR No.	576415	Weather:	CLEAR
Location:	2356 S. HOPE, NACO HWY	Collected By:	AP / KW

WELL DATA

Well Depth (ft bls):	355'	Static Water Level (ft bmp):	263' from 1999
Casing Diameter (in):	6"	Date/Time:	02/11/2008
Well Use:	DOMESTIC	Point of Measurement:	TOC
3 Casing Volumes:	135 X 3 = 405 - 10 = 40 min	GPS: UTM:	3471261 12 R 0602170
		Elevation:	4726(ft)

FIELD SAMPLING DATA

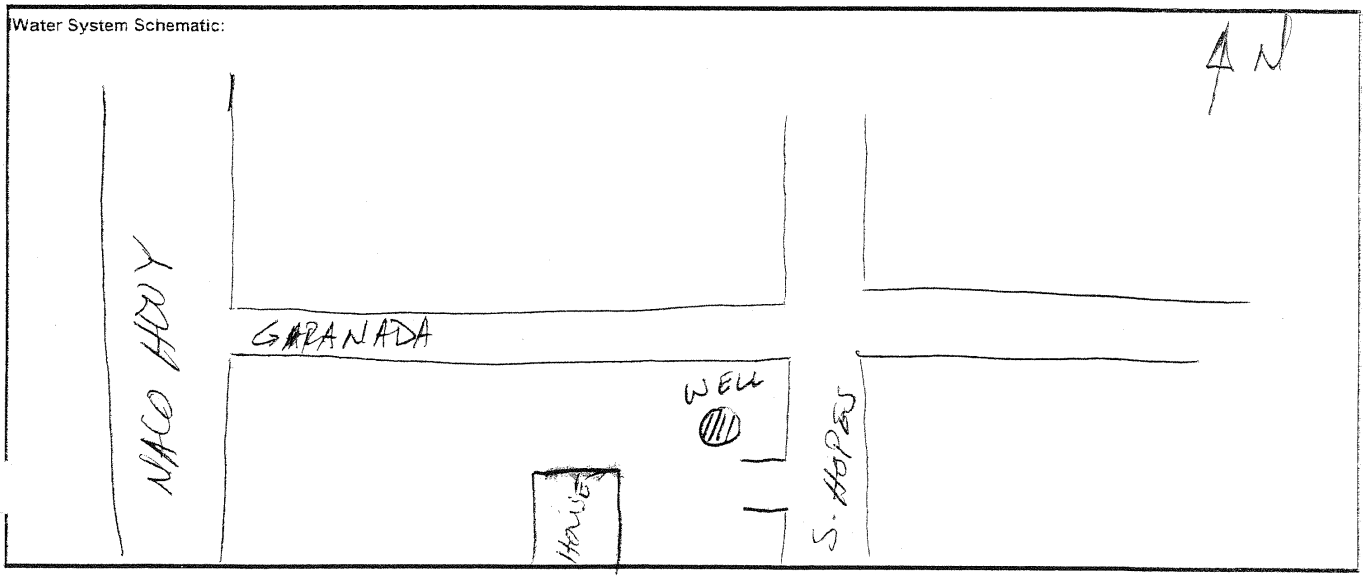
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1257	10		7.47	34.3	1090	CLEAR	N	
0102 pm	"		7.09	24.1	1063	"	"	
0107 pm	"		7.10	22.1	1063	"	"	
0112 pm	"		7.12	21.6	1064	"	"	
0117 PM	"		7.11	21.7	1062	"	"	
0123 pm	"		7.08	21.8	1067	"	"	
TOTAL DISCHARGE = 260								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
PARRA	1330	PLASTIC	125/250 500	3	300.0	Y/N/N	N

Additional Comments: THE SAMPLES WERE COLLECTED AT 1330 DUE TO THE STABLE PARAMETERS AND THE PROPERTY WAS FLOATED.

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	PIONKE	Date:	02/05/2008
ADWR No.	613395	Weather:	CLEAR
Location:	1633 Purdy Lane Off Purdy Lane West of Naco Hwy	Collected By:	~~AP~~/ MA

WELL DATA

Well Depth (ft bis):	330'	Static Water Level (ft bmp):	NA
Casing Diameter (in):	8"	Date/Time:	02/05/2008
Well Use:	DOMESTIC	Point of Measurement:	—
3 Casing Volumes:	PURGED TILL STABLE	GPS: UTM:	3468956 12R 0601048
		Elevation:	4592

FIELD SAMPLING DATA

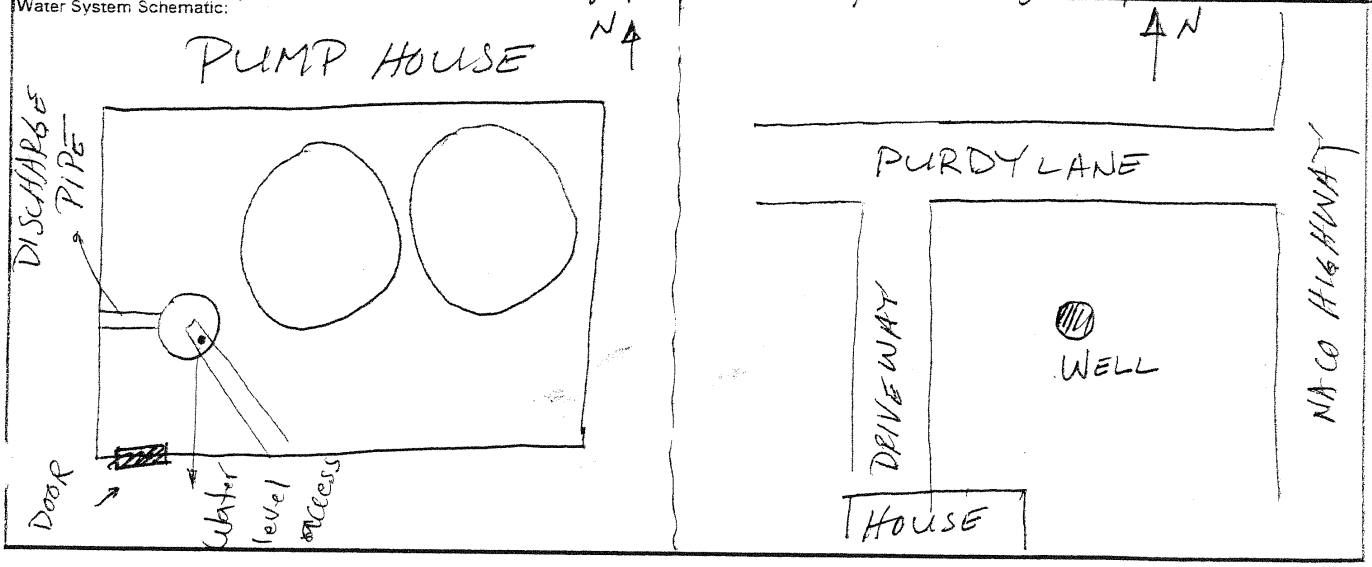
Time	Discnarge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
0955	15		7.38	15	1096	CLEAR	N	—
1000	"		7.40	19.7	936	"	"	—
1005	"		7.41	20.2	1015	"	"	—
1007	"		7.45	18.9	991	"	"	—
1010	"		7.45	19.9	904	"	"	—
1012	"		7.47	19.7	964	"	"	—
1015	"		7.53	19.9	910	"	"	—
TOTAL DISCHARGE = 330 G.								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
~~AP~~ PIONKE	1017	PLASTIC	500	1	300.0	N	

Additional Comments: Cannot obtain W/ as the plug on well head is covered by discharge pipe. This size requires the use of 1½" pipe reduced down for garden hose as the discharge, or sample port, to discharge away from pump house.

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	POOL	Date:	2/20/02
ADWR No.	55-~~519508~~ 509518	Weather:	Cloudy, Wind.
Location:	2831 Willson Rd Naco, AZ 85603	Collected By:	Arnescon

WELL DATA

Well Depth (ft bls):	313	Static Water Level (ft bmp):	204.22
Casing Diameter (in):	6"	Date/Time:	2-20-02 / 14:15
Well Use:	Domestic Supply	Point of Measurement:	Top of Casing
3 Casing Volumes:	479 Gal	GPS:	12R 0599682 UTM 3478015
		Elevation:	4630' AMSL

FIELD SAMPLING DATA

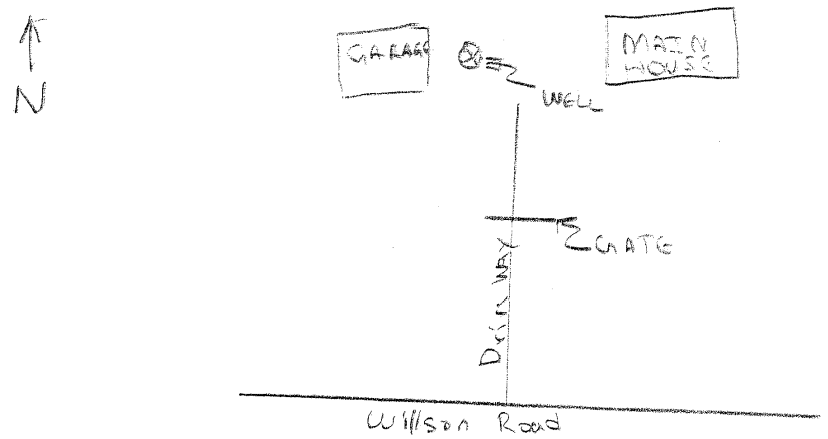
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1430	12	12	7.96	20.6	496	Clear	None	OPENED FLOW 1429
1433	12	48	7.95	20.9	496	"	"	
1439	12	108	8.16	20.6	497	"	"	
1441	12	144	8.01	20.9	497	"	"	
1446	12	204	7.95	20.9	497	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
POOL	1450	Plastic	250ml	1	300.1	None	SO4

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	55-216425	Date:	2-4-08
ADWR No.	RAMIREZ	Weather:	WINDY- CLOUDY
Location:	Dominguez St. Nuco, AZ	Collected By:	~~AP/MA~~

WELL DATA

Well Depth (ft bls):	300'	Static Water Level (ft bmp):	NA
Casing Diameter (in):	~~6"~~ 6"	Date/Time:	02/04/2008
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	PURGE FOR STABILITY	GPS:	UTM: 3467586 12 R 05-99731
		Elevation:	4594 ft

FIELD SAMPLING DATA

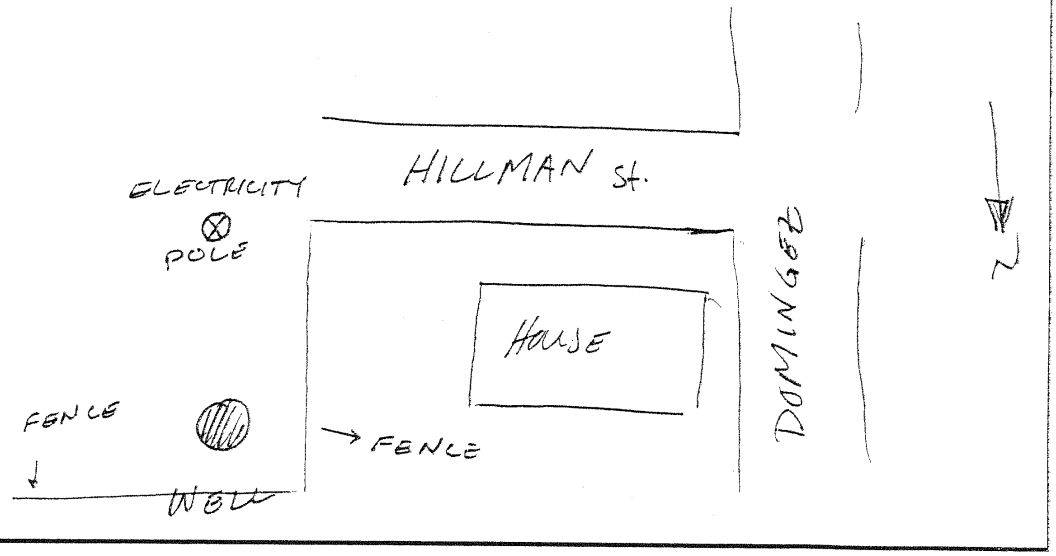
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
10:35	10	20	7.32	19.0	398	CLEAR	N	—
10:40	"	70	7.44	21.0	399	"	"	—
10:45	"	120	7.46	21.8	408	"	"	—
10:50	"	170	7.48	20.7	403	"	"	—
10:55	"	230	7.47	21.7	408	"	"	—

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
RAMIREZ	11:00	PLASTIC	250	1	300.0	N	

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	RAY	Date:	15 Feb 08
ADWR No.	803772	Weather:	RAIN
Location:	648 E MULBERRY LN	Collected By:	KW & AP

WELL DATA

Well Depth (ft bls):	100'	Static Water Level (ft bmp):	40.85
Casing Diameter (in):	8"	Date/Time:	15 Feb 08 9:48
Well Use:	domestic	Point of Measurement:	TOC
3 Casing Volumes:	154 x 3 = 462	GPS:	UTM 3469300 RR 0607083
		Elevation:	4652

FIELD SAMPLING DATA

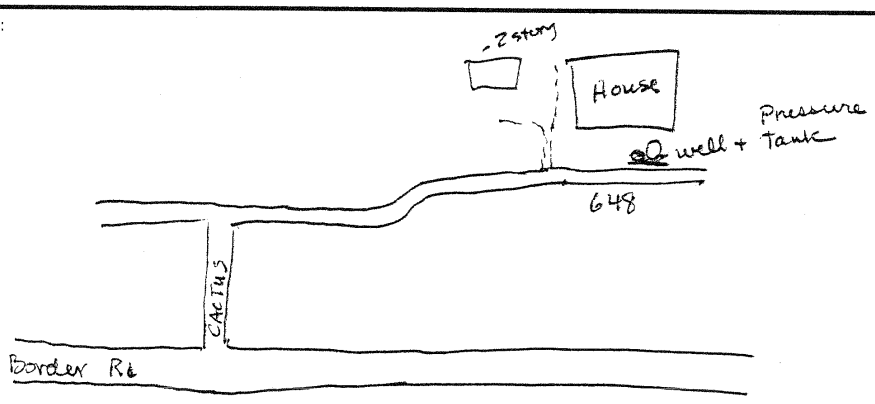
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
10:00	10	0	7.28	14.3	1587	clear	none	v. few flakes of rust
10:04	"	40	7.30	18.7	1609	"	"	"
10:10	"	100	7.31	17.9	1586	"	"	clear
10:14	"	140	7.33	19.1	1558	"	"	"
10:19	"	190	7.33	18.8	1556	"	"	"
10:24	"	240	7.30	19.1	1540	"	"	few rusty flakes

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
RAY	10:30	plastic	250	1	300.0	NO	

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	ROGERS 803	Date:	2-7-08
ADWR No.	641803	Weather:	Clear
Location:	Mule Deer Rd Naco, AZ	Collected By:	AP/MA

WELL DATA

Well Depth (ft bls):	300'	Static Water Level (ft bmp):	129.85
Casing Diameter (in):	6"	Date/Time:	2-7-08
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	250x3 = 750	GPS:	3468416 12R 600980
		Elevation:	4566

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1358	10		7.34	17.4	451	Clear	No	
1400	"		7.41	17.1	448	"	"	
1403	"		7.52	17.9	443	"	"	
1408	"		7.58	19.0	443	"	"	
1413	"		7.53	19.5	449	"	"	
1418	"		7.52	19.8	455	"	"	

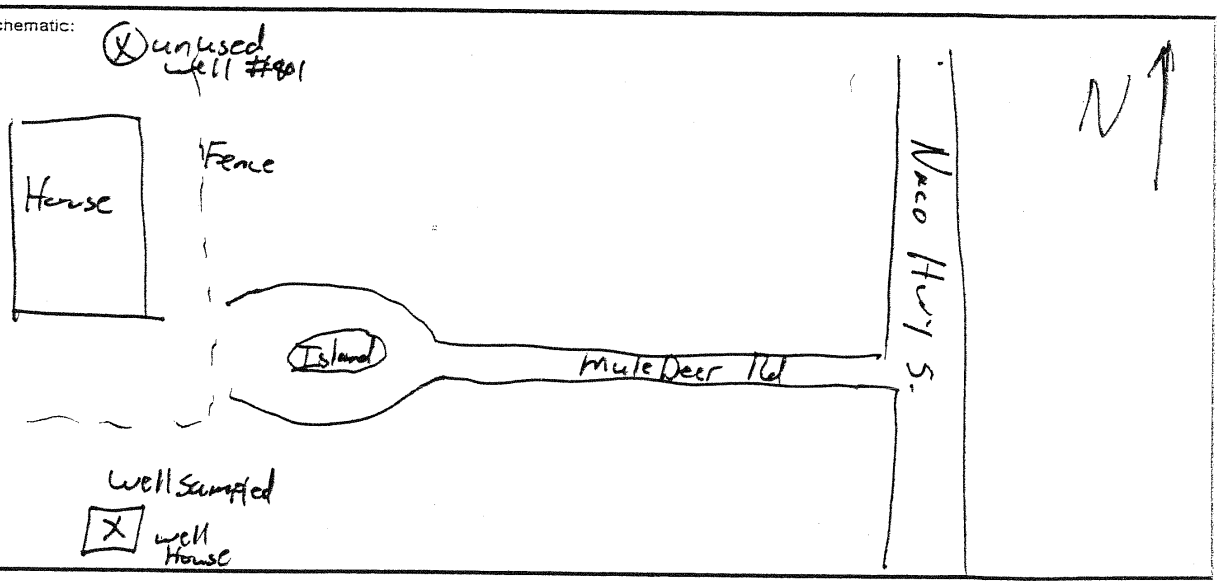
Total Discharge 200 gal

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
ROGERS 803	14:20	Plast.	250ml	1	300.0	N	

Additional Comments: Could not purge for full 75 min as the yard is flooding

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	87001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
ell ID:	ROGERS E	Date:	02/04/2008
ADWR No.	55-216018	Weather:	WINDY - CLEAR
Location:	Dominguez / Rogers St. Naco, AZ	Collected By:	ALI / MARK A

WELL DATA

Well Depth (ft bls):	285	Static Water Level (ft bmp):	NM (OBSTRUCTION)
Casing Diameter (in):	8"	Date/Time:	02/04/2008 / 9:00 AM
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	365x3 = 1096	GPS:	UTM: 3467634 R: 0600464
@ 15gpm = 73min purge		Elevation:	4607(ft)

FIELD SAMPLING DATA

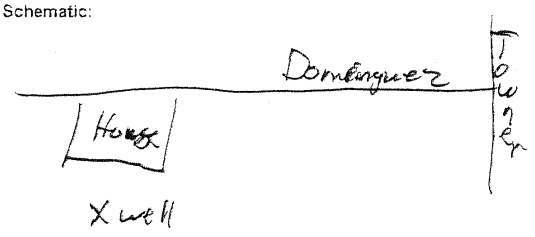
Time	Discharge Rate (gpm)	Total Discharge (galions)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
0915	15		7.30	20.2	434	CLEAR	N	
0918	"		7.35	19.9	432	"	"	
0925	"		7.33	20.4	436	"	"	
0930	"		7.40	20.9	436	"	"	
0935	"		7.40	21.0	435	"	"	
TOTAL DISCHARGE =								375 G

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
ROGERS E	0930	Plastic	250	1	300.0	None	

Additional Comments: Pump turned on at 917
No other wells on property.

Water System Schematic:



2

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	RUIZ	Date:	02/05/2008
ADWR No.	531770	Weather:	CLEAR
Location:	S. Barnett Rd San Jose	Collected By:	M/A

WELL DATA

Well Depth (ft bls):	312	Static Water Level (ft bmp):	293.29
Casing Diameter (in):	6	Date/Time:	02/05/2008
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	~~[illegible]~~ 27.9x3 = 84 G @ 15 gpm = 6 min purge	GPS: UTM	3471414 12 R 0602852
		Elevation:	4749

FIELD SAMPLING DATA

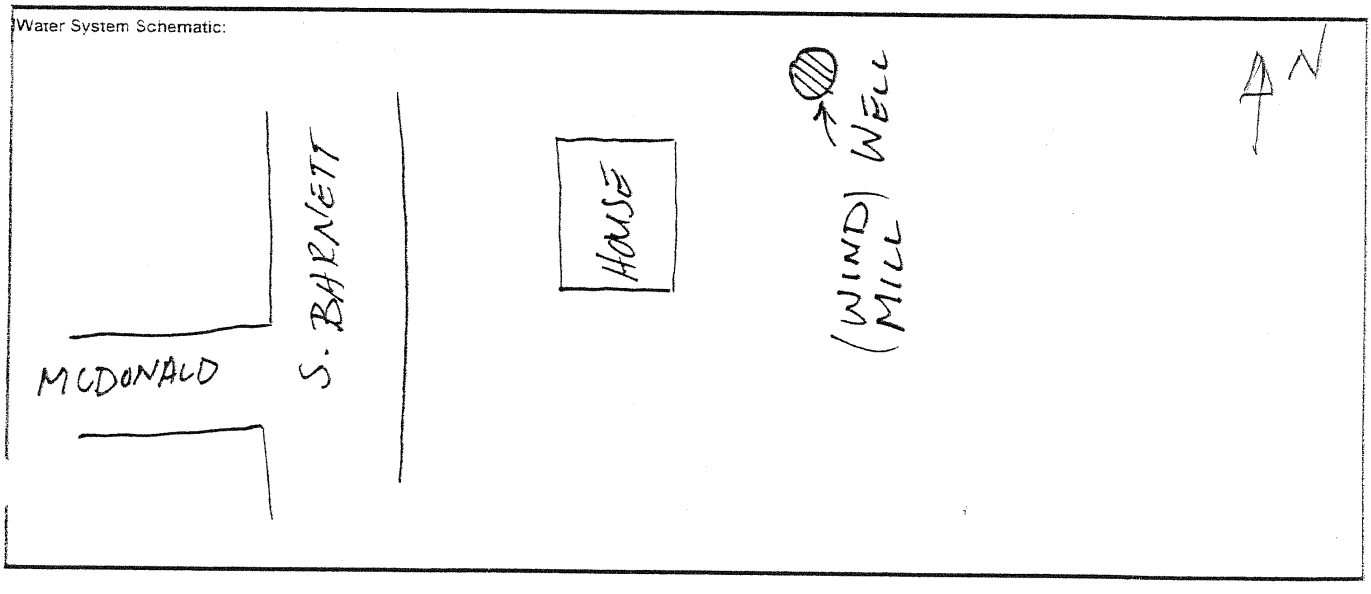
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
0830	15		7.56	16.9	4.53	CLEAR	N	
0840	"		7.58	18.8	4.54			
0850	N		7.64	19.6	996			
0855	N		7.73	18.2	445			
TOTAL DISCHARGE = 300 G.								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
RUIZ	8:50	PLASTIC	250	1	300.0	N	

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	SCHWARTZ	Date:	02/08/2008
ADWR No.	210865	Weather:	CLEAR
Location:	3468 S. Clubview Terrace Naco, AZ	Collected By:	AB/MA

WELL DATA

Well Depth (ft bls):	305'	Static Water Level (ft bmp):	121.80
Casing Diameter (in):	6"	Date/Time:	02/08/2008
Well Use:	DOMESTIC	Point of Measurement:	TOC
3 Casing Volumes:	269x3=806÷15= 54 min Purge @ 15 gpm	GPS: UTM	3468270 12R 0600813
		Elevation:	4567

FIELD SAMPLING DATA

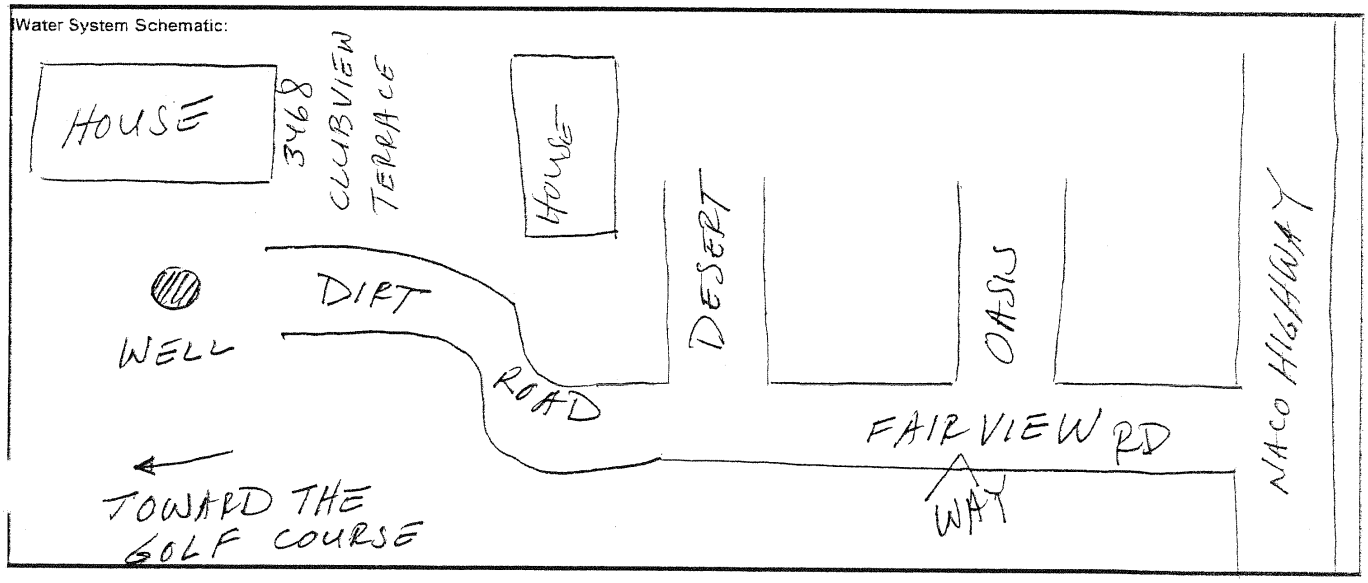
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1007	15	15	7.55	20.4	509	clear	None	
1009	"	45	7.49	21.2	510	"	"	
1011	"	75	7.50	21.4	504	"	"	
1015	"	135	7.52	21.7	507	"	"	
1020	"	210	7.47	21.8	506	"	"	
1026	"	300	7.46	21.7	505	"	"	
1028	"	330	7.52	21.5	506	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
SCHWARTZ	1030	Plastic	250ml	1	300.0	None	Filtered

Additional Comments: Only this one well on property

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	SWAN	Date:	2-13-08
ADWR No.	No Record	Weather:	Sunny; windy
Location:	2601 SWAN Rd Bisbee, AZ	Collected By:	AP/KW

WELL DATA

Well Depth (ft bis):	98	Static Water Level (ft bmp):	26.50
Casing Diameter (in):	4	Date/Time:	2-13-08 12:45
Well Use:	domestic	Point of Measurement:	TOC
3 Casing Volumes:	47x3 = 141	GPS:	UTM 3470649 12R 607378
		Elevation:	4694

FIELD SAMPLING DATA

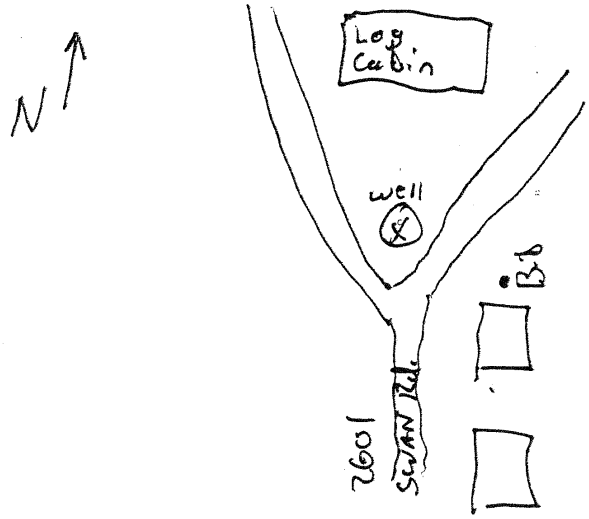
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
12:57	10		7.24	19.5	455	Clear	No	Few brn sed flakes
13:01	"		7.29	20.5	458	"	"	very few brn sed flakes
13:04	"		7.26	20.6	458	"	"	clear, no sediment
13:07	"		7.26	20.2	459	"	"	"
13:11	"		7.28	20.7	467	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
SWAN	13:15	plastic	125/250/500	3	300.0	Y/N/N	

Additional Comments: well depth est. based on owner. 4 houses using this well.

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	TM-08 SWAN	Date:	2-13-08
ADWR No.	55-522817	Weather:	Sunny, windy; becoming cloudy
Location:	2594 Windmill Ranch Rd (off of Swan Rd)	Collected By:	AW/AP

WELL DATA

Well Depth (ft bls):	817	Static Water Level (ft bmp):	unable to measure (>500')
Casing Diameter (in):	4"	Date/Time:	2/13/08 13:36
Well Use:	domestic	Point of Measurement:	TOC
3 Casing Volumes:	123 x 3 = 369	GPS:	3470668 12R 607788
		Elevation:	4701

FIELD SAMPLING DATA

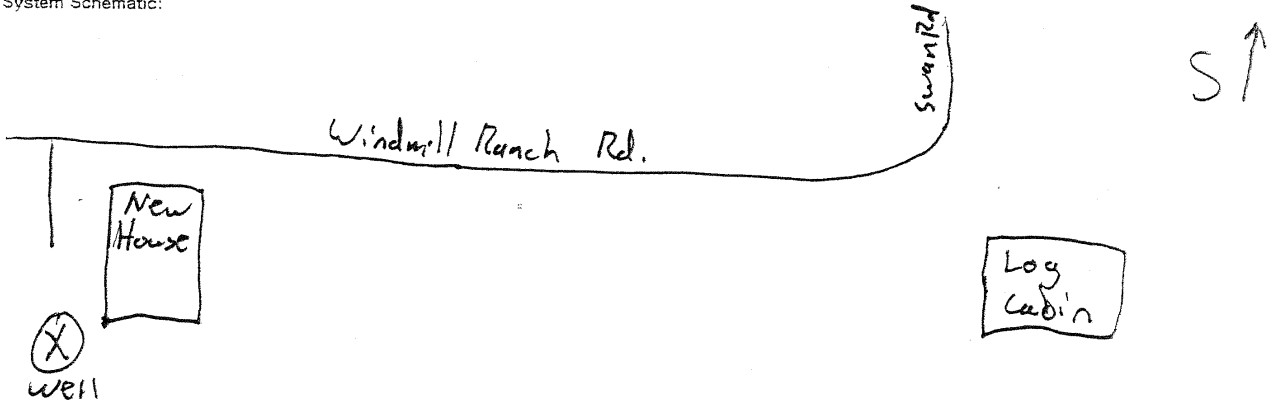
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
13:55	10		7.63	25.2	511	clear	No	Sampled from Tank

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
TM-08 SWAN	14:05	Plastic	125/250/500	3	300.0	Y/N/N	

Additional Comments: At the request of owner, sample was taken from 1000 gal tank which was filled on 2-11-08

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001.0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	WEED	Date:	2-14-08
ADWR No.	544535	Weather:	windy, dusty
Location:	1463 Hull Ranch Rd. Naco, AZ	Collected By:	AP/KW

WELL DATA

Well Depth (ft bls):	300	Static Water Level (ft bmp):	No Access
Casing Diameter (in):	NA	Date/Time:	2-14-08 14:40
Well Use:	domestic	Point of Measurement:	NA
3 Casing Volumes:	NA	GPS:	3470976 12R 601415
		Elevation:	4682

FIELD SAMPLING DATA

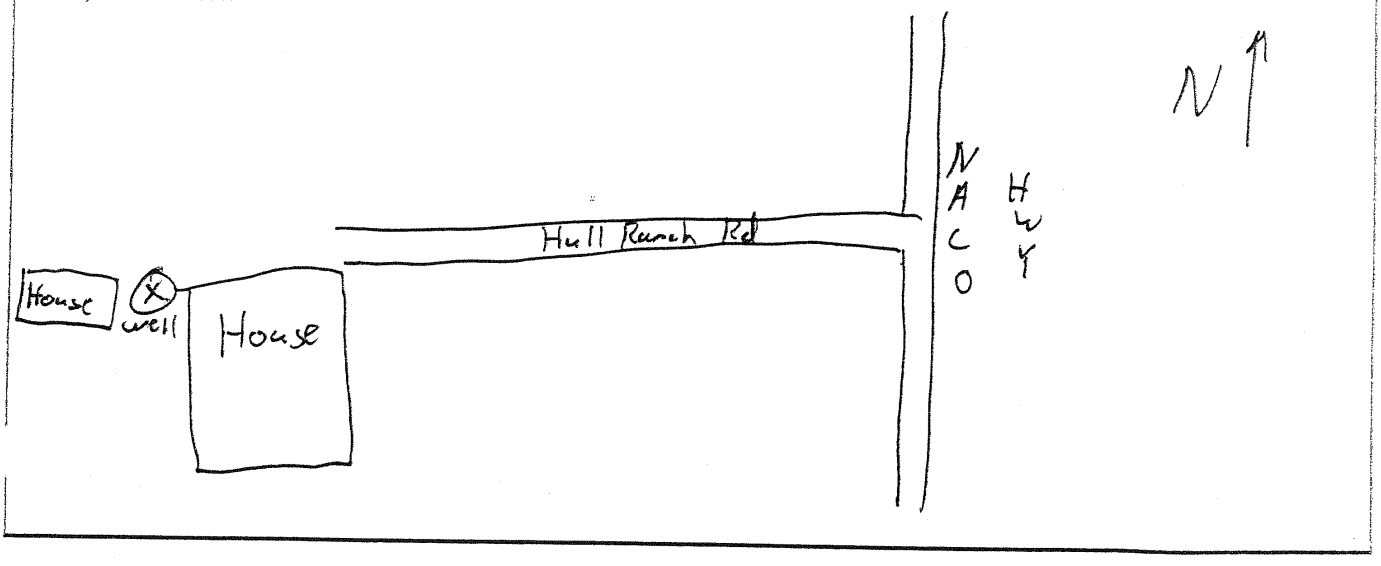
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
14:52	NA	NA	7.74	21.7	323	clear	No	few rusty sediment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
WEED	15:10	plastic	250	1	300.0	N	

Additional Comments: Owner reports well depth at 300' and WL @ about 250' bls
This well replaces 1915 well #606854. Other 1915 well #606855 w/depth of 400' is not in use

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	WEISKOPF	Date:	15 Feb 08
ADWR No.	641802	Weather:	RAIN + Wind
Location:	3316 S. Naco Hwy	Collected By:	KW & AD

WELL DATA

Well Depth (ft bls):	200	Static Water Level (ft bmp):	143.31
Casing Diameter (in):	6"	Date/Time:	15 Feb 08 8:01
Well Use:	domestic	Point of Measurement:	TOC
3 Casing Volumes:	83 x 3 = 251 / 25	GPS:	~~4602~~ UTM 12R 3468667 0601147
		Elevation:	4602

FIELD SAMPLING DATA

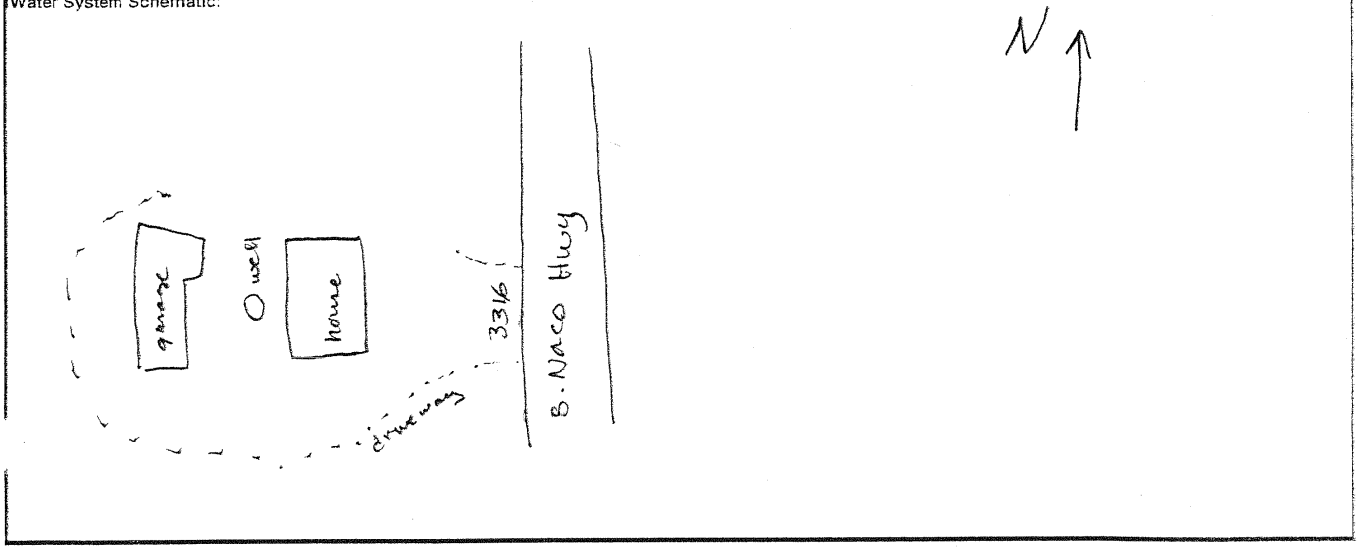
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
8:15	10		7.17	15.8	997	clear	none	few rusty flakes
8:17	"		7.28	16.4	1000	"	"	" " "
8:19	"		7.39	19.0	995	"	"	clear
8:22	"		7.52	19.6	910	"	"	"
8:24	"		7.51	19.8	965	"	"	"
8:28	"		7.51	20.2	1024	"	"	"
8:31	"		7.50	20.2	1048	"	"	"
8:34	"		7.50	20.0	1069	"	"	"
8:37	"		7.48	20.0	1072	"	"	"
		220 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
WEISKOPF	8:40	plastic	125/250/500	3	300.0	Y/N/N	—

Additional Comments:

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872001-0	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	ZANDER	Date:	02/04/2008
ADWR No.	205126	Weather:	RAINY - CLOUDY
Location:		Collected By:	AP/MA

WELL DATA

Well Depth (ft bls):	280'	Static Water Level (ft bmp):	144.85
Casing Diameter (in):	6"	Date/Time:	02/04/2008
Well Use:	DOMESTIC	Point of Measurement:	TOC
3 Casing Volumes:	198X3 = 595 @ 15 gpm	GPS: UTM:	3468003 12 R 0594677
	40 min purge	Elevation:	4566

FIELD SAMPLING DATA

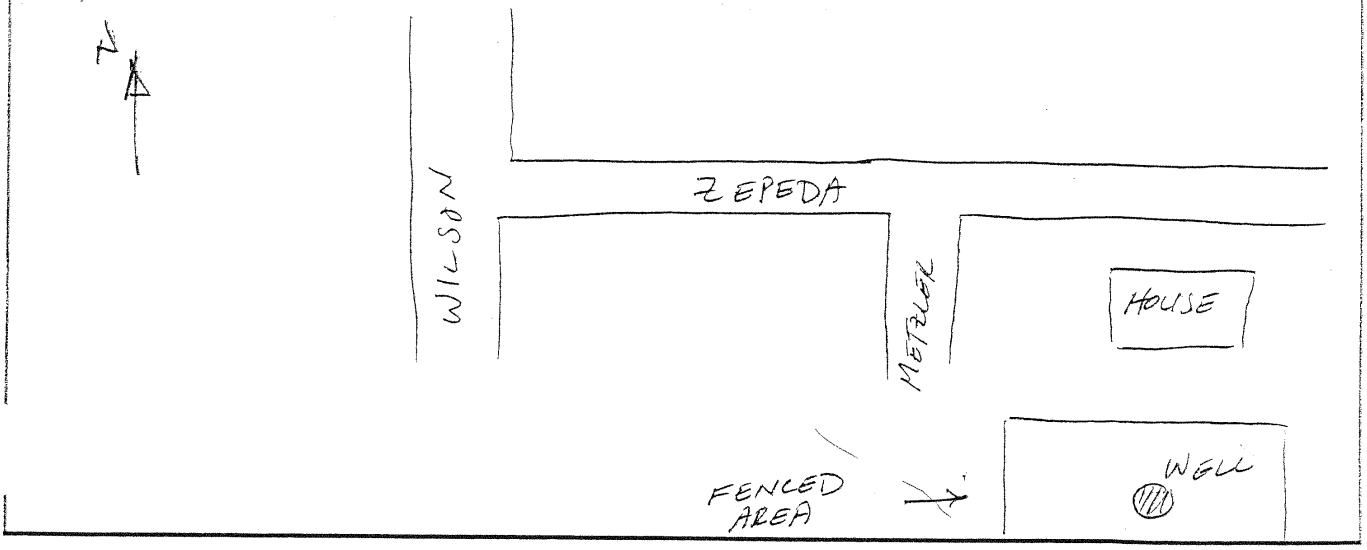
Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
2:30	20	40	7.07	17.1	395	CLEAR	N	
0235	"	140	7.13	19	391	"	"	
0240	"	240	7.14	19.8	395	"	"	
0250	"	440	7.21	20.2	392	"	"	
0255	"	540	7.24	19.7	392	"	"	
	TOTAL DISCHARGE = 600 GALLONS							

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
ZANDER	1500	PLASTIC	250	1	300.0	N	

Additional Comments:

Water System Schematic:



APPENDIX E

ANALYTICAL DATA FROM ARIZONA WATER COMPANY

ARIZONA WATER COMPANY
BISBEE WATER QUALITY DATA

System	PWSID	Site Name	Sample Date	Contaminant	Result in mg/L
BE	02001	Well #5	04-Feb-08	Sulfate	13

APPENDIX F

FREEPORT-MCMORAN COPPER QUEEN BRANCH
INTERIM ACTION REPORT

FREEPORT-McMoRan
COPPER & GOLD

Copper Queen Branch/Freeport-McMoRan Corporation
36 West Highway 92
Bisbee, Arizona 85603

May 22, 2008

Robert Casey
Water Enforcement Unit
Arizona Department of Environmental Quality
1110 West Washington Street
Phoenix, Arizona 85007

RE: Interim Action Report

Dear Mr. Casey:

In accordance with Mitigation Order on Consent, Docket No. P-121-07 (MO) between Freeport-McMoRan Corporation, Copper Queen Branch (f/k/a Phelps Dodge Corporation Copper Queen Branch) (Freeport) and Arizona Department of Environmental Quality (ADEQ), if the average sulfate concentration of a drinking water supply is found to exceed 250 milligrams per liter (mg/L) sulfate, interim actions selection and implementation will begin immediately.

In addition, the MO requires an interim action report to ADEQ within 30 days of implementing an interim action. The report shall "*state the name of the owner(s)/operator(s) of the affected well, the location and type of well (public or private) affected, and the interim action selected.*"

Forty wells verified as drinking water supply wells were sampled for sulfate between February and April 2008. Thirteen private wells contained sulfate concentrations greater than the 250 mg/l limit set by the MO. Residents using ten of the thirteen wells were already receiving bottled water. As an interim action for the three wells used by residents who were not already receiving bottled water, Freeport has elected to provide bottled water to residents using private wells where sulfate concentrations exceed 250 mg/L. The attached table provides the information required on the affected wells.

Sincerely,

Michael Jaworski
Site Manager
Copper Queen Branch

Attachment

TABLE 1
Interim Action Report

Owner	ADWR Program 55 ID	UTM N	UTM E	Address	City	State	Zip Code	Well Type	Sulfate (mg/l)	Interim Action Selected
Anderson, David	613396	3468816.100	601134.726	3272 South Naco Highway	Bisbee	Arizona	85603	Private	431	Provide Bottled Water [1]
Cooper, Charles	637069	3468913.044	601349.985	1497 West Purdy Lane	Bisbee	Arizona	85603	Private	880	Provide Bottled Water [1]
Franco, Irma	500101	3468835.683	602849.900	3245 South Franco Loop	Bisbee	Arizona	85603	Private	670	Provide Bottled Water [1]
Hoban, Barbara	805290	3468880.359	601705.844	1385 Purdy Lane	Bisbee	Arizona	85603	Private	510	Provide Bottled Water [1]
Howard, Joel	NR	3468768.655	601281.932	3269 South Naco Highway	Bisbee	Arizona	85603	Private	571	Provide Bottled Water [1]
McConnell, Virginia	539265	3468840.174	601463.091	1463 Purdy Lane	Bisbee	Arizona	85603	Private	720	Provide Bottled Water [1]
Metzler, Alfonzo	35-71891	3471381.200	602091.309	2313 Sunflower Lane	Bisbee	Arizona	85603	Private	317	Provide Bottled Water [1]
Noteman, Russell	551849	3471576.420	606053.795	2247 Arizona Street	Bisbee	Arizona	85603	Private	310	Provide Bottled Water
Panagakos, Alfred	35-76413	3469320.987	605311.680	500 West Purdy Lane	Bisbee	Arizona	85603	Private	410	Provide Bottled Water
Parra, Steve	576415	3471263.571	602170.711	2356 South Hope Street	Bisbee	Arizona	85603	Private	360	Provide Bottled Water [1]
Pionke, Jim	613395	3468836.647	600936.285	1633 West Purdy Lane	Naco	Arizona	85620	Private	394	Provide Bottled Water [1]
Ruiz, David	531770	3471424.239	602857.358	2295 South Barnett Road	Bisbee	Arizona	85603	Private	263	Provide Bottled Water [1]
Weiskopf, Tom	641802	3468658.887	601154.948	3316 Naco Highway	Bisbee	Arizona	85603	Private	500	Provide Bottled Water

ADWR = Arizona Department of Water Resources
UTM = Universal Transverse Mercator, Zone 12 Band R
mg/l = milligrams per liter
NR = No Record
35-70000 = ADWR Program 35 Database
[1] Resident receiving bottled water prior to well inventory investigation

REVISION 1
WORK PLAN TO CHARACTERIZE AND MITIGATE SULFATE WITH RESPECT TO DRINKING WATER SUPPLIES IN THE VICINITY OF THE CONCENTRATOR TAILING STORAGE AREA
COCHISE COUNTY, ARIZONA

MITIGATION ORDER ON CONSENT DOCKET NO. P-121-07

July 3, 2008

HYDRO
GEO
CHEM

REVISION 1
WORK PLAN TO CHARACTERIZE AND MITIGATE SULFATE WITH RESPECT TO DRINKING WATER SUPPLIES IN THE VICINITY OF THE CONCENTRATOR TAILING STORAGE AREA
COCHISE COUNTY, ARIZONA
MITIGATION ORDER ON CONSENT DOCKET NO. P-121-07

Prepared for:

FREEPORT-MCMORAN CORPORATION COPPER QUEEN BRANCH
36 West Highway 92
Bisbee, Arizona 85603

Prepared by:

HYDRO GEO CHEM, INC.
51 West Wetmore Road
Tucson, Arizona 85705
(520) 293-1500

July 3, 2008

HYDRO GEO CHEM, INC.
Environmental Science & Technology

REVISION 1

WORK PLAN TO CHARACTERIZE AND MITIGATE SULFATE WITH RESPECT TO DRINKING WATER SUPPLIES IN THE VICINITY OF THE CONCENTRATOR TAILING STORAGE AREA COCHISE COUNTY, ARIZONA

MITIGATION ORDER ON CONSENT DOCKET NO. P-121-07

Prepared for:

FREEPORT-MCMORAN CORPORATION COPPER QUEEN BRANCH
36 West Highway 92
Bisbee, Arizona 85603

Prepared by:

HYDRO GEO CHEM, INC.
51 West Wetmore Road
Tucson, Arizona 85705
(520) 293-1500

Approved by:

REGISTERED GEOLOGIST
CERTIFICATE NO.
30842
JAMES R.
NORRIS
Date Signed 7/3/08
ARIZONA U.S.A.
Expires 12/31/08

James R. Norris
Arizona Registered Geologist No. 30842

July 3, 2008

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LIST OF ACRONYMS

A.A.C.	Arizona Administrative Code
ac-ft/yr	acre-feet per year
ACP	Aquifer Characterization Plan
ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
ANP	Acid Neutralization Capacity
A.R.S.	Arizona Revised Statutes
AWC	Arizona Water Company
AWQS	Aquifer Water Quality Standards
CQB	Copper Queen Branch
CTSA	Concentrator Tailing Storage Area
DQO	Data Quality Objective
FS	Feasibility Study
GIS	Geographic Information System
gpm	gallons per minute
Sac LOGS	Sacramento Low Ore Grade Storage
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
MO	Mitigation Order
NWC	Naco Water Company
QAPP	Quality Assurance Project Plan
RO	Reverse Osmosis
SDP	Sewage Disposal Ponds
TDS	Total Dissolved Solids
UTM	Universal Transverse Mercator
WWTF	Waste Water Treatment Facility
WWTP	Waste Water Treatment Plant

1. INTRODUCTION

A plume of sulfate has been detected in the groundwater downgradient to the south and southwest from the Freeport-McMoRan Corporation Copper Queen Branch (CQB) Concentrator Tailing Storage Area (CTSA). The CTSA is located in the Naco-Bisbee area in the southeastern upper San Pedro River basin, approximately 85 miles southeast of Tucson, Arizona (Figure 1). The Naco-Bisbee area is bounded by the Mule Mountains to the north and east and by the Sierra San Jose in Sonora, Mexico to the south.

On November 14, 2007, Arizona Department of Environmental Quality (ADEQ) and Phelps Dodge Corporation, Copper Queen Branch entered into a Mitigation Order on Consent Docket No. P-121-07 (MO). In March 2008, Phelps Dodge Corporation changed its name to Freeport-McMoRan Corporation. The MO requires CQB to characterize the extent of sulfate in groundwater and to develop a Mitigation Plan for drinking water supplies impacted due to sulfate from the CTSA. The MO sets a maximum average sulfate concentration of 250 milligrams per liter (mg/L) for drinking water supplies. Because sulfate concentrations approaching and exceeding 250 mg/L have been found in some drinking water supply wells, ADEQ determined that a drinking water source is or is about to be rendered unusable without treatment (MO Section II.A.5). CQB and ADEQ entered into the MO to address the sulfate in groundwater attributable to the CTSA. The Naco-Bisbee aquifer containing the elevated sulfate is designated a Sole Source Aquifer by the U.S. Environmental Protection Agency (http://www.epa.gov/safewater/sourcewater/pubs/qrg-NACOBISBEE.pdf).

CQB is monitoring groundwater levels, has replaced one impacted drinking water supply well, and is providing bottled water to other parties with impacted drinking water supply wells. The MO provides a structure for conducting additional environmental investigations and evaluating additional potential mitigation alternatives for sulfate from the CTSA. As a requirement of the MO, this Work Plan presents the rationale and methods for further investigation and development of a Mitigation Plan. Hydro Geo Chem, Inc. prepared this Work Plan on behalf of CQB. The initial version of this Work Plan was submitted to ADEQ on December 17, 2007. Revision 1 of the Work Plan was developed in response to written comments on the December 17, 2007 Work Plan (ADEQ, 2008a and 2008b) and discussions with ADEQ.

1.1 Mitigation Order Requirements Pertaining to Work Plan

Section III of the MO requires a work plan to complete characterization of the vertical and horizontal extent of the sulfate plume downgradient of the CTSA. Specific work identified in the MO includes:

- A summary of existing information on the characterization of the sulfate plume, including references to known and ongoing characterization and assessment information (MO Section III.A.1).

- A Quality Assurance Project Plan (QAPP) that defines the sulfate plume characterization and assessment objectives, and describes the methods, organization, analyses, and Quality Assurance and Quality Control that CQB will implement to ensure that characterization and assessment objectives are met (MO Section III.A.2).

- A plan to complete characterization of the sulfate plume with an implementation schedule that includes site access and permitting requirements. The plan is to include sampling and testing of additional monitoring wells necessary (1) to identify the horizontal and vertical extent of the sulfate plume downgradient of the CTSA as defined by

concentrations in excess of 250 mg/L, and (2) to evaluate the fate and transport of sulfate downgradient of the CTSA (MO Section III.A.3).

- A plan to inventory all existing registered private wells used as a drinking water source or public drinking water system wells located within a one-mile radius of the sulfate plume's downgradient and crossgradient outer edge (MO Section III.A.4).

In accordance with Section III.C of the MO, the findings of this work are to be reported in an "Aquifer Characterization Report".

Section III.E of the MO requires a Mitigation Plan that identifies and evaluates alternatives that practically and cost effectively provide drinking water meeting applicable sulfate levels to the owner or operator of an impacted drinking water supply in accordance with Arizona Revised Statute (A.R.S.) § 49-286. An impacted drinking water supply is one that is determined to have a sulfate concentration in excess of 250 mg/L due to sulfate from the CTSA. The Mitigation Plan is to include sampling and analysis methods for documenting the average sulfate concentration of a drinking water source, and a process for verifying that the CTSA is the sulfate source. If drinking water supply wells are found to be impacted by sulfate prior to implementation of the Mitigation Plan, Section III.D of the MO requires CQB to implement interim mitigation actions for the impacted drinking water supplies.

Although sulfate is a non-hazardous constituent and the applicable legal criteria to address the plume are set forth in the MO and A.R.S. § 49-286, the process approach outlined in the MO and incorporated in this Work Plan is modeled generally after the process for remedial investigations and feasibility studies used in the Arizona Water Quality Assurance Revolving Fund and the Federal Superfund Program. This Work Plan proposes an Aquifer Characterization

Plan (ACP) and a Feasibility Study (FS) for sulfate mitigation to address the requirements of the MO. The ACP will determine the nature, extent, fate, and transport of sulfate and will gather information needed to develop mitigation action alternatives consistent with the MO. The FS will identify and evaluate mitigation action alternatives and recommend a Mitigation Plan in accordance with the objectives in the MO.

Although not addressed by this Work Plan, the MO also requires:

- Formation of a community advisory group, requiring a minimum of eight people, which will meet four times yearly.
- Creation of a local information repository for the dissemination of information about the MO.
- Submittal of quarterly status reports to ADEQ.

1.2 Work Plan Organization

The components of this Work Plan are meant to fulfill the work requirements in Sections III.A, III.C, III.D, and III.E of the MO. The Work Plan is organized as follows:

- **Section 1- Introduction.**
- **Section 2 - Summary of Existing Information**. Section 2 discusses background information, describes CQB's current efforts to mitigate sulfate in drinking water supplies, and presents an overview of the geology, groundwater hydrology, and water quality including the known occurrence and extent of the sulfate plume.
- **Section 3 - Aquifer Characterization Plan**. Section 3 describes work to further characterize the nature and extent of sulfate in groundwater. This work will include: a well inventory to identify private drinking water wells and public water supply systems located downgradient and crossgradient of the sulfate plume; groundwater monitoring; monitoring well installation and testing to determine the aquifer structure, to further delineate the extent of sulfate, and to quantify aquifer hydraulic properties; numerical modeling of groundwater flow to predict the future movement of sulfate and to test potential control strategies; and reporting.

- **Section 4 - Identification of Potential Interim Actions.** Potential interim actions are described in Section 4. This task, which is consistent with FS activities, considers potential interim actions if sulfate concentrations exceed 250 mg/L in a drinking water supply before the Mitigation Plan is completed.

- **Section 5 - Feasibility Study for Sulfate Mitigation Plan**. Section 5 provides the work plan for an FS to develop a sulfate Mitigation Plan. The FS will identify mitigation action objectives, evaluate potentially applicable response actions and technologies, identify mitigation alternatives for meeting the project objectives, evaluate the benefits and costs of the alternatives, and produce a Mitigation Plan.

- **Section 6 - Schedule.** The work and reporting schedule for the ACP and FS for the Mitigation Plan is provided in Section 6. The ACP and FS have been designed to proceed in parallel to identify mitigation options early in the process. Tasks related to identifying and addressing potentially impacted drinking water supplies (e.g., the well inventory and potential implementation of interim actions) are scheduled to begin as soon as possible in the process.

The appendices provide various supporting materials referenced in the text including a QAPP describing the work methods to be used. If during implementation of the Work Plan it is necessary to perform a task at substantive variance with the Work Plan, CQB will submit a written notice of variance and request ADEQ's written permission prior to performing the task. If ADEQ does not respond to a time-critical decision by the date identified in the written notice, CQB will assume that ADEQ approves the variance.

2. SUMMARY OF EXISTING INFORMATION

Section III.A.1 of the MO requires a summary of existing information on the extent of sulfate in groundwater downgradient of the CTSA, including references to known and ongoing characterization and assessment information. To address this requirement, this section: provides an overview of the estimated extent of sulfate in groundwater; reviews the current mitigation actions being taken by CQB to address sulfate in drinking water supplies; describes the geology, groundwater hydrology, and water quality downgradient of the CTSA; and presents a conceptual model of the sulfate plume.

2.1 Background

2.1.1 Description of the CTSA

The CTSA is located approximately 3.5 miles southeast of Bisbee, approximately four miles northeast of Naco, and approximately one mile south of Warren in Cochise County, Arizona (Figure 1). As defined by the MO, the CTSA is comprised of two inactive tailing impoundments (the North Tailing Impoundment and the South Tailing Impoundment), a former evaporation pond, and a storm water containment pond (Horseshoe Pond No. 1). The storm water containment pond is located immediately south of the South Tailing impoundment. Sediments from the former evaporation pond were excavated and placed on the South Tailing Impoundment in 1989 and 1990 (PD, 2004). Horseshoe Pond No. 1, an unlined storm water retention pond, was constructed at the former evaporation pond site in 1990 and currently

collects storm water from the North and South Tailing Impoundments and from drainage from areas north of the CTSA (PD, 2004). Collected storm water is periodically pumped from the Horseshoe Pond to the South Tailing Impoundment. The North and South Tailing Impoundments are uncapped and unlined except for certain side slopes of the South Tailing Impoundment. Capping and closure plans for the North and South Tailings Impoundments are in development and will be submitted to ADEQ for approval prior to implementation.

The North and South Tailing Impoundments and former evaporation pond cover an area of approximately 1,000 acres in Sections 27, 33, and 34, Range 24 East, Township 23 South, and Sections 3 and 4 in Range 24 East, Township 24 South. The CTSA was used variably from 1908 through 1987 for the storage and evaporation of excess mine water, the placement of tailing, or containment of stormwater. The CTSA facilities are currently inactive and receive no solids or liquids except for stormwater pumped from Horseshoe Pond No. 1 and rainwater.

2.1.2 Historical Land Use of the CTSA and Vicinity

Mining activities in the Bisbee area began in 1880. Land in the vicinity of the CTSA has been used variably since 1905 for management of excess water and placement of mined material. Historical facilities in the vicinity of the CTSA include a former irrigation area that used mine water south and southwest of the CTSA and the former Crawford Mill tailing site north of the CTSA. Further to the north were former low-grade ore stockpile areas (Sacramento Low Ore Grade Storage No. 1 (Sac LOGS 1) and Sacramento Low Ore Grade Storage No. 2 (Sac LOGS 2)) (Phelps Dodge Corporation (PD), 1990) (Figure 2).

Mining and smelting of ore from the Sacramento Pit began in 1919 (Stegan, et al, 2005) and operation of the Sacramento Mill began in 1923. Low-grade ore from the Sacramento Pit was stockpiled at Sac LOGS 1 and Sac LOGS 2 from 1923 to 1932 (PD, 2004) and tailing from the mill were piped as slurry to the North Tailing Impoundment through 1932 (PD, 1990). Crawford Mill tailing produced from 1945 through 1954 was sent to the 12.6-acre Crawford Mill Tailing Impoundment (PD, 2004). Lavender Pit ore was mined, milled, and leached from 1954 to 1974 and the Lavender Mill tailing were sent to the North and South Tailing Impoundments.

The former irrigation area, known as the Warren Ranch irrigation area, was in Sections 3, 4, 8, 9, and 10, Range 24 East, Township 24 South. Delivery of excess mine water to the irrigation area began in 1905 and ceased in 1987.

In 1991 and 1992, the relatively small Crawford Mill tailing impoundment was removed from its storage site and placed on the North Tailing Impoundment (PD, 2004). Because the Crawford Mill tailing impoundment was removed, this area is not considered a current or potential future source of sulfate.

2.1.3 Use of Excess Mine Water

The use of excess mine water for irrigation of the former Warren Ranch irrigation area started in 1905 and was followed by discharge of additional excess mine water to the former evaporation pond commencing in 1908 (PD, 2004). Delivery of mine water to both the Warren Ranch irrigation area and the former evaporation pond ceased in 1987. Mine water was pumped

to the former Warren Ranch irrigation area at a rate of approximately 2,350 acre-feet per year (ac-ft/yr) or approximately 1,457 gallons per minute (gpm) (PD, 2004). The former evaporation pond received excess water from underground mine and open pit dewatering at a rate of approximately 4,430 ac-ft/yr or approximately 2,746 gpm (PD, 2004).

2.1.4 Location of the Sulfate Plume

In 1987, groundwater in the vicinity of the CTSA was reported to have elevated sulfate and total dissolved solids (TDS) (Littin, 1987). In 1988 and 1989, CQB installed a series of monitoring wells in the CTSA. In addition, several borings were drilled to assess subsurface geology and hydrology, and were either not completed as wells after drilling, or were completed as temporary wells that were abandoned by 1990. Previous hydrogeologic studies have concluded that the primary source of sulfate is seepage from the former evaporation pond and to a lesser degree, water sent to the former irrigation area and not seepage from the North and South Tailing Impoundments (Southwest Groundwater Consultants (SGC), 1994; Savci Environmental Technologies (SET), 1998a).

Figure 3 is a well location map showing sites for which water level and water quality data were available for use in this Work Plan. The sites include current and abandoned monitoring wells, public water supply wells, and private wells. The lithologic unit in which each well is screened is indicated. Well construction data pertaining to wells shown on Figure 3 are summarized in Appendix A (Table A.1).

Based on limited sampling of monitoring and public water supply wells in 2005, the extent of the sulfate plume, defined by the 250 mg/L sulfate concentration contour, is estimated to be approximately 3.5 miles long in a southwesterly direction and 2.5 miles wide, with its northern boundary located at the southern margin of the South Tailing Impoundment and its southern edge south of Naco Water Company (NWC) well 3 (NWC-3) (Figure 4). Where recent data is lacking, the position of the contour is inferred based on historical water quality data for 1996 and consideration of historical hydraulic gradients as described in Section 2.5. As discussed in Section 2.5.2, TDS is associated with the sulfate plume.

The MO requires CQB to mitigate an impacted drinking water supply if the supply can be verified as having a sulfate concentration greater than 250 mg/L as a result of the plume originating from the CTSA. As stated in Section II.B.5 of the MO and A.R.S. § 49-286, mitigation measures may include:

- Providing an alternate drinking water supply
- Mixing or blending if economically practicable
- Economically and technically practicable treatment before ingesting the water
- Such other mutually agreeable mitigation measures as are necessary to achieve the purposes of A.R.S. § 49-286.

2.2 Current Sulfate Mitigation Actions

Current sulfate mitigation activities by CQB consist of supplying bottled water to parties with impacted drinking water wells and replacement of an impacted drinking water well. Bottled water is being provided to thirteen parties in the Naco area that have well water containing

greater than 250 mg/L sulfate due to the plume from the CTSA. CQB offered bottled water to a larger number of parties, some of whom have either declined or not responded. One private well was replaced in 2001.

2.3 Geologic Setting

This section provides an overview of the geology in the vicinity of the CTSA. Geologic data have been drawn from a number of sources including U. S. Geologic Survey publications, Arizona Geological Society publications, reports on environmental investigations, and a review of lithologic logs for area wells. The geology of the Mule Mountains and Bisbee-Naco basin has been mapped and described by Hayes (1970) and Hayes and Landis (1964). Stegan, et al (2005) describes the geology and mineralization of the Bisbee-Warren mining district, and references original detailed geologic studies by other workers pertaining to the mining district.

Mining activities in the Bisbee area have been concentrated in the Mule Mountains, which are comprised of Precambrian metamorphic rocks, Paleozoic and Cretaceous sedimentary formations, and Jurassic and Tertiary intrusive rocks. Mining activities have been focused primarily on metal mineralization occurring in the Paleozoic sedimentary units and various Jurassic intrusive rocks.

The Bisbee-Naco area is in a physiographic basin south of the Mule Mountains (Figure 1). The Mule Mountains and the Cerro La Muela in Sonora, Mexico form the northern and eastern margin of the basin. The Sierra San Jose in Sonora, Mexico forms the southern

boundary of the physiographic basin, approximately one half of which lies in Mexico (Figure 1). The mountains surrounding the basin are composed of bedrock materials, and the basin is comprised of clastic sediments underlain by bedrock. Surface runoff from the Bisbee-Naco watershed area primarily drains into Greenbush Draw, which flows west and then northwest into the San Pedro River (Figure 1). The CTSA is northeast of Greenbush Draw, in the northeastern portion of the Bisbee-Naco physiographic basin (Figures 1 and 2).

The geologic units present in the Bisbee-Naco area and surrounding mountains can be divided into three generalized units: Recent alluvium, Quaternary and Tertiary basin fill deposits, and the bedrock complex. Recent alluvium is comprised of unconsolidated alluvial material. Basin fill consists of poorly to moderately lithified clastic material (Littin, 1987). The bedrock complex is comprised of older indurated units including the Cretaceous Bisbee Group sedimentary formations, Jurassic to Tertiary age igneous rocks, Paleozoic sedimentary formations, and Precambrian metamorphic rocks. Figure 5 is a generalized geologic map based on mapping by Hayes and Landis (1964). Table 1 is a generalized geologic column for the vicinity of the CTSA. Figures 6 and 7 are geologic cross sections based on borings in the CTSA. The locations of the cross sections are shown in Figures 3 and 5.

2.3.1 Recent Alluvium

Recent alluvium includes stream channel sediments, pediment and terrace gravel, sheet wash deposits and alluvial fans (Hayes and Landis, 1964). Recent alluvium is not a significant

aquifer because it typically is unsaturated. In the vicinity of the CTSA, Recent alluvium occurs primarily in Greenbush Draw (Figure 5).

2.3.2 Basin Fill Deposits

The Tertiary to Quaternary basin fill deposits are comprised primarily of poorly to moderately lithified sand and gravel lying unconformably on Cretaceous or older sedimentary bedrock. The basin fill consists of interbedded boulder to pebble conglomerate, gravel, sand, silt and clay (Littin, 1987). Based on logging of cuttings from monitor wells, the estimated average silt and clay content of the basin fill is 15 percent, with a range of 5 to 40 percent. Caliche beds are commonly present within the upper 40 to 100 feet of the basin fill penetrated by monitoring wells in the vicinity of the CTSA (Errol L. Montgomery and Associates (ELMA), 1990) (Figures 6 and 7). Clay beds interbedded with sand and gravel have been logged in portions of the basin fill but no laterally extensive clay units have been defined. For example, clay beds up to 20 feet thick were encountered at various depths in the basin fill at GW-47 (Wright, 2001), TM-2A, and TM-29 (ELMA, 1990).

In the vicinity of the sulfate plume, the basin fill ranges in thickness from zero at its contact with surface outcrop of bedrock along the margins of the Bisbee-Naco physiographic basin to 535 feet thick within the plume area at monitor well TM-19A (ELMA, 1990). Basin fill thickness is shown on cross sections A-A' and B-B' (Figures 6 and 7), indicating that the basin fill thickens generally towards the southwest away from the CTSA. In the southern portion of the Bisbee-Naco area in Sonora, Mexico, depth to bedrock data is not currently available. The

basin fill deposits south of the international border appear to form thick alluvial fans which slope north and east toward Greenbush Draw from the base of the Sierra San Jose (Figure 1).

2.3.3 Bedrock Complex

For the purposes of this report, bedrock refers to lithified rock units regardless of whether or not they are water-bearing. Bedrock in the vicinity of CTSA is comprised of the lower Cretaceous Bisbee Group formations. Paleozoic sedimentary rocks have been intercepted beneath basin fill only in monitoring wells located north of the CTSA (ELMA, 1990 and Water Management Consultants (WMC), 2006). One of these northern monitoring wells, TM-18 (Figure 3) also intercepted Precambrian Pinal Schist below the Paleozoic units.

2.3.3.1 Cretaceous Sedimentary Rocks

The Bisbee Group consists of four sedimentary formations, which are, in descending order, the Cintura Formation, the Mural Limestone, the Morita Formation and the Glance Conglomerate. These formations have gradational contacts and are conformable with one another where they are exposed in the Mule Mountains north and east of the CTSA (Hayes, 1970). The Morita Formation and the Glance Conglomerate are the principal bedrock units underlying basin fill in the region around the CTSA (Figures 6 and 7). Mural Limestone was intercepted under basin fill in one well, TM-17, south of Purdy Lane (Figures 3 and 7).

The Cintura Formation is comprised of grayish red siltstone and mudstone, feldspathic sandstone, and minor amounts of green-gray calcareous claystone, with a few thin beds of fossiliferous limestone in its basal 100 feet. Maximum preserved thickness in the Mule Mountains is 1850 feet (Hayes and Landis, 1964).

The Mural Limestone is composed of an upper member of dark gray limestone that is up to 275 feet thick with subordinate sandstone in the upper 50 feet, and a lower member up to 453 feet thick consisting of interbedded calcareous sandstone, siltstone and impure fossiliferous limestone (Hayes and Landis, 1964).

The Morita Formation is generally comprised of grayish red siltstone and mudstone, pale red feldspathic sandstone, minor amounts of greenish gray calcareous claystone, a few thin beds of impure limestone in the upper part of the formation, and a very small amount of pebble conglomerate in the lower part of the formation. The upper 300 feet of the Morita Formation is primarily sandstone. Siltstone and mudstone cyclically interbedded with sandstone constitute the remainder of the formation. The Morita Formation probably represents deposition on a slowly subsiding subaerial deltaic plain. Sandstone beds in cut-and-fill relation on underlying siltstone and mudstone are believed to represent channel deposits of meandering streams and intervening siltstone and mudstone units represent inter-fluvial flood deposits (Hayes, 1970). Where it outcrops in the Mule Mountains north and east of the CTSA, the formation is about 2,605 feet thick (Hayes, 1970).

Morita Formation penetrated by monitor wells in the vicinity of the CTSA is described in well logs as variably colored and variably textured clastics with occasional minor limestone. Examples include sandstones varying in texture from fine- to coarse-grained, in composition from arkosic to quartzitic, and in color from grayish red, reddish brown, brown, buff, gray, green-gray to tan. Siltstones and mudstones vary in color from dark reddish brown, blackish red, purplish brown, olive green to yellow. The maximum thickness of Morita Formation penetrated by monitoring wells is 335 feet in TM-2A (ELMA, 1990), where it is observed to overlie Glance Conglomerate and to underlie basin fill. The maximum thickness of Morita Formation in the vicinity of the CTSA is relatively thin compared to the thicknesses outcropping in the Mule Mountains. Description of Morita Formation in geologic logs of area wells report abundant siltstone and mudstone interbedded with sandstone, consistent with penetration of the middle or lower rather than the upper portions of the formation. These two observations suggest that the Morita Formation in the vicinity of the CTSA has probably been faulted, tilted, and/or eroded prior to deposition of the basin fill.

The Glance Conglomerate lies unconformably on a variety of older lithologic units and is the basal Cretaceous unit of the Bisbee Group. The Glance Conglomerate outcrops north of the CTSA in and around the town of Warren, and over several square miles in the Mule Mountains east of the CTSA. Hayes and Landis (1964) estimated that the Glance Conglomerate ranges from zero to over 600 feet in thickness in the Mule Mountains. Beyond the Mule Mountains much greater thicknesses of Glance Conglomerate are reported; for example, over 3,600 feet of Glance Conglomerate has been described in the Huachuca Mountains approximately 22 miles west of Bisbee (Hayes, 1964; Bilodeau, et al, 1987). The thickest interval of Glance

Conglomerate intercepted in area monitoring wells was 740 feet in TM-8 southeast of the former evaporation pond (ELMA, 1990) (Figures 3 and 6).

The Glance Conglomerate is an alluvial fan deposit made up of locally derived material with variable ratios of schist, limestone, and granitic clasts (Hayes, 1970); and consists of poorly sorted, poorly rounded, cobble to pebble sized clasts in a sandy and silty grayish-red mudstone matrix. Boulder-sized clasts are also locally present. Glance Conglomerate intercepted in monitor wells near the CTSA is composed dominantly of schist clasts, with lesser amounts of limestone, quartz, and occasional chert clasts in a dark reddish brown silty matrix (ELMA, 1990).

2.3.3.2 Paleozoic Rocks

Paleozoic sedimentary bedrock formations in the Mule Mountains are represented by, in descending order, the Naco Group, which includes the lower Permian Colina Limestone, upper Pennsylvanian Earp, and middle to upper Pennsylvanian Horquilla Limestone Formations; followed by the Mississippian Escabrosa Limestone, Devonian Martin Limestone, and the Cambrian-age Abrigo Limestone and Bolsa Quartzite (Hayes and Landis, 1964). Paleozoic sedimentary units, particularly the Abrigo, Martin, and Escabrosa Limestones, are important hosts to metal mineralization in the Warren-Bisbee mining district (Stegan, et al, 2005).

North of the CTSA, where monitoring wells intercepted Paleozoic sedimentary rock, the rocks penetrated are not identified in well logs with respect to any formation, but are described

as micritic to crystalline limestone, calcareous to non-calcareous siltstone, and dolomitic siltstone and mudstone (ELMA, 1990).

2.3.3.3 Igneous and Metamorphic Rocks

Igneous and metamorphic rocks in the Mule Mountains include Tertiary quartz latite, Jurassic Juniper Flat Granite, a tuff of probable Jurassic age, the Jurassic Sacramento intrusive complex associated with copper mineralization, and the Precambrian Pinal Schist. The Pinal Schist is a light colored quartz-sericite phyllite to quartz-muscovite schist (Stegan, et al, 2005). Eroded Pinal Schist is the source of schist clasts in the Glance Conglomerate (Hayes, 1970). Monitoring well TM-18 drilled approximately one mile north of the North Tailing Impoundment, north of the Bisbee West fault (Figure 3), intercepted Pinal Schist underlying Paleozoic sedimentary rock (ELMA, 1990).

2.3.3.4 Structure

Four major faults influence the hydrogeologic setting of the CTSA: the Bisbee West fault and its eastward extension, the Gold Hill fault, the Abrigo fault, the Black Gap fault, and the Ninety-One Hills fault zone (Figures 4 and 5). The south-dipping Bisbee West and Abrigo faults along the southern margin of the Mule Mountains trend west-northwest and are sub-parallel high-angle range front faults with normal offset. The subsurface projection of the Bisbee West fault passes to the north of the former Sac LOGS 1 and 2. The projected trace of the Abrigo fault

as interpreted by SET (1998c) passes under the southwestern corner of the South Tailing Impoundment.

The Black Gap fault trends north-northeast and dips steeply to the west. On the surface it is expressed as a topographic break known as Black Gap, forming a pass between Warren and the CTSA, and vertically offsetting Paleozoic limestone beds (Figure 5). From Black Gap, the fault extends to the north-northeast intersecting the Saginaw fault zone in the subsurface north of Warren (SET, 1998c), and then is exposed again at the surface further north near the Dividend fault in the Mule Mountains (Hays & Landis, 1964) (Figure 5). To the south of Black Gap, the subsurface projection of the Black Gap fault trace passes along the eastern margin of the North Tailing Impoundment and under the South Tailing Impoundment, where it meets the projected subsurface trace of the Abrigo fault (SET, 1998c) (Figure 4).

The Ninety-One Hills fault is a west-northwest and west trending complex of faults paralleling the Abrigo and Bisbee West faults. The fault is located south of the CTSA approximately one mile southeast of Bisbee Junction (Hayes and Landis, 1964) (Figures 4 and 5). The Ninety-one Hills fault has been interpreted to extend under the basin fill towards the west, and offset along it may explain the presence of Mural Limestone underlying basin fill (rather than Morita Formation or Glance Conglomerate) in the vicinity of TM-17 (SET, 1998c) (Figure 3).

2.4 Groundwater Hydrology

The hydrology of the Bisbee-Naco area is discussed by Littin (1987), and the hydrologic conditions in the vicinity of the CTSA and the sulfate plume by Canonie (1990), ELMA (1990), and SET (1998a, 1998b, and 1998c). The Bisbee-Naco area watershed and aquifers are separate from those of the mining area in the Mule Mountains to the north. The hydrology of the mine area is discussed in WMC, 2006.

2.4.1 Hydrostratigraphic Units

Groundwater occurs in two hydrostratigraphic units in the vicinity of the CTSA: the basin fill and the bedrock complex. Recent alluvium is typically unsaturated and not a significant source of water to area wells. Within the bedrock complex, the Cretaceous Morita Formation and Glance Conglomerate are the most important water-bearing units.

2.4.1.1 Basin Fill

Basin fill is the principal aquifer in the Bisbee-Naco area south of the Abrigo fault and west of the Black Gap fault due to its relatively high permeability and large saturated thickness. In this area, the basin fill provided about 95 percent of all water for domestic purposes in the Bisbee area in the 1980s (Littin, 1987). The thickness of the basin fill increases from zero at the margins to at least 535 feet in the central portion of the basin north of Naco, based on the well log of monitor well TM-19A. North of the Abrigo fault and east of the Black Gap fault, the basin fill is unsaturated.

Clay beds are interbedded with sand and gravel within the basin fill (ELMA, 1990; Wright, 2001). Although well logs indicate that there is interbedded clay and silt in the basin fill in some TM wells and GW-47, clay and silt beds within the basin fill cannot be correlated from well to well. The role of these clay and silt beds in controlling groundwater flow, particularly vertical mixing in the aquifer, is uncertain.

2.4.1.2 Bedrock Complex

The bedrock complex generally has low permeability unless the intrinsic permeability is enhanced by secondary structures such as faults, fractures, and/or dissolution in the case of limestone. For this reason, the bedrock units typically do not yield as much water to wells as the basin fill (Litten, 1987), although the Bisbee Group is a source of water in the vicinity of the CTSA. The Cretaceous Morita Formation and Glance Conglomerate are the primary aquifers east of the Black Gap fault where the basin fill is unsaturated and thin.

Paleozoic sedimentary, igneous, and metamorphic rock units have not been intercepted in wells in the vicinity of the CTSA south of the Bisbee West-Gold Hill fault except at Arizona Water Company (AWC) well 5, which reportedly intercepted volcanic rock at a depth of 1,140 feet (Arizona Department of Water Resources (ADWR), 2006). Paleozoic and igneous rocks are not a source of water to CTSA wells. However, outside the CTSA in the Bisbee-Warren Mining District, highly fractured zones associated with faults in the Paleozoic units are capable of producing large volumes of water in localized areas (Littin, 1987; WMC, 2006).

2.4.1.3 Influence of Structure on Groundwater Flow

Faults play a significant role in controlling groundwater flow in the vicinity of the CTSA. The Abrigo and Black Gap faults have been regarded as hydraulic barriers or aquitards in previous hydrologic modeling of the Bisbee-Naco area (SET, 1998b and 1998c).

Although the fault zones themselves may have low permeability and restrict groundwater flow across them, adjacent fracturing in the wall rocks may increase permeability and water yield substantially in zones along or parallel to the faults. For example, the Black Gap fault forms the eastern boundary of the underground mine workings in the Warren Mining district because mine dewatering became difficult once this fault zone was crossed (Litten, 1987; WMC, 2006). North of the CTSA area, the highest flows encountered during underground mining in the district are reportedly from the fracture system developed at the intersection of the Black Gap and Saginaw faults (WMC, 2006). Enhanced permeability along the Black Gap fault may be due to subsidiary fracturing parallel to the Black Gap fault enlarging over time through dissolution (WMC, 2006). The influence of structure on groundwater elevation and flow in the vicinity of the CTSA is discussed further in Section 2.4.3.

2.4.2 Hydraulic Properties

Hydraulic conductivity data are available from pumping tests conducted at monitoring wells in the basin fill and bedrock aquifers (Steffen, Robertson, and Kirsten (SRK), 1997). Hydraulic conductivity data summarized in Table 2 include estimates for basin fill, basin fill plus Morita Formation, and Morita Formation. Table 2 contains three sets of data. The two data sets

reported by SRK (1997) consist of previously unpublished data for the original aquifer tests conducted by ELMA in 1990 and SRK's reinterpretation of the results. The third data set contains hydraulic conductivity estimates from the calibrated groundwater flow model of the Bisbee-Naco area by SET (1998c). Although not the result of field tests, the model-derived estimates are included for comparison because they represent volume-averaged hydraulic properties for the area.

Based on the original pumping test interpretations by ELMA (SRK, 1997), estimates of the hydraulic conductivity in basin fill wells TM-11 and TM-13 range from 39.0 to 59.0 feet per day (ft/day) and average 49.0 ft/day. Average hydraulic conductivities in co-located wells open to both basin fill and Morita Formation were estimated at 24.1 ft/day at TM-1and TM-1A, and 4.9 ft/day at TM-29, TM-29A, and TM-29B. Estimates of hydraulic conductivities for the Morita Formation west of the Black Gap fault average 9.3 ft/day based on pumping tests at TM-30, TM-30A, TM-19A and TM-38. East of the Black Gap fault, the hydraulic conductivity of the Morita Formation was estimated to be 1.3 ft/day at TM-16. Hydraulic conductivities reported by WMC (2006) for the Morita Formation in the mining area range from 5.8×10^{-4} to 14.4 ft/day and generally appear to be lower than Morita Formation hydraulic conductivities in the vicinity of the CTSA.

Other hydraulic data reported for the basin fill include an average porosity of 0.35, average effective porosity of 0.25, and for the Morita Formation, an average porosity of 0.25 and an average effective porosity of 0.15 (ELMA, 1990).

2.4.3 Potentiometric Relationships

Figures 8, 9, 10, and 11 illustrate water level data compiled from CQB files, ADWR (2005), and previous hydrological investigations of the area for the years 1989, 1996, 1999, and 2005, respectively. Fewer water level data are available for 1996, 1999, and 2005 than for 1989 because some of the monitoring points available in 1989 were not completed as wells and also because some of the wells were abandoned by 1990. Figures 8, 9, 10, and 11 only show wells with water level data for that period. The water level data shown on these figures is reported in Appendix B.

The potentiometric contour lines in Figures 8 through 11 are interpretive based on the conceptual model discussed in Section 2.6. Water level contours are not shown crossing the Abrigo and Black Gap faults in the vicinity of the tailing impoundments since differing water levels on either side of the faults indicate poor hydraulic communication across the faults in this area. Possible refraction of water level contours across fault zone heterogeneities is not depicted.

In general, the depth to water varies from approximately 60 feet east of the Black Gap fault to greater than 800 feet north of the Abrigo fault under the South Tailings Impoundment. The water level data indicate that in the vicinity of the CTSA, the groundwater flows southwest and west on the west side of the Black Gap fault and south and southwest on the east side of the fault. South of the CTSA, the groundwater flow direction shifts to westerly in the vicinity of Naco and Greenbush Draw.

Figure 8 illustrates water levels in the CTSA for the year 1989. To provide sufficient coverage, 1988 and 1990 water levels are included for NWC and AWC wells, respectively, because 1989 data were not available for these wells. The water level at TM-35 was not used in contouring the 1989 data due to its anomalously low water level relative to neighboring wells to the west. The 1989 water elevations east of the Black Gap fault are interpreted to reflect mounding in the vicinity of the CTSA. Figures 9, 10, and 11 illustrate water levels for the years 1996, 1999, and 2005, respectively. Water level data for these years are sparser than 1989 due to the abandonment of many temporary monitoring wells by 1990.

Since 1988, when systematic water level measurements began, water levels in monitoring wells have generally declined. Wells in the vicinity of the former evaporation pond show the greatest decline. Hydrographs of wells BF-2, TM-2, TM-2A, TM-7, TM-19, and TM-19A, located near and downgradient of the former evaporation pond (Figure 3), are shown in Figure 12. These wells show a steady decline in water levels from 1988 through 1997, probably reflecting the dissipation of a ground water mound formed in response to water discharged between 1908 and 1987 to the former evaporation pond. The rate of dissipation of the mound appears to have slowed after 1997.

In contrast to the drop in water levels over time at the former evaporation pond area wells (Figure 12), the hydrograph of well GL-3, located north of the Abrigo fault and west of the Black Gap fault, shows a nearly constant rise in water levels from the time the well was installed in 1993 through 2006 (Figure 13). The hydrograph of GL-3, compared to those of wells lying on opposite sides of the Black Gap and Abrigo faults, indicate that there is poor hydraulic

communication across the faults. As discussed by SET (1998b) and WMC (2006), the water level recovery at GL-3 matches that observed in the mining area to the north. On this basis, WMC (2006) concluded that the portion of the CTSA north of the Abrigo fault and west of the Black Gap fault lies in a structural block within the cone of depression resulting from mine dewatering. In this interpretation, the area north of the Abrigo fault is separated from the area south of the Abrigo fault by a groundwater divide, with groundwater flowing to the north in bedrock north of the Abrigo fault and to the south and west in basin fill and bedrock south of the Abrigo fault. The water level data shown on Figure 7 further illustrate potentiometric relationships in the vicinity of the Abrigo and Black Gap faults.

The influence of faults on permeability and groundwater flow in the area is largely inferred from potentiometric data. A combination of the Black Gap fault plane acting as a barrier to groundwater flow across the fault and a sub-parallel zone of fracture-enhanced permeability allowing flow along the fault plane may in part explain the unusual water level patterns north and west (GL-3) of the CTSA (Figures 7, 8, 9, 10, and 11). The exact nature of potentiometric relations across the projection of the Black Gap fault south of the tailing impoundment is uncertain and can only be inferred. South of the tailing impoundments water level elevations on either side of the Black Gap fault do not differ as dramatically as in the vicinity of the tailing impoundments, although monitoring data are sparse. It is possible that whatever process causes the discontinuity in water levels in the vicinity of the impoundments did not occur to the same degree south of the impoundments and so the fault may not represent as significant a heterogeneity south of the impoundment. Possible scenarios include that the fault

feathers out south of the impoundments or that the degree of fractures, offset, or mineralization along the fault is less.

The degree of hydraulic connection between the Glance Conglomerate and the overlying Morita Formation and basin fill is uncertain due to the lack of co-located wells in each hydrostratigraphic unit and limited time series water level data. This is true east of the Black Gap fault (Figures 8, 9, 10, and 11) and south of the Abrigo fault in the vicinity of TM-19 and TM-19A (Figure 12). At issue is whether potentiometric conditions in the Glance Conglomerate differ significantly from those in the Morita Formation and basin fill such that the Glance Conglomerate should be treated as a separate potentiometric system. Despite this complication, potentiometric conditions south of the Abrigo fault and east of the Black Gap fault were assumed to be continuous between basin fill, Morita Formation, and Glance Conglomerate for the purpose of contouring water elevation maps.

2.4.4 Groundwater Flow

Apparent groundwater flow velocities for the years 1989 and 2005 were estimated for the basin fill and Morita aquifers using available hydraulic property estimates (Table 2), water level data for 1989 and 2005 (Figures 8 and 11), and effective porosities of 0.25 and 0.15 for the basin fill and Morita formations, respectively. Table 3 summarizes the calculation of groundwater flow velocities. To evaluate a potential range for groundwater flow velocities, the average hydraulic conductivities from field tests (ELMA results in SRK, 1997) and the estimated hydraulic conductivities from numerical modeling by SET (1998c) were used.

The groundwater pore velocity in basin fill between TM-2 and TM-11 in 1989 was estimated to range between 0.23 and 0.48 ft/day in the southwest direction using the model-derived and field test hydraulic conductivities respectively. The groundwater pore velocity in the basin fill between TM-2 and well 641802 in 2005 was estimated likewise to be between 0.09 and 0.19 ft/day in the southwest direction. Well 641802 was used for the 2005 calculation rather than TM-11 because no 2005 water level data are available for TM-11, and 641802 is the well closest to TM-11 with a 2005 water level measurement (Figure 11). The hydraulic conductivity from the calibrated model of 23 ft/day for silty sand was used to estimate flow velocity because it is the material type used in modeling flow between these wells.

The groundwater pore velocity in the north-south direction on the east side of the Black Gap fault between Glance Conglomerate well TM-28 and Morita Formation well TM-16 was estimated to be between 0.29 and 0.9 ft/day in 1989 using the model-derived and field test hydraulic conductivities, respectively. The pore velocity in the Morita Formation in the

east-west direction between TM-16 and TM-19A was estimated likewise to be between 0.29 and 0.91 ft/day in 1989 and between 0.36 and 1.12 ft/day in 2005. Pore velocity in the Morita Formation in the north-south direction east of the Black Gap fault in 2005 was not calculated due to insufficient water level data.

In summary, pore velocities based on the ELMA (SRK, 1997) hydraulic conductivity estimates are greater than those based on the SET (1998c) model estimates by a factor of approximately three in the Morita Formation and a factor of two in the basin fill. Groundwater west of the Black Gap fault and south of the Abrigo fault is flowing to the southwest and west towards Naco. Groundwater flow east of the Black Gap fault is southerly, towards Bisbee Junction. Rates of groundwater movement in the basin fill west of the Black Gap fault have diminished since 1989 due to a reduction in hydraulic gradients. Rates of groundwater movement in the Morita Formation and the Glance Conglomerate east of the Black Gap fault have changed little between 1989 and 2005 because little change in hydraulic gradient had occurred. Calculated rates of movement are currently higher for the Morita Formation and Glance Conglomerate aquifers compared to basin fill because of higher hydraulic gradients and lower effective porosities in the former.

2.4.5 Recharge Sources

Range front recharge to the Bisbee-Naco area comes from the Sierra San Jose and the Mule Mountains. Littin (1987) suggested that a significant amount of recharge north of the Greenbush Draw may occur away from the Mule Mountain range front through fractured and

faulted rocks in the subsurface. Surface water runoff and recharge from mountain areas is from the Mule Mountains to the north and east and from the Sierra San Jose in Mexico to the south into the center of the physiographic basin.

Historically, mine water discharged to the former evaporation pond and the former irrigation area were a source of recharge. Other recharge sources in the Naco-Bisbee area include urban runoff, municipal wastewater treatment plant (WWTP) discharge, and irrigation water. In 2006, an expanded San Jose Wastewater Treatment Facility (WWTF) began operation, replacing three smaller WWTPs: the Warren WWTP and the San Jose WWTP located within the vicinity of the CTSA (Figure 3), and the Mule Gulch WWTP outside the vicinity of the CTSA. Each treatment plant had its own on-site discharge ponds. The Warren WWTP provided recharge east of the South Tailing Impoundment in Section 35, Range 24 East, Township 23 South. SET (1998c) estimated the maximum recharge rates at the Warren WWTP as 100 gpm. The San Jose WWTP provided recharge to the former irrigation area in Section 9, Range 24 East, Township 24 South (Figure 2).

As of 2006, effluent from the new San Jose WWTF is conveyed approximately 1.5 miles southwest and either discharged into Greenbush Draw at its intersection with the Bisbee-Naco Highway approximately one half mile northeast of Naco (Figure 3) or used for golf course irrigation. Effluent-dependent surface flow in Greenbrush Draw occurs for at least one mile downstream from the discharge point. The San Jose WWTF is permitted to collect a maximum average monthly flow of approximately 850 gpm (ADEQ, 2006). The Naco Sanitary District WWTF is located in the northwest portion of Section 13, Range 23 East, Township 24 South.

Additional recharge sources in the area are the Naco Sonora Sewage pond and El Oasis Irrigation area in Sonora, Mexico. SET (1998c) estimated maximum recharge from the Naco Sonora Sewage pond and El Oasis Irrigation area as approximately 100 gpm and 500 gpm, respectively.

2.5 Water Quality

CQB has monitored groundwater quality in the vicinity of the CTSA since the late 1980s. Water quality data has been generated primarily for groundwater monitoring wells installed in the area, but has also been generated for some municipal and private water supply wells. Appendix C contains sulfate concentration data for groundwater samples for 1987 through 2005 compiled from Canonie Environmental, 1990; SGC, 1994; SET, 1998b, 1998c, 1999; ADEQ, 2006; Weiskopf, 2006; the Arizona Water Company; and the Naco Water Company. Additional groundwater quality data for 1987 through 1997 were compiled from SET (1999) and are provided in Appendix D.

Most groundwater monitoring wells in the vicinity of the CTSA were installed between October 1988 and November 1989 for the Aquifer Protection Permit investigation (ELMA, 1990), although several additional wells were installed in 1993 (SGC, 1994) and 1997 (SRK, 1997) to further characterize the site. Water quality samples have been collected from wells completed in the three principal water-bearing units in the area; the basin fill, the Morita Formation, and the Glance Conglomerate. Many of the groundwater monitoring wells sampled in 1989 are no longer available for sampling because they were abandoned by 1990.

Water samples collected from monitoring wells in the vicinity of the CTSA have been analyzed for metals, organic compounds, and inorganic parameters such as sulfate. Based on the historical sampling, metals and organic compounds are not of concern because detections have been infrequent and at low concentrations (Appendix D). Major element chemistry and metal concentrations in groundwater are discussed in more detail in Sections 2.5.2 and 2.5.3, respectively.

Canonie Environmental (1990) evaluated groundwater for organic compounds. Out of a total of 59 organic compounds analyzed, only 5 were detected, and detected concentrations were below Arizona Aquifer Water Quality Standards (AWQS). Samples collected by Canonie were analyzed for 59 organic compounds using EPA Method 601/602 (phenol analyzed using EPA 420.2). The organic compounds detected in the 1989 sampling event conducted by Canonie were the following:

- Benzene (1 detection in 39 samples at a concentration of 1.7 µg/L)
- Chloroform (3 detections in 40 samples at concentrations from 2.9 to 10.6 µg/L)
- Toluene (4 detections in 39 samples at concentrations from 14.3 to 69.5 µg/L)
- Dithiocarbmates as Ziram (2 detections in 40 samples at concentrations of 0.020 and 0.039 µg/L)
- Phenols (22 detections in 62 samples at concentrations of 0.003 to 0.124 mg/L)

Because AWQS were not exceeded, and because detections were limited to one or two sampling events out of multiple sampling events at each well, the detections are believed to be the result of analytical error.

2.5.1 Sulfate Distribution

The sulfate plume (as defined by sulfate levels greater than 250 mg/L) extends over an area of approximately 2.5 miles by 3.5 miles and is confined primarily to the basin fill and Morita Formation aquifers. Within areas where the basin fill aquifer is the principal aquifer and is impacted by the sulfate plume, the underlying Morita Formation is typically unimpacted. Vertical stratification of sulfate within the basin fill aquifer is known to occur in at least one downgradient location based on depth-specific sampling during drilling of GW-47 (Section 2.5.1.2). Here, only the upper portion of the basin fill aquifer is impacted by sulfate.

2.5.1.1 Areal Distribution

Figures 14, 15, and 16 are contour maps showing the areal distribution of sulfate in August 1989, summer 1996, and August through November 2005, respectively. Figures 14 through 16 only show wells that have sulfate measurements for the period. The 1996 map shows 1997 data from wells for which 1996 data were unavailable. The map for August through November 2005 plots the most recent data available for the period and includes one data point from 2006. As indicated, sulfate extends downgradient of the area of the former evaporation pond and former irrigation area. West of the Black Gap Fault, the sulfate plume is contained primarily within the basin fill. East of the fault, where the basin fill is largely unsaturated, the sulfate plume has been identified in the underlying Morita Formation.

Contour lines are uncertain (and therefore dashed) over the plume area due to sparse data. The sparse data and, in many cases, the lack of measurements from the same wells over time

prevent precise positioning of contours and accurate determination of changes in contour positions over time. This is particularly true of the 250 mg/L contours, which are inferred over most of their extent. The rate of plume migration, based on the movement of the 250 mg/L contour over time, was likely higher between 1989 and 1996 than between 1996 and 2005 due to reduced hydraulic gradients in the latter period (Section 2.4.4). Because of dispersion and the reduction in hydraulic gradients over time, the plume may be relatively stagnant in some areas, but migrating in others, especially in marginal areas near production wells where groundwater gradients can be locally higher due to pumping. Additionally, the data are insufficient to contour sulfate concentrations in each individual hydrostratigraphic unit.

Figure 17 compares the extent of the sulfate plumes (defined by the 250 mg/L contour) in 1996 and 2005. As indicated, there are no significant differences in the apparent shape of the plume, although the southwestern margin of the plume migrated to the southwest between 1996 and 2005 and impacted well NWC-3. This well was predicted to remain outside the sulfate plume by previous numerical modeling (SET, 1998c). Concentrations at NWC-3 were 119 mg/L in August 1996 and 460 and 390 mg/L in October and November 2005, respectively. Figure 18 shows sulfate concentrations over time at NWC-3 and other wells in the vicinity of the plume.

Elsewhere, changes in sulfate concentrations within downgradient portions and at the margins of the plume indicate that the plume has expanded slightly, or, in places, has contracted slightly since 1996. Concentrations at downgradient well TM-16 (in the southeastern portion of the plume near Bisbee Junction) increased from 500 mg/L in June 1996, to 528 and 619 mg/L in August and October 2005, respectively, indicating possible expansion of the plume. However,

decreasing concentrations at NWC-4, located approximately 2500 feet south (and downgradient) of TM-16, indicate that the sulfate plume has contracted slightly. NWC-4 was within the plume with a concentration of 255 mg/L in August 1996, and is now outside the plume with October and November 2005 concentrations of 220 mg/L and 200 mg/L, respectively. Changes in sulfate concentrations over time at TM-16 and at NWC-4 are shown in Figure 18. A reduction in concentrations within the plume and possible contraction are also indicated by data from downgradient well TM-42 (in the southern portion of the sulfate plume near Purdy Lane) (Figure 18). Sulfate concentrations at TM-42 decreased from 985 mg/L in July 1997 to 656 mg/L in October 2005.

Sulfate concentrations in the upgradient portion of the plume (wells TM-2 and BF-1) have not changed significantly between 1996 and 2005 (Figure 18), although concentrations at TM-2 decreased substantially between 1989 and 1996 (from greater than 2,500 mg/L to less than 1,300 mg/L). Specifically, concentrations at well TM-2 were 1,200 mg/L in June 1996 and 1,280 mg/L in October 2005. Sulfate concentrations in BF-1 were 1,400 mg/L in June 1996 and 1410 mg/L in October 2005. The post-1989 drop in sulfate concentrations in TM-2 probably reflects a lack of further sulfate source loading when mine water discharge to the former evaporation pond stopped in 1987.

2.5.1.2 Vertical Distribution

Historical sampling indicates that west of the Black Gap fault, where the basin fill is the principal aquifer, the sulfate plume is confined primarily to the basin fill. Wells completed only

in the underlying Morita Formation or Glance Conglomerate west of the Black Gap fault are not impacted. For example, at paired wells TM-2/2A and TM 19/19A, in which one of the pair is screened in basin fill and the other in bedrock, the bedrock aquifer is unimpacted. East of the Black Gap fault, where the basin fill is unsaturated, the sulfate plume has been detected within the Morita Formation, and the extent of sulfate in Glance Conglomerate is undetermined.

Sulfate is vertically stratified within the basin fill at the location of GW-47. Depth-specific sampling during drilling indicated that sulfate concentrations in the basin fill decreased from 632 mg/L to 25.8 mg/L between the depths of 280 feet and 345 feet below land surface (Wright, 2001). The total depth of basin fill at GW-47 is 540 feet and the static water level was measured at a depth of 184 feet in October 2001. Water quality samples collected at depths of 250 to 280, 345 to 375, 455 to 485, 545 to 575, and 630 to 670 feet below ground surface had sulfate concentrations of 632, 25.8, 16.7, 39.8, and 54.2 mg/L, respectively. These data indicate that the sulfate plume is localized in the upper portion of the total 360-foot thickness of saturated basin fill. The underlying Morita Formation in which the well was completed had sulfate concentrations less than 55 mg/L, indicating the Morita Formation is unimpacted by the sulfate plume.

2.5.1.3 Comparison of Current Sulfate Distribution to Model Predictions

SET (1998c) developed a groundwater flow and sulfate transport model as a tool to predict the future movement of the sulfate plume. The model was calibrated to historical water levels in the basin fill, Morita Formation, and Glance Conglomerate, and to sulfate

concentrations measured up to year 1997. The model was then run forward in time to predict post-1997 sulfate concentrations based on assumed future pumping and recharge conditions. Predicted year 2005 sulfate concentrations at many of the wells, such as TM-2 and TM-16 (approximately 1,250 mg/L and 700 mg/L, respectively) are similar to measured values (1,280 mg/L and 610 mg/L, respectively). Measured sulfate concentrations at other locations, however, such as TM-42, are lower than predicted in 2005 (approximately 656 mg/L measured and 1,125 mg/L predicted). Figure 19 shows measured and predicted concentrations for the above wells.

As noted in Section 2.5.1.1, the SET model under predicted sulfate concentrations measured at NWC-3 in year 2005. Model predicted concentrations of approximately 100 mg/L for year 2005 are about one quarter the concentrations of 390 mg/L and 460 mg/L measured in October and November 2005, respectively (Figure 18). NWC-3 is of concern because it is a water supply well located at the downgradient edge of the sulfate plume. Differences between simulated and measured concentrations are likely due, in part, to unforeseen changes in groundwater flow resulting from changes in pumping rates and other factors that must be projected into the future at the time the predictive simulations are made. However, the model was under predicting sulfate concentrations at NWC-3 as early as 1997 (Figure 5-6B in SET, 1998c), suggesting that the model calibration needs improvement in this area.

2.5.2 Major Element Chemistry

The composition of groundwater within and outside the sulfate plume was examined with regard to major ions, TDS, and pH. Data collected as close to June 1996 as possible from selected wells completed within both the basin fill and Morita Formation aquifers were considered. Table 4 summarizes the data and Figure 20 displays the data in a trilinear plot after converting the concentrations to "milliequivalents per liter".

There are two generally well-defined populations evident in Figure 20 that distinguish groundwater collected from inside the sulfate plume from groundwater collected from outside the plume. This distribution indicates that the chemistry of groundwater outside the plume is generally similar in both the Morita Formation and basin fill aquifers, and that the chemistry of groundwater inside the plume is generally similar in both the Morita Formation and basin fill. Otherwise, four distinct populations would be evident. An obvious outlier is the sample from NWC-5, which has a relatively high chloride concentration and has been impacted by nitrate. This is likely the result of local infiltration of septage.

Groundwater inside the plume is a calcium sulfate type whereas groundwater outside the plume is bicarbonate type with either calcium or potassium. The groundwater chemistries of the basin fill and Morita Formation aquifers do have slight differences. Outside the sulfate plume, groundwater in the Morita Formation tends to have sodium concentrations that are higher than their respective concentrations in the basin fill. Inside the plume, potassium concentrations within the Morita Formation are generally higher than in the basin fill.

Concentrations of calcium, magnesium, carbonate, and TDS strongly correlate with sulfate concentrations. In general, this correlation is similar for groundwater samples collected from both the basin fill and Morita Formation aquifers. The concentration of TDS in a groundwater sample is a measure of the material dissolved in solution, whether it is ionized or not. Typically, the most abundant dissolved solids in groundwater are the major element cations of calcium, magnesium, sodium, and potassium, and the major anions of chloride, sulfate, and bicarbonate. Groundwater samples from the plume are a calcium sulfate type water, indicating the predominance of calcium and sulfate in solution. Table D.1 in Appendix D provides TDS, calcium, sulfate, and bicarbonate concentrations for groundwater samples. Inspection of Table D.1 indicates that the TDS concentration at TM-2 in the source area near the former evaporation pond ranged from a high of 5,520 mg/L to a low of 2,500 mg/L between January 1989 and November 1997. Sulfate, calcium, and bicarbonate can be seen to vary in rough proportion to TDS and each other. Because there are elevated concentrations of calcium, sulfate, and bicarbonate associated with the sulfate plume, the TDS within the plume is elevated. Mitigation actions that address sulfate would also address TDS because sulfate is a major component of the TDS.

Strongly acidic conditions (pH<5) have not been detected in groundwater near the former evaporation pond or tailing impoundments. The pH of groundwater in both the basin fill and Morita is neutral to slightly alkaline (generally between 7 and 8) outside the sulfate plume and neutral to slightly acidic (generally between 6 and 7) inside the plume. Thus, on average, groundwater impacted by the sulfate plume has a slightly lower pH than groundwater unimpacted by the plume.

2.5.3 Metals

Appendix D (Table D.1) contains the results of analysis of metals in groundwater samples from the CTSA and vicinity. Based on historical groundwater sampling, detections of metals have been infrequent enough and at low enough concentrations when detected that they are not of concern in the vicinity of the CTSA south of the Abrigo Fault. Furthermore, when detected, metals do not generally correlate well with the presence of elevated sulfate in the groundwater.

Metals for which AWQS have been established have been detected sporadically at low concentrations, including antimony, arsenic, barium, cadmium, chromium, lead, mercury, nickel, selenium, and thallium (Table D.1). The highest detected metals concentrations compared with their respective AWQS are as follows:

Metal	**Location**	**Highest Detected Concentration (mg/L)**	**AWQS (mg/L)**
Antimony	BF-2 (within plume)	0.06	0.006
Arsenic	TM-7 (within plume)	0.006	0.01
	TM-15 (outside plume)	0.006	0.01
	NWC-5 (outside plume)	0.006	0.01
Barium	AWC-3 (outside plume)	0.39	2.0
Cadmium	TM-2A (within plume)	0.0013	0.005
Chromium	GL-3 (outside plume)	0.045	0.1
Lead	GL 3 (outside plume)	0.034	0.05
Mercury	TM-2 (within plume)	0.00245	0.002
Nickel	GL-3 (outside plume)	0.036	0.1
Selenium	TM-2 (within plume)	0.011	0.05
Thallium	TM-16 (within plume)	0.002	0.002

GL-3 is located north of the Abrigo Fault and outside the sulfate plume. Disregarding GL-3, nickel was not detected, and the highest detected chromium and lead concentrations within the plume were as follows:

Metal	Location	Highest Detected Concentration (mg/L)	AWQS (mg/L)
Chromium	ELKS well (within plume)	0.036	0.1
	BF 01 (within plume)	0.036	0.1
Lead	TM-2A (within plume)	0.022	0.05

Table D.2 (Appendix D) summarizes the analytical results for metals for the wells listed in Table D.1. The summary in Table D.2 provides several insights regarding metals in groundwater:

- Most metals with AWQS were infrequently detected (a detection frequency of less than 15 percent), if detected at all. Arsenic, cadmium, chromium, mercury, nickel, lead, and selenium all had detection frequencies less than 15 percent.

- Antimony, mercury, and thallium were the only metals with one or more detections at or in excess of their respective AWQS.

- The constituent most frequently detected at concentrations above AWQS, antimony, was detected above AWQS in 9 of the 25 samples with MDLs less than the AWQS (detection frequency of 36 percent). The majority of antimony exceedances (8 of the 9 exceedances) were in samples collected and analyzed by ADEQ in 1996; including exceedances at two wells outside of the sulfate plume (AWC-2 and AWC-3). Samples from wells TM-2 and TM-16 which had exceedances in 1996 were collected again in two separate sampling events in 1997 and found to have no detectable antimony at an MDL of 5 ug/L.

- Mercury was detected in 1 of 97 samples (detection frequency of 1 percent). The lone detection was in a sample from TM-2 collected in 1989. The MDLs for all 97 analyses of mercury were less than the MDL.

- Thallium was detected in 1 of 18 samples with MDLs at or below the AWQS (detection frequency of 6 percent). The detection was at the MDL and the AWQS.

The above observations illustrate that (1) elevated concentrations of metals are not characteristic of the sulfate plume, (2) metal occurrences in excess of AWQS are neither widespread in space, nor persistent over time, and (3) the antimony exceedances are anomalous in that they were associated with a single sampling event and were not duplicated in subsequent sample events. Furthermore, the elevated concentrations of antimony cannot be associated with the sulfate plume because the antimony concentrations in excess of AWQS occurred both inside and outside of the plume extents. Given the infrequent detection of metals and the lack of association of elevated metal concentrations with the sulfate plume, metals are not constituents of concern with respect to sulfate mitigation.

2.6 Preliminary Conceptual Model for the Groundwater Sulfate Plume

The groundwater sulfate plume resulted from seepage of sulfate bearing waters from the tailing impoundment, the former evaporation pond, and the former irrigation area. All three of these areas received water containing elevated sulfate concentrations. The primary source of seepage was likely the former evaporation pond because of the relatively high hydraulic conductivity of the basin fill on which the water was applied (Section 2.4.2), and due to the maintenance of ponded conditions. Seepage from the tailing was relatively low due to the relatively low hydraulic conductivity of the tailing material, and is likely negligible at the present time based on the results of investigations by SET, 1998a. Also, the North Tailing Impoundment and most of the South Tailing Impoundment are north of the Abrigo fault and east of the Black Gap fault in the hydraulic domain isolated from the plume. Relative to the evaporation pond,

seepage from the former irrigation area was presumably low because of lower water application rates, less ponding, and higher evapotranspiration rates due to the crops grown.

Sulfate-bearing seepage mixed with groundwater in the basin fill to the west of the Black Gap fault, and with groundwater in the Morita Formation to the east of the fault. West of the fault, the basin fill is the principal aquifer, and east of the fault, the Morita Formation is the principal aquifer. The sulfate then moved downgradient with the direction of groundwater movement in each aquifer, to the west, southwest, and south in basin fill on the west side of the fault, and to the south and southwest in the Morita Formation on the east side of the fault. The rate of movement of sulfate is expected to be about the same as the rate of groundwater movement in each aquifer because sulfate behaves conservatively and does not significantly sorb onto, or react chemically with the aquifer materials.

The majority of the sulfate that entered groundwater was dissolved in seepage from the former evaporation pond. Seepage rates were high enough to create a groundwater mound in both the basin fill and Morita Formation aquifers. This mound has dissipated since the cessation of water delivery to the former evaporation pond in 1987 (Figure 12). This dissipation has occurred more quickly in the basin fill than the Morita Formation due to the lower average hydraulic conductivity of the Morita Formation (SET, 1998c). Although the primary source of the plume (the former evaporation pond) has been inactive since 1987, and sulfate concentrations in the upgradient portion of the plume have diminished since that time, residual sulfate concentrations in the upgradient portion of the plume were in excess of 1,400 mg/L as of year

2005. The CTSA facilities are inactive and do not receive discharges except for stormwater and rainfall (Section 2.1.1).

Movement of the sulfate plume has been primarily laterally within the basin fill, Morita Formation, and Glance Conglomerate. West of the Black Gap fault, where the basin fill is impacted, sulfate does not appear to have migrated vertically into the underlying Morita or Glance Formations. An exception may be monitoring well BF-1 near the former evaporation pond. BF-1, completed in basin fill, Morita Formation, and Glance Conglomerate, had a 2005 sulfate concentration of 1,410 mg/L. Although the source of sulfate in this well is likely the basin fill aquifer, it is unknown how much, if any, of the sulfate may be contributed by bedrock. East of the Black Gap fault, where the Morita Formation aquifer is impacted, it is unclear whether sulfate has migrated vertically into the underlying Glance Conglomerate aquifer. Flow from the Glance Conglomerate to the Morita Formation and from the Morita Formation to the basin fill across the dipping contacts, possibly in conjunction with higher horizontal hydraulic conductivity compared to vertical hydraulic conductivity, would act to maintain the sulfate plume at shallow depths, and may also partly explain the confinement of the sulfate plume to the upper portion of the basin fill at the location of GW-47 (Wright, 2001). Upward hydraulic gradients would enhance this behavior. Slight upward hydraulic gradients over much of the area of the plume were present in the site numerical model prepared by SET, (1998c). However, sustained upward hydraulic gradients have not been detected based on water level measurements in paired monitoring wells (Figure 12) and the vertical distribution of the plume is yet to be characterized.

With respect to lateral movement, the sulfate plume changes from a more southerly to a more westerly direction as it moves south towards Greenbush Draw, where the direction of groundwater flow changes from more southerly to westerly. Ultimately, the groundwater exits the basin flowing westerly, approximately parallel to the direction of surface water flow in Greenbush Draw.

The direction and rate of movement of the sulfate plume are locally influenced by areally non-uniform recharge rates, and groundwater pumping. As sulfate continues to move downgradient, hydrodynamic mixing and dilution by low-sulfate recharge act to reduce the average sulfate concentrations within the plume. These processes, and the absence of a continuing source, are important in reducing concentrations within both upgradient and downgradient portions of the plume. Furthermore, the reduction in hydraulic gradients between the upgradient and downgradient portions of the plume, that has resulted from dissipation of the groundwater mound associated with the former evaporation pond, will act to reduce the rate of downgradient migration of the sulfate plume.

In summary, the source of the sulfate plume was the seepage of sulfate–bearing water released to the former evaporation pond. The sulfate-bearing seepage migrated vertically to the groundwater table, likely forming a recharge mound in the subsurface beneath the former evaporation pond. Sulfate-bearing seepage mixed with groundwater in the basin fill and Morita Formation, and flowed primarily to the south and west under the prevailing hydraulic gradients. The sulfate plume formed because the discharge of sulfate-bearing water to the former evaporation pond persisted for decades. The source of sulfate-bearing seepage was eliminated

when discharges to the former evaporation pond were eliminated in 1987. Although the source is eliminated, the previously impacted groundwater composing the plume is still migrating under the current hydraulic gradients in the basin fill and Morita Formation aquifers. The migration pathway for sulfate-bearing water is as groundwater flow which is southerly and westerly from the area of the former evaporation pond. Potential receptors of sulfate-impacted groundwater are municipal or private drinking water supply wells in the downgradient reaches of the plume near Bisbee Junction and Naco. Potential exposure to sulfate-bearing groundwater would be through the ingestion of water from a well with a well screen in the plume. Figure 21 is a schematic diagram illustrating the hydrogeology, the source of sulfate, the migration pathway, and potential receptors.

3. AQUIFER CHARACTERIZATION PLAN

3.1 Aquifer Characterization Plan (ACP) Objectives and Data Needs

3.1.1 ACP Objectives

The objectives of the ACP are to address the MO requirements to characterize the sulfate plume and to collect data sufficient to complete the FS. Based on Sections III.A and III.C of the MO, the ACP will:

- Complete a well inventory to identify drinking water wells within one mile downgradient and cross gradient of the outer edge of the sulfate plume within the state of Arizona.
- Determine the vertical and horizontal extent of the sulfate plume.
- Evaluate the fate and transport of the sulfate plume.

3.1.2 Data Needs

Addressing the ACP requires collection of the following data:

- Locations of drinking water wells within one mile downgradient and crossgradient of the plume.
- Sulfate concentration data collected at different locations and depths.
- Water level measurements to document potentiometric conditions.
- Information on the structure and hydraulic properties of the aquifer.
- Water level and water quality conditions in the potential source area.

A numerical model for groundwater flow and solute transport will be developed to evaluate the fate and transport of sulfate. In addition to the data identified above, information quantifying existing and future sources and sinks of groundwater will be needed to construct the model.

Data needs for the FS include: water quality data pertinent to assess potential treatment technologies, the current and future pumping rates for existing wells, expected future pumping rates for planned wells, and design specifications for existing and future water distribution and storage systems. Water quality data for assessing treatability will be developed under the ACP; whereas the FS (Section 5) will develop information on water treatment, current and future water supply needs and storage infrastructure, and the costs and benefits of mitigation alternatives.

The ACP consists of the following four tasks that will collect the data needed to address the MO requirements.

- Task 1 – Well Inventory.
- Task 2 – Plume Characterization.
- Task 3 – Sulfate Fate and Transport Evaluation.
- Task 4 – Preparation of the Aquifer Characterization Report.

Data needs and the ACP tasks that address them are briefly described below and summarized in Table 5. Sections 3.2 through 3.5 describe the individual ACP tasks.

- **Well Inventory** – The locations of drinking water supply wells will be identified by the well inventory for Task 1 (Section 3.2). Water quality samples will be collected from drinking water supply wells identified by the well inventory, provided access is granted by the owner.

- **Horizontal Extent of Sulfate Plume** – As shown in Figure 4, the current horizontal extent of the plume can only be inferred because there are few water quality data from outside the plume. The eastern extent of the plume is poorly constrained due to a lack of any water quality data in the vicinity of the Bisbee airport. The southeastern extent of the plume is defined by well NWC-4 with a sulfate concentration of 220 mg/L, which is less than the 250 mg/L mitigation level set by the MO for drinking water supplies. The western edge of the plume is not well defined due to a lack of recent data, but lies no further west than TM-15 with a 2005 sulfate concentration of 22.6 mg/L. The plume extends to the southwest to at least NWC-3 which has a 2005 sulfate concentration of 390 mg/L. Additional data is needed on all sides of the plume in order to more precisely define its extent. Task 2 specifies groundwater monitoring (Section 3.3.2) and the installation and sampling of additional wells (Section 3.3.3) to further delineate the horizontal extent of the plume.

- **Vertical Distribution of Sulfate** – Ongoing monitoring of existing co-located wells screened in different materials, i.e., the basin fill, Morita Formation and Glance Conglomerate, will provide information on the vertical distribution of sulfate. Additional monitoring wells will be installed for Task 2 (Section 3.3.3) as co-located well nests to characterize the vertical dimension of the plume.

- **Water Level and Water Quality Information** – Water level and water quality data will be updated in areas lacking current information and the spatial coverage of water level and water quality data will be expanded. Groundwater monitoring will be conducted for Task 2 (Section 3.3.2) to provide water level and water quality information inside and outside of the plume area. Groundwater monitoring will provide contemporaneous water level and water quality data for areas outside the plume. These data are needed to provide information on the regional groundwater flow system for calibration of the groundwater flow model for Task 3 (Section 3.4) and for characterizing background water quality conditions.

- **Aquifer Structure and Hydraulic Properties** – Existing data on the aquifer structure and hydraulic properties will be compiled for Task 2. Aquifer testing to be conducted at monitoring wells installed for Task 2 (Section 3.3.3) will characterize the horizontal and vertical distribution of hydraulic properties. Additional aquifer testing will be conducted at existing wells pending a review of well construction and successful negotiation of site access (Section 3.3.4).

- **Conditions in the Potential Source Area –** Groundwater monitoring wells will be installed at the former evaporation pond and South Tailing Impoundment for Task 2.3. These installations will allow ongoing monitoring of water levels and water quality in the former source area.

- **Quantification of Groundwater Sources and Sinks –** Groundwater sources (recharge) and sinks (pumping) will be documented for use in the groundwater flow model for Task 3 (Section 3.4). Recharge to the aquifer from ephemeral flows into the basin, and other sources, such as surface discharge from the San Jose WWTF, will be documented

or estimated for the groundwater flow model. Current and future expected groundwater pumping from water supply, irrigation, and industrial wells will be obtained from well owners or estimated using available information.

3.2 Task 1 - Well Inventory of Drinking Water Supply Wells

A well inventory will be conducted to identify all wells in Arizona within one mile of the sulfate plume. Wells within one mile downgradient and cross gradient of the outer edge of the plume will be categorized on the basis of water use to identify wells that may supply drinking water.

The well inventory will be based on the ADWR Well Registry Database, which contains records for all registered wells in Arizona. Records in the well registry pertain to a variety of types of installations including water supply wells (private, domestic, and municipal), environmental monitoring wells, remediation pumping wells, piezometers, geotechnical borings, mineral exploration borings, and abandoned wells. Information potentially available for individual wells includes the well registry identification number, cadastral and Universal Transverse Mercator (UTM) coordinates, well use, water use, installation data, geological data, well construction information, pumping information, and well owner.

The ADWR Well Registry Database is provided in a Geographic Information System (GIS) format, which allows the use of spatial queries to identify and extract well information based on the location of the well. A spatial query will be constructed using a geo-referenced shape file defining the outer edge of the sulfate plume defined by the 250 mg/L

contour (Figure 4). The shape file will be used to query the database and identify all wells in the plume and within one mile of the plume's downgradient and crossgradient edge.

Well locations in the ADWR database are described by cadastral coordinates based on township, range, and section. Most well locations are described to the "quarter, quarter, quarter section", an area of 10 acres or 660 feet by 660 feet. The database assigns UTM coordinates for the well to the midpoint of the area, although the well can be anywhere in the 10-acre area. To ensure the well inventory is comprehensive and identifies all wells potentially within one mile downgradient and crossgradient of the plume in Arizona, a safety factor will be added to the one-mile search radius to account for the uncertainty in well location due to cadastral coordinates. Wells will be removed from the set of wells identified using the safety factor only if they can be verified as being farther than one mile from the plume based on survey information or more detailed cadastral coordinates.

To augment the well inventory, public and semi-public water systems on file with ADEQ will be checked against the well inventory to identify water systems. Also, the ADWR Water Providers database will be used to identify the service areas of municipal water providers in the area. Cochise County, local water providers (AWC and NWC), the ADEQ public water system inspector, and local residents will be checked for information on potential water supply wells.

The well inventory is an important step in identifying potentially impacted drinking water supply wells. The owners of drinking water supply wells identified by the well inventory will be contacted to determine if they have current water quality data for the well, and if not, to

determine if the owner would allow CQB to access the well for sampling. CQB will offer to collect samples from drinking water supply wells and analyze for sulfate at no cost to the well owner. The results of the analysis will be provided to the well owner. Water level information will also be recorded if the well is equipped with a sounding tube. Drinking water supply wells will be field checked and their locations identified with a hand-held Global Positioning System unit. All well information will be entered into a well inventory database.

The well inventory will begin shortly after the Work Plan is finalized and will be conducted initially using the 250 mg/L sulfate contour shown in Figure 4. The well inventory may be revised if the plume defined by the results of characterization work for Task 2 indicates a significantly different shape for the plume.

3.3 Task 2 - Plume Characterization

The main objectives of the ACP are to investigate the hydrogeology of the plume area and to characterize the lateral and vertical extent of the sulfate plume. Plume characterization for Task 2 consists of data compilation and evaluation activities as well as field investigations. The data compilation and evaluation activities will ensure that the existing data used to characterize the plume are complete and verified. The field investigations focus on characterizing water level and water quality conditions in the regional aquifer, determining the vertical and lateral distribution of sulfate in the plume, and estimating aquifer hydraulic properties. The QAPP in Appendix F presents the data quality objectives (DQOs) for plume characterization. In summary, the DQOs are to:

- Define the extent of groundwater with sulfate in excess of 250 mg/L based on groundwater samples from new and existing monitoring wells and water supply wells.

- Characterize the materials, structure, and permeability of water-bearing units in the CTSA through geologic analysis of cuttings from drill holes and aquifer testing to support groundwater modeling of plume migration.

- Characterize potentiometric conditions and the groundwater flow system through water level measurements to support groundwater modeling of plume migration.

- Characterize sulfate concentrations in the source area.

- Collect water quality data needed to evaluate potential water treatment technologies.

The plume characterization includes the following subtasks:

- Data compilation and evaluation.

- Groundwater monitoring to augment the existing water level and water quality data.

- Installation and testing of monitoring wells as needed to define the southern, western, and eastern extents of sulfate, and source conditions.

Results of the well inventory (Task 1) and sampling of existing monitoring wells (Task 2) will help define the number and location of new monitoring wells needed.

3.3.1 Task 2.1 - Data Compilation and Evaluation

The data compilation and evaluation will focus on assembling and assessing information on the subsurface distribution of bedrock and the water quality of area wells. A secondary objective will be to assemble and evaluate available geologic logs for wells in the area.

The effective thicknesses of the basin fill and Morita Formation aquifers are needed for construction of the groundwater flow model and estimation of groundwater flow. Outcrop

elevations and geologic contact elevations from drilling logs will be used to define the surfaces representing the bases of the basin fill and Morita Formations. Additionally, any geophysical data for the area will be reviewed for relevant information.

Limited water quality data are available for water supply wells in the area, and water quality sampling of these wells is proposed for Task 2.2 (Section 3.3.2). The owners of water supply wells will be contacted to obtain any water quality information they are willing to share. This data will then be compiled and evaluated to document existing conditions and to identify any water quality changes over time. Well owners will also be asked for access to geologic logs for wells, if that information is not available elsewhere.

3.3.2 Task 2.2 - Groundwater Monitoring

The groundwater monitoring program involves collecting data from CQB monitoring wells, as well as private wells within and outside the plume. CQB routinely monitors groundwater elevation in monitoring wells in the vicinity of the CTSA. Pursuant to the MO, groundwater sampling of CQB wells will also be conducted to evaluate water quality within the CTSA and sulfate plume areas. Additionally, a water level and groundwater sampling program at private and public supply wells is proposed to augment the CQB monitoring by collecting information on local and regional groundwater elevation and water quality at the margins of the sulfate plume and outside the CTSA. The collected information will be used to describe current water table conditions, the extent of the sulfate plume, and background water quality; all of which are needed for modeling the sulfate plume.

Groundwater monitoring will be conducted for two purposes, namely, plume monitoring and regional monitoring. Plume monitoring will be conducted at wells proximal to the sulfate plume to track its position and concentration. Regional monitoring will be conducted over a larger geographic area than the plume in order to document regional water level and water quality conditions for fate and transport modeling.

Plume monitoring will be conducted quarterly to document groundwater elevations and sulfate concentrations only at CQB monitoring wells in the vicinity of the CTSA and at private and public supply wells within and on the margins of the plume. The monitoring program will be reviewed and modified as necessary after the third quarter of plume monitoring. Plume monitoring will continue until the monitoring requirements under the Mitigation Plan become effective.

Regional monitoring will be conducted twice, once in winter and once in summer, to characterize any seasonality in water elevations. Samples for regional monitoring will be analyzed for a suite of major element constituents to characterize general water quality conditions in addition to sulfate.

Both the plume monitoring and regional monitoring efforts will seek to access private wells that are not controlled by CQB for monitoring water elevation and water quality. The AWC, NWC, Naco and San Jose Sanitation Districts, and private individuals are examples of entities that will be approached for well access or sampling data. Thus, the success of the groundwater monitoring task will partly be dependent on cooperation from private well owners

and water companies. Wells provisionally identified for plume and regional monitoring are listed in Table 6 and shown by Figure 22. Should a well owner refuse access or should a well be inappropriate for monitoring based on well construction or other considerations, CQB will attempt to identify a suitable substitute well.

Groundwater monitoring will include collection of static water level measurements and groundwater samples for chemical analysis unless equivalent information is available from the well owner. Water level measurements will be collected over a 30-day period, if possible, for the purpose of gathering contemporaneous data. Groundwater samples will be collected and submitted to an Arizona-certified laboratory for analysis. Samples for plume monitoring will be analyzed for sulfate only. Samples for regional monitoring will be analyzed for calcium, magnesium, sodium, potassium, chloride, sulfate, alkalinity, fluoride, nitrate, nitrite, and pH to characterize sulfate and the general water chemistry. If required by the FS, samples from select wells may also be analyzed for the following constituents useful for assessing water treatment by membrane processes: aluminum, ammonia, barium, chemical oxygen demand, ferrous and total iron, manganese, phosphate, selenium, soluble and colloidal silica, strontium, sulfide, total organic carbon, silt density index, turbidity, and bacteria.

Groundwater sampling and analysis will be conducted according to the methods and protocols in accordance with ADEQ approved procedures described in the QAPP (Appendix F). The ability to measure water levels at wells may be limited by whether the well has an access port or sounding tube, a determination that will be made in the field. Water level measurements will only be attempted if the well construction permits unobstructed access for the water level

sounder. Specific conductance, pH, and temperature will be measured in the field during groundwater sample collection. Groundwater samples will be collected as close to the wellhead as is feasible, upstream of any filtration, sand cyclones, chlorine or other chemical additions to the well water. The results of analyses will be provided to the well owner and included in groundwater monitoring reports to ADEQ. Groundwater data will be electronically submitted to ADEQ for inclusion in the ADEQ water quality database.

3.3.3 Task 2.3 - New Monitoring Well Installation and Testing

Additional monitoring wells are proposed at 12 locations to further define the extent of the sulfate plume, to characterize aquifer materials and hydraulic properties, to determine bedrock depth, to further evaluate conditions in the former source area, and to provide installations for ongoing groundwater monitoring. Monitoring wells will be installed for the following purposes:

- Determination of the lateral plume margin.
- Characterization of the vertical extent of sulfate in various aquifers.
- Evaluation of fault control of potentiometric and water quality conditions.
- Determination of aquifer hydraulic properties.
- Source area monitoring.

Figure 23 shows the approximate locations of proposed monitoring wells. Table 7 lists the proposed wells, their design objectives, and land ownership. Some of the proposed well locations are on land not owned by CQB; therefore, access agreements will have to be negotiated with landowners prior to drilling. The exact locations of the proposed wells are provisional

subject to successful negotiation of site access and the results of data collection in Tasks 1 and 2.2. Additionally, the scope of this task will be dependent on information gained as the task progresses. For example, some of the proposed wells may not be installed if the well inventory and groundwater monitoring programs identify suitable existing wells in the vicinity of the proposed locations.

Well locations and design objectives are based on position in relation to the plume, the level of information available in the area of the proposed well, and the potential long-term use of the monitoring well. Some well sites on the west and south side of the plume are expected to be between the plume and existing drinking water supply wells, allowing them to be useful as sentinel wells and for plume definition. Well designs in Table 7 are subject to modification based on the results of other plume characterization tasks that will provide information on the subsurface distribution of sulfate (e.g., water supply sampling for the well inventory (Task 1), groundwater monitoring of existing wells (Task 2.2), and the results from installation of new monitoring wells) and site-specific conditions observed during drilling (e.g., subsurface lithology and water quality).

Proposed well Sites 1, 2, 3, 5, and 6 will be installed to determine the horizontal and vertical extents of sulfate south, southwest, and west of the inferred plume because these areas have the greatest uncertainty in the extent of sulfate and are of interest with respect to future plume migration. Proposed Sites 2 and 5 will provide information on the vertical extent of sulfate in the vicinity of well NWC-4 and the AWC supply wells, respectively. If during this task, newly installed wells are determined to be within the plume, a determination will be made

as to whether additional wells need to be installed to meet the data quality objective of defining the extent of the plume.

Proposed well Sites 4, 7, and 10 will be installed to determine the vertical extent of sulfate in the plume area. Wells at Sites 4 and 7, near existing wells NWC-3 and MW-1, respectively, will be installed to allow collection of data at depth.

Proposed well Sites 8 and 9 will be installed on either side of the inferred Black Gap fault to investigate fault control on water levels and water quality. These wells will also provide information on vertical water quality in the plume.

Proposed well Sites 10, 11, and 12 will be installed at the former evaporation pond and peripheral to the South Tailing Impoundment to document water level and water quality conditions in the area of former sources. These proposed well sites will allow ongoing monitoring of groundwater elevation and sulfate concentration to characterize the area in the vicinity of the upgradient portion of the plume. A new well nest will be installed at proposed well Site 10 to characterize the vertical extent of sulfate in the plume at the former evaporation pond source area.

The vertical distribution of sulfate will be evaluated by water sampling during drilling and prior to well installation. The vertical extent of sulfate will be established by installing wells beneath the impacted zone (sulfate concentrations greater than 250 mg/L) that yield water samples with sulfate concentrations below 250 mg/L. Co-located well installations are

recommended to collect information on vertical zoning and for long-term monitoring of the vertical movement of the plume. Co-located wells are individual wells located in close proximity to one another but in separate borings. A generalized well construction diagram for monitoring wells is provided in Appendix E. Appendix F describes methods for well drilling, reconnaissance groundwater sampling during drilling, well construction techniques and materials, well development, and well testing.

3.3.3.1 Drilling Methods and Reconnaissance Sampling

Drilling of new monitoring wells will be accomplished using a variety of drilling methods including air-rotary casing hammer (ARCH), under-reaming casing advance using Stratex® tools, reverse circulation air-rotary, open-hole air rotary, or mud rotary methods. Selection of the drilling method is determined by the site conditions and the need for lithologic and formation water sampling for the particular borehole.

One of the primary objectives of the drilling is to obtain grab samples of groundwater at the drilling face at regular depth intervals during drilling (Section 4.3.4 of Appendix F). The preferred method to accomplish this sampling is a casing advance method (i.e., either ARCH or Stratex) that provides temporary casing of the borehole as it is being advanced into the formation. Alternatively, reverse circulation air-rotary may be used depending on drilling conditions. Reconnaissance water samples will be collected from the air return and analyzed in the field using an electrical conductivity meter to characterize TDS as described in Section 4.3 of Appendix F. Water samples for laboratory analysis of sulfate will also be collected.

In the event that reconnaissance sampling from the air rotary return is infeasible, reconnaissance water samples may be collected through a temporary well screen or using a straddle packer system. A temporary well screen would consist of 20-foot length of slotted casing which would be placed at the target sampling depth, surrounded by gravel pack, and sealed from the underlying and overlying formation and borehole using bentonite pellets or packers. The temporary well screen would be developed by air lifting, pumping, or bailing to remove at least three wetted borehole volumes in the event of installation by air drilling techniques or until the water is clear in the event of installation in by mud rotary. A straddle packer system may be used in bedrock boreholes where competent conditions exist. The use of temporary well screens or straddle packers for reconnaissance sampling may not be suitable for all sites, but should be capable of providing high quality water samples. Sampling through temporary well screens would be conducted by drilling to a pre-determined depth and setting and sampling temporary well screens at various depths.

Borehole conditions may make infeasible the collection of reconnaissance water samples from the air rotary return or from temporary well screens. If temporary water samples cannot be collected, the vertical extent of sulfate would need to be determined by sampling monitoring wells after they are installed.

Mud-rotary methods may be substituted for casing advance or reverse circulation if water sampling is unsuccessful, unstable hole conditions occur, or on the advice of the driller that doing so is necessary to maintain the borehole. Open-hole conventional circulation air-rotary methods may be used in bedrock formations if water sampling is unsuccessful or not required for

the specific borehole (e.g., if an adjacent borehole has already been drilled and satisfactorily sampled). If additional wells are installed at a borehole location that has been characterized by reconnaissance sampling, they would likely be installed using mud-rotary methods in basin fill and open-hole air-rotary methods in bedrock.

3.3.3.2 Well Design Rationale

Drilling, well construction, and hydraulic testing for Task 2.3 will be conducted to gather information to address the following data needs (Section 3.1 of this text) and DQOs (Section 3.1 of Appendix F):

- water level data to evaluate potentiometric conditions
- water samples to define the lateral and vertical distribution of sulfate
- lithologic information to understand subsurface material
- aquifer test data to estimate the hydraulic properties of subsurface materials

The proposed wells fall into two groups; namely, wells on the margins of the plume and wells within the footprint of the plume. Wells on the margin of the plume are intended primarily to define the lateral extent of the plume. Wells in the footprint of the plume are intended primarily to determine the vertical extent of sulfate. All the wells will be used for hydraulic testing to estimate hydraulic properties, and for long-term water quality and water level monitoring.

3.3.3.2.1 General Considerations

There are several considerations that go into the design of monitoring wells under this work plan.

- Wells must be screened over a significant portion of the aquifer such that the interval is long enough to represent the water quality of a portion of the aquifer that might be reasonably tapped by a drinking water supply well but short enough so as not to overly generalize water quality in areas where vertical stratification of sulfate concentrations may exist.

- Wells must be isolated in one hydrostratigraphic or water quality unit such that the water drawn from the well represents the unit in which the well is completed and does not draw water from overlying or underlying units.

- Wells screens must be long enough to provide representative data on the hydraulic properties of the hydrostratigraphic unit so that the data can be used to evaluate flow and transport in the vicinity of monitor well.

- Where multiple wells are necessary to characterize a hydrostratigraphic unit in one location, well screens must be spaced widely enough so that they tap different portions of the hydrostratigraphic unit and closely enough to provide water quality and hydraulic property coverage of the aquifer interval spanned by the screens.

To accomplish the DQOs, a design objective for wells installed for Task 2.3 is that they have screen lengths sufficient to provide water quality and hydraulic response data representative of a significant section of the aquifer. Short screen lengths have the risk of providing concentration and hydraulic response data that are of localized extent and unrepresentative of average conditions. Conversely, long screen lengths have the risk of underestimating the hydraulic conductivity of a high permeability zone significantly thinner than the length of the screen. However, at this stage in the aquifer characterization study, large-scale average properties are desired to characterize the extent and average concentration of the plume for making decisions regarding vertical and lateral extents of the plume, potential mitigation actions that can be undertaken for drinking water supply wells, and to determine hydraulic properties of

a representative elementary volume of the aquifer as needed for numerical modeling. Another consideration for wells on the margin of the plume is that they extend across portions of the aquifer in a manner similar to drinking water supply wells that are the focus of the Mitigation Order. In that way, the monitoring wells can serve as sentinel wells for supply wells. Drilling conditions, such as hard drilling, borehole stability, or flowing sand, if encountered, may also influence well design.

3.3.3.2.2 Wells on the Margin of the Plume

Wells on the margin of the plume are proposed in locations where sulfate concentrations are expected to be less than 250 mg/L, although they may be elevated with respect to background. These wells will provide sites for ongoing monitoring to document groundwater elevation and sulfate concentration, and will be tested to estimate representative hydraulic properties for aquifer materials.

Wells on the margins of the plume (Sites 1, 3, 5, 6, 11, and 12) will typically be constructed with screens ranging from 100 to 200 feet in length. Longer screens will be used for basin fill wells to get volume-averaged properties because the basin fill may be up to 1,000 feet thick and composed of interbedded sediments with variable hydraulic conductivity. Shorter screen lengths would tend to be used for wells in bedrock which are expected to have a low vertical hydraulic conductivity that would limit the potential depth of sulfate penetration and make monitoring over a longer screen length less important than in basin fill.

Wells on the margin of the plume will be installed with screened intervals extending from approximately the water table to depths of approximately 100 to 200 feet below the water table because most drinking water supply wells at the margins of the plume are within 200 feet of the water table and because limited data indicate that sulfate is in the upper portion of the basin fill aquifer and not the lower on the southwest margin of the plume. At locations where nested wells are to be installed on the margin of the plume (Sites 5 and 6) the top of the lower screen will be within 100 to 200 feet of the bottom of the overlying well. The actual depth placement of the wells and screen will depend on field decisions based on actual subsurface materials as determined from inspection of cuttings, water quality as indicated by reconnaissance grab samples of formation water, and on the well construction of nearby drinking water supply wells. Information determined during installation of wells within the plume may also be used in determining the design of wells on the margin of the plume.

3.3.3.2.3 Wells within the Footprint of the Plume

Wells within the footprint of the plume (Sites 2, 4, 7, 8, 9, and 10) will be installed to characterize conditions in the impacted zone or determine the vertical extent of sulfate. These monitoring wells will allow estimation of hydraulic properties of aquifer materials and establish sites for ongoing groundwater monitoring. Groundwater is assumed to be impacted at these sites, some of which have impacts in the basin fill aquifer (Sites 4, 7, and, possibly, 8 and 9) and some of which are impacted in the bedrock aquifer (Sites 2 and 10).

At sites with impacted basin fill, reconnaissance water sampling will continue until at least 200 feet below the impacted zone or until bedrock is encountered and a screen would be placed within 100 feet of the impacted zone to monitor the unimpacted aquifer below it. At sites in impacted bedrock (Sites 2, 10, and, possibly, 8 and 9) drilling will proceed to at least 200 feet below the impacted zone as determined by reconnaissance sampling and a well screen will be installed no farther than 100 feet from the base of the impacted zone to monitor the unimpacted aquifer below it. Borings in impacted bedrock will be advanced until unimpacted conditions are observed to determine the vertical extent of sulfate.

Wells in the footprint of the plume will typically be constructed with screens ranging from 100 to 200 feet in length to provide data on the large scale characteristics of the aquifer. When setting a well in unimpacted bedrock below impacted basin fill, the top of the gravel pack of the well will be no closer than 50 feet to the impacted aquifer and 50 feet to the top of the overlying geologic unit. The actual depth placement of a well and screen will depend on field decisions based on actual subsurface materials as determined from inspection of cuttings, water quality as indicated by reconnaissance grab samples of formation water, and on the well construction of nearby drinking water supply wells.

3.3.3.2.4 General Construction Guidelines

The approaches to well design are discussed below. Because of the uncertainties in geology, water quality, and drilling conditions at each site it would be highly speculative to stipulate presumptive well depths and screen lengths in advance. However, the general

guidelines described below will be used to guide the well design process. Additionally, well designs and objectives may change as new information is developed by drilling and sampling for Task 2.3 and by groundwater monitoring for Tasks 1 and 2.2.

The placement and length of well screen will be based on the results of reconnaissance water sampling during drilling. The following are general guidelines for placement and length of well screen. These guidelines provide the decision process for well design and may be modified at any given location based on lithologic, water quality, or drilling conditions that may be encountered in the borehole.

- Wells constructed in unimpacted (concentration of sulfate is below 250 mg/L) basin fill will be screened starting at approximately the water table down to approximately 100 to 200 feet below the water table.

- The deep well at paired shallow and deep wells constructed in unimpacted basin fill will be screened starting at approximately 100 to 200 feet below the shallow well screen and will have a screen length of 100 to 200 feet.

- Wells constructed in impacted (concentration of sulfate is above 250 mg/L) basin fill to monitor the impacted zone will have screened intervals up to 200 feet long, centered on the impacted zone to sample all, or as much of the zone as possible.

- Wells constructed in unimpacted basin fill beneath an impacted zone to monitor the unimpacted zone will be screened starting no farther than 100 feet below the impacted zone to approximately 200 to 300 feet below the impacted zone.

- Wells constructed in unimpacted bedrock below impacted basin fill to monitor the unimpacted bedrock will be screened starting at 50 feet below the bedrock contact to approximately 150 feet below the contact.

- Wells constructed in unimpacted bedrock where the water table is in bedrock will be screened starting at approximately the water table down to approximately 100 to 200 feet below the water table.

- Wells constructed in impacted bedrock to monitor the impacted zone will have screened intervals up to 200 feet long, centered on the impacted zone to sample all, or as much of the zone as possible.

- Wells constructed in unimpacted bedrock beneath an impacted bedrock zone to monitor the unimpacted zone will be screened starting no farther than 100 feet below the impacted zone to approximately 200 to 300 feet below the impacted zone.

As noted in Section 3.3.2.1, it may not be feasible to obtain reconnaissance water samples for definition of the sulfate distribution prior to constructing monitoring wells if reconnaissance water sampling efforts are unsuccessful. The decision process described above would be used for well installation when there are no reconnaissance water quality data. In such cases, the selection of screen lengths and depths would be based on best professional judgment given the general construction guidelines and recognizing that well installation would be the primary means of exploring the extent of the plume.

3.3.3.3 Well Installation, Development, and Testing

Drilling, well installation, and development methods are described in the QAPP (Appendix F). Each new well will be developed to remove sediment and drilling fluids. After development, a short duration (10 to 24 hour) step rate pumping test will be conducted. During or at the conclusion of the pumping test, a water quality sample will be collected for analysis of sulfate and other major element ions for characterizing general water chemistry (i.e., the analyte suite for regional monitoring wells (Section 3.3.2)). Following completion of their surface casings, CQB will survey all new wells. After the initial sampling, monitoring wells will be sampled as plume monitoring wells (Section 3.3.2) on a quarterly basis until a long-term monitoring plan is developed pursuant to the Mitigation Plan (Section 5). Water level measurement, water quality sampling, and pumping test methods are described in the QAPP (Appendix F).

3.3.4 Task 2.4 Additional Hydraulic Testing

In addition to hydraulic testing of all new monitoring wells, efforts will be made to conduct additional pumping tests in existing monitoring, public supply, and private wells in portions of the plume where hydraulic properties are critical for modeling such as at the leading edge of the plume near Naco and Bisbee Junction. Wells at the leading edge of the plume that are accessible and appropriately constructed for conducting step or constant rate pump test as long as feasible within a 24-hour period, will be identified and tested, depending on the well owners' permission and based on service commitments.

3.4 Task 3 - Sulfate Fate and Transport Evaluation

The information collected to meet the data needs described in Section 3.1.2 will be used to refine the preliminary conceptual model in Section 2.6. Numerical groundwater flow and transport models will then be developed based on the refined conceptual model to further evaluate the fate and transport of sulfate originating from the CTSA and, as described below, any other sources identified during execution of this Work Plan. The modeling will include development and use of a saturated flow and transport model that will encompass an area that extends from approximately one mile west of AWC-2 to Gold Gulch in the east-west direction and from the North Tailing Impoundment to at least the Arizona border. The actual area of the model will be adjusted as deemed necessary based on information gathered as part of the ACP. At a minimum, the model will focus on flow and transport within the basin fill and Morita Formation aquifers.

The modeling effort will make use of and build upon existing numerical models developed and used for the site (e.g., SET, 1998c). Boundary conditions and other features of the existing models may be incorporated in whole or in part into the new flow and transport model subject to verification of their adequacy. Existing model inputs, such as pumping rate files pertaining to production wells within the model domain, will be updated and incorporated as needed.

The goals of the modeling will be to:

- Calibrate to reproduce with acceptable accuracy past measured hydraulic head and sulfate distributions within the model domain.
- Examine the groundwater flow dynamics under existing conditions to understand how groundwater pumping at different locations in the basin influences the current distribution of sulfate.
- Predict future hydraulic head and sulfate distributions under various possible mitigation scenarios, such as installation of extraction wells to pump sulfate-bearing water, or under long-term conditions such as increased water supply pumping.

3.4.1 Compilation of Information on Groundwater Pumping and Recharge

Available pumping information for production wells within the model domain will be compiled and analyzed for input to the flow and transport sulfate model. It is anticipated that this effort will entail updating existing files of pumping rate information used in previous site models. Any recently installed production wells will be included, as will any existing wells that may be brought into a potentially expanded model domain. Water supply plans for local water companies will be used to estimate future groundwater pumping.

Areal recharge estimates resulting from infiltration by precipitation or as a result of stream flow will be developed for input to the model. This process will also build, to the extent appropriate, on recharge data incorporated into existing site numerical models. The sulfate concentration of the seepage over time at the CTSA and other recharge sources will be evaluated and used in the groundwater flow and transport model.

3.4.2 Sulfate Transport Under Current and Future Conditions

The numerical model developed to evaluate the fate and transport of sulfate in the regional aquifer will be calibrated to past and present measured hydraulic heads and sulfate concentrations. The calibrated model will be used to predict future conditions of hydraulic head and sulfate distribution in the relevant aquifers. Simulations of future conditions will include the effects of pumping from future wells and water supply development described by water system plans.

The regional model will incorporate elements of existing site models such as boundary conditions, and recharge by precipitation and stream flow, as appropriate. It will be three-dimensional, and will include, at a minimum, two layers representing basin fill and one representing the Morita Formation. Compared to previous models, the model will use different hydrogeological properties, sources and sinks, and boundary conditions based on most current information.

At a minimum, it is anticipated that the model will be used to simulate future conditions assuming:

- Continued inactivity of the CTSA.
- Addition of sulfate control strategies, such as ground water pumping to control plume migration.

The results of these simulations will be used by the FS (Section 5) to evaluate the potential future migration of sulfate and the effectiveness of different groundwater pumping schemes and/or the use of institutional controls and natural attenuation as potential mitigation actions. The groundwater flow and transport simulations will be used to provide conceptual design bases for potential mitigation actions.

3.5 Task 4 - Reporting

The following task reports will be submitted to ADEQ pursuant to the ACP:

- Well Inventory Report (Task 1).
- Quarterly Groundwater Monitoring Data Reports (Task 2.2).
- Aquifer Characterization Report (Tasks 1, 2, and 3).

Figure 24 shows a schedule for the ACP reports assuming ADEQ approves the revised Work Plan.

The well inventory report will be submitted to ADEQ shortly after approval of the revised Work Plan (Section 6). A preliminary review of ADWR well records indicates there may be as many as 100 water supply wells within one mile of the plume. The schedule for the

well inventory report is based on the time needed to conduct the well inventory to identify potential drinking water wells, contact well owners to verify well use, field check wells to verify their location and condition, obtain access agreements for sampling, conduct sampling, analyzes samples, and compile and report results.

Quarterly groundwater monitoring reports will be submitted to ADEQ in the month following the end of the quarter. This schedule will allow for laboratory turn around of samples collected during the quarter and for data review and reporting. Section 6 discusses the schedule for groundwater monitoring reports.

Section III.C of the MO requires CQB to submit an Aquifer Characterization Report to ADEQ. Pursuant to the MO, the Aquifer Characterization Report will provide the findings of work conducted pursuant to the ACP, including:

- Current sulfate plume delineation.
- Sulfate fate and transport.
- Identification of all registered private drinking water wells and public drinking water system wells.

The Aquifer Characterization Report will summarize previously submitted information from the well inventory and quarterly groundwater monitoring reports, and will provide reports for Tasks 2.1, 2.3, and 3. New information presented in the Aquifer Characterization Report will consist of the data compilation for Task 2.1, the results of drilling, well installation, hydraulic testing, and initial sampling of monitoring wells for Task 2.3, and the results of construction and

calibration of the groundwater flow and sulfate transport model for Task 3. Section 6 discusses the schedule for the Aquifer Characterization Report.

The well inventory and quarterly groundwater monitoring reports will provide current water quality information to ADEQ through the course of the ACP. The latest information on the plume delineation will be provided in the Aquifer Characterization Report, which will contain maps and cross sections showing the distribution of sulfate.

Figure 24 shows a schedule for the ACP tasks. Work for some the ACP task is expected to take more than a year to complete. Although CQB proposes this schedule, the groundwater monitoring and well installation tasks have scheduling uncertainties due to the need to negotiate access to private property. The schedule is discussed further in Section 6.

4. POTENTIAL INTERIM ACTIONS

Pursuant to Section III.D of the MO, CQB will identify and implement interim mitigation actions for a drinking water supply found to have a sulfate concentration in excess of 250 mg/L sulfate due to the CTSA prior to implementation of the Mitigation Plan. Potential interim actions will be implemented before the Mitigation Plan is completed if: (1) the sulfate concentration at the point of use in a drinking water supply exceeds 250 mg/L, or (2) if data demonstrate that the sulfate concentration at the point of use in a drinking water supply will exceed 250 mg/L before the Mitigation Plan is completed.

As part of the well inventory (Section 3.2), CQB will sample and analyze drinking water supplies for sulfate free of charge or will work with water providers to collect and share water quality data sufficient to determine the sulfate concentration of the water supply. The sulfate concentration will be determined based on discrete samples collected at the point of use or the point of entry to the supply system unless there is downstream blending. The discrete sulfate concentration of a drinking water supply will be the result of the most recent single sample at the point of use or the point of entry.

If the discrete sulfate concentration of a drinking water supply is found to exceed 250 mg/L sulfate, interim action selection and implementation will begin immediately. On receipt of sampling results, CQB may resample the drinking water supply to confirm that the sulfate concentration exceeds 250 mg/L.

A water supply having a discrete sulfate concentration between 135 mg/L and 250 mg/L will be monitored monthly for four months to determine whether concentrations are increasing and to identify any trend in sulfate concentrations over time. Based on the apparent trend in sulfate concentrations, a monitoring schedule will be developed for the supply. If the trend indicates increasing concentrations, an interim action will be selected for the water supply and an implementation plan will be developed to implement the selected action, if possible, before the sulfate concentration at the point of use or point of entry exceeds 250 mg/L.

Water supplies with discrete sulfate concentrations less than 135 mg/L will receive water sampling quarterly as follow-up monitoring to track the discrete sulfate concentration.

The nature of an interim action will depend on site-specific circumstances. For private wells, possible interim actions would include provision of bottled water or other measures to be developed pursuant to A.R.S. § 49-286. For a public supply well, possible interim actions could consist of providing bottled water to each customer served by the public supply well, installation of a temporary reverse osmosis (RO) treatment system at the wellhead, or, if applicable, blending. Should an interim action be undertaken, sampling would be conducted at points appropriate for the situation, including well head and point of entry, if applicable. If changes to water system infrastructure are required, ADEQ approvals would be obtained as necessary to perform the action in compliance with applicable existing regulations.

Pursuant to the MO, CQB shall submit an interim action report to ADEQ within 30 days of implementing an interim action, which shall state the name of the owner(s)/operator(s) of the

affected well, the location and type of well (public or private) affected, and the interim action selected. There are thirteen parties currently receiving bottled water as an interim action. A report for these previously implemented interim actions was submitted to ADEQ on May 22, 2008 (CQB, 2008).

Once an interim action is implemented, follow-up monitoring of the water supply will be at a frequency recommended in the interim action report submitted to ADEQ. Follow-up sampling will be used to calculate an average sulfate concentration for a water supply. The average sulfate concentration will be calculated as the arithmetic mean of the three most recent discrete water quality samples for the water supply. Any interim action implemented would continue until follow-up monitoring determines that the average sulfate concentration of the drinking water supply is less than the sulfate mitigation level of 250 mg/L based on at least three quarters of follow-up monitoring. The interim action and follow-up water supply monitoring will continue until superseded by the mitigation and monitoring recommendations of the Mitigation Plan developed pursuant to the FS (Section 5).

5. FEASIBILITY STUDY FOR SULFATE MITIGATION PLAN

Pursuant to Section III.E of the MO, CQB will develop a Mitigation Plan for submittal to ADEQ. The scope of the Mitigation Plan is to practically and cost effectively provides drinking water to owners or operators of a drinking water supply affected by sulfate in excess of 250 mg/L due to the CTSA.

An FS will be conducted to identify and evaluate mitigation alternatives for the Mitigation Plan. The purpose of the FS is to provide a structured approach for identifying and evaluating the various ways in which mitigation can be accomplished.

The main components of the FS will be:

- Identification and Screening of Mitigation Technologies.
- Development and Screening of Mitigation Alternatives.
- Detailed Analysis of Mitigation Alternatives.
- Preparation of a Mitigation Plan.

5.1 Identification and Screening of Mitigation Actions and Technologies

The identification and screening of mitigation actions and technologies is a multi-step process, identifying mitigation objectives, mitigation actions, mitigation technologies, and process options. Mitigation actions are broad categories of possible actions consisting of one or more mitigation technologies and the process options used by the technologies. A series of screening steps is applied, consisting of criteria such as implementability, effectiveness, and cost

to reduce the range of potentially applicable mitigation technologies and process options by eliminating inappropriate or unworkable options. Information developed for the identification of interim actions (Section 4) will be incorporated into the screening as appropriate. Mitigation actions, mitigation technologies, and process options retained by the screening will be assembled into mitigation alternatives for subsequent analysis. Mitigation alternatives are plans that may consist of a single mitigation action or a combination of actions for meeting mitigation objectives.

5.1.1 Mitigation Objectives

Mitigation objectives are qualitative and quantitative goals that meet the requirements of the MO. The constituent of concern is sulfate, an inorganic substance contained in affected groundwater. The MO sets a sulfate level of 250 mg/L for drinking water. Based on the factors identified in the MO, the objective for mitigation is to provide drinking water meeting applicable water quality standards to the owner of a drinking water supply containing sulfate in excess of 250 mg/L due to the CTSA.

5.1.2 Mitigation Actions

Mitigation actions are generic approaches to mitigation that can be employed singly or in combination to accomplish the mitigation action objectives. A mitigation action can consist of several different technologies and process options. For example, water treatment is a mitigation action that can be used to remove sulfate from drinking water. Water treatment can employ

different technologies for removing sulfate such as chemical precipitation, ion exchange, or semi-permeable membranes. Within each technology there may be several process options that can be used to implement the technology. In the case of semi-permeable membrane technology, RO, electrodialysis, or nanofiltrations are examples of different process options.

For the mitigation of non-hazardous substances such as sulfate, A.R.S. § 49-286 identifies alternative mitigation actions as follows:

- Providing an alternative water supply.
- Mixing or blending if economically practicable.
- Economically and technically practicable treatment before ingesting the water.
- Other mutually agreeable mitigation measures.

The FS also will consider mitigation measures that would control or mitigate sulfate through the application of groundwater controls that may include groundwater pumping to reduce sulfate concentrations to meet the numeric mitigation objective. Additional mitigation actions to be considered include monitoring of groundwater and drinking water, institutional controls, such as restrictions on well drilling, natural attenuation, and if needed, alternatives that could reduce sulfate loading to groundwater from the CTSA.

Each mitigation action can employ various technologies depending on site-specific conditions. Alternative water supply can be accomplished by various means including replacement wells, use of an unimpacted supply well, well modification, connection to an existing public water supply, or bottled water. Mixing and blending refers to commingling waters with different sulfate concentrations to meet the numeric mitigation objective. Water

treatment would use a physical, chemical, or biological process to remove sulfate and other constituents from drinking water. Depending on the situation, water treatment can be conducted before the point-of-entry to a distribution system using a centralized plant or wellhead treatment system or at the point-of-use with home-based treatment systems.

5.2 Development and Screening of Mitigation Alternatives

Mitigation alternatives will be formulated using mitigation actions, mitigation technologies, and process options retained by the previous screening evaluation. Mitigation alternatives can consist of either a single mitigation action or a combination of mitigation actions that address the mitigation objectives.

For cases in which multiple mitigation technologies or process options are retained by the screening (e.g., RO, electrodialysis, and nanofiltration), determination of the most applicable process option will be made based on criteria such as implementability, effectiveness, and cost. CQB will retain a specialist in water treatment as part of the FS team. Treatability studies will be undertaken at bench and field scale, if needed, to test the effectiveness of potentially applicable treatment process options and to estimate operational costs.

Mitigation alternatives will be developed in consultation with, and considering the requirements of local water providers and well owners. Factors to be considered in developing alternatives include projected water needs, infrastructure constraints on water supplies, and water rights. CQB will retain a water systems engineering firm to evaluate the water needs and

delivery infrastructure in the area of the sulfate plume and to provide guidance in the development of mitigation alternatives.

The groundwater fate and transport model (Section 3.4) will be used to develop and evaluate potential plume control response actions. The migration and concentration of sulfate over time will be key factors in evaluating the effectiveness of plume control response actions.

5.3 Detailed Analysis of Mitigation Alternatives

The detailed analysis of mitigation alternatives will evaluate each alternative with respect to its benefits and cost. A.R.S. § 49-286.B indicates that the mitigation selection process shall balance the short-term and long-term public benefits of mitigation with the cost of each alternative, and that only the least costly alternative may be required if more than one alternative satisfies the mitigation objective. The analysis of alternatives will include consideration of residuals. The estimated quantity and type of residuals created by each alternative will be determined. Means for managing these residuals will be evaluated and included in the feasibility determination and cost estimate.

The mitigation alternatives will then be compared with respect to their benefits and cost. Quantitative estimates of benefits and cost will be developed. The cost analysis will consider direct and indirect capital and the long-term operating costs of each alternative. Costs will be compared based on their 30-year net present value or a similar long-term estimate.

A recommended mitigation alternative or combination of alternatives will be selected using the detailed analysis of alternatives. The recommended mitigation alternative(s) will describe the work to be implemented for the Mitigation Plan.

5.4 Mitigation Plan

The Mitigation Plan will report the results of the alternatives analysis for the FS and will identify the recommended mitigation alternative(s). A schedule for implementation of the recommended alternative(s) will be included in the Mitigation Plan. The plan will also contain a methodology for verification sampling and analysis of drinking water sources to determine (1) when the average sulfate concentration of a drinking water source exceeds the numeric mitigation objective and (2) whether the sulfate is attributable to the CTSA. The Mitigation Plan will be submitted to ADEQ for review and approval pursuant to the MO.

6. SCHEDULE

Figure 24 charts the schedule for the ACP and FS for sulfate mitigation. The start of the schedule is assumed to be February 2008 because CQB initiated water sampling for Tasks 1 and 2.2 prior to work plan approval while ADEQ was commenting on the Work Plan and CQB was responding to the comments. Table 8 lists deliverable dates for key reports based on the February start of work. Although work was started in February, reporting was suspended pending completion of discussions with ADEQ and revision of the Work Plan. For this reason, deliverables for the well inventory and the first two quarters of groundwater monitoring will be provided on an expedited basis as listed in Table 8, the schedule for Work Plan deliverables.

The schedule provides for completion of tasks related to exposure management (e.g., well inventory, interim actions, and first quarterly groundwater monitoring) as early as possible and completion of the FS to identify potential mitigation actions in parallel with the ACP. However, several tasks may have a long lead-time due to the necessity of negotiating access to private land to conduct work. The lead-time for Task 2.3 is the critical path item for the ACP. The timing of Task 2.3 impacts the fate and transport modeling for Task 3, which cannot be finalized until the completion of the hydrogeologic characterization.

As described in Section 4, interim actions will be implemented immediately on identification of a drinking water supply exceeding 250 mg/L sulfate due to sulfate from the CTSA. Interim action monitoring will commence with monitoring for the well inventory.

The FS will be conducted in parallel with the ACP. The identification and screening of mitigation technologies, identification and screening of mitigation alternatives, treatability studies, and certain aspects of the detailed analysis of mitigation alternatives will be implemented during the ACP. Completion of the detailed analysis of alternatives requires completion of the sulfate fate and transport evaluation in order to evaluate alternatives using groundwater pumping and completion of treatability studies for evaluating treatment technologies. The Mitigation Plan will be prepared following completion of the detailed analysis of mitigation alternatives.

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TABLES

TABLE 1
Generalized Geologic Column in the Vicinity of the CTSA

Age		Hydro-geologic Unit	GEOLOGIC UNIT
QUATERNARY	RECENT	ALLUVIUM	**Recent Alluvium** Unconsolidated stream channel sediments
QUATERNARY	Pliocene - Pleistocene	BASIN FILL	**Basin Fill** Valley fill, pediment, terrace and fan deposits; weakly to moderately consolidated interbedded gravel, sand, silt, and clay
TERTIARY		BEDROCK COMPLEX	**Intrusive Porphyry** Quartz latite porphyry
CRETACEOUS	*BISBEE GROUP*		**Cintura Formation** Grayish-red siltstone and mudstone, pale-red feldspathic sandstone, and minor greenish- gray calcareous claystone, few thin beds of limestone in basal 100 feet
			Mural Limestone Upper member: medium dark-gray limestone with subordinate sandstone in upper 50 feet Lower member: interbedded light-gray calcareous sandstone and siltstone and impure fossiliferous limestone
			Morita Formation Grayish-red siltstone and mudstone, pinkish-gray to pale-red feldspathic sandstone, minor greenish-gray calcareous claystone; few thin beds of impure limestone in the upper part and very subordinate pebble conglomerate in the lower part
			Glance Conglomerate Locally derived boulder to pebble conglomerate with grayish-red matrix
JURASSIC			**Jurassic Intrusive Complex** Stocks and dikes of porphyritic leucratic alkali granite
PALEOZOIC	*NACO GROUP*		**Colina Limestone** Medium-gray thick bedded limestone, locally slightly cherty
			Earp Formation Pale-red calcareous siltstone and mudstone with subordinate medium-gray thin bedded limestone and marl.
			Horquilla Limestone Light-gray, medium-bedded limestone with subordinate pale-red calcareous siltstone and silty limestone
	MISSISSIPPIAN		**Escabrosa Limestone** Medium- to light-gray thick-bedded to massive crinoidal limestone and medium- to dark-gray thin-bedded limestone
	DEVONIAN		**Martin Limestone** Medium- to dark-gray limestone, marl, dolomite and sandy dolomite, and calcareous siltstone
	CAMBRIAN		**Abrigo Limestone** Laminated hornfels with subordinate limestone, silty and argillaceous limestone with chert; overlain by interlaminated silty limestone and chert; glauconitic sandy dolomite, dolomitic sandstone, with minor interbedded marl, medium-gray locally dolomitized laminitic limestone
			Bolsa Quartzite Resistant yellowish- to reddish-brown-weathering siliceous sandstone
PRE-CAMBRIAN	*LOWER PRE-CAMBRIAN*		**Pinal Schist** Muscovite, sericite, chlorite and quartz schist

Source: Hayes and Landis 1964; Stegan et al, 2005

TABLE 2
Summary of Hydraulic Conductivity Data

Well or Boring	Aquifer Material	Hydraulic Conductivity (ft/day)		
		ELMA, 1990; published by SRK, 1997	SRK,1997; re-interpretation of ELMA, 1990 data	SET, 1998c
TM-11	basin fill	39.0	1.2	
TM-13	basin fill	59.0	19.1	
	average, basin fill	**49.0**	**10.1**	
TM-1	basin fill-Morita Formation	21.4	11	
TM-1A	basin fill-Morita Formation	26.8	not calculated	
	average, TM-1, TM-1A	**24.1**		
TM-29	basin fill-Morita Formation	6.7	not calculated	
TM-29A	basin fill-Morita Formation	4.0	1.3	
TM-29B	basin fill-Morita Formation	4.0	1.8	
	average, TM-29, TM-29B	**4.0**	1.6	
	average, all basin fill-Morita Formation	**12.6**	**4.7**	
TM-30	Morita Formation, west of Black Gap fault	12.0	not calculated	
TM-30A	Morita Formation, west of Black Gap fault	1.3	not calculated	
	average, TM-30, TM-30A	**6.7**		
TM-19A	Morita Formation, west of Black Gap fault	12.0	5.8	
TM-38	Morita Formation, west of Black Gap fault	12.0	not calculated	
	average, all Morita Formation, west of Black Gap fault	**9.3**	**5.8**	
TM-16	Morita Formation, east of Black Gap fault	1.3	2.2	
Flow and Transport Model (SET,1998c)	basin fill, gravel			72
	basin fill, gravelly sand			65
	basin fill, sand			30
	basin fill, silty sand			23
	average, basin fill			**48**
	Morita Formation, sandstone			20
	Morita Formation, siltstone			3
	Morita/Mural Formations, siltstone limestone			2
	Morita Formation, siltstone/mudstone			1
	Morita Formation, mudstone			2
	average, Morita Formation			**6**
	Glance Conglomerate, silty matrix			2
	Glance Conglomerate, clayey matrix			1
	average, Glance Conglomerate			**1**

Notes:

ft/day = feet per day

TABLE 3
Estimated Groundwater Flow Velocities in the Vicinity of the CTSA

Description		K (ft/d)	n	h1 (ft)	h2 (ft)	dH (ft)	dX (ft)	v (ft/d)
1989 Basin Fill	**TM-2 to TM-11**							
Avg ELMA (1990)		49	0.25	4460.8	4497.72	-36.92	15000	**0.48**
Avg SET (1998c)		22.96	0.25	4460.8	4497.72	-36.92	15000	**0.23**
2005 Basin Fill	**TM-2 to 641802**							
Avg ELMA (1990)		49	0.25	4443	4457.9	-14.9	15000	**0.19**
Avg SET (1998c)		22.96	0.25	4443	4457.9	-14.9	15000	**0.09**
1989 Glance-Morita (North-South)	**TM-28 to TM-16**							
Avg ELMA (1990)		9.3	0.15	4623.64	4750.59	-126.95	8750	**0.90**
Avg SET (1998c)		2.952	0.15	4623.64	4750.59	-126.95	8750	**0.29**
2005 Morita-Glance (North-South)								
Avg ELMA (1990)		9.3	0.15	na	na	na	8750	**na**
Avg SET (1998c)		2.952	0.15	na	na	na	8750	**na**
1989 Morita (East-West)	**TM-16 to TM19A**							
Avg ELMA (1990)		9.3	0.15	4470.07	4623.64	-153.57	10500	**0.91**
Avg SET (1998c)		2.952	0.15	4470.07	4623.64	-153.57	10500	**0.29**
2005 Morita (East-West)	**TM-16 to TM-19A**							
Avg ELMA (1990)		9.3	0.15	4435.5	4625.8	-190.3	10500	**1.12**
Avg SET (1998c)		2.952	0.15	4435.5	4625.8	-190.3	10500	**0.36**

Assumptions:

1. *Unidimensional (horizontal) groundwater flow in direction of measurement locations.*
2. *Linear water table with distance (confined flow equations good approximate).*
3. *Homogeneous, isotropic properties between well locations.*

Note:

ft/d = feet per day.

$$v = (-K/n)[dH/dx]$$

where:
v = groundwater flow velocity
K = hydraulic conductivity
n = porosity
dH = change in water elevation between locations
dX = distance between locations

TABLE 4

Analytical Results for 1996 Groundwater Samples Used for Trilinear Diagrams [1]

Well No.	Formation	Sample Date	Ca (mg/L)	Mg (mg/L)	Na (mg/L)	K (mg/L)	Cl (mg/L)	SO4 (mg/L)	HCO3 (mg/L)	CO3 (mg/L)	pH (standard units)	TDS (mg/L)
TM-41	Morita	07/30/97	620	250	47	28	22	1940	488	0.3	6.2	3600
TM-16	Morita	06/27/96	200	44.1	28.2	11.1	28	500	126	0.3	7.4	1100
TM-2	Basin Fill	06/20/96	628	147	35.6	4.9	28	1200	457	0.3	6.4	2700
BF-2	Basin Fill	06/25/96	958	206	30.1	4.1	33	2000	602	0.3	6.3	3800
TM-19	Basin Fill	06/20/96	427	55.6	41.3	4.3	19	1100	126	0.3	7.2	2100
NWC 5	Morita	08/07/96	158	33.0	25.8	4.56	180	78.9	77	0.3	7.4	888
TM-6	Morita	06/26/96	36.1	18.2	54	1.5	18	29	137	0.3	7.9	320
TM-19A	Morita	06/25/96	43.8	10.2	58.6	2.5	14	56	119	0.3	7.8	320
TM-12	Basin Fill	06/26/96	57.7	7.5	23.3	1.8	25	7	110	0.3	7.7	270
TM-15	Basin Fill	06/27/96	26	16.4	30.3	1.9	7.2	14	114	0.3	7.8	230
AWC 3	Basin Fill	08/06/96	60.4	7.6	15.7	2.27	8.0	5.0	109	0.3	7.6	248
TM-5	Basin Fill	06/26/96	50.5	5.6	19.8	1.6	24	10	90	0.3	7.8	240

Notes:

[1] select data from SET, 1999 used for trilinear diagram (Figure 18)

mg/L = milligrams per liter.

TABLE 5
Summary of Data Needs and Proposed Work

DATA NEEDS	PROPOSED AQUIFER CHARACTERIZATION PLAN (ACP)/FEASIBILITY STUDY (FS) WORK
AQUIFER CHARACTERIZATION DATA NEEDS	
Locations of drinking water wells downgradient and crossgradient of the plume	**ACP - Task 1 - Well Inventory: use Arizona Department of Water Resources and Arizona Department of Environmental Quality data to identify the location and water use for individual wells.**
Groundwater sulfate data to determine the eastern, southern, and western horizontal extents of the plume	**ACP - Task 2 - Plume Characterization: conduct plume and regional groundwater monitoring to characterize lateral extent of sulfate, install and sample proposed new monitoring wells east, south, and west of the plume; and Task 1 - Well Inventory: samples from drinking water supplies will provide data on extent of sulfate.**
Groundwater sulfate data to determine the vertical distribution of sulfate	**ACP - Task 2 - Plume Characterization: conduct plume monitoring at existing well nests, and install and sample proposed new monitoring well nests to evaluate the vertical distribution of sulfate.**
Local and regional water level measurements to characterize the regional flow system	**ACP - Task 2 - Plume Characterization: conduct plume and regional monitoring to measure local and regional water levels at existing wells, and measure water levels at new monitoring wells.**
Local and regional water quality data to determine background water quality	**ACP - Task 2 - Plume Characterization: conduct plume and regional groundwater monitoring to characterize background water quality, install and sample proposed new monitoring wells east, south, and west of the plume.**
Aquifer structure and hydraulic properties	**ACP - Task 2 - Plume Characterization: compile and evaluate data on the depths and hydraulic properties of aquifer units, conduct pumping tests at new wells; and Task 3 - Sulfate Fate and Transport Evaluation: aquifer data will be incorporated into a calibrated groundwater flow model.**
Conditions in the potential source area	**ACP - Task 2 - Plume Characterization: install and sample proposed new monitoring wells at the former evaporation pond area site and on the east and west sides of the South Tailing Impoundment.**
Quantification of sources and sinks of groundwater for groundwater flow model	**ACP - Task 3 - Sulfate Fate and Transport Evaluation: the flow rates and sulfate concentrations of historical and current sources and sinks of groundwater will be compiled or estimated for incorporation into the groundwater flow model; project concentrations and flows of future sources and sinks for predictive simulations.**
FEASIBILITY STUDY DATA NEEDS	
Water quality data for assessing treatability	**ACP - Task 2 - Plume Characterization: identify and collect information on water quality parameters that may influence treatment effectiveness, if needed.**
Current and projected pumping rates for existing wells	**FS - ISMAT and DSMA (see FS Task list below): determine current and projected demands for water use in the Bisbee-Naco area; and ACP - Task 3 - Sulfate Fate and Transport Evaluation: future sources and sinks will be projected for predictive simulations.**
Expected future pumping rates for planned wells	**FS - ISMAT and DSMA: determine projected future demands for water use in the Bisbee-Naco area; and ACP - Task 3 - Sulfate Fate and Transport Evaluation: future sources and sinks will be projected for predictive simulations.**
Specifications for existing and planned water supply distribution and storage systems	**FS - ISMAT and DSMA: obtain existing and projected future infrastructure specification from water users in the Bisbee-Naco area.**

ACP Task List

Task 1 - Well Inventory

Task 2 - Plume Characterization

- *Task 2.1 - Data Compilation and Evaluation*
- *Task 2.2 - Groundwater Monitoring*
- *Task 2.3 - New Monitoring Well Installation and Testing*

Task 3 - Sulfate Fate and Transport Evaluation

Task 4 - Aquifer Characterization Report

FS Task List

Identification and Screening of Mitigation Actions and Technologies (ISMAT)

Development and Screening of Mitigation Alternatives (DSMA)

Detailed Analysis of Mitigation Alternatives (DAMA)

TABLE 6
Proposed Groundwater Monitoring Wells

ADWR 55 Well Registry Number	Well ID	Monitoring Purpose	Sampling Frequency
200393	Walker	Regional	Semi Annual
203321	NWC3relp	Plume	Quarterly
212268	Burke	Plume	Quarterly
502527	Gallant	Regional	Semi Annual
510298	Yates	Plume	Quarterly
516399	Conner	Regional	Semi Annual
522573	TM-2	Plume	Quarterly
522574	TM-2A	Plume	Quarterly
522575	TM-3	Plume	Quarterly
522576	TM-7	Plume	Quarterly
522578	TM-16	Plume	Quarterly
522580	TM-19	Plume	Quarterly
522581	TM-19A	Plume	Quarterly
522694	TM-5	Regional	Semi Annual
522695	TM-6	Plume	Quarterly
522696	TM-10	Plume	Quarterly
522697	TM-12	Regional	Semi Annual
522698	TM-13	Plume	Quarterly
522699	TM-15	Regional	Semi Annual
522700	TM-17	Plume	Quarterly
522815	TM-11	Plume	Quarterly
522816	TM-14	Regional	Semi Annual
522817	TM-8	Regional	Semi Annual
527586	NSD-3	Regional	Semi Annual
527587	NSD-2	Regional	Semi Annual
539782	GL-3	Plume	Quarterly
539783	BF-1	Plume	Quarterly
544535	Rozzano	Plume	Quarterly
558557	Garner	Plume	Quarterly
562554	TM-42	Plume	Quarterly
562555	TM-41	Plume	Quarterly
562944	NWC-2repl	Plume	Quarterly
564726	TM-43A	Regional	Semi Annual
564728	TM-45	Regional	Semi Annual
564729	TM-43	Regional	Semi Annual

TABLE 6
Proposed Groundwater Monitoring Wells

ADWR 55 Well Registry Number	Well ID	Monitoring Purpose	Sampling Frequency
565004	TM-43B	Regional	Semi Annual
568875	Naco Golf Course (Lawson)	Plume	Quarterly
570012	City of Bisbee	Regional	Semi Annual
575700	NWC-6	Regional	Semi Annual
576415	Parra	Plume	Quarterly
577927	Bima LLC	Plume	Quarterly
587635	GW-47	Plume	Quarterly
590620	AWC-5	Plume	Quarterly
593116	City of Bisbee	Plume	Quarterly
599796	East	Regional	Semi Annual
602134	SJ-9	Plume	Quarterly
606854	Hull	Plume	Quarterly
616585	AWC-3	Plume	Quarterly
623564	Laeding	Plume	Quarterly
624535	Power	Regional	Semi Annual
627682	NWC-1	Regional	Semi Annual
627685	NWC-4	Plume	Quarterly
627696	NWC-5	Plume	Quarterly
628546	Galloping Goose Properties	Plume	Quarterly
628547	ELKS	Plume	Quarterly
637069	Hutson	Plume	Quarterly
641340	Miller	Plume	Quarterly
641341	Miller	Plume	Quarterly
641342	Miller	Regional	Semi Annual
641802	Grout	Plume	Quarterly
641803	Rogers	Plume	Quarterly
642937	Helga	Regional	Semi Annual
903984	City of Bisbee	Plume	Quarterly
903992	MW-1	Plume	Quarterly
no number	BJ-1	Plume	Quarterly
no number	BJ-2	Plume	Quarterly
no number	BJ-4	Plume	Quarterly
no number	BJ-5	Plume	Quarterly

ADWR = Arizona Department of Water Resources

TABLE 7
Proposed New Monitoring Well Locations

PROPOSED WELL SITE	PURPOSE	ESTIMATED WELL DEPTH	ESTIMATED DEPTH TO BEDROCK	BEDROCK FORMATION	APPROACH TO WELL INSTALLATION	LAND STATUS
1	Determine eastern extent and of sulfate and hydraulic properties; long term water level and water quality monitoring in the vicinity of abandoned assessment well TM-4 (Figure 3)	400	75	Glance Conglomerate	Single well in Glance Conglomerate	Private
2	Determine southeastern extent and vertical zoning of sulfate and hydraulic properties in Morita Formation or Glance Conglomerate; long term water quality monitoring in the vicinity of Bisbee Junction basin watershed margin is impacted by the CTSA	600	5-15	Morita Formation and Glance Conglomerate	Single well in Morita Formation or Glance Conglomerate, depending on construction details of NWC 4 and thickness of Morita Formation; existing private well may substitute if suitable	Private
3	Determine southern extent and of sulfate and hydraulic properties; long term water level and water quality monitoring	550-700	550-700	Morita Formation and Glance Conglomerate	Single well in basin fill	Private
4	Determine vertical zoning of sulfate and hydraulic properties in the vicinity of NWC-3, specifically whether or not sulfate is present in deep basin fill below screened depths of area wells; long term water level and water quality monitoring	600-1000	600-1000	Morita Formation and Glance Conglomerate	Single well in deep basin fill	Private
5	Determine southwestern extent and vertical zoning of sulfate and hydraulic properties; serve as sentinel well between plume margin and AWC public supply wells; long term water level and water quality monitoring	600	600-1000	Morita Formation and Glance Conglomerate	Two wells in shallow and deep basin fill; existing private well(s) may substitute for shallow basin fill well if suitable	Private
6	Determine western extent and vertical zoning of sulfate and hydraulic properties between TM-14 and TM-13; long term water level and water quality monitoring	550	450-550	Morita Formation and Glance Conglomerate	Two wells in shallow and deep basin fill; existing private well(s) may substitute if suitable	Private
7	Determine vertical zoning of sulfate and hydraulic properties inside the plume in the vicinity of MW-1; specifically, monitor sulfate concentrations in bedrock; long term water quality monitoring	600	450-500	Morita Formation	Single well in Morita Formation	PDCQB
8	Determine vertical zoning of sulfate and hydraulic properties on the west side of the Black Gap fault; determine the hydrologic influence of the fault; test for presence of and monitor sulfate in the bedrock aquifer; long term water level and water quality monitoring	550-650	350-450	Morita Formation	Two wells, one in basin fill and one in Morita Formation	PDCQB
9	Determine vertical zoning and hydraulic properties within the Morita Formation +/- Glance Conglomerate below the depth of TM-41; long term monitoring of water quality east of the Black Gap fault	500	150	Morita Formation and Glance Conglomerate	Single well in deep bedrock	PDCQB
10	Source area monitoring; determine vertical sulfate zoning within bedrock aquifer and hydraulic properties on the east side of the Black Gap fault	500	140	Morita Formation and Glance Conglomerate	Two wells in shallow and deep bedrock	PDCQB
11	Source area monitoring; long term water level and water quality monitoring	400	240	Morita Formation	Single well in bedrock	PDCQB
12	Source area monitoring; long term water level and water quality monitoring	200	60	Glance Conglomerate	Single well in bedrock; existing private well may substitute if suitable	Private

Note:

PDCQB = Phelps Dodge Copper Queen Branch

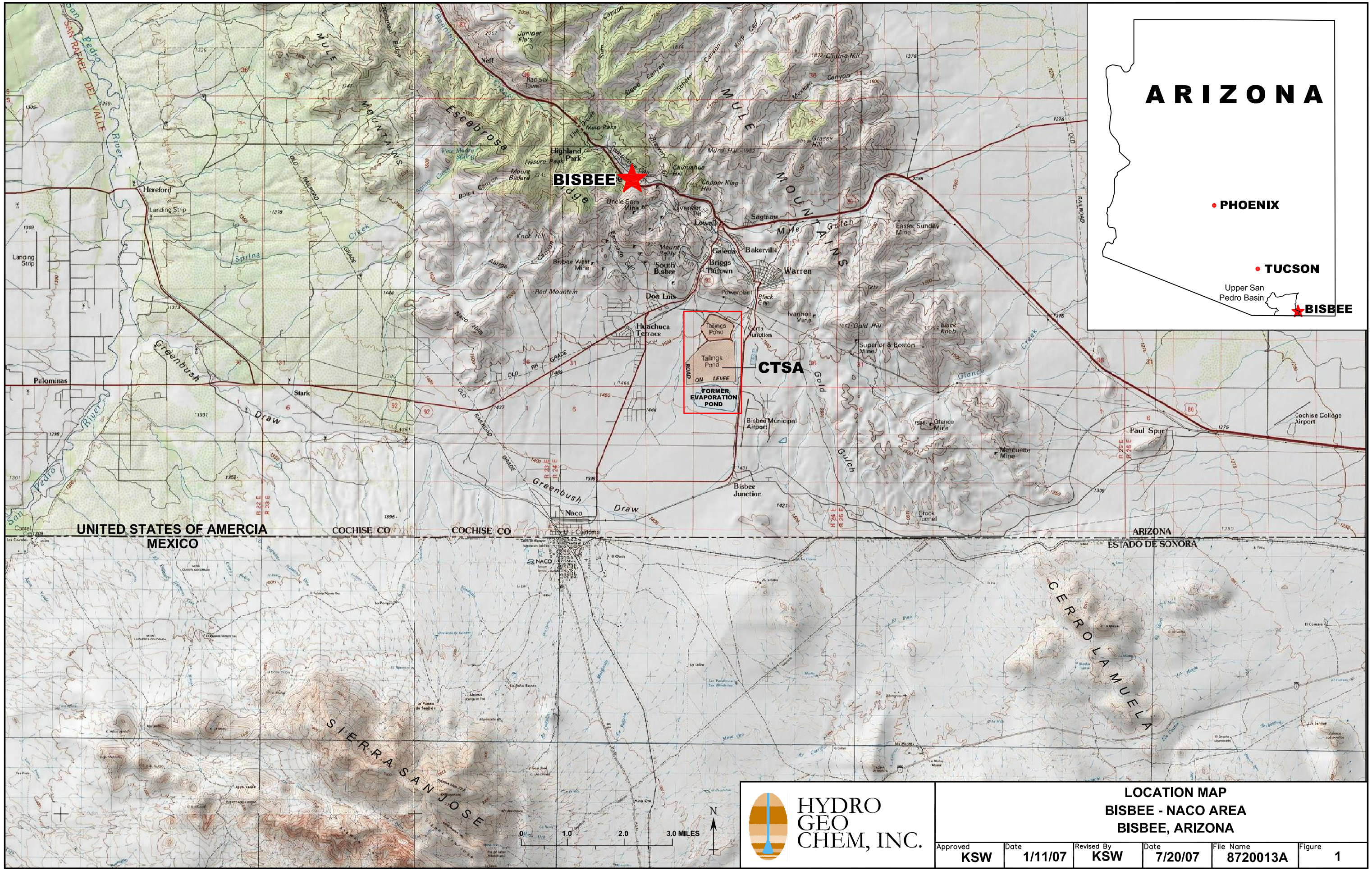
Location of proposed wells may be subject to change depending on land access and results of data collection in Task 2.2.

Some wells may not be drilled if suitable existing wells are available for groundwater monitoring.

TABLE 8
Schedule for Work Plan Deliverables

DELIVERABLE	DATE
Well Inventory Report	July 31, 2008
Groundwater Monitoring Reports	
First Quarter 2008	July 31, 2008
Second Quarter 2008	July 31, 2008
Third Quarter 2008	October 31, 2008
Fourth Quarter 2008	January 31, 2008
First Quarter 2009	April 30, 2009
Second Quarter 2009	July 31, 2009
Third Quarter 2009	October 31, 2009
Aquifer Characterization Report	April 30, 2009
Feasibility Study	July 31, 2009
Mitigation Plan	September 30, 2009

FIGURES



HYDRO GEO CHEM, INC.

LOCATION MAP
BISBEE - NACO AREA
BISBEE, ARIZONA

Approved	Date	Revised By	Date	File Name	Figure
KSW	1/11/07	KSW	7/20/07	8720013A	1

NORTH TAILING IMPOUNDMENT

SOUTH TAILING IMPOUNDMENT

FORMER EVAPORATION PONDS

FORMER IRRIGATION AREA

FORMER SAN JOSE WWTF PONDS

FORMER SAC LOGS NO. 1

FORMER SAC LOGS NO. 2

FORMER CRAWFORD MILL TAILING PILE

FORMER WARREN WWTP

NACO SANITARY DISTRICT WWTF

SAN JOSE WWTF OUTFALL

T 23S
T 24S

R 23E R 24E

R 24E R 25E

CTSA FACILITY

FACILITY DISCUSSED IN TEXT

0 1/2 1 MILE

0 2000 4000 6000 FEET

0 .5 1 2 KILOMETER

N

MAP SOURCE: USGS 7.5 MIN QUADS: BISBEE, BISBEE NE, BISBEE SE, AND NACO, ARIZONA
NAD 27 ZONE 12 CENTRAL, METERS

HYDRO GEO CHEM, INC.

FACILITIES IN THE VICINITY OF THE CONCENTRATOR TAILING STORAGE AREA BISBEE NACO AREA, ARIZONA, 2007

Approved	Date	Revised By	Date	File Name	Figure
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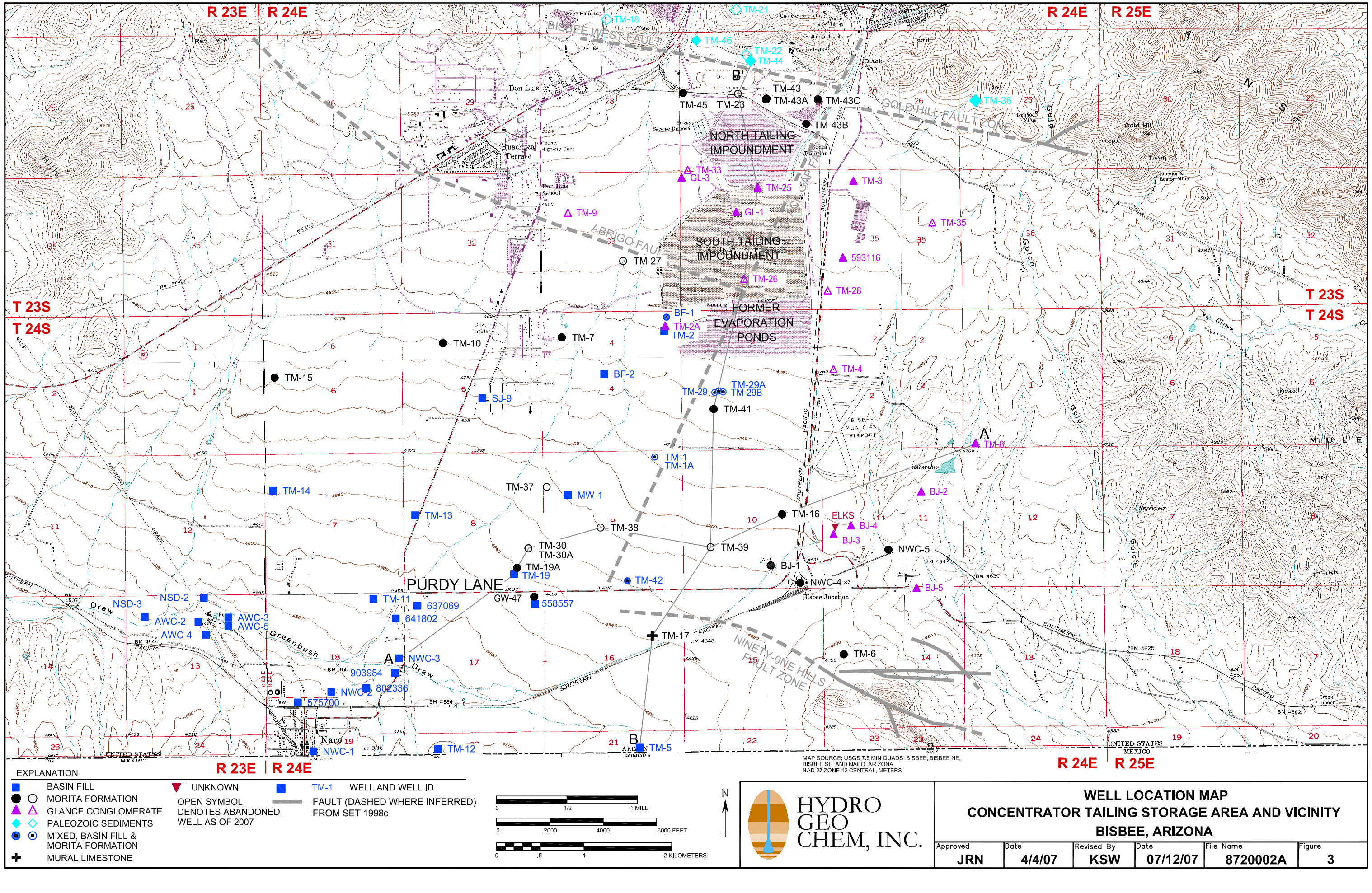
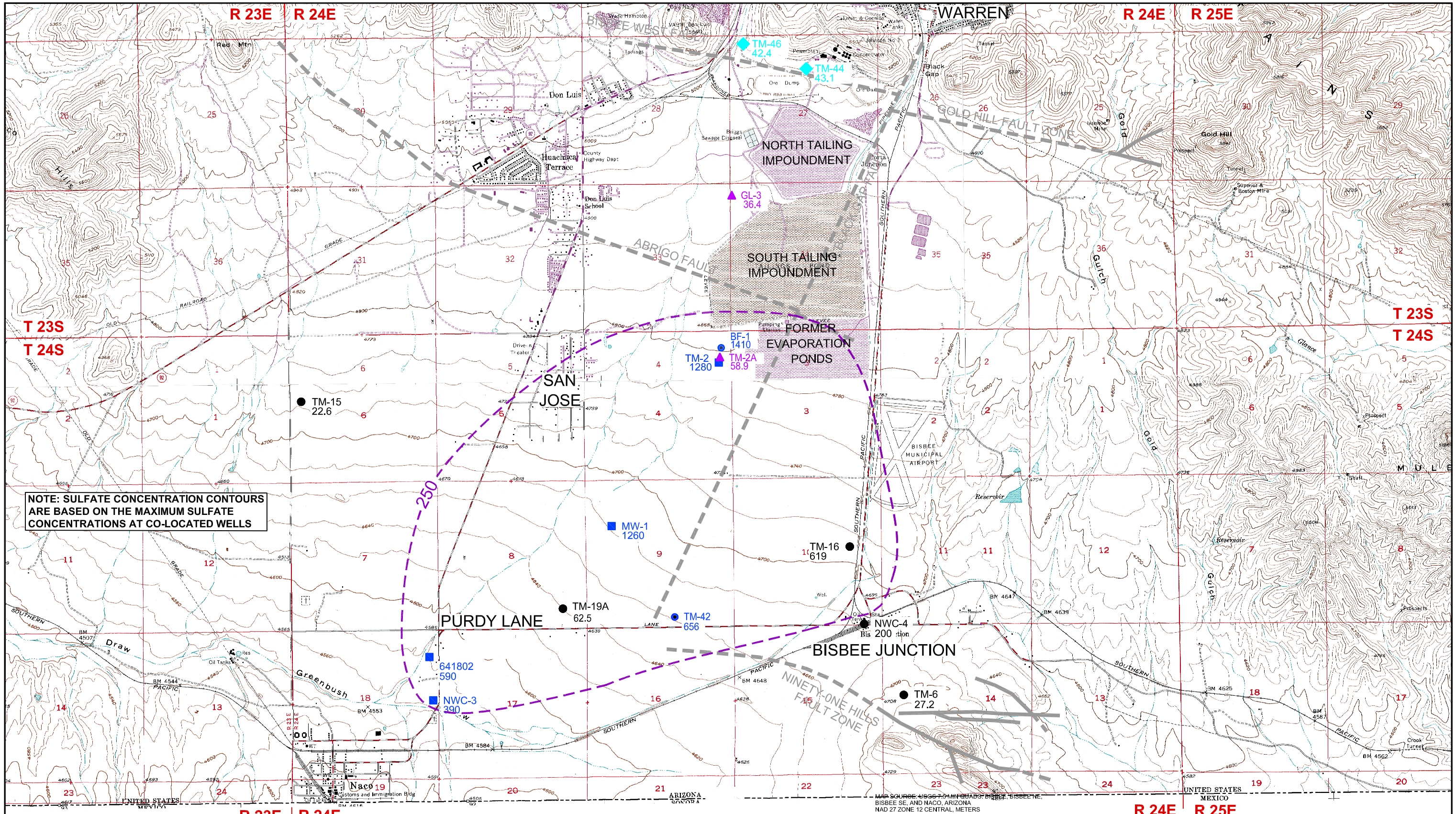

R 23E
R 24E
R 25E
T 23S
T 24S
TM-18
TM-21
TM-46
TM-22
TM-44
TM-45
TM-23
TM-43
TM-43A
TM-43C
TM-43B
TM-36
B'
B
A'
A
BISBEE WEST FAULT
GOLDHILL FAULT ZONE
ABRIGO FAULT
NORTH TAILING IMPOUNDMENT
SOUTH TAILING IMPOUNDMENT
FORMER EVAPORATION PONDS
TM-33
GL-3
TM-25
GL-1
TM-3
TM-35
TM-9
TM-27
TM-26
593116
TM-28
BF-1
TM-2A
TM-2
TM-10
TM-7
TM-15
BF-2
SJ-9
TM-4
TM-29
TM-29A
TM-29B
TM-41
TM-1
TM-1A
TM-8
TM-37
MW-1
TM-14
TM-13
TM-38
TM-16
TM-39
TM-30
TM-30A
TM-19A
TM-19
TM-42
BJ-2
ELKS
BJ-4
BJ-3
NWC-5
BJ-1
NWC-4
BJ-5
PURDY LANE
GW-47
558557
TM-11
637069
641802
NSD-3
NSD-2
AWC-2
AWC-3
AWC-5
AWC-4
NWC-3
903984
NWC-2
802336
575700
NWC-1
TM-12
TM-17
TM-6
TM-5
NINETY-ONE HILLS FAULT ZONE
Huachuca Terrace
Don Luis
Don Luis School
Black Gap
Gold Hill
Bisbee Junction
Naco
Greenbush Draw
Gold Gulch
Glance Gulch
Mule
Red Mtn
Hills
BISBEE MUNICIPAL AIRPORT
UNITED STATES
MEXICO
SOUTHERN PACIFIC
RAILROAD
GRADE
LANE
Reservoir
Prospect
Tunnel
Shaft
Well
Spring
Pumping Station
LEVEE
Sewage Disposal
County Highway Dept.
Drive-in Theater
Ore Bins
Superior & Boston Mine
Ivanhoe Mine
Calumet & Sonora Mine
Junction
Crook Tunnel
BM 4507
BM 4544
BM 4584
BM 4455
BM 4647
BM 4639
BM 4625
BM 4587
BM 4562
EXPLANATION
BASIN FILL
MORITA FORMATION
GLANCE CONGLOMERATE
PALEOZOIC SEDIMENTS
MIXED, BASIN FILL & MORITA FORMATION
MURAL LIMESTONE
UNKNOWN
OPEN SYMBOL DENOTES ABANDONED WELL AS OF 2007
TM-1 WELL AND WELL ID
FAULT (DASHED WHERE INFERRED) FROM SET 1998c
0 1/2 1 MILE
0 2000 4000 6000 FEET
0 .5 1 2 KILOMETERS
N
MAP SOURCE: USGS 7.5 MIN QUADS: BISBEE, BISBEE NE, BISBEE SE, AND NACO, ARIZONA
NAD 27 ZONE 12 CENTRAL, METERS
HYDRO GEO CHEM, INC.
WELL LOCATION MAP
CONCENTRATOR TAILING STORAGE AREA AND VICINITY
BISBEE, ARIZONA
Approved JRN
Date 4/4/07
Revised By KSW
Date 07/12/07
File Name 8720002A
Figure 3



EXPLANATION

- BASIN FILL
- MORITA FORMATION
- GLANCE CONGLOMERATE
- PALEOZOIC SEDIMENTS
- MIXED, BASIN FILL AND MORITA FORMATION
- MURAL LIMESTONE
- UNKNOWN
- FAULT (DASHED WHERE INFERRED) FROM SET 1998c
- SULFATE, DASHED WHERE UNCERTAIN
- MW-1 1260 — WELL ID, SULFATE CONCENTRATION

0 1/2 1 MILE

0 2000 4000 6000 FEET

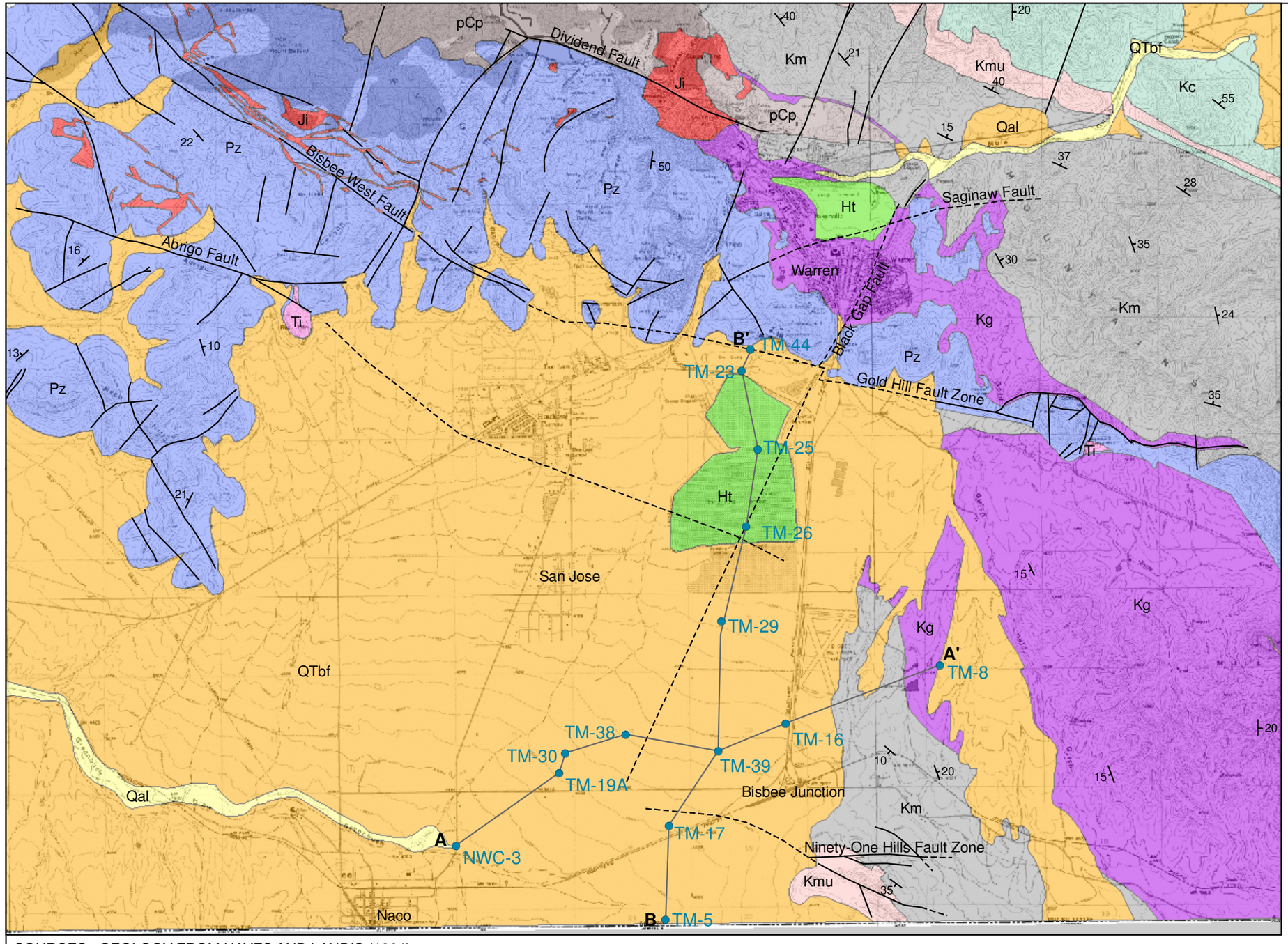
0 .5 1 2 KILOMETER

N

HYDRO GEO CHEM, INC.

SULFATE PLUME, 2005
APPROXIMATE BOUNDARY OF
250 mg/L SULFATE CONCENTRATION
BISBEE, ARIZONA

Approved	Date	Revised By	Date	File Name	Figure
JRN	04/04/07	KSW	07/18/07	8720015A	4



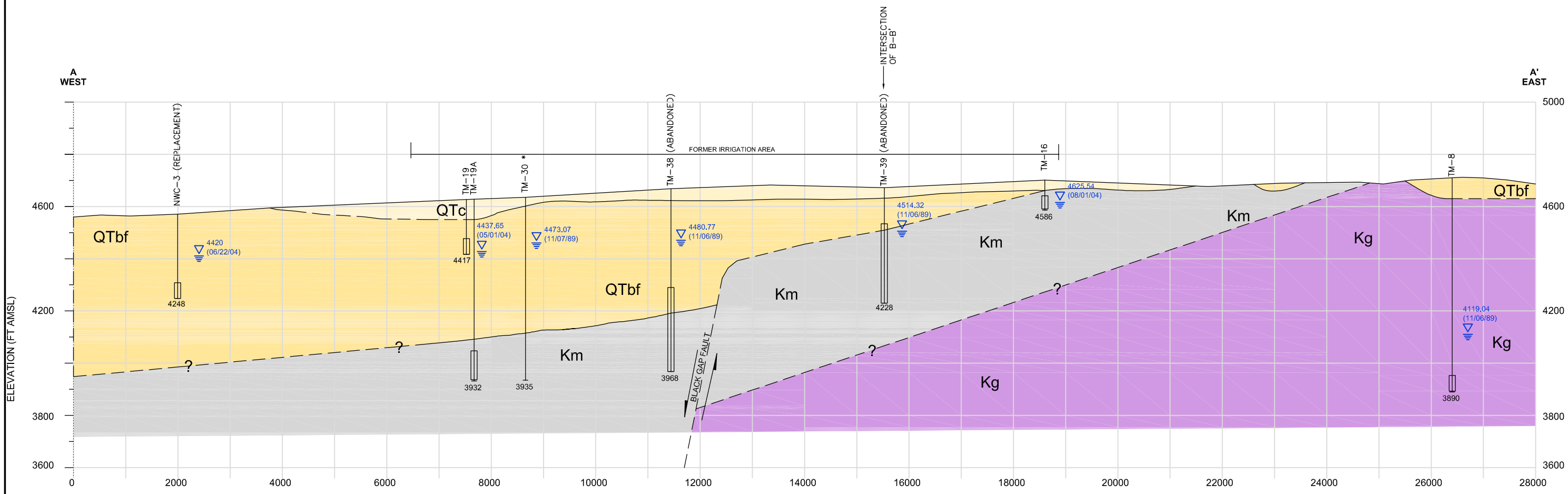
SOURCES: GEOLOGY FROM HAYES AND LANDIS (1964)
FAULT PROJECTIONS FROM SET (1998c)

0 0.5 1 Miles
0 2,000 4,000 6,000 Feet
0 1 2 Kilometers
N

HYDRO GEO CHEM, INC.

GEOLOGICAL MAP OF THE CTSA AND VICINITY BISBEE, ARIZONA

Approved	Date	Reviewed By	Date	File Name	Figure
KSW	04/11/07	KSW	07/20/07	8720005G	5



EXPLANATION

- QTc — QUATERNARY – TERTIARY CALICHE CEMENTED BASIN FILL
- QTbf — QUATERNARY – TERTIARY BASIN FILL
- Km — CRETACEOUS MORITA FORMATION
- Kg — CRETACEOUS GLANCE CONGLOMERATE
- FAULT, DASHED WHERE INFERRED
- FORMATION CONTACT, DASHED WHERE INFERRED
- * — GEOLOGIC BOREHOLE, NOT COMPLETED AS WELL

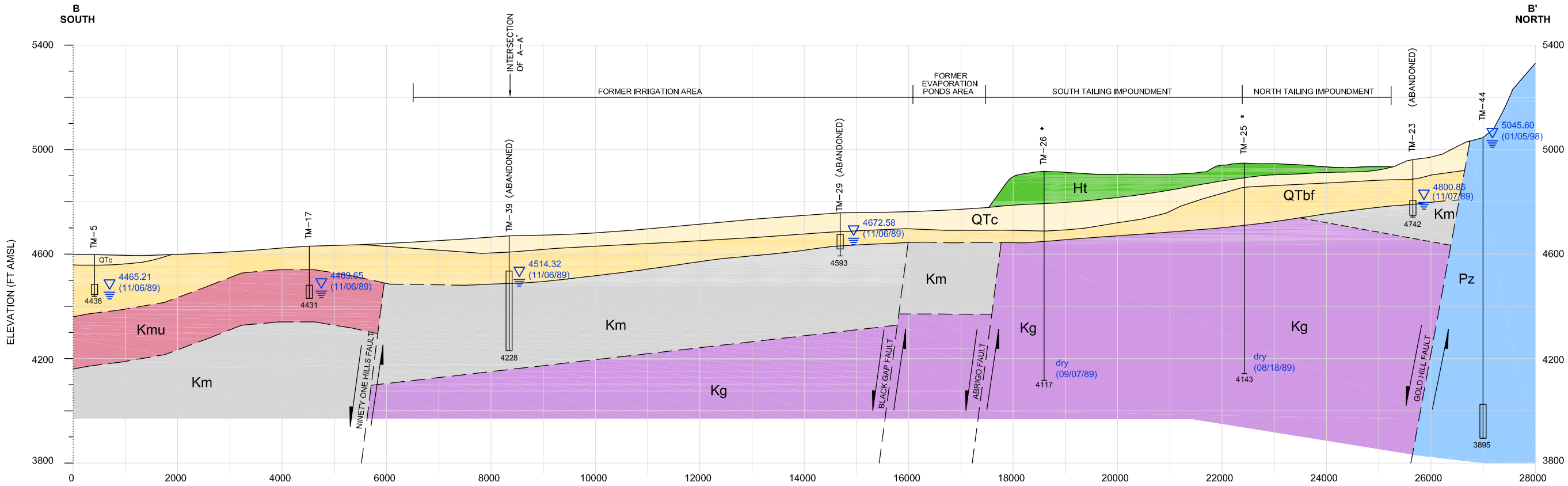
TM–5 — WELL ID; WELL; WATER LEVEL (DATE); SCREEN

0 1000 2000 4000
SCALE IN FEET

HYDRO GEO CHEM, INC.

A-A' GEOLOGICAL CROSS SECTION
BISBEE-NACO AREA, ARIZONA

Approved	Date	Revised By	Date	File Name	Figure
KSW	3/19/07	KSW	07/17/07	8720017A	6



EXPLANATION

Ht	RECENT MILL TAILINGS
QTc	QUATERNARY – TERTIARY CALICHE CEMENTED BASIN FILL
QTbf	QUATERNARY – TERTIARY BASIN FILL
Kmu	CRETACEOUS MURAL LIMESTONE
Km	CRETACEOUS MORITA FORMATION
Kg	CRETACEOUS GLANCE CONGLOMERATE
Pz	PALEOZOIC SEDIMENTS
	FAULT, DASHED WHERE INFERRED
	FORMATION CONTACT, DASHED WHERE INFERRED
*	GEOLOGIC BOREHOLE, NOT COMPLETED AS WELL

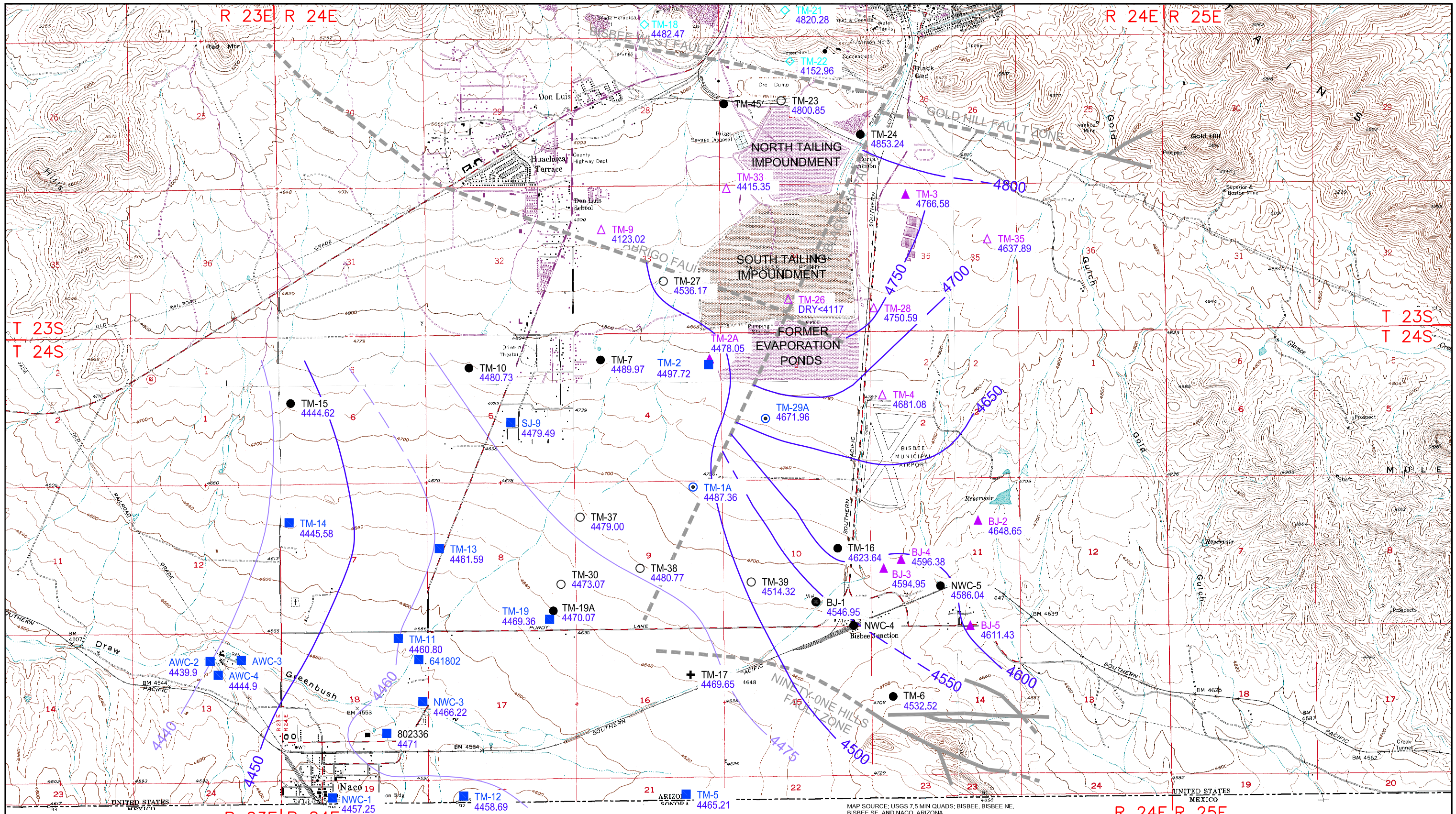
TM–5 — WELL ID
WELL
SCREEN

0 1000 2000 4000
SCALE IN FEET

HYDRO GEO CHEM, INC.

B-B' GEOLOGICAL CROSS SECTION
BISBEE-NACO AREA BISBEE, ARIZONA

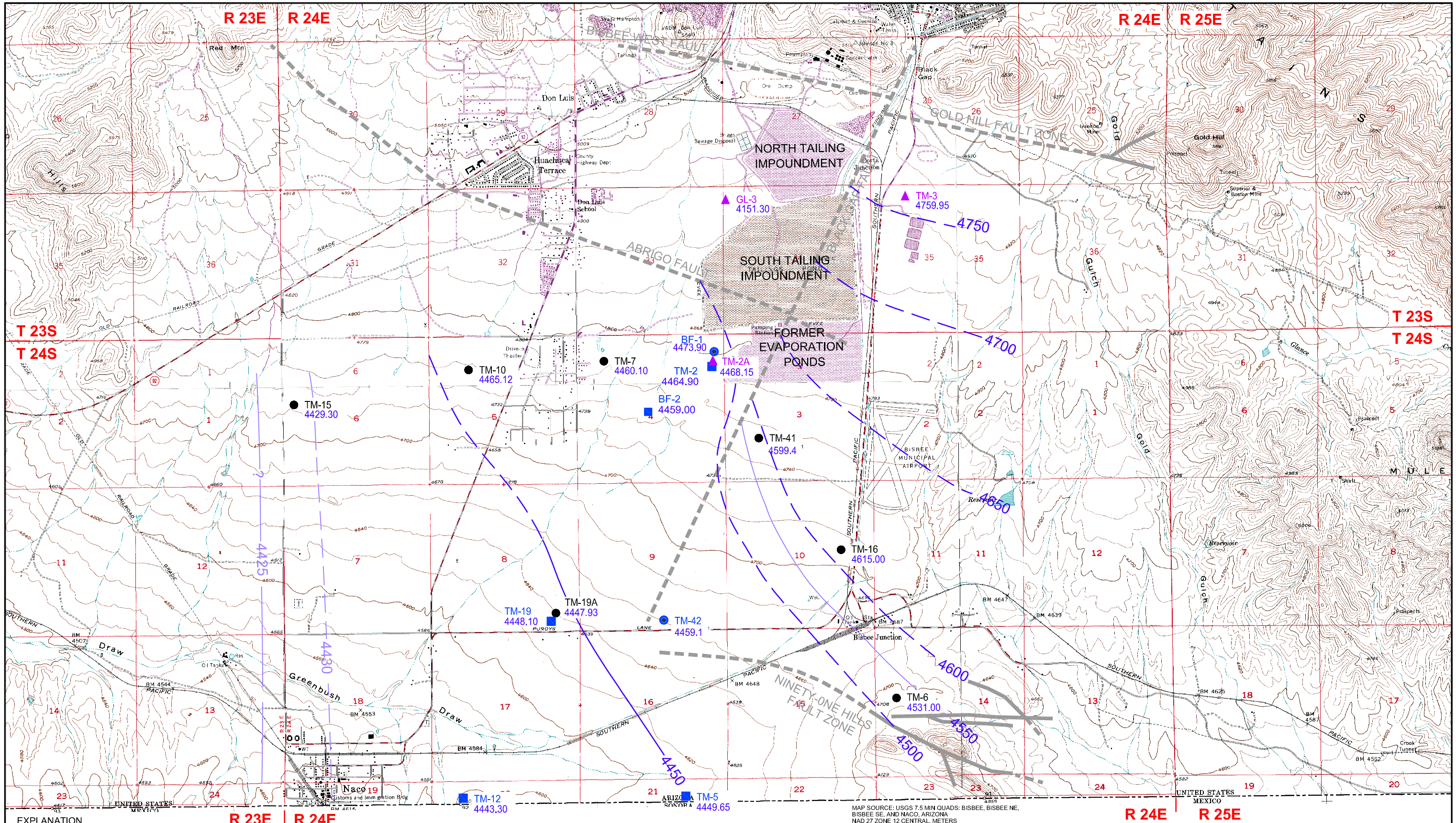
Approved	Date	Revised By	Date	File Name	Figure
KSW	03/19/07	KSW	06/30/08	8720016A	7



HYDRO GEO CHEM, INC.

WATER LEVEL MAP 1989
CONCENTRATOR TAILING STORAGE AREA AND VICINITY
BISBEE, ARIZONA

Approved	Date	Revised By	Date	File Name	Figure
KSW	4/4/07	KSW	7/12/07	8720007A	8



EXPLANATION

- BASIN FILL
- MORITA FORMATION
- GLANCE CONGLOMERATE
- PALEOZOIC SEDIMENTS
- MIXED, BASIN FILL & MORITA FORMATION

TM-1 4443.2 WELL ID, WATER ELEVATION (FT AMSL)

WATER CONTOUR LINE (DASHED WHERE INFERRED)

INTERMEDIATE WATER CONTOUR LINE (DASHED WHERE INFERRED)

FAULT (DASHED WHERE INFERRED) FROM SET 1998c

1 WATER LEVELS FROM TM-41 & TM-42 ARE FROM 1997

0 1/2 1 MILE

0 2000 4000 6000 FEET

0 .5 1 2 KILOMETER

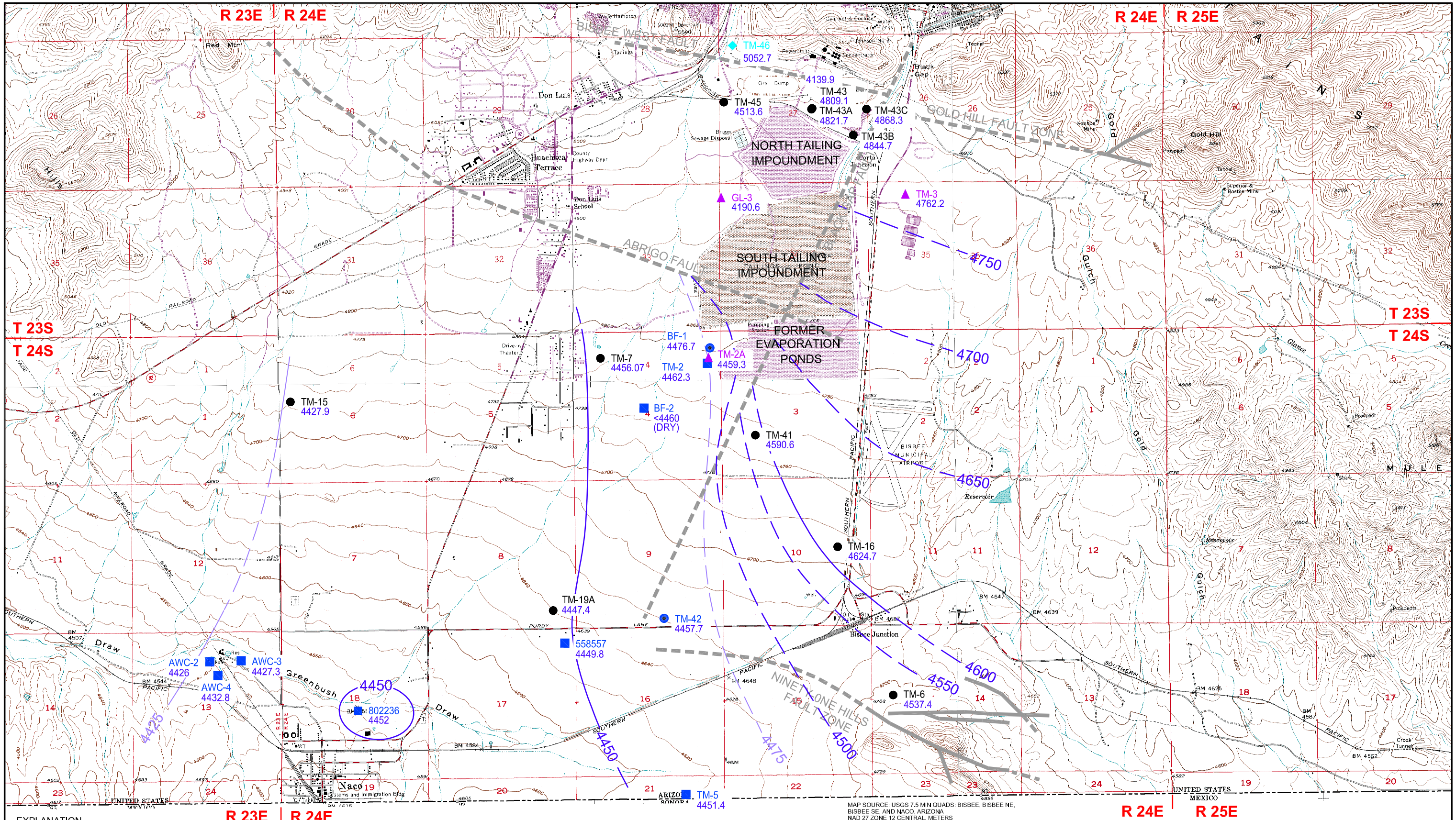
N

MAP SOURCE: USGS 7.5 MIN QUADS: BISBEE, BISBEE NE, BISBEE SE, AND NACO, ARIZONA
NAD 27 ZONE 12 CENTRAL, METERS

HYDRO GEO CHEM, INC.

WATER LEVEL MAP 1996
CONCENTRATOR TAILING STORAGE AREA AND VICINITY
BISBEE, ARIZONA

Approved	Date	Revised By	Date	File Name	Figure
KSW	04/04/07	KSW	07/19/07	8720022A	9



MAP SOURCE: USGS 7.5 MIN QUADS: BISBEE, BISBEE NE, BISBEE SE, AND NACO, ARIZONA
NAD 27 ZONE 12 CENTRAL, METERS

EXPLANATION

- BASIN FILL
- MORITA FORMATION
- GLANCE CONGLOMERATE
- PALEOZOIC SEDIMENTS
- MIXED, BASIN FILL & MORITA FORMATION
- MURAL LIMESTONE

TM-1 4443.2 — WELL ID, WATER ELEVATION (FT AMSL)

- WATER CONTOUR LINE (DASHED WHERE INFERRED)
- INTERMEDIATE WATER CONTOUR LINE (DASHED WHERE INFERRED)
- FAULT (DASHED WHERE INFERRED) FROM SET 1998c

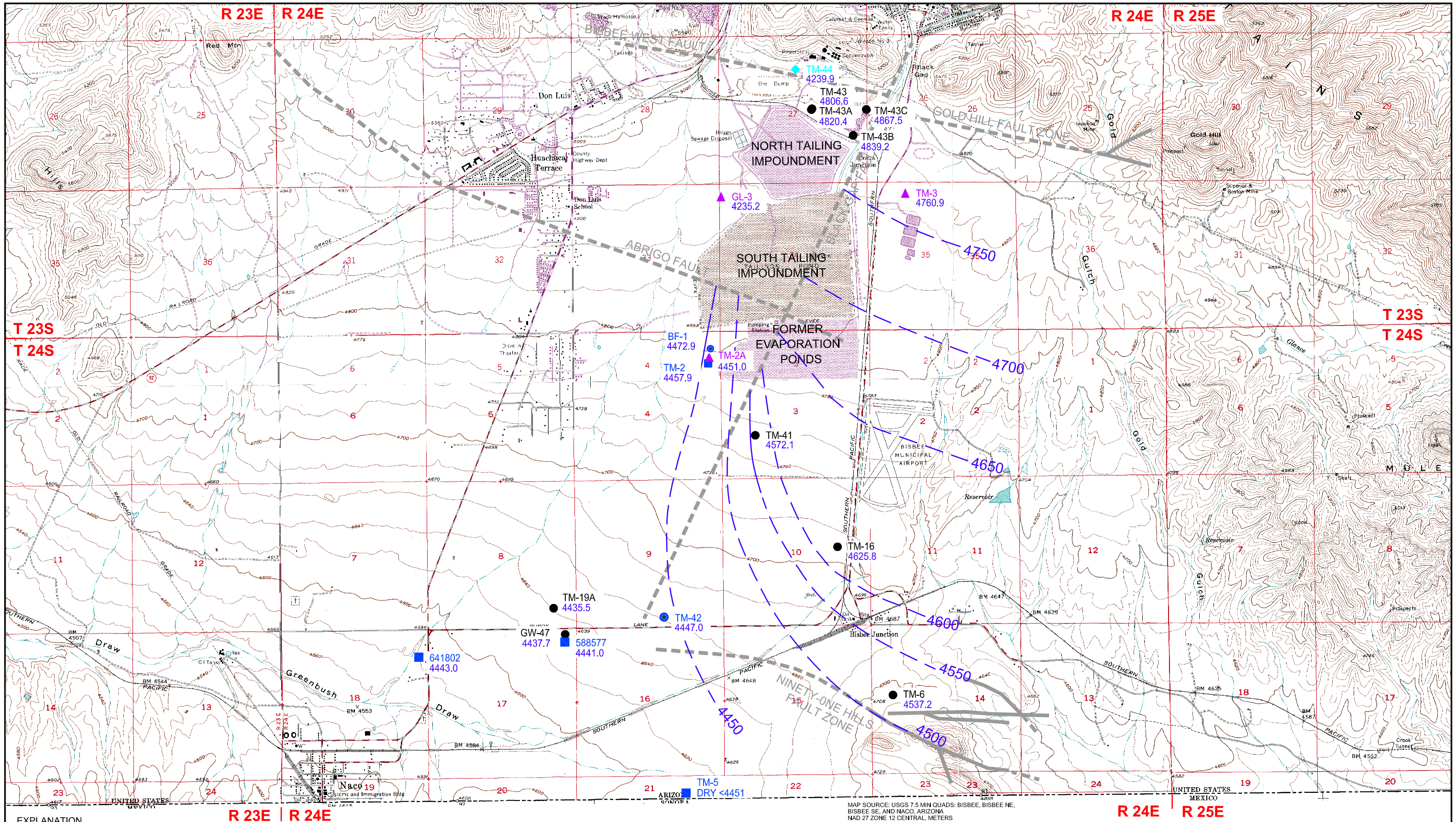
0 1/2 1 MILE
0 2000 4000 6000 FEET
0 .5 1 2 KILOMETER

N

HYDRO GEO CHEM, INC.

WATER LEVEL MAP 1999
CONCENTRATOR TAILING STORAGE AREA AND VICINITY
BISBEE, ARIZONA

Approved	Date	Revised By	Date	File Name	Figure
KSW	4/4/07	KSW	07/17/07	8720006A	10



MAP SOURCE: USGS 7.5 MIN QUADS: BISBEE, BISBEE NE, BISBEE SE, AND NACO, ARIZONA
NAD 27 ZONE 12 CENTRAL, METERS

EXPLANATION

- BASIN FILL
- MORITA FORMATION
- GLANCE CONGLOMERATE
- PALEOZOIC SEDIMENTS
- MIXED, BASIN FILL & MORITA FORMATION
- TM-1 4443.2 — WELL ID, WATER ELEVATION (FT AMSL)
- WATER CONTOUR LINE (DASHED WHERE INFERRED)
- FAULT (DASHED WHERE INFERRED) FROM SET 1998c

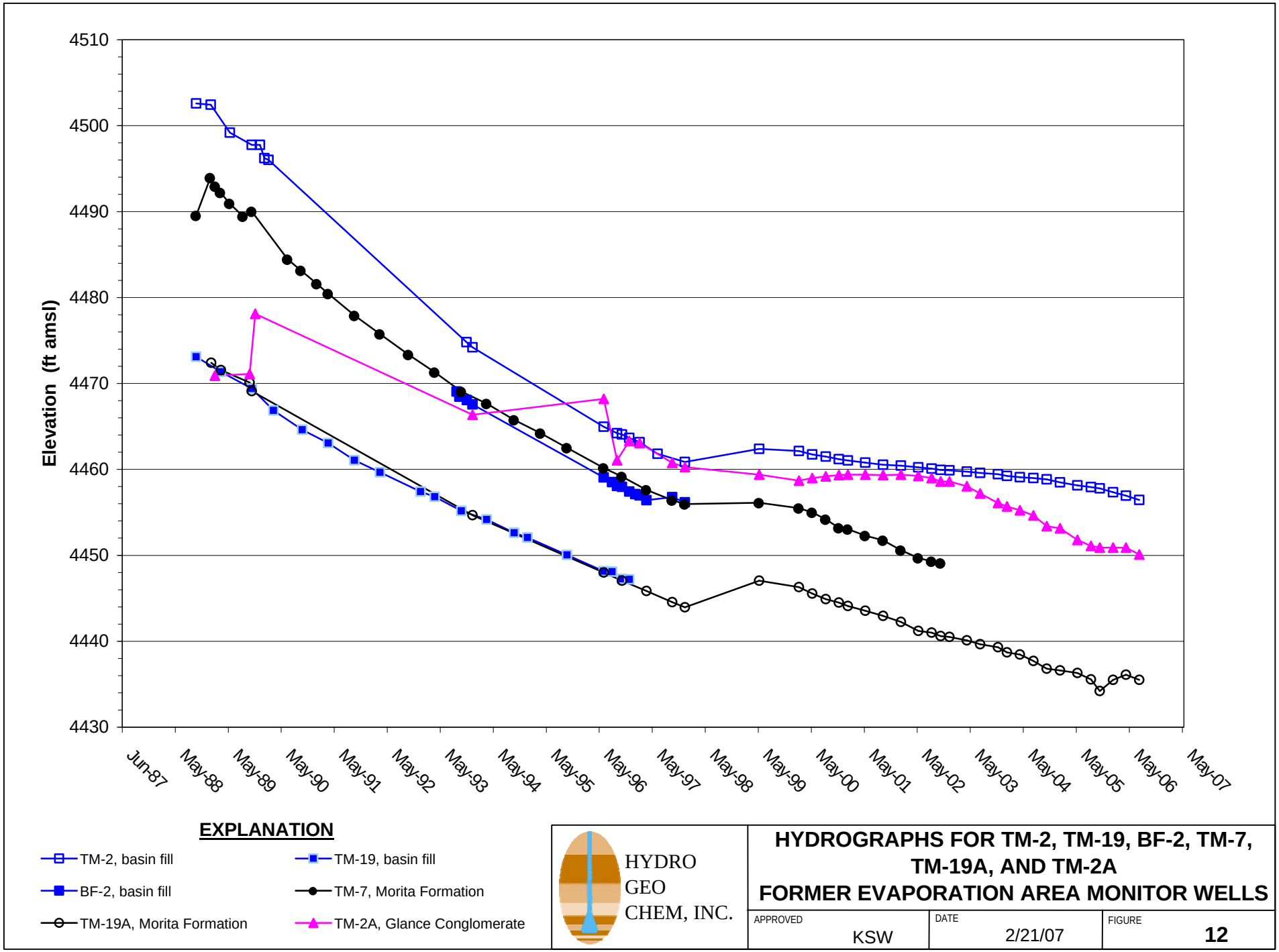
0 1/2 1 MILE
0 2000 4000 6000 FEET
0 .5 1 2 KILOMETER

N

HYDRO GEO CHEM, INC.

WATER LEVEL MAP SEPTEMBER 2005
CONCENTRATOR TAILING STORAGE AREA AND VICINITY
BISBEE, ARIZONA

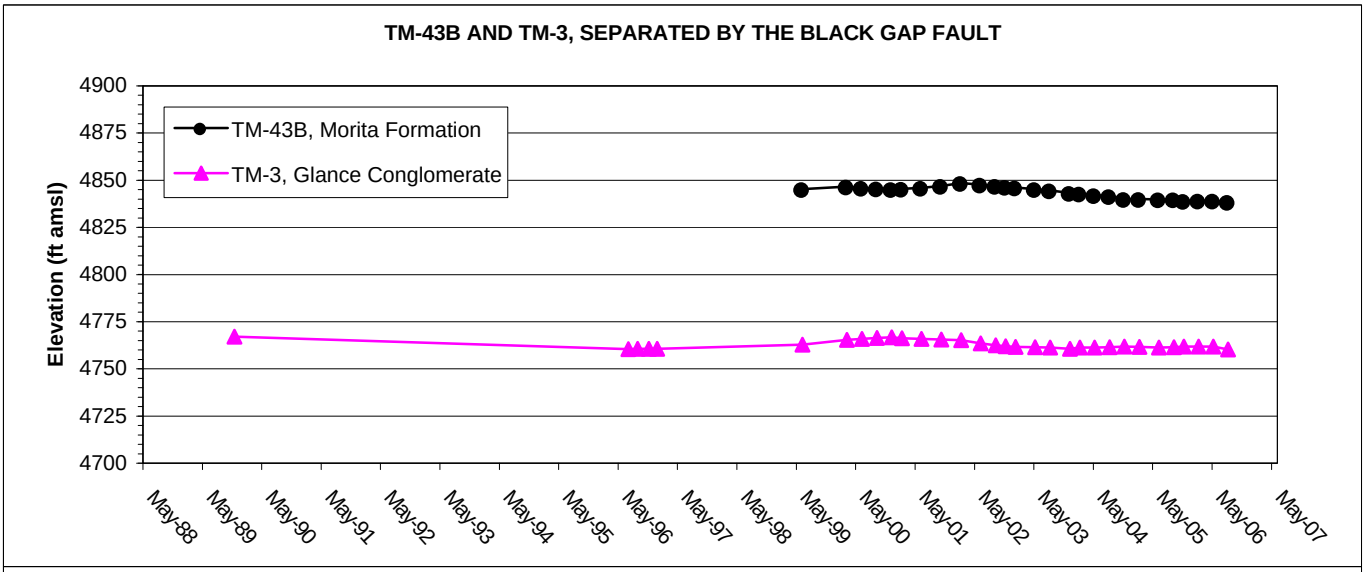
Approved	Date	Revised By	Date	File Name	Figure
KSW	4/4/07	KSW	07/17/07	8720005A	11

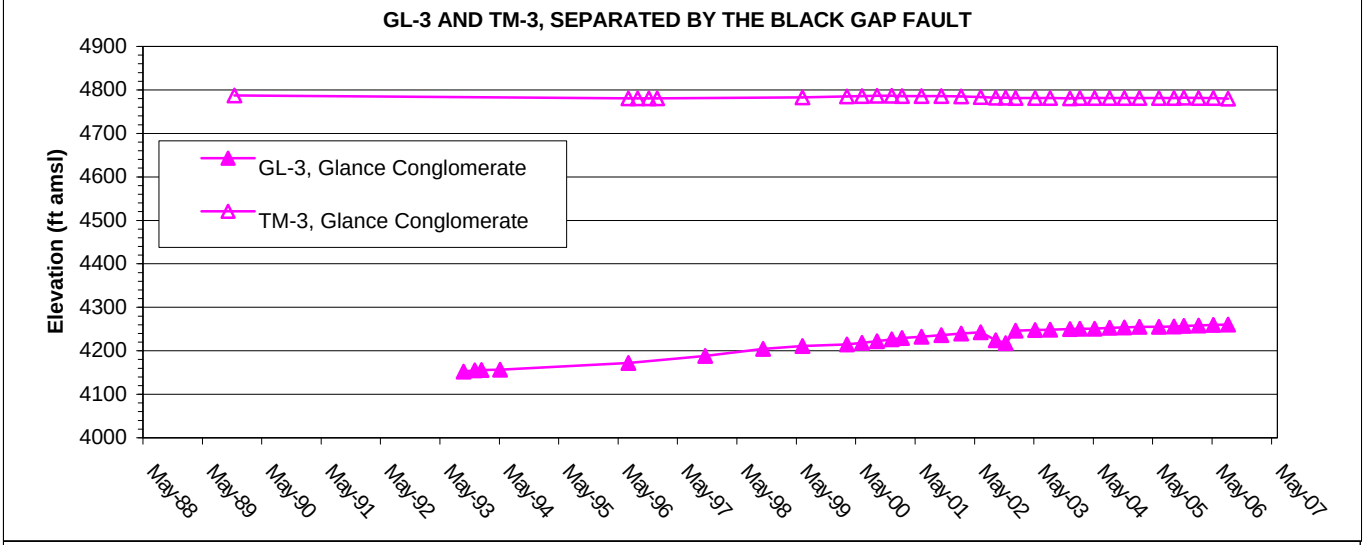


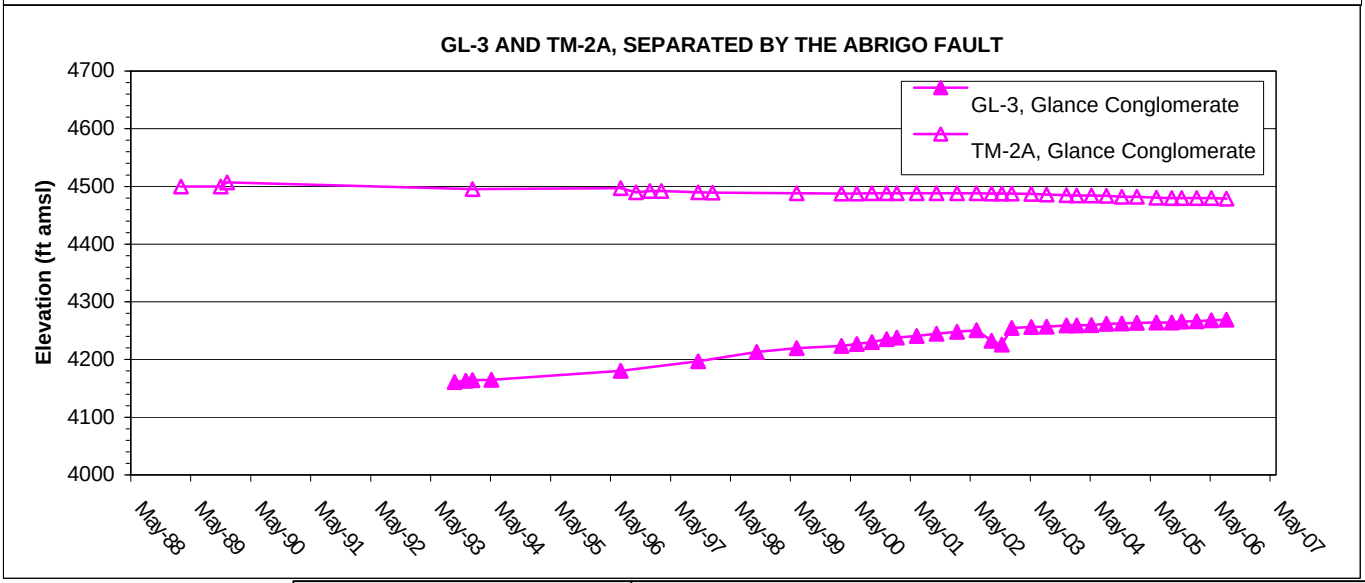
HYDRO GEO CHEM, INC.

HYDROGRAPHS FOR TM-2, TM-19, BF-2, TM-7, TM-19A, AND TM-2A
FORMER EVAPORATION AREA MONITOR WELLS

APPROVED	DATE	FIGURE
KSW	2/21/07	**12**



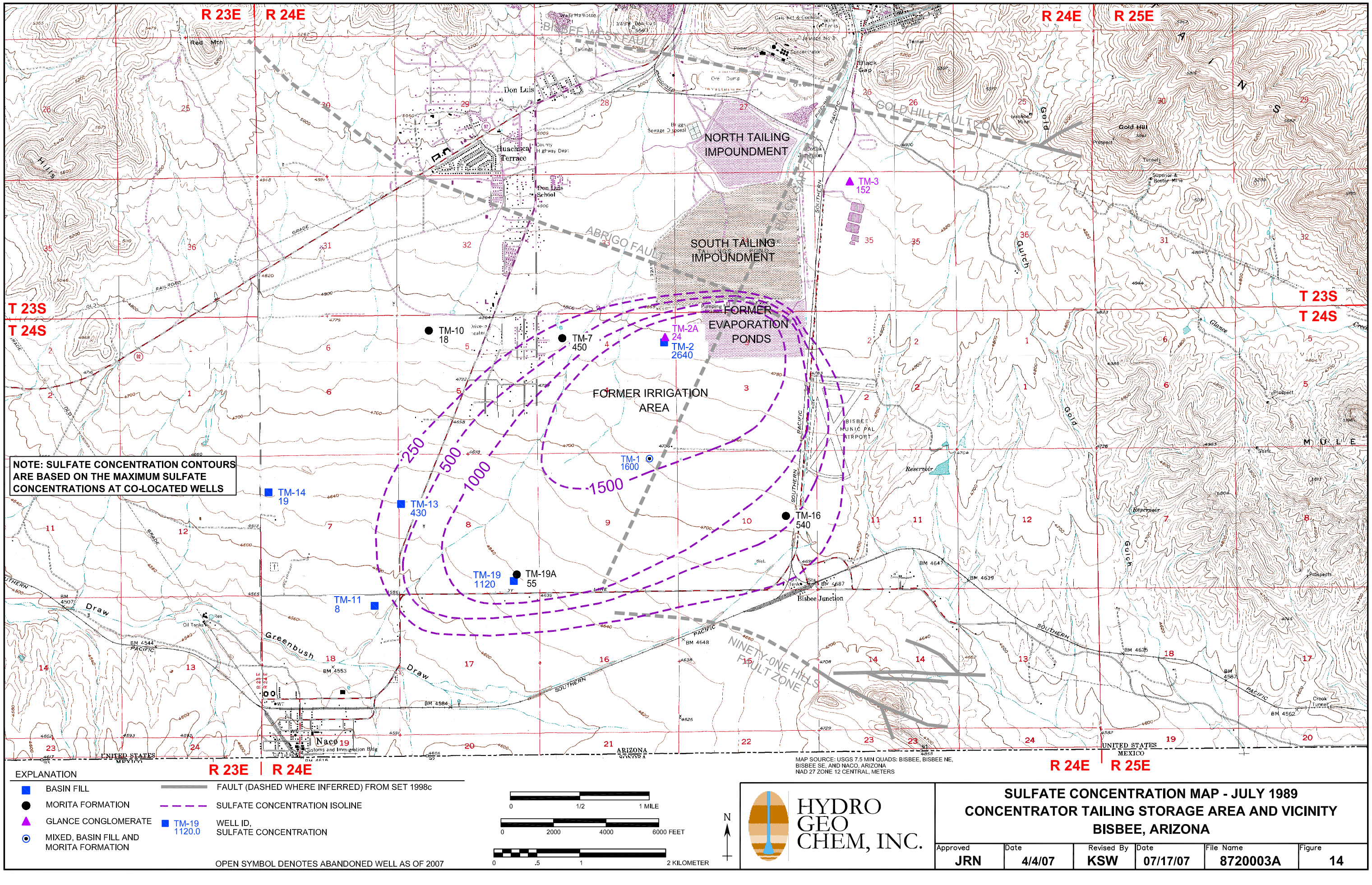




HYDRO GEO CHEM, INC.

HYDROGRAPHS OF MONITORING WELLS SEPARATED BY THE BLACK GAP AND THE ABRIGO FAULTS

APPROVED	DATE	FIGURE
KSW	04/07/07	13



EXPLANATION

- BASIN FILL
- MORITA FORMATION
- GLANCE CONGLOMERATE
- MIXED, BASIN FILL AND MORITA FORMATION
- FAULT (DASHED WHERE INFERRED) FROM SET 1998c
- SULFATE CONCENTRATION ISOLINE
- TM-19 1120.0 — WELL ID, SULFATE CONCENTRATION

OPEN SYMBOL DENOTES ABANDONED WELL AS OF 2007

0 1/2 1 MILE

0 2000 4000 6000 FEET

0 .5 1 2 KILOMETER

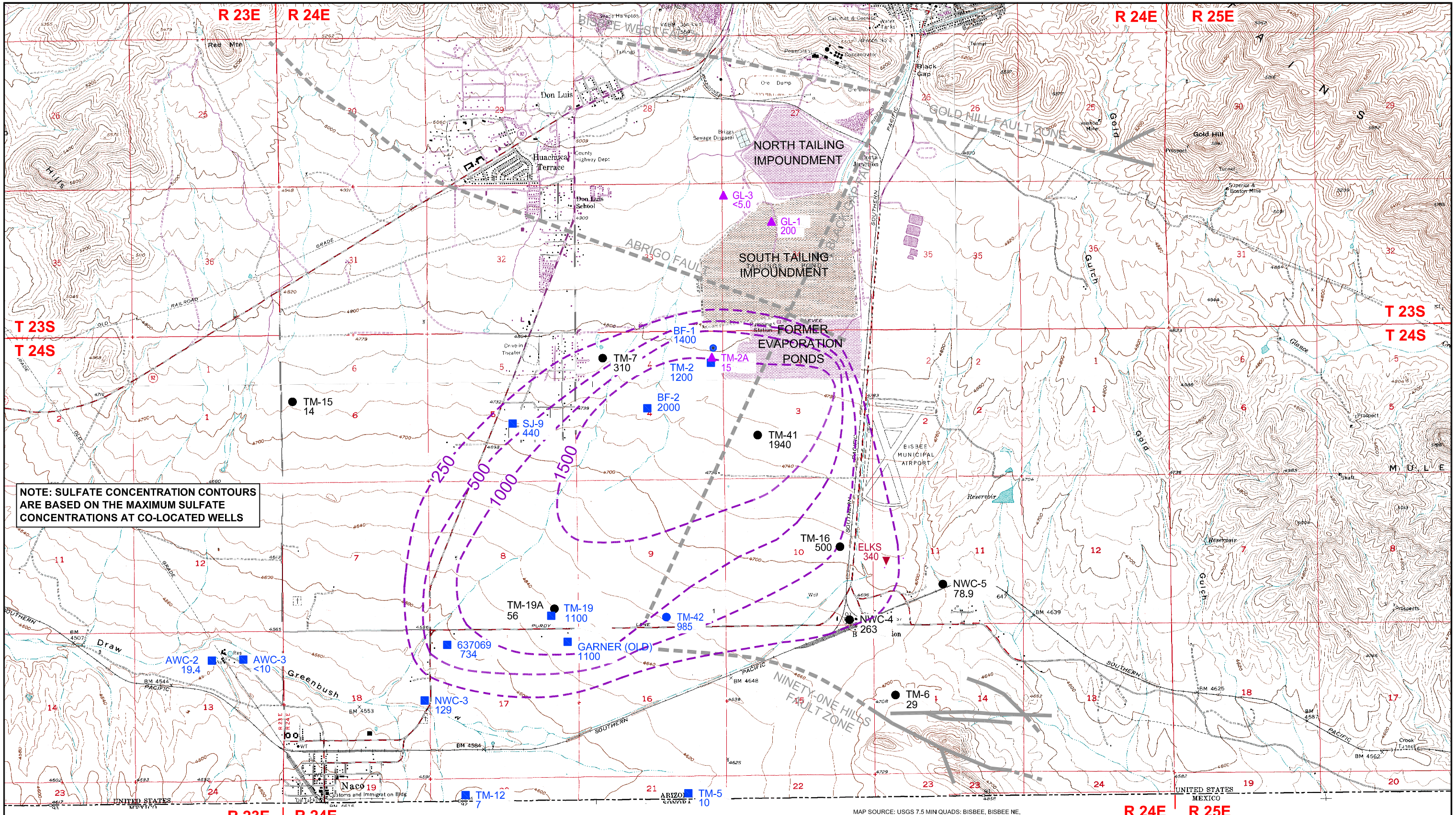
N

MAP SOURCE: USGS 7.5 MIN QUADS: BISBEE, BISBEE NE, BISBEE SE, AND NACO, ARIZONA
NAD 27 ZONE 12 CENTRAL, METERS

HYDRO GEO CHEM, INC.

SULFATE CONCENTRATION MAP - JULY 1989
CONCENTRATOR TAILING STORAGE AREA AND VICINITY
BISBEE, ARIZONA

Approved	Date	Revised By	Date	File Name	Figure
JRN	4/4/07	KSW	07/17/07	8720003A	14



NOTE: SULFATE CONCENTRATION CONTOURS ARE BASED ON THE MAXIMUM SULFATE CONCENTRATIONS AT CO-LOCATED WELLS

EXPLANATION

- BASIN FILL
- MORITA FORMATION
- GLANCE CONGLOMERATE
- MIXED, BASIN FILL AND MORITA FORMATION
- UNKNOWN
- TM-12 7.0 — WELL ID, SULFATE CONCENTRATION
- FAULT (DASHED WHERE INFERRED) FROM SET 1998c
- SULFATE CONCENTRATION ISOLINE
- [1] DATA FOR JULY, 1997

0 1/2 1 MILE

0 2000 4000 6000 FEET

0 .5 1 2 KILOMETER

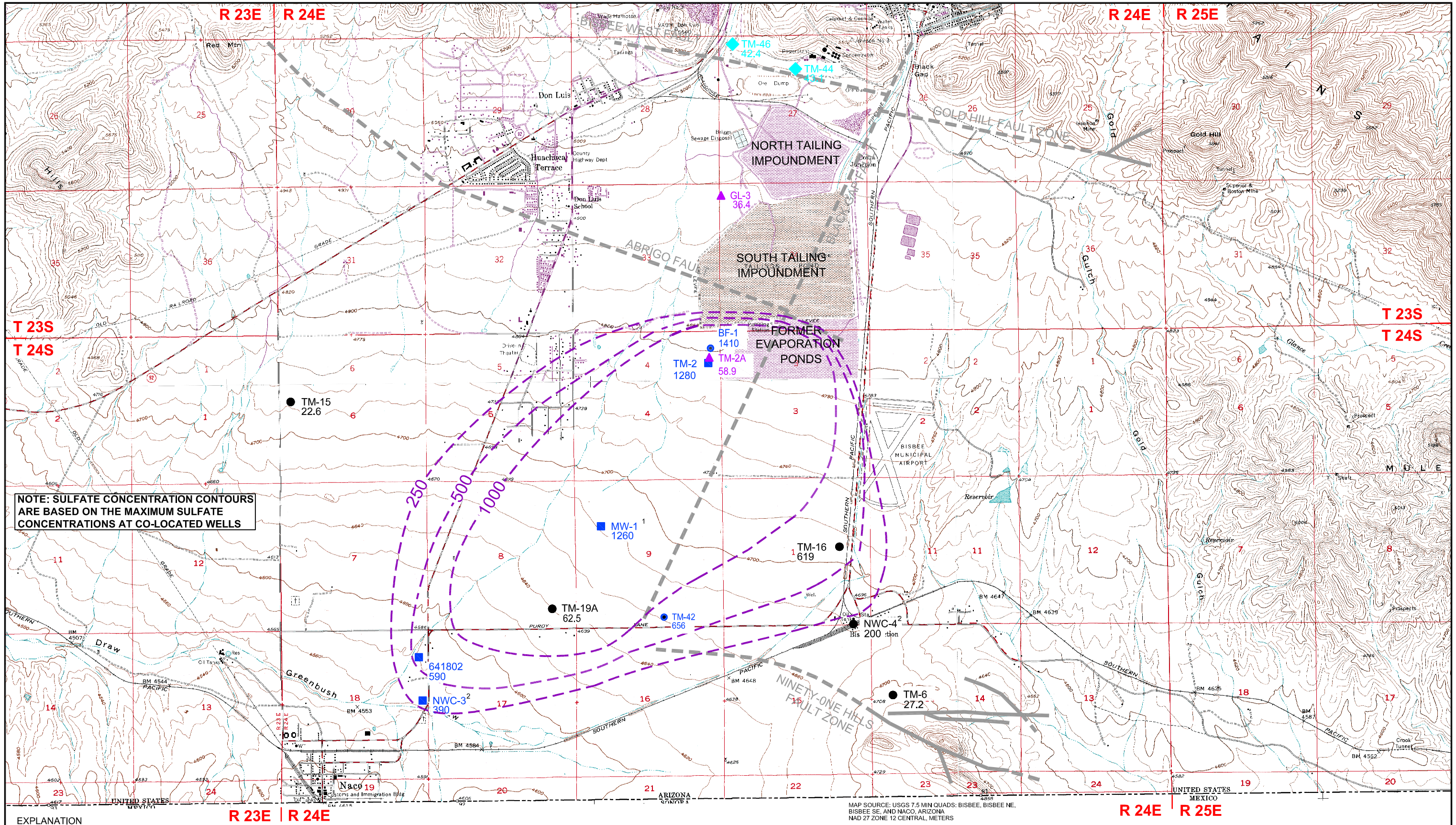
N

MAP SOURCE: USGS 7.5 MIN QUADS: BISBEE, BISBEE NE, BISBEE SE, AND NACO, ARIZONA
NAD 27 ZONE 12 CENTRAL, METERS

HYDRO GEO CHEM, INC.

SULFATE CONCENTRATION MAP - SUMMER 1996
CONCENTRATOR TAILING STORAGE AREA AND VICINITY
BISBEE, ARIZONA

Approved	Date	Revised By	Date	File Name	Figure
JRN	04/04/07	KSW	04/04/07	8720004A	15



NOTE: SULFATE CONCENTRATION CONTOURS ARE BASED ON THE MAXIMUM SULFATE CONCENTRATIONS AT CO-LOCATED WELLS

MAP SOURCE: USGS 7.5 MIN QUADS: BISBEE, BISBEE NE, BISBEE SE, AND NACO, ARIZONA
NAD 27 ZONE 12 CENTRAL, METERS

EXPLANATION

- BASIN FILL
- MORITA FORMATION
- GLANCE CONGLOMERATE
- PALEOZOIC SEDIMENTS
- MIXED, BASIN FILL AND MORITA FORMATION
- FAULT (DASHED WHERE INFERRED) FROM SET 1998c
- SULFATE CONCENTRATION ISOLINE
- MW-1 1260 WELL ID, SULFATE CONCENTRATION

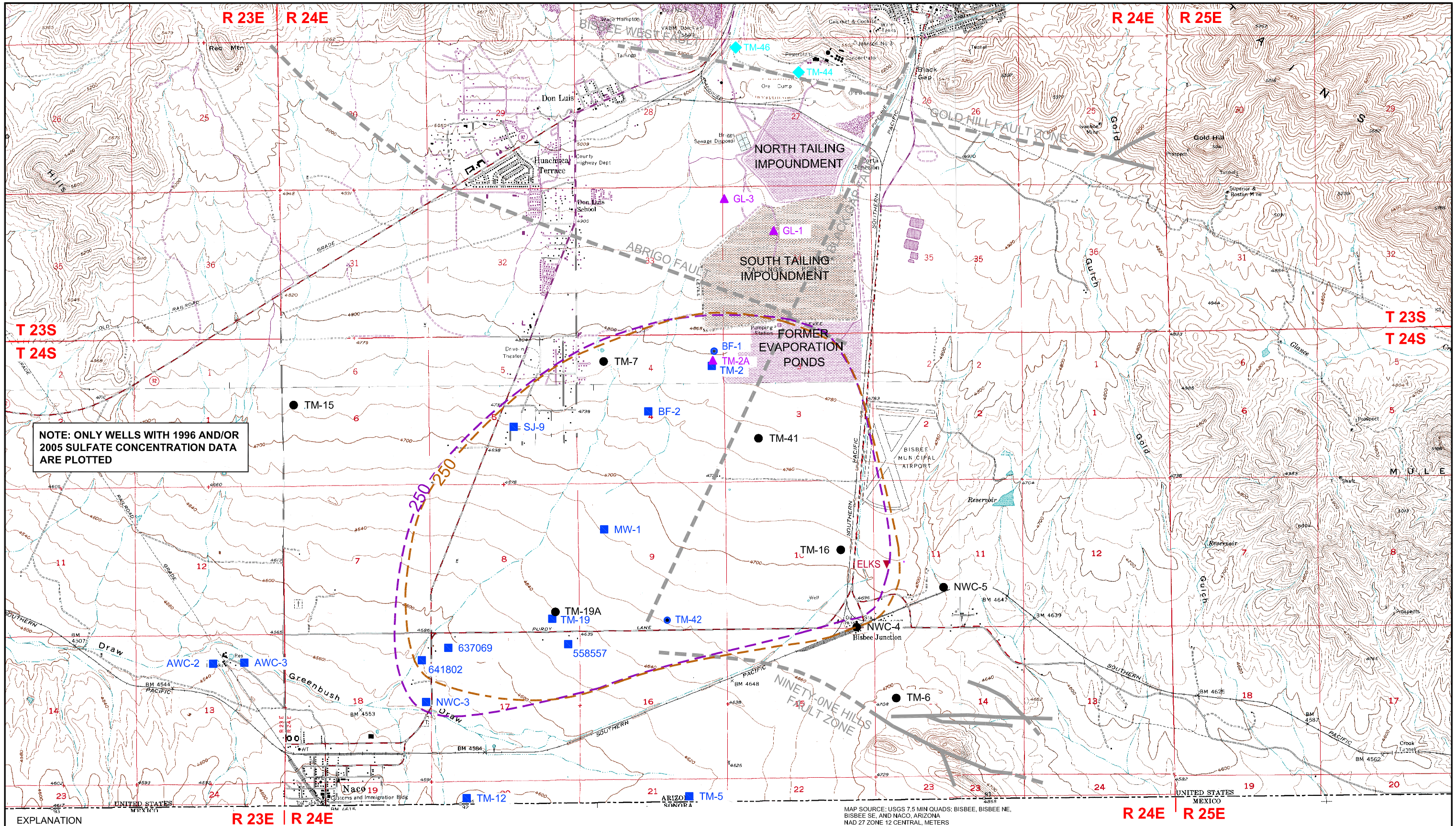
[1] SULFATE CONCENTRATION FROM APRIL 2006
[2] MOST RECENT 2005 CONCENTRATION IS PLOTTED

0 1/2 1 MILE
0 2000 4000 6000 FEET
0 .5 1 2 KILOMETER
N

HYDRO GEO CHEM, INC.

SULFATE CONCENTRATION MAP - AUG. THROUGH NOV. 2005
CONCENTRATOR TAILING STORAGE AREA AND VICINITY
BISBEE, ARIZONA

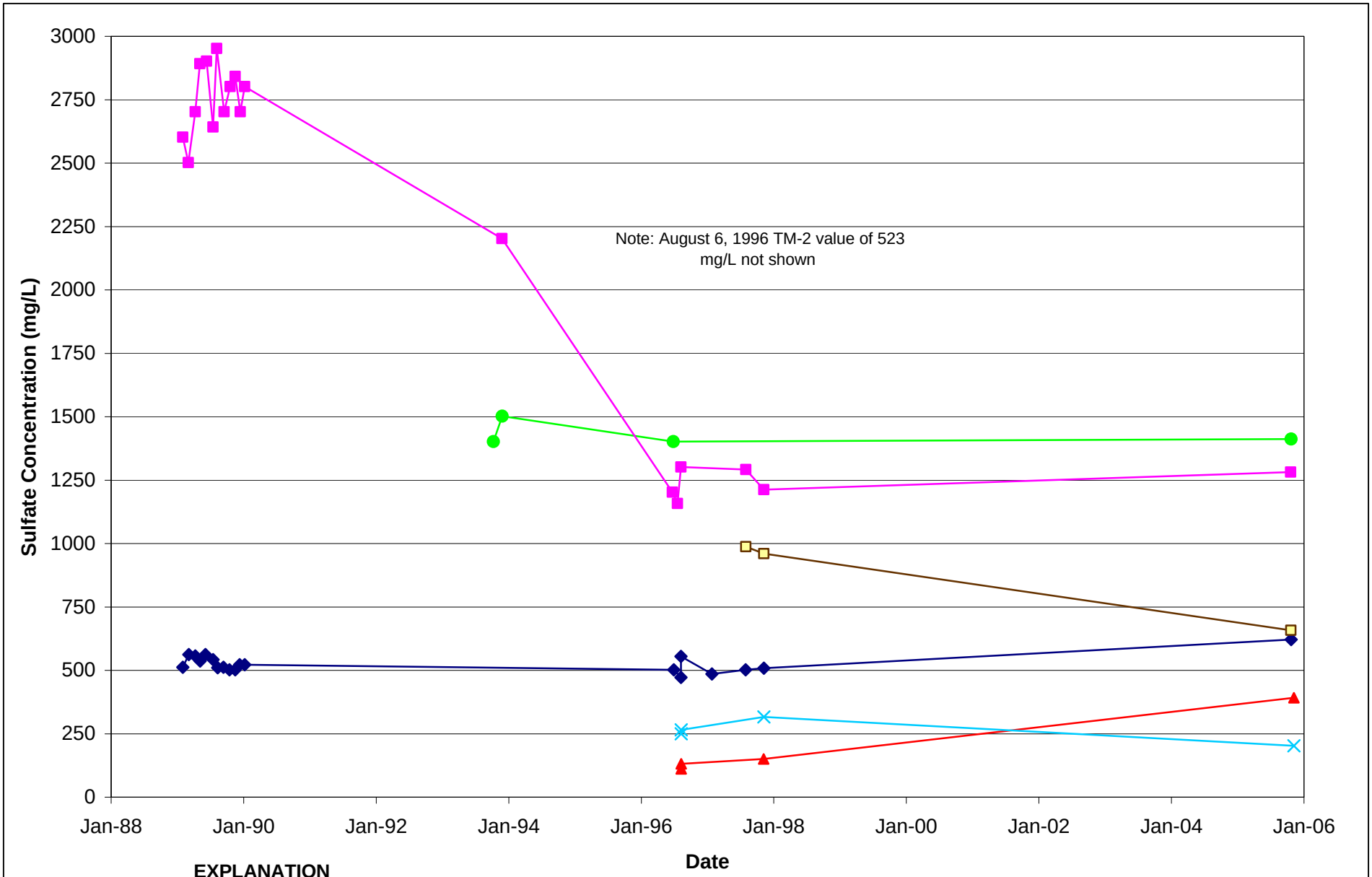
Approved	Date	Revised By	Date	File Name	Figure
JRN	4/4/07	KSW	7/20/07	8720009A	16



HYDRO GEO CHEM, INC.

COMPARISON OF 1996 AND 2005 SULFATE PLUME BOUNDARIES CONCENTRATOR STORAGE TAILINGS AREA AND VICINITY BISBEE, ARIZONA

Approved	Date	Revised By	Date	File Name	Figure
JRN	4/4/07	KSW	07/19/07	8720010A	17



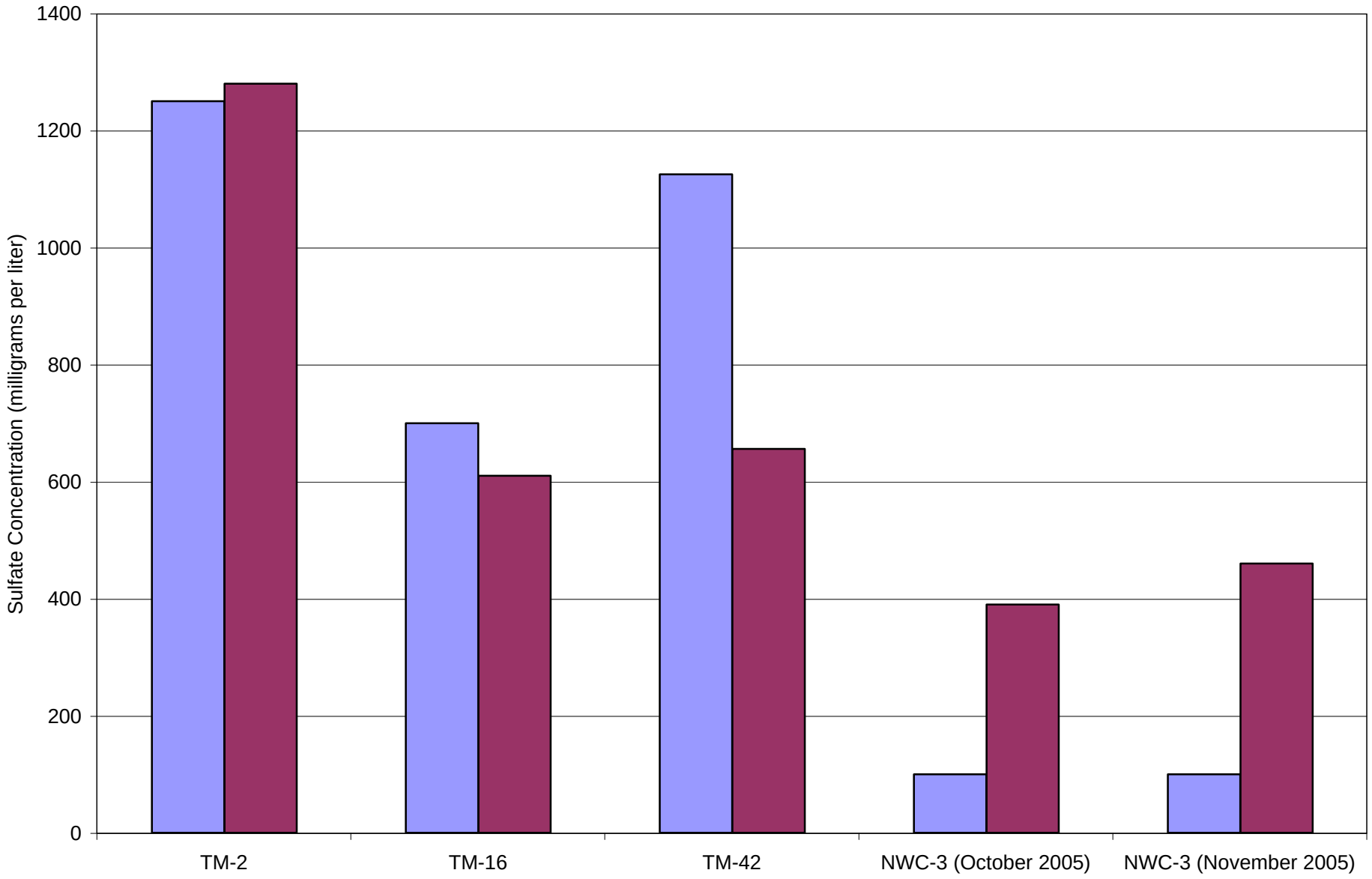
EXPLANATION

- BF-1 mixed basin fill and Morita Formation
- NWC-3 basin fill
- NWC-4 Morita Formation
- TM-2 basin fill
- TM-16 Morita Formation
- TM-42

HYDRO GEO CHEM, INC.

SULFATE CONCENTRATIONS IN WELLS BF-1, NWC-3, NWC-4, TM-2, TM-16, and TM-42

APPROVED	DATE	FIGURE
SJS	09/10/07	**18**



EXPLANATION

- Predicted
- Measured

HYDRO GEO CHEM, INC.

MEASURED AND PREDICTED SULFATE CONCENTRATIONS FOR YEAR 2005

APPROVED	DATE	FIGURE
SS	2/2/07	**19**

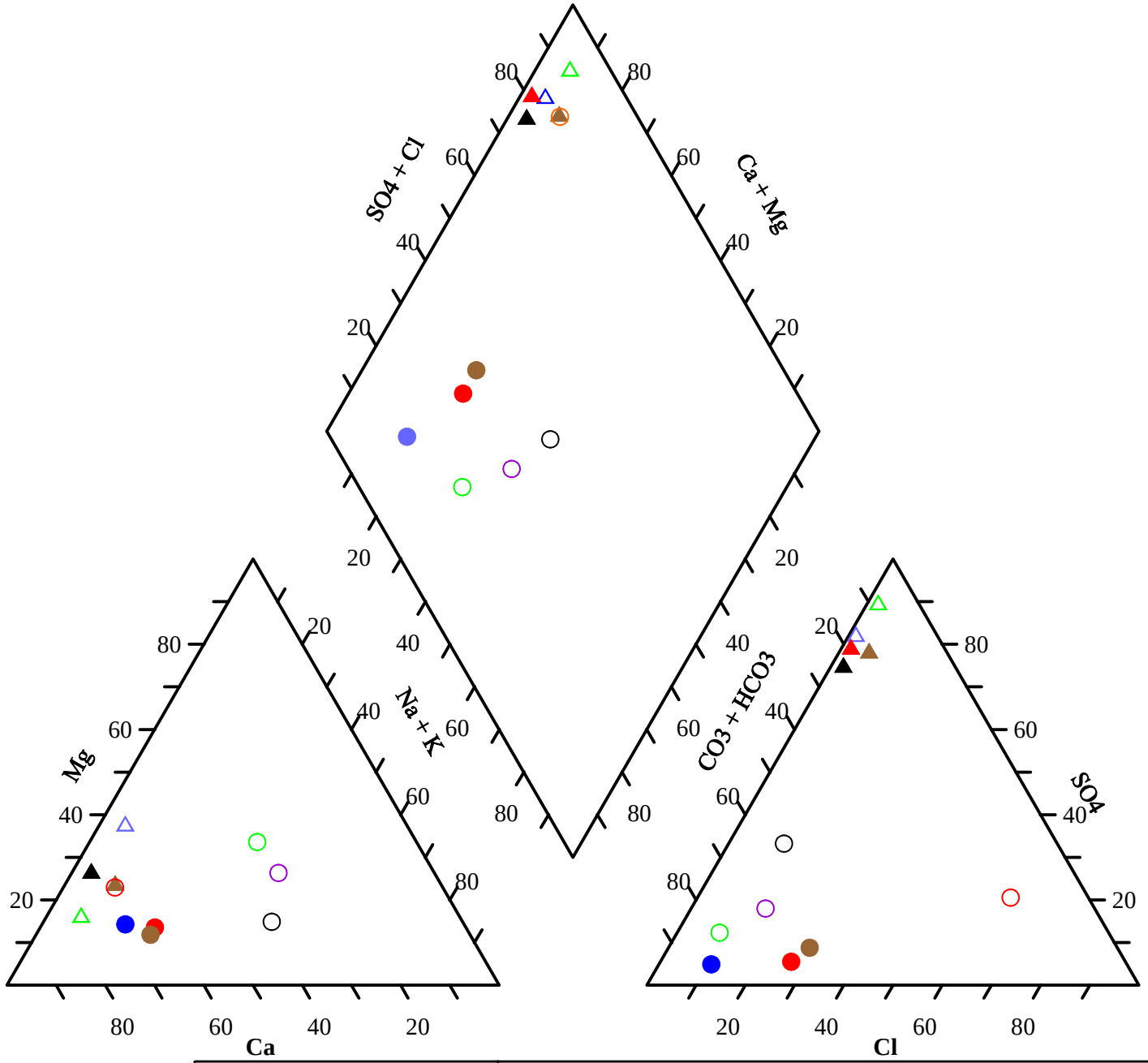
EXPLANATION

Inside Plume - Morita
- TM-41
- TM-16

Inside Plume - Basin Fill
- TM-2
- BF-2
- TM-19

Outside Plume - Morita
- NWC-5
- TM-6
- TM-19A
- TM-15

Outside Plume - Basin Fill
- TM-12
- AWC-3
- TM-5



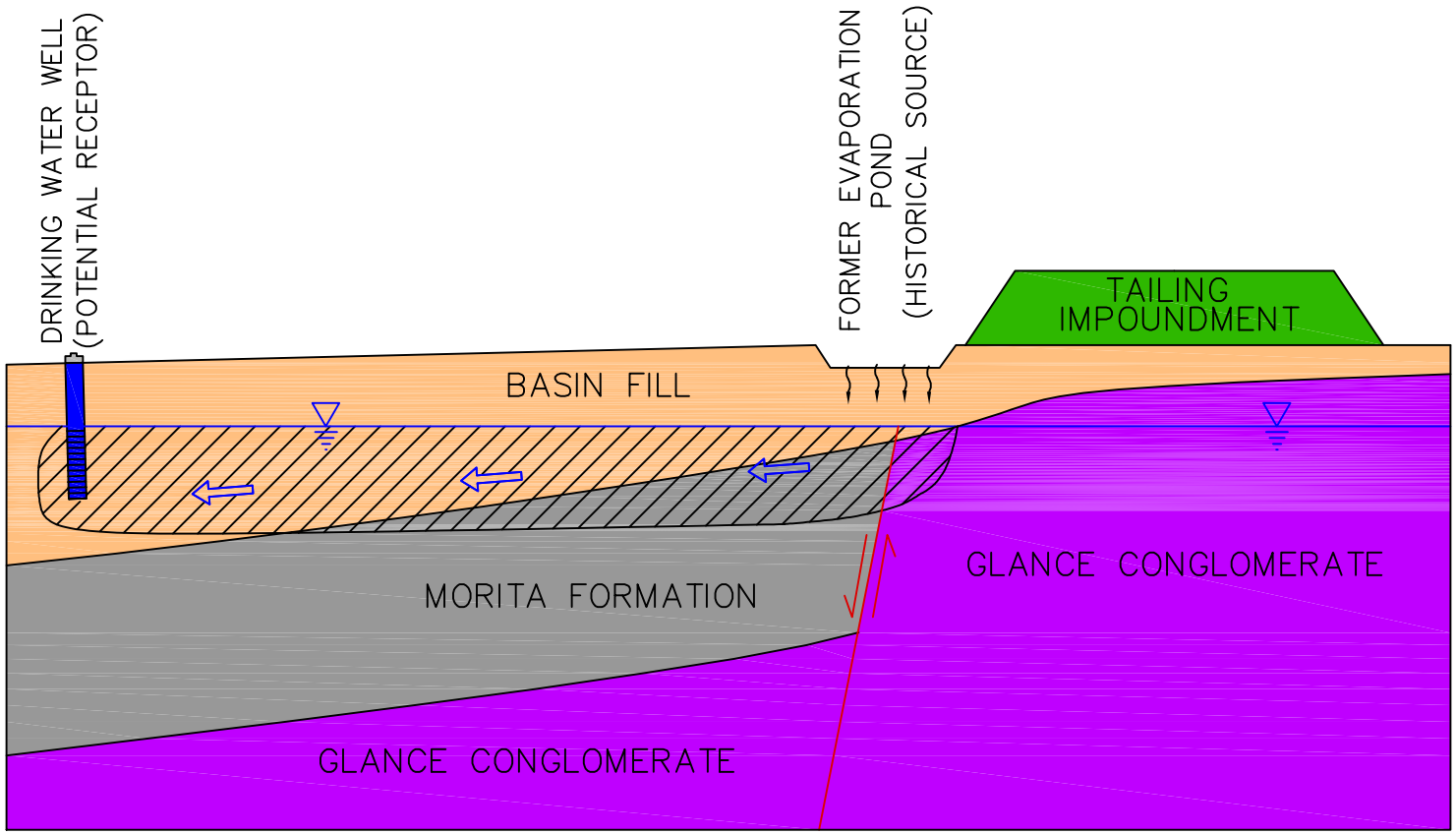
HYDRO GEO CHEM, INC.

TRILINEAR DIAGRAM OF MAJOR IONS (1996)

APPROVED	DATE	REFERENCE	FIGURE
NWH	12/15/2006	H:/872000/WorkPlan/Figures/Figure 20.srf	20

SOUTHWEST

NORTHEAST



LEGEND

WATER TABLE

SEEPAGE THROUGH VADOSE ZONE

GROUNDWATER FLOW DIRECTION (MIGRATION PATHWAY)

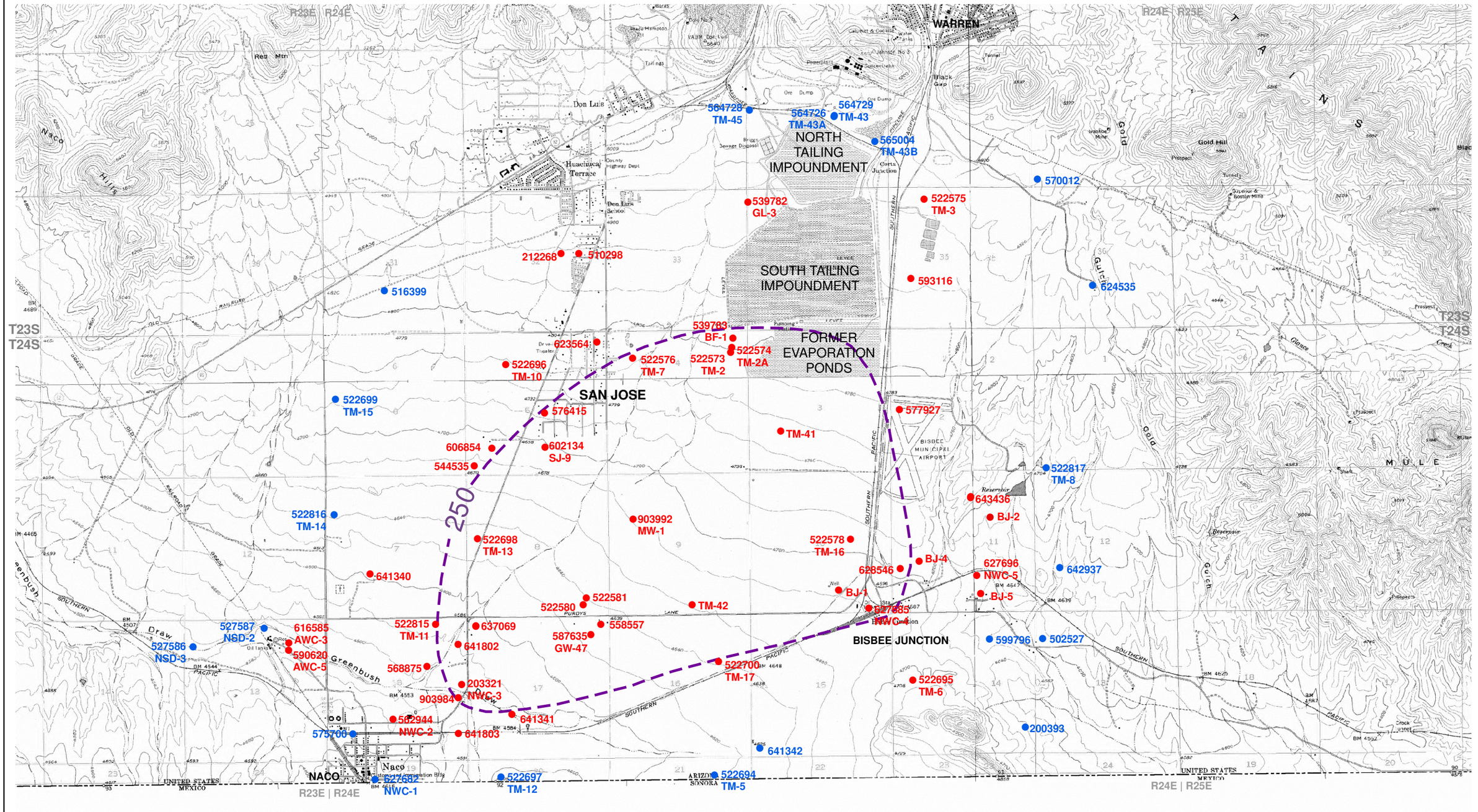
SULFATE BEARING GROUNDWATER

N.T.S.

HYDRO GEO CHEM, INC.

SCHEMATIC DIAGRAM OF CONCEPTUAL SITE MODEL

Approved	Date	Author	Date	File Name	Figure
JRN	04/11/08	MTC	04/11/08	8720027A	21



EXPLANATION

- Quarterly Monitoring
- Semi-Annual Monitoring
- 2005 Sulfate Plume, 250 mg/L Contour

1 inch equals 3,500 feet

0 1,700 3,400 Feet

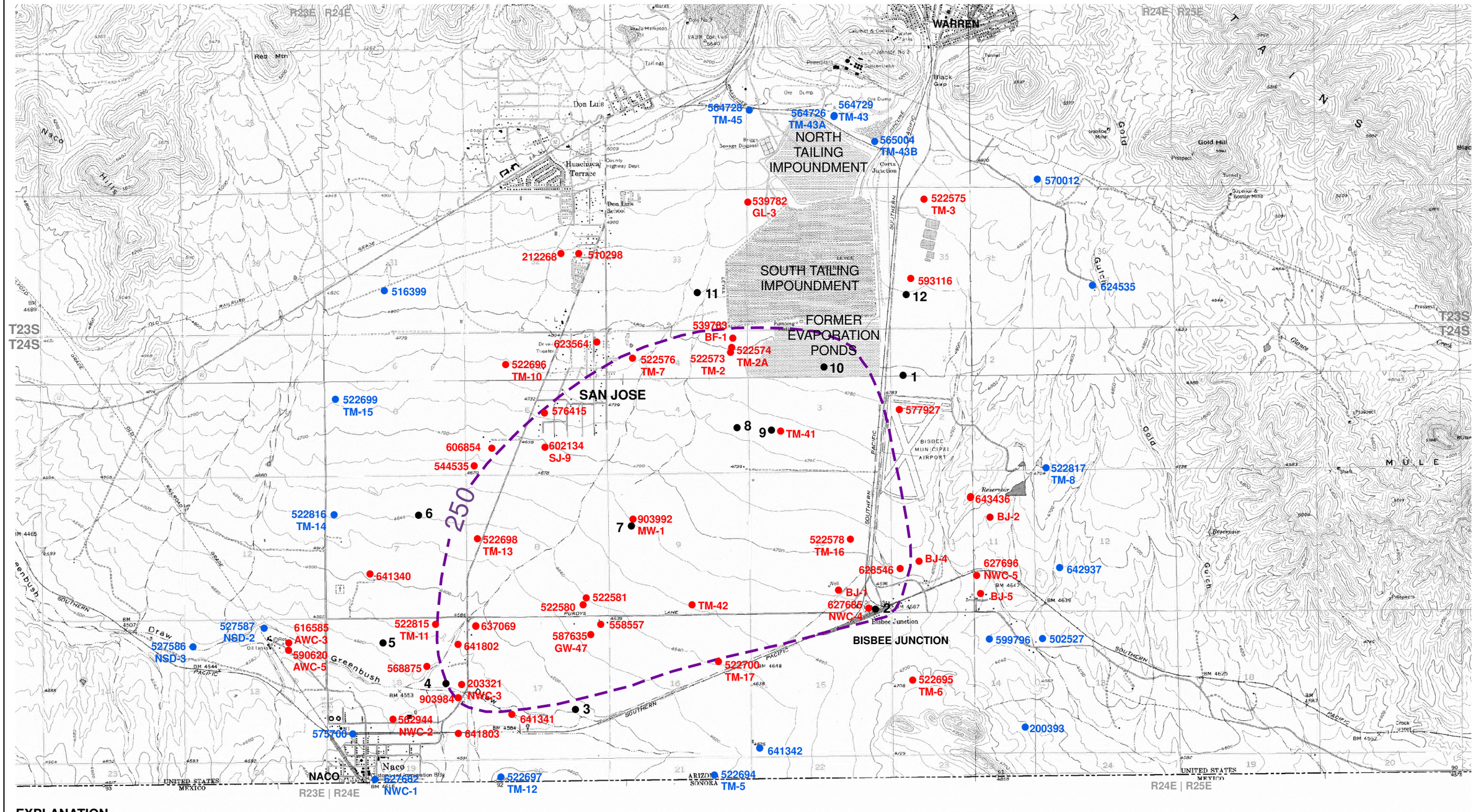
MAP SOURCE: USGS 7.5 MIN QUADS
UTM Zone 12N NAD27, METERS

N

HYDRO GEO CHEM, INC.

PROPOSED WELL LOCATIONS FOR GROUNDWATER MONITORING (TASK 2.2) AT EXISTING WELLS

Approved	Date	Revised	Date	File Name	Figure
KSW	04/12/07	JRN	06/16/08	8720002G_3	22



EXPLANATION

- Proposed Well Site
- Existing Quarterly Monitoring Well
- Existing Semi-Annual Monitoring Well
- 2005 Sulfate Plume, 250 mg/L Contour

1 inch equals 3,500 feet

0 1,700 3,400 Feet

MAP SOURCE: USGS 7.5 MIN QUADS
UTM Zone 12N NAD27, METERS

N

HYDRO GEO CHEM, INC.

PROPOSED NEW MONITORING WELL LOCATIONS (TASK 2.3)

Approved	Date	Revised	Date	File Name	Figure
KSW	03/20/07	JRN	06/16/08	8720018G	23

FIGURE 24
Schedule for Aquifer Characterization and Sulfate Mitigation Plans

TASK	2008											2009										
	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
AQUIFER CHARACTERIZATION PLAN [1]																						
TASK 1 WELL INVENTORY																						
TASK 2 PLUME CHARACTERIZATION																						
Task 2.1 - Data Compilation																						
Task 2.2 - Groundwater Monitoring																						
Task 2.3 - New Monitoring Well Installation and Testing																						
Access and Permits																						
Well Installation																						
Sampling and Testing																						
Task 2.4 - Additional Hydraulic Testing																						
TASK 3 FATE AND TRANSPORT STUDY																						
TASK 4 REPORTING																						
Well Inventory Report						1																
Quarterly Groundwater Monitoring Reports						2			2			2			2			2			2	
Aquifer Characterization Report															3							
POTENTIAL INTERIM ACTIONS																						
Interim Action Implementation (if needed)																						
FEASIBILITY STUDY FOR SULFATE MITIGATION PLAN																						
Identification and Screening of Mitigation Actions																						
Development and Screening of Mitigation Alternatives																						
Detailed Analysis of Mitigation Alternatives																						
Feasibility Study Report																		4				
Mitigation Plan Report																				5		
Treatability Studies (if needed)																						

Notes:
[1] Start and end times are highly dependent on the ability and timing to access sampling and drill sites through agreements with private parties and public entities.

EXPLANATION OF REPORTING SCHEDULE

1 - Well Inventory Report (Task 1)
2 - Quarterly Groundwater Monitoring Report (Task 2.2)
3 - Final Aquifer Characterization Report (Task 4)
4 - Feasibility Study Report
5 - Mitigation Plan Report

APPENDIX A

SUMMARY OF WELLS IN THE CTSA AND VICINITY

TABLE A.1
Summary of Wells in the CTSA and Vicinity

Cadastrals	Well	ADWR Registration Number	Owner	Use	Completion Date	Total Depth	Measuring Point Elevation[1]	Screened Interval	Screened Material	Status [2]
D-23-24										
21cdd	TM-18	522579	Phelps Dodge	assessment	10/27/88	787.5	5140.57	not completed	Pinal Schist	abandoned
22cda	TM-21	525148	Phelps Dodge	assessment	08/08/89	630	5153.36	not completed	Paleozoic sediments	abandoned
27acc	TM-43	564729	Phelps Dodge	monitoring	11/10/97	830	4956.436	720-800	Morita Formation	active
27acc	TM-43A	564726	Phelps Dodge	monitoring	10/28/97	215	4954.672	108-215	basin fill and Morita Formation	active
27bad	TM-22	525146	Phelps Dodge	assessment	09/09/89	1000	5077.08	900-1000	Paleozoic sediments	abandoned
27dad	TM-43B	565004	Phelps Dodge	monitoring	10/29/97	215	4907.293	130-215	Morita Formation	active
27add	TM-43C	565005	Phelps Dodge	monitoring	11/12/97	270	4940.878	175-270	Morita Formation	active
27bad	TM-44	564730	Phelps Dodge	monitoring	10/26/97	1150	5045.6	1020-1150	Paleozoic limestone	active
27bbc	TM-46	564727	Phelps Dodge	monitoring	12/12/97	1080	5052.694	919-1080	Paleozoic limestone	active
27bdd	TM-23	525555	Phelps Dodge	assessment	08/18/89	220	4961.5	155-215	Morita Formation	abandoned
28add	TM-45	564728	Phelps Dodge	monitoring	11/17/97	520	4998.252	384-520	Morita Formation	active
33bca	TM-9	522577	Phelps Dodge	monitoring	01/26/89	940	4889.12	870-930	Glance Conglomerate	abandoned
33dbc	TM-27	525143	Phelps Dodge	assessment	09/05/89	410	4840.66	306-367	Morita Formation	abandoned
34baa	TM-25	525145	Phelps Dodge	assessment	08/18/89	805	4947.78	not completed	Glance Conglomerate	abandoned
34bbb	GL-3	539782	Phelps Dodge	monitoring	08/11/93	825	4909.115	780-820	Glance Conglomerate	active
34bbb	TM-33	525140	Phelps Dodge	assessment	10/25/89	500	4903.57	not completed	Glance Conglomerate	abandoned
34bda	GL-1	539785	Phelps Dodge	monitoring	08/20/93	833	4915.02	768-808	Glance Conglomerate	active
34cda	TM-26	525144	Phelps Dodge	assessment	09/07/89	800	4917.18	not completed	Glance Conglomerate	abandoned
35abd	TM-35	525139	Phelps Dodge	monitoring	10/03/89	380	4898.88	249-310	Glance Conglomerate	abandoned
35bba	TM-3	522575	Phelps Dodge	monitoring	12/16/88	200	4883.688	150-200	Glance Conglomerate	active
35cbd	593116	593116	City of Bisbee	monitoring	07/16/02	150	4836.59	90-150	limestone (or Glance Conglomerate?)	active
35ccb	TM-28	525142	Phelps Dodge	assessment	08/04/89	140	4813.27	not completed	Glance Conglomerate	abandoned
D-24-23										
13abb	NSD-2	527587	Naco Sanitary District	monitoring	04/26/90	120	4527	95-129	basin fill	active
13abc	AWC-4	616584	Arizona Water Co.	municipal	01/01/59	337	4540		basin fill	active
13abc	AWC-2	616586	Arizona Water Co.	municipal	01/01/55	333	4530		basin fill	active
13abd	AWC-3	616585	Arizona Water Co.	municipal	07/20/56	270	4540		basin fill	active
13abd2	AWC-5	590620	Arizona Water Co.	municipal	06/24/02	1183	4540e	163-603 and 623-1163	basin fill, clay rich sediments to 1140'; volcanic 1140-1163'	active
13baa	NSD-1		Naco Sanitary District	monitoring			4535e			
13bbc	NSD-3	527586	Naco Sanitary District	monitoring	05/07/90	66.32	4515	78-150	basin fill	active
D-24-24										
01ccc	TM-8	522817	Phelps Dodge	monitoring	01/20/89	820	4710.49	757-817	Glance Conglomerate	transferred to land owner
02bcc	TM-4	522693	Phelps Dodge	assessment	01/17/89	175	4770.38	125-175	Glance Conglomerate	abandoned
03caa	TM-29	525141	Phelps Dodge	assessment	08/07/89	140	4759.63	85-140	basin fill and Morita Formation	abandoned
03cab1	TM-29A	525137	Phelps Dodge	assessment	08/08/89	165	4758.08	85-165	basin fill and Morita Formation	abandoned
03cab2	TM-29B	525136	Phelps Dodge	assessment	08/10/89	165	4757.61	85-165	basin fill and Morita Formation	abandoned
03cbd	TM-41		Phelps Dodge	monitoring	1997	210	4760.958	145-200	Morita Formation	active
04aaa	BF-1	539783	Phelps Dodge	monitoring	08/15/93	400	4815.13	325-385	Mixed (25' basin fill, 30' Morita, 5'	active
04aac1	TM-2	522573	Phelps Dodge	monitoring	12/14/88	640	4794.891	280-360	basin fill	active
04aac2	TM-2A	522574	Phelps Dodge	monitoring	02/10/89	925	4794.132	825-925	Glance Conglomerate	active
04bbd	TM-7	522576	Phelps Dodge	monitoring	11/04/88	350	4768.927	259-349	Morita Formation	active
04bdd	BF-2	539786	Phelps Dodge	monitoring	08/05/93	326	4750.37	265-305	basin fill	active (dry)
05bac	TM-10	522696	Phelps Dodge	monitoring	11/06/89	290	4741.2	240-290	Morita Formation	active
05dbb2	SJ-9	602134	Duree/Bullard	domestic	09/06/74	300	4730		basin fill	active
06bcc	TM-15	522699	Phelps Dodge	assessment	01/11/89	325	4711.7	260-320	Morita Formation	transferred to land owner

TABLE A.1
Summary of Wells in the CTSA and Vicinity

Cadastrals	Well	ADWR Registration Number	Owner	Use	Completion Date	Total Depth	Measuring Point Elevation[1]	Screened Interval	Screened Material	Status [2]
07bcb2	TM-14	522816	Phelps Dodge	assessment	01/12/89	215	4626.2	165-215	basin fill	transferred to land owner
08bcc	TM-13	522698	Phelps Dodge	assessment	01/05/89	200	4617.3	140-200	basin fill	transferred to land owner
08dac2	TM-30A	525558	Phelps Dodge	assessment	09/26/89	700	4635.89	not completed	Morita Formation	abandoned
08dad	TM-30	525548	Phelps Dodge	assessment	09/25/89	700	4636.92	not completed	Morita Formation	abandoned
08ddc1	TM-19A	522580	Phelps Dodge	monitoring	11/16/88	700	4632.45	585-695	Morita Formation	active
08ddc2	TM-19	522581	Phelps Dodge	monitoring	11/17/88	210	4626.9	150-210	basin fill	active
09aab1	TM-1	522569	Phelps Dodge	assessment	11/01/88	265	4714.5	215-265	basin fill	abandoned
09aab1	TM-1A	525557	Phelps Dodge	assessment	09/09/89	265	4712.43	204-265	basin fill and Morita Formation	abandoned
09bbc	TM-37	525552	Phelps Dodge	assessment	10/09/89	700	4670.86	464-700	Morita Formation and Glance	abandoned
09bca	MW-1	903992	City of Bisbee/SJWWTF	monitoring	03/02/06	430	4680e	350-410	basin fill	active
09caa	TM-38	525553	Phelps Dodge	assessment	10/03/89	700	4667.97	375-700	Morita Formation	abandoned
09dcc	TM-42		Phelps Dodge	monitoring	1997	250	4654.033	180-250	basin fill and Morita Formation	active
10acd	TM-16	522578	Phelps Dodge	monitoring	12/15/88	115	4705.54	65-115	Morita Formation	active
10cbd	TM-39	525554	Phelps Dodge	assessment	10/22/89	424	4651.71	118-424	Morita Formation	abandoned
10ddd	NWC-4	627685	Naco Water Co	municipal	01/01/26	379	4685		Morita Formation	active
10dcb	BJ-1					220	4680		Morita Formation	unknown
11abd	BJ-2					250	4710		Glance Conglomerate	unknown
11cbc1	BJ-3					430	4720		Glance Conglomerate	unknown
11cbc2	BJ-4					400	4720		Glance Conglomerate	unknown
11cbc3	ELKS	628547	B.P.O. Elks No. 671	domestic	08/18/61	800	4710e		unknown	active
11dac	NWC-5	627696	Naco Water Co	municipal	01/01/60	175	4680		Morita Formation	active
11dcc	BJ-5					318	4660		Glance Conglomerate	unknown
14bcc	TM-6	522695	Phelps Dodge	assessment	01/24/89	200	4695.852	150-200	Morita Formation	transferred to land owner
16aca	TM-17	522700	Phelps Dodge	assessment	01/17/89	200	4631	150-200	Mural Limestone	transferred to land owner
17aaa	GW-47	587635	Garner	domestic	10/12/01	680	4628.11	580-660	Morita Formation	active
17aaa	558557	558557	Garner	domestic	09/04/96	300	4628e	180-220, 240-300	basin fill	unknown
17bbb	637069	637069	Olmstead	domestic	07/29/66	220	4595e		basin fill	active
18aab	TM-11	522815	Phelps Dodge	monitoring	11/18/88	160	4573.1	99-159	basin fill	transferred to land owner
18aad	641802	641802	Grout	domestic	01/01/60	200	4585e		basin fill	active
18add	NWC-3	627684	Naco Water Co	municipal	01/01/30	179	4560e		basin fill	active
18add	NWC-3 replacement	203321	Naco Water Co	municipal	02/22/04	312	4560e	252-312	basin fill	active
18db	802336	802336	City of Bisbee	irrigation	02/14/34	222	4580e		basin fill	active
19bab	NWC-1	627682	Naco Water Co	municipal	09/24/51	215	4620e		basin fill	active
18cd/cad	NWC-2	627683	Naco Water Co	municipal	08/02/59	210	4590e		basin fill	active
18cad	NWC-2 replacement	562944	Naco Water Co	municipal	06/11/97	312	4590e	212-312	basin fill	active
18cca	NWC-6	575700	Naco Water Co	municipal	09/15/99	410	4590e	180-279, 302-340	basin fill	active
18daa	903984	903984	City of Bisbee	monitoring	01/20/06	170	4560	92-152	basin fill	active
20bbd	TM-12	522697	Phelps Dodge	assessment	01/12/89	175	4589.4	121-171	basin fill	transferred to land owner
21aba	TM-5	522694	Phelps Dodge	monitoring	01/13/89	160	4604.463	120-160	basin fill	transferred to land owner

Notes:

[1] ft amsl = feet above mean sea level. Water levels from PD are referenced to a "collar elevation." e = elevation estimated from topographic map

[2] abandoned TM wells were abandoned by 1990

APPENDIX B

HISTORIC WATER LEVELS FOR SELECT WELLS
(Tables B.1 through B.5)

TABLE B.1
Historic Groundwater Elevations for Select Wells, CTSA

Well	Cadastral	Altitude of Measuring Point [1]	Date Sampled	Depth to Water Below Measuring Point [2]	Water Elevation (ft amsl)	Data Source [3]
AWC-2	D-24-23-13abc	4530	01/21/57	85	4445	ADWR GWSI
AWC-2		4530	09/01/77	90.5	4439.5	ADWR GWSI
AWC-2		4540	11/21/85	91.6	4448.4	Litten, 1987
AWC-2		4530	12/04/90	90.1	4439.9	ADWR GWSI
AWC-2		4530	01/28/98	99.2	4430.8	ADWR GWSI
AWC-2		4530	12/15/99	104	4426	ADWR GWSI
AWC-2		4530	12/04/01	115.3	4414.7	ADWR GWSI
AWC-3	D-24-23-13abd	4540	03/20/68	90.4	4449.6	ADWR GWSI
AWC-3		4540	02/19/86	89.8	4450.2	ADWR GWSI
AWC-3		4540	12/15/99	112.7	4427.3	ADWR GWSI
AWC-3		4540	02/26/01	100.4	4439.6	ADWR GWSI
AWC-4	D-24-23-13abc	4520	02/19/86	85.2	4435	Litten, 1987
AWC-4		4540	12/04/90	95.1	4444.9	ADWR GWSI
AWC-4		4540	01/28/98	103.9	4436.1	ADWR GWSI
AWC-4		4540	12/15/99	107.2	4432.8	ADWR GWSI
AWC-4		4540	12/04/01	115.5	4424.5	ADWR GWSI
BF-1	D-24-24-04aaa		09/16/93		4482.30	SET, 1998
BF-1			10/06/93		4481.30	SET, 1998
BF-1			11/23/93		4482.00	SET, 1998
BF-1			01/04/94		4481.90	SET, 1998
BF-1			06/25/96		4473.90	SET, 1998
BF-1			08/22/96		4473.40	SET, 1998
BF-1			09/25/96		4473.20	SET, 1998
BF-1			10/29/96		4473.15	SET, 1998
BF-1			12/19/96		4473.00	SET, 1998
BF-1			01/29/97		4472.70	SET, 1998
BF-1			02/27/97		4472.75	SET, 1998
BF-1			04/16/97		4472.35	SET, 1998
BF-1			10/10/97		4479.05	SET, 1998
BF-1			01/05/98		4473.80	SET, 1998
BF-1		4820.754	06/01/99	344.05	4476.70	PD file
BF-1		4820.754	03/01/00	345.70	4475.05	PD file
BF-1		4820.754	06/01/00	346.55	4474.20	PD file
BF-1		4820.754	09/01/00	347.20	4473.55	PD file
BF-1		4820.754	12/01/00	348.10	4472.65	PD file
BF-1		4820.754	02/01/01	348.20	4472.55	PD file
BF-1		4820.754	06/01/01	348.25	4472.50	PD file
BF-1		4820.754	10/01/01	348.30	4472.45	PD file
BF-1		4820.754	02/01/02	348.35	4472.40	PD file
BF-1		4820.754	06/01/02	348.20	4472.55	PD file
BF-1		4820.754	09/01/02	348.25	4472.50	PD file
BF-1		4820.754	11/01/02	348.30	4472.45	PD file
BF-1		4820.754	01/01/03	348.10	4472.65	PD file
BF-1		4820.754	05/01/03	347.80	4472.95	PD file
BF-1		4820.754	08/01/03	347.40	4473.35	PD file
BF-1		4820.754	12/01/03	347.30	4473.45	PD file
BF-1		4820.754	02/01/04	347.30	4473.45	PD file
BF-1		4820.754	05/01/04	347.35	4473.40	PD file
BF-1		4820.754	08/01/04	347.30	4473.45	PD file
BF-1		4820.754	11/01/04	347.30	4473.45	PD file
BF-1		4820.754	02/01/05	347.60	4473.15	PD file
BF-1		4820.754	06/01/05	347.65	4473.10	PD file
BF-1		4820.754	09/01/05	347.80	4472.95	PD file
BF-1		4820.754	11/01/05	348.00	4472.75	PD file
BF-1		4820.754	02/01/06	348.10	4472.65	PD file
BF-1		4820.754	05/01/06	348.20	4472.55	PD file
BF-1		4820.754	08/01/06	348.30	4472.45	PD file
BF-2	D-24-24-04bdd		09/16/93		4469.00	SET, 1998
BF-2			10/06/93		4468.40	SET, 1998
BF-2			11/26/93		4468.00	SET, 1998
BF-2			01/04/94		4467.50	SET, 1998
BF-2			06/25/96		4459.00	SET, 1998
BF-2			08/22/96		4458.45	SET, 1998
BF-2			09/25/96		4458.00	SET, 1998
BF-2			10/29/96		4457.90	SET, 1998

TABLE B.1
Historic Groundwater Elevations for Select Wells, CTSA

Well	Cadastral	Altitude of Measuring Point [1]	Date Sampled	Depth to Water Below Measuring Point [2]	Water Elevation (ft amsl)	Data Source [3]
BF-2			12/19/96		4457.35	SET, 1998
BF-2			01/29/97		4457.05	SET, 1998
BF-2			02/27/97		4456.90	SET, 1998
BF-2			04/16/97		4456.35	SET, 1998
BF-2			10/10/97		4456.70	SET, 1998
BF-2			01/05/98		4456.10	SET, 1998
BF-2		4750.37	06/01/99	290" no water		PD file
BF-2		4750.37	03/01/00	290" no water		PD file
BJ-1	D-24-24-10dcb	4680	11/19/85	133.00	4547.00	Litten, 1987
BJ-1			06/22/88		4546.95	SET, 1998
BJ-2	D-24-24-11abd	4710	11/20/85	14.30	4695.70	Litten, 1987
BJ-2			06/27/88		4648.65	SET, 1998
BJ-3	D-24-24-11cbc1	4720	11/19/85	79.80	4640.20	Litten, 1987
BJ-3			05/10/88		4594.95	SET, 1998
BJ-4	D-24-24-11cbc2	4720	11/19/85	87.60	4640.20	Litten, 1987
BJ-4			05/10/88		4596.38	SET, 1998
BJ-5	D-24-24-11dcc	4660	11/19/85	36.40	4623.60	Litten, 1987
BJ-5			09/02/88		4611.43	SET, 1998
GL-1	D-23-24-34bda		09/16/93		4128.32	SET, 2000
GL-1			10/06/93		4135.32	SET, 2000
GL-1			11/23/93		4133.32	SET, 2000
GL-1			01/04/94		4134.22	SET, 2000
GL-1			04/24/94		4134.00	SET, 2000
GL-3	D-23-24-34bbb		09/16/93		4132.08	SET, 2000
GL-3			10/06/93		4132.98	SET, 2000
GL-3			11/23/93		4134.38	SET, 2000
GL-3			01/04/94		4135.28	SET, 2000
GL-3			04/29/94		4136.00	SET, 2000
GL-3			06/25/96	748.70	4151.30	WMC, 2006
GL-3			08/22/96	745.00	4155.00	WMC, 2006
GL-3			09/25/96	743.70	4156.30	WMC, 2006
GL-3			10/29/96	742.70	4157.30	WMC, 2006
GL-3			12/19/96	741.30	4158.70	WMC, 2006
GL-3			10/10/97	731.95	4168.05	WMC, 2006
GL-3			01/21/98	731.30	4168.70	WMC, 2006
GL-3			05/06/98	727.60	4180.08	WMC, 2006
GL-3			10/01/98	723.80	4183.88	WMC, 2006
GL-3			01/25/99	720.80	4186.88	WMC, 2006
GL-3		4909.115	06/01/99	718.50	4190.62	PD file
GL-3		4909.115	03/01/00	714.70	4194.42	PD file
GL-3		4909.115	06/01/00	711.35	4197.77	PD file
GL-3		4909.115	09/01/00	707.80	4201.32	PD file
GL-3		4909.115	12/01/00	703.05	4206.07	PD file
GL-3		4909.115	02/01/01	700.00	4209.12	PD file
GL-3		4909.115	06/01/01	697.50	4211.62	PD file
GL-3		4909.115	10/01/01	693.20	4215.92	PD file
GL-3		4909.115	02/01/02	690.10	4219.02	PD file
GL-3		4909.115	06/01/02	687.10	4222.02	PD file
GL-3		4909.115	09/01/02	705.55	4203.57	PD file
GL-3		4909.115	11/01/02	712.20	4196.92	PD file
GL-3		4909.115	01/01/03	683.40	4225.72	PD file
GL-3		4909.115	05/01/03	681.55	4227.57	PD file
GL-3		4909.115	08/01/03	680.90	4228.22	PD file
GL-3		4909.115	12/01/03	679.20	4229.92	PD file
GL-3		4909.115	02/01/04	679.00	4230.12	PD file

TABLE B.1
Historic Groundwater Elevations for Select Wells, CTSA

Well	Cadastral	Altitude of Measuring Point [1]	Date Sampled	Depth to Water Below Measuring Point [2]	Water Elevation (ft amsl)	Data Source [3]
GL-3		4909.115	05/01/04	678.60	4230.52	PD file
GL-3		4909.115	08/01/04	676.25	4232.87	PD file
GL-3		4909.115	11/01/04	675.70	4233.42	PD file
GL-3		4909.115	02/01/05	674.50	4234.62	PD file
GL-3		4909.115	06/01/05	674.20	4234.92	PD file
GL-3		4909.115	09/01/05	673.95	4235.17	PD file
GL-3		4909.115	11/01/05	672.10	4237.02	PD file
GL-3		4909.115	02/01/06	671.70	4237.42	PD file
GL-3		4909.115	05/01/06	670.20	4238.92	PD file
GL-3		4909.115	08/01/06	669.00	4240.12	PD file
GW-47		4627.01	02/01/02	184.65	4442.36	PD file
GW-47		4627.01	06/01/02	185.30	4441.71	PD file
GW-47		4627.01	09/01/02	186.00	4441.01	PD file
GW-47		4627.01	11/01/02	186.50	4440.51	PD file
GW-47		4627.01	01/01/03	186.30	4440.71	PD file
GW-47		4627.01	05/01/03	187.50	4439.51	PD file
GW-47		4627.01	12/01/03	187.70	4439.31	PD file
GW-47		4627.01	02/01/04	188.02	4438.99	PD file
GW-47		4627.01	08/01/04	188.90	4438.11	PD file
GW-47		4627.01	11/01/04	189.15	4437.86	PD file
GW-47		4627.01	02/01/05	189.10	4437.91	PD file
GW-47		4627.01	06/01/05	194.30	4432.71	PD file
GW-47		4627.01	09/01/05	189.35	4437.66	PD file
GW-47		4627.01	11/01/05	189.75	4437.26	PD file
MW-1	D-24-24-09bca	4703	08/01/06	240	4463.00	ADWR, 2006
NWC-1	D-24-24-19bb	4600	11/20/85	138	4462	Litten, 1987
NWC-1			05/19/88		4457.25	SET, 1998
NWC-3	D-24-24-18add	4560	03/20/68	91	4469	ADWR GWSI
NWC-3			09/22/77	96	4464	ADWR GWSI
NWC-3			05/18/88		4466.22	SET, 1998
NWC-3 replacement		4560	02/22/04	140	4420.00	ADWR, 2006
NWC-4	D-24-24-10ddd	4685	03/21/69	180.5	4505	ADWR GWSI
NWC-4		4685	09/22/77	216.4	4469	ADWR GWSI
NWC-4		4685	12/05/90	197	4488	ADWR GWSI
NWC-4		4685	09/20/04	173	4512	ADWR GWSI
NWC-5	D-24-24-10ddc2	4680	11/19/85	170	4510.00	Litten, 1987
NWC-5		4680	05/18/88		4586.04	SET, 1998
SJ-9	D-24-24-5dbb2		06/16/88		4479.49	SET, 1998
TM-1	D-24-24-09aab		07/19/89		4487.20	SET, 1998
TM-1A	D-24-24-09aab2	4712.43	11/06/89	225.07	4487.36	ELMA, 1990
TM-2	D-24-24-04aac1		10/18/88		4502.54	SET, 1998
TM-2			01/27/89		4502.39	SET, 1998
TM-2			02/27/89		4501.49	SET, 1998
TM-2			04/06/89		4500.64	SET, 1998
TM-2			05/01/89		4500.99	SET, 1998
TM-2			06/08/89		4499.14	SET, 1998
TM-2			07/13/89		4498.44	SET, 1998
TM-2			09/06/89		4497.44	SET, 1998
TM-2			10/22/89		4498.04	SET, 1998
TM-2		4791.72	11/06/89	294.00	4497.72	ELMA, 1990

TABLE B.1
Historic Groundwater Elevations for Select Wells, CTSA

Well	Cadastral	Altitude of Measuring Point [1]	Date Sampled	Depth to Water Below Measuring Point [2]	Water Elevation (ft amsl)	Data Source [3]
TM-2			11/06/89		4497.04	SET, 1998
TM-2			01/01/90	294.70	4497.72	WMC, 2006
TM-2			02/01/90	295.55	4496.17	WMC, 2006
TM-2			03/01/90	295.77	4495.95	WMC, 2006
TM-2			11/23/93		4474.74	SET, 1998
TM-2			01/04/94		4474.14	SET, 1998
TM-2			06/25/96		4464.90	SET, 1998
TM-2			08/22/96		4464.45	SET, 1998
TM-2			09/25/96		4464.15	SET, 1998
TM-2			10/29/96		4464.00	SET, 1998
TM-2			12/19/96		4463.60	SET, 1998
TM-2			01/29/97		4463.20	SET, 1998
TM-2			02/27/97		4463.10	SET, 1998
TM-2			07/01/97		4461.75	SET, 1998
TM-2			01/05/98		4460.80	SET, 1998
TM-2		4794.891	06/01/99	332.55	4462.34	PD file
TM-2		4794.891	03/01/00	332.80	4462.09	PD file
TM-2		4794.891	06/01/00	333.20	4461.69	PD file
TM-2		4794.891	09/01/00	333.45	4461.44	PD file
TM-2		4794.891	12/01/00	333.75	4461.14	PD file
TM-2		4794.891	02/01/01	333.90	4460.99	PD file
TM-2		4794.891	06/01/01	334.15	4460.74	PD file
TM-2		4794.891	10/01/01	334.40	4460.49	PD file
TM-2		4794.891	02/01/02	334.50	4460.39	PD file
TM-2		4794.891	06/01/02	334.70	4460.19	PD file
TM-2		4794.891	09/01/02	334.85	4460.04	PD file
TM-2		4794.891	11/01/02	335.00	4459.89	PD file
TM-2		4794.891	01/01/03	335.05	4459.84	PD file
TM-2		4794.891	05/01/03	335.20	4459.69	PD file
TM-2		4794.891	08/01/03	335.35	4459.54	PD file
TM-2		4794.891	12/01/03	335.50	4459.39	PD file
TM-2		4794.891	02/01/04	335.70	4459.19	PD file
TM-2		4794.891	05/01/04	335.85	4459.04	PD file
TM-2		4794.891	08/01/04	335.95	4458.94	PD file
TM-2		4794.891	11/01/04	336.10	4458.79	PD file
TM-2		4794.891	02/01/05	336.45	4458.44	PD file
TM-2		4794.891	06/01/05	336.80	4458.09	PD file
TM-2		4794.891	09/01/05	337.00	4457.89	PD file
TM-2		4794.891	11/01/05	337.15	4457.74	PD file
TM-2		4794.891	02/01/06	337.60	4457.29	PD file
TM-2		4794.891	05/01/06	338.00	4456.89	PD file
TM-2		4794.891	08/01/06	338.50	4456.39	PD file
TM-2A	D-24-24-04aac2		02/24/89		4470.84	SET, 1998
TM-2A			03/03/89		4471.04	SET, 1998
TM-2A			10/22/89		4471.04	SET, 1998
TM-2A			11/30/89		4477.67	SET, 1998
TM-2A		4790.95	11/30/89	312.90	4478.05	ELMA, 1990
TM-2A			11/23/93		4443.60	SET, 1998
TM-2A			01/04/94		4466.30	SET, 1998
TM-2A			06/25/96		4468.15	SET, 1998
TM-2A			08/22/96		4460.35	SET, 1998
TM-2A			09/25/96		4461.00	SET, 1998
TM-2A			10/29/96		4462.30	SET, 1998
TM-2A			12/19/96		4463.25	SET, 1998
TM-2A			01/29/97		4463.25	SET, 1998
TM-2A			02/27/97		4463.00	SET, 1998
TM-2A			04/16/97		4462.30	SET, 1998
TM-2A			10/10/97		4460.70	SET, 1998
TM-2A			01/05/98		4460.20	SET, 1998

TABLE B.1
Historic Groundwater Elevations for Select Wells, CTSA

Well	Cadastral	Altitude of Measuring Point [1]	Date Sampled	Depth to Water Below Measuring Point [2]	Water Elevation (ft amsl)	Data Source [3]
TM-2A		4794.132	06/01/99	334.80	4459.33	PD file
TM-2A		4794.132	03/01/00	335.50	4458.63	PD file
TM-2A		4794.132	06/01/00	335.20	4458.93	PD file
TM-2A		4794.132	09/01/00	335.00	4459.13	PD file
TM-2A		4794.132	12/01/00	334.85	4459.28	PD file
TM-2A		4794.132	02/01/01	334.80	4459.33	PD file
TM-2A		4794.132	06/01/01	334.80	4459.33	PD file
TM-2A		4794.132	10/01/01	334.85	4459.28	PD file
TM-2A		4794.132	02/01/02	334.80	4459.33	PD file
TM-2A		4794.132	06/01/02	334.95	4459.18	PD file
TM-2A		4794.132	09/01/02	335.20	4458.93	PD file
TM-2A		4794.132	11/01/02	335.60	4458.53	PD file
TM-2A		4794.132	01/01/03	335.60	4458.53	PD file
TM-2A		4794.132	05/01/03	336.15	4457.98	PD file
TM-2A		4794.132	08/01/03	337.00	4457.13	PD file
TM-2A		4794.132	12/01/03	338.10	4456.03	PD file
TM-2A		4794.132	02/01/04	338.50	4455.63	PD file
TM-2A		4794.132	05/01/04	338.95	4455.18	PD file
TM-2A		4794.132	08/01/04	339.55	4454.58	PD file
TM-2A		4794.132	11/01/04	340.80	4453.33	PD file
TM-2A		4794.132	02/01/05	341.05	4453.08	PD file
TM-2A		4794.132	06/01/05	342.40	4451.73	PD file
TM-2A		4794.132	09/01/05	343.10	4451.03	PD file
TM-2A		4794.132	11/01/05	343.30	4450.83	PD file
TM-2A		4794.132	02/01/06	343.30	4450.83	PD file
TM-2A		4794.132	05/01/06	343.30	4450.83	PD file
TM-2A		4794.132	08/01/06	344.10	4450.03	PD file
TM-3	D-23-24-35bba		10/18/88		4762.79	SET, 1998
TM-3			01/27/89		4762.65	SET, 1998
TM-3			03/01/89		4762.19	SET, 1998
TM-3			04/06/89		4761.94	SET, 1998
TM-3			05/02/89		4761.64	SET, 1998
TM-3			06/01/89		4761.54	SET, 1998
TM-3			07/13/89		4761.19	SET, 1998
TM-3			09/06/89		4762.59	SET, 1998
TM-3			10/22/89		4760.79	SET, 1998
TM-3			11/06/89		4765.93	SET, 1998
TM-3		4880.58	11/06/89	114.00	4766.58	ELMA, 1990
TM-3			01/05/94		4771.29	SET, 1998
TM-3			6/25/1996		4759.95	SET, 1998
TM-3			08/22/96		4760.05	SET, 1998
TM-3			09/25/96		4760.10	SET, 1998
TM-3			10/29/96		4760.10	SET, 1998
TM-3			12/19/96		4760.10	SET, 1998
TM-3			01/29/97		4759.60	SET, 1998
TM-3			02/27/97		4759.40	SET, 1998
TM-3			04/16/97		4758.80	SET, 1998
TM-3			10/10/97		4647.70	SET, 1998
TM-3			01/05/98		4647.40	SET, 1998
TM-3		4883.688	06/01/99	121.45	4762.24	PD file
TM-3		4883.688	03/01/00	118.90	4764.79	PD file
TM-3		4883.688	06/01/00	118.40	4765.29	PD file
TM-3		4883.688	09/01/00	117.95	4765.74	PD file
TM-3		4883.688	12/01/00	117.60	4766.09	PD file
TM-3		4883.688	02/01/01	118.00	4765.69	PD file
TM-3		4883.688	06/01/01	118.35	4765.34	PD file
TM-3		4883.688	10/01/01	118.70	4764.99	PD file
TM-3		4883.688	02/01/02	119.10	4764.59	PD file
TM-3		4883.688	06/01/02	120.80	4762.89	PD file

TABLE B.1
Historic Groundwater Elevations for Select Wells, CTSA

Well	Cadastral	Altitude of Measuring Point [1]	Date Sampled	Depth to Water Below Measuring Point [2]	Water Elevation (ft amsl)	Data Source [3]
TM-3		4883.688	09/01/02	121.80	4761.89	PD file
TM-3		4883.688	11/01/02	122.20	4761.49	PD file
TM-3		4883.688	01/01/03	122.60	4761.09	PD file
TM-3		4883.688	05/01/03	122.85	4760.84	PD file
TM-3		4883.688	08/01/03	123.00	4760.69	PD file
TM-3		4883.688	12/01/03	123.65	4760.04	PD file
TM-3		4883.688	02/01/04	123.00	4760.69	PD file
TM-3		4883.688	05/01/04	123.00	4760.69	PD file
TM-3		4883.688	08/01/04	122.85	4760.84	PD file
TM-3		4883.688	11/01/04	122.50	4761.19	PD file
TM-3		4883.688	02/01/05	122.60	4761.09	PD file
TM-3		4883.688	06/01/05	122.90	4760.79	PD file
TM-3		4883.688	09/01/05	122.80	4760.89	PD file
TM-3		4883.688	11/01/05	122.40	4761.29	PD file
TM-3		4883.688	02/01/06	122.45	4761.24	PD file
TM-3		4883.688	05/01/06	122.50	4761.19	PD file
TM-3		4883.688	08/01/06	123.90	4759.79	PD file
TM-4	D-24-24-02bcc		06/23/89		4677.70	SET, 1998
TM-4			11/06/89		4680.88	SET, 1998
TM-4		4770.38	11/06/89	89.30	4681.08	ELMA, 1990
TM-5	D-24-24-21aba		10/18/88		4465.32	SET, 1998
TM-5			11/06/89		4464.42	SET, 1998
TM-5		4598.06	11/06/89	132.85	4465.21	ELMA, 1990
TM-5			06/25/96		4449.65	SET, 1998
TM-5			12/19/96		4448.35	SET, 1998
TM-5			04/16/97		4447.85	SET, 1998
TM-5			10/10/97		4446.70	SET, 1998
TM-5			01/05/98		4446.45	SET, 1998
TM-5		4604.463	06/01/99	153.05	4451.41	PD file
TM-5			09/01/05	no water		PD file
TM-6	D-24-24-14bcc		10/18/88		4531.80	SET, 1998
TM-6			11/06/89		4531.30	SET, 1998
TM-6		4690.22	11/06/89	157.70	4532.52	ELMA, 1990
TM-6			06/25/96		4531.00	SET, 1998
TM-6			12/19/96		4530.90	SET, 1998
TM-6			04/16/97		4530.95	SET, 1998
TM-6			10/10/97		4530.90	SET, 1998
TM-6			01/05/98		4531.05	SET, 1998
TM-6		4695.852	06/29/99	158.40	4537.45	PD file
TM-6		4695.852	03/01/00	158.20	4537.65	PD file
TM-6		4695.852	06/01/00	158.30	4537.55	PD file
TM-6		4695.852	09/01/00	158.40	4537.45	PD file
TM-6		4695.852	12/01/00	158.40	4537.45	PD file
TM-6		4695.852	02/01/02	158.30	4537.55	PD file
TM-6		4695.852	06/01/02	158.30	4537.55	PD file
TM-6		4695.852	10/01/02	158.25	4537.60	PD file
TM-6		4695.852	01/01/03	158.25	4537.60	PD file
TM-6		4695.852	05/01/03	158.30	4537.55	PD file
TM-6		4695.852	08/01/03	158.35	4537.50	PD file
TM-6		4695.852	12/01/03	158.40	4537.45	PD file
TM-6		4695.852	09/01/05	158.70	4537.15	PD file
TM-6		4695.852	11/01/05	158.50	4537.35	PD file
TM-6		4695.852	08/01/06	158.70	4537.15	PD file
TM-7	D-24-24-04bbd		10/18/88		4489.49	SET, 1998
TM-7			01/24/89		4493.89	SET, 1998
TM-7			02/27/89		4492.89	SET, 1998

TABLE B.1
Historic Groundwater Elevations for Select Wells, CTSA

Well	Cadastral	Altitude of Measuring Point [1]	Date Sampled	Depth to Water Below Measuring Point [2]	Water Elevation (ft amsl)	Data Source [3]
TM-7			04/04/89		4492.16	SET, 1998
TM-7			05/01/89		4492.34	SET, 1998
TM-7			06/06/89		4490.89	SET, 1998
TM-7			07/12/89		4490.39	SET, 1998
TM-7			09/06/89		4489.39	SET, 1998
TM-7			10/22/89		4490.39	SET, 1998
TM-7			11/06/89		4489.39	SET, 1998
TM-7		4766.15	11/06/89	276.18	4489.97	ELMA, 1990
TM-7			07/10/90		4484.40	SET, 1998
TM-7			10/11/90		4483.10	SET, 1998
TM-7			12/04/90	279.20	4491.00	ADWR GWSI
TM-7			01/28/91		4481.55	SET, 1998
TM-7			04/16/91		4480.40	SET, 1998
TM-7			07/15/91		4479.20	SET, 1998
TM-7			10/15/91		4477.85	SET, 1998
TM-7			01/15/92		4476.68	SET, 1998
TM-7			04/06/92		4475.70	SET, 1998
TM-7			07/20/92		4474.50	SET, 1998
TM-7			10/20/92		4473.30	SET, 1998
TM-7			04/19/93		4471.25	SET, 1998
TM-7			07/19/93		4470.25	SET, 1998
TM-7			08/19/93		4470.00	SET, 1998
TM-7			10/19/93		4469.00	SET, 1998
TM-7			01/24/94		4468.45	SET, 1998
TM-7			04/12/94		4467.60	SET, 1998
TM-7			07/19/94		4466.70	SET, 1998
TM-7			10/18/94		4465.70	SET, 1998
TM-7			01/17/95		4464.95	SET, 1998
TM-7			04/18/95		4464.15	SET, 1998
TM-7			07/27/95		4463.00	SET, 1998
TM-7			10/17/95		4462.45	SET, 1998
TM-7			06/25/96		4460.10	SET, 1998
TM-7			08/22/96		4459.50	SET, 1998
TM-7			10/29/96		4459.10	SET, 1998
TM-7			12/19/96		4458.55	SET, 1998
TM-7			01/29/97		4458.20	SET, 1998
TM-7			02/27/97		4458.10	SET, 1998
TM-7			04/16/97		4457.55	SET, 1998
TM-7			07/01/97		4456.80	SET, 1998
TM-7			10/10/97		4456.35	SET, 1998
TM-7			01/05/98		4455.90	SET, 1998
TM-7		4768.927	06/01/99	312.85	4456.07	PD file
TM-7		4768.927	03/01/00	313.50	4455.43	PD file
TM-7		4768.927	06/01/00	314.00	4454.93	PD file
TM-7		4768.927	09/01/00	314.80	4454.13	PD file
TM-7		4768.927	12/01/00	315.80	4453.13	PD file
TM-7		4768.927	02/01/01	315.95	4452.98	PD file
TM-7		4768.927	06/01/01	316.70	4452.23	PD file
TM-7		4768.927	10/01/01	317.25	4451.68	PD file
TM-7		4768.927	02/01/02	318.40	4450.53	PD file
TM-7		4768.927	06/01/02	319.30	4449.63	PD file
TM-7		4768.927	09/01/02	319.70	4449.23	PD file
TM-7		4768.927	11/01/02	319.90	4449.03	PD file
TM-9	D-23-24-33bca	4889.12	03/14/89	766.10	4123.02	ELMA, 1990
TM-10	D-24-24-05bac		10/18/88		4492.22	SET, 1998
TM-10			11/06/89		4481.42	SET, 1998
TM-10		4768.927	11/06/89	260.45	4480.73	ELMA, 1990
TM-10			01/25/94		4471.02	SET, 1998
TM-10			06/25/96		4465.12	SET, 1998

TABLE B.1
Historic Groundwater Elevations for Select Wells, CTSA

Well	Cadastral	Altitude of Measuring Point [1]	Date Sampled	Depth to Water Below Measuring Point [2]	Water Elevation (ft amsl)	Data Source [3]
TM-11	D-24-24-18aab		10/18/88		4461.04	SET, 1998
TM-11			04/04/89		4459.79	SET, 1998
TM-11			11/06/89		4459.69	SET, 1998
TM-11		4573.10	11/06/89	112.30	4460.80	ELMA, 1990
TM-12	D-24-24-20bbd		10/18/88		4461.99	SET, 1998
TM-12			04/18/89		4461.49	SET, 1998
TM-12			11/06/89		4459.06	SET, 1998
TM-12		4589.44	11/06/89	130.75	4458.69	ELMA, 1990
TM-12			06/25/96		4443.30	SET, 1998
TM-12			12/19/96		4443.05	SET, 1998
TM-12			04/16/97		4442.60	SET, 1998
TM-12			10/10/97		4440.70	SET, 1998
TM-12			01/05/98		4441.10	SET, 1998
TM-13	D-24-24-08bcc2		10/18/88		4461.43	SET, 1998
TM-13			04/17/89		4460.53	SET, 1998
TM-13			11/06/89		4459.94	SET, 1998
TM-13		4617.29	11/06/89	155.70	4461.59	ELMA, 1990
TM-13			01/26/94		4445.73	SET, 1998
TM-13			11/29/01	182.70	4447.30	ADWR GWSI
TM-14	D-24-24-07bcb2		10/18/88		4454.26	SET, 1998
TM-14			04/18/89		4453.36	SET, 1998
TM-14			11/06/89		4448.52	SET, 1998
TM-14		4626.23	11/06/89	180.65	4445.58	ELMA, 1990
TM-15	D-24-24-06bcc		10/18/88		4443.90	SET, 1998
TM-15			04/18/89		4443.35	SET, 1998
TM-15			11/06/89		4443.42	SET, 1998
TM-15		4711.65	11/06/89	267.03	4444.62	ELMA, 1990
TM-15			06/25/96		4429.30	SET, 1998
TM-15			10/29/96		4428.65	SET, 1998
TM-15			06/01/99	284.90	4427.89	WMC, 2006
TM-16	D-24-24-10acd		10/18/88		4620.44	SET, 1998
TM-16			11/06/89		4621.52	SET, 1998
TM-16		4701.12	11/06/89	77.48	4623.64	ELMA, 1990
TM-16			04/06/89		4624.10	SET, 1998
TM-16			10/11/89		4621.60	SET, 1998
TM-16			04/03/90		4621.10	SET, 1998
TM-16			10/17/90		4620.40	SET, 1998
TM-16			04/16/91		4620.80	SET, 1998
TM-16			10/14/91		4620.50	SET, 1998
TM-16			04/06/92		4618.45	SET, 1998
TM-16			04/19/93		4617.00	SET, 1998
TM-16			10/19/93		4616.10	SET, 1998
TM-16			04/12/94		4615.70	SET, 1998
TM-16			04/18/95		4615.50	SET, 1998
TM-16			10/17/95		4615.30	SET, 1998
TM-16			06/25/96		4615.00	SET, 1998
TM-16		4705.54	06/01/99	80.80	4624.70	PD file
TM-16		4705.54	03/01/00	79.25	4626.29	PD file
TM-16		4705.54	06/01/00	78.55	4626.99	PD file
TM-16		4705.54	09/01/00	77.65	4627.89	PD file
TM-16		4705.54	12/01/00	77.10	4628.44	PD file
TM-16		4705.54	02/01/01	76.95	4628.59	PD file
TM-16		4705.54	06/01/01	76.55	4628.99	PD file
TM-16		4705.54	10/01/01	76.20	4629.34	PD file

TABLE B.1
Historic Groundwater Elevations for Select Wells, CTSA

Well	Cadastral	Altitude of Measuring Point [1]	Date Sampled	Depth to Water Below Measuring Point [2]	Water Elevation (ft amsl)	Data Source [3]
TM-16		4705.54	02/01/02	76.00	4629.54	PD file
TM-16		4705.54	06/01/02	76.45	4629.09	PD file
TM-16		4705.54	09/01/02	76.50	4629.04	PD file
TM-16		4705.54	11/01/02	76.60	4628.94	PD file
TM-16		4705.54	01/01/03	76.60	4628.94	PD file
TM-16		4705.54	05/01/03	77.30	4628.24	PD file
TM-16		4705.54	08/01/06	77.85	4627.69	PD file
TM-16		4705.54	12/01/03	78.10	4627.44	PD file
TM-16		4705.54	02/01/04	78.45	4627.09	PD file
TM-16		4705.54	05/01/04	78.80	4626.74	PD file
TM-16		4705.54	08/01/04	79.00	4626.54	PD file
TM-16		4705.54	11/01/04	79.30	4626.24	PD file
TM-16		4705.54	02/01/05	79.50	4626.04	PD file
TM-16		4705.54	06/01/05	79.80	4625.74	PD file
TM-16		4705.54	09/01/05	79.75	4625.79	PD file
TM-16		4705.54	11/01/05	79.75	4625.79	PD file
TM-16		4705.54	02/01/06	79.90	4625.64	PD file
TM-16		4705.54	05/01/06	80.30	4625.24	PD file
TM-16		4705.54	08/01/06	80.75	4624.79	PD file
TM-17	D-24-24-16aca		10/18/88		4468.37	SET, 1998
TM-17			04/17/89		4467.63	SET, 1998
TM-17			11/06/89		4467.54	SET, 1998
TM-17		4631.00	11/06/89	161.35	4469.65	ELMA, 1990
TM-17			01/26/94		4455.07	SET, 1998
TM-18	D-23-24-21cdd	5140.57	11/06/89	658.10	4482.47	ELMA, 1990
TM-19	D-24-24-08ddc1		10/18/88		4473.04	SET, 1998
TM-19			01/30/89		4471.99	SET, 1998
TM-19			03/01/89		4471.44	SET, 1998
TM-19			04/07/89		4471.29	SET, 1998
TM-19			05/02/89		4471.04	SET, 1998
TM-19			06/09/89		4470.44	SET, 1998
TM-19			07/13/89		4469.89	SET, 1998
TM-19			09/06/89		4469.19	SET, 1998
TM-19			10/22/89		4470.04	SET, 1998
TM-19			11/06/89		4468.77	SET, 1998
TM-19		4626.86	11/06/89	157.50	4469.36	ELMA, 1990
TM-19			03/08/90		4467.15	SET, 1998
TM-19			04/04/90		4466.80	SET, 1998
TM-19			07/30/90		4465.34	SET, 1998
TM-19			10/19/90		4464.55	SET, 1998
TM-19			01/31/90		4463.60	SET, 1998
TM-19			04/16/91		4463.00	SET, 1998
TM-19			06/24/91		4462.25	SET, 1998
TM-19			07/16/91		4462.00	SET, 1998
TM-19			10/14/91		4461.00	SET, 1998
TM-19			01/15/92		4460.20	SET, 1998
TM-19			04/06/92		4459.60	SET, 1998
TM-19			01/11/93		4457.35	SET, 1998
TM-19			04/19/93		4456.75	SET, 1998
TM-19			07/21/93		4456.00	SET, 1998
TM-19			10/19/93		4455.10	SET, 1998
TM-19			01/04/94		4454.70	SET, 1998
TM-19			04/12/94		4454.10	SET, 1998
TM-19			07/19/94		4453.30	SET, 1998
TM-19			10/18/94		4452.55	SET, 1998
TM-19			01/17/95		4452.00	SET, 1998
TM-19			10/17/95		4450.00	SET, 1998

TABLE B.1
Historic Groundwater Elevations for Select Wells, CTSA

Well	Cadastral	Altitude of Measuring Point [1]	Date Sampled	Depth to Water Below Measuring Point [2]	Water Elevation (ft amsl)	Data Source [3]
TM-19			06/25/96		4448.10	SET, 1998
TM-19			08/22/96		4448.05	SET, 1998
TM-19			10/29/96		4447.15	SET, 1998
TM-19A	D-24-24-08ddc2		01/30/89		4472.34	SET, 1998
TM-19A			03/01/89		4471.94	SET, 1998
TM-19A			04/07/89		4471.49	SET, 1998
TM-19A			05/02/89		4471.14	SET, 1998
TM-19A			06/09/89		4470.74	SET, 1998
TM-19A			07/13/89		4470.24	SET, 1998
TM-19A			09/06/89		4469.54	SET, 1998
TM-19A			10/22/89		4470.04	SET, 1998
TM-19A			11/06/89		4469.04	SET, 1998
TM-19A		4627.32	11/06/89	157.25	4470.07	ELMA, 1990
TM-19A			12/04/90	156.70	4482.00	ADWR GWSI
TM-19A			01/04/94		4454.60	SET, 1998
TM-19A			06/25/96		4447.93	SET, 1998
TM-19A			08/22/96		4447.40	SET, 1998
TM-19A			09/25/96		4447.00	SET, 1998
TM-19A			10/29/96		4447.00	SET, 1998
TM-19A			12/19/96		4446.50	SET, 1998
TM-19A			01/29/97		4446.40	SET, 1998
TM-19A			02/27/97		4446.30	SET, 1998
TM-19A			04/16/97		4445.80	SET, 1998
TM-19A			10/10/97		4444.50	SET, 1998
TM-19A			01/05/98		4443.90	SET, 1998
TM-19A		4632.45	06/01/99	185.45	4447.00	PD file
TM-19A		4632.45	03/01/00	186.20	4446.25	PD file
TM-19A		4632.45	06/01/00	186.95	4445.50	PD file
TM-19A		4632.45	09/01/00	187.60	4444.85	PD file
TM-19A		4632.45	12/01/00	188.00	4444.45	PD file
TM-19A		4632.45	02/01/01	188.40	4444.05	PD file
TM-19A		4632.45	06/01/01	188.95	4443.50	PD file
TM-19A		4632.45	10/01/01	189.55	4442.90	PD file
TM-19A		4632.45	02/01/02	190.25	4442.20	PD file
TM-19A		4632.45	06/01/02	191.30	4441.15	PD file
TM-19A		4632.45	09/01/02	191.50	4440.95	PD file
TM-19A		4632.45	11/01/02	191.90	4440.55	PD file
TM-19A		4632.45	01/01/03	192.00	4440.45	PD file
TM-19A		4632.45	05/01/03	192.40	4440.05	PD file
TM-19A		4632.45	08/01/03	192.85	4439.60	PD file
TM-19A		4632.45	12/01/03	193.20	4439.25	PD file
TM-19A		4632.45	02/01/04	193.80	4438.65	PD file
TM-19A		4632.45	05/01/04	194.05	4438.40	PD file
TM-19A		4632.45	08/01/04	194.80	4437.65	PD file
TM-19A		4632.45	11/01/04	195.70	4436.75	PD file
TM-19A		4632.45	02/01/05	195.90	4436.55	PD file
TM-19A		4632.45	06/01/05	196.20	4436.25	PD file
TM-19A		4632.45	09/01/05	196.95	4435.50	PD file
TM-19A		4632.45	11/01/05	198.30	4434.15	PD file
TM-19A		4632.45	02/01/06	197.00	4435.45	PD file
TM-19A		4632.45	05/01/06	196.40	4436.05	PD file
TM-19A		4632.45	08/01/06	197.00	4435.45	PD file
TM-21	D-23-24-22cda	5153.36	11/06/89	333.08	4820.28	ELMA, 1990
TM-22	D-23-24-27bad	5077.08	11/07/89	924.12	4152.96	ELMA, 1990
TM-23	D-23-24-27bdd	4961.50	11/07/89	160.65	4800.85	ELMA, 1990

TABLE B.1
Historic Groundwater Elevations for Select Wells, CTSA

Well	Cadastral	Altitude of Measuring Point [1]	Date Sampled	Depth to Water Below Measuring Point [2]	Water Elevation (ft amsl)	Data Source [3]
TM-24	D-23-24-27dad	4909.85	11/07/89	56.61	4853.24	ELMA, 1990
TM-25	D 23-24-34baa	4947.78	08/08/89	dry	<4142.78	ELMA, 1990
TM-26	D-23-24-34cda	4917.18	09/07/89	dry	<4117.18	ELMA, 1990
TM-27	D-23-24-33dbc	4840.66	11/07/89	304.49	4536.17	ELMA, 1990
TM-28	D-23-24-35ccb	4813.27	11/06/89	62.68	4750.59	ELMA, 1990
TM-29	D-24-24-03caa		09/06/89		4667.43	SET, 1998
TM-29			10/22/89		4667.28	SET, 1998
TM-29			11/06/89		4671.60	SET, 1998
TM-29		4759.63	11/06/89	87.05	4672.58	ELMA, 1990
TM-29A	D-24-24-03cab1	4758.08	11/06/89	86.12	4671.96	ELMA, 1990
TM-30	D-24-24-08dad		11/07/89		4474.39	SET, 1998
TM-30		4635.89	11/07/89	162.82	4473.07	ELMA, 1990
TM-33	D-23-24-34bbb	4903.57	11/07/89	488.22	4415.35	ELMA, 1990
TM-35	D-24-23-35adb	4898.88	11/06/89	260.99	4637.89	ELMA, 1990
TM-35			10/22/89		4638.48	SET, 1998
TM-35			11/06/89		4638.79	SET, 1998
TM-37	D-24-24-9bbc		11/07/89		4474.26	SET, 1998
TM-37		4670.86	11/07/89	191.9	4479.00	ELMA, 1990
TM-38	D-24-24-9caa		11/06/89		4479.04	SET, 1998
TM-38		4667.97	11/06/89	187.2	4480.77	ELMA, 1990
TM-39	D-24-24-10cbd		11/06/89		4514.44	SET, 1998
TM-39		4671.51	11/06/89	157.19	4514.32	ELMA, 1990
TM-41	D-24-24-03cbd		07/01/97		4599.44	SET, 1998
TM-41			11/06/97		4594.69	SET, 1998
TM-41			01/05/98		4593.29	SET, 1998
TM-41		4760.96	06/01/99	170.40	4590.56	PD file
TM-41		4760.96	03/01/00	171.50	4589.46	PD file
TM-41		4760.96	06/01/00	170.50	4590.46	PD file
TM-41		4760.96	09/01/00	169.10	4591.86	PD file
TM-41		4760.96	12/01/00	167.00	4593.96	PD file
TM-41		4760.96	02/01/01	165.20	4595.76	PD file
TM-41		4760.96	06/01/01	164.55	4596.41	PD file
TM-41		4760.96	10/01/01	163.75	4597.21	PD file
TM-41		4760.96	02/01/02	162.45	4598.51	PD file
TM-41		4760.96	06/01/02	165.00	4595.96	PD file
TM-41		4760.96	09/01/02	167.40	4593.56	PD file
TM-41		4760.96	11/01/02	168.20	4592.76	PD file
TM-41		4760.96	01/01/03	169.80	4591.16	PD file
TM-41		4760.96	05/01/03	171.60	4589.36	PD file
TM-41		4760.96	08/01/03	173.05	4587.91	PD file
TM-41		4760.96	12/01/03	177.90	4583.06	PD file
TM-41		4760.96	02/01/04	179.90	4581.06	PD file
TM-41		4760.96	05/01/04	182.70	4578.26	PD file
TM-41		4760.96	08/01/04	185.20	4575.76	PD file
TM-41		4760.96	11/01/04	188.10	4572.86	PD file
TM-41		4760.96	02/01/05	188.40	4572.56	PD file

TABLE B.1
Historic Groundwater Elevations for Select Wells, CTSA

Well	Cadastral	Altitude of Measuring Point [1]	Date Sampled	Depth to Water Below Measuring Point [2]	Water Elevation (ft amsl)	Data Source [3]
TM-41		4760.96	06/01/05	188.75	4572.21	PD file
TM-41		4760.96	09/01/05	188.85	4572.11	PD file
TM-41		4760.96	11/01/05	189.20	4571.76	PD file
TM-41		4760.96	02/01/06	190.15	4570.81	PD file
TM-41		4760.96	05/01/06	193.10	4567.86	PD file
TM-41		4760.96	08/01/06	No water,194		PD file
TM-42	D-24-24-09dcc		07/01/97		4459.10	SET, 1998
TM-42			11/06/97		4457.25	SET, 1998
TM-42			01/05/98		4457.05	SET, 1998
TM-42		4654.033	06/01/99	196.30	4457.73	PD file
TM-42		4654.033	03/01/00	197.10	4456.93	PD file
TM-42		4654.033	06/01/00	198.10	4455.93	PD file
TM-42		4654.033	09/01/00	198.65	4455.38	PD file
TM-42		4654.033	12/01/00	199.00	4455.03	PD file
TM-42		4654.033	02/01/01	199.30	4454.73	PD file
TM-42		4654.033	06/01/01	199.95	4454.08	PD file
TM-42		4654.033	10/01/01	200.85	4453.18	PD file
TM-42		4654.033	02/01/02	201.45	4452.58	PD file
TM-42		4654.033	06/01/02	202.35	4451.68	PD file
TM-42		4654.033	09/01/02	202.80	4451.23	PD file
TM-42		4654.033	11/01/02	203.00	4451.03	PD file
TM-42		4654.033	01/01/03	203.10	4450.93	PD file
TM-42		4654.033	05/01/03	203.70	4450.33	PD file
TM-42		4654.033	08/01/03	204.10	4449.93	PD file
TM-42		4654.033	12/01/03	204.80	4449.23	PD file
TM-42		4654.033	02/01/04	205.10	4448.93	PD file
TM-42		4654.033	05/01/04	205.60	4448.43	PD file
TM-42		4654.033	08/01/04	205.95	4448.08	PD file
TM-42		4654.033	11/01/04	206.15	4447.88	PD file
TM-42		4654.033	02/01/05	206.30	4447.73	PD file
TM-42		4654.033	06/01/05	206.70	4447.33	PD file
TM-42		4654.033	09/01/05	207.00	4447.03	PD file
TM-42		4654.033	11/01/05	207.60	4446.43	PD file
TM-42		4654.033	02/01/06	208.00	4446.03	PD file
TM-42		4654.033	05/01/06	208.40	4445.63	PD file
TM-42		4654.033	08/01/06	208.90	4445.13	PD file
TM-43	D-23-24-27acc	4956.436	06/01/99	147.30	4809.14	PD file
TM-43		4956.436	03/01/00	147.55	4808.89	PD file
TM-43		4956.436	06/01/00	147.55	4808.89	PD file
TM-43		4956.436	09/01/00	147.55	4808.89	PD file
TM-43		4956.436	12/01/00	147.55	4808.89	PD file
TM-43		4956.436	02/01/01	147.55	4808.89	PD file
TM-43		4956.436	06/01/01	147.50	4808.94	PD file
TM-43		4956.436	10/01/01	147.45	4808.99	PD file
TM-43		4956.436	02/01/02	147.30	4809.14	PD file
TM-43		4956.436	06/01/02	147.60	4808.84	PD file
TM-43		4956.436	09/01/02	147.75	4808.69	PD file
TM-43		4956.436	11/01/02	147.90	4808.54	PD file
TM-43		4956.436	01/01/03	148.10	4808.34	PD file
TM-43		4956.436	05/01/03	148.20	4808.24	PD file
TM-43		4956.436	08/01/03	148.30	4808.14	PD file
TM-43		4956.436	12/01/03	148.70	4807.74	PD file
TM-43		4956.436	02/01/04	148.85	4807.59	PD file
TM-43		4956.436	05/01/04	148.90	4807.54	PD file
TM-43		4956.436	08/01/04	149.05	4807.39	PD file
TM-43		4956.436	11/01/04	149.30	4807.14	PD file
TM-43		4956.436	02/01/05	149.45	4806.99	PD file
TM-43		4956.436	06/01/05	149.70	4806.74	PD file

TABLE B.1
Historic Groundwater Elevations for Select Wells, CTSA

Well	Cadastral	Altitude of Measuring Point [1]	Date Sampled	Depth to Water Below Measuring Point [2]	Water Elevation (ft amsl)	Data Source [3]
TM-43		4956.436	09/01/05	149.80	4806.64	PD file
TM-43		4956.436	11/01/05	149.90	4806.54	PD file
TM-43		4956.436	02/01/06	149.70	4806.74	PD file
TM-43		4956.436	05/01/06	149.80	4806.64	PD file
TM-43		4956.436	08/01/06	149.80	4806.64	PD file
TM-43A	D-23-24-27acc	4954.672	06/01/99	132.95	4821.72	PD file
TM-43A		4954.672	03/01/00	132.80	4821.87	PD file
TM-43A		4954.672	06/01/00	132.70	4821.97	PD file
TM-43A		4954.672	09/01/00	132.65	4822.02	PD file
TM-43A		4954.672	12/01/00	132.65	4822.02	PD file
TM-43A		4954.672	02/01/01	132.50	4822.17	PD file
TM-43A		4954.672	06/01/01	132.35	4822.32	PD file
TM-43A		4954.672	10/01/01	132.20	4822.47	PD file
TM-43A		4954.672	02/01/02	132.10	4822.57	PD file
TM-43A		4954.672	06/01/02	132.20	4822.47	PD file
TM-43A		4954.672	09/01/02	132.40	4822.27	PD file
TM-43A		4954.672	11/01/02	132.70	4821.97	PD file
TM-43A		4954.672	01/01/03	132.70	4821.97	PD file
TM-43A		4954.672	05/01/03	132.75	4821.92	PD file
TM-43A		4954.672	08/01/03	133.00	4821.67	PD file
TM-43A		4954.672	12/01/03	133.40	4821.27	PD file
TM-43A		4954.672	02/01/04	134.40	4820.27	PD file
TM-43A		4954.672	05/01/04	136.25	4818.42	PD file
TM-43A		4954.672	08/01/04	139.55	4815.12	PD file
TM-43A		4954.672	11/01/04	143.00	4811.67	PD file
TM-43A		4954.672	02/01/05	143.10	4811.57	PD file
TM-43A		4954.672	06/01/05	143.00	4811.67	PD file
TM-43A		4954.672	09/01/05	134.30	4820.37	PD file
TM-43A		4954.672	11/01/05	134.30	4820.37	PD file
TM-43A		4954.672	02/01/06	134.50	4820.17	PD file
TM-43A		4954.672	05/01/06	134.25	4820.42	PD file
TM-43A		4954.672	08/01/06	134.30	4820.37	PD file
TM-43B	D-23-24-27dad	4907.293	06/01/99	62.60	4844.69	PD file
TM-43B		4907.293	03/01/00	61.20	4846.09	PD file
TM-43B		4907.293	06/01/00	61.95	4845.34	PD file
TM-43B		4907.293	09/01/00	62.30	4844.99	PD file
TM-43B		4907.293	12/01/00	62.60	4844.69	PD file
TM-43B		4907.293	02/01/01	62.40	4844.89	PD file
TM-43B		4907.293	06/01/01	61.85	4845.44	PD file
TM-43B		4907.293	10/01/01	60.95	4846.34	PD file
TM-43B		4907.293	02/01/02	59.45	4847.84	PD file
TM-43B		4907.293	06/01/02	60.30	4846.99	PD file
TM-43B		4907.293	09/01/02	60.95	4846.34	PD file
TM-43B		4907.293	11/01/02	61.35	4845.94	PD file
TM-43B		4907.293	01/01/03	61.75	4845.54	PD file
TM-43B		4907.293	05/01/03	62.60	4844.69	PD file
TM-43B		4907.293	08/01/03	63.20	4844.09	PD file
TM-43B		4907.293	12/01/03	64.70	4842.59	PD file
TM-43B		4907.293	02/01/04	65.05	4842.24	PD file
TM-43B		4907.293	05/01/04	65.90	4841.39	PD file
TM-43B		4907.293	08/01/04	66.40	4840.89	PD file
TM-43B		4907.293	11/01/04	67.80	4839.49	PD file
TM-43B		4907.293	02/01/05	67.85	4839.44	PD file
TM-43B		4907.293	06/01/05	67.95	4839.34	PD file
TM-43B		4907.293	09/01/05	68.10	4839.19	PD file
TM-43B		4907.293	11/01/05	68.80	4838.49	PD file
TM-43B		4907.293	02/01/06	68.70	4838.59	PD file
TM-43B		4907.293	05/01/06	68.70	4838.59	PD file

TABLE B.1
Historic Groundwater Elevations for Select Wells, CTSA

Well	Cadastral	Altitude of Measuring Point [1]	Date Sampled	Depth to Water Below Measuring Point [2]	Water Elevation (ft amsl)	Data Source [3]
TM-43B		4907.293	08/01/06	69.40	4837.89	PD file
TM-43C	D-23-24-27add	4940.878	06/01/99	72.55	4868.33	PD file
TM-43C		4940.878	03/01/00	73.90	4866.98	PD file
TM-43C		4940.878	06/01/00	73.55	4867.33	PD file
TM-43C		4940.878	09/01/00	73.30	4867.58	PD file
TM-43C		4940.878	12/01/00	73.20	4867.68	PD file
TM-43C		4940.878	02/01/01	73.10	4867.78	PD file
TM-43C		4940.878	06/01/01	73.05	4867.83	PD file
TM-43C		4940.878	10/01/01	72.85	4868.03	PD file
TM-43C		4940.878	02/01/02	72.55	4868.33	PD file
TM-43C		4940.878	06/01/02	72.45	4868.43	PD file
TM-43C		4940.878	09/01/02	72.60	4868.28	PD file
TM-43C		4940.878	11/01/02	72.80	4868.08	PD file
TM-43C		4940.878	01/01/03	72.75	4868.13	PD file
TM-43C		4940.878	05/01/03	72.90	4867.98	PD file
TM-43C		4940.878	08/01/03	73.00	4867.88	PD file
TM-43C		4940.878	12/01/03	73.20	4867.68	PD file
TM-43C		4940.878	02/01/04	73.20	4867.68	PD file
TM-43C		4940.878	05/01/04	73.25	4867.63	PD file
TM-43C		4940.878	08/01/04	73.30	4867.58	PD file
TM-43C		4940.878	11/01/04	73.30	4867.58	PD file
TM-43C		4940.878	02/01/05	73.30	4867.58	PD file
TM-43C		4940.878	06/01/05	73.35	4867.53	PD file
TM-43C		4940.878	09/01/05	73.35	4867.53	PD file
TM-43C		4940.878	11/01/05	73.35	4867.53	PD file
TM-43C		4940.878	02/01/06	73.40	4867.48	PD file
TM-43C		4940.878	05/01/06	73.60	4867.28	PD file
TM-43C		4940.878	08/01/06	73.60	4867.28	PD file
TM-44	D-23-24-27bad	5045.6	01/05/98		4178.53	SET, 2000
TM-44		5045.6	05/06/98		4182.03	SET, 2000
TM-44		5045.6	06/01/99	851.70	4193.90	PD file
TM-44		5045.6	03/01/00	843.70	4201.90	PD file
TM-44		5045.6	06/01/00	834.60	4211.00	PD file
TM-44		5045.6	09/01/00	829.65	4215.95	PD file
TM-44		5045.6	12/01/00	824.00	4221.60	PD file
TM-44		5045.6	02/01/01	821.75	4223.85	PD file
TM-44		5045.6	06/01/01	818.60	4227.00	PD file
TM-44		5045.6	10/01/01	815.40	4230.20	PD file
TM-44		5045.6	02/01/02	812.30	4233.30	PD file
TM-44		5045.6	06/01/02	812.15	4233.45	PD file
TM-44		5045.6	09/01/02	810.30	4235.30	PD file
TM-44		5045.6	11/01/02	808.35	4237.25	PD file
TM-44		5045.6	01/01/03	808.45	4237.15	PD file
TM-44		5045.6	05/01/03	808.50	4237.10	PD file
TM-44		5045.6	08/01/03	808.55	4237.05	PD file
TM-44		5045.6	12/01/03	808.55	4237.05	PD file
TM-44		5045.6	02/01/04	808.85	4236.75	PD file
TM-44		5045.6	05/01/04	809.10	4236.50	PD file
TM-44		5045.6	08/01/04	809.30	4236.30	PD file
TM-44		5045.6	11/01/04	809.55	4236.05	PD file
TM-44		5045.6	02/01/05	809.55	4236.05	PD file
TM-44		5045.6	06/01/05	806.60	4239.00	PD file
TM-44		5045.6	09/01/05	805.75	4239.85	PD file
TM-44		5045.6	11/01/05	800.10	4245.50	PD file
TM-44		5045.6	02/01/06	800.35	4245.25	PD file
TM-44		5045.6	05/01/06	800.90	4244.70	PD file
TM-44		5045.6	08/01/06	800.15	4245.45	PD file

TABLE B.1
Historic Groundwater Elevations for Select Wells, CTSA

Well	Cadastral	Altitude of Measuring Point [1]	Date Sampled	Depth to Water Below Measuring Point [2]	Water Elevation (ft amsl)	Data Source [3]
TM-45	D-23-24-28add	4998.252	06/01/99	484.70	4513.55	PD file
TM-45		4998.252	03/01/00	485.20	4513.05	PD file
TM-45		4998.252	06/01/00	484.95	4513.30	PD file
TM-45		4998.252	09/01/00	484.80	4513.45	PD file
TM-45		4998.252	12/01/00	484.70	4513.55	PD file
TM-45		4998.252	02/01/01	485.00	4513.25	PD file
TM-45		4998.252	06/01/01	485.45	4512.80	PD file
TM-45		4998.252	10/01/01	485.95	4512.30	PD file
TM-45		4998.252	02/01/02	486.50	4511.75	PD file
TM-45		4998.252	06/01/02	486.80	4511.45	PD file
TM-45		4998.252	09/01/02	487.00	4511.25	PD file
TM-45		4998.252	11/01/02	487.20	4511.05	PD file
TM-45		4998.252	01/01/03	487.30	4510.95	PD file
TM-45		4998.252	05/01/03	487.90	4510.35	PD file
TM-45		4998.252	08/01/03	488.15	4510.10	PD file
TM-45		4998.252	12/01/03	488.80	4509.45	PD file
TM-45		4998.252	02/01/04	490 no water		PD file
TM-45		4998.252	05/01/04	490 no water		PD file
TM-45		4998.252	08/01/04	490 no water		PD file
TM-45		4998.252	11/01/04	490 no water		PD file
TM-46	D-23-24-27bbc	5052.694	01/05/98		4178.19	SET, 2000
TM-46		5052.694	05/06/98		4181.09	SET, 2000
TM-46		5052.694	06/01/99	N/A		PD file
TM-46		5052.694	12/01/00	833.00	4219.69	PD file
558557	D-24-24-17aaa		01/29/97	172.40	4455.61	WMC, 2006
558557			01/21/98	174.90	4453.11	WMC, 2006
558557			01/25/99	172.20	4455.81	WMC, 2006
558557		4628.011	06/01/99	178.20	4449.81	PD file
558557		4628.011	03/01/00	178.70	4449.31	PD file
558557		4628.011	06/01/00	179.90	4448.11	PD file
558557		4628.011	09/01/00	180.50	4447.51	PD file
558557		4628.011	12/01/00	181.00	4447.01	PD file
558557		4628.011	02/01/02	182.75	4445.26	PD file
558557		4628.011	06/01/02	183.20	4444.81	PD file
558557		4628.011	09/01/02	183.80	4444.21	PD file
558557		4628.011	11/01/02	184.05	4443.96	PD file
558557		4628.011	01/01/03	184.30	4443.71	PD file
558557		4628.011	05/01/03	185.30	4442.71	PD file
558557		4628.011	12/01/03	185.70	4442.31	PD file
558557		4628.011	02/01/04	186.02	4441.99	PD file
558557		4628.011	08/01/04	186.90	4441.11	PD file
558557		4628.011	11/01/04	187.00	4441.01	PD file
558557		4628.011	02/10/05	187.20	4440.81	PD file
558557		4628.011	06/01/05	187.80	4440.21	PD file
558557		4628.011	09/01/05	187.05	4440.96	PD file
558557		4628.011	11/01/05	188.30	4439.71	PD file
641802	D-24-24-18aad	4585e	08/17/05	141.85	4443.00	PD file
802236	D-24-24-18dbb1	4562	12/06/90	90.6	4471	ADWR GWSI
802236		4562	12/15/99	110.2	4452	ADWR GWSI

Notes:

[1] feet above mean sea level. PD file reports as "collar elevation"; ELMA,1990 reports as "measuring point"; ADWR GWIS, SET (1998, 2000), and WMC 2006 do not report measuring point elevations.

[2] feet above mean sea level. Depths to water are not reported by SET (1998) or SET (2000).

[3] ADWR GWSI = Arizona Department of Water Resources Ground Water Site Inventory database; ADWR, 2006 = Arizona Department of Water Resources Imaged Records database, downloaded December 15, 2006; PD file = Phelps Dodge water level database; SET = Savci Environmental Technologies WMC = Water Management Consults ELMA = Errol L. Montogmery and Associates

TABLE B.2
Water Elevation Data Used for 1989 Water Level Map [1]

Well	Date	Water Elevation [2]	Cadastrals	Data Source[3]
AWC-2	12/04/90	4439.9	D-24-23-13abc	ADWR GWSI
AWC-4	12/04/90	4444.9	D-24-23-13abc	ADWR GWSI
NWC-1	05/19/88	4457.25	D-24-24-19b	SET, 1998
NWC-3	05/18/88	4466.22	D-24-24-19bb	SET, 1998
NWC-5	05/18/88	4586.04	D-24-24-11cad	SET, 1998
BJ-1	06/22/88	4546.95	D-24-24-10dcb	SET, 1998
BJ-2	06/27/88	4648.65	D-24-24-11abd	SET, 1998
BJ-3	05/10/88	4594.95	D-24-24-11cbc1	SET, 1998
BJ-4	05/10/88	4596.38	D-24-24-11cbc2	SET, 1998
BJ-5	09/02/88	4611.43	D-24-24-11dcc	SET, 1998
SJ-9	06/16/88	4479.49	D-24-24-5-dbb2	SET, 1998
TM-1A	11/06/89	4487.36	D-24-24-09aab2	ELMA, 1990
TM-2	11/06/89	4497.72	D-24-24-04aac1	ELMA, 1990
TM-2A	11/30/89	4478.05	D-24-24-04aac2	ELMA, 1990
TM-3	11/06/89	4766.58	D-23-24-35bba	ELMA, 1990
TM-4	11/06/89	4681.08	D-24-24-02bcc	ELMA, 1990
TM-5	11/06/89	4465.21	D-24-24-21aba	ELMA, 1990
TM-6	11/06/89	4532.52	D-24-24-14bcc	ELMA, 1990
TM-7	11/06/89	4489.97	D-24-24-04bbd	ELMA, 1990
TM-9	03/14/89	4123.02	D-23-24-33bca	ELMA, 1990
TM-10	11/06/89	4480.73	D-24-24-05bac	ELMA, 1990
TM-11	11/06/89	4460.80	D-24-24-18aab	ELMA, 1990
TM-12	11/06/89	4458.69	D-24-24-20-bbd	ELMA, 1990
TM-13	11/06/89	4461.59	D-24-24-08-bcc	ELMA, 1990
TM-14	11/06/89	4445.58	D-24-24-07bcb2	ELMA, 1990
TM-15	11/06/89	4444.62	D-24-24-06bcc	ELMA, 1990
TM-16	11/06/89	4623.64	D-24-24-10acd	ELMA, 1990
TM-17	11/06/89	4469.65	D-24-24-16aca	ELMA, 1990

TABLE B.2
Water Elevation Data Used for 1989 Water Level Map [1]

Well	Date	Water Elevation [2]	Cadastrals	Data Source[3]
TM-18	11/06/89	4482.47	D-23-24-21cdd	ELMA, 1990
TM-19	11/06/89	4469.36	D-24-24-08ddc2	ELMA, 1990
TM-19A	11/06/97	4470.07	D-24-24-08ddc1	ELMA, 1990
TM-21	11/06/89	4820.28	D-23-24-22cda	ELMA, 1990
TM-22	11/07/89	4152.96	D-23-24-27bad	ELMA, 1990
TM-23	11/07/89	4800.85	D-23-24-27bdd	ELMA, 1990
TM-24	11/07/89	4853.24	D-23-24-27dad	ELMA, 1990
TM-26	09/07/89	<4117 (dry)	D-23-24-34-cda	ELMA, 1990
TM-27	11/07/89	4536.17	D-23-24-33dbc	ELMA, 1990
TM-28	11/06/89	4750.59	D-23-24-35ccb	ELMA, 1990
TM-29A	11/06/89	4671.96	D-24-24-3cab1	ELMA, 1990
TM-30	11/07/89	4473.07	D-24-24-08dad	ELMA, 1990
TM-33	11/07/89	4415.35	D-23-24-34bbb	ELMA, 1990
TM-35	11/06/89	4637.89	D-23-24-35abd	ELMA, 1990
TM-37	11/07/89	4479.00	D-24-24-9bbc	ELMA, 1990
TM-38	11/06/89	4480.77	D-24-24-9caa	ELMA, 1990
TM-39	11/06/89	4514.32	D-24-24-10cbd	ELMA, 1990
802236	12/06/90	4471	D-24-24-18dbd1	ADWR GWSI

Notes:

[1] includes 1989 data for TM wells, 1988 data for SJ-9 and NWC wells, and 1990 data for AWC and Bisbee wells.

[2] feet above mean sea level

[3] ADWR GWSI = Arizona Department of Water Resources Ground Water Site Inventory Database, 2005
ELMA=Errol Montgomery and Associates
SET=Savci Environmental Technologies

TABLE B.3
Groundwater Elevation Data Used for 1996 Water Level Map

Well	Cadastral	Date Sampled	Water Elevation[1]	Data Source[2]
BF-1	D-24-24-04aaa	06/25/96	4473.90	SET, 1998
BF-2	D-24-24-04bdd	06/25/96	4459.00	SET, 1998
GL-3	D-23-24-34bbb	06/25/96	4151.30	SET, 1998
TM-2	D-24-24-04aac1	06/25/96	4464.90	SET, 1998
TM-2A	D-24-24-04aac2	06/25/96	4468.15	SET, 1998
TM-3	D-23-24-35bba	06/25/96	4759.95	SET, 1998
TM-5	D-24-24-21aba	06/25/96	4449.65	SET, 1998
TM-6	D-24-24-14bcc	06/25/96	4531.00	SET, 1998
TM-7	D-24-24-04bbd	06/25/96	4460.10	SET, 1998
TM-10	D-24-24-05bac	06/25/96	4465.12	SET, 1998
TM-12	D-24-24-20bbd	06/25/96	4443.30	SET, 1998
TM-15	D-24-24-06bcc	06/25/96	4429.30	SET, 1998
TM-16	D-24-24-10acd	06/25/96	4615.00	SET, 1998
TM-19	D-24-24-08ddc1	06/25/96	4448.10	SET, 1998
TM-19A	D-24-24-08ddc2	06/25/96	4447.93	SET, 1998
TM-41	D-24-24-03cbd	7/1/1997	4599.44	SET, 1998
TM-42	D-24-24-09-9dcc	7/1/1997	4459.10	SET, 1998

Notes:

[1] feet above mean sea level

[2] SET=Savci Environmental Technologies

TABLE B.4
Water Elevations Used for 1999 Water Level Map

Well	Cadastral	Date Sampled	Water Elevation [1]	Data Source [2]
AWC-2	D-24-23-13abc	12/15/99	4426	ADWR GWSI
AWC-3	D-24-23-13abd	12/15/99	4427.3	ADWR GWSI
AWC-4	D-24-23-13abc	12/15/99	4432.8	ADWR GWSI
BF-1	D-24-24-04aaa	06/01/99	4476.7	PD file
BF-2	D-24-24-04bdd	06/01/99	<4460	PD file
Garner	D-24-24-17aaa	06/01/99	4449.81	PD file
GL-3	D-23-24-34bda	06/01/99	4190.62	PD file
TM-2	D-24-24-04aac1	06/01/99	4462.34	PD file
TM-2A	D-24-24-04aac2	06/01/99	4459.33	PD file
TM-3	D-23-24-35bba	06/01/99	4762.24	PD file
TM-5	D-24-24-21aba	06/01/99	4451.41	PD file
TM-6	D-24-24-4bcc	06/01/99	4537.45	PD file
TM-7	D-24-24-04bbd	06/01/99	4456.07	PD file
TM-15	D-24-24-06bcc	06/01/99	4427.89	WMC, 2006
TM-16	D-24-24-10acd	06/01/99	4624.70	PD file
TM-19A	D-24-24-08ddc2	06/01/99	4447.00	PD file
TM-41	D-24-24-03cbd	06/01/99	4590.56	PD file
TM-42	D-24-24-09dcc	06/01/99	4457.73	PD file
TM-43	D-23-24-27acc	06/01/99	4809.14	PD file
TM-43A	D-23-24-27acc	06/01/99	4821.72	PD file
TM-43B	D-23-24-27dad	06/01/99	4844.69	PD file
TM-43C	D-23-24-27add	06/01/99	4868.33	PD file
TM-44	D-23-24-27bad	06/01/99	4193.90	PD file
TM-45	D-23-24-28add	06/01/99	4513.55	PD file
802236	D-24-24-18dbb1	12/15/99	4452	ADWR GWSI

Notes:

[1] feet above mean sea level

[2] ADWR GWSI = Arizona Department of Water Resources Ground Water Site Inventory Database, 2005
PD file = Phelps Dodge water level database
WMC = Water Management Consultants

TABLE B.5
Water Elevations Used for September 2005 Water Level Map

Well	Date Sampled	Water Elevation [1]	Cadastral	Data Source[2]
BF-1	09/01/05	4472.95	D-24-23-04aaa	PD file
GL-3	09/01/05	4235.17	D-23-24-34bda	PD file
Garner Well	09/01/05	4440.96	D-24-24-17aaa	PD file
GW-47	09/01/05	4437.66	D-24-24-17aaa	PD file
TM-2	09/01/05	4457.89	D-24-24-04aac1	PD file
TM-2A	09/01/05	4451.03	D-24-24-04aac2	PD file
TM-3	09/01/05	4760.89	D-23-24-35bba	PD file
TM-6	09/01/05	4537.15	D-24-24-14bcc	PD file
TM-16	09/01/05	4625.79	D-24-24-10acd	PD file
TM-19A	09/01/05	4435.50	D-24-24-08ddc2	PD file
TM-41	09/01/05	4572.11	D-24-24-03cbd	PD file
TM-42	09/01/05	4447.03	D-24-24-09dcc	PD file
TM-43	09/01/05	4480.64	D-23-24-27acc	PD file
TM-43A	09/01/05	4820.37	D-23-24-27acc	PD file
TM-43B	09/01/05	4839.19	D-23-24-27dad	PD file
TM-43C	09/01/05	4867.53	D-23-24-27add	PD file
TM-44	09/01/05	4239.85	D-23-24-27bad	PD file
641802	08/17/05	4443	D-24-24-18dbb1	PD file

Notes:

[1] feet above mean sea level

[2] PD file=Phelps Dodge water level database

APPENDIX C

HISTORIC SULFATE CONCENTRATIONS
CTSA WELLS

TABLE C.1
Historic Sulfate Concentrations, CTSA Wells

Cadastrals	Well	ADWR Registration #	Owner	Use	Completion Date	Total Depth	Sample Date	Sulfate mg/L	Screened Material	Data Source [1]
D-24-23-13abc	AWC-2	616586	Arizona Water Co.	domestic	01/01/55	333	03/27/95	15.1	Basin fill	9
	AWC-2						08/06/96	19.4		1
	AWC-2						07/05/00	7.2		9
	AWC-2						07/11/05	12		9
D-24-23-13abd	AWC-3	616585	Arizona Water Co.	domestic	07/20/56	270	01/06/94	22.5	Basin fill	9
	AWC-3						08/06/96	<10		1
	AWC-3						07/05/00	27.3		9
	AWC-3						7/11/05	35.4		9
	AWC-4		Arizona Water Co.	domestic	05/12/05	337	6/1/91	20		9
	AWC-4					1183	7/5/00	23.1		9
	AWC-5		Arizona Water Co.	domestic	06/24/02		8/5/02	9.6		9
D-24-24-04aab	BF-1	539783	Phelps Dodge	monitoring	08/15/93	400	10/06/93	1400	Basin fill, Morita Formation, and Glance Conglomerate	6
	BF-1						11/24/93	1500		6
	BF-1						06/25/96	1400		4
	BF-1						10/23/05	1410		2
D-24-24-04bdc	BF-2	539786	Phelps Dodge	monitoring	08/05/93	326	10/06/93	1900	Basin fill	6
	BF-2						11/23/93	1900		6
	BF-2						06/25/96	2000		4
	BF-2						08/06/96	1280		4
	BF-2						08/06/96	1880		4
D-24-24-11cbc3	ELKS	628547	B.P.O. Elks No.671	domestic	08/18/61	800	06/01/96	340	unknown	1
D-23-24-34bda	GL-1	539785	Phelps Dodge	monitoring	08/20/93	833	11/23/93	310	Glance Conglomerate	6
	GL-1						06/20/96	200		1
D-23-24-34bbb	GL-3	539782	Phelps Dodge	monitoring	08/11/93	825	11/24/93	34	Glance Conglomerate	6
	GL-3						06/25/96	<5		1
	GL-3						10/23/05	36.4		2
D-24-24-09bca	MW-1	903992	San Jose WWTF	monitoring	03/02/06	250	04/12/06	1260	Basin fill	3
D-24-23-13baa2	NSD-1		Naco Sanitary District	monitoring			10/04/01	12.5		10
D-24-23-13abb	NSD-2	527587	Naco Sanitary District	monitoring	05/12/90	120	10/04/01	18.2	Basin fill	10
D-24-23-13bcc	NSD-3	527586	Naco Sanitary District	monitoring	05/12/90	100	04/05/01	109	Basin fill	10

TABLE C.1
Historic Sulfate Concentrations, CTSA Wells

Cadastrals	Well	ADWR Registration #	Owner	Use	Completion Date	Total Depth	Sample Date	Sulfate mg/L	Screened Material	Data Source [1]
D-24-24-18add	NWC-3	627684	Naco Water Co	municipal	01/01/30	179	01/08/86	71	Basin fill	4
	NWC-3						08/07/96	109		4
	NWC-3						08/07/96	129		4
	NWC-3						11/05/97	148		7
	NWC-3						12/03/02	215		7
	NWC-3						10/10/05	460		7
	NWC-3						11/08/05	390		7
D-24-24-10ddd	NWC-4	627685	Naco Water Co	capped	01/01/26	379	08/07/96	248	Morita Formation	4
	NWC-4						08/07/96	263		4
	NWC-4						11/06/97	314		7
	NWC-4						08/04/00	280		7
	NWC-4						12/03/02	255		7
	NWC-4						10/10/05	220		7
	NWC-4						11/08/05	200		7
D-24-24-11d	NWC-5	627696	Naco Water Co	domestic	01/01/60	175	08/07/96	78.9	Morita Formation	1
D-24-24-05db	SJ-9	602134	Duree	domestic	09/06/74	351	06/27/96	440	Basin fill	4
D-24-24-09aab1	TM-1	522569	Phelps Dodge	monitoring	11/01/88	265	02/01/89	1650	Basin fill	4
	TM-1						03/02/89	1630		4
	TM-1						04/17/89	1660		4
	TM-1						05/17/89	1450		4
	TM-1						06/23/89	1460		4
	TM-1						07/19/89	1600		4
	TM-1						08/24/89	1620		4
	TM-1						09/19/89	1520		4
	TM-1						10/27/89	1600		4
	TM-1						12/13/89	1500		4
	TM-1						01/08/90	1480		4

TABLE C.1
Historic Sulfate Concentrations, CTSA Wells

Cadastrals	Well	ADWR Registration #	Owner	Use	Completion Date	Total Depth	Sample Date	Sulfate mg/L	Screened Material	Data Source [1]
D-24-24-04aac1	TM-2	522573	Phelps Dodge	monitoring	12/14/88	640	01/27/89	2600	Basin fill	5
	TM-2						02/27/89	2500		5
	TM-2						04/06/89	2700		5
	TM-2						05/01/89	2890		5
	TM-2						06/08/89	2900		5
	TM-2						07/13/89	2640		5
	TM-2						08/02/89	2950		5
	TM-2						09/12/89	2700		5
	TM-2						10/16/89	2800		5
	TM-2						11/13/89	2840		5
	TM-2						12/11/89	2700		5
	TM-2						01/04/90	2800		5
	TM-2						11/23/93	2200		6
	TM-2						06/20/96	1200		4
	TM-2						07/18/96	1156		1
	TM-2						08/06/96	1300		1
	TM-2						08/06/96	523		1
	TM-2						07/30/97	1290		1
	TM-2						11/06/97	1210		1
	TM-2						10/21/05	1280		2
D-24-24-04aac2	TM-2A	522574	Phelps Dodge	monitoring	02/10/89	925	02/24/89	640	Glance Conglomerate	5
	TM-2A						03/03/89	26		5
	TM-2A						04/06/89	27		5
	TM-2A						05/01/89	29		5
	TM-2A						06/08/89	27		5
	TM-2A						07/13/89	24		5
	TM-2A						08/07/89	27		5
	TM-2A						09/12/89	26		5
	TM-2A						10/16/89	26		5
	TM-2A						11/13/89	27		5
	TM-2A						12/11/89	26		5
	TM-2A						01/04/90	27		5
	TM-2A						11/23/93	20		4
	TM-2A						06/24/96	15		1
	TM-2A						10/22/05	58.9		2

TABLE C.1
Historic Sulfate Concentrations, CTSA Wells

Cadastrals	Well	ADWR Registration #	Owner	Use	Completion Date	Total Depth	Sample Date	Sulfate mg/L	Screened Material	Data Source [1]
D-23-24-35bba	TM-3	522575	Phelps Dodge	monitoring	12/16/88	200	01/27/89	155	Glance Conglomerate	5
	TM-3						03/01/89	149		5
	TM-3						04/06/89	153		5
	TM-3						05/02/89	158		5
	TM-3						06/01/89	162		5
	TM-3						07/13/89	152		5
	TM-3						08/08/89	154		5
	TM-3						09/08/89	150		5
	TM-3						10/11/89	146		5
	TM-3						11/13/89	147		5
	TM-3						12/07/89	154		5
	TM-3						01/04/90	150		5
D-24-24-21aba	TM-5	522694	Phelps Dodge	monitoring	01/13/89	160	06/26/96	10	Basin fill	1
D-24-24-14bcc	TM-6	522695	Phelps Dodge	assessment	01/24/89	200	06/26/96	29		1
	TM-6						08/23/05	27.2		2
D-24-24-04bbd	TM-7	522576	Phelps Dodge	monitoring	11/04/88	350	01/24/89	365	Morita Formation	5
	TM-7						02/27/89	485		5
	TM-7						04/04/89	525		5
	TM-7						05/01/89	520		5
	TM-7						06/06/89	510		5
	TM-7						07/12/89	450		5
	TM-7						08/07/89	475		5
	TM-7						09/07/89	480		5
	TM-7						10/10/89	450		5
	TM-7						11/08/89	340		5
	TM-7						12/04/89	460		1
	TM-7						01/03/90	456		1
	TM-7						06/24/96	310		1
	TM-7						08/06/96	311		1
	TM-7						08/06/96	315		1
	TM-7						01/23/97	311		1
	TM-7						07/29/97	271		4
	TM-7						11/06/97	300		1

TABLE C.1
Historic Sulfate Concentrations, CTSA Wells

Cadastrals	Well	ADWR Registration #	Owner	Use	Completion Date	Total Depth	Sample Date	Sulfate mg/L	Screened Material	Data Source [1]
D-24-24-05bac	TM-10	522696	Phelps Dodge	monitoring	11/06/89	290	01/30/89	16	Glance Conglomerate	5
	TM-10						03/02/89	16		5
	TM-10						04/07/89	16		5
	TM-10						05/02/89	12		5
	TM-10						06/07/89	17		5
	TM-10						07/14/89	18		5
	TM-10						08/10/89	14		5
	TM-10						09/07/89	15		5
	TM-10						10/10/89	15		5
	TM-10						11/14/89	15		5
	TM-10						12/04/89	15		5
	TM-10						01/03/90	17		5
D-24-24-18aab	TM-11	522815	Phelps Dodge	monitoring	11/18/88	160	01/24/89	9	Basin fill	6
	TM-11						02/27/89	10		6
	TM-11						04/04/89	9		6
	TM-11						05/01/89	10		6
	TM-11						06/06/89	11		6
	TM-11						07/12/89	8		6
	TM-11						08/07/89	7		6
	TM-11						09/07/89	16		6
	TM-11						10/10/89	9		6
	TM-11						11/08/89	9		6
	TM-11						12/04/89	9		6
	TM-11						01/03/90	9		6
D-24-24-20bbd	TM-12	522697	Phelps Dodge	assessment	01/12/89	175	12/04/89	7	Basin fill	1
D-24-24-08bcc	TM-13	522698	Phelps Dodge	assessment	01/05/89	200	02/01/89	430	Basin fill	4
	TM-13						03/02/89	460		4
	TM-13						04/17/89	415		4
	TM-13						05/17/89	380		4
	TM-13						06/19/89	416		4
	TM-13						07/18/89	430		4
	TM-13						08/22/89	440		4
	TM-13						09/12/89	146		4
	TM-13						10/25/89	396		4
	TM-13						01/17/90	450		4

TABLE C.1
Historic Sulfate Concentrations, CTSA Wells

Cadastrals	Well	ADWR Registration #	Owner	Use	Completion Date	Total Depth	Sample Date	Sulfate mg/L	Screened Material	Data Source [1]
D-24-24-07bcb2	TM-14	522816	Phelps Dodge	assessment	01/12/89	215	03/10/89	16	Basin fill	4
	TM-14						04/18/89	18		4
	TM-14						05/18/89	19		4
	TM-14						06/19/89	17		4
	TM-14						07/18/89	19		4
	TM-14						08/22/89	19		4
	TM-14						09/12/89	18		4
	TM-14						10/25/89	17		4
	TM-14						01/05/90	20		4
D-24-24-06bcc	TM-15	522699	Phelps Dodge	monitoring	01/11/89	325	06/27/96	14	Morita Formation	1
	TM-15				08/23/05		08/23/05	15.4		1
	TM-15						10/23/05	22.6		2
D-24-24-10acd	TM-16	522578	Phelps Dodge	monitoring	12/15/88	115	01/27/89	510	Morita Formation	5
	TM-16						03/01/89	560		5
	TM-16						04/06/89	555		5
	TM-16						05/03/89	535		5
	TM-16						06/01/89	560		5
	TM-16						07/13/89	540		5
	TM-16						08/08/89	508		5
	TM-16						09/08/89	510		5
	TM-16						10/11/89	500		5
	TM-16						11/13/89	500		5
	TM-16						12/07/89	520		5
	TM-16						01/04/90	520		5
	TM-16						06/27/96	500		1
	TM-16						08/06/96	470		1
	TM-16						08/06/96	553		1
	TM-16						01/23/97	484		1
	TM-16						07/29/97	500		1
	TM-16						11/06/97	506		1
	TM-16						08/23/05	528		2
	TM-16						10/23/05	619		2

TABLE C.1
Historic Sulfate Concentrations, CTSA Wells

Cadastrals	Well	ADWR Registration #	Owner	Use	Completion Date	Total Depth	Sample Date	Sulfate mg/L	Screened Material	Data Source [1]
D-24-24-08ddc2	TM-19	522581	Phelps Dodge	monitoring	11/17/88	210	01/30/89	1100	Basin fill	5
	TM-19						03/01/89	1100		5
	TM-19						04/07/89	1180		5
	TM-19						05/02/89	1125		5
	TM-19						06/09/89	1070		5
	TM-19						07/13/89	1120		5
	TM-19						08/08/89	1110		5
	TM-19						09/08/89	1080		5
	TM-19						10/13/89	1200		5
	TM-19						11/14/89	1100		5
	TM-19						12/07/89	1120		5
	TM-19						01/04/90	1120		5
	TM-19						11/23/93	1100		6
	TM-19						06/20/96	1100		4
	TM-19						08/06/96	1120		4
	TM-19						08/06/96	1200		1
	TM-19						01/23/97	1140		1
D-24-24-08ddc1	TM-19A	522580	Phelps Dodge	monitoring	11/16/88	700	01/30/89	50	Morita Formation	5
	TM-19A						03/01/89	54		5
	TM-19A						04/07/89	55		5
	TM-19A						05/02/89	50		5
	TM-19A						06/09/89	55		5
	TM-19A						07/13/89	55		5
	TM-19A						08/08/89	53		5
	TM-19A						09/11/89	58		5
	TM-19A						10/13/89	58		5
	TM-19A						11/14/89	58		5
	TM-19A						12/07/89	58		5
	TM-19A						01/04/90	62		5
	TM-19A						11/23/93	63		6
	TM-19A						06/25/96	56		1
	TM-19A						10/23/05	62.5		2

TABLE C.1
Historic Sulfate Concentrations, CTSA Wells

Cadastrals	Well	ADWR Registration #	Owner	Use	Completion Date	Total Depth	Sample Date	Sulfate mg/L	Screened Material	Data Source [1]
D-24-24-03cbd	TM-41	unknown	Phelps Dodge	monitoring	06/19/05	210	07/30/97	1940	Morita Formation	4
	TM-41						11/06/97	1900		1
D-24-24-09dcc	TM-42	unknown	Phelps Dodge	monitoring	1997	250	07/30/97	985	Basin fill and Morita Formation	1
	TM-42						11/06/97	958		1
	TM-42						10/22/05	656		2
D-23-24-27aac	TM-43	564729	Phelps Dodge	monitoring	11/10/97	830	04/27/98	26	Morita Formation	8
D-23-24-27aac	TM-43A	564726	Phelps Dodge	monitoring	10/28/97	215	03/10/98	1700	Morita Formation	8
D-23-24-27dad	TM-43B	565004	Phelps Dodge	monitoring	10/29/97	215	03/11/98	28	Morita Formation	8
D-23-24-27add	TM43C	565005	Phelps Dodge	monitoring	11/12/97	270	03/11/98	200	Morita Formation	8
D-23-24-27bad	TM-44	564730	Phelps Dodge	monitoring	10/27/97	1150	10/22/05	43.1	Paleozoic Sediments	2
D-23-24-27bbb	TM-46	564727	Phelps Dodge	monitoring	12/12/97	1080	10/23/05	42.4	Paleozoic Sediments	2
D-24-24-18aad	641802	641802	Grout/Weiskopf	domestic	before 1960	200	08/17/05	590	Basin fill	2
D-24-24-17aaa	Garner - old	unknown	Garner	domestic			06/27/96	1100	Basin fill	1
D-24-24-17aaa	558557	558557	Garner	domestic	09/04/96	300	01/23/97	777	Basin fill	1
D-24-24-17aaa	GW-47	587635	Garner	domestic	10/12/01	680	08/16/05	38.7	Morita Formation	2
D-24-24-17bbb	637069	637069	Olmstead	domestic	07/29/66	220	08/06/96	734	unknown	1

Notes:

mg/L = milligram per Liter

[1] data source:

1 = SET, 1999

2 = Weiskopf, 2006, personal communication

3 = Arizona Department of Environmental Quality, 2006

4 = SET, 1998c

5 = Canonie Environmental, 1990

6 = Southwest Groundwater Consultants, 1994

7 = Naco Water Company

8 = SET, 1998b

9 = Geoscience Support Services, Inc. Responses to City of Bisbee's Aquifer Protection Permit No. P-100983 and AZPDES Permit No. AZ0025275

10 = ADEQ File 100833. Aquifer Protection Permit Application, Naco Wastewater Treatment Plan, Naco Sanitary District, Arizona, January 22, 2003

APPENDIX D

ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES
(Tables D.1 and D.2)

TABLE D.1
Analytical Results for Groundwater Samples
Copper Queen Branch-Bisbee, Arizona [5]

Well Name and 55 No.	Date	pH [1]	Turbidity [2]	CO3 [3]	HCO3 [3]	Alkalinity [3]	Hardness	Cl	F	Total N	NO2-N	NO3-N	SO4	TDS	Ag	Al	As	Ba	Be	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn	Na	Ni	Pb	Sb	Se	Tl	Zn
AWC-2 616586	08/6/1996 [4]	7.58	3.03			166	168	17.4	0.29	2.16	<0.10	2.16	19.4	269	<0.001	<0.50	<0.010	0.37	<0.0005	61.3	<0.0010	<0.010	<0.010	<0.10	<0.0005	8.27	8.1	<0.05	20.2	<0.10	<0.005	0.013	<0.005	<0.005	<0.05
AWC-3 616585	08/6/1996 [4]	7.56	0.10			179	163	8.0	0.33	1.61	<0.10	1.61	<10.0	248	<0.001	<0.50	<0.010	0.39	<0.0005	60.4	<0.0010	<0.010	<0.010		<0.0005	2.27	7.6	<0.05	15.7	<0.10	<0.005	0.015	<0.005	<0.005	<0.05
BF-1	10/06/93	6.7		<1	710	710		30	0.06			1.33	1400	2900	<0.010		<0.005	0.042	<0.005	686	<0.0005	<0.010	<0.010	2.6	<0.0002	--	110	0.036	61	<0.020	<0.005	<0.05	<0.005	<0.005	0.025
539783	11/24/93	6.8		<1	706	706		30	0.06			1.25	1500	3000	<0.010		<0.005	0.037	<0.005	693	<0.0005	<0.010	<0.010	1.28	<0.0002	--	109	0.019	63.4	<0.020	<0.005	<0.05	<0.005	<0.005	<0.020
	06/25/96	6.4		<1	737	737		30	<0.05			0.98	1400	2900	<0.010		<0.003	0.032	<0.004	752	<0.0005	0.036	<0.010	<0.05	<0.0002	3.3	102	<0.010	54.6	<0.020	<0.002	<0.05	<0.005	<0.005	<0.05
BF-2	10/06/93	6.4		<1	964	964		33	0.06			1.99	1900	3800	<0.010		<0.005	0.039	<0.005	864	<0.0005	<0.010	<0.010	0.264	<0.0002	--	199	0.224	41.7	<0.020	0.005	<0.05	<0.005	<0.005	1.99
539786	11/23/93	6.9		<1	955	955		34	0.08			2.02	1900	3800	<0.010		<0.005	0.032	<0.005	854	<0.0005	<0.010	<0.010	0.128	<0.0002	--	196	0.225	35.1	<0.020	0.003	<0.05	<0.005	<0.005	11.56
	06/25/96	6.3		<1	987	987		33	<0.05			2.2	2000	3800	<0.010		<0.003	0.031	<0.004	958	<0.0005	0.017	<0.010	<0.05	<0.0002	4.1	206	0.123	30.1	<0.020	<0.002	0.06	<0.005	<0.005	0.325
	8/6/1996	6.1			794			35.8	<1.0			2.3	1280	3800			<0.005		<0.1	864	<0.003	<0.03		<0.1		5	208.0		23.1		<0.005	<0.2	0.007	<0.002	0.30
	08/6/1996 [4]	6.37	0.96			939	3,540	33.0	<0.2	2.17	<0.10	2.17	1880	3,820	<0.001	<0.50	< 0.02	<0.10	<0.0005	913	<0.0010	<0.010	<0.010	<0.10	<0.0005	4.60	209	0.10	25.3	<0.10	<0.005	0.016	0.007	<0.005	0.24
ELKS 628546	06/27/96	7.7		<1.0	220	220		58	0.26			6.2	340	840	<0.010		<0.003	0.038	<0.004	114	<0.0005	0.036	<0.010	<0.050	<0.0002	8.1	45.6	<0.010	52.6	<0.020	<0.002	<0.25	<0.005	<0.005	<0.050
Garner - Old	06/27/96	7.2		ND	219			21	0.14			3.2	1100	2000				0.026		422			ND	ND		3.7	45.6	ND	41.1						0.14
Garner - New 558557	01/23/97	6.95		<1	238	238		21.5	<0.5			3.1	777	1480				<1		356			<0.02	<0.3		6	42.0	<0.02	41.3						<0.04
GL-1	01/23/93	7.4		<1	442	442		21	0.24			1.4	310	940	<0.010		<0.005	0.092	<0.005	209	<0.0005	<0.010	<0.010	3.19	<0.0002	--	56	0.674	20.3	<0.020	<0.002	<0.05	<0.005	<0.005	<0.020
539785	06/20/96	7.1		<1	472	472		18	0.2			2.8	200	860	<0.010		<0.003	0.046	<0.004	175	<0.0005	0.026	<0.010	1.14	<0.0002	2.8	49.5	0.053	20.1	0.022	<0.002	<0.05	<0.005	<0.005	11.4
GL-3	11/24/93	7.4		<1	358	358		21	0.23			<0.06	34	440	<0.010		<0.005	0.444	<0.005	68.1	0.0006	0.045	0.024	38.9	<0.0002	--	31.9	0.829	16.4	0.036	0.034	<0.05	<0.005	<0.005	4.5
539782	06/25/96	7.6		<1	201	201		24	0.4			<0.06	<5	230	<0.010		<0.003	0.166	<0.004	36.1	<0.0005	0.016	<0.010	3.95	<0.0002	2.2	21	0.072	224	<0.020	<0.002	<0.05	<0.005	<0.005	0.675
NWC-3	8/7/96 [4]	7.45	3.60			153	325	21.7	0.27	5.19	<0.10	5.19	129	446	<0.001	<0.50	<0.010	<0.10	<0.0005	116	<0.0010	<0.010	<0.010	<0.10	<0.0005	3.20	14.6	<0.05	27.5	<0.10	<0.005	<0.005	<0.005	<0.005	<0.05
627684	08/07/96	7.45			148			23.3	<1.0			5.2	109	450			0.006		<0.1	109	<0.003	<0.03		<0.1		<5	13.4		21.8		<0.005	<0.2	<0.005	<0.002	<0.04
	11/05/97	7.05		<1	150	150			0.3	5.10	<0.1	5.10	148	390		<2	0.005	<1	<0.1	100	<0.003	<0.03		<0.3	<0.001	<5	14.0	<0.02	30.0	<0.1	0.006	<0.005	<0.005	<0.002	
NWC-4	8/7/96 [4]	7.40	0.05			184	444	40.9	0.34	6.20	<0.10	6.20	263	666	<0.001	<0.50	<0.010	<0.10	<0.0005	123.0	<0.0010	<0.010	<0.010	<0.10	<0.0005	6.89	43.3	<0.05	38.1	<0.10	<0.005	<0.005	0.006	<0.005	0.06
627685	08/07/96	7.41			192	192		45.4	<1.0			6.1	248	668			<0.005		<0.1	118	<0.003	<0.03		<0.1		7	40		30.2		<0.005	<0.2	<0.005	<0.002	0.06
	11/06/97	6.90		<1	180	180			0.30	6.30	<0.1	6.30	314	690		<2	<0.005	<1	<0.1	130.0	<0.003	<0.03		<0.3	<0.001	10.00	50.0	<0.02	38.0	<0.1	<0.005	<0.005	0.005	<0.002	
NWC-5 627696	8/7/96 [4]	7.38	2.8			126	490	180	0.33	26.5	<0.10	26.5	78.9	888	<0.001	<0.50	<0.010	<0.10	<0.0005	158	<0.0010	<0.010	<0.010	<0.10	<0.0005	4.56	33.0	<0.05	25.8	<0.10	<0.005	<0.005	0.006	<0.005	0.19
Olmstead 637069	8/6/96 [4]	7.32	2.8			169	765	21.7	0.22	2.43	<0.10	2.43	687	1340	<0.001	<0.50	<0.010	<0.10	<0.0005	294	<0.0010	<0.010	<0.010	<0.10	<0.0005	4.69	40.7	<0.05	34.4	<0.10	<0.005	0.015	0.007	<0.005	<0.05
Olmstead-Dup	8/6/96 [4]	7.36	2.4			173	851	21.3	0.21	2.45	<0.10	2.45	734	1340	<0.001	<0.50	<0.010	<0.10	<0.0005	326	<0.0010	<0.010	<0.010	<0.10	<0.0005	5.20	44.3	<0.05	37.6	<0.10	<0.005	0.010	0.006	<0.005	<0.05
TM-2	01/27/89	6.7		<2.6	1368			23	0.07			0.2	2600	4895	<0.010		<0.010	<0.1		878	<0.005	<0.010	<0.010	<0.05	<0.0002	7	394	6.4	31		<0.01		<0.005		0.02
522573	02/27/89	6.5		<2.6	1325			26.6	<0.05			0.2	2500	4840	<0.010		<0.010	<0.1		831	<0.005	<0.010	<0.010	<0.05	0.00245	6	391	6.2	33		<0.01		<0.005		<0.01
	04/06/89	6.4		<2.6	1376			37.2	0.06			0.2	2700	5150	<0.010		<0.010	<0.1		800	<0.005	<0.010	0.011	<0.05	<0.0002	5.5	480	10.27	30		<0.01		<0.005		0.025
	05/01/89	6.7		<2.6	1313			29.7	0.08			0.2	2890	5315	<0.010		<0.010	<0.1		893	<0.005	<0.010	<0.010	<0.05	<0.0002	4.8	433	8.69	30		<0.01		<0.005		<0.01
	06/08/89	6.8			1388			26.6	0.06			0.2	2900	5295						820			<0.010		<0.0002	5.7	490	11.8	31						<0.01
	07/13/89	6.3			1340			29.7	<0.05			0.2	2640	5145						760			<0.010			5.4	466	10.33	30						0.015
	08/02/89	6.6			1397			33.3	<0.05			0.1	2950	5530						800			<0.010			5.3	537	13.68	27						<0.01
	09/12/89	6.7			1359			28.3	<0.05			0.2	2700	5135						820						6.1	467	10.62	31						0.02
	10/16/89	6.5			1344			26.9	<0.05			0.2	2800	5160						820						5.2	479	11.78	27						0.021
	11/13/89	6.8			1366			30.8	0.08			0.2	2840	5110						823						5.4	471	11.14	30						0.075
	12/11/89	6.7			1354			28.7	0.05			0.2	2700	5225						784						5.4	494	10.64	28						0.082
	01/04/90	6.6			1317			29.7	0.05			0.2	2800	5100						800						5.4	500	13.3	31						1.04
	11/23/93	6.6		<1	895	895		30	0.06			1.01	2200	3900	<0.010		<0.005	0.016	<0.005	706	<0.0005	<0.010	<0.010	0.029	<0.0002	--	322	4.03	26.3	<0.020	<0.002	<0.05	<0.005	<0.005	<0.020
	06/20/96	6.4		<1	750	750		28	0.09			1.7	1200	2700	<0.050		<0.003	0.022	<0.004	628	<0.0005	0.02	<0.010	<0.05	<0.0002	4.9	147	<0.010	35.6	<0.020	<0.002	<0.05	<0.005	<0.005	0.062
	07/18/96	7.35		0	838	687		26.1	<0.10		<0.10	0.84	1156	2657		<0.10	0.005	<0.10		584	<0.01	<0.05	<0.01	<0.05	<0.001	4.8	142	<0.01	32.0	<0.05	<0.05		<0.001		<0.01
	08/06/96	6.12			700			31.5	<1.0			1.7	523	2,580			<0.005		<0.1	569	<0.003	<0.03		<0.1		5	140		27.8		<0.005	<0.2	<0.005	<0.002	<0.04
	8/6/96 [4]	6.3	3.6			678	1840	27.9	<0.2	1.56		1.56	1300	2600	<0.001	<0.50	<0.010	<0.10	<0.0005	603	<0.0010	<0.010	<0.010	<0.10	<0.0005	7.82	134	<0.05	31.1	<0.10	<0.005	0.015	0.011	<0.005	<0.05
	07/30/97	6.10		<1	606	606		24.0	<0.1	1.50	<0.1	1.5	1290	2,500		<2	<0.005	<1	<0.1	530	<0.05	<0.1		0.3	<0.001	8		<0.1	38.0	<0.1	<0.005	<0.005	<0.005	<0.002	
	11/06/97	6		<1.0	670	670			<0.1	1.30	<0.10	1.3	1210	2,500		<2.0	<0.005	<1.0	<0.1	530	<0.003	<0.03		<0.3	<0.001	7.5	14	0.06	35.0	<0.1	<0.005	<0.005	<0.005	<0.002	

TABLE D.1
Analytical Results for Groundwater Samples
Copper Queen Branch-Bisbee, Arizona [5]

Well Name and 55 No.	Date	pH [1]	Turbidity [2]	CO3 [3]	HCO3 [3]	Alkalinity [3]	Hardness	Cl	F	Total N	NO2-N	NO3-N	SO4	TDS	Ag	Al	As	Ba	Be	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn	Na	Ni	Pb	Sb	Se	Tl	Zn
TM-2A	02/24/89	8.1		<2.6	333			18	0.19			1.3	640	1180	<0.010		<0.010	0.16		184	<0.005	<0.010	<0.010	<0.05	<0.0002	10	85	0.31	62		<0.01		<0.005		<0.01
522574	03/03/89	9.1		15.3	156			9.6	0.42			1.5	26	370	<0.010		<0.010	<0.1		8.4	<0.005	<0.010	<0.010	<0.05	<0.0002	8.3	4.7	0.013	68		<0.01		<0.005		0.082
	04/06/89	9		14.5	146			10.6	0.56			<0.1	27	265	<0.010		<0.010	<0.1		9.2	<0.005	<0.010	0.011	<0.05	<0.0002	5.6	5.2	<0.010	62		<0.01		<0.005		<0.01
	05/01/89	8.8		17.9	133			9.6	0.43			0.2	29	225	<0.010		<0.010	<0.1		8	<0.005	<0.010	<0.010	<0.05	<0.0002	3.7	4.5	<0.010	63		<0.01		<0.005		0.099
	06/08/89	9		19.6	137			7.1	0.49			0.2	27	340				<0.1		7.6			<0.010		<0.0002	4.1	5.3	0.012	64						<0.01
	07/13/89	8.9		12.8	156			12.4	0.45			0.1	24	350						7			<0.010		<0.0002	3.7	5.4	<0.010	66						<0.01
	08/07/89	9		19.6	149			8.1	0.4			0.2	27	335						7.9			<0.010		<0.0002	3.3	6	0.011	66						0.02
	09/12/89	8.9		23	140			8.1	0.42			0.1	26	310						7.7					<0.0002	4	5.5	0.013	68						0.036
	10/16/89	8.6		25.6	136			8.1	0.43			0.1	26	410						9.8					<0.0002	3.5	6.6	0.014	64						0.012
	11/13/89	8.7		23	147			12.4	0.39			0.2	27	280						9					<0.0002	3.4	6.3	0.017	69						0.149
	12/11/89	8.8		10.2	164			9.6	0.28			0.2	26	240						9					<0.0002	3.4	6	0.016	66						0.276
	01/04/90	8.7		9.4	173			9.2	0.28			0.2	27	310						9.4					<0.0002	3.6	6.1	0.013	67						0.219
	11/23/93	8.2		<1	169	169		9.3	0.34			1.76	20	240				0.162	<0.005	19.4	0.0013	<0.010	0.014	4.02	<0.0002	--	7.4	0.132	59.3	<0.020	0.022	<0.05	<0.005	<0.005	1.24
	06/24/96	8.1		<1	173	173		8.7	0.28			0.41	15	240	<0.010		<0.003	0.15	<0.004	15.2	<0.0005	<0.010	<0.010	<0.05	<0.0002	2.4	6.2	0.108	59.3	<0.020	<0.020	<0.05	<0.005	<0.005	0.575
TM-3	01/27/89	8.1		<2.6	250			35	0.26			3.5	155	505	<0.01		<0.01	<0.1		86	<0.005	<0.01	<0.01	<0.05	<0.0002	3.5	34	<0.01	30		<0.01		<0.005		0.02
522575	03/01/89	7.9		<2.6	248			30.4	0.29			3.7	149	525	<0.01		<0.01	<0.1		83	<0.005	<0.01		<0.05	<0.0002	3.4	32	<0.01	29		<0.01		<0.005		<0.01
	04/06/89	8		<2.6	250			35.4	0.34			3.9	153	535	<0.01		<0.01	<0.1		90	<0.005	<0.01	<0.01	<0.05	<0.0002	3.2	35	<0.01	28		<0.01		<0.005		<0.01
	05/02/89	7		<2.6	244			34	0.27			3.6	158	520	<0.01		<0.01	<0.1		94	<0.005	<0.01	<0.01	<0.05	<0.0002	2	33	0.013	28		<0.01		<0.005		<0.01
	06/01/89	8.1			242			32.2	0.29			3.8	162	530						92		<0.01				3.5	32	<0.01	26						<0.01
	06/27/89																																		
	07/13/89	7.8			246			34.3	0.3			3.7	152	505						86		<0.01				3.3	34	<0.01	27						
	08/08/89	8			247			31.5	0.26			3.8	154	495						85		<0.01				3.2	32	<0.01	29						
	09/08/89	8.1			249			34	0.31			3.5	150	505						88		<0.01				3.9	32	<0.01	29						
	10/11/89	7.8			243			31.9	0.35			3.5	146	515						83		<0.01				3.2	34		26						
	11/13/89	8			250			31.9	0.25			4.1	147	520						87						3.2	33		25						
	12/07/89	8.3		6.0	232			33.6	0.3			4	154	515						93						3.4	33		26						
	01/04/90	8.1		<2.6	237			34.3	0.26			4.3	150	495						87						3.5	34		29						
TM-5 522694	06/26/96	7.8		<1.0	147	147		24	0.34			2.1	10	240	<0.010		0.003	0.223	<0.004	50.5	<0.0005	0.014	<0.010	<0.05	<0.0002	1.6	5.6	<0.010	19.8	<0.020	<0.002	<0.05	<0.005	<0.005	<0.050
TM-6 522695	06/26/96	7.9		<1.0	225	225		18	0.82			0.83	29	320	<0.010		<0.003	0.085	<0.004	36.1	<0.0005	0.019	<0.010	<0.05	<0.0002	1.5	18.2	<0.010	54	<0.020	<0.002	<0.05	<0.005	<0.005	<0.050
TM-7 522576	01/24/89	7.9		<2.6	249			23	0.1			2.5	365	805	<0.01		<0.01	<0.1		144	<0.005	<0.01	<0.01	<0.05	<0.0002	2.9	52	0.02	28		<0.01		<0.005		0.02
	02/27/89	7.4		<2.6	261			22.7	0.12			2.4	485	1005	<0.01		<0.01	<0.1		180	<0.005	<0.01	<0.01	<0.05	<0.0002	2.8	55	0.014	34		<0.01		<0.005		<0.01
	04/04/89	7.4		<2.6	258			31.9	0.15			3	525	1025	<0.01		<0.01	<0.1		196	<0.005	<0.01	<0.01	<0.05	<0.0002	2.8	62	0.013	30		<0.01		<0.005		0.012
	05/01/89	7.2		<2.6	266			26.2	0.18			2.6	520	1040	<0.01		<0.01	<0.1		184	<0.005	<0.01	<0.01	<0.05	<0.0002	1.6	64	<0.01	30		<0.01		<0.005		0.014
	06/06/89	7.8			260			24.1	0.06			2.8	510	985						175						2.9	66	0.011	31						<0.01
	07/12/89	7.4			271			25.5	0.09			2.7	450	920						160						2.8	66	0.046	31						<0.01
	08/07/89	7.5			264			23.4	0.05			2.8	475	990						179						2.7	62	0.012	30						<0.01
	09/07/89	7.8			262			25.1	0.11			2.5	480	995						180						3.2	62	<0.01	31						0.024
	10/10/89	7.4			261			21.2	0.06			2.1	450	950						161						2.8	61	<0.01	29						0.152
	11/08/89	7.5			245			28.7	0.09			2.9	340	730						134						2.6	48	<0.01	28						0.1
	12/04/89	8		<2.6	250			25.5	0.16			2.9	460	940	<0.01		<0.01	<0.1		174	<0.005			<0.05	<0.0002	2.8	57	<0.01	28		<0.01		<0.005		0.05
	01/03/90	7.7		<2.6	246			22.7	0.07			3.1	456	900	<0.01		<0.01	<0.1		165	<0.005			<0.05	<0.0002	3.0	60	<0.01	31		<0.005		<0.005		0.022
	06/24/96	7.7		<1	185	185		17	0.17			2.2	310	720	<0.01		<0.003	0.107	<0.004	122	<0.0005	0.029		<0.05	<0.0002	2.3	41.1	<0.01	25.4	<0.020	0.002	<0.05	<0.005	<0.005	<0.050
	08/06/96	7.25			180			17.9	<1			2.1	315	672			<0.010		<0.0005	129	<0.003	<0.03		<0.1		<5	41.7		20.7		<0.005	<0.2	<0.005	<0.002	<0.04
	8/6/1996 [4]	7.30	0.38			173	462	16.4	0.24	2.05	<0.10	2.05	311	691	<0.001	<0.50	<0.010	<0.10	<0.0005	136	<0.0010	<0.010	<0.010	<0.10	<0.0005	2.45	43.5	<0.05	23.6	<0.10	<0.005	0.005	<0.005	<0.005	<0.05
	01/23/97	7.21											311	672																					
	07/29/97	7		<1	178	178		17	0.2	2.1	<0.1	2.1	271	600		<2	<0.005	<1	<0.1	120	<0.05	<0.1		<0.1	<0.001	<5	42	<0.1	28	<0.1	<0.005	<0.005	<0.005	<0.002	
	11/06/97	6.87			172	172			0.2			2	300	580		<2	<0.005	<1.0	<1	120	<0.003	<0.03		<0.3	<0.001	<5	41	<0.02	25	<0.1	0.006	<0.005	<0.005	<0.002	

TABLE D.1
Analytical Results for Groundwater Samples
Copper Queen Branch-Bisbee, Arizona [5]

Well Name and 55 No.	Date	pH [1]	Turbidity [2]	CO3 [3]	HCO3 [3]	Alkalinity [3]	Hardness	Cl	F	Total N	NO2-N	NO3-N	SO4	TDS	Ag	Al	As	Ba	Be	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn	Na	Ni	Pb	Sb	Se	Tl	Zn
TM-10	01/30/89	8.1		<2.6	224			8.1				2.1	16	240	<0.01		<0.01	<0.1		29	<0.005	<0.01	<0.01	<0.05	<0.0002	2.1	20	<0.01	27		<0.01		<0.005		0.02
522696	03/02/89	8		<2.6	218			4.2				1.5	16	235	<0.01		<0.01	0.17		28	<0.005	<0.01	<0.01	<0.05	<0.0002	1.9	18	<0.01	27		<0.01		<0.005		<0.01
	04/07/89	8.1		<2.6	210			7.4				2.3	16	265	<0.01		<0.01	0.165		29	<0.005	<0.01	<0.01	<0.05	<0.0002	1.9	18	<0.01	27		<0.01		<0.005		0.012
	05/02/89	7.9		<2.6	207			<1.8				2.7	12	225	<0.01		<0.01	0.162		25	<0.005	<0.01	<0.01	<0.05	<0.0002	1	18	<0.01	26		<0.01		<0.005		0.018
	06/07/89	8.1			215			3.5				2.2	17	230				0.189		28						2	19		27						<0.01
	07/14/89	8			212			8.1				2.5	18	230				0.198		28						1.9	20		26						<0.01
	08/10/89	8.1			217			5.7				2.7	14	230				0.173		28						1.9	19		27						<0.01
	09/07/89	8.4			191			6.4				3	15	245				0.164		30						2	18.6		26						<0.01
	10/10/89	7.9			213			5.3				2	15	220				0.189		28						1.8	19		26						
	11/14/89	8.4			193			5.3				3	15	240				0.186		28						1.9	20		25						
	12/04/89	8.2			194			7.4				3.4	15	240				0.186		28						1.9	20		26						
	01/03/90	8.3			198			6				3.9	17	215				0.179		28						1.9	19		28						
TM-11	01/24/89	8		<2.6	191			16.6	0.25			1.9	9	240	<0.01		<0.01	0.33		51	<0.005	<0.01	<0.01	<0.05	<0.0002	2.4	8.2	<0.01	13		<0.01		<0.005		0.02
522815	02/27/89	7.9		<2.6	189			14.2	0.3			2.2	10	240	<0.01		<0.01	0.29		53	<0.005	<0.01	<0.01	<0.05	<0.0002	2.2	7.4	0.05	13		<0.01		<0.005		<0.01
	04/04/89	7.8		<2.6	184			18	0.24			2.5	9	225	<0.01		<0.01	0.342		54	<0.005	<0.01	<0.01	<0.05	<0.0002	2.1	8	<0.01	13		<0.01		<0.005		<0.01
	05/01/89	7.5		<2.6	174			17.4	0.31			2.1	10	230	<0.01		<0.01	0.306		50	<0.005	<0.01	<0.01	<0.05	<0.0002	1	7	<0.01	12		<0.01		<0.005		0.015
	06/06/89	8.1			181			14.5	0.3			2.3	11	220				0.349		50						2.2	8.2	<0.01	12						<0.01
	07/12/89	7.7			179			15.6	0.3			2.3	8	220				0.328		50						2	7.3	<0.01	11				<0.005		<0.01
	08/07/89	7.9			179			15.2	0.28			2.3	7	215				0.318		50						2.1	7.3		12				<0.005		<0.01
	09/07/89	8.1			186			13.8	0.32			2.2	16	235				0.293		51						2.4	7.8		14				<0.005		<0.01
	10/10/89	7.7			184			16.3	0.35			1.7	9	210				0.339		51						2	8.9		12				<0.005		
	11/08/89	8			178			16.3	0.27			2.6	9	215				0.324		50						2.1	7.3		13				<0.005		
	12/04/89	8			167			91.1	0.3			2.5	9	230				0.326		47						2.1	7.7		13				<0.005		
	01/03/90	8			176			18.8	0.32			2.7	9	220				0.338		51						2.1	7.5		12				<0.005		
TM-12 522697	06/26/96	7.7		<1.0	181	181		25	0.22			2.7	7	270	<0.010		<0.003	0.421	<0.004	57.7	<0.0005	0.013	<0.010	<0.050	<0.0002	1.8	7.5	<0.010	23.3	<0.020	<0.002	<0.05	<0.005	<0.005	<0.050
TM-15 522699	06/27/96	7.9		<1.0	187	187		7.2	0.39			1.28	14	230	<0.010		0.006	0.167	<0.004	26	<0.0005	0.018	<0.010	<0.050	<0.0002	1.9	16.4	<0.010	30.3	<0.020	<0.002	<0.05	<0.005	<0.005	<0.050
TM-16 522578	01/27/89	7.8		<2.6	258			30.8	0.03			7.4	510	1115	<0.010		<0.01	<0.1		215	<0.005	<0.010	<0.010	<0.010	<0.0002	13	49	<0.01	32		<0.01		<0.005		0.02
	03/01/89	7.5		<2.6	250			27.3	0.07			10	560	1120	<0.010		<0.01	<0.1		220	<0.005	<0.010	<0.010		<0.0002	11	48	<0.01	40		<0.01		<0.005		<0.01
	04/06/89	7.4		<2.6	252			36.5	0.16			7.6	555	1130	<0.010		<0.01	<0.1		220	<0.005	<0.010	<0.010	<0.010	<0.0002	12	53	<0.01	30		<0.01		<0.005		0.012
	05/03/89	7.5		<2.6	249			31.9	0.2			7.6	535	1100	<0.010		<0.01	<0.1		217	<0.005	<0.010	<0.010	<0.010	<0.0002	12.4	48	<0.01	29		<0.01		<0.005		0.011
	06/01/89	7.7			253			29.4	0.05			8.2	560	1115						239						12	46		31				<0.005		<0.01
	07/13/89	7.4			250			30.4	0.16			8.2	540	1115						225						12	52		31				<0.005		<0.01
	08/08/89	7.3			263			28	0.16			8	508	1185						218						12	48		29				<0.005		<0.01
	09/08/89	7.7			261			30.8	0.1			6.8	510	1070						217						12.9	50		28				<0.005		0.017
	10/11/89	7.5			259			28.7	0.05			18.2	500	1070						213						12	52		30				<0.005		0.014
	11/13/89	7.8			259			31.9	0.18			8.2	500	1065						207						12	47		33				<0.005		<0.01
	12/07/89	7.9			248			30.1	0.16			8	520	1080						220						12	47		29				<0.005		0.243
	01/04/90	7.6			248			30.1	<0.05			7.7	520	1065						209						12	50		32				<0.005		0.073
	06/27/96	7.4		<1	206	206		28	0.17			7.1	500	1100	<0.010		<0.003	0.024	<0.004	200	<0.0005	0.033	<0.010		<0.0002	11.1	44.1	<0.01	28.2	<0.020	0.002	<0.25	<0.005	<0.005	<0.050
	08/06/96	7.07			198			30.5	<1.0			7.0	470	1080			<0.005		<0.1	221	<0.003	<0.03		<0.1		13	47.3		24.7		<0.005	<0.2	<0.005	<0.002	<0.04
	08/6/96 [4]	7.24	0.10			194	686	29.2	0.21	7.23	<0.10	7.23	553	1060	<0.001	<0.50	<0.010	<0.10	<0.0005	223	<0.0010	<0.010	<0.010	<0.010	<0.0005	10.7	49.4	<0.05	28.6	<0.10	<0.005	0.008	<0.005	<0.005	<0.05
	01/23/97	7.10											484	1060																					
	07/29/97	6.90		<1	192	192		31.0	0.20	7.40	<0.1	7.40	500	1000		<2	<0.005	<1	<0.1	220	<0.05	<0.1		<0.1	<0.001	15.0	49.0	<0.1	34.0	<0.1	<0.005	<0.005	<0.005	0.002	
	11/06/97	6.88		<1.0	188	188			0.20	7.10	<0.1	7.10	506	970		<2.0	<0.005	<1.0	<0.1	200	<0.003	<0.03		<0.3	<0.001	13	45	<0.02	27	<0.1	<0.005	<0.005	<0.005	<0.002	

TABLE D.1
Analytical Results for Groundwater Samples
Copper Queen Branch-Bisbee, Arizona [5]

Well Name and 55 No.	Date	pH [1]	Turbidity [2]	CO3 [3]	HCO3 [3]	Alkalinity [3]	Hardness	Cl	F	Total N	NO2-N	NO3-N	SO4	TDS	Ag	Al	As	Ba	Be	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn	Na	Ni	Pb	Sb	Se	Tl	Zn
TM-19	01/30/89	7.6		<2.6	290			20.9	0.16			2.3	1100	1935	<0.010		<0.01	<0.1		449	<0.005	<0.010	<0.01	<0.05	<0.0002	5.2	56	<0.01	45		<0.01		<0.005		0.03
522581	03/01/89	7.2		<2.6	287			16.6	<0.05			3.4	1100	1975	<0.010		<0.01	<0.1		432	<0.005	<0.010		<0.05	<0.0002	5.1	56	<0.01	44		<0.01		<0.005		0.03
	04/07/89	7.2		<2.6	275			26.2	0.13			2.4	1180	1955	<0.010		<0.01	<0.1		464	<0.005	<0.010	<0.01	<0.05	<0.0002	5	57	<0.01	43		<0.01		<0.005		0.02
	05/02/89	7.1		<2.6	268			13.8	0.17			2.4	1125	1925	<0.010		<0.01	<0.1		451	<0.005	<0.010	<0.01	<0.05	<0.0002	4	56	<0.01	42		<0.01		<0.005		0.021
	06/09/89	7.5			274			16.6	0.14			2.4	1070	1890						420			<0.01			5	56		44		<0.01				<0.01
	07/13/89	7.1			274			21.2	0.15			2.7	1120	1935						430						4.9	57		44		<0.01				0.013
	08/08/89	7.2			284			19.1	0.15			2.5	1110	1935						454						4.9	56		41		<0.01				0.011
	09/08/89	7.5			280			18.8	0.14			2.3	1080	1920						437						5.6	55		40		<0.01				0.01
	10/13/89	7.2			280			18.4	0.15			2.4	1200	1940						468						4.8	57		43		<0.01				<0.01
	11/14/89	7.8			283			23	0.15			2.6	1100	1950						430						4.7	55		43		<0.01				0.036
	12/07/89	7.5			272			19.8	0.14			2.5	1120	1945						448						4.6	55		41		<0.01				0.105
	01/04/90	7.4			269			19.8	0.15			2.7	1120	1935						448						4.9	56		45		<0.01				0.032
	11/23/93	7.3		<1	197	197		20	0.15			1.93	1100	1900	<0.010		<0.005	0.025	<0.005	419	<0.0005	<0.010	<0.01	0.08	<0.0002	--	50.2	<0.01	40.9	<0.020	<0.002	<0.05	<0.005	<0.005	<0.020
	06/20/96	7.2		<1	207	207		19	0.16			1.8	1100	2100	<0.020		<0.003	0.03	<0.004	427	<0.0005	0.022	<0.01	<0.05	<0.0002	4.3	55.6	<0.01	41.3	<0.020	<0.002	<0.05	<0.005	<0.005	0.065
	08/06/96	6.81			192			19.1	<1.0			1.8	1120	2040			<0.005		<0.1	475	<0.003	<0.03		<0.1		7	58.4		88.9		<0.005	<0.2	<0.005	<0.002	<0.04
	08/6/1996 [4]	7.13	0.30			194	1460	18.6	<0.20	1.84	<0.1	1.84	1200	2070	<0.001	<0.50	<0.010	<0.10	<0.0005	496	<0.0010	<0.010	<0.010	<0.10	<0.0005	4.67	61.0	<0.05	43.5	<0.10	<0.005	0.016	<0.005	<0.005	<0.05
	01/23/97	6.88											1140	2040																					
TM-19A	01/30/89	8		<2.6	233			14.9	0.22			1.7	50	320	<0.01		<0.01	0.18		39	<0.005	<0.01	<0.01	<0.05	<0.0002	2.7	9	<0.01	59		<0.01		<0.005		<0.01
522580	03/01/89	8		<2.6	230			11.7	0.29			1.8	54	320	<0.01		<0.01	0.15		35	<0.005	<0.01		<0.05	<0.0002	2.6	8	<0.01	58		<0.01		<0.005		<0.01
	04/07/89	7.9		<2.6	223			15.2	0.27			1.8	55	345	<0.01		<0.01	0.17		43	<0.005	<0.01	<0.01	<0.05	<0.0002	2.5	9.5	0.013	55		<0.01		<0.005		0.012
	05/02/89	7.7		<2.6	226			9.2	0.23			1.8	50	310	<0.01		<0.01	0.158		41	<0.005	<0.01	<0.01	<0.05	<0.0002	1.5	9.1	0.012	54		<0.01		<0.005		0.024
	06/09/89	8.1			221			11.3	0.27			1.8	55	320				0.176		40						2.6	9.8	0.011	56				<0.005		0.033
	07/13/89	7.6			228			14.2	0.25			1.8	55	330				0.192		40						2.6	10	0.011	57				<0.005		<0.01
	08/08/89	7.8			230			12.7	0.23			1.9	53	335				0.164		41						2.6	9.2	0.01	56				<0.005		<0.01
	09/11/89	7.3			230			13.4	0.27			1.7	58	310				0.17		42						2.9	9.5	0.01	56				<0.005		<0.01
	10/13/89	7.2			228			12	0.25			1.8	58	345				<0.1		42						2.5	16	<0.01	43				<0.005		0.379
	11/14/89	8.4			206			12.4	0.25			2	58	330				0.188		43						2.6	10	0.014	55				<0.005		0.135
	12/07/89	8.4			199			13.8	0.23			2	58	335				0.174		42						2.8	9.5	0.013	53				<0.005		0.107
	01/04/90	8.1			220			14.2	0.23			1.7	62	310				0.153		40						2.7	9.5	0.01	57				<0.005		0.35
	11/23/93	8.2		<1	172	172		15	0.26			1.81	63	310	<0.01		<0.005	0.14	<0.005	42.7	<0.0005	<0.01	<0.01	0.19	<0.0002	--	9.9	0.015	56.1	<0.020	<0.002	<0.05	<0.005	<0.005	<0.020
	06/25/96	7.8		<1	195	195		14	0.21			1.7	56	320	<0.01		<0.003	0.154	<0.004	43.8	<0.0005	<0.01	<0.01	0.103	<0.0002	2.5	10.2	0.011	58.6	<0.020	<0.002	<0.05	<0.005	<0.005	<0.050
TM-41	07/30/97	6.2		<1	800	800		22	0.2	2	<0.1	2	1940	3600		<2	<0.005	<1	<0.1	620	<0.05	<0.1		<0.1	<0.001	28	250	<0.1	47	<0.1	<0.005	<0.005	<0.005	<0.002	
	11/06/97	6.08		<1.0	740	740			0.2	1.8	<0.1	1.8	1900	3500		<2.0	<0.005	<1.0	<0.1	640	<0.003	<0.03		<0.3	<0.001	17	250	0.03	43	<0.10	<0.005	<0.005	0.006	<0.002	
TM-42	07/30/97	6.9		<1	188	188		28	0.3	4.1	<0.1	4.1	985	1700		<2	<0.005	<1	<0.1	290	<0.05	<0.1		<0.1	<0.001	18	95	<0.1	50	<0.1	<0.005	<0.005	<0.005	<0.002	
	11/06/97	6.8		<1.0	182	182			0.30	4.2	<0.1	4.2	958	1600		<2.0	<0.005	<1.0	<0.1	290	<0.003	<0.03		<0.3	<0.001	14	93.0	<0.02	49	<0.1	<0.005	<0.005	0.005	<0.002	

Notes:
[1] *Standard Units*
[2] *Nephelometric Turbidity Unit (NTU)*
[3] *mg/l as $CaCO_3$*
[4] *Sampled by ADEQ*
[5] *Unless Otherwise Noted all Results are in milligrams per Liter (mg/L);*
Data from SET, 1999

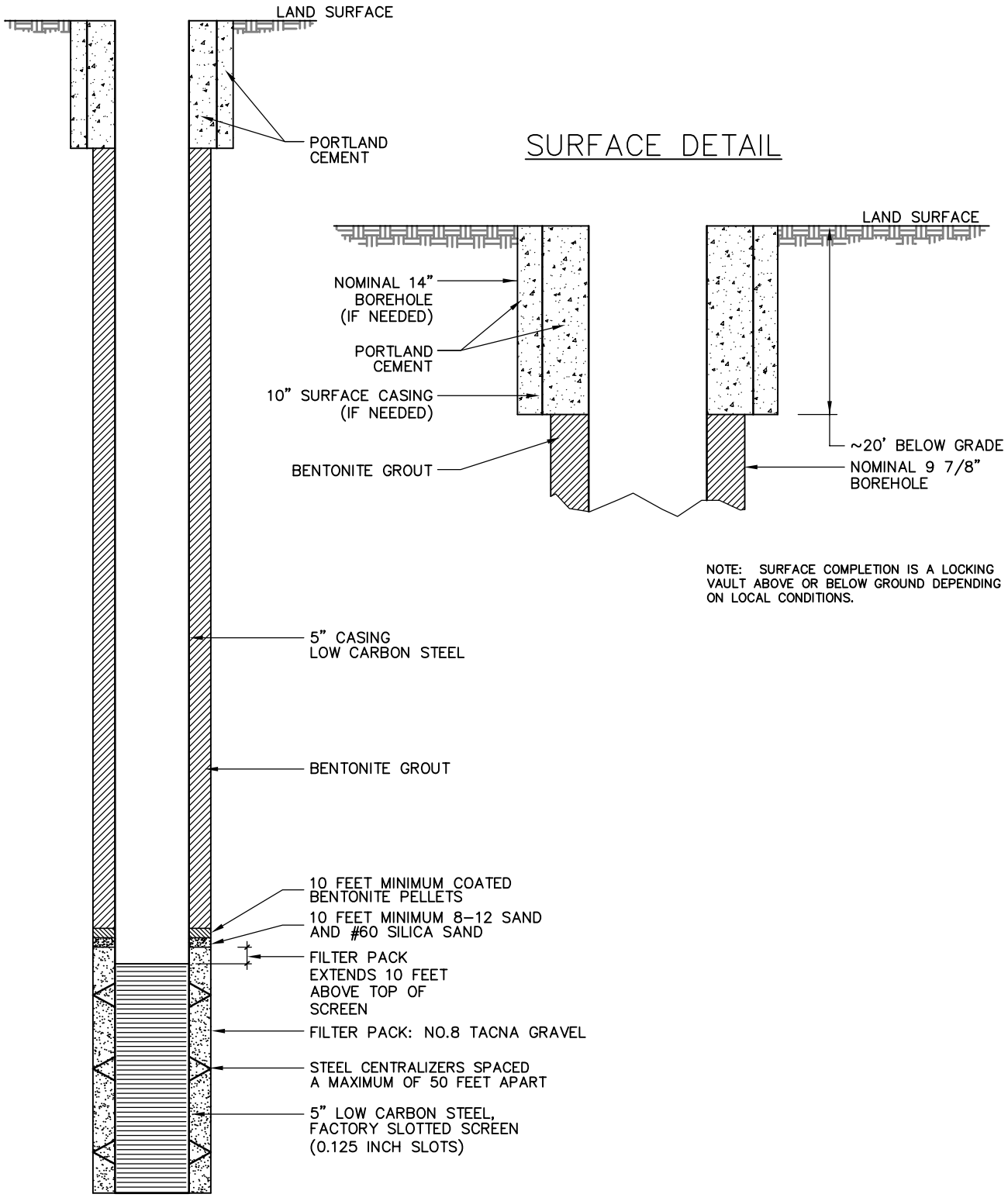
TABLE D.2
Summary of Metal Analyses

	Ag	Al	As	Ba	Be	Ca	Cd	Cr	Cu	Fe	Hg	K	Mg	Mn	Na	Ni	Pb	Sb	Se	Tl	Zn
DATA FOR ALL WELLS[1]																					
Number Detections	0	0	5	63	0	167	2	14	4	14	1	152	166	55	167	2	7	10	10	1	71
Number Samples	74	25	94	115	56	167	95	98	79	94	97	167	166	126	167	50	103	56	118	56	140
Detection Frequency	0.0%	0.0%	5.3%	54.8%	0.0%	100.0%	2.1%	14.3%	5.1%	14.9%	1.0%	91.0%	100.0%	43.7%	100.0%	4.0%	6.8%	17.9%	8.5%	1.8%	50.7%
Arizona AWQS[2] (mg/L)	NNS	NNS	0.05	2	0.004	NNS	0.005	0.1	NNS	NNS	0.002	NNS	NNS	NNS	NNS	0.1	0.05	0.006	0.05	0.002	NNS
Maximum Detected (mg/L)	na	na	0.006	0.444	na	958	0.0013	0.045	0.024	38.9	**0.0025**	28	537	13.68	224	0.036	0.034	**0.06**	0.011	**0.002**	11.56
# Detections > AWQS	na	na	0	0	0	na	0	0	na	na	1	na	na	na	na	0	0	9	0	0	na
# Non-detects with MDL > AWQS	na	na	0	0	28	na	6	0	na	na	0	na	na	na	na	0	0	31	0	38	na

Notes:
[1] All wells included in Table D.1 of the Work Plan
[2] AWQS = Arizona Aquifer Water Quality Standard (AAC R18-11-106)
mg/L = milligrams per liter
MDL = analytical method detection limit
NNS = no numeric standard
na = not applicable

APPENDIX E

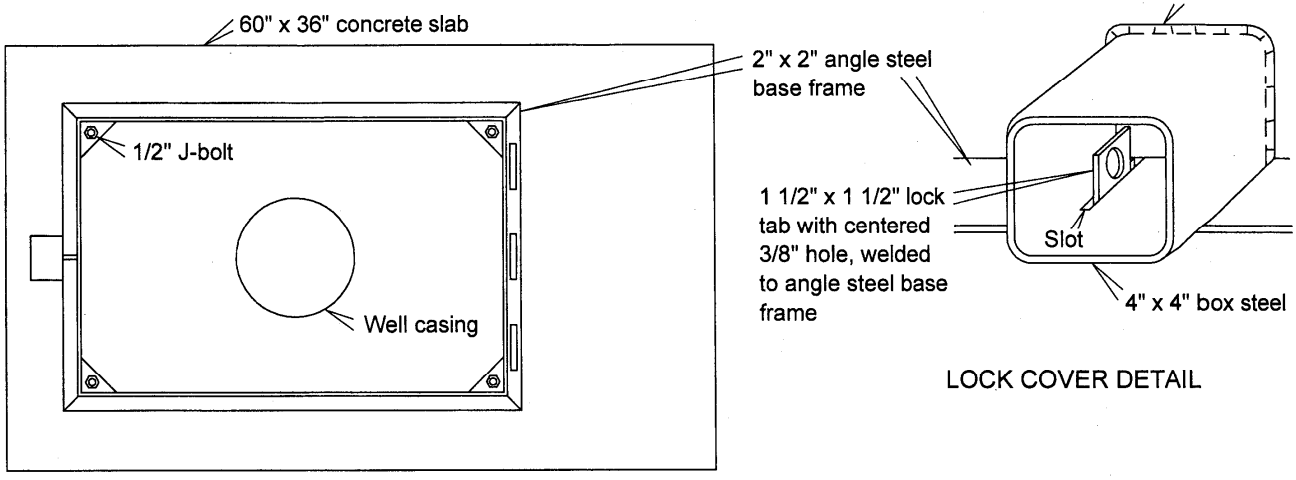
GENERALIZED WELL CONSTRUCTION DIAGRAMS FOR MONITORING WELLS (Figures E.1 and E.2)



HYDRO GEO CHEM, INC.

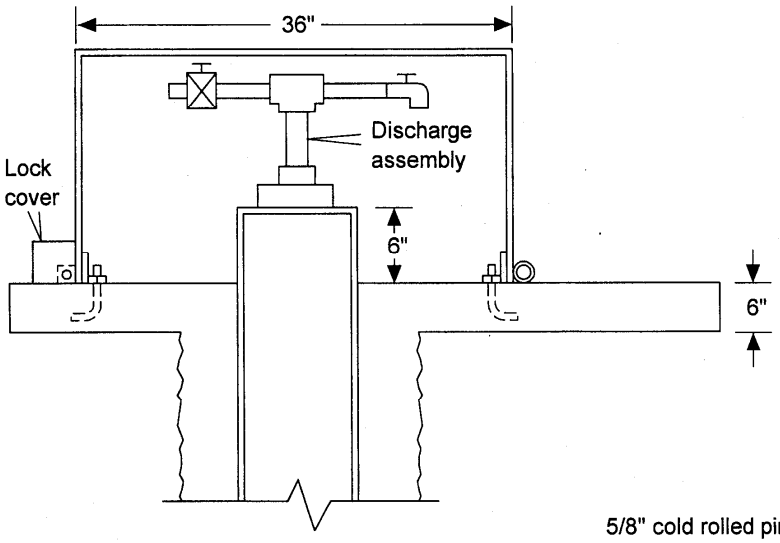
GENERALIZED WELL CONSTRUCTION DIAGRAM FOR MONITOR WELLS

Approved	Date		Date	File Name	Figure
RZ	02/18/08			8720026A	E.1

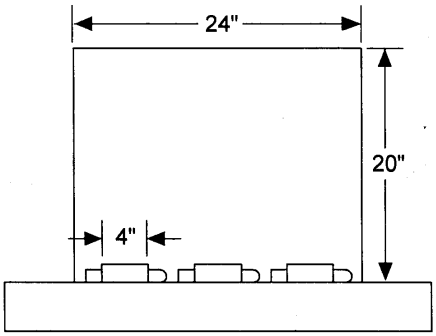


TOP VIEW - COVER REMOVED

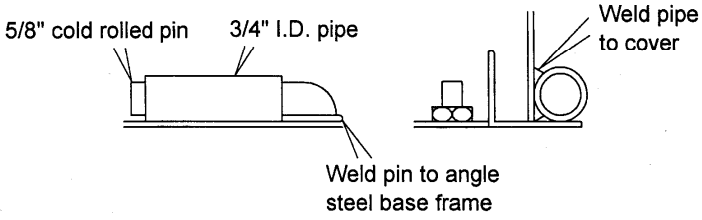
LOCK COVER DETAIL



SIDE VIEW - CROSS SECTION



END VIEW



HINGE DETAIL

NOTES:

Not to scale.

All steel is at least 3/16" thickness, unless otherwise specified.

All bare metal surfaces are painted with two coats of industrial grade oil base primer.

HYDRO GEO CHEM, INC.

WELLHEAD SURFACE COMPLETION

APPROVED	DATE	FIGURE
RKZ	1/24/07	**E.2**

APPENDIX F

QUALITY ASSURANCE PROJECT PLAN

APPENDIX F

QUALITY ASSURANCE PROJECT PLAN
FOR AQUIFER CHARACTERIZATION PLAN

Prepared for:

FREEPORT-MCMORAN CORPORATION COPPER QUEEN BRANCH
36 West Highway 92
Bisbee, Arizona 85603

Prepared by:

HYDRO GEO CHEM, INC.
51 West Wetmore Road
Tucson, Arizona 85705
(520) 293-1500

July 3, 2008

APPROVAL & DISTRIBUTION SHEET
QUALITY ASSURANCE PROJECT PLAN
FOR AQUIFER CHARACTERIZATION PLAN
COPPER QUEEN BRANCH, COCHISE COUNTY, ARIZONA

_____ Stuart Brown Bridgewater Group, Inc. Project Director (503) 675-5252 date: _____	_____ Michael Jaworski Freeport-McMoRan Corporation Copper Queen Branch Site Manager (520) 432-6209 date: _____
_____ James R. Norris Hydro Geo Chem, Inc. Project Manager (520) 293-1500 ext. 112 date: _____	_____ Daniel R. Simpson Hydro Geo Chem, Inc. Quality Assurance Manager (520) 293-1500 ext. 133 date: _____
_____ Field Technician date: _____	_____ Field Technician date: _____
_____ Laboratory Project Manager date: _____	_____ Laboratory Quality Assurance Manager date: _____
_____ Drilling Subcontractor date: _____	_____ Subcontractor date: _____

ACRONYM AND ABBREVIATION LIST

°C	degrees Celsius
μS/cm	microsiemens per centimeter
ACP	Aquifer Characterization Plan
ADEQ	Arizona Department of Environmental Quality
ADHS	Arizona Department of Health Services
ADWR	Arizona Department of Water Resources
ARS	Arizona Revised Statutes
ASTM	American Society for Testing and Materials
AZPDES	Arizona Pollutant Discharge Elimination System
bgs	below ground surface
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
COC	chain-of-custody
CQB	Copper Queen Branch
CTSA	Concentration Tailing Storage Area
DGP	De Minimus General Permit
DOT	Department of Transportation
DQI	data quality indicators
DQO	data quality objectives
DTW	depth to water
EPA	U.S. Environmental Protection Agency
FS	feasibility study
ft	feet
HGC	Hydro Geo Chem, Inc.
ID	laboratory identification
LCS	laboratory control sample
MDL	method detection limit
mg/L	milligrams per liter
MO	Mitigation Order on Consent Docket No. P-121-07, dated November 14, 2007
MSHA	Mine Safety and Health Administration
MS/MSD	matrix spike/matrix spike duplicate
OSHA	Occupational Safety and Health Administration
PQL	practical quantitation levels
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
RPD	relative percent difference
SOP	standard operating procedure
TDS	total dissolved solids
USCS	Unified Soil Classification System

CROSS-REFERENCE OF QUALITY ASSURANCE ELEMENTS

The following table contains a cross reference between this document and the elements specified by Arizona Department of Environmental Quality (ADEQ) in its *Quality Assurance Project Plan Review*, based on the U.S. Environmental Protection Agency (EPA) *Requirements for Quality Assurance Plans for Environmental Data Operations*, EPA QA/R-5 (EPA, 2001a).

QUALITY ASSURANCE /R-5 ELEMENTS	COMMENT ADDRESSED
A1, Title and Approval Sheet	Cover, Pg. i
A2, Table of Contents	Pg. vii
A3, Distribution List	Pg. I
A4, Project Organization	Section 2, Figure 1
A5, Problem Definition/Background	Section 1.1
A6, Project/Task Description	Section 1.1
A7, Quality Objectives and Criteria for Measurement Data	Section 3
A8, Special Training/Certification	Sections 4.1, 5.1
A9, Documentation and Records	Sections 4.6, 5.7
B1, Sampling Process Design	Sections 4.2, 4.3
B2, Sampling Methods Requirements	Sections 4.2, 4.3
B3, Sample Handling and Custody Requirements	Sections 4.2.3, 5.2
B4, Analytical Methods Requirements	Section 5.3
B5, Quality Control Requirements	Sections 4.2.1.5, 5.4
B6, Instrument/Equipment Testing, Inspection, and Maintenance Requirements	Sections 4.5., 5.5
B7, Instrument/Equipment Calibration and Frequency	Sections 4.5, 5.5
B8, Inspection/Acceptance of Supplies and Consumables	Sections 4.5
B9, Data Acquisition for Non-Direct Measurements	N/A
B10, Data Management	Section 6
C1, Assessments and Response Actions	Sections 4.7, 5.7, 6.4
C2, Reports to Management	Sections 5.6, 6.4
D1, Data Review, Verification, and Validation	Section 6.2
D2, Verifications and Validation Methods	Section 6.2
D3, Reconciliation with User Requirements	Section 6.2

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1. INTRODUCTION

This Quality Assurance Project Plan (QAPP) describes the quality assurance levels and procedures for field operations and the associated laboratory and data management activities that will be conducted for the Aquifer Characterization Plan (ACP) contained in the *Work Plan to Characterize and Mitigate Sulfate with Respect to Drinking Water Supplies in the Vicinity of the Concentrator Tailing Storage Area, Cochise County, Arizona* (Work Plan). The Work Plan was developed pursuant to Mitigation Order on Consent Docket No. P-121-07 between Phelps Dodge Copper Queen Branch and the Arizona Department of Environmental Quality (ADEQ). In March 2008, Phelps Dodge changed its name to Freeport McMoRan Corporation. Section III.A.2 of the MO states that a QAPP will be provided with the Work Plan. Components of the QAPP are to define, "the sulfate plume characterization and assessment objectives," and describe "the methods, organization, analyses, and quality assurance and quality control" needed to meet the objectives of the Work Plan. Hydro Geo Chem, Inc. (HGC) prepared this QAPP on behalf of Freeport-McMoRan Corporation Copper Queen Branch (CQB).

1.1 Background and Project Description

The Concentration Tailing Storage Area (CTSA) is located in the Bisbee-Naco area approximately 85 miles southeast of Tucson and 3.5 miles southeast of Bisbee, in Cochise County, Arizona. The CTSA comprises the North and South Tailing Impoundments, the former evaporation pond area, and a stormwater containment pond. In the 1980s, groundwater in the

vicinity of the CTSA was found to contain elevated concentrations of sulfate. The origin of the sulfate was identified as seepage from the CTSA into the underlying aquifer.

Groundwater sampling in the CTSA area has identified the presence of a groundwater plume with sulfate concentrations exceeding 250 milligrams per liter (mg/L). The zone of elevated sulfate extends from the base of the former evaporation pond in the CTSA southwestward to Naco and southward to Bisbee Junction.

In November 2007, the MO was finalized to address sulfate attributable to the CTSA. To meet the MO requirements, the Work Plan proposes an ACP and a Feasibility Study (FS) for the sulfate mitigation. The ACP will determine the nature, extent, fate, and transport of sulfate in groundwater and will gather information needed to develop mitigation action alternatives for drinking water supplies consistent with the MO. This QAPP pertains to data collection activities for the ACP for use in characterizing the sulfate plume and conducting the FS.

1.2 Quality Assurance Project Plan Overview

Quality assurance (QA) is a planned, systematic set of activities designed to ensure that a product or service meets defined standards of quality within a stated level of confidence. Quality control (QC) is the routine application of procedures for obtaining prescribed performance standards for monitoring and measuring. This QAPP provides the QA/QC procedures needed to provide confidence that the data generated during ACP activities are appropriate for their intended use, are legally defensible, and are of sufficient quality to support decisions concerning

characterization of sulfate in groundwater and development of the Mitigation Plan. The QA/QC program described in this QAPP covers procedures to be followed for field activities, sample handling, chain-of-custody (COC) documentation, laboratory analyses, and data management.

QA of data collected under the direction of HGC will be governed by this QAPP. This QAPP is designed to be generally consistent with the following documents:

- *EPA Guidance for Quality Assurance Project Plans*, EPA/240/R-02/009. (EPA, 2002a),
- *Guidance on Systematic Planning Using the Data Quality Objective Processes*, EPA/540/B-06/001. (EPA, 2006).
- *EPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, Final* (EPA, 2004).
- *ADEQ Quality Management Plan*, EQR00-01. (ADEQ, 1999).

1.3 Quality Assurance Project Plan Distribution

The HGC QA Manager is responsible for ensuring that each project member has access to the most current version of the QAPP, including all subsequent addenda or revisions. The project members include, but may not be limited to, all individuals named on the signature page of this QAPP and all subcontractors performing field operations and laboratory analyses. The QAPP will be reviewed yearly by the HGC Project Manager to address any changes in data collection requirements. If revisions are made to the QAPP, they will be made under the direction of the HGC Project Manager and a revised document will be issued a sequential revision number and a new signature page.

1.4 Quality Assurance Project Plan Organization

This QAPP begins by describing the project organization and QA responsibilities for ACP activities (Section 2). It then defines the data quality objectives (DQOs) for data generated by activities conducted for the ACP (Section 3). Finally, it gives the QA/QC procedures, for field, analytical laboratory, and data management activities (Sections 4, 5, and 6).

2. PROJECT ORGANIZATION AND RESPONSIBILITIES

An organizational chart indicating the relationships and lines of communication among project participants is provided in Figure F.1. CQB is ultimately responsible for implementing and reporting environmental monitoring activities to be identified for the ACP. HGC will coordinate and oversee groundwater sampling of existing wells for Task 2.2 and the installation, testing, and sampling of new wells for Task 2.3. The roles and responsibilities of the individuals given in Figure F.1 are described below.

2.1 ADEQ Project Manager

The ADEQ Project Manager conducts regulatory oversight of the Work Plan activities and provides regulatory review and approval of documents, reports, plans, schedules, and other communications submitted pursuant to the MO.

2.2 Project Director

The Project Director has the overall responsibly for implementing the Work Plan. The Project Director will direct the schedule and scope of operations and provide fiscal oversight for resources needed for Work Plan activities.

2.3 CQB Project Manager

The CQB Project Manager has responsibility for environmental matters at the CQB property and directs CQB sampling activities. The CQB Project Manager will work with the HGC Project Manager to provide resources for safe implementation of ACP tasks.

2.4 HGC Project Manager

The HGC Project Manager directs field activities for the ACP, ensures that all personnel are properly trained, and ensures adequate resources for the completion of ACP tasks. The HGC Project Manager also works with the HGC QA Manager to provide QA checks of data quality and to implement corrective actions. The HGC Project Manager is responsible for providing final review and approval of documents, reports, plans, schedules, and other communications submitted to ADEQ pursuant to the MO. The HGC Project Manager will periodically review and provide any needed updates to the QAPP.

2.5 HGC QA Manager

The HGC QA Manager reviews data and documentation from ACP activities to ensure compliance with the provisions of this QAPP, initiates corrective actions, and ensures that records are properly stored in HGC files and electronic databases. The HGC QA Manager will also coordinate data transfer with the CQB Project Manger and be responsible for entry of any data collected by CQB into the HGC database.

2.6 Field Technicians

Field technicians are all personnel (geologists, hydrologists, or environmental technicians) performing field activities described in the ACP, including groundwater sampling, lithologic and borehole logging, well construction oversight, and aquifer testing. All field technicians should be adequately trained for the activities that they will perform, and they are responsible for ensuring the quality of their own work, including complete and accurate documentation.

2.7 Laboratory Project Manager

The Laboratory Project Manager ensures that laboratory resources are available, reviews final analytical reports produced by the laboratory, reviews and directs compliance with the QAPP, coordinates scheduling of laboratory analyses, and supervises in-house COC procedures. The Laboratory Project Manager also has the responsibility of submitting analytical reports to HGC.

2.8 Laboratory QA Manager

The Laboratory QA Manager maintains laboratory QA procedures and QA/QC documentation, conducts periodic internal laboratory audits, and recommends corrective actions when necessary. The Laboratory QA Manager is responsible to ensure that laboratory

procedures are in compliance with this QAPP. Section 5 identifies laboratories expected to be used for this project.

2.9 Drilling Subcontractors

Drilling subcontractors are responsible for the specific drilling, well construction, and well sampling activities for which they are contracted. They are also responsible for being properly licensed and trained to perform these activities.

3. DATA QUALITY OBJECTIVES

The primary data collection activities for the ACP are water level measurement, collection and analysis of water quality samples, lithologic logging of boreholes, and aquifer testing. Data collected by these activities will be used by CQB and ADEQ to characterize the extent of sulfate in groundwater and to develop and evaluate mitigation alternatives for drinking water supplies. The overall QA objective is to implement field procedures, laboratory analyses, and reporting that will provide results that are scientifically valid and legally defensible. DQOs are qualitative and quantitative objectives that specify the quality of data needed from a sampling program. Data Quality Indicators (DQIs) aid in this goal by specifying criteria for data types, quality, quantity, and applications that are needed to minimize decision errors due to data uncertainties. This section discusses DQOs, QA deliverables, and the DQIs used to evaluate if the DQOs have been met for field operations and laboratory analyses.

3.1 Data Quality Objectives

The DQOs for this project are:

- Collection of water level data of sufficient quantity and representativeness to evaluate potentiometric conditions during seasonal high (summer) and low (winter) pumping conditions.

- Collection and laboratory analysis of water samples of sufficient quality to define the lateral and vertical distribution of sulfate and to characterize water quality parameters pertinent to the identification and evaluation of potential water treatment technologies for the FS.

- Collection of lithologic information of sufficient accuracy to develop a reliable understanding of subsurface materials.

- Collection of aquifer test data of sufficient quality to estimate hydraulic properties of subsurface materials.

- Water flow rate and volume measurements of sufficient accuracy to support estimation of hydraulic properties and major components of the water budget.

3.2 Quality Assurance of Deliverables

The QA program should ensure the quality of all deliverables from field activities, laboratory analyses, and data processing. The U.S. Environmental Protection Agency (EPA) has identified five levels of QA/QC. The QA/QC level required for a project depends on the purpose of that project and the data deliverables requested. Levels I through IV are defined in Table F.1. Level V refers to non-conventional parameters and is not applicable to this QAPP. The relevance of levels I through IV to this QAPP am discussed below.

- Level I analytical methods are required for field data collection. Field data will be generated using portable instruments that are regularly calibrated. Level I methods will be implemented in the field and include the use of pH, temperature, and electrical conductivity meters, as well as other instruments.

- Level II may be used for screening-level measurements such as in-field sulfate detection. In general, however, Level II is not pertinent to this QAPP because it does not provide adequate accuracy or sensitivity.

- Level III analytical methods are required for the majority of project data collected per this QAPP. For most groundwater samples, the quality of laboratory data must be sufficient to monitor current groundwater conditions. Additionally, the data must be of sufficient quality to meet all objectives identified for this project.

- Level IV consists of a highly accurate and rigorous QA/QC review that would only be undertaken in this project if there was a persistent problem identified with analytical results. HGC may request a Level IV "Contract Laboratory Program (CLP)-equivalent" QC package from the laboratory and independent validation of the data. CQB may request a Level IV "CLP-equivalent" QC package for all or some percentage of the data. Data validation documentation will be consistent with

Laboratory Documentation Required for Data Evaluation as established by EPA Region IX QA Office (2001b).

3.3 Data Quality Indicators

Field and laboratory data will be evaluated using the following DQIs: precision, bias, accuracy, representativeness, comparability, completeness, and sensitivity. If laboratory data DQIs do not meet the data acceptance criteria, the reason will be noted in the case narrative submitted to HGC. If DQI acceptance criteria are not met, corrective actions to be taken may include additional sampling and/or re-analysis.

3.3.1 Precision

Precision is "the measure of agreement among repeated measurements of the same property under identical, or substantially similar, conditions" (EPA, 2002a). For this QAPP, data precision is measured by calculating the relative percent difference (RPD) of the analytical results for field and laboratory duplicates. RPD is calculated using the following formula:

$$RPD = \frac{x_1 - x_2}{x_m} \times 100 \qquad (1)$$

where x_1 is the analytical result from the original sample
x_2 is the analytical result from the duplicate sample
x_m is the mean of the two samples

Acceptance criteria for precision of laboratory duplicates will be set by method guidance or in-house laboratory limits, whichever is more stringent. The default acceptance criteria for

field duplicates from groundwater samples will be an RPD of less than 20 percent, which is the criteria listed in EPA functional guidelines (EPA, 2004).

3.3.2 Bias

Bias is "the systematic or persistent distortion of measurements that causes consistent errors in one direction" (EPA, 2002a). Bias can be caused by matrix interferences that either enhance or suppress the response of an instrument to the presence of a constituent. Bias is addressed both in the field and in the laboratory by calibration of instruments and consistent application of standardized procedures (Sections 4.5 and 5.4).

3.3.3 Accuracy

Accuracy is "a measure of the overall agreement of a measurement to a known value" (EPA, 2002a). Accuracy can be decreased by errors related to both precision and bias. A measured value is of acceptable accuracy when it does not differ beyond acceptable limits from the true value or the known concentration of a spike or standard. Accuracy of analytical results is measured by calculating the percent recoveries of surrogates, matrix spikes, and blank spikes. Laboratory accuracy is expressed as the percent recovery (%R), calculated as follows:

$$\%R = \frac{x_s - x}{T} \times 100 \qquad (2)$$

where x_s is the measured value of the spiked sample
x is the measured value of the unspiked sample
T is the true value of the spike solution added

Acceptance criteria for laboratory accuracy are set by the stricter of in-house limits or method guidance (Section 5.4).

3.3.4 Representativeness

Representativeness is a qualitative measure that conveys "the degree to which sample data accurately and precisely represents a characteristic of the environmental condition being measured" (EPA, 2002a). Representativeness is best satisfied by ensuring that sampling procedures, locations, and quantities are selected properly. Field data will be considered representative when obtained by adherence to sample identification and collection techniques and decontamination procedures (Section 4.2). In addition, proper laboratory analytical procedures and methods are mandatory to ensure representativeness of field data (Section 5).

3.3.5 Comparability

Comparability is a qualitative expression of the confidence with which one data set is comparable to and/or compatible with previous and subsequent data. Comparability is achieved by adhering to standardized methods and QA procedures established in this QAPP during sample collection, handling, and analysis. The comparability of laboratory data is achieved through compliance with analytical method protocols. Comparability is enhanced when the same laboratory is used to analyze samples from successive sampling events and when data is reported in consistent and standard units of measurement.

3.3.6 Completeness

Completeness is a measure of the amount of valid data needed to be obtained from a sampling campaign or measurement program. Completeness will be expressed as the percentage of the total number of each type of sample or measurement that satisfies the QA/QC criteria for this project. Percent completeness will be calculated as follows:

$$\left(\frac{number\ of\ valid\ data\ obtained}{number\ of\ valid\ data\ possible} \right) \times 100$$

Completeness will be calculated and reported by the HGC QA Manager. Adherence to this QAPP is expected to yield data sets that will be at least 90 percent complete. Common factors that reduce data completeness include the following:

- The laboratory did not analyze the sample for the requested parameter.
- The laboratory did not analyze the sample following the correct method.
- The laboratory did not provide the correct sensitivity.
- The laboratory rejected data due to QC failure.
- The data reviewer rejected data due to QC failure.

3.3.7 Sensitivity

Sensitivity is a measure of "the capability of the method or instrument to discriminate between measurement responses representing different levels of a variable of interest" (EPA, 2002a). Sensitivity requirements for field measurement instruments are as follows:

- Water levels probes = 0.01 foot (ft).
- Temperature meters = 1 degree Celsius (°C).
- pH meters = 0.1 standard units.
- Electrical conductivity meters = 10 microsiemens per centimeter (µS/cm).
- Pressure transducers = 0.01 ft water head or as appropriate for pressure rating.
- Flow meters = 5 percent of measured flow rate.
- Topographic survey instruments = 0.1 ft horizontal and vertical for licensed surveying.
- Borehole depth measurement devices = 0.1 ft.

Sensitivity requirements for analytical laboratories are generally described by the analytical method detection limits (MDLs). A MDL is the minimum amount of an analyte that can be consistently measured and reported with a high degree of confidence that the analyte concentration is above a background response. A practical quantitation limit (PQL) is that amount that can be consistently quantified with acceptable precision and accuracy. Target PQLs for each analyte will be set by method guidance or laboratory specifications, whichever is stricter (Section 5.3).

4. FIELD ACTIVITIES

This section gives the QA procedures that will be used for field activities, including groundwater sampling (water level measurement and water quality sampling), drilling and well construction, and aquifer testing. It also describes the procedures for equipment care, investigation derived waste management, and field documentation. Field activities will be documented in a dedicated field logbook or on field forms as described in Section 4.6.

4.1 Certification and Preliminary Activities

All field staff shall have Occupational Safety and Health Administration (OSHA) 40-hour training and certification as described in the Code of Federal Regulations (CFR), Title 29, Section 1910.120. Staff working within the CQB property boundaries shall also have site-specific hazard awareness training and Mining Safety and Health Administration (MSHA) training as prescribed in 30 CFR Subchapter H. All certified field operations personnel must annually complete OSHA and MSHA refresher courses to maintain their certifications. All personnel and subcontractors will have appropriate licensure and certification as required by law to perform their specific field operation. In particular, drillers will have a current well driller's license issued by the Arizona Department of Water Resources (ADWR).

Prior to starting field activities, the HGC Project Manager will obtain necessary permits, notify property owners of scheduled field activities, and locate all subsurface utilities near areas where drilling will occur. Required permits may include an ADEQ Arizona Pollutant Discharge

Elimination System (AZPDES), De Minimus General Permit (DGP), an ADWR drilling permit, and an ADWR groundwater withdrawal permit. The HGC Project Manager will complete and submit Notice of Intent to Drill Well forms to ADWR for all proposed wells. The HGC Project Manager will locate subsurface utilities by requesting a Blue Stake Survey at least 72 hours, but not more than 2 weeks, prior to drilling.

4.2 Groundwater Sampling Activities

As described in the ACP, groundwater monitoring will be conducted for two purposes: plume monitoring and regional monitoring. Plume monitoring will be conducted at wells proximal to the sulfate plume to track its position and concentration. Regional monitoring will be conducted over a large geographic area than the plume in order to document regional water level and water quality conditions for fate and transport modeling.

The ACP specifies groundwater sampling from existing CQB wells and from existing privately-owned wells. Samples taken from existing wells will be taken from the screened interval of the well without regard to collection depth within the screen (Section 4.2.1). All groundwater sampling activities will be consistent with the procedures outlined in EPA-approved methodologies, ADEQ sampling guidance documents, and this section so that data obtained from the sampling activities is of sufficient quality to meet the DQOs (Section 3). QA procedures for sampling activities are described below. Following the description of QA procedures, protocols for sample handling from the collection site to the analytical laboratory are provided. Sample receipt and handling by the analytical laboratory are discussed in Section 5.2.

4.2.1 Groundwater Sampling from Existing Wells

Groundwater sampling will be conducted in a variety of well types including monitoring wells, active public water supply wells, and private wells. For wells with a dedicated pump, that pump will be used for purging and sampling. If a well does not have a dedicated pump, a decontaminated, portable, submersible pump will be used to purge the well and collect groundwater samples. Prior to sampling, well construction specifications will be obtained from the well owner or ADWR records. Upon arrival at the sampling location, the sampling personnel will document the condition of the well in the field notebook or on a sampling form. Groundwater sampling then will be conducted using the following steps:

1. Depth-to-water (DTW) measurement.
2. Well purging and collection of groundwater indicator parameters.
3. Sample collection and labeling.
4. Equipment decontamination.

QA procedures for these steps are described below.

4.2.1.1 Depth to Water Measurements

Water level measurements will be taken in both pumping and non-pumping wells, if possible. For wells that are not being continuously pumped, the static DTW in wells will be measured prior to purging and sampling and will be recorded as a static pumping level. For wells that are being pumped, the pumping water level will be measured and the DTW will be

recorded as a dynamic water level. The following QA procedures will be followed when making the DTW measurements:

- Use a decontaminated electronic well sounder probe capable of measuring water levels with an accuracy of 0.01 ft (Section 3.3.7).
- Verify the well identification (ID) and check to ensure that measurement equipment is operating properly.
- Record the well ID and, if known, the surface elevation.
- Measure DTW from the measuring point on the top of well casing or from the north side of the top of the inner well casing if the casing has no surveyed measuring point.
- Record the DTW and the height of the measuring point above ground surface to the nearest 0.01 foot.
- Take DTW measurement a second time to verify that a correct measurement has been made. The two measurements should agree to within 0.03 ft.

4.2.1.2 Well Purging and Collection of Indicator Parameters

After taking DTW measurements and prior to taking groundwater samples, the wells will be purged of resident water so that groundwater samples will be representative of water from the formation. The HGC Project Manager will determine the needs for a DGP for purge water once sample locations are selected. While purging the well, groundwater indicator parameters (pH, electrical conductivity, and temperature) will be measured. Groundwater purging and indicator parameter measurements will adhere to the following QA practices:

- Calculate the wetted casing volume based on the DTW measurement and well construction.
- Collect the indicator parameters readings at regular time or pumped volume intervals, and record the readings on a groundwater sampling form.

- If possible, purge the well of three wetted casing volumes and allow indicator parameters to stabilize so that consecutive parameter measurements (collected at approximately one-half casing volumes apart) are within the following: pH - 0.3 standard units, temperature - 2 °C, and electrical conductivity - 100 µS/cm.

- Permit any well that goes dry during pumping to recover at least 50 percent of its starting water elevation prior to groundwater sampling.

No more than five wetted casing volumes need to be pumped regardless of parameter stabilization; however, parameter instability may indicate a problem with the measurement instrument(s). If stabilized parameters cannot be obtained, field instruments will be re-calibrated (Section 4.5.2). For wells that are being pumped when sampling personnel arrive (e.g., production wells), the sampling personnel do not need to purge the well if it has been pumping continuously for a period sufficient to remove three wetted casing volumes. DTW and field parameters should still be measured and recorded.

It may not be possible to purge three wetted casing volumes in all cases due to potential disruption of well service or due to the owner's request. In such cases, the purge volume will be recorded and the reason for the limiting the purge noted.

4.2.1.3 Groundwater Sample Collection

Plume monitoring will be conducted quarterly to document groundwater elevations and sulfate concentrations only at CQB monitoring wells on the CTSA and at private and public supply wells on the margins of the plume. Plume monitoring will continue until the monitoring requirements under the Mitigation Plan become effective.

Regional monitoring will be conducted twice; once in winter and once in summer to characterize any seasonality in water elevations. Samples collected for regional monitoring will be analyzed for a suite of major element constituents to characterize general water quality conditions in addition to sulfate.

Filtered groundwater samples for plume monitoring will be analyzed for sulfate only using the methods describe below. In quarters when regional monitoring occurs, samples from wells identified for plume monitoring will also be analyzed for the expanded suite of constituents used for regional monitoring.

Filtered groundwater samples for regional monitoring will be analyzed for major element ions (calcium, magnesium, sodium, potassium, chloride, sulfate, nitrate, nitrite, and fluoride) for characterizing the general water chemistry. Groundwater samples from select wells may also be analyzed for the following constituents needed to evaluate water treatment for the FS: aluminum, ammonia, barium, chemical oxygen demand, ferrous and total iron, manganese, phosphate, selenium, soluble and colloidal silica, strontium, sulfide, total organic carbon, silt density index, turbidity, and bacteria (total plate count). Table F.2 lists the analytical suites for characterization of general chemistry and for characterization of water treatment constituents. Table F.2 lists analytical methods; target method detection limits; and filtration, preservation, and holding time requirements. All groundwater samples will be field filtered using a 0.45 micron filter to allow analysis of dissolved constituents unless otherwise indicated in Table F.2.

The HGC QA manager will be responsible for ensuring that the analytical laboratory provides appropriate sample containers with any necessary preservatives. Field duplicate samples and field blank samples will be collected periodically for quality control as described in Section 4.2.1.5. QA practices for collecting groundwater samples are as follows:

- Verify that sample containers have been properly prepared, including addition of any preservative required (Table F.2).
- Minimize the lag time between filtered and unfiltered samples by setting up the sample containers near the sampling location and by first taking the filtered sample.
- Install a new (unused) in-line (0.45 µm) filter to the pump discharge and collect a sample from the filtered discharge. If the in-line filter cannot be connected to the pump discharge from the well, collect a sample aliquot, then filter the aliquot using a portable pump and the in-line filter.
- Take the unfiltered samples directly from the pump discharge.

Sample containers do not need to have zero headspace since volatilization of analytes is not a concern.

4.2.1.4 Sample Labeling

Each sample will be uniquely labeled with permanent indelible ink either directly on the container or on a water-proof label that is affixed to the container. Each sample will also be labeled with the date and time of sample collection, the analysis requested, and the preservative used.

4.2.1.5 Field Quality Control Samples

Field QC samples will be collected to verify sampling and analytical precision, accuracy, and representativeness. Two types of field QC samples will be used as QC check samples: field duplicates and field blanks. Field duplicates will be collected to assess analytical precision (Section 3.3.1). Field blanks will be collected to check for the introduction of contamination in sample handling, shipment, storage, or analysis. These field QC samples will be assigned a unique ID so that the laboratory does not know they are QC samples; however, the QC sample IDs will be clearly noted in the field logbook and on the groundwater sampling form. The collection of field duplicates, and field blanks is described below.

- Field Duplicate Samples are samples that are collected at the same time and location as another groundwater sample. The field duplicate and its partner sample will be split samples collected from the same aliquot of water. The field duplicate will be collected by first obtaining a groundwater sample in a large sampling container, and then distributing the water into sample bottles for analysis of like analytes (e.g. fill bottles for anion analysis from the same sample draw). Field duplicates of filtered water will be collected at a frequency of at least one per 20 samples.

- Field Blank Samples will be collected from de-ionized water that is poured directly into a sample container while in the field. Field blank samples will be subject to the same sampling procedures as samples being collected from a designated sampling location, including container type and preparation, storage, and handling. One field blank will be collected for every 20 samples.

- Field Equipment Blank Samples will be collected by pouring deionized water over and through sampling equipment in the field after the equipment has been cleaned. One field equipment blank sample will be collected for every 20 samples from decontaminated equipment.

4.2.1.6 Equipment Decontamination

Properly decontaminated sampling equipment will help prevent errors due to cross-contamination. Prior to the start of sampling, all reusable equipment will be decontaminated. This includes non-dedicated groundwater pumps, reusable bailers, DTW probes, and any other equipment brought onsite. Cleaned equipment should not lie on the ground or any unclean surfaces. Disposable, single-use equipment such as filters, bailers, sampling spigots, and nylon string will be used at a single sample collection location and then discarded.

Environmental sampling conducted during aquifer characterization for the focuses on sulfate and other major element ions (e.g., calcium, magnesium, chloride, bicarbonate). Because the major element ions are nonsorbing and exist at relatively high concentrations in the groundwater, equipment decontamination is not subject to the rigorous protocols that are needed for decontamination when sampling for trace organic and metal compounds. Nevertheless, proper equipment decontamination is important to preserve sample integrity and maintain quality control. The following procedures should be used to decontaminate any reusable equipment involved in sampling.

1. **Decontamination of reusable sampling equipment (e.g., buckets, beakers)**

    a. Use proper personal protective equipment. This includes safety glasses and chemical resistant gloves. Use care while handling detergents.
    b. Scrub exterior of equipment with a non-phosphate detergent/potable water mixture.
    c. Flush interior of equipment with a non-phosphate detergent/potable water mixture.
    d. Rinse interior and exterior of equipment with potable water.
    e. Rinse interior and exterior of equipment with deionized water.
    f. Allow the equipment to air dry.

g. Properly dispose of all disposable sampling and cleaning equipment.

2. Decontamination of mobile monitoring well pumps and pump riser pipe

a Use proper personal protective equipment. This includes safety glasses and chemical resistant gloves. Use care while handling detergents.
b Pressure wash interior and exterior portions of riser pipe with a non-phosphate detergent /potable water mixture.
c Repeat step "b" using potable water.
d Pump a non-phosphate detergent /potable water mixture through the submersible pump
e Repeat step "d" using potable water.
f Allow the exterior of pump and riser pipe to air dry with the exception of probes that must remain moist (e.g. pH probe).
g Properly dispose of all disposable sampling and cleaning equipment.

3. Decontamination of meters and probes

a Use proper personal protective equipment. This includes safety glasses and chemical resistant gloves. Use care while handling detergents.
b Rinse meters and probes with deionized water for several seconds between each reading.
c Rinse containers used for field measurements with deionized water between each reading. If there is residual residue on containers, use a non-phosphate/potable water mixture to manually remove residue. Afterward rinse containers with potable water then deionized water.
d Allow the meters, probes, and containers to air dry.
e Properly dispose of all disposable sampling and cleaning equipment.

4.2.2 Sample Custody and Handling

Groundwater samples will be stored in coolers with ice (4 ºC ± 2º) from the time they are collected until they arrive at the laboratory. COC documentation will be maintained from the time of collection until the samples are analyzed to ensure the defensibility of the results. Further instructions on sample custody and shipping are specified below.

4.2.2.1 Sample Custody and COC Documentation

Samples are in the sampler's custody upon collection. The custody of the samples will be the responsibility of the sampler until the samples are delivered or shipped to the laboratory. A sample is considered to be under a person's custody if one or more of the following conditions are met:

- The sample is in the person's physical possession.
- The sample is in the view of the person after that person has taken possession.
- The sample is secured by that person so that no one can tamper with the sample.
- The sample is secured by that person in an area that is restricted from unauthorized personnel.

Custody of samples will be documented from the time of sample collection to completion of the analyses using COC forms. COC forms will be filled out and will accompany the samples when shipped to the laboratory. The COC form will identify the contents of each shipment. The COC form will remain in the sampler's possession until the samples have been hand delivered or shipped to the laboratory. The sampling team leader or designee will sign the COC form in the "relinquished by" box and note the date and time the samples were relinquished. A properly completed COC form will specify:

- The project name, required signatures, dates, and times that samples were relinquished and accepted.
- Analyses requested, time and date of sampling, and sample matrix.
- Unique field identification of each sample.
- Number of containers submitted.
- Temperatures upon receipt by the analytical laboratory.

4.2.2.2 Sample Shipping

Procedures for packing and transporting samples to the laboratory may vary depending on whether samples are hand delivered to the laboratory by field personnel or delivered via a commercial shipping service such as Federal Express or United Parcel Service. The method of sample shipment will be noted on the COC form. Table F.3 provides a checklist for shipping requirements.

If samples are shipped by a delivery service, all U.S. Department of Transportation (DOT) regulations for packaging and shipment must be followed. Each sample will be packaged and transported according to the procedures outlined below, which meet DOT requirements.

- Ice will be placed in a sturdy plastic bag to prevent leaking. Samples will be protected by bubble wrap, foam, or some other packing material. Sufficient packing material will be used to prevent sample containers from making contact during shipment. Enough ice will be added to maintain the cooler temperature at 4°C ⟨≡~ 2°, until receipt by the laboratory. The plastic bag will be zip-locked or closed with a twist or cable tie.

- The COC records will be signed by the person relinquishing possession of the samples and will be placed inside a plastic bag. The bag will be sealed and taped to the inside of the cooler lid. The shipping address will be verified before the samples are relinquished to the courier.

- The cooler will be closed and taped shut with packing tape around both ends.

- The cooler will be transferred to the courier along with a completed shipping bill.

4.3 Drilling and Well Construction Activities

As described in the ACP, drilling and well construction activities will be conducted to install monitoring wells at offsite locations. These activities involve the following:

- Utility Location (Blue Stake)
- Licensure and Permits
- Drilling of boreholes
- Lithologic logging of boreholes
- Reconnaissance water quality sampling of drilling return water
- Well construction
- Well development
- Hydraulic testing and water sampling of new wells

QA procedures for these activities are discussed below.

4.3.1 Licensure and Permits

All drilling, well construction, and well development activities will be performed by a drilling contractor who is licensed by ADWR. Prior to drilling, well development, and hydraulic testing of wells, applicable forms and permits will be filed and obtained from ADWR and ADEQ. These forms and permits may include a Notice of Intent to Drill, a well permit, and a DGP to discharge groundwater to the ground surface. Drilling activities, including drilling progress, setbacks, and milestones will be noted in the field logbook or appropriate forms. The drilling contractor for this project is WDC Exploration and Wells.

4.3.2 Borehole Drilling

Proposed approximate drilling locations are given in the ACP. Locations of proposed new monitoring wells are subject to change depending on land access and results of data collection (Task 2.2). Drilling of new monitoring wells will be accomplished using a variety of drilling methods including air-rotary casing hammer (ARCH), under-reaming casing advance using Stratex® tools, reverse circulation air-rotary, open-hole air rotary, or mud rotary methods. Selection of the drilling method is determined by the site conditions and the need for lithologic and formation water sampling for the particular borehole.

One of the primary objectives of the drilling is to obtain samples of groundwater at the drilling face at regular depth intervals during drilling (Section 4.3.4). The preferred method to accomplish this sampling is a casing advance method (i.e., either ARCH or Stratex) that provides temporary casing of the borehole as it is being advanced into the formation. Air is injected at the drilling face to lift cuttings and formation water out of the borehole. The return air and cuttings travel up the borehole between the temporary casing and the drill rods, preventing interaction with the formation. Borehole integrity is maintained throughout the drilling process by the presence of the temporary casing, which is withdrawn during well construction. Reverse circulation methods have many of the same benefits and may be used for pilothole drilling and formation water sampling if the casing advance methods cannot be used for some reason. The drawback to reverse circulation drilling is that the borehole is too small completion of the well, requiring reaming using mud rotary methods to provide as stable borehole large enough to complete the planned wells.

Mud-rotary methods may be substituted for casing advance or reverse circulation if water sampling is unsuccessful, unstable hole conditions occur, or on the advice of the driller that doing so is necessary to maintain the borehole. Open-hole air rotary methods may be used in bedrock formations if water sampling is unsuccessful or not required at that specific borehole (e.g., if an adjacent borehole has already been drilled and satisfactorily sampled). If additional wells are installed at a borehole location, they will be installed using mud rotary methods in basin fill and possibly open-hole air rotary in bedrock.

The drilling methods outlined here may be modified based on the judgment of the site geologist or recommendations from the drilling contractor. Well design will be based on the results of lithologic sampling and water quality data collected during drilling as described in Section 3.3.3 of the main text.

The site geologist has responsibility of logging the borehole drilling and making sure that boreholes are satisfactorily drilled according to the requirements of the ACP. The site geologist will follow the QA practices given below when logging boreholes.

- Prior to drilling, measure (to ± 0.01 ft) and record the size and length of the drill, sub-assembles, and drill rods. Know and document the relationship between the number of drill rods in the ground and the depth of the borehole.
- Give constant attention to drilling progress, including the number of drill rods in the ground and verify that the driller is in agreement with the depth estimates.
- Immediately discuss any suspected deviations in drilling progress with the driller. Record deviations in the field logbook and immediately report them to the HGC Project Manager.

- Record the following in the field notebook or on the borehole log along with the corresponding depths and times: groundwater depth, observed changes in drilling conditions, and the type and quantity of any materials added to the borehole.

4.3.3 Lithologic Logging

Lithologic logging of boreholes for wells will be conducted by the site geologist. The lithology will be logged at 10-ft intervals or more frequently if needed to note significant changes in material properties. Materials used for lithologic logging will be collected from the air-rotary cyclone or mud return. To ensure comparability between lithologic descriptions between different locations, logging will be conducted according to the specifications of American Society for Testing and Materials (ASTM) D2488-00. A copy of this ASTM standard is provided in Appendix F.1. Logging will, as a minimum, note the following:

- Sample description
- Color (using a Munsell color chart)
- Unified Soil Classification System (USCS) classification symbol or lithologic name
- Grading (for coarse grained soils)
- Estimated percentages of gravel, sand, and fines
- Consistency of dominant size fraction
- Local or geologic name, if applicable
- Degree of rounding/angularity
- Lithology of larger grains
- Reaction with hydrochloric acid

4.3.4 Reconnaissance Groundwater Sampling from Boreholes

Grab samples of groundwater will be collected from the air rotary return for reconnaissance estimation of sulfate concentrations with depth. Grab sampling will commence when the borehole reaches the groundwater table and will continue at approximately 40-ft intervals to the bottom of the borehole if there is sufficient water in the return.

Formation water samples can be collected at discreet intervals using either casing advance or reverse circulation methods. Casing advance methods provide temporary casing that is advanced with the drill bit to case off higher portions of the hole during drilling. When the end of a casing section is reached, drilling stops allowing cuttings and water to be blown out of the hole until it is clear. Formation water can only enter the drill column at the drilling face and it is blown out of the hole between the temporary casing and the drill pipe, preventing adulteration of the sample by formation water from higher in the borehole. Similarly, with reverse circulation, the annulus between the borehole and the double-walled drill pipe is small, enabling formation water at the drilling face to be blown out of the hole in the center of the double-walled pipe where it is isolated from the formation.

Procedures for borehole water sampling are as follows.

- At the end of each section of drill pipe and temporary casing, pull back on the drill bit and purge the borehole of all cuttings and liquids.
- Turn off the air, enabling formation water to enter the borehole at the drilling.
- Resume air circulation to blow the formation water out of the hole.
- Collect return water in a decontaminated container.

- Measure indicator parameters (temperature, pH, and electrical conductivity) as soon as possible so that temperature does not significantly increase.

- Record the indicator parameter measurements in the field notebook along with the name of the boring, the depth of the casing at the time of sample collection, and the date and time of the measurements.

In the event that reconnaissance sampling from the air rotary return is infeasible, reconnaissance water samples may be collected through a temporary well screen or using a straddle packer system depending on the situation. A temporary well screen would consist of 20-foot length of slotted casing placed at the target sampling depth, surrounded by gravel pack, and sealed from the underlying and overlying formation and borehole using bentonite pellets or packers. The temporary well screen would be developed by air lifting, pumping, or bailing to remove at least three wetted borehole volumes in the event of installation by air drilling techniques or until the water is clear in the event of installation in by mud rotary. A straddle packer system may be used in bedrock boreholes where competent conditions exist. The straddle packer would seal off a screened interval which would be purged by pumping or bailing. The use of temporary well screens or a straddle packer for reconnaissance sampling may not be suitable for all sites, but should be capable of providing high quality water samples. Sampling through temporary well screens would be conducted by drilling to a pre-determined depth and setting and sampling temporary well screens at various depths.

The TDS and sulfate concentrations in samples will be estimated by measuring pH and conductivity using an electrical conductivity meter. Filtered water samples for laboratory analysis of sulfate will be collected if sufficient water is available. The labeling and handling of

samples will follow the protocols in Sections 4.2.1.3, except that sample depth will be identified in the sample ID.

4.3.5 Well Construction

Well construction design will be determined by the site geologist in consultation with the HGC Project Manager and the driller. Length and quantity of materials will be determined according to the purpose of the well, site geologic conditions, and the quality of water samples collected during drilling as described in Section 3.3.3 of the main text.

Well casings will be 5-in diameter low-carbon (= 0.3 percent) steel. Schedule 80 PVC may be used for wells less than 500 feet deep, but use of PVC is not anticipated. Annular materials including filter pack, bentonite pellet seals, and bentonite grout will be emplaced through a tremie pipe. From 0 to 20 feet below ground surface (bgs), grout will be a bentonite/cement mixture. To ensure that wells are properly constructed, the field technician will observe the following:

- Prior to well construction, estimate the amount of materials (e.g., well casing, packing material, and grout) needed to construct the well. During well construction, immediately notify the driller of a potential problem if the materials needed for well construction are significantly more or less than estimated.

- Prepare and use a well-construction diagram to monitor the progress of the well construction. Record the progress in the field notebook or on a well construction form.

- Periodically have the driller measure the depth of the filter pack and check to make sure that “bridging” of the packing material does not occur. A tightly fitting rubber surge block may be used in wetted portions of the well screen to compact the filter pack.

- After the filter pack is in place, the well will be pre-developed using air lifting to remove formation materials and drilling mud (if used) from the well. Drilling mud and sediment will be contained at the site and transported to CQB property for disposal. Decanted formation water will be discharged at the site under the terms of a DGP obtained from ADEQ prior to discharge. Air lifting will continue the discharge is relatively sediment free.

Generalized well construction diagrams for monitoring wells are in Appendix E of the Work Plan. Significant standard features of the well design include a 10-foot sump of blank casing below the well screen; No. 8 Tacna gravel filter pack surrounding a well screen with 0.125-inch openings, transition sand consisting of 5 feet of 8-12 sand and 5 feet of No. 60 sand beginning at least 10 feet above the top of the well screen; 10 feet of bentonite pellets followed by high-solids bentonite grout above the transition sand to within 20 feet of the surface to form an annular seal around the blank steel well casing; and a 20-foot surface seal of cement-bentonite grout.

4.3.6 Well Completion

Surface completion of all wells include a watertight well plug or sanitary well seal. The north side of the top of the casing or sounding tube will be notched to establish a permanent measurement point. The measuring point will be surveyed to ± 0.01 ft by a licensed surveyor contracted by CQB to establish a datum for water level measurements. A surface well cover box will be installed around the well casing and cemented in place. The well name and the ADWR well registry number will be stamped into the vault lid or well casing. The well registry number will also be written near the top of the well casing or concrete pad with permanent black marker. After the well is completed, the DTW with be measured and recorded.

4.3.7 Well Development

Following well completion, the well will be developed using the following procedure:

1. Obtain a DGP from ADEQ prior to development pumping, if required.

2. The depth to the bottom of the well (total depth) will be measured to determine whether any sediment has accumulated in the well.

3. The wetted portion of the well screen will be surged with a tightly fitting rubber surge block to dislodge any material finer than the screen slot size.

4. Air lifting or bailing will be used to remove sediments from the well.

5. A temporary submersible pump and sounding tube will be installed in the well for pump development. Turbidity will be monitored during well development. Well development will be considered complete when the pumped groundwater is relatively sediment free or when the turbidity has stabilized.

4.3.8 Hydraulic Testing and Water Sampling

A 10- to 24-hour step rate pumping test and a recovery test will be conducted at each new well to estimate the hydraulic conductivity of the formation. The step test will consist of two 60-minute pumping steps followed by 480 minutes or more of pumping at a maximum constant rate. A detailed description of the test procedure is in Appendix F.2. The pumping test will be conducted using the general guidelines provided below:

1. Obtain a DGP from ADEQ prior to conducting a pumping test.

2. Prior to beginning the test, measure the static water level using a well sounder. Install a pressure transducer below the anticipated drawdown level. Be certain that the transducer has a sufficient pressure range to accurately measure the anticipated drawdown. Measure the static water level with the pressure transducer and verify the transducer water level measurement by using a water level indicator.

3. Select pumping rate(s) for the test to provide the necessary drawdown data and to avoid lowering the water level below the transducer or pump intake. Use a constant pumping rate throughout each step of the step test.

4. Measure DTW levels during the test with a pressure transducer/data logger assembly and periodically verify it with a sounder probe. At a minimum, take measurements according to the following schedule:

Time of Pumping Step	Measurement Interval
0 to 15 minutes	1 minute
15 to 50 minutes	5 minutes
50 to 100 minutes	10 minutes
100 to 500 minutes	30 minutes
Over 500 minutes	60 minutes

5. Ensure that water discharged during the pumping test is directed down gradient of the well so that re-infiltration of the discharge water does not affect the test results.

6. Continue pumping long enough to collect sufficient drawdown data. Ideally, pumping will be continued for 600 minutes or longer; although, the work location or other constraints may dictate a shorter pumping period.

7. After pumping is discontinued, measure the recovery of water levels in the well at frequency intervals similar to those used for the active pumping period. Continue measurements until the water level in the well has recovered to within 90 percent of its pre-pumping level.

During or near the end of each pumping test, a groundwater sample will be collected from the test well using the sample collection and handling procedures in Sections 4.2. Pumping test results will be interpreted using analytical software such as the Well Hydraulics Interpretation Program (HGC, 1987) or AQTESOLV (Hydro Solve, Inc., 2000).

4.4 Investigation-Derived Waste Management

Investigation-derived wastes are expected to consist of purge water, drill cuttings, drilling fluids, and development water. Prior to initiation of field activities, the HGC Project Manager will contact ADEQ to determine the need for a DGP for the release of purge water. DGP is expected to be needed for the release of development water. Cuttings and drilling fluids will be collected in tanks or roll-off containers and stored at an appropriate location within the site according to methods approved by the CQB Project Manger. This may include spreading cuttings on the ground.

4.5 Field Equipment and Consumables

4.5.1 Field Equipment Maintenance and Calibration

The field technician will be responsible for properly maintaining and calibrating all field equipment. Operation, calibration, and maintenance procedures for all equipment will be kept accessible when equipment is being used, calibrated, or serviced. Measurement equipment will be calibrated when it is first used and recalibrated periodically based on the recommendations in the instrument's operations manual. Maintenance practices also will follow the manufacturers' recommendations. All calibration and maintenance will be recorded on a maintenance record that is readily available for reference in the field.

Precautionary measures will be taken to avoid equipment problems. Some precautionary measures are listed below.

- Keep spare parts such as batteries and probes on hand.
- Store equipment in a cool, clean, dry place when not in use.
- Clean equipment after each use.
- Keep sensitive parts covered and protected from potential hazards.
- Inspect equipment for potential problems prior to use.
- Keep battery packs charged.

Should a piece of equipment become inoperable, it will be removed from service and tagged to indicate that repair, recalibration, or replacement is needed. The HGC QA Manager will be notified when equipment needs to be repaired or replaced so that prompt service can be performed or substitute equipment can be obtained. Instrument problems encountered during the field program will be recorded and, if possible, resolved in the field.

4.5.2 Electrical Conductivity, Temperature, and pH Measuring Equipment

A multi-probe meter with automatic temperature correction of electrical conductivity measurements will be used to measure indicator parameters. The instrument will be properly stored and calibrated each day that it is in use. The instrument probes will be triple-rinsed with de-ionized water and stored according to the manufacturer's specifications after use. The electrical conductivity probe will be calibrated before each sampling event using a commercial

standard. Because electrical conductivity measurements may be correlated with, and used for, sulfate ion estimation, electrical conductivity measurements must be accurate and temperature corrected. The pH probe will be calibrated with two standards that have pH values that bracket the anticipated pH values for the samples to be tested. Standards with pH of 7 and 10 will be used for calibration. The calibration will be checked at least once every 4 hours thereafter with the pH 7 standard, and the probe will be recalibrated if the reading is out of the range of 6.7 to 7.3.

4.5.3 Water Level Measuring Equipment

Each electric sounder probe should be checked for accuracy at least once every 3 months. The accuracy will be checked by comparing the depth markings on the probe tape with the markings on a graduated steel tape. The sounder will also be checked after any incident that may alter the instrument's accuracy. If the difference between markings on the steel tape and on the sounder probe tape exceeds 0.05 ft per 100 ft, a correction factor will be determined and applied to DTW measurements. The sounder probe will be kept clean and functional. Portions of the cable that are submerged below fluid levels in wells will be properly cleaned, as described in the decontamination procedures outlined in Section 4.2.1.6.

4.5.4 Pressure Transducers and Data Loggers

The pressure transducer should be capable of measuring water levels with a sensitivity of 0.01 ft, although the transducer accuracy may differ depending on pressure rating. The data

logger may be internal to the pressure transducer or a separate instrument, but it must be programmable to collect pressure data at a minimum frequency consistent with the schedule given in Section 4.3.7. The accuracy of the pressure transducer will be periodically verified using the sounder probe. Data collected by the data logger will be downloaded daily. Maintenance for the pressure transducer/data logger assembly will follow the guidelines of the operations manual. The assembly will be stored in a clean, secure location when not in use.

4.5.5 Flow Meters

Flow meters will be capable of measuring flow rates in the range needed for well development and hydraulic testing. The flow meters will have a sensitivity of approximately 5 percent of the measured flow rate. Maintenance and calibration of flow meters will follow the guidelines of the operations manual.

4.5.6 Consumables

The field technician, under the direction of the HGC QA Manager, has the responsibility for performing daily checks of consumables and for ensuring that there is adequate supply. Consumables include the following:

- Groundwater sampling containers prepared with preservatives.
- Sample identification labels and packing supplies.
- Coolers and ice for sample storage and transport.
- Disposable gloves for groundwater sampling.

- Markers and/or ink pens for sample labeling and for recording field activities.
- Detergent and water for decontamination.
- Laboratory grade de-ionized water for QC samples.

4.6 Field Documentation and Reporting

Field notes will be maintained for all sampling, drilling, well construction, well development, and pump test activities. The field logbook will be a bound, water resistant notebook with consecutively numbered pages. Documentation in the field logbook will be sufficient to reconstruct a field activity, including any corrective actions taken, without relying on memories from field team members. Deviations from the ACP or this QAPP also will be noted in the logbook. Field logbooks will be clearly identified on the cover with the project name and each page of the logbook should note the date that the entry was made. Entries will be made in blue or black ink. Incorrect entries will be crossed out with a single stroke and the change will be initialed and dated by the person making it. Manually recorded data will be transferred to an electronic format after field activities are concluded. Specialized information for some tasks may be recorded on field forms developed for that data type (e.g., groundwater sampling forms, geologic logs, well construction logs). When combined with the field logbook, these comprise the field record for the ACP.

At the end of each day, the carbon copy of the pages of the day's entries in the field logbook will be removed, or the pages will be photocopied, and stored in a secure area. Field forms and any other field checklists also will be photocopied and stored at the end of each day.

This practice will protect against lost data should the logbook or forms be lost or destroyed. Data measured by field instruments and recorded in digital storage devices will be downloaded daily for processing. At least once a week, all data that was collected in the field, including field notes, field forms, checklists, and electronic data, will be presented to the HGC QA Manager for review and verification.

4.7 Field Corrective Action Procedures

Corrective action procedures will be taken for all field non-conformances. Non-conformances are defined as events or measurements that are either unexpected or do not meet established acceptance criteria and that might affect data quality if uncorrected. Examples of non-conformances include:

- Incorrect use of field equipment.
- Field instrument failure.
- Improper sample collection, preservation, and shipment procedures.
- Incomplete field documentation, including COC records.
- Incorrect decontamination procedures.
- Incorrect collection of QC samples.

The appropriate corrective action will depend on the nonconformance. In cases where immediate and complete corrective action can be implemented by field personnel, corrective actions should be completely described in the field logbook. If a nonconformance cannot be completely and immediately corrected in the field, the individual involved with the field activity

will immediately notify the HGC QA Manager and corrective actions will be taken as described in Section 6.5.

5. ANALYTICAL LABORATORY PROCEDURES

Upon receipt of samples from HGC field activities, the analytical laboratory will be responsible for sample handling, analysis, and reporting. Analytical laboratory procedures must be conducted in a consistent, accurate, and quality controlled manner so that the data generated from field activities is useful for achieving the purposes of the Work Plan. This section discusses the following items related to QA of analytical laboratory procedures:

- Licensure
- Sample receipt and handling
- Analytical methods
- Laboratory QC samples
- Laboratory equipment
- Reporting
- Corrective action

Samples collected by HGC will be analyzed by an Arizona Department of Health Services (ADHS) licensed laboratory. Currently, ACZ Laboratories, Inc. of Steamboat Springs, Colorado will conduct analysis of water samples collected for Tasks 1 and 2.2, and Turner Laboratories of Tucson, Arizona will conduct analysis of reconnaissance samples collected for Task 2.3. However, CQB reserves the right to change laboratories for any reason. Analytical laboratory requirements are discussed generically.

5.1 Licensure

The designated analytical laboratory and any laboratories to which sample analyses will be subcontracted shall be licensed by ADHS to perform each analysis requested, unless ADHS licensure is not provided or required for that particular method. If the status of the laboratory's license changes, or if laboratory performance is unsatisfactory, an alternate licensed analytical laboratory may be selected to perform the analyses. A laboratory performing analyses will notify the HGC Project Manager for approval prior to subcontracting analyses to another licensed laboratory. Documentation verifying the subcontracted laboratory's ADHS license must be received by the HGC Project Manager prior to performance of the analytical services.

5.2 Sample Receipt and Handling

When the samples arrive at the laboratory, the laboratory will check samples for label identifications and complete, accurate COC documentation. The sample condition will be checked and recorded on the COC. Any discrepancies between the COC documentation and sample labels, any inaccurate or incomplete sample preservation, or any problem encountered that may compromise the sample integrity must be noted and communicated to the person submitting the samples and to the HGC QA Manager.

A unique laboratory ID number will be assigned to each sample. This number will be cross-referenced to the sample field ID to avoid the possibility of mislabeling. Analytical reports will contain both laboratory ID numbers and field IDs for sample results. Access to the sample

control area will be restricted to prevent unauthorized contact with samples, extracts, or documentation. All samples and extracts will be maintained by the laboratory until at least 30 days following the release of the final report. A detailed description of the laboratory sample receiving, custody, login, and tracking procedures will be contained in the laboratory's QA plan and/or SOP.

Samples may be shipped from one laboratory to another for analysis. Laboratories will package and transport samples as described in Section 4.2.3. The temperature inside the cooler will be checked and documented on the COC by the receiving laboratory upon receipt of the samples. Samples shall then be placed immediately on ice or in a refrigerator at 4 °C ⟨≡~ 2° at the receiving laboratory.

5.3 Analytical Methods

Selected samples collected as part of the ACP will be analyzed for the following major element ions and parameters: calcium, magnesium, sodium, potassium, sulfate, chloride, fluoride, nitrate-nitrite, silica, hardness, total dissolved solids, alkalinity, and pH. Water samples will be analyzed using the methods or equivalent methods specified in Table F.2. If analyses by alternative methods are deemed necessary or more appropriate by the Laboratory Project Manager, they will first be approved by the HGC QA Manager. The following documents can serve as a guide in selecting alternative methods.

- *Analytical Methodologies Designed for Testing Conducted Under the Clean Water Act*, CFR, Title 40, Part 136.

- *National Primary Drinking Water Regulations Analytical Methodologies*, cited in the Federal Register under the National Primary Drinking Water Regulations. These may be used to evaluate groundwater concentrations as they pertain to human receptors of drinking water.

- *Standard Methods for the Examination of Water and Wastewater* American Public Health Association, 1995). These are EPA-approved methods for analysis of inorganic compounds and can be used to evaluate surface water or groundwater samples.

The laboratory performing sample analysis should use the most efficient and cost-effective approach to achieve the accuracy and precision requirements of this QAPP. Target method detection limits (MDLs) are given in Table F.2. If sample dilution is necessary due to a relatively high concentration of an individual compound or if there is interference, the MDLs and other DQIs may not be achieved for every analyte. Similarly, matrix interferences may cause surrogate and analyte recoveries to fall outside of the required percent recoveries listed in the laboratory's SOPs. The laboratory will document all analyte and matrix interferences in all laboratory reports and evaluate the possible matrix effects using ADEQ policy 0154.000 *Addressing Spike and Surrogate Recovery as They Relate to Matrix Effects in Water, Air, Sludge and Soil Matrices* (ADEQ, 1998a). Analytical data will be qualified by the ADEQ Data Qualifiers (Appendix F.2).

If laboratory results are outside any of the method acceptance criteria or the acceptance criteria listed in the laboratory's SOPs, the laboratory will document the deviations in the case narrative. If deviations are the result of laboratory procedures, the laboratory will take the appropriate corrective action, such as re-analysis of samples or a detailed review of instrument output.

5.4 Laboratory Quality Control

QC of laboratory operations consists of documentation of all actions taken by personnel regarding issues such as equipment maintenance, reagent purity, standards traceability, waste disposal, and corrective action systems. These policies should be specified in each laboratory's QA manual. Appendix F.3 and F.4 contain quality assurance procedure for ACZ Laboratories, Inc. and Turner Laboratories, Inc., respectively.

The designated laboratory should be familiar with and follow ADEQ Policies related to QA/QC of laboratory results such as Policy 0154.000, *Addressing Spike and Surrogate Recovery as They Relate to Matrix Effects* (ADEQ, 1998a), and Policy 0155.000, *Analytical Methods Having Provisions for a One-point Calibration and Continuing Calibration Verification Constraints* (ADEQ, 1998b). Laboratory QA/QC procedures will be in accordance with method requirements and as described in each laboratory's QA plan and/or SOP. The laboratories' QA plan and SOP will be provided by the laboratory if requested.

Laboratory QC also includes the routine measurements taken within the laboratory to verify the integrity of analysis, data processing, and record maintenance. The laboratory will analyze internal QC samples as required by the analytical methods to ensure analytical precision, accuracy, and representativeness. Field samples and laboratory QC samples will be analyzed to a minimum reporting limit as specified by the method, or in-house requirements, whichever is stricter. The precision acceptance criteria for those analytes (RPD; Section 3.3.1) and accuracy (percent recovery; Section 3.3.3) also will be based on the stricter of in-house laboratory established limits or method requirements.

Typical laboratory QC samples include blank spikes, laboratory control samples (LCSs), method blanks, surrogates, matrix spike/matrix spike duplicate (MS/MSD) analysis, internal (reference) standards, and duplicate samples. These samples are described below:

- The blank spike is a sample of water demonstrated to be free of matrix interference and has non-detectable concentrations of the target analyte to which a known amount of the analyte is added. ADEQ Policy 0154.000 (ADEQ, 1998a) requires a blank spike and a blank spike duplicate to be analyzed to demonstrate both precision and accuracy when the MSs are unacceptable because of matrix interference. The percent recovery of the blank spike and blank spike duplicate pair is used to evaluate the accuracy and recovery of each preparation and analytical batch, and may be used to establish statistical control of the analysis.

- The LCS is a standard or sample that is derived from a different source (i.e., different vendor or lot number) than the standards that are used to calibrate the instrument. It is used as a cross-check to verify the accuracy of the calibration and typically must be analyzed once for every instrumental calibration (ADEQ Policy 0154.000 (ADEQ, 1998a)).

- A method blank is a sample of water that has non-detectable concentrations of the target analytes. For most methods, at least one method blank is prepared for every batch of 20 samples. The method blank is taken through the entire analytical process as part of the sample batch to demonstrate that contamination did not occur during the testing.

- A surrogate is a compound that is expected to perform similarly to the compounds being analyzed in the laboratory method. The surrogate is not normally found in the environment and can therefore be used to monitor the recovery efficiency of the analytical process.

- The MS/MSD is used to demonstrate both the precision and accuracy of the test and the presence or absence of matrix interferences. The MS/MSD is prepared by spiking a sample with a known concentration of the target compounds and taking it through the entire analytical process as part of the sample batch.

- Internal standards are reference samples that contain a known concentration of the analyte. The internal standards are used to test the accuracy of the instruments and analytical methods.

- Duplicate samples are taken from the same aliquot as the environmental sample being tested. The duplicate sample is analyzed within the same batch and in exactly the same manner as the original aliquot. Duplicate samples evaluate the analytical precision at the concentration of the environmental sample.

5.5 Laboratory Equipment

All laboratory equipment will be maintained and calibrated as described in the laboratory's QA plan and SOPs. Any equipment problems that may affect data quality will be documented in the case narrative. Regular calibration of laboratory instruments is essential to ensure that the analytical system is operating correctly and functioning at the proper sensitivity to meet established detection limits. Each instrument will be calibrated with standard solutions appropriate for the type of instrument and the linear range established for the analytical method. Each analytical method contains requirements for the number and concentration of calibration standards, which are described in the laboratory's QA plan.

ADHS has established criteria for instrument calibration and the quantification of analytes as part of the Laboratory Licensure program. All analyses must be consistent with these requirements, and quantification of analytes must be consistent with the reporting requirements of ADHS (the lowest calibration concentration will be at or below the reporting level). Each calibration will then be verified through the use of statistical tests (e.g., a Pearson's Correlation Coefficient or relative standard deviation calculations), initial and continuing calibration verification standards and blanks, and LCSs prior to the sample results being approved.

5.6 Laboratory Data and Reporting

Laboratories will be expected to provide preliminary analytical data reports within 15 working days of receiving the samples and final reports shortly thereafter. Laboratory data reports will be sent to the HGC QA Manager in hard and electronic formats from the designated laboratory. Analytical laboratories will be expected to store the original hard copy and electronic reports for 5 years. The laboratories will be expected to notify HGC prior to destruction of records. The requirements for the content and the handling of hard and electronic reports are given below.

5.6.1 Hardcopy Data

Analytical data will contain the necessary sample results and QC data to evaluate the DQOs defined for this project (Section 3). Omissions or insufficient levels of detail will be corrected at the laboratory's expense. The laboratory reports will be consistent with EPA Level III documentation (Section 3.2) and include, at a minimum, the following:

- Case narrative (including a complete description of any analytical difficulties or QA/QC deficiencies encountered during sample analysis), sample number cross-reference, COC documentation, and method references.
- Analytical results with cross-reference to analytical batch.
- Surrogate recoveries (as applicable).
- Blank results.
- LCS recoveries.
- Sample spike recoveries.

- Duplicate sample results or duplicate spike recoveries.
- Outliers qualified according to ADEQ Data Qualifiers (Appendix F.2).

The laboratory report, as defined above, will be submitted to the QA Manager for use in the data verification/validation process. If requested, the laboratory will make supporting documentation consistent with EPA Level IV (Section 3.2.). The following QC issues may trigger the need for the submission of Level IV documentation:

- Continued quality issues detected through the data verification/validation process
- Unexpected or unexplained sample results

5.6.2 Electronic Data

An electronic data report will be submitted by the laboratory in a format that is compatible with HGC's database. HGC's QA Manager will verify that the report is in an acceptable format and that all elements needed are present. HGC's QA Manager will enter the analytical data into a spreadsheet or database for verification before it is used in any reports.

5.7 Laboratory Corrective Action Procedures

The internal laboratory corrective action procedures and a description of out-of-control situations requiring corrective action will be contained in the laboratory QA plan. At a minimum, corrective action will be implemented when control chart warnings, control limits, sample holding times are exceeded, or if the method QC requirements are not met. Out-of-control situations that cannot be resolved within 2 days of identification will be reported to HGC. In

addition, a corrective action report, signed by the Laboratory Project Manager and the Laboratory QA Manager, will be provided for the project files. HGC's Project Manager can request the re-analysis of any or all of the data acquired since the system was last in control.

6. DATA MANAGEMENT

Reports and documentation from activities conducted under the direction of HGC will be submitted to the HGC QA Manager. The QA Manager has the responsibility of processing these data and evaluating and maintaining the data quality. The sequence for processing field and analytical data is shown in Figure F.2. This process consists of the following items:

- Data compilation
- Data entry into a spreadsheet or database
- Data review and verification
- Data entry into permanent database
- Reporting
- Corrective Action

6.1 Data Compilation and Entry to Spreadsheet or Database

6.1.1 Field Data

The field logbook and other field forms generated from field activities directed by HGC will be submitted to the HGC QA Manager at least once per week for review. The HGC QA Manager will review the field logbook and field forms using the checklist provided in Table F.4. This review will consist of checking for incomplete documentation and anomalous data entries. The HGC QA Manager will immediately contact the person submitting the field forms to verify

or correct missing or anomalous entries. When the problems are resolved or if no problems are found, the information will be entered into a temporary database for the sampling event.

6.1.2 Laboratory Data

Hardcopy and electronic laboratory reports will be reviewed for completeness (Table F.4). Electronic data deliverables will be entered into a spreadsheet or database for review and verification by the QA Manager. Hardcopy laboratory reports will be stored in HGC's files.

6.2 Data Review, Verification, and Validation

Data verification is "the process of evaluating the completeness, correctness, and conformance/compliance of a specific data set against the method, procedural, or contractual requirements" (EPA 2002b). Data validation is "an analyte- and sample-specific process that extends the evaluation of data beyond method, procedural, or contractual compliance (i.e., data verification) to determine the analytical quality of a specific data set" (EPA 2002b).

Data validation is not expected for this project. Data validation would require a thorough review of all the field data and/or the analytical laboratory results to provide data documentation consistent with EPA Level IV requirements. This level of review will not be performed unless there are persistent concerns regarding the quality of field or laboratory data. If persistent

concerns do arise and an EPA Level IV package is deemed necessary, 100 percent of the affected data will undergo data validation (Section 6.4).

Results of the data review and verification will be documented and summarized in a data verification report that will be included in the groundwater monitoring reports for Task 2.2. Data collected according to the directives of the MO will be reviewed and verified according to the provisions of this QAPP. It is the responsibility of the HGC QA Manager to resolve any data verification issues identified prior to preparation of groundwater monitoring reports for Task 2.2.

6.2.1 Field Data

The HGC QA Manager will review and verify all field data to evaluate their completeness and check for data anomalies prior to entry into the permanent project database. Where appropriate, DQI's will be evaluated as described in Section 3.3. The data quality assessment checklist, provided in Table F.4, will be completed as part of this review.

6.2.2 Laboratory Data

The HGC QA Manager will verify analytical data by reviewing it for compliance with the QA/QC specifications outlined in the analytical methods and Table F.4 of this QAPP. After the data have been verified, the HGC QA Manager will determine whether the DQOs have been met. Data verification flags will be applied to those sample results that fall outside acceptance criteria specified in the analytical methods, the laboratory SOPs, and this QAPP and therefore did not

meet the DQOs. Data verification flags to be used for this project are defined by the ADEQ Data Qualifiers (Appendix F.5). Data verification flags will indicate whether results are considered anomalous, estimated, or rejected. Only rejected data are considered unusable for decision-making purposes, however, other qualified data may require further verification. All corrective action to be taken by the laboratory should be completed as described in Section 5.7 and 6.5 prior to reporting the data.

6.2.3 Final Data Assessment

All field and laboratory data will undergo a final data assessment (Table F.4). This assessment involves checking data entered into the temporary database with the original data source and, where appropriate, comparing data against time series plots to check for data anomalies. The final assessment also will verify that all QA issues have been resolved and proper corrective actions have been taken.

6.3 Data Storage and Data Transfer

Any data generated by CQB will be shared with HGC so that a comprehensive database of all ACP activities can be maintained. To the degree possible, data transfer should be performed electronically to eliminate human transcription errors. When electronic data transfer is not possible, a staff member will manually input data to the database, and another staff member will proof these manually entered data to ensure that they are correct before they are uploaded and reported. Key data that cannot be verified will be brought to the attention of the

appropriate QA Manager. All reported results are ultimately stored in the permanent project files along with original copies of field notes, monitoring forms, and laboratory reports.

6.4 Reporting

A data verification report will be prepared by the HGC QA Manager for each groundwater monitoring report for Task 2.2, or on another routine basis, as specified by the HGC Project Manager. The report will summarize data flags, document corrective actions, and evaluate the data quality against the DQO's. Each report also will include a summary of any significant QA/QC problems. If data quality problems necessitate data validation and reporting, the content and frequency of such reports will be identified in the verification report.

The HGC QA Manager will assemble a data package for each sampling event or field activity. Where applicable, the data package is to include the following:

- Field documentation of monitoring, sample collection, and handling records (Sections 4.2 and 4.6)
- Field equipment calibration and decontamination records (Sections 4.5.2 and 4.2.1.6)
- QC sample collection records (Section 4.2.1.5)
- COC forms (Section 4.2.2)
- Sample receipt records and shipping bills (Section 4.2.2)
- Laboratory analytical reports including laboratory QC summaries (Sections 5.6)
- Data Quality Assessment Checklist (Table 4)

6.5 Corrective Action

The HGC QA and Project Managers will promptly and thoroughly act to correct any nonconformance that is expected to compromise the quality of the project data. Rapid and effective corrective action minimizes the possibility of questionable data or documentation. All QA problems and corrective actions will be documented by the HGC QA Manager. This documentation will provide a complete record of QA activities and also will help to identify long-term corrective actions that may be necessary. After the source of the error is determined and remedied, the HGC QA Manager will ensure that all suspect data are either deleted from the permanent database or re-collected.

Corrective action procedures will depend on the nonconformance. For a nonconformance that can be easily corrected, immediate corrective actions can be taken in the field or laboratory. Often, the source of the problem is obvious and can be corrected at the time of observation. Nonconformances that have substantial impact on data quality will require the completion of a Corrective Action Request Form (Figure F.3). This form may be filled out by any project individual who suspects that any aspect of data integrity is being compromised by a nonconformance. Each form is limited to a single nonconformance. Copies of the corrective action request form will be given to the HGC Project Manager and be placed in the project file. The HGC Project Manager and QA Manager will meet along with other staff as necessary to discuss the appropriate steps to resolve the problem. Issues that may be discussed include the following:

- Determination of when and how the problem developed
- Assignment of responsibility for problem investigation and documentation
- Determination of the corrective action to be implemented to eliminate the problem
- Development of a schedule for completion of the corrective action
- Assignment of responsibility for implementing the corrective action
- Documentation and verification that the corrective action has eliminated the problem

The HGC QA Manager can require field and/or laboratory activities to be limited, discontinued, or repeated until the corrective action is complete and the nonconformance eliminated. The HGC QA Manager should continue to monitor the status of corrective actions and periodically (as determined in the corrective action report) complete a corrective action status report. This report should briefly describe the problem, the individual who identified it, and list the personnel who are responsible for the determination and implementation of the corrective action. Completion dates for each phase of the corrective action procedure will also be listed in the status report, along with the date for the designated personnel to review and check the effectiveness of the solution. A follow-up date will also be listed to check that the problem has not reappeared. This follow-up will be conducted to ensure that the solution has adequately and permanently corrected the problem.

7. REFERENCES

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TABLES

TABLE F.1
Summary of EPA Analytical Levels

EPA Analytical Level	Type of Analysis	Accuracy	Sensitivity	Level of Documentation
Field Check Level 1	Temperature, pH, and specific conductivity measurement using portable instruments.	**Low;** provides general indication of contamination.	**Low to moderate;** at least sufficient to screen for general levels of ions. Instruments may not be sensitive to some chemicals.	**Low;** often digital readout of final result only or visual indication of concentration range (e.g., by change in color.)
Routine Screening Level II	Preliminary analyses of sulfate using in-field method.	**Moderate;** provides data typically as concentration ranges	**Moderate to high;** sufficient to document presence or absence of selected chemicals.	**Low;** often only the final quantitative results without supporting quality assurance data.
Level III	Analysis of major element ions using standard EPA procedures.	**High;** provides data of known bias and precision for an overall accuracy level that is useful for most applications.	**Moderate to high;** sufficient to document presence or absence of a wide range of chemicals.	**Low to moderate;** summary of quality assurance results is provided but is usually not adequate for an independent verification of results.
Program Specific Level IV	Standard analyses of major element ions using EPA procedures.	**High;** similar accuracy as Level III with a focus on confirmation of results.	**Moderate to high;** similar sensitivity as Level III but most standardized protocols focus on characterization of waste materials.	**Rigorous;** standardized data package of sample and quality assurance results is sufficient for independent verification of results.

The QC requirements may be specially defined for each level. For example:

-- Level I requirements may include running only a standard and a blank.
-- Level II requirements may include a blank and running multiple standards to determine the range.
-- Level III requirements would include the QA/QC required by the method.
-- Level IV requirements would include Level III requirements, plus any additional steps you would like the laboratory to take, such as CLP protocols.

TABLE F.2
Groundwater Sampling and Analysis Requirements

Analyte	Method	MDL (mg/L)	Container	Preservation	Holding Time	Filtered (F), Unfiltered (U)
Constituents for General Chemistry						
pH	EPA 150	N/A	500 mL plastic or glass	N/A	analyze immediately	U
Temperature (C^o)	Thermometric	N/A	500 mL plastic or glass	N/A	analyze immediately	U
Conductivity	Conductance	N/A	500 mL plastic or glass	N/A	analyze immediately	U
TDS	SM 2540C/160.1	10	250 mL HDPE	4º C	7 days	F
Total Alkalinity (as $CaCO_3$)	SM 2320B	2	500 mL HDPE	4º C	14 days	U
Chloride	EPA 300.0	1	250 mL HDPE	4º C	28 days	F
Fluoride	EPA 300.0	0.1	250 mL HDPE	4º C	28 days	F
Nitrate	EPA 300.0	0.02	250 mL HDPE	4º C	48 hours	F
Nitrite	EPA 300.0	0.02	250 mL HDPE	4º C	48 hours	F
Sulfate	EPA 300.0	10	250 mL HDPE	4º C	28 days	F
Calcium	EPA 200.7	0.2	250 mL HDPE	4º C; HNO_3 to pH < 2	6 months	F
Magnesium	EPA 200.7	0.2	250 mL HDPE	4º C; HNO_3 to pH < 2	6 months	F
Potassium	EPA 200.7	0.3	250 mL HDPE	4º C; HNO_3 to pH < 2	6 months	F
Sodium	EPA 200.7	0.3	250 mL HDPE	4º C; HNO_3 to pH < 2	6 months	F
Constituents for Water Treatment Evaluation						
Ammonia	EPA 350.1	0.05	500 mL HDPE	4º C; H_2SO_4 to pH < 2	28 days	F
Barium	EPA 200.8	0.0001	250 mL HDPE	4º C; HNO_3 to pH < 2	6 months	F
Strontium	EPA 200.7	0.01	250 mL HDPE	4º C; HNO_3 to pH < 2	6 months	F
Ferrous Iron	EPA 3500	0.01	250 mL HDPE	4º C; HNO_3 to pH < 2	6 months	F
Iron (total)	EPA 200.7	0.02	250 mL HDPE	4º C; HNO_3 to pH < 2	6 months	U
Manganese	EPA 200.7	0.005	250 mL HDPE	4º C; HNO_3 to pH < 2	6 months	F
Boron	EPA 2007	0.01	250 mL HDPE	4º C; HNO_3 to pH < 2	6 months	F
Aluminum	EPA 200.7	0.03	250 mL HDPE	4º C; HNO_3 to pH < 2	6 months	F
Phosphate	EPA 365.1	0.01	250 mL HDPE	4º C	48 days	F
Sulfide	EPA 376.2	0.02	125 mL HDPE	4º C; Zn acetate; pH>9 NaOH	7 days	F
Silica (total)	EPA 200.7	0.2	125 mL HDPE	4º C	28 days	U
Silica (soluble)	EPA 200.7	0.2	125 mL HDPE	4º C	28 days	F
Selenium	EPA 200.7	0.004	250 mL HDPE	4º C; HNO_3 to pH < 2	6 months	F
Total organic carbon	EPA 415.1	1	250 mL HDPE	4º C; HCl or H_2SO_4 to pH < 2	28 days	U
Chemical Oxygen Demand	EPA 410.4	10	250 mL HDPE	4º C; H_2SO_4 to pH < 2	28 days	F
Total hardness	SM 2340B	Calculation	N/A	N/A	N/A	F
Silt density index (SDI)	ASTM D4189-82	N/A	500 mL HDPE	N/A	N/A	U
Bacteria (count/ml)	EPA 9222D	1 cfu / 100mL	100 mL HDPE (Sterile)	4º C; H_2SO_4 to pH < 2	24 hrs.	U
Turbidity	EPA 180	N/A	500 mL HDPE	N/A	48 hrs.	U

TABLE F.3
Sample Shipment Checklist

Sample Handling Checklist	Yes	No	Not Applicable
Sample bottles are free of defects and in their original packaging:			
Field Duplicate samples named with unrecognizable IDs and actual locations recorded in field logbook			
Samples labeled with:			
Sample Name/Date (e.g., LE-1-041604)			
Analyses Required			
Sample Matrix			
Filtered or Unfiltered			
Sampler's Initials			
Preservative			
COC filled out with:			
Project Name, required signatures, dates, and times			
Analytical Suite required			
Date and time of sampling, sample IDs, sample matrix			
Number of containers submitted			
QA Sample IDs, matrices, date and time of sampling			
Samples stored on sufficient ice to remain at 4ºC until arrival at lab			
Sample package will not leak during shipment			
Sign COC to relinquish sample custody, remove pink slip, and enclose original in sample shipment			
Samples shipped within 48 hours of collection			

Notes:
COC = Chain of Custody
QA = Quality Assurance
ID = Identification

TABLE F.4
Data Quality Assessment Checklist

	Yes	No	Not Applicable
Data Compilation			
Field Data			
Field Logbook Entries Current			
Field Sampling Forms Completed			
Borehole and Lithologic Logging Forms Completed			
Well Construction Diagrams Completed			
Hydraulic Testing Forms Completed			
Anomalous Data Entries Resolved			
Chain of Custody Forms Completed			
Correct Analyses Requested			
Laboratory Data			
Hard Copy Reports Received			
Electronic Reports Received			
Case Narrative and QC Summaries Included in Report			

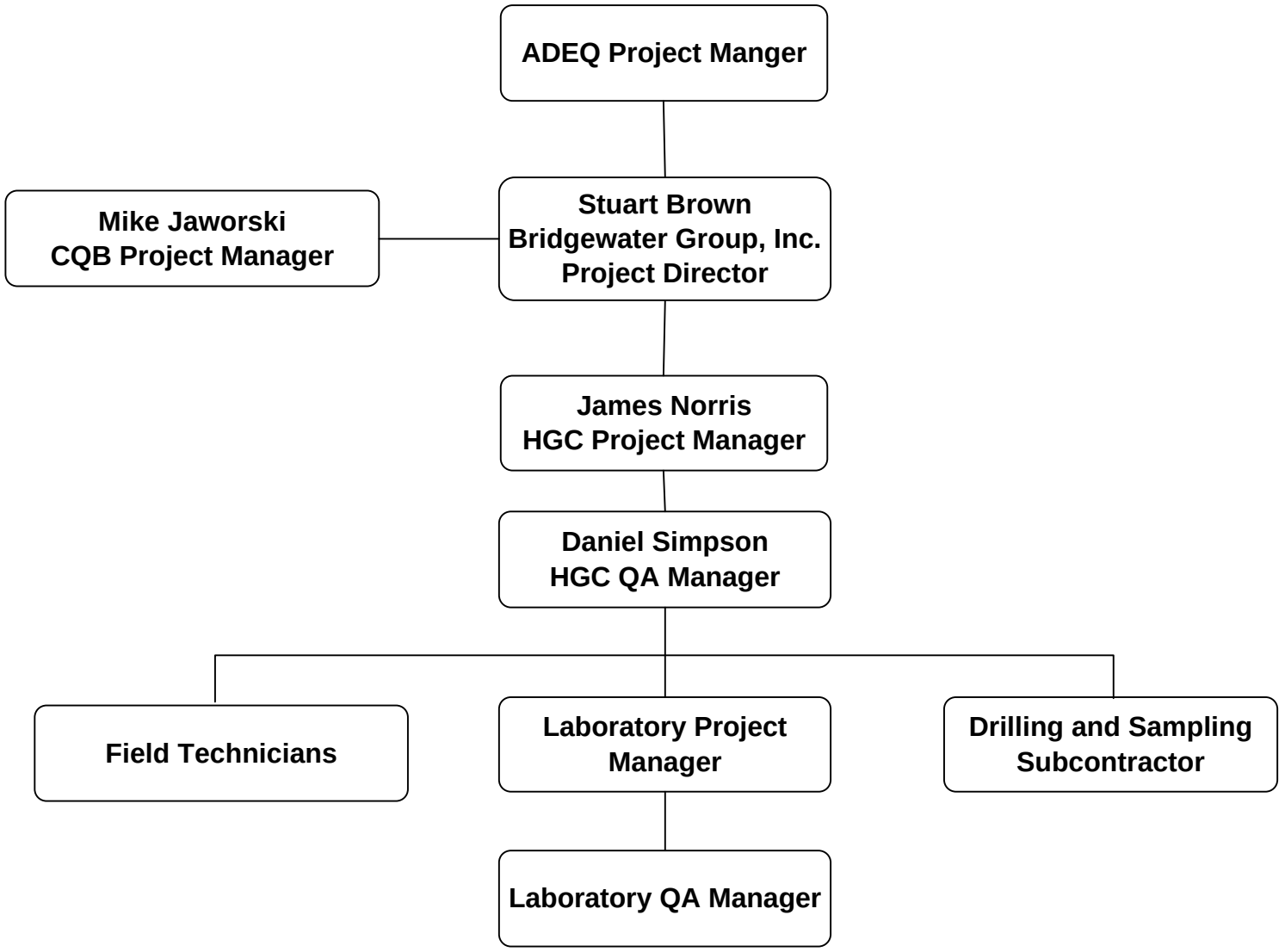
Data Review and Verification			
Field Data **Groundwater Sampling**			
Monitoring Conducted at Correct Locations			
Measuring Point for Water Levels is Consistent			
Field Equipment Calibration Requirements Met			
Field Equipment Decontaminated Before Uses			
Purge Parameters Stabilized Prior to Sample Collection			
QC Samples Taken at Appropriate Frequency			
Drilling and Well Construction			
Lithologic Logging per ASTM Standards			
Reconnaissance Borehole Sampling Completed			
Laboratory Samples			
Wells Properly Constructed			
Hydraulic Testing Properly Conducted			
Laboratory data			
All Required Analyses Performed			
Holding Times and Temperatures Met			
Laboratory QC Samples Within Acceptable Limits			
Field QC Samples Within Acceptable Limits			
MDLs < Target MDLs			

Final Data Quality Assessment Checklist:	Yes	No	Not Applicable
Data Entry Checked Against Original			
Time-Series of Analytical and Field Data Checked for Anomalies			
QA Issues Resolved and Documented			
Corrective Action Taken and Documented			

Notes:

QC = Quality Control
QA = Quality Assurance
MDLs = Method Detection Limits
PQLs = Practical Quantification Limits
RAOs = Mitigation Order Objectives

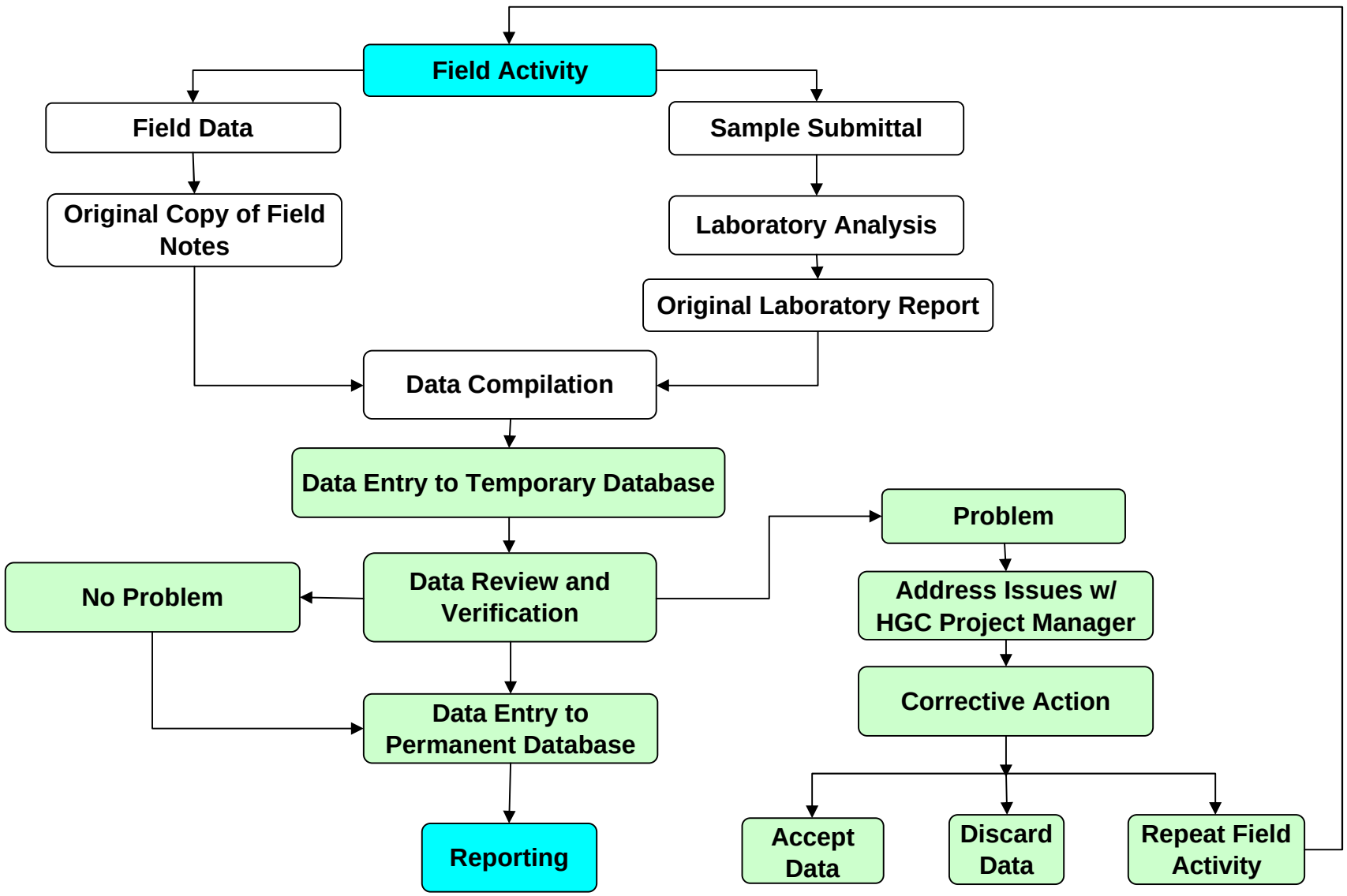
FIGURES



HYDRO GEO CHEM, INC.

ORGANIZATIONAL CHART

APPROVED	DATE	FIGURE
JRN	6/27/07	**F.1**



HYDRO GEO CHEM, INC.

FIELD AND ANALYTICAL DATA PROCESSING SEQUENCE

APPROVED	NWH	DATE	7/6/06	FIGURE	F.2

FIGURE F.3
CORRECTIVE ACTION FORM

Service or Activity:_____Date:_____
_____

Contractor or Support Organization:_____
Date Discovered:_____ Location:_____
Notation in Logbook Vol. No. _____ Page_____ Date_____

Nature of Alteration: Description of Alteration and Apparent Cause:
( )Procedural Deficiency _____
( )Data Deficiency _____
( )Instrumentation Def. _____
( )Other _____

Recommended Disposition: Justification for Recommended Disposition:
( )Accept Deviation _____
( )Modify Plan/Procedure _____
( )Repeat Service/Activity _____
( )Terminate, Recommended Corrective Action:_____
( )Conditional Acceptance*_____
*State Conditions_____
_____
Originator:_____ Organization:_____ Phone: _____
Corrective Action Verification:
( ) Verified (note any appropriate conditions):_____
_____
_____
( ) Cannot verify (note reasons for lack of verification):_____
_____
_____
Project QA:_____ Date:_____
(Use space below for comments or extensions to the above topics.)

APPENDIX F.1

ASTM 2488
DESCRIPTION AND IDENTIFICATION OF SOILS

Designation: D 2488 – 00

Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)[1]

This standard is issued under the fixed designation D 2488; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope *

1.1 This practice covers procedures for the description of soils for engineering purposes.

1.2 This practice also describes a procedure for identifying soils, at the option of the user, based on the classification system described in Test Method D 2487. The identification is based on visual examination and manual tests. It must be clearly stated in reporting an identification that it is based on visual-manual procedures.

1.2.1 When precise classification of soils for engineering purposes is required, the procedures prescribed in Test Method D 2487 shall be used.

1.2.2 In this practice, the identification portion assigning a group symbol and name is limited to soil particles smaller than 3 in. (75 mm).

1.2.3 The identification portion of this practice is limited to naturally occurring soils (disturbed and undisturbed).

NOTE 1—This practice may be used as a descriptive system applied to such materials as shale, claystone, shells, crushed rock, etc. (see Appendix X2).

1.3 The descriptive information in this practice may be used with other soil classification systems or for materials other than naturally occurring soils.

1.4 The values stated in inch-pound units are to be regarded as the standard.

1.5 *This standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For specific precautionary statements see Section 8.

1.6 *This practice offers a set of instructions for performing one or more specific operations. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this practice may be applicable in all circumstances. This ASTM standard is not intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied without consideration of a project's many unique aspects. The word "Standard" in the title of this document means only that the document has been approved through the ASTM consensus process.*

2. Referenced Documents

2.1 *ASTM Standards:*

D 653 Terminology Relating to Soil, Rock, and Contained Fluids[2]

D 1452 Practice for Soil Investigation and Sampling by Auger Borings[2]

D 1586 Test Method for Penetration Test and Split-Barrel Sampling of Soils[2]

D 1587 Practice for Thin-Walled Tube Sampling of Soils[2]

D 2113 Practice for Diamond Core Drilling for Site Investigation[2]

D 2487 Classification of Soils for Engineering Purposes (Unified Soil Classification System)[2]

D 3740 Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and rock as Used in Engineering Design and Construction[3]

D 4083 Practice for Description of Frozen Soils (Visual-Manual Procedure)[2]

3. Terminology

3.1 *Definitions*—Except as listed below, all definitions are in accordance with Terminology D 653.

NOTE 2—For particles retained on a 3-in. (75-mm) US standard sieve, the following definitions are suggested:
Cobbles—particles of rock that will pass a 12-in. (300-mm) square opening and be retained on a 3-in. (75-mm) sieve, and
Boulders—particles of rock that will not pass a 12-in. (300-mm) square opening.

3.1.1 *clay*—soil passing a No. 200 (75-μm) sieve that can be made to exhibit plasticity (putty-like properties) within a range of water contents, and that exhibits considerable strength when air-dry. For classification, a clay is a fine-grained soil, or the

[1] This practice is under the jurisdiction of ASTM Committee D-18 on Soil and Rock and is the direct responsibility of Subcommittee D18.07 on Identification and Classification of Soils.

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[2] *Annual Book of ASTM Standards*, Vol 04.08.

[3] *Annual Book of ASTM Standards*, Vol 04.09.

***A Summary of Changes section appears at the end of this standard.**

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fine-grained portion of a soil, with a plasticity index equal to or greater than 4, and the plot of plasticity index versus liquid limit falls on or above the "A" line (see Fig. 3 of Test Method D 2487).

3.1.2 *gravel*—particles of rock that will pass a 3-in. (75-mm) sieve and be retained on a No. 4 (4.75-mm) sieve with the following subdivisions:

coarse—passes a 3-in. (75-mm) sieve and is retained on a ¾-in. (19-mm) sieve.

fine—passes a ¾-in. (19-mm) sieve and is retained on a No. 4 (4.75-mm) sieve.

3.1.3 *organic clay*—a clay with sufficient organic content to influence the soil properties. For classification, an organic clay is a soil that would be classified as a clay, except that its liquid limit value after oven drying is less than 75 % of its liquid limit value before oven drying.

3.1.4 *organic silt*—a silt with sufficient organic content to influence the soil properties. For classification, an organic silt is a soil that would be classified as a silt except that its liquid limit value after oven drying is less than 75 % of its liquid limit value before oven drying.

3.1.5 *peat*—a soil composed primarily of vegetable tissue in various stages of decomposition usually with an organic odor, a dark brown to black color, a spongy consistency, and a texture ranging from fibrous to amorphous.

3.1.6 *sand*—particles of rock that will pass a No. 4 (4.75-mm) sieve and be retained on a No. 200 (75-μm) sieve with the following subdivisions:

coarse—passes a No. 4 (4.75-mm) sieve and is retained on a No. 10 (2.00-mm) sieve.

medium—passes a No. 10 (2.00-mm) sieve and is retained on a No. 40 (425-μm) sieve.

fine—passes a No. 40 (425-μm) sieve and is retained on a No. 200 (75-μm) sieve.

3.1.7 *silt*—soil passing a No. 200 (75-μm) sieve that is nonplastic or very slightly plastic and that exhibits little or no strength when air dry. For classification, a silt is a fine-grained soil, or the fine-grained portion of a soil, with a plasticity index less than 4, or the plot of plasticity index versus liquid limit falls below the "A" line (see Fig. 3 of Test Method D 2487).

4. Summary of Practice

4.1 Using visual examination and simple manual tests, this practice gives standardized criteria and procedures for describing and identifying soils.

4.2 The soil can be given an identification by assigning a group symbol(s) and name. The flow charts, Fig. 1a and Fig. 1b for fine-grained soils, and Fig. 2, for coarse-grained soils, can be used to assign the appropriate group symbol(s) and name. If the soil has properties which do not distinctly place it into a specific group, borderline symbols may be used, see Appendix X3.

NOTE 3—It is suggested that a distinction be made between *dual symbols* and *borderline symbols.*

Dual Symbol—A dual symbol is two symbols separated by a hyphen, for example, GP-GM, SW-SC, CL-ML used to indicate that the soil has been identified as having the properties of a classification in accordance with Test Method D 2487 where two symbols are required. Two symbols are required when the soil has between 5 and 12 % fines or when the liquid limit and plasticity index values plot in the CL-ML area of the plasticity chart.

Borderline Symbol—A borderline symbol is two symbols separated by a slash, for example, CL/CH, GM/SM, CL/ML. A borderline symbol should be used to indicate that the soil has been identified as having properties that do not distinctly place the soil into a specific group (see Appendix X3).

5. Significance and Use

5.1 The descriptive information required in this practice can be used to describe a soil to aid in the evaluation of its significant properties for engineering use.

5.2 The descriptive information required in this practice should be used to supplement the classification of a soil as determined by Test Method D 2487.

5.3 This practice may be used in identifying soils using the classification group symbols and names as prescribed in Test Method D 2487. Since the names and symbols used in this practice to identify the soils are the same as those used in Test Method D 2487, it shall be clearly stated in reports and all other appropriate documents, that the classification symbol and name are based on visual-manual procedures.

5.4 This practice is to be used not only for identification of soils in the field, but also in the office, laboratory, or wherever soil samples are inspected and described.

5.5 This practice has particular value in grouping similar soil samples so that only a minimum number of laboratory tests need be run for positive soil classification.

NOTE 4—The ability to describe and identify soils correctly is learned more readily under the guidance of experienced personnel, but it may also be acquired systematically by comparing numerical laboratory test results for typical soils of each type with their visual and manual characteristics.

5.6 When describing and identifying soil samples from a given boring, test pit, or group of borings or pits, it is not necessary to follow all of the procedures in this practice for every sample. Soils which appear to be similar can be grouped together; one sample completely described and identified with the others referred to as similar based on performing only a few of the descriptive and identification procedures described in this practice.

5.7 This practice may be used in combination with Practice D 4083 when working with frozen soils.

NOTE 5—Notwithstanding the statements on precision and bias contained in this standard: The precision of this test method is dependent on the competence of the personnel performing it and the suitability of the equipment and facilities used. Agencies that meet the criteria of Practice D 3740 are generally considered capable of competent and objective testing. Users of this test method are cautioned that compliance with Practice D 3740 does not in itself assure reliable testing. Reliable testing depends on several factors; Practice D 3740 provides a means for evaluating some of those factors.

6. Apparatus

6.1 *Required Apparatus*:

6.1.1 *Pocket Knife or Small Spatula.*

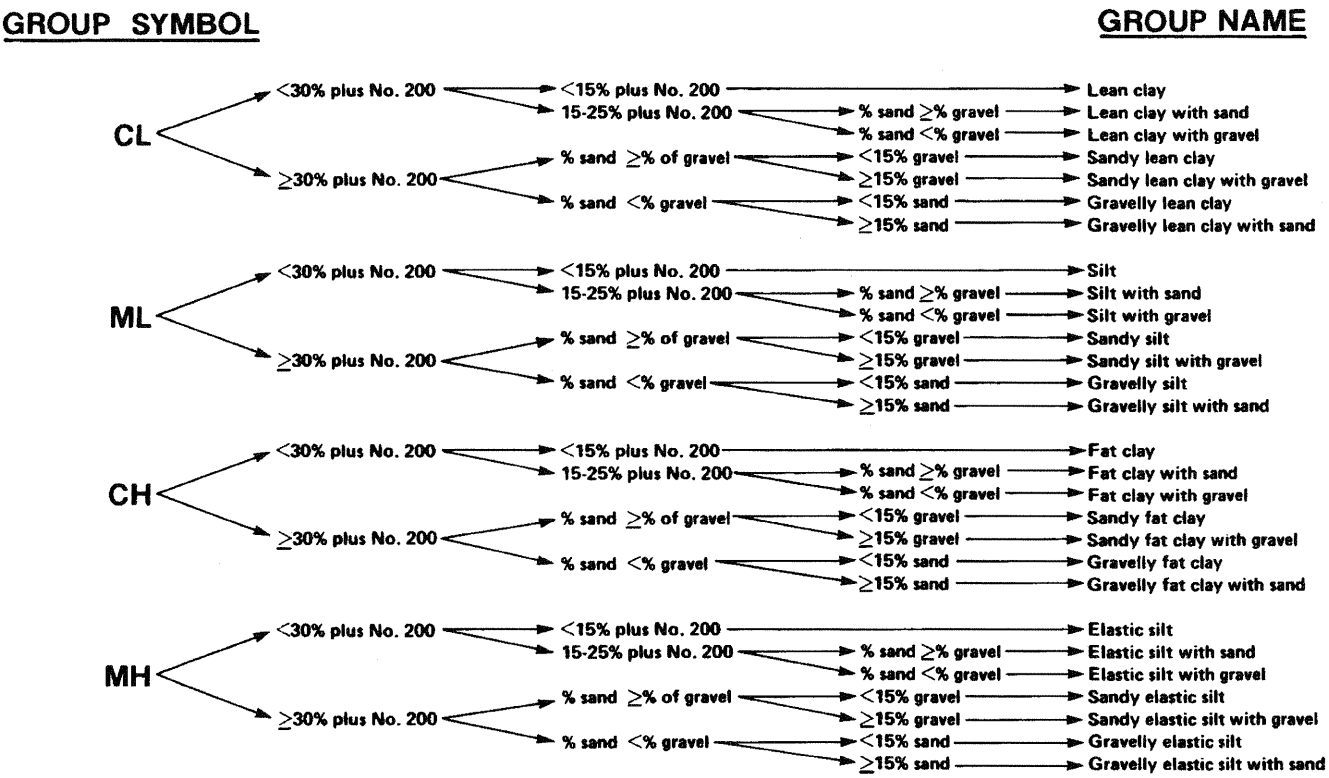
6.2 *Useful Auxiliary Apparatus*:

6.2.1 *Small Test Tube and Stopper* (or jar with a lid).

6.2.2 *Small Hand Lens.*

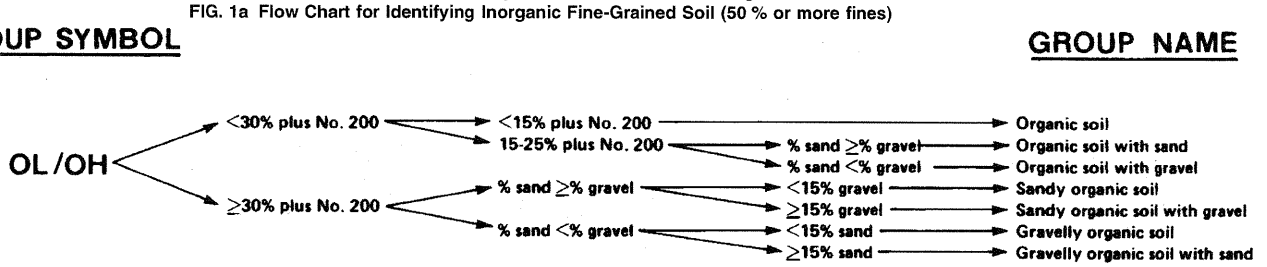
7. Reagents

7.1 *Purity of Water*—Unless otherwise indicated, references



NOTE 1—Percentages are based on estimating amounts of fines, sand, and gravel to the nearest 5 %.

FIG. 1a Flow Chart for Identifying Inorganic Fine-Grained Soil (50 % or more fines)



NOTE 1—Percentages are based on estimating amounts of fines, sand, and gravel to the nearest 5 %.

FIG. 1 b Flow Chart for Identifying Organic Fine-Grained Soil (50 % or more fines)

to water shall be understood to mean water from a city water supply or natural source, including non-potable water.

7.2 *Hydrochloric Acid*—A small bottle of dilute hydrochloric acid, HCl, one part HCl (10 *N*) to three parts water (This reagent is optional for use with this practice). See Section 8.

8. Safety Precautions

8.1 When preparing the dilute HCl solution of one part concentrated hydrochloric acid (10 *N*) to three parts of distilled water, slowly add acid into water following necessary safety precautions. Handle with caution and store safely. If solution comes into contact with the skin, rinse thoroughly with water.

8.2 **Caution**—Do not add water to acid.

9. Sampling

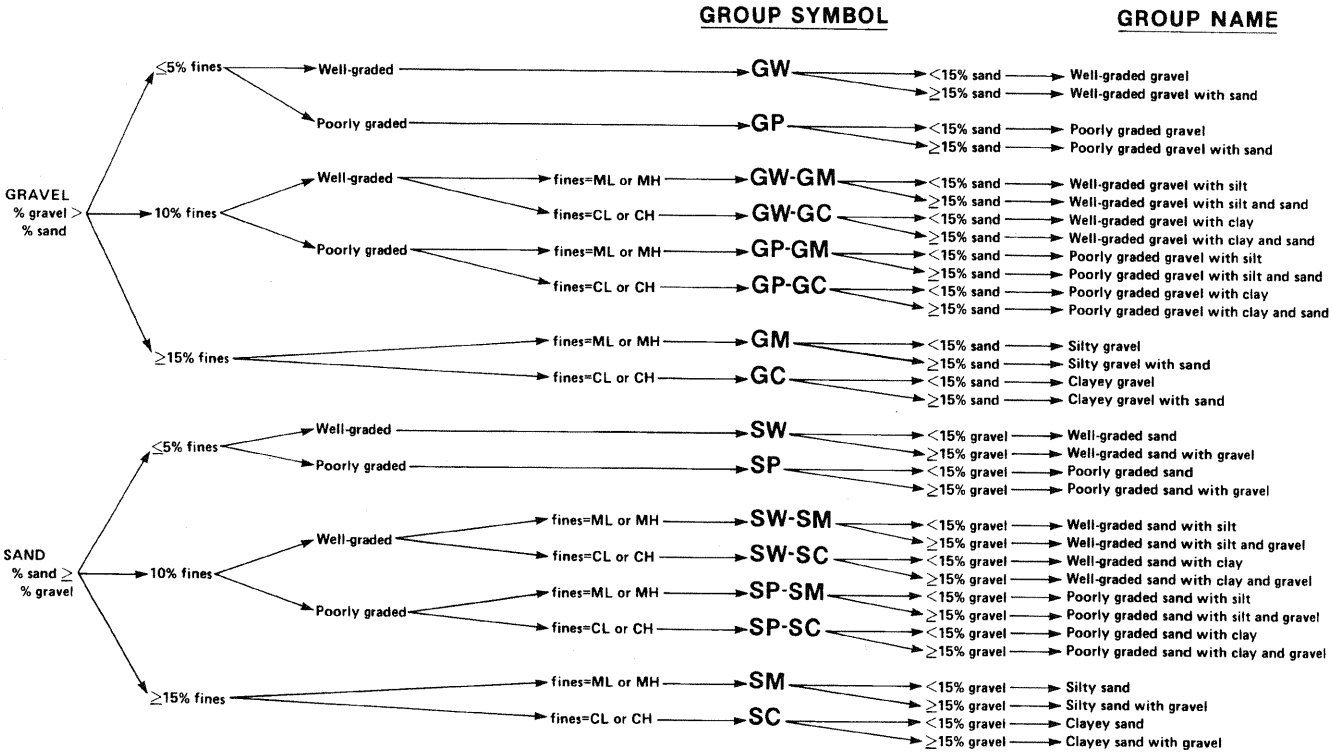
9.1 The sample shall be considered to be representative of the stratum from which it was obtained by an appropriate, accepted, or standard procedure.

NOTE 6—Preferably, the sampling procedure should be identified as having been conducted in accordance with Practices D 1452, D 1587, or D 2113, or Test Method D 1586.

9.2 The sample shall be carefully identified as to origin.

NOTE 7—Remarks as to the origin may take the form of a boring number and sample number in conjunction with a job number, a geologic stratum, a pedologic horizon or a location description with respect to a permanent monument, a grid system or a station number and offset with respect to a stated centerline and a depth or elevation.

9.3 For accurate description and identification, the minimum amount of the specimen to be examined shall be in accordance with the following schedule:



NOTE 1—Percentages are based on estimating amounts of fines, sand, and gravel to the nearest 5 %.

FIG. 2 Flow Chart for Identifying Coarse-Grained Soils (less than 50 % fines)

Maximum Particle Size, Sieve Opening	Minimum Specimen Size, Dry Weight
4.75 mm (No. 4)	100 g (0.25 lb)
9.5 mm (⅜ in.)	200 g (0.5 lb)
19.0 mm (¾ in.)	1.0 kg (2.2 lb)
38.1 mm (1½ in.)	8.0 kg (18 lb)
75.0 mm (3 in.)	60.0 kg (132 lb)

NOTE 8—If random isolated particles are encountered that are significantly larger than the particles in the soil matrix, the soil matrix can be accurately described and identified in accordance with the preceeding schedule.

9.4 If the field sample or specimen being examined is smaller than the minimum recommended amount, the report shall include an appropriate remark.

10. Descriptive Information for Soils

10.1 *Angularity*—Describe the angularity of the sand (coarse sizes only), gravel, cobbles, and boulders, as angular, subangular, subrounded, or rounded in accordance with the criteria in Table 1 and Fig. 3. A range of angularity may be stated, such as: subrounded to rounded.

10.2 *Shape*—Describe the shape of the gravel, cobbles, and boulders as flat, elongated, or flat and elongated if they meet the criteria in Table 2 and Fig. 4. Otherwise, do not mention the shape. Indicate the fraction of the particles that have the shape, such as: one-third of the gravel particles are flat.

10.3 *Color*—Describe the color. Color is an important property in identifying organic soils, and within a given locality it may also be useful in identifying materials of similar geologic origin. If the sample contains layers or patches of varying colors, this shall be noted and all representative colors shall be described. The color shall be described for moist samples. If the color represents a dry condition, this shall be stated in the report.

TABLE 1 Criteria for Describing Angularity of Coarse-Grained Particles (see Fig. 3)

Description	Criteria
Angular	Particles have sharp edges and relatively plane sides with unpolished surfaces
Subangular	Particles are similar to angular description but have rounded edges
Subrounded	Particles have nearly plane sides but have well-rounded corners and edges
Rounded	Particles have smoothly curved sides and no edges

10.4 *Odor*—Describe the odor if organic or unusual. Soils containing a significant amount of organic material usually have a distinctive odor of decaying vegetation. This is especially apparent in fresh samples, but if the samples are dried, the odor may often be revived by heating a moistened sample. If the odor is unusual (petroleum product, chemical, and the like), it shall be described.

10.5 *Moisture Condition*—Describe the moisture condition as dry, moist, or wet, in accordance with the criteria in Table 3.

10.6 *HCl Reaction*—Describe the reaction with HCl as none, weak, or strong, in accordance with the critera in Table 4. Since calcium carbonate is a common cementing agent, a report of its presence on the basis of the reaction with dilute hydrochloric acid is important.

10.7 *Consistency*—For intact fine-grained soil, describe the

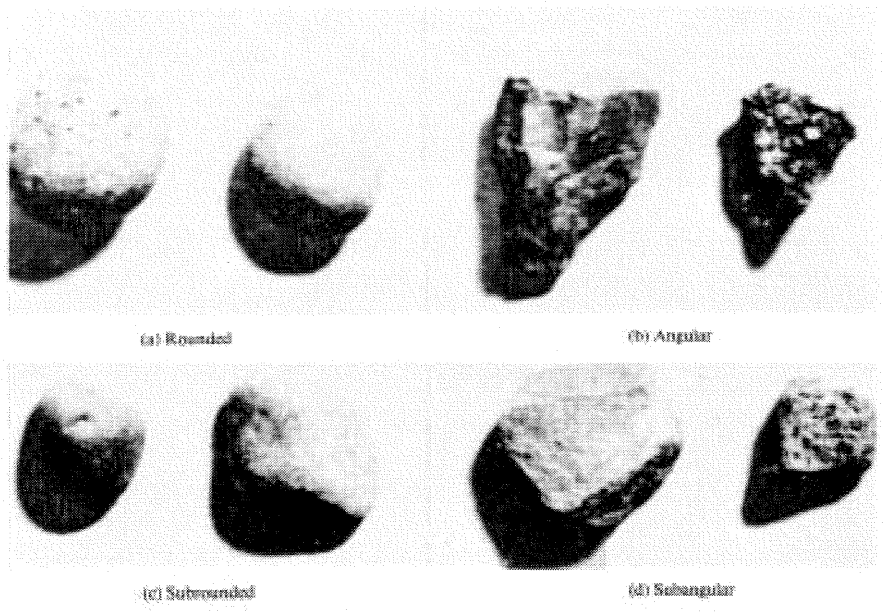


FIG. 3 Typical Angularity of Bulky Grains

TABLE 2 Criteria for Describing Particle Shape (see Fig. 4)

The particle shape shall be described as follows where length, width, and thickness refer to the greatest, intermediate, and least dimensions of a particle, respectively.	
Flat	Particles with width/thickness > 3
Elongated	Particles with length/width > 3
Flat and elongated	Particles meet criteria for both flat and elongated

consistency as very soft, soft, firm, hard, or very hard, in accordance with the criteria in Table 5. This observation is inappropriate for soils with significant amounts of gravel.

10.8 *Cementation*—Describe the cementation of intact coarse-grained soils as weak, moderate, or strong, in accordance with the criteria in Table 6.

10.9 *Structure*—Describe the structure of intact soils in accordance with the criteria in Table 7.

10.10 *Range of Particle Sizes*—For gravel and sand components, describe the range of particle sizes within each component as defined in 3.1.2 and 3.1.6. For example, about 20 % fine to coarse gravel, about 40 % fine to coarse sand.

10.11 *Maximum Particle Size*—Describe the maximum particle size found in the sample in accordance with the following information:

10.11.1 *Sand Size*—If the maximum particle size is a sand size, describe as fine, medium, or coarse as defined in 3.1.6. For example: maximum particle size, medium sand.

10.11.2 *Gravel Size*—If the maximum particle size is a gravel size, describe the maximum particle size as the smallest sieve opening that the particle will pass. For example, maximum particle size, 1½ in. (will pass a 1½-in. square opening but not a ¾-in. square opening).

10.11.3 *Cobble or Boulder Size*—If the maximum particle size is a cobble or boulder size, describe the maximum dimension of the largest particle. For example: maximum dimension, 18 in. (450 mm).

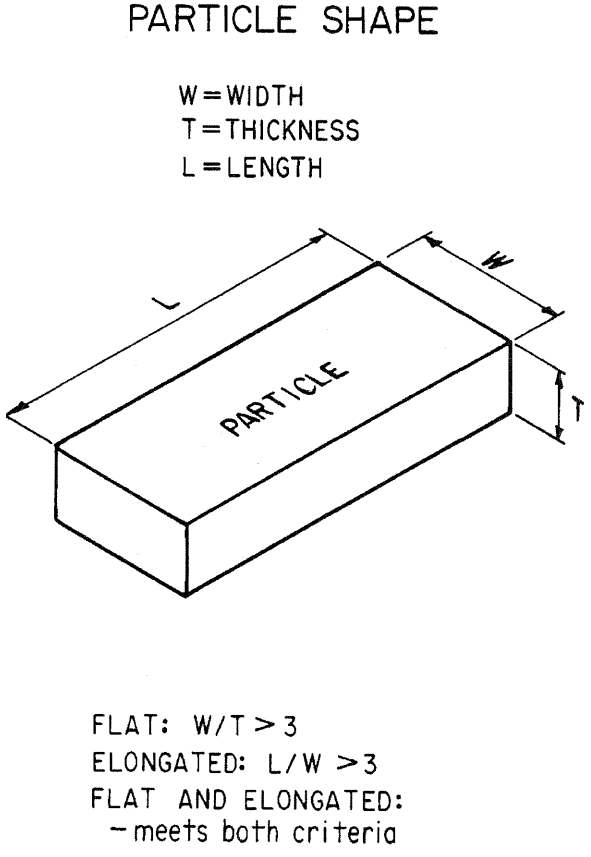


FIG. 4 Criteria for Particle Shape

10.12 *Hardness*—Describe the hardness of coarse sand and larger particles as hard, or state what happens when the

TABLE 3 Criteria for Describing Moisture Condition

Description	Criteria
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

TABLE 4 Criteria for Describing the Reaction With HCl

Description	Criteria
None	No visible reaction
Weak	Some reaction, with bubbles forming slowly
Strong	Violent reaction, with bubbles forming immediately

TABLE 5 Criteria for Describing Consistency

Description	Criteria
Very soft	Thumb will penetrate soil more than 1 in. (25 mm)
Soft	Thumb will penetrate soil about 1 in. (25 mm)
Firm	Thumb will indent soil about ¼in. (6 mm)
Hard	Thumb will not indent soil but readily indented with thumbnail
Very hard	Thumbnail will not indent soil

TABLE 6 Criteria for Describing Cementation

Description	Criteria
Weak	Crumbles or breaks with handling or little finger pressure
Moderate	Crumbles or breaks with considerable finger pressure
Strong	Will not crumble or break with finger pressure

TABLE 7 Criteria for Describing Structure

Description	Criteria
Stratified	Alternating layers of varying material or color with layers at least 6 mm thick; note thickness
Laminated	Alternating layers of varying material or color with the layers less than 6 mm thick; note thickness
Fissured	Breaks along definite planes of fracture with little resistance to fracturing
Slickensided	Fracture planes appear polished or glossy, sometimes striated
Blocky	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay; note thickness
Homogeneous	Same color and appearance throughout

particles are hit by a hammer, for example, gravel-size particles fracture with considerable hammer blow, some gravel-size particles crumble with hammer blow. "Hard" means particles do not crack, fracture, or crumble under a hammer blow.

10.13 Additional comments shall be noted, such as the presence of roots or root holes, difficulty in drilling or augering hole, caving of trench or hole, or the presence of mica.

10.14 A local or commercial name or a geologic interpretation of the soil, or both, may be added if identified as such.

10.15 A classification or identification of the soil in accordance with other classification systems may be added if identified as such.

11. Identification of Peat

11.1 A sample composed primarily of vegetable tissue in various stages of decomposition that has a fibrous to amorphous texture, usually a dark brown to black color, and an organic odor, shall be designated as a highly organic soil and shall be identified as peat, PT, and not subjected to the identification procedures described hereafter.

12. Preparation for Identification

12.1 The soil identification portion of this practice is based on the portion of the soil sample that will pass a 3-in. (75-mm) sieve. The larger than 3-in. (75-mm) particles must be removed, manually, for a loose sample, or mentally, for an intact sample before classifying the soil.

12.2 Estimate and note the percentage of cobbles and the percentage of boulders. Performed visually, these estimates will be on the basis of volume percentage.

NOTE 9—Since the percentages of the particle-size distribution in Test Method D 2487 are by dry weight, and the estimates of percentages for gravel, sand, and fines in this practice are by dry weight, it is recommended that the report state that the percentages of cobbles and boulders are by volume.

12.3 Of the fraction of the soil smaller than 3 in. (75 mm), estimate and note the percentage, by dry weight, of the gravel, sand, and fines (see Appendix X4 for suggested procedures).

NOTE 10—Since the particle-size components appear visually on the basis of volume, considerable experience is required to estimate the percentages on the basis of dry weight. Frequent comparisons with laboratory particle-size analyses should be made.

12.3.1 The percentages shall be estimated to the closest 5 %. The percentages of gravel, sand, and fines must add up to 100 %.

12.3.2 If one of the components is present but not in sufficient quantity to be considered 5 % of the smaller than 3-in. (75-mm) portion, indicate its presence by the term *trace*, for example, trace of fines. A trace is not to be considered in the total of 100 % for the components.

13. Preliminary Identification

13.1 The soil is *fine grained* if it contains 50 % or more fines. Follow the procedures for identifying fine-grained soils of Section 14.

13.2 The soil is *coarse grained* if it contains less than 50 % fines. Follow the procedures for identifying coarse-grained soils of Section 15.

14. Procedure for Identifying Fine-Grained Soils

14.1 Select a representative sample of the material for examination. Remove particles larger than the No. 40 sieve (medium sand and larger) until a specimen equivalent to about a handful of material is available. Use this specimen for performing the dry strength, dilatancy, and toughness tests.

14.2 *Dry Strength*:

14.2.1 From the specimen, select enough material to mold into a ball about 1 in. (25 mm) in diameter. Mold the material until it has the consistency of putty, adding water if necessary.

14.2.2 From the molded material, make at least three test specimens. A test specimen shall be a ball of material about ½ in. (12 mm) in diameter. Allow the test specimens to dry in air, or sun, or by artificial means, as long as the temperature does not exceed 60°C.

14.2.3 If the test specimen contains natural dry lumps, those that are about ½ in. (12 mm) in diameter may be used in place of the molded balls.

NOTE 11—The process of molding and drying usually produces higher strengths than are found in natural dry lumps of soil.

14.2.4 Test the strength of the dry balls or lumps by crushing between the fingers. Note the strength as none, low, medium, high, or very high in accorance with the criteria in Table 8. If natural dry lumps are used, do not use the results of any of the lumps that are found to contain particles of coarse sand.

14.2.5 The presence of high-strength water-soluble cementing materials, such as calcium carbonate, may cause exceptionally high dry strengths. The presence of calcium carbonate can usually be detected from the intensity of the reaction with dilute hydrochloric acid (see 10.6).

14.3 *Dilatancy*:

14.3.1 From the specimen, select enough material to mold into a ball about ½ in. (12 mm) in diameter. Mold the material, adding water if necessary, until it has a soft, but not sticky, consistency.

14.3.2 Smooth the soil ball in the palm of one hand with the blade of a knife or small spatula. Shake horizontally, striking the side of the hand vigorously against the other hand several times. Note the reaction of water appearing on the surface of the soil. Squeeze the sample by closing the hand or pinching the soil between the fingers, and note the reaction as none, slow, or rapid in accordance with the criteria in Table 9. The reaction is the speed with which water appears while shaking, and disappears while squeezing.

14.4 *Toughness*:

14.4.1 Following the completion of the dilatancy test, the test specimen is shaped into an elongated pat and rolled by hand on a smooth surface or between the palms into a thread about ⅛ in. (3 mm) in diameter. (If the sample is too wet to roll easily, it should be spread into a thin layer and allowed to lose some water by evaporation.) Fold the sample threads and reroll repeatedly until the thread crumbles at a diameter of about ⅛ in. The thread will crumble at a diameter of ⅛ in. when the soil is near the plastic limit. Note the pressure required to roll the thread near the plastic limit. Also, note the strength of the thread. After the thread crumbles, the pieces should be lumped together and kneaded until the lump crumbles. Note the toughness of the material during kneading.

14.4.2 Describe the toughness of the thread and lump as low, medium, or high in accordance with the criteria in Table 10.

TABLE 8 Criteria for Describing Dry Strength

Description	Criteria
None	The dry specimen crumbles into powder with mere pressure of handling
Low	The dry specimen crumbles into powder with some finger pressure
Medium	The dry specimen breaks into pieces or crumbles with considerable finger pressure
High	The dry specimen cannot be broken with finger pressure. Specimen will break into pieces between thumb and a hard surface
Very high	The dry specimen cannot be broken between the thumb and a hard surface

TABLE 9 Criteria for Describing Dilatancy

Description	Criteria
None	No visible change in the specimen
Slow	Water appears slowly on the surface of the specimen during shaking and does not disappear or disappears slowly upon squeezing
Rapid	Water appears quickly on the surface of the specimen during shaking and disappears quickly upon squeezing

14.5 *Plasticity*—On the basis of observations made during the toughness test, describe the plasticity of the material in accordance with the criteria given in Table 11.

14.6 Decide whether the soil is an *inorganic* or an *organic* fine-grained soil (see 14.8). If inorganic, follow the steps given in 14.7.

14.7 *Identification of Inorganic Fine-Grained Soils*:

14.7.1 Identify the soil as a *lean clay*, CL, if the soil has medium to high dry strength, no or slow dilatancy, and medium toughness and plasticity (see Table 12).

14.7.2 Identify the soil as a *fat clay*, CH, if the soil has high to very high dry strength, no dilatancy, and high toughness and plasticity (see Table 12).

14.7.3 Identify the soil as a *silt*, ML, if the soil has no to low dry strength, slow to rapid dilatancy, and low toughness and plasticity, or is nonplastic (see Table 12).

14.7.4 Identify the soil as an *elastic silt*, MH, if the soil has low to medium dry strength, no to slow dilatancy, and low to medium toughness and plasticity (see Table 12).

NOTE 12—These properties are similar to those for a lean clay. However, the silt will dry quickly on the hand and have a smooth, silky feel when dry. Some soils that would classify as MH in accordance with the criteria in Test Method D 2487 are visually difficult to distinguish from lean clays, CL. It may be necessary to perform laboratory testing for proper identification.

14.8 *Identification of Organic Fine-Grained Soils*:

14.8.1 Identify the soil as an *organic soil*, OL/OH, if the soil contains enough organic particles to influence the soil properties. Organic soils usually have a dark brown to black color and may have an organic odor. Often, organic soils will change color, for example, black to brown, when exposed to the air. Some organic soils will lighten in color significantly when air dried. Organic soils normally will not have a high toughness or plasticity. The thread for the toughness test will be spongy.

NOTE 13—In some cases, through practice and experience, it may be possible to further identify the organic soils as organic silts or organic clays, OL or OH. Correlations between the dilatancy, dry strength, toughness tests, and laboratory tests can be made to identify organic soils in certain deposits of similar materials of known geologic origin.

TABLE 10 Criteria for Describing Toughness

Description	Criteria
Low	Only slight pressure is required to roll the thread near the plastic limit. The thread and the lump are weak and soft
Medium	Medium pressure is required to roll the thread to near the plastic limit. The thread and the lump have medium stiffness
High	Considerable pressure is required to roll the thread to near the plastic limit. The thread and the lump have very high stiffness

TABLE 11 Criteria for Describing Plasticity

Description	Criteria
Nonplastic	A 1/8-in. (3-mm) thread cannot be rolled at any water content
Low	The thread can barely be rolled and the lump cannot be formed when drier than the plastic limit
Medium	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit
High	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit

TABLE 12 Identification of Inorganic Fine-Grained Soils from Manual Tests

Soil Symbol	Dry Strength	Dilatancy	Toughness
ML	None to low	Slow to rapid	Low or thread cannot be formed
CL	Medium to high	None to slow	Medium
MH	Low to medium	None to slow	Low to medium
CH	High to very high	None	High

14.9 If the soil is estimated to have 15 to 25 % sand or gravel, or both, the words "with sand" or "with gravel" (whichever is more predominant) shall be added to the group name. For example: "lean clay with sand, CL" or "silt with gravel, ML" (see Fig. 1a and Fig. 1b). If the percentage of sand is equal to the percentage of gravel, use "with sand."

14.10 If the soil is estimated to have 30 % or more sand or gravel, or both, the words "sandy" or "gravelly" shall be added to the group name. Add the word "sandy" if there appears to be more sand than gravel. Add the word "gravelly" if there appears to be more gravel than sand. For example: "sandy lean clay, CL", "gravelly fat clay, CH", or "sandy silt, ML" (see Fig. 1a and Fig. 1b). If the percentage of sand is equal to the percent of gravel, use "sandy."

15. Procedure for Identifying Coarse-Grained Soils

(Contains less than 50 % fines)

15.1 The soil is a *gravel* if the percentage of gravel is estimated to be more than the percentage of sand.

15.2 The soil is a *sand* if the percentage of gravel is estimated to be equal to or less than the percentage of sand.

15.3 The soil is a *clean gravel* or *clean sand* if the percentage of fines is estimated to be 5 % or less.

15.3.1 Identify the soil as a *well-graded gravel*, GW, or as a *well-graded sand*, SW, if it has a wide range of particle sizes and substantial amounts of the intermediate particle sizes.

15.3.2 Identify the soil as a *poorly graded gravel*, GP, or as a *poorly graded sand*, SP, if it consists predominantly of one size (uniformly graded), or it has a wide range of sizes with some intermediate sizes obviously missing (gap or skip graded).

15.4 The soil is either a *gravel with fines* or a *sand with fines* if the percentage of fines is estimated to be 15 % or more.

15.4.1 Identify the soil as a *clayey gravel*, GC, or a *clayey sand*, SC, if the fines are clayey as determined by the procedures in Section 14.

15.4.2 Identify the soil as a *silty gravel*, GM, or a *silty sand*, SM, if the fines are silty as determined by the procedures in Section 14.

15.5 If the soil is estimated to contain 10 % fines, give the soil a dual identification using two group symbols.

15.5.1 The first group symbol shall correspond to a clean gravel or sand (GW, GP, SW, SP) and the second symbol shall correspond to a gravel or sand with fines (GC, GM, SC, SM).

15.5.2 The group name shall correspond to the first group symbol plus the words "with clay" or "with silt" to indicate the plasticity characteristics of the fines. For example: "well-graded gravel with clay, GW-GC" or "poorly graded sand with silt, SP-SM" (see Fig. 2).

15.6 If the specimen is predominantly sand or gravel but contains an estimated 15 % or more of the other coarse-grained constituent, the words "with gravel" or "with sand" shall be added to the group name. For example: "poorly graded gravel with sand, GP" or "clayey sand with gravel, SC" (see Fig. 2).

15.7 If the field sample contains any cobbles or boulders, or both, the words "with cobbles" or "with cobbles and boulders" shall be added to the group name. For example: "silty gravel with cobbles, GM."

16. Report

16.1 The report shall include the information as to origin, and the items indicated in Table 13.

NOTE 14—*Example: Clayey Gravel with Sand and Cobbles, GC*—About 50 % fine to coarse, subrounded to subangular gravel; about 30 % fine to coarse, subrounded sand; about 20 % fines with medium plasticity, high dry strength, no dilatancy, medium toughness; weak reaction with HCl; original field sample had about 5 % (by volume) subrounded cobbles, maximum dimension, 150 mm.

In-Place Conditions—Firm, homogeneous, dry, brown

Geologic Interpretation—Alluvial fan

TABLE 13 Checklist for Description of Soils

1. Group name
2. Group symbol
3. Percent of cobbles or boulders, or both (by volume)
4. Percent of gravel, sand, or fines, or all three (by dry weight)
5. Particle-size range:
   Gravel—fine, coarse
   Sand—fine, medium, coarse
6. Particle angularity: angular, subangular, subrounded, rounded
7. Particle shape: (if appropriate) flat, elongated, flat and elongated
8. Maximum particle size or dimension
9. Hardness of coarse sand and larger particles
10. Plasticity of fines: nonplastic, low, medium, high
11. Dry strength: none, low, medium, high, very high
12. Dilatancy: none, slow, rapid
13. Toughness: low, medium, high
14. Color (in moist condition)
15. Odor (mention only if organic or unusual)
16. Moisture: dry, moist, wet
17. Reaction with HCl: none, weak, strong

For intact samples:

18. Consistency (fine-grained soils only): very soft, soft, firm, hard, very hard
19. Structure: stratified, laminated, fissured, slickensided, lensed, homogeneous
20. Cementation: weak, moderate, strong
21. Local name
22. Geologic interpretation
23. Additional comments: presence of roots or root holes, presence of mica, gypsum, etc., surface coatings on coarse-grained particles, caving or sloughing of auger hole or trench sides, difficulty in augering or excavating, etc.

NOTE 15—Other examples of soil descriptions and identification are given in Appendix X1 and Appendix X2.

NOTE 16—If desired, the percentages of gravel, sand, and fines may be stated in terms indicating a range of percentages, as follows:

Trace—Particles are present but estimated to be less than 5 %
Few—5 to 10 %
Little—15 to 25 %
Some—30 to 45 %
Mostly—50 to 100 %

16.2 If, in the soil description, the soil is identified using a classification group symbol and name as described in Test Method D 2487, it must be distinctly and clearly stated in log forms, summary tables, reports, and the like, that the symbol and name are based on visual-manual procedures.

17. Precision and Bias

17.1 This practice provides qualitative information only, therefore, a precision and bias statement is not applicable.

18. Keywords

18.1 classification; clay; gravel; organic soils; sand; silt; soil classification; soil description; visual classification

APPENDIXES

(Nonmandatory Information)

X1. EXAMPLES OF VISUAL SOIL DESCRIPTIONS

X1.1 The following examples show how the information required in 16.1 can be reported. The information that is included in descriptions should be based on individual circumstances and need.

X1.1.1 *Well-Graded Gravel with Sand (GW)*—About 75 % fine to coarse, hard, subangular gravel; about 25 % fine to coarse, hard, subangular sand; trace of fines; maximum size, 75 mm, brown, dry; no reaction with HCl.

X1.1.2 *Silty Sand with Gravel (SM)*—About 60 % predominantly fine sand; about 25 % silty fines with low plasticity, low dry strength, rapid dilatancy, and low toughness; about 15 % fine, hard, subrounded gravel, a few gravel-size particles fractured with hammer blow; maximum size, 25 mm; no reaction with HCl (Note—Field sample size smaller than recommended).

In-Place Conditions—Firm, stratified and contains lenses of silt 1 to 2 in. (25 to 50 mm) thick, moist, brown to gray; in-place density 106 lb/ft^3; in-place moisture 9 %.

X1.1.3 *Organic Soil (OL/OH)*—About 100 % fines with low plasticity, slow dilatancy, low dry strength, and low toughness; wet, dark brown, organic odor; weak reaction with HCl.

X1.1.4 *Silty Sand with Organic Fines (SM)*—About 75 % fine to coarse, hard, subangular reddish sand; about 25 % organic and silty dark brown nonplastic fines with no dry strength and slow dilatancy; wet; maximum size, coarse sand; weak reaction with HCl.

X1.1.5 *Poorly Graded Gravel with Silt, Sand, Cobbles and Boulders (GP-GM)*—About 75 % fine to coarse, hard, subrounded to subangular gravel; about 15 % fine, hard, subrounded to subangular sand; about 10 % silty nonplastic fines; moist, brown; no reaction with HCl; original field sample had about 5 % (by volume) hard, subrounded cobbles and a trace of hard, subrounded boulders, with a maximum dimension of 18 in. (450 mm).

X2. USING THE IDENTIFICATION PROCEDURE AS A DESCRIPTIVE SYSTEM FOR SHALE, CLAYSTONE, SHELLS, SLAG, CRUSHED ROCK, AND THE LIKE

X2.1 The identification procedure may be used as a descriptive system applied to materials that exist in-situ as shale, claystone, sandstone, siltstone, mudstone, etc., but convert to soils after field or laboratory processing (crushing, slaking, and the like).

X2.2 Materials such as shells, crushed rock, slag, and the like, should be identified as such. However, the procedures used in this practice for describing the particle size and plasticity characteristics may be used in the description of the material. If desired, an identification using a group name and symbol according to this practice may be assigned to aid in describing the material.

X2.3 The group symbol(s) and group names should be placed in quotation marks or noted with some type of distinguishing symbol. See examples.

X2.4 Examples of how group names and symbols can be incororated into a descriptive system for materials that are not naturally occurring soils are as follows:

X2.4.1 *Shale Chunks*—Retrieved as 2 to 4-in. (50 to 100-mm) pieces of shale from power auger hole, dry, brown, no reaction with HCl. After slaking in water for 24 h, material identified as "Sandy Lean Clay (CL)"; about 60 % fines with medium plasticity, high dry strength, no dilatancy, and medium toughness; about 35 % fine to medium, hard sand; about 5 % gravel-size pieces of shale.

X2.4.2 *Crushed Sandstone*—Product of commercial crushing operation; "Poorly Graded Sand with Silt (SP-SM)"; about 90 % fine to medium sand; about 10 % nonplastic fines; dry, reddish-brown, strong reaction with HCl.

X2.4.3 *Broken Shells*—About 60 % gravel-size broken

shells; about 30 % sand and sand-size shell pieces; about 10 % fines; "Poorly Graded Gravel with Sand (GP)."

X2.4.4 *Crushed Rock*—Processed from gravel and cobbles in Pit No. 7; "Poorly Graded Gravel (GP)"; about 90 % fine, hard, angular gravel-size particles; about 10 % coarse, hard, angular sand-size particles; dry, tan; no reaction with HCl.

X3. SUGGESTED PROCEDURE FOR USING A BORDERLINE SYMBOL FOR SOILS WITH TWO POSSIBLE IDENTIFICATIONS.

X3.1 Since this practice is based on estimates of particle size distribution and plasticity characteristics, it may be difficult to clearly identify the soil as belonging to one category. To indicate that the soil may fall into one of two possible basic groups, a borderline symbol may be used with the two symbols separated by a slash. For example: SC/CL or CL/CH.

X3.1.1 A borderline symbol may be used when the percentage of fines is estimated to be between 45 and 55 %. One symbol should be for a coarse-grained soil with fines and the other for a fine-grained soil. For example: GM/ML or CL/SC.

X3.1.2 A borderline symbol may be used when the percentage of sand and the percentage of gravel are estimated to be about the same. For example: GP/SP, SC/GC, GM/SM. It is practically impossible to have a soil that would have a borderline symbol of GW/SW.

X3.1.3 A borderline symbol may be used when the soil could be either well graded or poorly graded. For example: GW/GP, SW/SP.

X3.1.4 A borderline symbol may be used when the soil could either be a silt or a clay. For example: CL/ML, CH/MH, SC/SM.

X3.1.5 A borderline symbol may be used when a fine-grained soil has properties that indicate that it is at the boundary between a soil of low compressibility and a soil of high compressibility. For example: CL/CH, MH/ML.

X3.2 The order of the borderline symbols should reflect similarity to surrounding or adjacent soils. For example: soils in a borrow area have been identified as CH. One sample is considered to have a borderline symbol of CL and CH. To show similarity, the borderline symbol should be CH/CL.

X3.3 The group name for a soil with a borderline symbol should be the group name for the first symbol, except for:

CL/CH lean to fat clay
ML/CL clayey silt
CL/ML silty clay

X3.4 The use of a borderline symbol should not be used indiscriminately. Every effort shall be made to first place the soil into a single group.

X4. SUGGESTED PROCEDURES FOR ESTIMATING THE PERCENTAGES OF GRAVEL, SAND, AND FINES IN A SOIL SAMPLE

X4.1 *Jar Method*—The relative percentage of coarse- and fine-grained material may be estimated by thoroughly shaking a mixture of soil and water in a test tube or jar, and then allowing the mixture to settle. The coarse particles will fall to the bottom and successively finer particles will be deposited with increasing time; the sand sizes will fall out of suspension in 20 to 30 s. The relative proportions can be estimated from the relative volume of each size separate. This method should be correlated to particle-size laboratory determinations.

X4.2 *Visual Method*—Mentally visualize the gravel size particles placed in a sack (or other container) or sacks. Then, do the same with the sand size particles and the fines. Then, mentally compare the number of sacks to estimate the percentage of plus No. 4 sieve size and minus No. 4 sieve size present. The percentages of sand and fines in the minus sieve size No. 4 material can then be estimated from the wash test (X4.3).

X4.3 *Wash Test (for relative percentages of sand and fines)*—Select and moisten enough minus No. 4 sieve size material to form a 1-in (25-mm) cube of soil. Cut the cube in half, set one-half to the side, and place the other half in a small dish. Wash and decant the fines out of the material in the dish until the wash water is clear and then compare the two samples and estimate the percentage of sand and fines. Remember that the percentage is based on weight, not volume. However, the volume comparison will provide a reasonable indication of grain size percentages.

X4.3.1 While washing, it may be necessary to break down lumps of fines with the finger to get the correct percentages.

X5. ABBREVIATED SOIL CLASSIFICATION SYMBOLS

X5.1 In some cases, because of lack of space, an abbreviated system may be useful to indicate the soil classification symbol and name. Examples of such cases would be graphical logs, databases, tables, etc.

X5.2 This abbreviated system is not a substitute for the full name and descriptive information but can be used in supplementary presentations when the complete description is referenced.

X5.3 The abbreviated system should consist of the soil classification symbol based on this standard with appropriate lower case letter prefixes and suffixes as:

Prefix:	Suffix:
s = sandy	s = with sand
g = gravelly	g = with gravel
	c = with cobbles
	b = with boulders

X5.4 The soil classification symbol is to be enclosed in parenthesis. Some examples would be:

Group Symbol and Full Name	Abbreviated
CL, Sandy lean clay	s(CL)
SP-SM, Poorly graded sand with silt and gravel	(SP-SM)g
GP, poorly graded gravel with sand, cobbles, and boulders	(GP)scb
ML, gravelly silt with sand and cobbles	g(ML)sc

SUMMARY OF CHANGES

In accordance with Committee D18 policy, this section identifies the location of changes to this standard since the last edition (1993$^{\epsilon 1}$) that may impact the use of this standard.

(1) Added Practice D 3740 to Section 2.

(2) Added Note 5 under 5.7 and renumbered subsequent notes.

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APPENDIX F.2

AQUIFER TEST PROCEDURES FOR HYDRAULIC TESTING OF NEW AND EXISTING WELLS MITIGATION ORDER ON CONSENT NO. P-121-07

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1. OVERVIEW OF WORK

Aquifer tests will be conducted at the conclusion of well development at each new monitoring well installed for Mitigation Order on Consent No. P-121-07. The objective of aquifer testing is to estimate aquifer transmissivity and other hydraulic properties using measurements of the water level response to pumping in the pumped well and any observation well(s). A groundwater sample will be collected from the pumped well during or at the conclusion of the aquifer test to document the concentrations of sulfate and other constituents. Water discharge to surface will be monitored for Clean Water Act compliance under the terms of a De Minimus General Permit (DGP) from Arizona Department of Environmental Quality, if required.

2. GENERAL DESIGN OF AQUIFER TEST

Aquifer testing at each well will consist of a step-rate pumping test and a recovery test. The step test will include measuring water levels while the well is pumped at three successively increasing flow rates. The recovery test will include measuring water levels after pumping is stopped.

Target pumping rates for the step test are 15, 30, and 50 gallons per minute (gpm) for basin fill wells, and 5, 10, and 20 gpm for bedrock wells. The two initial steps will last for a minimum of one hour each and pump at approximately 30% and 60% of the maximum flow rate. The third step will pump for eight to ten hours at the maximum flow rate. At the conclusion of the third step, the pump will be shut off and the recovery of water levels monitored. The duration of the recovery test will equal the duration of total step test pumping.

3. AQUIFER TEST METHOD

The critical parameters to be monitored during a pumping test are water levels during pumping and recovery, barometric pressure, and the pumping rate. Barometric pressure will be monitored regardless of the type of downhole pressure transducer used (either vented or non-vented). The change in water level over time is used to calculate drawdown, or the difference between the static water level at the start of the test and the water level at any time in the test. Drawdown is used in conjunction with measurements of the pumping rate over time to estimate aquifer hydraulic properties. Any corrections to drawdowns needed as a result of barometric pressure fluctuations will be made based on barometric data. Therefore, the water level in pumping and observation well(s), barometric pressure, and the pumping rate are monitored frequently during the aquifer test.

3.1 Pumping Equipment

Verdad Group (Verdad) will equip the pumping well with a submersible pump, air line (for insertion of transducer and water level sounder for manual water level measurements), discharge piping, and a flow meter. The pump will be capable of pumping 50 gpm against a head of 500 feet for basin fill wells, and 20 gpm against a head of 800 feet for bedrock wells. The pump must be fitted with a check valve for the recovery test to be accurate. Verdad will provide and operate a generator to power the pump throughout the aquifer test.

Discharge from the well will be released to either areas of internal drainage for infiltration or to surface water drainage pursuant to a DGP. Verdad will install a discharge line from the pump and equip it with a flow meter in such a way that there is an appropriate length of pipe around the flow meter to avoid turbulence or backflow pressure that can interfere with it operation. The discharge line will be directed to an area of internal drainage or to the drainage identified in the DGP. The discharge line will be set up in a manner that allows periodic measurement of filling time for a graduated 50 gallon drum. Measurements of filling time will be used to calculate the flow rate and to verify flow meter measurements (Section 3.3.2).

3.2 Preparation for Aquifer Test

Preparation for the aquifer test consists of:

- Deployment of equipment for water level and barometric pressure measurement, and
- Testing the pumping system

Downhole monitoring equipment will never be installed until the pump and airline have been installed. Monitoring equipment will not be installed via the airline to depths below the base of the airline.

3.2.1 Equipment for Water Level Measurement

Water levels will be measured in the pumped well and observation well(s) using both pressure transducers and manual soundings.

3.2.1.1 Transducers

Water levels will be measured using either vented or non-vented pressure transducers. Vented transducers measure gauge pressure (water pressure minus barometric pressure) and non-vented transducers measure absolute pressure (water pressure plus barometric pressure). In-Situ LevelTROLL 700 0 to 30 psig (vented), or 0 to 30 psia (non-vented) pressure transducers, or the equivalent, will be used.

Vented transducers will be suspended in wells by a vented cable to the surface. The vented cable provides a reference barometric pressure for the transducer. For this reason, care needs to be taken not to pinch the cable. The cable also allows communication between the transducer and a laptop computer. Non-vented transducers do not have a reference pressure line nor the ability to communicate with the surface and are suspended in wells using nylon cord or light steel cable. The well casing and the cable used to suspend the selected transducer will be marked at a common location to judge whether there is any movement of the cable during the test.

The transducer in the pumped well should be set approximately 40 feet below the water table unless measurements of drawdown during development indicated a larger drawdown should be expected (Note: the 30 psig transducer has a maximum pressure rating of 69 feet of water and should not be submerged deeper than that. The 30 psia transducer should not be submerged more than about 35 feet since it responds to the sum of water pressure and atmospheric pressure). Transducers in observation wells should be suspended approximately 20 feet below the water table. This can be done by lowering the transducer until there is a reading

of submergence and then adding only the length of additional cable needed for desired depth of submergence. Alternately, the depth to water can be measured and marked on the transducer cable along with the desired depth of submergence. Then the transducer can be lowered to the mark on the cable. Either way, the depth of submergence should be recorded in the field notebook.

The transducers remain below the water table during the entire aquifer test. Drawdown at the pumping well can be estimated during development pumping. As a guide for setting transducers, drawdown in observation wells is not expected to exceed 10 feet.

Transducers need to be programmed prior to placement in the well. Programming consists of setting the clock time, measurement units, and measurement frequency. The clock time will be synchronized by setting instruments to a single time piece, the clock in the laptop computer. Table 1 summarizes the programming process. **Transducer measurements in all wells will be recorded at 30 second intervals throughout the aquifer test**. Larger measurement intervals may be needed to stay within the data storage capacity of the transducers if the monitoring period exceeds 20 days.

Vented Transducers will be checked in the field by (1) checking that the unit is powered and communicating with the laptop, and (2) checking the transducer reading by comparing it to a manual measurement of depth to groundwater (remember, the depth to water by manual measurement equals the depth of transducer submergence minus the feet of water over the

transducer). (Non-vented (absolute) pressure transducers cannot be checked once suspended in the well without removal fro the well.)

Transducers will be placed in the well 6 to 12 hours prior to the start of the aquifer test to measure regional water level trend and will be kept in the well until the end of the recovery test. For aquifer tests in which multiple wells are being tested sequentially, transducers can be maintained in the wells throughout the test period unless they need to be pulled to allow pump placement or removal. In all cases, recovery will be monitored for at least the duration of the step test pumping prior to initiation of any additional work.

In the event there are questions regarding proper operation of the transducers, communication software, or program, In-situ has customer service technicians available 24/7 for technical support.

- **In-Situ Customer Service Technicians - 1-800-446-7488**

3.2.1.2 Manual Water Level Measurement

Manual water level measurements will be made in all wells during the step and the recovery tests. The manual measurements will be used to verify transducer readings or to supplement transducer data in the event of transducer malfunction.

Manual measurements should be made with reference to a fixed measuring point established at each well. The depth to water should be measured from the measuring point to the

nearest 0.01 feet. The elevation of the measuring point above the ground surface should be measured and recorded in the field notebook. All measurements should be recorded in the field notebook with the time in hours and minutes synchronized to a single time piece. The time that pumping starts must also be recorded in the field notebook

The static (nonpumping) water level should be measured manually in each well prior to placement and removal of the transducers. Transducers will be deployed in the pumping and observation wells as soon as feasible prior to the aquifer test, preferably at least 12 hours prior to the start of the test. A water level indicator will be installed in the air line of the **pumping** well at the same time as the transducer and cable, and maintained there for the remainder of the aquifer test. A second water level indicator will be used for measurement of **observation** wells.

The schedule for manual water level measurements follows:

- **Manual water level measurements will be made in observation wells at 30 minute intervals throughout the step test.**
- **The water level in the pumped well should be measured manually at 1 minute intervals during the first 5 minutes of each step and then at 10 minute intervals for the remainder of the first two steps and during the first hour of the third step, and every 30 minutes thereafter. The manual measurement will verify transducer measurements which will be at 30-second intervals.**
- **Manual water level measurements will be collected every minute for the first 10 minutes of the recovery test, the every 10 minutes for the remainder of the first hour of the recovery test.**
- **The recovery test can run overnight without manual water level measurements, but the water level should be measured immediately the next morning.**
- **At the completion of the recovery test, water levels will be measured in all wells prior to removing any equipment from the pumped well.**

3.2.2 Barometric Pressure Measurement

Barometric pressure will be monitored during each test regardless of the type of pressure transducer used to measure water levels. A BaroTROLL absolute pressure transducer or equivalent will be used to measure barometric pressure. The BaroTROLL should be suspended in the upper 10 feet of an observation well for the duration of the test. Prior to deployment the BaroTROLL should be synchronized to the clock in the laptop so that it is also synchronized with the transducers used to measure water levels.

3.2.3 Pumping System

Prior to starting the aquifer test, the pumping system should be tested to:

- identify leaks,
- determine the maximum expected pumping rate, and
- calibrate the valve to the step test pumping rates (e.g., 15 gpm, 30 gpm, etc.).

An initial estimate of the maximum flow rate will be available from pumping for well development. The system should be pumped long enough (10 to 15 minutes) to identify and fix leaks, to verify the maximum pumping rate, and to calibrate valve opening for the step test. To calibrate the valve, determine and mark the valve opening that yields the target pumping rate for the step test. Ideally, this preliminary pumping should be completed the day before the aquifer test and the system monitored over night before the test start. If preliminary pumping must be done the day of the test, the aquifer test should not start until the pumping has been shut down for a period of time equal to the duration of the preliminary pumping to allow proper recovery.

3.3 Aquifer Test Procedure

Pumping rates will be held constant through each step of the aquifer test. Once the pump is turned on and the valve opened to the predetermined setting, do not adjust the flow rate further just begin documenting the water levels and the flow rate.

3.3.1 Aquifer Test

The general aquifer test procedure is as follows:

- Complete the preparations described in Section 3.2
- Test all transducers to verify operational status as described in Section 3.2.1.1
- Manually measure static water levels in all wells immediately prior to starting pumping
- Open the valve of the discharge line to the position for the first step

TEST STEP ONE: Record time and start pump

- Record flow meter readings as described in Section 3.3.2
- Manually measure flow rate as described in Section 3.3.2
- Manually measure water levels as described in Section 3.2.1.2
- Check vented transducers with laptop and manual water level measurement to verify operation as described in Section 3.2.1.1

TEST STEP TWO: At test time equal to 60 minutes, record time and open the valve to the position for the second step

- Record flow meter readings as described in Section 3.3.2
- Manually measure flow rate as described in Section 3.3.2
- Manually measure water levels as described in Section 3.2.1.2
- Check vented transducers with laptop and manual water level measurement to verify operation as described in Section 3.2.1.1

TEST STEP THREE: At test time equal to 120 minutes, record time and open the valve to the position for the third step

- Record flow meter readings as described in Section 3.3.2
- Manually measure flow rate as described in Section 3.3.2
- Manually measure water levels as described in Section 3.2.1.2
- Check vented transducers with laptop and manual water level measurement to verify operation as described in Section 3.2.1.1

RECOVERY TEST: At test time equal to at least 600 minutes, record time and shut down pump

- Manually measure water levels as described in Section 3.2.1.2
- Check vented transducers with laptop and manual water level measurement to verify operation as described in Section 3.2.1.1
- Download each transducer to the laptop before leaving the site for the day and immediately copy the transducer files from the laptop to a flash drive
- Continue water level monitoring when returning to the site in the morning
- At the conclusion of the recovery test, download each transducer to the laptop before leaving the site for the day and immediately copy the transducer files from the laptop to a flash drive

If field conditions dictate that the first two steps be run for longer than the times indicated, Step 3 will still be run for at least 480 minutes. The primary basis for terminating the aquifer test will be attainment of at least 40 minutes of pumping in Step 3.

3.3.2 Flow Rate Measurement

All pumping rate measurements will be recorded in the field notebook as to the hour and minute of pump startup and shutdown. The flow rate should be kept constant throughout each step of the test. Flow rates will be measured by the flow meter and manually. Manual flow measurements will used to verify the flow meter measurements. Manual flow measurements will be based on the time to fill a 50 gallon drum.

The test procedure is as follows:

- **Flow meter measurements are recorded every minute for the first 5 minutes of each step to determine flow rate stability.**
- **A manual measurement of flow rate is made after 5 minutes to verify the flow meter readings.**
- **If the flow meter reading is confirmed by the manual flow measurement, the flow meter reading will be recorded every 15 minutes thereafter and checked by manual flow measurements hourly.**
- **If the flow meter is erratic or incorrect (a greater than 15 percent difference from the manual measurements) on a consistent basis, manual flow measurements will be taken every 15 minutes.**

3.3.3 Water Quality Field Parameters During Pumping

The pH and electrical conductivity of discharge will be monitored hourly throughout the step test and prior to collection of the water quality sample (Section 3.4). The pH/conductivity meter will be calibrated at the start of each aquifer test and the calibration checked against standards daily.

3.4 Water Quality Sampling of Pumping Well

A water quality sample will be collected during or near the completion of the third step of the step test. The water sample will be filtered using a 0.45 micron filter. An unfiltered sample will be collected for analysis of sulfate only. The water sample will be shipped to ACZ Laboratories, Inc. and analyzed for the extended list of analytes (calcium, magnesium, potassium, sodium, chloride, sulfate, fluoride, nitrate, nitrite, total dissolved solids, and alkalinity). **To comply with the 48-hour holding time for the nitrate/nitrite analysis, the**

sample should be collected with sufficient time to complete chain of custody paperwork and to drop the sample off at a shipper for overnight shipment with next day delivery.

3.5 Discharge to Surface

Discharge of water to the surface is covered under the DGP. The character, duration, and water quality of the discharge are to be documented pursuant to permit specifications and the best management plan (BMP) for the permit. A copy of the BMP is in Appendix A.

Water quality sampling for the DGP consists of collecting a grab sample for analysis of oil and grease. Additionally, the DGP requires monitoring turbidity and the volume of flow.

3.6 Preliminary Equipment List

- Two water level sounders (of sufficient length to measure depths to water in target wells)
- LevelTROLL vented pressure transducers with 500-foot vent cables or absolute pressure transducers. (Recommend that only absolute transducers be used in wells with depths to water greater than 400 feet)
- BaroTROLL barometric transducer
- Laptop computer with MS Excel and WinSitu programs
- Communication cables to connect LevelTROLLS and BaroTROLL to laptop
- pH/electrical conductivity meter
- turbidity meter
- Watch or stopwatch
- 55 gallon drum with gradations
- Light tools (pliers, wrench, screwdriver)
- 100-foot measuring tape with 0.1-foot markings for measuring the transducer cable
- Light steel cable
- Nylon cord
- Notebook and pens
- Project Quality Assurance/Quality Control Plan

- Project Health and Safety Plan
- De Minimus General Permit for discharge to ground surface
- Padlocks and chain

3.7 Site Security

Whenever the site is vacated by personnel, all equipment should be removed to the maximum degree possible. Equipment that must remain at the site should be secured. This may require chaining certain equipment to an immovable object or chaining equipment together to deter easy removal. Some sites may warrant retaining a security guard for nighttime security during the aquifer test.

TABLE

TABLE 1
Using Win-situ 5

- Open program
- Highlight *Site Data*
    - Right click and choose your site name (i.e. MO-2007-1)
- Go to *File* and choose *connect*
- Synchronize clocks on using prompt on right side of screen
- Go to the *Logging* tab
    - Right click on screen below listed site names of previous tests
    - Choose *New* to bring up Set Up wizard

Setup wizard steps follow:

- Select your site from drop-down menu
- Choose a Log Name and type it into box (i.e. 1a)
- Select parameters and units to log
    - Temperature (C)
    - Depth (ft.)
- Choose a logging method
    - Fast Linear (time intervals less than one minute)
    - Start Condition = scheduled
    - Stop Condition = none
- What do you want the output to be?
    - Ground water (depth)
- Pick specific gravity value
    - Default = 0.999 when you choose ground water with a note that reads, "0.991 to 1.000 depending on temp. and EC. This value represents water at 15 C and 200 microseimens/cm.
- Summary
    - This dialog box show all of the parameters specified and asked for.
    - Click on the check mark to accept.

Note: To download data connect to troll, choose logging tab, highlight your named test and right click on it. Select download. These data will be stored in your site name file from which you can export to CSV which places it into an Excel file that shall be saved on the laptop hard drive and a removable drive.

APPENDIX F.3

QUALITY ASSURANCE PLAN FOR ACZ LABORATORIES, INC.

ACZ Laboratories, Inc.

QUALITY ASSURANCE PLAN

UNCONTROLLED

Effective Date: August 10, 2007

Authorization Signatures and Dates:

Audrey Stover 8-9-07
Audrey Stover, President/CEO

8-9-07
Matt Sowards, Production Manager

Kristen Russell 8-9-07
Kristen Russell, QA/QC Officer

2773 Downhill Drive
Steamboat Springs, CO 80487

(970)-879-6590
www.acz.com

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1 INTRODUCTION

ACZ Laboratories, Inc. is an environmental testing laboratory that provides data to clients primarily for regulatory purposes. Samples are analyzed for compliance with federal programs including the Resource Conservation Recovery Act (RCRA), Safe Drinking Water Act (SDWA), and Clean Water Act (CWA). Environmental compliance and management decisions are based on the analytical data provided, which are critical to the expenditure of large amounts of money; are important to public health safety; are important in evaluating, monitoring, and protecting the environment; and are often essential in litigation. To this effect, analytical data must always be technically sound, accurate, and legally defensible or it is useless to the end user.

An effective Quality Assurance and Quality Control program is the cornerstone of the generation of reliable analytical data. ACZ's Quality Assurance Plan (QAP) outlines the quality assurance and quality control objectives, policies, and procedures determined to be necessary to meet the requirements of the EPA, federal government entities, state agencies, other regulatory authorities, and our clients. This document provides the necessary guidelines to ensure all ACZ employees have sufficient knowledge and training to perform their job responsibilities in a manner that guarantees all data reported to all of our clients is accurate, reliable, technically sound, legally defensible, and impartial.

For data to be accurate, it must be of known and documented quality. The word "quality" has many different meanings, but for the purposes of environmental testing activities can be stated simply as "conformance to requirements." Conforming to requirements allows objective measurements to be applied, rather than subjective opinions, to determine when work is of good quality. *Quality control* refers to all activities that ensure accuracy (i.e. good quality) of the data. It requires action(s) to be taken and is typically included as part of the procedure. *Quality assurance* provides the records of the results obtained from the required action(s) and refers to the ability of the laboratory to demonstrate or prove to an outside party that the quality of the data is what the laboratory states it is. Quality assurance relies heavily on documentation, and to be effective, the documentation must (1) assure the quality control procedures are being implemented as required (2) assure the reported data reflect the sample as it was received, meaning sample mix-up was avoided, the sample was properly preserved prior to analysis, etc. (3) facilitate traceability of an analytical result and (4) be subjected to reasonable precautions to protect data from loss, damage, theft, and internal or external tampering.

Quality Policy Statement: To maintain an effective QA/QC program, continually improve the quality of our environmental testing services, and consistently provide clients with technically sound and legally defensible data in a timely manner, the management of ACZ recognizes the importance of its commitment to:

- Ensuring good professional practice by well-trained and qualified employees with the necessary experience and skills to carry out their organizational functions and to meet or exceed ACZ's standards for the quality and reliability of its testing services.
- Ensuring the data provided to our clients is of known and documented quality, and is accurate and impartial.
- Ensuring that all quality assurance and quality control policies and procedures are communicated to and understood by all employees, and that they are implemented by all employees in their work.
- Ensuring that all aspects of the business operations are conducted in a manner that adheres to the NELAC Standards and all of ACZ's policies and procedures documented in the QAP, SOPs, emails, memos, etc.
- Upholding the spirit and intent of ACZ's Ethics Program and implementing the requirements of the program.

2 QUALITY SYSTEM OBJECTIVES & COMPONENTS

ACZ's QAP provides a framework that guides all technical staff and administrative personnel. The information presented is necessary to ensure all employees perform their duties in a manner that allows the company to achieve its objectives, thereby ensuring the precision, accuracy, completeness, and consistency of the analytical data reported to our clients. This framework is referred to as the Quality System. The Quality System encompasses every documented quality assurance (QA) and quality control (QC) policy and procedure and guides all business functions and laboratory operations by specifying standardized protocols to control both the short-term and long-term activities that influence the quality and defensibility of our testing services.

The Quality System is designed to be appropriate to the type, range and volume of the environmental testing undertaken. The Quality System is not a static entity and must function in a manner that allows for continuous evolution of all aspects of ACZ's business when improvements have been identified and have been determined to be necessary or beneficial. ACZ management recognizes that the staff is comprised of people who possess varied experience and knowledge and can contribute valuable insight and suggestions regarding these improvements. All employees are encouraged to be involved in this process. The following six (6) key elements form the foundation of ACZ's Quality System:

- Documents & Records
- SOPs
- Training
- Audits
- Corrective Actions
- Management Review of the Quality System

2.1 Documents & Records

The entire history of any sample must be readily understood through the associated documentation. To this extent, a formal and systematic control of documents and records is necessary for accurately reconstructing all events pertaining to any sample and for guaranteeing the quality and defensibility of the data. All information relating to the laboratory facilities equipment, analytical test methods, and related laboratory activities (such as sample receipt, sample preparation, data verification and data reporting) must be documented, and all records, including those pertaining to calibration and test equipment, certificates and reports, must be maintained. Documents and records must be safely stored (protected against fire, theft, loss, deterioration, and vermin), and must be held secure and in confidence to the client for a minimum of five (5) years. Refer to section 10.0 for details regarding the storage and control of ACZ's documents and records.

2.1.1 Documents

A document is a writing that contains information. All documents are reviewed for accuracy, approved for release by authorized personnel, and properly distributed. A document control system subsequently ensures that employees use only the correct and effective version of any form, Standard Operating Procedure (SOP), or other document, which are maintained through ACZ's LabWeb intranet. LabWeb is a computerized document control system based in HTML that can be accessed from any network computer within the facility. Documents can be queried by department and then organized in several ways by clicking the appropriate header. Click on the title of the document to view it as an Adobe Acrobat (*.pdf) file. The PDF has a "read only" qualifier and does not allow changes. Users may view SOPs but the documents may not be saved to another network drive and may not be printed. Forms may be viewed and printed but may not be saved to another network drive.
All documents are categorized by department and are assigned a unique document ID that is printed in either the header or footer section. The ID nomenclature starts with either SOP (procedure) or FRM (form), followed by the 2-letter department code, the unique document number, the month and year of

issue, and the revision. The effective date for any SOP or other document is included on the title page and header section of each subsequent page and indicates the implementation date.

The QA/QC Officer has full responsibility of the Document Control System. Documents can be changed, overwritten, or saved as a different document only by employees with Domain Administer computer rights (primarily IT and QA/QC staff). A new or revised document is reviewed, and following approval, the document control number is updated and the SOP or form is uploaded to Labweb. When a new version of an SOP is added to Labweb, the previous version is removed from the active list, date-stamped and electronically archived in a designated location on the network. This automatic process guarantees that ACZ can retrieve the version that was in effect at any given time. Controlled forms are not currently archived.

2.1.2 Records

A record is any information or data on a particular subject that is collected and preserved. Records are produced on a daily basis and contain original, factual information from an activity or study. For ACZ's purpose, this information may be recorded by the following means: LIMS database, logbooks, raw instrument data, worksheets, and notes (or exact copies thereof) that are necessary for the reconstruction and evaluation of the report of the activity or study. The record management system provides control of records for data reduction, validation, reporting and storage, and also provides control of all laboratory notebooks and logbooks. The system must allow for historical reconstruction of all laboratory activities that produced analytical data, must document the identity of personnel involved in sample receipt, preparation, calibration or testing, and must facilitate the retrieval of all working files and archived records for inspection and verification purposes. At a minimum, the following criteria for records must be met:

1) Instrument logbooks must be kept up-to-date on a daily basis. In general, document all relevant activities when the event occurs.

2) Dilution factors and observations must be recorded at the time they are made, and notes regarding the sample(s) or analysis must be identifiable to the specific task.

3) A detailed description of any departure from a documented procedure, and the reason for the departure, must be provided at the time it is performed.

4) All generated data must be recorded either by an automated data collection system or must be recorded directly, promptly and legibly in permanent ink (blue or black is preferred).

5) Erroneous entries (hard copy or electronic) cannot be destroyed by methods such as erasures, overwritten files or markings. Refer to section 16 for ACZ's error correction protocol.

6) Any change(s) to hard copy records must be clearly initialed and dated by the responsible staff. Changes to electronic records must also be traceable to the individual who made the change, and the reason for the change must be provided.

7) Records generated by computers must have hard copy or write-protected backup copies.

2.2 Standard Operating Procedures

A documented procedure is required for all phases of ACZ's business operations, from sample log-in through sample disposal. A Standard Operating Procedure (SOP) is a written document that details the manner in which an operation, analysis, or action is performed and thoroughly prescribes the techniques and procedures, which are the accepted process for performing certain routine or repetitive tasks. Analytical SOPs must be written with adequate detail to allow someone similarly qualified, other than the analyst(s) who routinely performs the procedure, to reproduce the procedure used to generate the test result. To the extent possible, administrative SOPs [non-technical] must include specific requirements pertaining to the process; however, the procedure itself may be a more general description so as to lend a degree of necessary flexibility to account for client requests and other circumstances, which may be outside of ACZ's control.

Proposed revisions to any test SOP must be noted on the SOP Revision Form (FRMQA030). Proper use of FRMQA030 ensures the SOP continues to include all requirements of the procedure. All procedural revisions must be reviewed and approved by QA/QC prior to implementation. Changes to provide additional clarification, correct typographical errors, etc. do not need to be approved but need to be noted on the revision form to ensure the changes are included during the next revision. Analytical SOPs must be reviewed annually using the SOP Review Form (FRMQA035), and Administrative SOPs must be reviewed regularly and revised if necessary to ensure the information is accurate and reflects current practice. Documenting changes in the controlled copy of any SOP is not permitted. Refer to section 10.5.1 for additional information on SOPs.

SOPs are proprietary documents and ACZ does not distribute them freely. Any copy sent electronically or otherwise to an outside party is considered uncontrolled, and the recipient understands that additional changes can be made without prior notification. The use of uncontrolled copies of SOPs is not permitted on site unless approved by QA/QC, and such documents will be initialed and dated by QA/QC personnel when issued.

Before a new procedure, application, or instrument can be implemented, an SOP must be developed. Following QA/QC review, an effective "working draft" will be issued to allow the user(s) to "fine-tune" the document. If a client requests a procedure for which there is not a published method or an existing SOP, ACZ will utilize the process described in the SOP *Client Service Policies and Procedures* (SOPAD043). Analytical SOPs are written in accordance with the NELAC Standards and must include or reference the following items, where applicable:

1) identification of the test method
2) summary, scope & application of the test method, including matrices & components to be analyzed
3) references, including documents provided by instrument / equipment manufacturer
4) sample collection, preservation, & storage
5) equipment & supplies
6) reagents & standards, including storage conditions & shelf-life for each
7) safety
8) interferences
9) complete procedure, including details and acceptance criteria for initial & continuing calibration
10) data review & assessment, including protocols for handling out-of-control or unacceptable data
11) quality control, including acceptance criteria & corrective action for handling failed quality control
12) calculation equations (dilution factors, RPD, % recovery, etc.) & calibration formulas
13) method detection limit & reporting limit
14) method performance, including Demonstration of Capability and Method Detection Limit procedures
15) pollution prevention & waste management
16) definitions
17) tables, diagrams, flowcharts

2.3 Training

It is the responsibility of ACZ's management to ensure the competence of all employees who perform environmental tests and other specific duties, operate equipment or instrumentation, give opinions and interpretations, evaluate

results, and sign test reports. Additionally, ACZ management is responsible for formulating the goals and policies with respect to the necessary education, training, and skills of all personnel and for providing training that is relevant to the company's present and anticipated tasks.

Employees must possess the appropriate combination of education, experience, and skills to adequately demonstrate a specific knowledge of their particular functions and to carryout those functions in a manner that meets or exceeds ACZ's standards and expectations. Additionally, each staff member must demonstrate an understanding of laboratory operations, test methods, related quality assurance and quality control procedures, and management of records and documents to the extent necessary to successfully perform their job duties.

All full-time and part-time personnel must complete a formal training process for Safety, Ethics, Quality Assurance / Quality Control, and Sexual Harassment on the first day of hire and are subsequently responsible for complying with all requirements that pertain to their organizational functions. For all technical staff, training for analytical procedures must be completed prior to independent generation of client data, including Proficiency Testing samples. In general, any staff member who is undergoing training must be provided with appropriate supervision. It is the responsibility of each supervisor or manager to ensure personnel within his or her department is supervised, competent, and is working in accordance with ACZ's Quality System.

2.3.1 Safety Training

Safety training is scheduled with ACZ's Chemical Hygiene Officer and includes viewing a video of general laboratory safety, a complete review of ACZ's Chemical Hygiene Plan, and a building tour to identify the location of Material Safety Data Sheets, emergency showers, eye wash stations, and emergency exits. Following completion of the training, the employee takes an exam, which allows the CHO to evaluate his/her understanding of the material covered.

2.3.2 Ethics Training

ACZ is committed to fostering and enforcing an ethically sound work environment that encourages the conscientious production of accurate, technically sound and legally defensible data. Initial and follow-up ethics training is required for all full-time and part-time employees (permanent or temporary) as described in ACZ's SOP *Ethics and Proactive Prevention Program* (SOPAD039). Initial training provides a general introduction to ACZ's Ethics program, ACZ's Code of Conduct, Code of Ethics, and zero-tolerance policy. Each new employee is also introduced to the company's Ombudsman. Follow-up training is provided within 30 – 60 days and includes a more in-depth review of unacceptable practices. The employee is required to read SOPAD039 prior to attending the session. On an annual basis, a review of SOPAD039 and exercises in making ethical decisions, as well as other relevant information, are presented to all employees.

2.3.3 QA/QC Training

2.3.3.1 All full-time and part-time employees attend an initial orientation session, which is based on the most current version of ACZ's Quality Assurance Plan [QAP] and focuses on the relationship between quality control, quality assurance, environmental testing, and environmental monitoring.

2.3.3.2 Follow-up training is completed within 30 – 60 days and includes a more detailed review and discussion of QA/QC policies and procedures. By this time, employees are expected to be familiar with their responsibilities and have a general understanding of ACZ's operations. The employee must read ACZ's QAP and any pertinent supporting SOPs prior to attending the training, and should prepare questions in advance, as material in each document will be reviewed and an opportunity to seek clarification will be provided. The supervisor must schedule sufficient time for the employee to read all pertinent documents prior to follow-up training.

2.3.3.3 A performance review will be conducted for a new employee after 90 days from the hire date. The review is conducted by the supervisor and is based on general work performance, supervisor observations, and feedback from the QA/QC department.

2.3.4 Sexual Harassment Training

Sexual Harassment training is required for each new employee and includes viewing a video that demonstrates the identification, reporting, and remediation of harassment issues in the work place.

2.3.5 Technical personnel must be thoroughly trained in the analytical techniques and operating principles for all pertinent method procedures. Under no circumstances may any analyst independently generate or review client data for a test procedure before completing the required training and receiving the explicit approval of the QA/QC department. Section 5 provides details of ACZ's technical training program.

2.3.6 An employee performing only data AREV or SREV functions must be appropriately trained regarding QC requirements, corrective action(s), and data qualification criteria stated in the effective version of the test SOP. The trainee must first read the SOP, and then review all pertinent information with the department supervisor. Items covered during training must be documented using the appropriate form, and both the supervisor and the trainee must sign the form. Thereafter, the effective version of the test SOP must always be used for data review.

2.3.7 Continuing training must be documented and at a minimum, the documentation must certify that the employee has read, understands, and agrees to follow the effective version of a revised SOP or other in-house document. The department manager is required to meet with their staff to review the change(s) and to ensure each employee fully understands the change(s). Training is documented using either FRMQA023 or FRMQA030, whichever is most appropriate.

2.3.8 Training is required for all employees whose activities are affected by any procedural change(s) to an SOP and is considered to be complete once the department supervisor has reviewed the change(s) with all staff members and each employee has subsequently initialed and dated the changed item(s) on the SOP Revision form (FRMQA030). Alternatively, if the revisions have been incorporated into a new effective version of the SOP then training is documented using FRMQA023.

2.3.9 ACZ recognizes the benefit of continuing education and encourages employee participation in advanced training courses, seminars, and professional organizations and meetings.

2.4 Audits

The purpose of any audit is to verify performance and compliance to documented Quality Assurance and Quality Control policies and procedures, and to identify discrepancies when they exist. In the latter case, any problems must be addressed and resolved in an appropriate manner in order to assure the Quality System is continuously improved on all levels.

2.4.1 External Audits

External audits are conducted to ascertain compliance with rules, regulations, and additional criteria for certification, and will have a higher degree of formality than internal audits. Where mandatory records are required, compliance with such will be critically evaluated. The search for any corrective actions and the correction of problems identified in a previous audit will also be an important activity. The ease with which important records and information can be retrieved is a criterion for judgment of the management practices of a laboratory and may dictate the depth of the audit. Individual state agencies, its NELAC Primary Accrediting Authority, and current and potential clients typically audit ACZ.

The on-site assessment is generally a two to four day process during which the regulating agency conducts an entrance interview and tours the facility before performing an in-depth review of documents, workgroups, reports, electronic data files, etc. A critical aspect of the on-site assessment is review and verification of bench-level documentation and analyst interviews to determine actual laboratory practices. It is ACZ's policy to always have QA/QC personnel present during an interview. If necessary, the President or Production Manager may attend the interview. An exit interview is conducted upon completion of all on-site assessment activates, during which observations and findings are reviewed. The agency will submit a final report to ACZ, generally within 30 days, detailing all pertinent findings and recommendations.

Upon receipt and review of the agency's report, the QA/QC department will meet with each department manager to develop a corrective action plan, which must be submitted to the agency by the date indicated in their report. Each finding is addressed as a major corrective action as described in section 2.5.2. Employees may not make changes to any laboratory or other practice based on comments or opinions expressed by the regulating agency during an interview or any other stage of the on-site assessment. ACZ will revise polices and procedures as necessary upon completion of the major corrective action process. The audit report and all subsequent corrective actions are thoroughly documented, and all documentation is retained for at least five (5) years.

2.4.2 Internal Audits

ACZ is responsible for the quality of its data and must take reasonable efforts to assure itself and all interested parties of the confidence that can be placed in it. To this extent, internal audits of its activities must be conducted to verify continued compliance with the Quality System. It is the responsibility of the QA/QC Officer to plan, direct, and organize internal audits; however, a trained and qualified individual, independent from the area or system being audited, may be designated by the QA/QC Officer to conduct an internal audit. The area of activity audited, the audit findings, and subsequent corrective actions must be documented, and all documentation must be retained for at least five (5) years.

Whenever any internal audit finding casts doubt on the effectiveness of the operations or on the correctness or validity of the test results, timely corrective action must be taken, and the client(s) must be notified in writing, as soon as the extent of the problem can be determined, if investigations show that the laboratory results may have been affected.

At a minimum, internal audits are conducted for the following departments. Method audits performed for all analytical departments listed below encompass both qualitative evaluation of the operational details of the QA/QC program and quantitative evaluation of the accuracy of data generated by the laboratory staff. These evaluations do not include the real-time review of laboratory raw data or final reports for routine quality control sample verification.

- Log-In
- Reporting
- Wet Chemistry Manual
- Wet Chemistry Instrument (Prep and Analytical)
- Inorganic Instrument
- Inorganic Metals Prep
- Soils
- Radiochemistry (Prep and Analytical)
- Organics (Prep and Analytical)

More frequent internal audits may be scheduled depending on the following criteria:

- Number and type of corrective actions filed for a method or activity
- Client complaints
- Continued failure to achieve acceptable results for a Proficiency Testing sample
- Findings from an external audit
- Request from management

All findings from internal audits are directed through ACZ's corrective action system. Each finding is assigned a corrective action number (similar findings may be combined). A general description of the process is as follows:

1) Findings and observations are summarized in a memo.

2) The memo is distributed to the department supervisor, Production Manager, and President.

3) The supervisor reviews the memo with their staff and develops a response for each finding.

4) The supervisor informs the QA/QC Officer of all resolutions and expected implementation date(s) within two (2) weeks from the date indicated in the memo.

Additionally, an in-depth review will be conducted if there is any evidence of inappropriate actions or vulnerabilities related to data integrity. This review shall be handled in a confidential manner until a follow up evaluation, full investigation, or other appropriate actions have been completed and the issue(s) clarified. Refer to ACZ's SOP *Ethics and Proactive Prevention Program* (SOPAD039). All documentation related to the investigation must be maintained for at least five (5) years.

2.4.3 Electronic Data Audits

Periodically ACZ hires a third party auditing firm to perform a full level audit of analytical data, either on-site or off-site. The auditing firm provides ACZ management with a report citing the deficiencies and recommendations. After review of these findings by management, the QA/QC Officer, and the production supervisor, corrective actions are initiated to ensure that any deficiencies are rectified.

2.4.4 Proficiency Testing [PT] Program

ACZ is required to participate in a formal Proficiency Testing Program at the frequency stipulated by regulating agencies. These "performance audits" are facilitated through the introduction of blind samples, purchased from approved vendors. ACZ analyzes PT samples for most accredited parameters twice in a calendar year, with each study being approximately six (6) months apart. These tests are analyte, matrix, and technology specific, but are not method specific, and provide useful information regarding the accuracy of the analytical data being produced. ACZ participates in the Water Supply (WS) study for SDWA, the Water Pollution (WP) study for CWA, the Soil and Underground Storage Tank studies for RCRA, and Radiochemistry PT study for Drinking Water.

Following log-in, the PT sample is prepared by the analyst according to the vendor's instructions and is then analyzed in the same manner as client samples as described by the test SOP. **NOTE:** Analysts must record the date of preparation (and time of preparation if the holding time is $\leq$ 72 hours) on the subsample container and on the associated workgroup bench sheet(s). Analysis must be performed as soon as possible after diluting the concentrate, as indicated in the vendor's instruction pamphlet. Metals analyses must be completed within 48 hours of diluting the concentrate, as indicated in ACZ CAR519.

Data is compiled by the QA/QC department and reported to the vendor no later than the study close date. The vendor evaluates the data as "acceptable," "not acceptable," or "check for error" by comparing the reported values to statistically derived acceptance criteria and issues a report within 21 days from the study close date. Upon receipt of the report, the QA/QC department initiates a major corrective action for the PT study if any "not acceptable" results were reported. Each production supervisor must investigate all "not acceptable" results for their department, indicate possible causes and determine the appropriate corrective action(s) by the designated due date. If necessary, the QA/QC department will order follow-up samples to confirm the system deficiency has been corrected. Refer to ACZ's SOP *Proficiency Testing Program* (SOPAD011) for additional information.

Strict rules apply regarding the exchange of information for any PT sample:

- ACZ shall not send any PT sample, or a portion of a PT sample for accrediting purposes to another laboratory for any analysis.
- ACZ shall not knowingly accept any PT sample or a portion of a PT sample for accrediting purposes from any other laboratory.
- Employees of ACZ shall not discuss PT data results with any other person outside of the laboratory, in particular any person associated with another laboratory.
- Employees of ACZ shall not attempt to obtain the results or assigned values of any PT sample from our PT Provider prior to the close of the study.

2.5 Corrective Action

When any problem, deviation or failure is identified within the Quality System or when any change is made to a previously documented company-wide protocol, a corrective action must be initiated. Corrective actions are a fundamental element of ACZ's QA/QC Program, as a successful Quality System requires the identification of deficiencies and depends on the development, implementation, and documentation of effective contingency plans and resolutions to effectively address the deficiencies.

Problems can ordinarily be classified two ways: 1) undesirable but not critical or 2) critical and requiring immediate action. To this extent, ACZ utilizes two types of corrective actions: Minor and Major. A minor corrective action pertains to any temporary deviation from a policy or procedure and may be initiated by any employee in order to resolve an immediate problem that is isolated or may impact only one workgroup or several related workgroups. Minor corrective actions do not require QA/QC follow-up. Major corrective actions address system-wide errors or failures and require the root cause(s) of the error or failure to be determined and the resolution to be documented and implemented.

2.5.1 Minor Corrective Action

The minor corrective action report (FRMQA001) allows for complete documentation of any temporary deviation from the SOP or other protocol. The employee who initiates the corrective action will complete Section 1 of the report. Documentation must be accurate and must provide a complete detailed explanation of the situation for future reference. The department supervisor should always be informed of the need for a minor corrective action and may provide additional information in the appropriate section. The project manager may also provide additional information in the appropriate section if necessary. QA/QC does not need to close a minor corrective action; however, the employee may review the report with QA/QC personnel and request their signature in the appropriate section.

Complete documentation may be provided either on the workgroup bench sheet or on the data review checklist in lieu of using FRMQA001 if the deviation applies to a limited number of workgroups. Use FRMQA001 if the deviation applies to many workgroups and attach a copy of the completed form to each workgroup before the workgroup is scanned. If the report is generated after the workgroups have been scanned, then the workgroup must be retrieved and rescanned with the report include as part of the data package. In this case, a note is made on the front page of the workgroup package indicating the reason the workgroup was rescanned (i.e. "CAR attached, WG rescanned"). If appropriate, a minor corrective action will be addressed in the case narrative of the client report.

2.5.2 Major Corrective Action

It is the responsibility of the QA/QC Officer to notify laboratory management in writing of departures from the Quality System, and it is the responsibility of the laboratory management to ensure that any corrective action that arises is discharged within the time frame indicated on the corrective action report, or additional communication must be provided to the QA/QC Officer (see item 3 below).

A major corrective action is initiated whenever a system failure has been identified or whenever an audit finding or other circumstance casts doubt on the correctness or validity of the analysis result(s). The client must be notified in writing if their work is affected. The QA/QC department will work with the Project Manager to determine if a revised report must be issued to the client. See ACZ's SOP *Client Service Policies and Procedure* (SOPAD043) for details. A major corrective action may also be initiated when the need for preventive action has been identified (refer to section 2.5.4).
Only QA/QC department personnel may open and close a major corrective action. When opened, the corrective action will be assigned a unique tracking number (referred to as the CAR number) to ensure that ACZ maintains a complete and accessible record of all Quality System deviations or failures, root cause determinations and subsequent resolutions, and preventive actions. All associated documentation must be retained for at least five (5) years as described in Section 10.

Other examples of circumstances requiring a major corrective action include, but are not limited to:

- Contamination trends as indicated by blanks routinely above acceptable levels
- Spikes, surrogates and lab control samples continually outside acceptance limits
- Change to the MDL and/or PQL (RL) for a procedure
- Client inquiries about data anomalies
- "Not Acceptable" Proficiency Testing results
- Results of internal or external audits
- Discrepancies observed at any stage of data review or reporting
- Using expired receivables
- Hold times or deadlines routinely missed
- Evidence of insufficient or inadequate training

Following initiation, the procedure for a major corrective action proceeds to an investigation by the assigned individual to determine the root cause of the problem and to identify possible resolutions to rectify the problem. The action(s) most likely to eliminate the problem and prevent recurrence of the problem must be selected, documented and implemented, and pertinent staff members must be trained, if necessary. Changes resulting from the corrective action will be monitored, if necessary, to ensure the resolution(s) are shown to be effective. A general outline of the procedure is as follows:

1) Initiation: Any employee may initiate a corrective action by notifying QA/QC. The department manager should always be notified first of any problem and then inform QA/QC. If determined to be necessary, QA/QC personnel will open a corrective action and assign a unique tracking number.

2) Assignment: QA/QC assigns the corrective action to the person(s) responsible for performing the "root cause" determination.

3) Investigation and Action: Must be completed within two (2) weeks from the date the corrective action was initiated. The need for an extension must be communicated to the QA/QC department.

    a. The assigned individual(s) perform a "root cause" determination to identify the suspected cause(s) of the problem.

    b. A resolution to correct the problem and prevent its reoccurrence must be determined, and the estimated date by which the resolution will be completed and implemented must be indicated in the appropriate section of the form. Resolution may be done solely by the person(s) who investigated the root cause or it may require input from one or more additional departments.

4) Project Manager Review: If necessary, the PM will determine whether affected data will be accepted or rejected, contact the client, and reissue a revised report if necessary. Project Manager review may not be required for every major corrective action.

5) Conduct additional training if necessary. Training must be documented using the appropriate form and must include a description provided by the person who conducts the training. All trainees are required to sign and date the form to acknowledge he/she has received training, understands the change(s) and agrees to adhere to any change(s) in a policy or procedure.

6) Revise SOP(s). Proposed revisions must be documented on the SOP Revision form (FRMQA030) and approved by QA/QC before trained personnel initial / date and implement the changes. Use FRMQA023 if the changes are incorporated into the SOP and a new effective version is issued.

7) Submit all supporting documentation to QA/QC to be attached to the hard copy of the report.

8) QA/QC reviews the corrective action. If satisfactory, the corrective action is closed and the implementation date is documented in the space provided.

9) If necessary, QA/QC conducts follow-up within two (2) weeks from the implementation date. If the corrective action is determined to be ineffective, then a new major corrective action will be initiated and the process repeated.

2.5.3 Technical Corrective Actions

Technical corrective actions apply to departures or deviations from the quality control parameters stated in individual test SOPs. Each test SOP must include all required quality control that applies to the procedure (as stipulated by the method and other regulatory agencies) as well as the performance frequency, acceptance criteria and corrective action for handling failed quality control measurements. Each SOP must describe the procedures to be followed for reviewing and assessing data, including corrective action for handling out-of-control or unacceptable data. The required protocol for technical corrective actions is summarized below. ACZ's protocols are included within the [ ].

1) identify the individual responsible for assessing each nonconformance and initiating or recommending corrective action [analyst who performs AREV]

2) define how the analyst must treat data if associated quality control measurements are unacceptable [section 12 of SOP]

3) specify how non-conformance and subsequent corrective actions are to be documented [data review checklist]

4) specify how management reviews the corrective actions [reviewed during SREV]

To the extent possible, samples shall be reported only if all quality control measures are acceptable. If a quality control measure is found to be out of control then the corrective action described in the SOP must be performed. Alternatively, report data with the appropriate qualifier if reprocessing and reanalysis is not possible. The qualifier must be assigned to any sample(s) associated with the failed quality control measure. A current list of all extended qualifiers is available in the LIMS database and may be accessed by all employees.

2.5.4 Preventive Action

Preventive action is a pro-active process to identify opportunities for improvement rather than reacting to the identification of problems or complaints. Needed improvements and potential source(s) of any

nonconformance, either technical or concerning the Quality System, must be identified and addressed. Examples of preventive action include but are not limited to: maintaining a cross-trained staff; maintaining a supply of spare consumable parts; monitoring the performance of support equipment; performing routine maintenance on instruments; maintaining an adequate supply of standards/reagents; ordering supplies before running out; completing log-in review in a timely manner; ensuring ACZ can perform work before samples are accepted; correcting quotes before samples are logged in; and analyzing samples by the appropriate method.

2.6 Management Review of the Quality System

At least once per calendar year, ACZ's management conducts a review of its Quality System and all activities related to its environmental testing services to ensure their continuing suitability and effectiveness, and to introduce necessary changes or improvements. At a minimum, the review must take the following into account:

- Status, review, and discussion of major corrective actions
- Results of recent PT studies and corrective actions initiated / completed
- Review of recent external audits
- Review of internal audits
- Presentation of ideas to improve efficiency and productivity
- Presentation of ideas to improve service and data quality
- Status of state certifications
- Feedback from clients
- Feedback from employees
- Ethics Program
- Ombudsman
- Changes in the volume and type of work undertaken
- Other pertinent issues

2.6.1 Department Reports

Each department manager completes a Department Report (FRMQA041) prior to the Management Review meeting. Each item on the report is to be evaluated as it pertains to the individual department. FRMQA041 is provided in Appendix D.

2.6.2 Management Review Report

The completed department reports are submitted to ACZ's President by the specified due date, and the information from each report is reviewed and compiled to complete the Management Review Report (FRMQA042). A copy of the completed report is issued to each manager in advance of the Management Review meeting. At a date / time specified by the President, all managers meet as a group to discuss the report. Other formats may be utilized at the President's discretion. All reviews will be appropriately documented and all documentation retained for at least five (5) years as described in section 10 (Control & Storage of Records & Documents). FRMQA042 is provided in Appendix D.

3 ETHICAL AND LEGAL RESPONSIBILITY

All ACZ employees have an ethical and legal responsibility to produce data that is accurate, reliable, and legally defensible. ACZ's proactive program for the prevention and detection of improper, unethical or illegal actions includes the implementation in 2002 of an Ombudsman who acts as a neutral party and serves as a confidential liaison between ACZ employees and upper management regarding questions, problems, complaints, suggestions, or ethical dilemmas.

All employees are educated with regards to ACZ's Code of Conduct and Code of Ethics as well as ACZ's zero-tolerance policy, which is strictly enforced. Additionally, employees are informed about the processes in place to ensure employees are free from any undue internal or external commercial, financial or other pressures that may adversely effect the quality of an employee's work, endanger the trust in the independence of ACZ's judgment, or compromise the integrity of ACZ's environmental testing activities. A more detailed description of all aspects of the ethics program is provided in ACZ's SOP *Ethics and Proactive Prevention Program* (SOPAD039).

ACZ will not tolerate any unethical or improper activities or behavior. Violation of company policies may lead to repercussions ranging from a severe reprimand to termination, and possible criminal prosecution if warranted by the situation. ACZ has access to many resources that may be utilized at any time to help clarify any situation determined to be a "gray area." Employees are strongly encouraged to seek further guidance from a supervisor, ACZ's Ombudsman, President or QA/QC staff whenever doubt is raised. Activities that will not be tolerated include, but are not limited to:

- **Misrepresentation of a procedure or documentation** – Intentionally performing a job duty in a manner that does not comply with a documented procedure, including but not limited to a test SOP or method used for sample analysis; providing inaccurate and misleading documentation associated with a data package or failing to provide the necessary documentation as part of a data package.

- **Falsifying Records** – Providing false information on personal credentials, resumes or educational transcripts, logbooks, raw data and client reports, or creating data without performing the procedure (also known as dry labbing).

- **Improper peak integration** – Intentionally performing improper integration of data chromatograms so quality control samples meet acceptance criteria. This is also known as peak shaving or peak enhancing.

- **Improper clock setting** – Readjusting the computer clock so that it appears samples were analyzed within hold times.

- **Improper representation of Quality Control samples** – Failing to treat batch quality control samples in the same manner as client samples (including Proficiency Testing samples) or misrepresenting any type of quality control sample associated with the preparation batch and/or analytical batch.

- **Improper calibration** – Intentionally performing improper manipulation of calibration data or forging tune data so that it meets acceptance criteria.

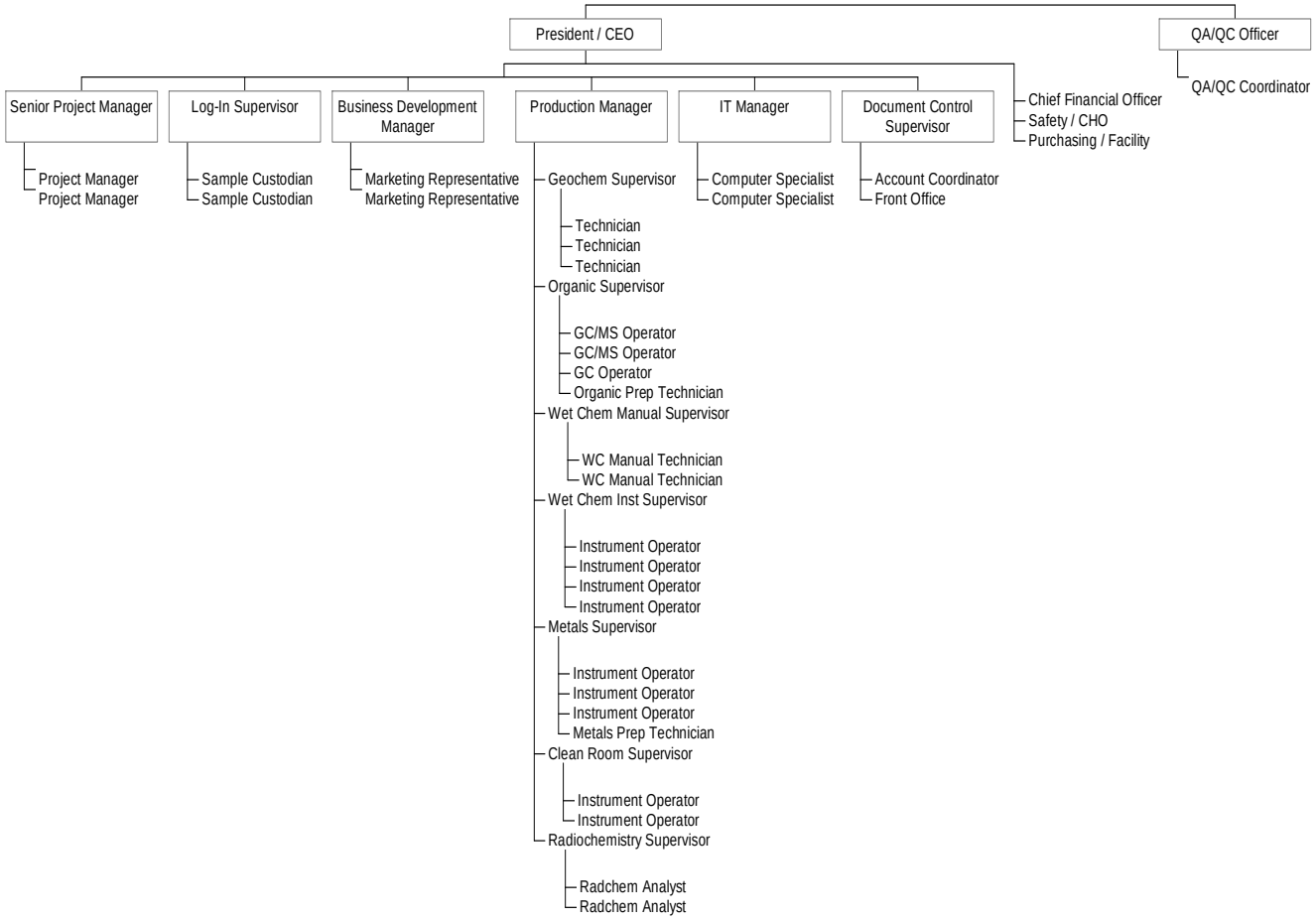
- **File Substitution** – Replacing invalid data with valid data from a different time so the analysis appears to be successful.

4 PERSONNEL AND RESPONSIBILITIES

Due to the nature of regulatory oversight and the increasing demands of the environmental lab industry, QA/QC issues permeate all aspects of our business, the largest and most critical of which are operations (production). On a daily basis, QA/QC and Production must efficiently function together to consistently provide our clients with technically sound and legally defensible data and to ensure the Quality System remains an integral part of all areas within ACZ. The President must rely on regular input and feedback from ACZ's QA/QC Officer and Production Manager, and to this effect, upper management is defined as ACZ's President, QA/QC Officer and Production Manager. It is the responsibility of upper management to document company policies, objectives, systems, programs, procedures, and instructions to the extent necessary to assure the quality and defensibility of all data.

ACZ is organized such that the President also works directly with and relies on input and feedback from the Senior Project Manager, Business Development Manager, Production Supervisors, Document Control Supervisor, IT Manager, Chief Financial Officer, and Chemical Hygiene Officer. These individuals are responsible for managing both the day-to-day operations and long-term goals within their respective areas. It is the responsibility of all managers to ensure that all documented ACZ policies and procedures, including those in the QAP and associated SOPs, are communicated to, understood by, made available to, and implemented by ACZ personnel.

Figure 4-1. Employee Organizational Chart



4.1 President/CEO

The President is ultimately responsible for all analytical and operational activities of the laboratory and must ensure that 1) the laboratory carries out all environmental activities in such a way as to meet the requirements of the NELAC Standards and 2) the laboratory satisfies the needs of the client and the regulatory authorities. General duties involve budgeting for all departments, making decisions on capital equipment and automation; developing company policies and benefits; addressing personnel issues such as hiring, firing, and promotions; and working with clients on various matters. Day-to-day responsibilities include providing direction to all laboratory departments including laboratory operations, accounting, marketing, QA/QC, and client services. Additional responsibilities are as follows:

- Work directly with ACZ's Ombudsman to provide and maintain a mechanism for confidential reporting of ethical/data integrity issues as well as issues that may directly affect current ACZ policies.
- Define the minimal level of qualification, experience, and skills necessary for all laboratory positions.
- Provide the QA/QC Officer with defined responsibility and authority for ensuring the successful development, implementation, and management of ACZ's Quality System.
- Provide the Production Manager with defined responsibility and authority for ensuring the technical operations and provision of resources needed to maintain the required quality of laboratory operations.
- Provide adequate supervision of environmental staff by persons familiar with methods and procedures, purpose of each test, and assessment of the test results.
- Ensure all technical staff has demonstrated capability in the activities for which they are responsible and ensure that the training of each member of the technical staff is kept up-to-date.
- Ensure the QA/QC Officer has access to the highest level of management at which decisions are made on laboratory policy or resources.
- Provide managerial staff the authority and resources needed to discharge their duties.
- Provide technical personnel the resources needed to discharge their duties.
- Specify and document the responsibility, authority, and interrelationship of all personnel who manage, perform or verify work affecting the quality of calibrations and tests.
- Implement appropriate and current guidelines for all lab methods and procedures to ensure data quality and efficiency of analyses. Ensure all method protocols utilized by ACZ meet the QC requirements as established by EPA or other governing agency.
- Document all policies and procedures related to the analytical and operational activities of the laboratory.
- Provide support to technical staff to ensure timely completion of all laboratory work, and develop contingency plans to ensure workflow progresses as planned.
- Meet quarterly (or more often) with the QA/QC Officer and Production Manager.

4.2 QA/QC Officer

The QA/QC Officer reports directly to the President; however, the QA/QC department is considered a separate entity from operations in order to assure data is evaluated objectively and assessments are performed without outside (i.e. managerial) influence. The QA/QC Officer has direct access to the President, and is therefore able to discuss and/or resolve all concerns, policies, etc. related to quality assurance or quality control. The primary responsibility of the QA/QC Officer is to develop, implement, and manage all aspects of ACZ's Quality System, and he/she may take any action necessary to ensure all ACZ employees adhere to all policies, procedures, and objectives documented in ACZ's QAP, SOPs, memorandums, emails, etc. If warranted, the QA/QC Officer has the authority to halt the performance of a single method or the production of a department, and if necessary, the operations of the entire laboratory, and will grant permission to resume when satisfied that the issue(s) have been resolved. Additional responsibilities include but are not limited to those stated in FRMAD060 and the following:

- Review and revise ACZ's QAP and provide training for all employees following approval of a new version.
- Provide QA/QC orientation to new employees.
- Meet quarterly (or more often) with the President and Production Manager.
- Work with department managers to develop and improve training protocols.
- Conduct department training sessions as needed to address specific problems and questions.
- Arrange for or conduct internal audits; notify management of deficiencies; and track corrective actions.
- Organize all external audits; notify management of deficiencies; and assign and track corrective actions.
- Review and approve SOPs (may designate responsibilities to QA/QC Coordinator).
- Meet at least quarterly with Production Supervisors to provide information, respond to questions, etc.
- Manage Proficiency Testing (PT) program (may designate responsibilities to QA/QC Coordinator).
- Coordinate and maintain all regulatory and client certification programs.
- Review and validate a determined percentage of all data packages from Log-in to Reporting.
- Work with marketing/client service representatives on QA/QC aspects of proposals.
- Work with Project Managers and the Production Manager to resolve client feedback regarding data quality.
- Review and maintain records and documentation for audits, certifications and all other QA/QC issues.
- Schedule electronic data audits with third-party.

  <u>Qualifications:</u>

  - General knowledge of the analytical test methods
  - Documented training and/or experience in QA/QC procedures
  - Knowledge of the Quality System as defined under NELAC

4.3 QA/QC Coordinator

The QA/QC Coordinator reports directly to the QA/QC Officer and assists the QA/QC Officer with the development, implementation, and management of the Quality System. Primary job responsibilities are as follows:

- Review and maintain records/documentation for employee training including DOCs, MDLs, etc.
- Provide initial QA/QC orientation to new employees.
- Provide follow-up QA/QC training to new employees.
- Schedule analyses and compile and report data for Proficiency Testing (PT) program, including DMRQA.
- Initiate and track corrective actions related to PT samples and manage all documentation associated with analyses.
- Review and approve SOPs.
- Conduct internal audits, notify management of deficiencies; and track corrective actions.
- Conduct department training sessions as needed to address specific problems and questions.
- Update control chart-generated QC limits in the LIMS database as needed.

Qualifications:

- General knowledge of the analytical test methods
- Documented training and/or experience in QA/QC procedures
- Knowledge of the Quality System as defined under NELAC

4.4 Production Manager

The Production Manager reports directly to the President. General duties involve working with analytical department supervisors on a daily basis to prioritize client projects and QA/QC deadlines and to track sample analyses in order to maintain acceptable turn-around-times for project completion. The Production Manager also addresses personnel, instrumentation, and reagent/supply issues that may affect the completion of the scheduled work and works directly with the QA/QC department to ensure all Quality System requirements pertaining to production are successfully completed in a timely manner. Additional responsibilities are described in FRMAD060.

- Conduct weekly meeting with Production Supervisors to discuss current and upcoming workload, scheduling, priority projects, QC requirements, instrument / equipment issues, personnel, etc.
- Schedule QA/QC work (MDL studies, DOCs, PT sample analysis, SOP revisions, etc.) with department supervisors in order to ensure QA/QC requirements are kept up-to-date.
- Meet at least quarterly with the President and QA/QC Officer.
- Communicate with Project Managers regarding project/instrument status. Notify PMs if problems exist that may affect the project completion date.
- Work with marketing/client service representatives on production aspects of proposals.
- Work with Project Managers and the QA/QC Officer to resolve client feedback regarding data quality.
- Perform checks of sample status using LIMS database to help the laboratory staff meet all established hold times and to determine that analyses can proceed as scheduled to meet required turn around times.
- Provide hands-on support to analysts when necessary to ensure timely completion of all laboratory work, and develop contingency plans to ensure workflow progresses as planned.
- Work with QA/QC Officer to develop and improve training protocols, conduct department work sessions to address specific problems and questions.

  Qualifications:

  - General knowledge of the analytical test methods
  - Minimum four (4) years of laboratory experience
  - Minimum two (2) years of supervisory experience
  - General knowledge of lab-wide systems (including but not limited to log-in and reporting)

4.5 Production Supervisor

Each Production Supervisor is a full-time employee who reports to the Production Manager and exercises day-to-day oversight of laboratory operations for their specific area(s) of expertise. Each supervisor must be familiar with the test methods and related theory and instrumentation, as well as the assessment of results. In addition to monitoring the standards of performance, validity of all analyses, and quality of all data generated in their respective department(s), each supervisor is also responsible for ensuring that a new analyst has successfully completed all training requirements and is adequately prepared to commence work on client samples. Additional responsibilities are described in FRMAD060. If any supervisor is absent for more than 15 consecutive calendar days then another full-time staff member meeting the required qualifications will be assigned to perform the supervisor's duties.

Required Qualifications for a Production Supervisor:

1) Chemical analyses (Organics & Metals): BS or BA in chemical, environmental, biological sciences, physical sciences or engineering, with a minimum of 24 college semester credit hours in chemistry and at least two (2) years of experience in the environmental analysis of representative inorganic and organic analytes for the which the laboratory seeks or maintains accreditation. A masters or doctoral degree in one of the above disciplines may be substituted for one (1) year of experience.

2) Inorganic Chemical analyses (other than Metals): At least an earned associate's degree in the chemical, physical, or environmental sciences, or two (2) years of equivalent and successful college education, with a minimum of 16 college semester credit hours in chemistry and at least two (2) years of experience performing such analyses.

3) Radiological analyses: BS or BA in chemistry, physics, or engineering, with at least 24 college semester credit hours in chemistry and at least two (2) years of experience in the radiological analyses of environmental samples. A masters or doctoral degree may be substituted for one (1) year of experience.

4.6 Business Development Manager

ACZ's Business Development Manager reports directly to the President and supervises all Client Service Representatives, each of who conducts marketing and sales efforts on behalf of ACZ with potential, new and existing clientele, and develops and maintains long-term relationships with customers by working with Project Managers when necessary. Additional responsibilities of the Business Development Manager are described in FRMAD060. ACZ's Client Service staff is authorized to review all contractual agreements with clients, review all proposals and develop price quotations for routine and non-routine analytical projects.

4.7 Project Manager (PM)

The Senior Project Manager reports directly to the President and is responsible for overseeing the PM department. Additional responsibilities of the Senior PM are described in FRMAD060. Each Project Manager serves as the primary laboratory contact for each ACZ client, handles all client service requests, and investigates and resolves any problem brought to ACZ's attention by the customer. In order to provide consistency, each PM is assigned a list of clients, and it is the primary responsibility of each PM to ensure all of their client project needs are managed on a day-to-day basis and met in a timely manner and that all data submitted to the client is of high quality. All PMs work directly with the Production Manager and Production Supervisors regarding client data issues (due dates, hold times, retests, data quality, etc.), with Document Control regarding client reports and with the QA/QC department regarding data quality questions or concerns.

4.8 Instrument Operator

Instrument operators report directly to the respective Production Supervisor. The position involves the analysis of various matrices for trace level contaminants using specialized and technical instrumentation, and each operator must be capable of performing all job duties in an accurate and proficient manner. Education will be verified by providing a copy of a college transcript or diploma, which is maintained in the employee's personnel file. Experience is verified by ACZ's CFO prior to completing the hiring process (verbal or documented verification provided by each reference listed on a resume or application is acceptable). The operator must demonstrate understanding of related theory, mathematics, analytical instrumentation and data interpretation. This work is predominantly intellectual and involves the continuous use of professional and sound judgment. The employee must meet or exceed all requirements for generation of litigation-quality data and must also continue to demonstrate increased proficiency regarding the interpretation of the data as well as the operation and troubleshooting of the assigned instrument(s). These improvements should be attainable through ongoing efforts in-house as well as through specialized instruction at off-site locations. Prerequisites regarding education and experience, as well as job responsibilities and performance expectations are described in FRMAD059. Exceptions pertaining to experience or education will be made on a case-by-case basis.

Qualifications:

- BA or BS in Chemistry or related science or a minimum of 3 years of relevant experience in lieu of degree
- Prior laboratory experience is preferred but is not required.
- Successful completion of training by supervisor or proficient instrument operator

4.8.1 Laboratory Analyst [Technician]

The laboratory technician reports directly to the respective Production Supervisor. The position involves analysis of various matrices using appropriate analytical techniques and support equipment as well as preparation of samples for instrument analyses. Each technician must be capable of performing all job duties in an accurate and proficient manner. Education will be verified by providing a copy of a college transcript or diploma, which is maintained in the employee's personnel file. Experience is verified by ACZ's CFO prior to completing the hiring process (verbal or documented verification provided by each reference listed on a resume or application is acceptable). The technician must demonstrate understanding of related principles and mathematics, must possess common sense and mechanical skills, and must seek professional judgment from the supervisor as necessary. The employee must meet or exceed all requirements for generation of litigation-quality data as well as sample preparation tasks and routine analyses, and must also continue to demonstrate continuous improvements. These improvements should be attainable through ongoing training efforts in-house as well as through training opportunities at off-site locations. Prerequisites regarding education and experience, as well as job responsibilities and performance expectations are described in FRMAD058. Exceptions pertaining to experience or education will be made on a case-by-case basis.

Qualifications:

- BA or BS in Chemistry or related science is preferred but is not required
- Prior laboratory experience is preferred but is not required
- Successful completion of training period by supervisor or proficient technician

4.9 Information Technology (IT) Manager

The Information Systems Manager reports directly to the President and is responsible for the oversight of the IT department regarding the installation and maintenance of ACZ's computer network and all hardware and software and related equipment deployed on the premise. Additional responsibilities are described in FRMAD060. The department is also responsible for developing, maintaining, and improving custom written applications for laboratory automation and efficiency as well as for ACZ's Oracle database, Intranet (Labweb), Internet and electronic diskette deliverables (EDDs).

4.10 Log-In Supervisor

The Log-In Supervisor reports directly to the President and is responsible for the oversight and management of all department personnel and operations. Primary responsibilities include fulfillment and shipment of bottle orders to the client's destination in a timely manner, receipt of all incoming samples, evaluation of all incoming samples against ACZ's Sample Acceptance Policy, entering samples into the LIMS database, and performing timely review of all logged samples. Additional responsibilities are described in FRMAD060.

4.11Document Control Supervisor

The Document Control Supervisor reports directly to the President and is responsible for the oversight of the Document Control department. Primary responsibilities include the generation of client reports and EDDs and the maintenance, organization and control of all hard copy data and records, including workgroup data, client reports, CCOCs, QA/QC records and documents. Additional responsibilities are described in FRMAD060.

4.12Chemical Hygiene Officer

The Chemical Hygiene Officer (CHO) is primarily responsibilities for oversight of ACZ's documented Chemical Hygiene Plan, conducting initial and refresher safety training for all employees, monitoring exposures, and maintaining records for Material Safety Data Sheets, injury reports, chemical exposure reports, etc. Additional responsibilities include as working with management to develop and implement policies to improve the program. The person designated as CHO must have completed at least one basic laboratory safety course and has one year's experience performing laboratory work, preferably with responsibility for at least one area of laboratory safety.

4.13Chief Financial Officer

ACZ's Chief Financial Officer (CFO) is primarily responsible for all financial matters including payroll, accounts receivable, accounts payable and financial statements; monthly and annual balance and profit and loss statements; and assisting with annual budget preparation. In addition, the CFO maintains and monitors the security system and electronic time clock, invoices client projects from the database, updates customer account information, acts as the administrator for 401k/Profit Sharing Plan, maintains and executes the Employee Benefits Manual and assists in hiring process by posting job openings, scheduling qualified candidates for interviews, checking references, and ensuring a new employee provides proof of education.

4.14Purchasing Agent

Primary responsibilities include generating material requisitions and tracking all subsequent purchase orders; inspecting all incoming goods; generating PCNs for all incoming standards, reagents, and chemicals; tracking and maintaining an adequate supply of laboratory consumables.

5 TECHNICAL TRAINING

Prior to the independent generation or review of data for client samples (including PT samples), all analysts must undergo a formal, documented training process. Technical personnel must be thoroughly trained in the analytical techniques and operating principles and procedures for the methods utilized by ACZ. This process includes but is not limited to: reading the associated published method, reading all related SOPs, improving laboratory skills, learning troubleshooting, maintenance, and operating procedures for pertinent equipment and instruments, and creating workgroups and reviewing data through the LIMS database.

It is the responsibility of the department supervisor to determine that a new analyst is properly trained, has successfully completed all initial training requirements and is prepared to commence work on client samples. Under no circumstances may any analyst independently generate client data before receiving the explicit approval of the QA/QC department.

5.1 The effective version of the test SOP provides the framework for training for all sample preparation and analysis. The SOP is typically based on published approved methodologies (EPA or other) and incorporates any necessary activities and protocols not included in the published method(s) as well as requirements stipulated by other regulatory agencies.

5.2 Training for data AREV or SREV only must be documented as specified in section 2.3.6.

5.3 Each employee must be trained either by the department supervisor or by an analyst within the department who is proficient in the area of testing and has been designated by the supervisor. Anyone performing training must meet the following requirements:

1) Documentation of training on the effective version of the test SOP.
2) Documented approval for the analysis.
3) A current IDOC or CDOC.

5.4 Initial training is documented using the Initial Method Training form (FRMQA004). Once training has been completed, the trainee and the instructor fill out the form together to ensure all pertinent information has been addressed and to ensure the trainee comprehends the material and is provided an opportunity to ask questions or request additional training. The trainee's signature is an attestation that he/she has read, understands, and agrees to always follow the effective version of the SOP.

5.5 To demonstrate an aptitude for the procedure, the analyst must perform a successful Initial Demonstration of Capability (IDOC) prior to independent preparation and/or analysis of client samples. Performance is documented using FRMAD023. The data is reviewed initially by the department supervisor and the analyst (AREV), and both individuals must initial and date the review checklist.

5.6 SREV for any preparation workgroup is performed by the department supervisor or a qualified analyst, and SREV for any analytical workgroup is performed by QA/QC.

5.7 Prior to performing an IDOC, a new analyst should be provided sufficient opportunity to practice the procedure. This confirms the analyst understands the procedure and feels comfortable performing the procedure independently. Data associated with any practice is not submitted to QA/QC.

5.8 It is not necessary for the first IDOC attempt to pass; however, the supervisor needs to review the analyst's techniques if multiple attempts do not pass.

5.9 A thorough review of the raw data is performed as part of initial method training and should include particular attention to details not presented in LIMS or on the final report, such as generating final

sample concentration from the instrument response provided in the raw data (if applicable) and verifying correct standard and reagent traceability.

5.10 Where specified by the method or a regulating entity, and as stated in the test SOP, successful demonstration of performance such as Linear Calibration Range determination (LCR) or Method Detection Limit (MDL) study must be completed prior to independent analysis of client samples.

5.11 All initial training documentation must be submitted to the QA/QC department as a complete package. At a minimum, the package must include:

1) Initial Method Training form (FRMQA004), signed by the trainee and instructor (or department supervisor).

2) IDOC documentation:

- ✓ Completed and signed certification statement (FRMAD023)
- ✓ Workgroup bench sheet, raw data, and all supporting documentation

3) If applicable, MDL study for each instrument. Complete FRMAD031 and attach all related raw data and supporting documentation.

4) If applicable, calibration range study for each instrument. Complete FRMQA029 and attach all related raw data and supporting documentation.

5.12 Following review of all pertinent training documentation, QA/QC will issue procedure-specific clearance for the trainee to independently generate and review data for client samples. This permission is tracked and may be viewed on a designated location on the public network drive.

1) Approval for preparation procedures is granted after the instrument data has been reviewed and approved.

2) An unapproved analyst who is "shadowing" the trainer (observing, learning the organization of the lab, reagent room, etc.) may not assist with the procedure, and the workgroup documentation must bear only the initials of the trainer, who is fully responsible for the data.

3) If the analyst has successfully completed training for a procedure and generates client data or reviews client data prior to QA/QC approval, then any workgroup(s) or data review checklist must also bear the initials of a proficient analyst, with current approval for the method, who oversees the analyst's work for the procedure and assumes full responsibility for the data. The primary analyst must always be aware that he/she is responsible for the workgroup. The use of another employee's initials without their explicit approval is not permitted.

5.13 The supervisor is responsible for ensuring the training of each analyst is kept up-to-date. Each analyst must read, understand, and agree to follow the effective version of the SOP and continued proficiency must be demonstrated and documented annually for each analyst.

5.14 Each production supervisor routinely conducts department meetings to discuss procedures, work schedules, resources, questions and concerns, problems, QA/QC, etc.

6 SAMPLE COLLECTION & HOLDING TIMES

Sample collection procedures are well documented by the EPA and other agencies, and ACZ's clients are instructed to provide representative samples whenever possible. ACZ supplies its clients with the containers and other materials necessary to maintain sample integrity (to the extent possible) from the time of collection through analysis. Although ACZ does not perform sample collection activities, each project manager or client service representative will assist a client with specific sampling requirements as needed, or when necessary, will direct a client to other resources. The following sections include general information on sample containers, preservatives and holding times, which are essential components in maintaining the chemical and physical properties possessed by the sample at the time of collection.

6.1 Sampling Containers and Preservatives

The EPA outlines the requirements for sample container types, sample volume and preservation. ACZ inventory includes various sizes of plastic and glass containers that range from pre-sterilized to certified-clean by the supplier. Amber bottles are used when specified by the method. Glass containers are obtained from vendors that specialize in the sales of environmental sample containers, and all non-certified bottles are purchased from reputable lab/industry vendors. Refer to FRMAD045 and FRMAD046 for bottles types and preservation techniques for specific analyses. Refer also to Appendix A for additional information regarding EPA requirements container types and preservation.

All sample containers shipped to our clients are new, contain the appropriate preservative(s), and are color-coded to identify preservation and storage. Out-going containers are packed in clean coolers with a copy of ACZ's Sample Acceptance Policy, general directions for sample collection, bottle labels, ice packs, sampling information, blank chain of custody, return shipping labels, and custody seals. Trip blanks and rinsette water are included when requested by the client or when mandated by a specific analytical method. After samples have been collected they are cooled to a temperature > 0 °C and < 6 °C. Samples that require thermal preservation must be maintained within this temperature range until all analyses have been completed.

6.2 Holding Times

The EPA has conducted lengthy studies of sample degradation versus time to establish a maximum holding time for each method, and the results of these studies are compiled into holding-time tables to provide guidelines for litigation purposes. Data for a sample prepared / analyzed outside of the established holding time are the most difficult to defend in court. Holding times will vary slightly from regulation to regulation, thus further emphasizing the need for a client to consult with their Project Manager prior to sample collection. The holding time begins from the time or date of collection in the field. Appendix A outlines holding times (a hold time stated in 40CFR supersedes the published method). **NOTE**: The sampling date for PT samples is the preparation date, which must be documented on the workgroup and the container of prepared sample.

If ACZ Laboratories, Inc. receives samples past holding times or near the expiration of the holding time, sample analysis will proceed unless the client has indicated on the CCOC that an attempt to contact the client must first be made. Analyses performed outside of holding time will be appropriately qualified on the final report. Holding times $\leq$ 72 hours are calculated based on the hour of the sample date/time. Holding times > 72 hours are calculated based on the day of the sample date/time.

In general, and unless otherwise noted in the test SOP, sample preparation and analysis must be completed within the stated holding time. For analyses that extend beyond the intended scope of the method for an analyte or matrix, the hold time stated in the SOP must be met, or samples must be appropriately qualified.

7 SAMPLE CUSTODY & SAMPLE HANDLING

Sample custody begins with the receipt of sample containers from the client and continues beyond preparation and analysis to the proper disposal of primary and secondary sub-samples. Complete and accurate documentation must be provided at all stages of custody. There are many key elements to sample custody including laboratory security, chain of custody records, sample storage, internal custody logs, sample tracking within the laboratory, control of subcontracted work, and sample disposal.

7.1 Laboratory Security

A secure facility is essential to maintaining sample and data integrity and to providing safety to employees and visitors. ACZ has an electronic security system based on anti-pass back protocols, which controls and limits access to only authorized personnel. The following steps have been taken to ensure this security:

- All entryways are armed and a proximity reader at the east entrance and west shipping entrance allows access to an employee only after he/she passes their card.
- Employees may enter/exit only through the west door at Log-In and the east door next to the lunchroom.
- During normal business hours, public access into the building can be made at the front entrance and the west shipping entrance. Both doors are equipped with a buzzer.
- The outside doors at the west shipping entrance remain unlocked; however, the doors between the vestibule area and sample receiving area are equipped with an anti-pass back system.
- Building access is limited to specific hours of the employee's shifts.
- All employees are required to use their access cards to enter and exit the building.
- If any employee does not have their access card, they must notify ACZ's CFO as soon as possible and must sign in and out during the day using the visitor's register at the front desk. This ensures a record is maintained of which personnel were in the building at any time.
- If employees fail to use their card, the anti-pass back system denies access for that card the next time it is used. The employee must report to ACZ's CFO if this occurs.
- Visitors must enter and exit through the main entrance and must sign the register at the front desk upon arrival and before departure.
- Lab personnel must escort visitors as long as they remain on the premises.
- Emergency Exit doors are to be used only for emergency purposes. If a door is opened, a siren alarm will sound.
- It is against company security policy to loan or transfer access cards to anyone, including other ACZ employees. Employees may not allow a non-shift employee to enter the building.
- Vendors and delivery services enter the building via the west shipping entrance.

7.2 Sample Receipt and Log-in

Upon delivery of samples to ACZ, Log-In personnel evaluate the condition of the cooler and custody seals. The custody seals are then broken to retrieve the Chain of Custody (COC), which must be signed by the sample custodian to document the transfer of possession of the samples to ACZ. Once a cooler is opened, the pH of each sample is checked, if necessary, to verify the method preservation requirements have been met. The pH check is documented along with cooler temperature, radioactivity screen and other pertinent sample information.

Any problems, such as expired hold times, lack of preservative or improper cooler temperature, are noted and the Project Manager must contact the client as soon as possible so that a contingency plan can be initiated if necessary. Samples are logged-in as outlined in the SOP *Sample Receipt & Log-In Procedure / Maintenance of Sample Integrity* (SOPAD016) and are delivered to the assigned storage areas. Following log-in, every project is reviewed by the assigned PM, and upon completion of the review, the client receives an electronic summary, referred to as the "Login Review Report" that details the project information. This summary allows the client an opportunity to make changes to the project before samples are analyzed. Refer to ACZ's SOP *Client Service Policies and Procedures* (SOPAD043) for additional information.

7.3 Internal Custody Logs

Some clients may specify additional custody tracking of the samples once they have been logged in. Internal custody may require that samples are stored in a manner that ensures limited access. The internal custody log (FRMQA015) shall accompany the samples from log-in through completed analysis. The person responsible for the work signs and dates each entry and/or page in the logbook. When all data from a sample set is compiled, copies of all logbook entries shall be included in the final report package. For projects requiring internal custody, ACZ will adhere to the procedure described in the SOP *Client Service Policies and Procedures* (SOPAD043).

7.4 Sample Tracking

Sample flow through the laboratory is facilitated by the use of an Oracle-based LIMS database (Laboratory Information Management System). Every product (requested analysis) logged into the LIMS for a sample has a specific, pre-determined department path. All products have default paths of at least Login Review and Reporting. Between these two departments, a product may go through, for example, Soil Prep and Metal Analysis or Soil Prep, Organic Prep and GC Analysis. At each department step in a product's path, the status can be updated and viewed at any time. Analytical product statuses are defined below. Additional information regarding sample tracking is available in the SOP *Client Service Policies and Procedures* (SOPAD043).

NEED	Prep or Analysis has not been started
WIP	Prep or Analysis has been started (Work In Progress)
PREP	Sample preparation is complete and sample is ready for analysis
UPLD	Analytical data has been uploaded into LIMS
AREV	Analyst has reviewed and accepted analytical data
SREV	Supervisor has reviewed and accepted analytical data
DONE	Analysis or task has been completed
REDO	Sample requires reanalysis
REDX	Sample requires re-digestion/extraction
CANT	Sample preparation or analysis cannot be performed

8 PROCUREMENT, INVENTORY & TRACEABILITY OF SUPPLIES

8.1 Procurement / Inventory

All consumable supplies are purchased from reputable vendors that have been evaluated for service, quality, and price. To the extent possible, materials traceable to national or international standards of measurement are purchased for use in technical operations. Supplies are purchased using ACZ's purchase order (PO) and inventory system database. The Purchasing Agent is not permitted to make a substitution for any material(s) specifically requested unless the department supervisor approves the substitution. Upon receipt, reagents, chemicals, standards, and other laboratory consumables are stored in the Chemical & Supply Room, which has limited access, or are delivered to the laboratory. Refer to ACZ's SOP *Purchase, Receipt, and Storage of Consumable Materials for Technical Operations* (SOPAD037) for additional information.

8.2 Glassware

ACZ uses only laboratory grade glassware. Prior to use, glassware is cleaned using Alconox® or Chemsolve® (or other appropriate detergent) and then rinsed with Type I water. Glassware for trace metals is subsequently rinsed with 50% Nitric Acid and rinse again with Type I water. Glassware for nutrients is subsequently rinsed with 10% Hydrochloric Acid and then with Type I water. All glassware for organic analyses is washed with Alconox® then rinsed with de-ionized water and kiln-baked. Glassware for radiochemistry analyses is washed first with Contrad70® and then with 50% Nitric Acid and is rinsed with Type I water. Clean glassware must be stored in an enclosed cabinet or other suitable container and/or covered with Parafilm or foil.

8.3 Other Supplies

Routine consumables (centrifuge tubes, autosampler tubes, pipette tips, etc.) are purchased through an automatic system managed by Fisher (RIMS). All other supplies are purchased on an as-needed basis through ACZ's Purchase Order and inventory system database. Refer to SOPAD037 for additional information.

8.4 Traceability of Standards and Reagents

To provide complete traceability, each data package must reference every standard and reagent used for sample preparation or analysis, including but not limited to acids, bases, preservatives, color reagents, pH indicators, buffers, instrument reagents. Each PCN and/or SCN must be documented either on the workgroup bench sheet, data review checklist, or a current standard/reagent form. The open date for all original containers is not tracked in LIMS; however, good laboratory practice dictates that the open date always be noted on the sample container.

8.4.1 Primary Control Number (PCN)

Upon receipt, all stock chemicals, standards, and reagents are assigned a unique PCN in LIMS for tracking and traceability purposes. A label with the PCN and the expiration date is affixed to both the container and the Certificate of Analysis (if applicable). Document Control enters the data for each PCN using the certified value(s) supplied by the vendor, as indicated on the Certificate of Analysis. Because the certified value is entered, the final concentrations for prepared standards may vary slightly from the theoretical value indicated in the test SOP. Non-certified values are not entered and are not used for quality control purposes. Document Control maintains certificates of Analysis, and a copy of the PCN report is generated and maintained. If data for any PCN is to be edited, then complete documentation must be provided as a major corrective action (FRMQA001).
NOTE: Only Document Control and QA/QC personnel are authorized to enter or edit PCN data.

8.4.2 Secondary Control Number (SCN)

To ensure complete traceability, a unique SCN must be created when any intermediate or working standard is prepared from one or more stock solutions, stock chemicals, or intermediate solutions. A standardized format is used for creating the SCN: a two-letter code indicates the lab section and is followed by the prep date and then by a daily sequential number. For example, the SCN **II051128-2** denotes the second standard prepared on November 28, 2005 in the Inorganic Instrument lab. An acceptable alternative is to let LIMS assign a unique number when prompted.

A SCN for any working standard subjected to a LIMS calculation must be created electronically in LIMS. The initial volume and concentration of each constituent and the final volume of the prepared solution are entered in the SCN Wizard program to calculate the final concentration(s) of each analyte using the formula $C_1V_1 = C_2V_2$. The preparation date, expiration date, and preparer's initials are included as part of this electronic record. A hard copy of the SCN report may be affixed to the standard/reagent logbook, depending on individual department practice; however, it is not required.

Prepared reagents do not require a SCN to be created electronically in LIMS; however, preparation must be recorded in the department's designated logbook. At a minimum, the logbook entry must clearly identify what reagent was prepared, its subcomponents, the preparer's initials, the preparation date, and the expiration date. This information is sufficient for color reagents, buffer solutions, instrument reagents, etc. because details of the preparation are stated in the test SOP.

8.5 Preparation and Expiration of Standards and Reagents

8.5.1 Preparation of Standards and Reagents

Refer to individual test SOPs for detailed information regarding standard and reagent preparation. In general, either Class A pipettes or mechanical pipettes are used to measure and dispense aliquots of any solution used to prepare a standard or reagent. Accurate delivery of mechanical pipettes must first be verified as described in ACZ's SOP *Control, Calibration, and Maintenance of Measuring and Test Equipment* (SOPAD013).

The term QS referenced in many test SOPs is the acronym for *Quantity Sufficient* and refers to the addition of appropriate diluent to the solution to achieve the final volume. All containers of prepared reagents and standards stored for more than one day must be properly labeled with the SCN (or other unique identifier), preparation date, and expiration date. Preparation of reagents and standards must be documented as described in 8.4.2.

8.5.2 Expiration of Purchased Standards and Chemicals (PCNs)

In general, purchased liquid standards or reagents are assigned a default expiration date of one year from receipt. When provided, the manufacturer's expiration date will be assigned in lieu of the default expiration date. Solid materials are assigned a default expiration date of five (5) years from receipt.

An expired stock material may continue to be used only if its reliability can be verified. For the purpose of ensuring transparency, the reason for extending the expiration date of a PCN must be documented as a QA/QC Issue Wizard assigned to QA/QC or the Document Control supervisor. Unusable materials must be replaced and the standard or reagent remade as soon as possible. Remove the container from the lab or the supply room and dispose of properly. Contact ACZ's CHO for assistance.

8.5.3 Expiration of Prepared Standards

Storage conditions and shelf life for prepared standards are provided in the individual test SOPs. The following guidelines may be used to determine the shelf life for a prepared standard:

1) A standard that has been prepared in-house may continue to be used after its assigned expiration date for as long as its reliability can been verified. For applicable procedures, instrument response should be considered when determining whether or not a solution is still reliable.

   - In cases where reliability has been verified, the expiration date of the SCN must be updated in LIMS or the standard/reagent logbook.

   - In the event the solution was used prior to updating the SCN then documentation must be provided as part of the workgroup to indicate the solution was used past the shelf life stated in the SOP (a minor corrective action may be used if more than one workgroup is affected). The expired standard must be remade as soon as its reliability becomes questionable – it is the responsibility of the analyst to use their best judgment.

2) The shelf life of any prepared standard with any analyte concentration < 10 mg/L is 90 days from the preparation date. This is a general guideline – if any constituent does not remain in solution for 90 days, then the standard must be prepared more often. If the manufacturer's expiration date for any stock standard is sooner, then the expiration date of the SCN is the manufacturer's expiration date for a single analyte solution or the earliest manufacturer's expiration date for a multiple analyte solution.

3) The shelf life of any prepared standard with analyte concentration $\geq$ 10 mg/L is one year from the preparation date. This is a general guideline – if any constituent does not remain in solution for one year, then the standard must be prepared more often. If the manufacturer's expiration date for any stock standard is sooner, then the expiration date of the SCN is the manufacturer's expiration date for a single analyte solution or the earliest manufacturer's expiration date for a multiple analyte solution.

4) In general there are no manufacturer expiration dates for Radiological isotopes. If provided, these will be used; otherwise, the default expiration date of one year from receipt will be assigned when the material is received and can be subsequently updated at yearly intervals as needed for as long as the material remains useable. Because the shelf life of a radiological isotope is dependent on the half-life, the isotope will be deemed expired when it falls within 3 times the detection limit of the method.

5) In general, prepared Radiochemistry standards expire one year from the preparation date. The solution may be re-evaluated using control charts or other criteria and the expiration date extended by year intervals if the solution is still deemed usable. Refer to the specific test SOP for details.

8.5.4 Expiration of Reagents

In general, a reagent is a solution, other than a surrogate or internal standard, which is used for any step of sample preparation or analysis but does not contain the target analyte(s). Storage conditions and shelf life are stated in the individual test SOPs. The expiration date can be extended for a prepared reagent provided the criteria stated in 8.5.3.1) are met.

9 MAINTENANCE & CALIBRATION OF INSTRUMENTATION & EQUIPMENT

9.1 Maintenance of Instruments and Support Equipment

The best protocol for producing quality work is to prevent errors and non-conformances rather than to react to and correct problems after they occur. An essential part of this protocol is ensuring that all laboratory instrumentation and equipment used for the generation of data has been optimized and is functioning properly before commencing work on client samples. Performing routine maintenance and optimizing instrument-operating conditions prior to sample analysis minimizes instrument downtime, thereby improving productivity and ensuring quality of the data. It is the responsibility of the designated analyst(s) to perform and properly document daily and routine maintenance, instrument optimization, troubleshooting, any instrument servicing or repair, and any repair or replacement of parts.

All manufacturer-prescribed inspection and maintenance must be performed according to the schedule indicated in the operator's manual (or similar) provided by the manufacturer and must be documented either in the instrument logbook or a separate maintenance logbook or on the instrument maintenance checklist (available in LabWeb). ACZ management recognizes that performing all maintenance procedures at the frequency indicated by the manufacturer may not be economically feasible or a significant increase in workload may require the maintenance be performed at a later time if instrument performance is deemed to be acceptable; therefore, at a minimum, the instrument part(s) must be inspected regularly according to the schedule. The analyst must use their professional judgment to determine if maintenance or replacement is necessary at that time. Refer to ACZ's SOP *Control, Calibration and Maintenance of Measuring and Test Equipment* (SOPAD013) for details for each specific instrument or instrument type.

Additionally, all support equipment (any device that may not be the actual test instrument, but is necessary to support laboratory operations) must be monitored regularly to confirm proper functioning. The temperature of all drying ovens, refrigerators, freezers, and incubators must be checked each working day (except Sundays or holidays) and each check recorded on the associated Temperature Logsheet. Refer to SOPAD013 for more detail.

Equipment that has been subjected to overloading or mishandling, gives suspect results or has been shown to be defective or outside specified limits must be taken out of service and FRMAD029 attached to indicate the instrument or equipment is waiting for repair and cannot be used. During this downtime the department supervisor, Production Manager, and Project Manager may collectively determine it is necessary to sub-contract samples until correct performance of the repaired instrument or equipment has been demonstrated by a successful calibration or other suitable test. Document all contact with the manufacturer, as well as all repairs and other services, in the instrument or maintenance logbook to be used as a reference for solving future instrument problems. Additionally, when instrumentation or equipment goes outside of the direct control of the laboratory, the functioning and calibration status must be checked and shown to be satisfactory before it is returned to service. Refer to SOPAD013 for additional information.

To minimize downtime, each laboratory should maintain an adequate inventory of reagents, stock standards, glassware, etc. and should keep a sufficient supply of extra "critical" parts in-house rather than possibly delay sample analysis while waiting for parts to arrive. Keep in mind that parts from a vendor may be back-ordered and will not be available for immediate shipment. Additionally, an MDL study, MDL verification, calibration range determination, etc. must be performed for all methods on each instrument used to analyze client samples. This ensures any "backup" instrument can be utilized for analysis of client samples as soon as needed, rather than delaying production to first successfully complete any QC requirement(s).

9.2 Instrument Calibration

The accuracy of all instrument-generated data is ultimately dependent upon the proper initial calibration of the instrumentation used for any particular analysis. In order to perform quantitative measurements, the initial calibration must be established and verified, at the frequency required by the method or by the manufacturer (whichever is more stringent), before samples are analyzed. In general, calibration or standardization involves defining the relationship between instrument response and the amount or concentration of analyte introduced into the instrument. The graphical depiction of this relationship is referred to as the calibration curve. Calibration frequency must be performed in accordance with the manufacturer's guidelines, test method or other regulatory requirements, or client contract stipulations, whichever is most stringent. Every calibration or standardization must meet the acceptance criteria stated in the SOP and must be subsequently verified by analyzing an initial calibration verification standard (ICV) or other control standard (if specified in the SOP) that contains all target analytes and has been prepared or obtained from a different source than the one used to prepare the calibration standards.[1] Whenever possible, calibration standards and the second-source verification standard should be prepared on different days. If they are prepared concurrently, then another qualified analyst should prepare the second-source verification standard. This eliminates the possibility of the same analyst preparing both solutions incorrectly, an error difficult to detect.

A continuing calibration verification standard (CCV) containing all analytes of interest must be analyzed at the frequency stated in the test SOP to ensure the stability of the initial calibration curve has not varied over time due to any change in the analytical instrument and its detection system, such as instability of standards, instrument cleanliness, column performance, matrix effects, flow changes, and changes within the laboratory environment.

For applicable methods, all initial and continuing calibration steps must be clearly detailed in the test SOP. Additionally, each test SOP must specify the frequency and acceptance limits for the calibration and subsequent verification (ICV and CCV). In general, acceptance criteria are method-specific; however, the SOP may also include requirements of other regulatory agencies. Prior to resuming sample analysis, immediate corrective action must be taken if the calibration, ICV, or CCV is outside of the acceptance criteria. Technical corrective actions are described in the individual test SOPs. Refer also to section 11.2 for additional information.

General calibration guidelines are listed below and detailed information is provided in ACZ's SOP *Maintenance and Control of Calibration and Test Equipment* (SOPAD013).

- Understand the method requirements for calibration (minimum number of standards, etc.)
- Use the correct calibration model (linear, second-order, etc.)
- Include all target analytes in the calibration standards and second-source standard
- Analyze a calibration standard with a concentration less than or equal to the reporting limit.[2]
- Do not remove points from the middle of the calibration (only high or low standard may be dropped).
- Calibration is a single-event process. A retest of a calibration standard must be performed immediately.
- Documentation and resolution of calibration abnormalities is absolutely critical

[1] If a second source standard is not available then a different lot(s) of the same standard(s) may be used. If a different lot is not available then an analyst who did not prepare the calibration standards may prepare the calibration verification standard. The latter is an exception, and an attempt must first be made to purchase a different lot from the same vendor whenever a second-source standard is not commercially available.

[2] In general, the concentration of the low calibration standard is equal to the reporting limit, because lesser values are qualified as estimated; however, actual lab practice may differ and must be stated in the test SOP.

10 CONTROL & STORAGE OF RECORDS & DOCUMENTS

A formal and systematic control of records and documents is necessary for accurately reconstructing the entire history of any sample as well as to guarantee the quality and defensibility of the data. All information pertaining to instrumentation and equipment, analytical test methods, and related laboratory activities, such as sample receipt, sample preparation, data verification and data reporting must be documented, must identify all personnel involved, and must be readily understood. All records, including those pertaining to calibration and test equipment, certificates and reports, must be maintained, and the management system must facilitate the retrieval of all working files and archived records for inspection and validation purposes. Documents and records must be safely stored (protected against fire, theft, loss, environmental deterioration, and vermin) and must be held secure and in confidence to the client for a minimum of five (5) years. The hard copy of all records and documents must be maintained in a designated storage area with limited access. To the extent possible, hard copies for the most recent two (2) years are stored on-site, and if necessary, may be moved to off-site storage after two years. Off-site storage conditions must meet the same criteria that apply to on-site storage.

10.1 Workgroups

10.1.1 Changes made to any workgroup record (hardcopy or text file) must be documented.

1) If a workgroup is "dissolved" to change the status then all data must first be deleted, and the workgroup is then either re-reviewed or re-uploaded. In either case, the analyst is prompted in LIMS to provide an explanation of why he/she is performing the task.

2) Changes to text files must be documented in LIMS and on the hard copy of the workgroup.

10.1.2 Workgroup data that is re-uploaded *for any reason* must first be deleted. Use one of the following options in LIMS\Sx Analysis.

1) Choose "Delete workgroup data and set to WIP."

2) In either the AREV or SREV function choose "Errors" and then "Reupload."

If any of the data changes then a new Run Approval report must be printed and attached to the hard copy of the workgroup, and the workgroup must be rescanned.

10.1.3 Document Control or other administrative personnel use a multi-page scanner with its own PDF scanning software to scan all workgroups.

1) Before the workgroup is scanned, the top page is reviewed to make sure it has both the AREV and SREV initials and dates, and that errors have been properly corrected.

2) The person scanning the must initial and date in the lower right hand corner of the front page by the person. This provides a record of the scan date.

3) The workgroup is scanned to the designated network directory and is then moved through an automated process to the appropriate read-only LabWeb directory, which is accessible to all employees. When a workgroup is rescanned, the previous file is maintained. A copy will be automatically created so as not to overwrite any files and will have a letter appended; starting with "A" the first time the workgroup is rescanned. The most current file will not have a letter appended.

10.1.4 The hard copy is filed by workgroup number in a storage box. The front of the full storage box is labeled with the year and the workgroups contained in the box. The first box of each new calendar year is "1." Full boxes are consecutively numbered, transferred to a designated

location and stored in numerical order. The storage room is locked at all times. Access is limited and is tracked through an access logbook.

10.1.5 Workgroups moved to storage may be accessed; however, a checkout card must hold the place of the workgroup in the file and must indicate who removed the workgroup, the workgroup number, and the date the workgroup was removed. When the workgroup is returned, then the checkout card is removed.

10.2 Electronic File Retention & Storage

All electronic records, stored either on instrument computers or on the network, are systematically backed up to tape. These records include Oracle data, instrument raw data, workgroups, client reports, instrument upload files, SOPs and other controlled documents, telephone records/voice mails, and department data. Tape backups are performed incrementally nightly Monday through Thursday, and a complete backup is performed each Friday. The tape from the first Friday of the month is pulled from service and placed in a secure, data-rated, 4-hour fireproof, safe that is located in the CFO's office. On a regular basis, the monthly tapes are moved to ACZ's safety deposit box at a local bank.

10.3 Instrument Data Files

Instrument raw data files are backed up by two different procedures: ACZ's Instrument Data Backup Application (IDBA) and StorActive. IDBA is a mandatory program that accesses local directories from instrument computers. Each night the program retrieves and backs up individual data files from the specified directory on each instrument computer. Refer to ACZ's SOP *Backup and Archive of Instrument Data Files* (SOPAD044) for details. StorActive LiveBackup is a third party program located on its own server that stores any saved version of all files located on any computer that employs LiveBackup (including files with the same name). This program is helpful in case a full restore is necessary or if multiple files overwritten by a saved version need to be retrieved. This program works for any computer utilizing Windows XP as its operating system.

10.4 Client Reports

10.4.1 Client reports are generated and signed electronically and are automatically stored as a PDF at a designated location on the network that has limited access. If a copy of any report exists on the network, and a new report is generated, then the existing copy will be renamed so that it is not overwritten. This way ACZ maintains a copy of all reports generated for a client.

10.4.2 Hardcopy documentation associated with a client project (CCOC, invoice, Login Review Form, etc) is filed by project number and stored in the document storage location.

10.4.3 Electronic Diskette Deliverables (EDD) are stored on the network at a designated location.

10.4.4 Changes to data may be necessary due to reporting requirements. These changes are made after the routine workgroup approval step and may include changes to reporting qualifiers, QC Summary qualifiers, report notes, etc. A record of the change must be made in the project "Change Log." Access the Change Log from the LIMS2000 menu/Reporting/Report Approval form. Refer to ACZ's SOP *Client Service Policies and Procedures* (SOPAD043) for additional information.

10.4.5 The Change Log must be used when a reported parameter is moved from one workgroup to another. The preferred way to do this is for a PM to either document the necessary changes in the Change Log and then notify the reporting department of the required changes or notify the reporting department immediately that a change is necessary. In the case of the latter, the

reporting department makes the changes and then logs this action in the Change Log. Refer also to ACZ's SOP *Client Service Policies and Procedures* (SOPAD043).

10.4.6 Once a project has been invoiced, the directory on P:\Client is moved to the designated network location as a read-only PDF. If a project is un-invoiced, the project folder is copied to P:\Client where changes can take place.

10.4.7 In general, changes are not allowed to projects (including compilation) if the project has been invoiced. If a change needs to be made, the project must first be un-invoiced. At the time of un-invoicing, the user must provide a reason in LIMS to explain why the project was un-invoiced. This information is then stored in the Oracle database.

10.5 Documents

10.5.1 Standard Operating Procedures

10.5.1.1 Refer to section 2.2 for additional information pertaining to SOPs.

10.5.1.2 The original master copy of each SOP is maintained through a combined effort of QA/QC and Document Control. Master copies are organized in three-ring binders, which are kept in the Document Control office. An SOP Control Form (FRMQA003) is kept with each master copy and indicates each controlled copy of the SOP that was issued as well as the date and to which lab(s) the copies were distributed.

10.5.1.3 When a new version of any SOP becomes effective, the master copy of the previous version is retained and filed in the Document Control office. All controlled copies of the previous version are collected and disposed of. The collect date is documented on the SOP Control Form, which is maintained with the associated master copy SOP.

10.5.1.4 A controlled copy of the SOP is kept in each location the procedure is performed.

1) Each lab or department is issued one controlled copy of all relevant SOPs. The controlled copy must not be removed from the assigned area for an extended period of time and may not be photocopied. An additional controlled copy of any SOP or individual replacement pages of any SOP will be distributed upon request.

2) A SOP Revision Form (FRMQA030) is issued with each controlled copy. Any revision to a procedure must be noted on the form and must be approved by QA/QC before changes may be implemented. The revision form is kept in the laboratory SOP binder until the SOP is reviewed and revised. Once the next revision of the SOP becomes effective, the original revision form(s) are maintained with the master copy of the new version.
3) To ensure outdated information is not inadvertently used as a reference, an uncontrolled copy of any SOP is not allowed unless issued by QA/QC. Additionally, an electronic copy of any SOP becomes obsolete and must be deleted from a network drive or email once the effective version has been uploaded to LabWeb.

10.5.2 When documents are found to contain conflicting policies or procedures, the more recent document will be followed.

10.5.3 All controlled forms must be printed from LabWeb and may not be stored on a separate network drive. If photocopies are used then any unused copies of the expired version must be

disposed of as soon as a new version is uploaded to LabWeb. This ensures that the effective version of any controlled form is in use at all times.

10.5.4 Any controlled SOP(s) issued to an employee must collected upon resignation or termination.

10.5.5 Employees utilize an uncontrolled copy of the Ethics SOP or QAP for initial or continuing training purposes. All copies are collected following completion of the training session.

10.5.6 Only Document Control and QA/QC personnel are authorized to enter or edit data for a PCN.

10.5.7 The hard copy of each PCN report generated in LIMS is stored in a three-ring binder that is maintained by the Document Control department.

10.5.8 The original certificate of analysis for any stock material, if provided, is attached to the hard copy PCN report.

10.5.9 Accreditation certificates are scanned as a PDF to a designated network location. The original copy is maintained by Document Control. Certificates are also posted to ACZ's website.

10.5.10 Original calibration certificates and related documentation for support equipment (including but not limited to pipettes, thermometers, and glass micro liter syringes) are maintained by Document Control.

10.5.11 LIMS and other problems pertaining to IT are documented and managed by the electronic system called Issue Wizard. If an employee encounters a problem that requires attention, then that employee will submit a request through Issue Wizard. The request requires a priority to be assigned to the appropriate employee(s) for resolution. This system allows ACZ to track all changes made to computer systems. Reports are routinely generated to evaluate the status and eventual resolution of computer issues.

10.6 Records

10.6.1 Records include, but are not limited to: all logbooks; phone logs; raw data, derived data, and calibration data; training documentation (training forms, MDL studies, DOCs, etc.); proficiency testing results; calibration and certification records; internal audit reports; external audit reports; corrective action reports; management reports; and regulatory correspondence.

10.6.2 Records related to sample log-in are maintained as described in SOPAD016.

10.6.3 Raw data may include photography, microfilm or microfiche copies, computer printouts, magnetic media, dictated observations, and recorded data from automated instruments.

10.6.4 Original copies of records, except those pertaining to analytical data, are maintained by the QA/QC department or Document Control, and access is limited.

10.6.5 Relevant qualifications, training skills, and experience of technical personnel are maintained in the employee's training file.

10.6.6 Records such as transcripts, applications for employment, performance evaluations, etc. are maintained in the personnel files, which are stored in the secured office of the CFO.

10.6.7 The DOC certification statement (FRMAD023) and initial method training form (FRMQA004) are filed with the workgroup if the DOC was logged-in; otherwise, the training form is maintained in the employee's training file and the DOC form is filed with the data package.

10.6.8 Each employee's legal name, legal signature, and initials are documented on the New Employee Checklist (FRMAD043). The form is maintained in the employee's personnel file, which is stored in the Controller's office. A master signature/initial log is maintained for anyone employed at ACZ prior to the implementation of FRMAD043.

10.6.9 Each Organic Instrument ICAL data package is scanned to the designated network directory as a read-only PDF and the hard copy stored in labeled boxes. ICAL information that needs to be attached to any subsequent workgroup(s) must be printed from the PDF.

10.6.10 Logbooks must be maintained and controlled as described in SOPAD013.

10.6.11 Project Managers are responsible for maintaining all emails pertaining to a client and/or project. Refer to ACZ's SOP *Client Service Policies and Procedures* (SOPAD043).

10.6.12 Procedural change(s) made to a SOP must be noted on the SOP Revision Form (FRMQA030) and approved by QA/QC prior to implementation. The date of the QA/QC approval denotes the effective date for the change.

10.6.13 Any correction to a hard copy record must be made by crossing through the error with a single line, and the correction must be clearly initialed and dated by the responsible staff. Erroneous entries cannot be destroyed by erasures, other markings or use of Whiteout®.

10.6.14 Changes to electronic records must be traceable to the individual who made the correction, and the reason for the change must be provided. Erroneous entries cannot be destroyed by methods such as overwritten files.

10.6.15 Record Storage and Retention

10.6.15.1 The minimum retention period of five (5) years may be increased dependent upon client request, regulatory requirement, or civil action order.

10.6.15.2 Records stored by a computer must have hard copy or write-protected backup copies.

10.6.15.3 Records stored only on electronic media must be supported by the hardware and software necessary for their retrieval and utilization in the proper format.

10.6.15.4 Records stored on electronic media must be stored in a way to provide protection from electronic or magnetic sources.

10.6.15.5 Scanned workgroups and client reports are backed up to an off-site data vault, which is secure, fireproof, and equipped with electronic data redundancy. Data backups occur daily (including Saturday and Sunday) after 12:00 am. After one year of storage off-site, data is transferred to a DVD, which is stored in a bank safety deposit box until all data on the DVD is at least five (5) years old. Obsolete DVDs are permanently destroyed.

NOTE: Data files that precede June 1, 2005 are stored to tape and/or DVD, which are kept in a bank safety deposit box.

10.6.15.6 If there is a change in ownership and/or a change in location, all records and documents will be made available to all accrediting authorities for five (5) years. Under no circumstances shall any records or documents be destroyed – all records and analyses performed that pertain to NELAC accreditation are subject to inspection by the NELAC accrediting authorities during this five (5) year period. A new owner of ACZ will assume possession of all records and documents.

10.6.15.7 If ACZ goes out of business, all records and documents will be stored and maintained according to protocol in a location to be determined at the time of closure. All records will be maintained for at least five (5) years and will be made available to all accrediting authorities.

10.6.16 Access to Archived Records

10.6.16.1 Access to archived information must be documented with an access log. A log is kept in each storage location, and any person entering a storage location must provide the required information in the log.

10.6.16.2 Hard copy records are stored in a locked environment with limited access. When a record is removed from its location, a "checkout card" must be filled out to indicate who removed the record, the date the record was taken, and a description of the record. The card marks the place in the storage box, and when the record is returned the card is pulled from the box.

10.6.16.3 Any changes to be made to archived data will require assistance from IT to do so.

10.6.16.4 Electronic data that has been archived to a more permanent media (such as tape, CD, or DVD) is stored in a bank safety deposit box. Access is limited and must be documented in the logbook maintained by Document Control.

10.6.17 Record Disposal

10.6.17.1 Records are disposed of in a manner to ensure client confidentiality.

10.6.17.2 Stored records will be reviewed to determine which ones can be destroyed. Any record older than five (5) years from the current date will be destroyed, unless client request, regulatory requirement, or civil action order dictates otherwise.

10.7 Computer Data and Records

10.7.1 Network File Server

Computer files pertaining to all aspects of ACZ's business are stored on a file/print server. To gain access, an employee logs on to the "LAB" domain. Each employee has a unique network user name so that security rules may be enforced. No "guest" logon is permitted. Every employee belongs to a specific "group" and directory security is enforced through privileges granted to these groups. Typically, an employee is granted access to files that pertain to their job functions; otherwise, read-only access or no access is granted.

Data generated and reported by ACZ is extremely confidential and the company may be liable for the consequences of the release of this data to any unauthorized person. The implementation of password security is not arbitrary and ensures data is protected and cannot be disclosed to outside parties. Weak, unchanging passwords make this scenario more likely.

In general, the network will prompt employees to change their password every 30 days. The password must be at least five (5) characters. Numeric characters are optional. Passwords may not be shared with other employees. The use of another employee's password (with the exception of common passwords for shared computers) is grounds for disciplinary action.

10.7.2 LIMS Server

1) Information stored on the LIMS server consists of all sample and client information needed for day-to-day production activities. The information is stored using an Oracle database application. Access is controlled through membership in "groups." Employees may update and change database records according to their job responsibilities. Otherwise, information is restricted to read-only access or no access.

2) No modifications to data can be made through applications not authorized by ACZ's IT department unless a CAR or Issue Wizard is submitted or documentation is provided on the hardcopy of the workgroup. Unauthorized applications include Attached Tables.

3) All tables that track changes (TrackInvoice, TrackWorkgroup, etc.) will be audited on a regular basis by a member of the IT department to ensure sufficient information is being supplied as to why changes occur. The explanations must be professional and specific.

10.7.3 Docs Server

Access to the docs server is read-only and is permitted through Internet Information Services (IIS) authentication and is logged in IIS log files. The server is updated on a regular basis by automated scripts.

11 ELEMENTS OF QUALITY CONTROL

A critical focus of ACZ's quality control policies and protocols involves monitoring sample preparation and measurement processes to determine matrix effects and to evaluate laboratory performance. Quality control samples are typically analyzed with every batch of environmental samples. Each test SOP provides detailed information regarding quality control sample types, acceptance criteria, and corrective actions, if applicable to the procedure, and reflects the requirements of the method and/or other regulatory authorities.

Performance control samples demonstrate precision or accuracy and expose out-of-control events. Matrix-specific control samples indicate possible effects of the matrix on method performance and may also identify data as in-control or out-of-control. Data that is out-of-control dictates corrective action ranging from re-extraction / re-analysis to reporting data with qualifiers. In general, the corrective action specified in the SOP must be performed if any quality control sample does not meet the acceptance criteria. Data associated with failed quality control cannot be qualified after the initial analysis without acceptable justification.

To the extent possible, client samples are reported only if all quality control measures are acceptable. If any measure is outside of the acceptance criteria, and the data will be accepted and reported to the client, then the appropriate data qualifier(s) must be assigned to all associated samples. The list of current extended qualifiers is maintained in the LIMS database.

11.1 Method Performance

11.1.1 Negative Control – Prep Blank (Method Blank)

The prep blank is used to assess possible contamination introduced during sample processing steps. A prep blank is prepared using Type I water or other similar matrix similar that is free of the target analyte(s) and contains all reagents in the same volumes used to prepare the client samples. The prep blank must be prepared, processed and analyzed in the same manner as the associated client samples. Unless specified in the test SOP, sample concentration may not be corrected for the prep blank value.

While the goal is to have no detectable contaminants, each prep blank must be carefully evaluated as to the nature of the interference and the effect on the analysis of each sample in the batch. Contamination in the prep blank results from four principle sources: the environment the analysis is performed in; the reagents used; the supplies and apparatus used; and the analyst performing the analysis. Contamination sources vary and the test SOP must be referenced to determine the appropriate corrective action(s).

When contamination is suspected, the source(s) must be investigated and measures taken to correct, minimize or eliminate the problem, and associated client samples must be reprocessed and reanalyzed. Alternatively, report data with the appropriate qualifier if reprocessing and reanalysis is not possible or if one of the following criteria applies:

i) The concentration of a target analyte in the blank is at or above the acceptance limit and the measured concentration of the analyte in an associated sample is greater than 10 times the measured concentration of analyte in the blank.

ii) The concentration of a target analyte in any associated sample is less than the MDL.

iii) Corrective actions could not be performed or are ineffective. Thoroughly document any corrective action taken and the outcome.

11.1.2 Positive Control

11.1.2.1 Laboratory Fortified Blank (LFB)

An LFB is required for methods that do not include a Laboratory Control Sample but include a fortified matrix (spike). The LFB is an aliquot of reagent water to which a known quantity of each target analyte is added. It is treated exactly like a client sample, and its purpose is to determine whether the methodology is in control, and whether the laboratory is capable of making accurate and precise measurements. When the acceptance criteria for the LFB are exceeded (i.e. high bias) then any associated client sample with a measured concentration less than the MDL may be accepted and reported with the appropriate qualification.

11.1.2.2 Laboratory Control Sample [LCSW (Water) or LCSS (Soil)]

The performance of both sample preparation and analysis of each sample batch may be monitored by an LCS. The LCS is a matrix-specific standard (whenever possible) of known analyte concentration(s) that may be prepared by the laboratory or purchased pre-made. The LCS must be carried through the entire preparation and analytical schemes with the client samples. Analysis and evaluation of the LCS allows for confirmation of the applicability of the preparation procedure to the analytes. Evaluate data using the following guidelines:

1) When only an LCSW is analyzed, the results must be within the acceptance limits or the entire batch of samples must be re-prepped and retested.

2) An LCSW duplicate (LCSWD) may be prepared and analyzed with the batch, typically in lieu of a matrix duplicate or spike duplicate. Data is acceptable if the LCSW and/or LCSWD is within the acceptance limits and the RPD passes. Associated samples must be re-prepped and reanalyzed if either of the following occurs:

   - LCSW/D RPD fails the acceptance criteria specified in the SOP.
   - % R of both the LCSW and LCSWD is outside the acceptance limits.

3) For a solid or semi-solid matrix, an LCSS and LCSSD are prepared and analyzed.[3] The data is acceptable if the LCSS and/or LCSSD is within the acceptance limits and the RPD passes. Associated samples must be re-prepped and reanalyzed if any of the following occurs:

   - LCSS/D RPD fails the acceptance criteria specified in the SOP.
   - % R of both the LCSS and LCSSD is outside the acceptance limits.
   - MS/D RPD fails the acceptance criteria specified in the SOP (if applicable).

4) When the acceptance criteria for the LCS are exceeded [i.e. high bias] then any associated client sample with a measured concentration less than the MDL may be accepted and reported with the appropriate qualifier.

5) Refer to section 11.1.3.3 for additional information regarding data assessment for solid-matrix workgroups prepared with both LCSS/LCSSD and MS/MSD.

[3] Corrective action for Recommendation #5 cited in the 2002 ADHS audit report.

11.1.2.3 Radiological Tracers

Radiological tracers are used for Thorium and Uranium analyses. The tracer reacts in the same manner as the target isotope and is used to asses analyte recovery. The tracer is added to client samples, controls, and blanks in accordance with the requirements stipulated in the test SOP. Because the tracer recovery has a direct impact on the LLD, the recovery must be high enough to yield LLDs that are within the scope of the project or meet ACZ's acceptance criteria. Refer to the test SOP for evaluation criteria and corrective action(s) for out-of-control tracer recovery.

11.1.3 Sample Specific Controls

The effect of different sample matrices on the performance of any method can be profound; therefore, matrix spikes, duplicates, and surrogate compounds are analyzed to evaluate matrix effects on data quality. Each SOP includes specific information regarding the usage and evaluation of matrix-specific QC samples and also states the required corrective action to take if any matrix QC fails.

ACZ provides analytical services to numerous and varied clients; therefore, the possibility of routinely favoring one client is highly unlikely. Over the course of time, no single matrix type will always be spiked or duplicated, and no one client will be selected for a high percentage of spiked or duplicated samples. If either of these occurs, it is due entirely to chance. Samples are selected for a workgroup by due date or priority – not by client – and are presented in the workgroup in increasing numerical order according to project number. A client's samples will be grouped together within the batch – in this way, a single client cannot be selected for a spike or duplicate, unless all of the client samples in the batch are from the same project. ACZ recommends that the analyst, to the extent possible, select samples to spike or duplicate that are representative of the workgroup. Analysts are not to associate QC with a client sample known to be or believed to be any type of blank or Proficiency Testing sample. Several exceptions exist for selecting samples for spiking or duplicating:

1) A sample is not spiked or duplicated if the volume is inadequate, and the client sample and QC sample(s) would require dilution; however, if no other option is available then the client sample and QC sample should be prepared and analyzed on the same dilution whenever possible.

2) Use the same weights (or as similar as possible) to prepare duplicates of solid matrix samples.

3) A client may request that one or more of their samples be spiked or duplicated. A "RUN QC" comment is added when the sample is logged in to notify the analyst that QC must be performed for a specific sample or project. If a client requests that their sample(s) be spiked or duplicated then ACZ is obliged to accommodate the client.

4) If TDS data indicates a sample would require dilution, then the sample should not be selected for spiking. Performing dilutions increases the likelihood of introducing error due to pipetting, and it is possible that spike recoveries may be incorrectly influenced by this error. A high TDS value will not influence whether or not a sample is duplicated.

5) A reactive sample is unpredictable and is a poor choice for spiking or duplicating.

6) A PT sample is not a real-world sample and is a poor choice for spiking or duplicating, because the data does not provide any useful information about possible matrix effects. Spike or duplicate a PT sample only when there are no client samples in the workgroup.

11.1.3.1 Surrogates

Surrogates are organic compounds that are similar to the target analyte(s) in chemical composition and behavior in the analytical process, but are not normally found in environmental samples. Surrogates are included in the scope of Organic methods and are used to evaluate accuracy, method performance and extraction efficiency and shall be added to environmental samples, controls, and blanks, in accordance with the method requirements.

Whenever a surrogate recovery is outside the acceptance limits, the corrective action(s) stated in the test SOP must be performed. If corrective actions could not be performed or are ineffective, then the appropriate qualifier is applied to the sample results and reported to the client.

11.1.3.2 Matrix Spike Samples

A matrix spike sample (however named) is used to determine the level of bias (accuracy) associated with a particular matrix. For the purposes of this document, "MS" designates a matrix spike, and "MSD" designates a matrix spike duplicate. Spikes are prepared by adding a known and appropriate quantity of each target analyte to a replicate aliquot of client sample.

The required analytical frequency is specified by the method or other regulating entity and is indicated in the test SOP. Each result is evaluated against the acceptance criteria, and matrix effects are determined and reported to the client. The following evaluation criteria apply to spikes that are subjected to processing steps and post-digestion spikes (analytical spikes).

- Percent Recovery (%R) is considered for all spikes.
- %R is evaluated only if the theoretical concentration in the spiked aliquot is greater than or equal to the reporting limit; otherwise, each associated client sample must be reported with the appropriate qualifier, regardless of %R.
- If %R for the MS and/or the MSD is outside of the acceptance limits, the RPD passes, and all other pertinent prep and instrument QC passes, then each associated client sample may be accepted and reported with the appropriate qualification.

11.1.3.3 Matrix Duplicates and Matrix Spike Duplicates

The matrix-specific precision associated with an analysis is determined through the use of a matrix duplicate (DUP) or spike duplicate (MSD), which are performed at a frequency specified by the method or other regulating entity (refer to the specific test SOP). The results are evaluated, and the matrix effect on precision are determined and reported to the client.

- Relative Percent Difference (RPD) is considered for all duplicates except non-drinking water samples for radiochemical analyses (see 12.4.4).
- RPD for a spike duplicate is evaluated only if the observed concentration is greater than or equal to the reporting limit; otherwise each associated client sample must be reported with the appropriate qualifier.
- RPD for a matrix duplicate is evaluated only if the observed concentration is greater than 10 times the MDL; otherwise each associated client sample must be reported with the appropriate qualifier, regardless of RPD.

- In the absence of other contributing factors, a DUP failure for a solid or semi-solid matrix is attributed to non-homogeneity of the sample, and each associated client sample may be reported with the appropriate qualifier.

- For an aqueous matrix, if the DUP fails then all associated samples and the DUP must be retested. If permitted by the instrument software the sample and DUP can be reanalyzed at the end of the analysis in lieu of retesting all associated samples.

- For an aqueous matrix, if the MS/MSD RPD fails then the associated samples must be reanalyzed. If permitted by the instrument software the sample and MS/MSD can be reanalyzed at the end of the analysis in lieu of retesting all associated samples.

- If applicable, evaluate the LCS/LCSD if the RPD fails for a matrix duplicate or spike duplicate. Each associated client sample may be reported with the appropriate qualifier if the LCS/LCSD meets the criteria stated in 11.1.2.2.

- For a solid or semi-solid matrix, if both the LCSS and LCSSD recoveries pass but the RPD fails, then acceptable precision may be demonstrated by a passing RPD for the MS/MSD, and each associated client sample may be reported with the appropriate qualifier.

11.2 Instrument Specific Controls

All data must be associated with a passing instrument calibration and initial calibration verification. To the extent possible, all data must be associated with passing continuing calibration verification. If the initial calibration verification results (ICV/ICB) are outside of the acceptance criteria, then the source(s) of the failure must be identified, corrective action(s) performed if necessary, and the instrument recalibrated before proceeding with sample analysis.

If the continuing calibration verification results (CCV/CCB) do not meet the acceptance criteria then the source(s) of the failure must be identified and corrective action(s) performed, including recalibration if necessary, before continuing with sample analysis. If reanalysis of any sample(s) associated with failing calibration verification is not possible then the associated data must be reported with the appropriate qualification.

For instruments that permit the analysis of subsequent workgroups using the most recent calibration, two (2) consecutive attempts of the opening CCV/CCB are allowed. If both attempts fail to produce acceptable results then the source(s) of the failure must be identified and corrective action(s) performed, including recalibration if necessary, before commencing sample analysis.

Unless stated otherwise by the test SOP, passing calibration verification must always bracket all batch quality control samples, and results for additional instrument check standards, if applicable, must be within the acceptance criteria stated in the SOP. However, when the acceptance criteria for a CCV or CCB are exceeded (i.e. high bias) any associated client sample with a measured concentration less than the MDL may be accepted and reported with the appropriate qualification.

11.3 Other Control Indicators

11.3.1 Internal Standards

Internal Standards (IS) are measured amounts of certain compounds added after preparation or extraction of a sample to be analyzed by GC/MS or ICPMS. The IS is an analyte not likely to be found in the environment and is used in a calibration method to correct sample results affected by column injection losses, purging losses or viscosity effects. The IS is added to client samples, controls and blanks in accordance with the method requirements. When the results are outside of the acceptance limits for applicable quality control samples, corrective actions shall be performed. Once system control has been reestablished, all samples analyzed while the system was malfunctioning shall be reanalyzed. If corrective actions could not be performed or are ineffective then the data for each client sample must be appropriately qualified on the final report.

11.3.2 Trip Blank

The trip blank is a sample container filled in the laboratory with Type I water that is shipped to the collection site in the sample cooler, returned to the laboratory, logged-in, and analyzed in the same manner as the client samples. With the exception of Hg-1631, trip blanks are not opened in the field. If a target analyte is detected in the trip blank then the appropriate data qualifier is applied to pertinent results from those samples returned to ACZ in the same cooler as the trip blank. Trip blanks are typically prepared for Hg-1631, Cyanide, and VOA samples.

11.3.3 Instrument Blank

The instrument blank is an aliquot of Type I water processed only through the instrument steps of sample analysis and is used to determine presence of instrument contamination. For Organic instrument methods, neither surrogate nor IS standards are added.

11.3.4 Equipment Blank

An equipment blank is provided by the client and is used to assess the effectiveness of equipment decontamination procedures. Type I water is poured into (or over) or pumped through the sampling device, collected in a sample container and transported to the lab to be analyzed for all parameters requested for the environmental samples collected at the site. If any target analyte is detected then all associated sample results must be qualified on the final report.

11.3.5 Ambient Blank

The ambient blank consists of Type I water poured into a VOA vial at the sampling site (in the same vicinity as the associated samples). It is handled like an environmental sample and transported to the laboratory for analysis. Ambient blanks are prepared when samples are to be analyzed for VOA analytes and are used to assess the potential introduction of contaminants from ambient sources (e.g., active runways, engine test cells, gasoline motors in operation, etc.) to the samples during sample collection. The frequency of collection for ambient blanks is specified in the client's field-sampling plan and are not required for all projects.

12 EVALUATING QUALITY CONTROL SAMPLES

In general, acceptance criteria for quality control samples are method-specific; however, compliance with the requirements of clients and regulatory or other accrediting agencies must also be demonstrated. Immediate corrective action must be taken if any quality control is outside of the acceptance criteria. Appropriate corrective actions are described in the test SOP. To the extent possible, client samples are reported only if all quality control measurements are acceptable. If a quality control measure is outside of acceptance criteria, and the data must be reported, then all samples associated with the failed QC must be reported to the client with the appropriate data qualifier(s). Clients will occasionally request limits different from those in a published method. If a client has data quality objectives that require modification of our guidelines then we may deviate from those guidelines only if more stringent controls are requested. ACZ's policy is to adhere to the strictest limits as a means of meeting all agency and client requirements.

For methods that do not specify acceptance criteria for any type of quality control measurement, limits may be generated by plotting historical data in a control chart once a minimum of 20 data points is available. A control chart application may be accessed through LIMS and allows the user to create limits, either from a specified number of data points or for a specific time period, that are set at $\pm$ 3 times the standard deviation from the mean percent recovery. Current control limits are also plotted to provide a direct comparison of the two sets of data. New limits developed from a control chart must be documented on FRMQA039 and must be reviewed by the QA/QC department prior to implementation. If the new limits are approved, then QA/QC personnel will update LIMS. Refer to ACZ's SOP *Control Charting Application and Procedure* (SOPAD041) for further details. Default acceptance criteria established by the Arizona Department of Health Services (ADHS) may be used in lieu of generating a control chart to establish limits; however the SOP must specify which limits are in use. [4] **NOTE:** For all data evaluation, final results ending with 1 – 4 are rounded down and results ending with 5 – 9 are rounded up.

12.1 Accuracy

Accuracy is defined as "the degree of agreement of a measured value with the true or expected value of the quantity of concern."[*] Control samples (LCS or LFB) and spiked samples are analyzed with every batch of samples or as stipulated by the specific test SOP to assess accuracy and matrix effects.

- Percent Recovery (%R) for a control sample is calculated as follows:

$$\%R = \frac{M}{S_p} \times 100$$

Where: M = Measured concentration of the control sample
S_p = True value of the control sample

- Percent Recovery (%R) for a spike is calculated as follows:

$$\%R = \frac{M - S}{S_p} \times 100$$

Where: M = Measured concentration of the spiked sample
S = Measured concentration of the sample aliquot
S_p = True value of the spike concentration

12.2 Precision

Precision is defined as "the degree of mutual agreement characteristic of independent measurements as the result of repeated application of the process under specified conditions." Matrix duplicates and spike duplicates are analyzed with every batch of samples or as stipulated by the test SOP to determine the precision associated with the analysis.

[4] ADHS Information Update #87 (July 7, 2005)

[*] "Quality Assurance of Chemical Measurements," Taylor, J., 1987

If any method does not specify acceptance criteria for the RPD, then default criteria of RPD $\leq$ 20 is used (a value that rounds to 20 is acceptable). [5] The Relative Percent Difference (RPD) as an absolute value is calculated as follows:

$$|RPD| = \frac{(S - D)}{[(S + D) / 2]} \times 100$$

Where: S = Sample Value
D = Duplicate Value

12.3 Other Calculations

- Solids Dilution Factor (assume 100% solid for "as received" samples):

  $$\text{Dilution Factor} = \frac{V}{(W)(\%\ \text{solid})}$$

  Where: V = Final digestate volume, in mL
  W = Sample weight used, in g
  %solid = %solid or air dry solid, as a decimal

- Sample Concentration for Solids:

  - wet weight [biota tissue, fruit or vegetable matter, etc.]: $mg/Kg = \frac{DF * C * V}{W}$

  - dry weight [plant matter, grasses, soil, sludge, etc.]: $mg/Kg = SF * C * DF$

    Where: DF = instrument dilution factor
    C = raw data value, in mg/L
    V = Final volume of digestate, in L
    W = sample weight used, in Kg
    SF = soil dilution factor

- Percent Difference for Serial Dilution (SDL):

  $$|\%D| = \frac{[I - (s * 5)]}{I} \times 100$$

  Where: I = initial sample result
  s = serial dilution result (raw data value)

  For SDL calculations in LIMS, "s" is multiplied by 5 and the resulting "reg value" is compared to the "found value" to calculate %D.

[5] ADHS Information Update #87 (July 7, 2005)

12.4 Radiochemistry Calculations

12.4.1 Activity

The results of radioactivity are typically reported in terms of activity per unit volume or mass. Units are normally expressed in picocuries (pCi), which equal 2.22 disintegrations per minute (dpm). Specific formulas to determine activity are in the SOP for each method. The general formula is as follows:

$$C = \frac{R_{net}}{(e)(y)(i)(v)(u)}$$

Where: C = activity per unit volume (pCi/L)
R_{net} = net counts per minute
e = counting efficiency, cpm/dpm
y = chemical yield
i = ingrowth correction factor
v = volume or mass being counted (L)
u = units correction factor, 2.22 for cpm to pCi

12.4.2 Counting Error

Radiochemical data are considered incomplete without reporting associated random and systematic errors. For this reason all radiochemical results should be accompanied by a counting error at the 95% confidence level (1.96*standard deviation). The general counting error formula is as follows:

$$E = \frac{1.96\left(R_o / t_1 + B / t_2\right)^{1/2}}{(e)(y)(i)(v)(u)}$$

Where: E = counting error
R_o = gross sample, cpm
t_1 = sample count duration, min
B = background, cpm
t_2 = background count duration, min
e, y, i, v, and u are as previously defined.

12.4.3 Lower Limit of Detection (LLD)

LLD (also referred to as Minimum Detectable Activity or MDA) is considered the smallest quantity of sample radioactivity that will yield a net count for which there is a pre-determined level of confidence that radioactivity is present. At the 95% confidence level, the following equation calculates the LLD for any single nuclide. The calculation uses the standard deviation for the background counting rate, assuming the sample and background counting rates should be very similar at the LLD. The formula for determining LLD is as follows:

$$LLD_{95} = \frac{4.66 S_b}{(e)(y)(i)(v)}$$

Where : LLD_{95} = Lower limit of detection at the 95% confidence interval
S_b = Standard deviation of the instrument background counting rate, cpm
e, y, i, v, and *u* are as previously defined

12.4.4 Precision

The normalized absolute difference, or Replicate Error Ratio (RER), between the sample and the laboratory duplicate, given by the following equation shall be used to determine that results do not differ significantly when compared to their respective 2* sigma uncertainty.

$$RER = \frac{|Sx - Dup|}{\sqrt{(Sx_{error})^2} + \sqrt{(+(Dup_{error})^2}}$$

Where: Sx = sample concentration in pCi/L
Sx_{error} = sample counting error (in pCi/L) at the 95% confidence level.
Dup = duplicate concentration in pCi/L
Dup_{error} = duplicate counting error (in pCi/L) at the 95% confidence level.

NOTE: For Radchem Drinking Water samples, both RPD and RER are used to evaluate precision. For non-Drinking Water samples, only RER is used; however, data for both RER and RPD are uploaded to LIMS for all analyses. Use the following guidelines to correctly assess precision. Further details are provided in ACZ's Wiki and must be consulted to ensure data for each workgroup is correctly evaluated. Go to LabWeb \ Wiki \ Analytical Departments \ Radio Chemistry.

Drinking Water:

RPD $\leq$ 20, RER < 2.0 – Precision is judged to be in control
RPD $\leq$ 20, RER > 2.0 – Precision is judged to be in control; case narrative required for RER
RPD > 20, [sx] < 5x [LLD], RER < 2.0 – Precision is judged to be in control; qualify data.
RPD > 20, [sx] > 5x [LLD], RER> 2.0 – Precision of the prep batch is questionable.
RPD > 20, [sx] > 5x [LLD], RER < 2.0 – Precision of the prep batch is questionable.

Non-Drinking Water:

RER < 2.0, RPD $\leq$ 20 – Precision is judged to be in control.
RER < 2.0, RPD > 20 – Precision is judged to be in control; RPD must be qualified.
RER > 2.0, RPD $\leq$ 20 – Precision of the sample prep batch is questionable.
RER > 2.0, RPD > 20 – Precision of the sample prep batch is questionable.

13 VALIDATION & REVIEW OF ANALYTICAL DATA

ACZ has the responsibility to always provide the best data possible to ensure our clients can make sound and cost-effective decisions regarding public health and the environment. In order to generate and report reliable data, the analytical systems used need to be properly functioning, and the review process must be conducted in a manner that is logical and reasonable and would be defensible if subjected to legal scrutiny. Decisions regarding data quality must be meaningful and must be backed by good science and sound professional judgments.

The entire validation and review process encompasses more than solely evaluating the final results for client and quality control samples. To this extent, the necessary steps must also be performed *prior* to sample preparation or analysis to ensure the quality of the data. Following sample analysis, data is uploaded to the LIMS database and then submitted to a variety of process chains such as calculations, rounding, application of qualifiers, etc. A multi-level data review process is utilized to verify the uploaded analytical data meets all documented ACZ requirements as well as any client-specific quality objectives. For additional details of the data reduction, review, and validation process, refer to ACZ's SOP *Data Review Process* (SOPAD032). At a minimum, the validation process must include the following steps, as applicable:

- Monitor the expiration dates for all stock, intermediate, and working standards, reagents, and chemicals.
- Prior to analysis, determine that holding times have not been exceeded. Unless otherwise specified by the test SOP, sample preparation and analysis must be completed within the holding time.
- Prior to analyzing samples, verify the correct set-up and operation of the instrument or equipment. Perform calibration, maintenance, and optimization as necessary to ensure proper functioning.
- In general, for QC frequency of 1 per10 or less client samples, the first set of QC is associated with samples 1 – 10. If there are fewer than 20 samples in the workgroup, then the remaining client samples are associated with the second set of QC.
- Before completing workgroup creation, verify the correct PCNs and/or SCNs have been entered. Percent recovery for control samples and spikes is calculated using the information in LIMS for each.
- Verify the proper sub-sample (green dot, yellow dot, etc.) is being used for preparation or analysis.
    - Notify the supervisor or Production Manager as soon as possible if a sample cannot be located.
    - Document on the bench sheet if a sub-sample other than the type indicated in the SOP is used.
- Compare the Log-In number on the sample container to the Log-In number on the bench sheet and make a visible mark next to each sample on the workgroup to indicate the check has been performed.
- Clearly label tubes, beakers, autosampler cups, etc. to identify the sample (and dilution factor, if applicable).
- Manage sample volume to ensure all analyses from a bottle type can be completed.
- Document all dilution factors on the bench sheet at the time the dilution is performed.
- Record complete and accurate observations, as necessary, when an analysis, sample preparation, or sample matrix is unusual or problematic.
- Ensure transcription errors do not occur. Verify all data manually entered into LIMS is correct before completing the upload process.

- The calibration workgroup must be associated with all subsequent workgroups. Record the calibration workgroup number (or calibration file name) on the data review checklist.

- Provide complete traceability for all standards and reagents used for sample preparation and analysis.

- Quality control samples must be treated in the same manner as client sample, including preparation.

- If it is necessary to perform a calculation manually, use the values in the raw data [do not truncate] and then round the final result to no more than three (3) significant figures. If the final result passes the acceptance criteria then pass the QC in LIMS and note on the data review checklist that it passes.

- LIMS performs several additional QC calculations on the approved data including cation/anion balance (CAB) checks, calculated TDS versus actual TDS ratios, and Total versus Dissolved ratios. The Project Manager may update the status of the pertinent sample(s) to REDO if one of these calculations indicates a discrepancy with the associated data.

- If two attempts fail to produce acceptable data then notify the supervisor or Production Manager before taking further action. It may be necessary to first determine if a larger problem is interfering with the analysis. Investigate the problem before qualifying the associated data.

- If there is an indication that the analytical system is out of control then the issue(s) must be investigated. Notify the supervisor immediately. Conduct troubleshooting in an organized manner.

- All data must be reviewed initially in LIMS [AREV] by the analyst who performed the analysis or by another qualified individual who has previously been granted approval. The department supervisor or another qualified individual performs the secondary review [SREV]. The following are data review guidelines:

    1) A data review checklist must be completed during the review process. Verify all items listed and note any errors, problems or non-compliances and the corrective action(s) taken.

    2) If applicable, review the raw data to verify the analytical system was in control and to ensure no anomalies exist. Check for notes on the bench sheet regarding the preparation or analysis.

    3) For client samples and quality control samples, ensure all results are within the measurement range and are bracketed by a passing calibration and passing calibration verification [ICV/ICB or CCV/CCB]. Sample values outside of the measurement range must be appropriately qualified if reanalysis is not possible.

    4) The corrective action specified in the SOP must be performed if any quality control sample does not meet the acceptance criteria. Data associated with failed quality control cannot be qualified after the initial analysis without acceptable justification.

    5) Data is more acceptable if the preparation and analysis was performed within the holding time. If reprep or reanalysis will be conducted outside of the holding time, check first with the supervisor.

    6) Confirm all dilutions are appropriate. A reasonable explanation must be provided on the bench sheet if a sample was diluted and the value is less than the reporting limit (refer also to section 15).

    7) If the initial analysis indicates possible positive or negative matrix interference then the sample(s) should be retested on dilution to confirm. The sample needs to be retested only one time – if a background effect is still evident, then note the event on the data review checklist and qualify the associated data.

8) If a spike fails, determine if the sample concentration is disproportionate to the spike added. If the analyte concentration in the sample is > 4x the spike added then note the failure on the checklist and appropriately qualify the associated samples.

9) If a spike recovery indicates the sample was not spiked, then re-prep / retest all associated samples.

10) Each associated client sample must be appropriately qualified if the matrix spike, matrix duplicate or spike duplicate data cannot be used for validation purposes.

11) Confirm failed QC by verifying the correct PCN or SCN was entered. Make corrections if necessary before proceeding with data review.

12) Verify all assigned qualifiers are appropriate. Does use of a particular qualifier make sense ? Could data be defended using the qualifier(s) assigned to the scenario or problem ?

13) If a case narrative is necessary, the reason for accepting and reporting the data must be sound and logical. Provide sufficient and accurate verbiage to ensure the data is legally defensible.

14) If a sample was retested in the same workgroup, verify the correct data will be reported. All other data for the sample must be failed – LIMS cannot report multiple data for the same sample.

15) Confirm all samples have the correct status (PASS, FAIL, REDO, REDX) before completing the review process. For multi-parameter workgroups, all analytes must have the correct status.

16) Refer also to section 11.0 for data evaluation criteria.

14 DETECTION LEVELS

Current practice identifies several detection levels, each of which has a defined purpose: Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Reporting Limit (RL) or Practical Quantitation Limit (PQL). The MDL and RL (or PQL) are stated in each test SOP and are adjusted accordingly in LIMS when data is uploaded to reflect the use of smaller sample volume (dilution) or larger sample volume (concentration).

14.1 Instrument Detection Limit (IDL)

The IDL is the concentration of substance that produces a signal greater than three standard deviations of the mean noise level or the concentration that can be determined by injecting a standard to produce a signal that is five times the signal-to-noise ratio. The IDL should always be below the MDL and is not used for compliance reporting, but is useful for estimating the amount of analyte needed to produce a signal in order to calculate an estimated method detection level and for comparing the attributes of different instruments.

14.2 Method Detection Limit (MDL)

The EPA defines the MDL as the "minimum concentration of substance that can be measured by a specific testing protocol and reported with 99% confidence that the analyte concentration is greater than zero…" This confidence interval means that any substance detected at a concentration equal to the MDL is 99% likely to be present, but it also means there is a 1% chance that the substance will be considered falsely present (false positive). The MDL procedure is designed so that the probabilities of both false positive and false negative errors are acceptably small; however, the procedure has limitations. Data users must understand the limitations when evaluating low level data and must proceed with caution when interpreting data reported between the MDL and RL in order to minimize the risk of making poor environmental decisions.

MDLs are dependent on variables (temperature, instrument conditions, analysts, matrix, etc.) and are typically determined by processing, preferably over the course of several days, at least seven individual replicates of a fortified blank sample through the method's preparation and analytical schemes. MDLs determined for the same method / matrix / technology must be compared to ensure they are in agreement.

ACZ maintains a current MDL for each method. Unless specified by a method or to meet the needs of a special project or client request, a MDL is considered current if no changes have been made to (1) extraction or analytical procedure, (2) type of column used, if applicable, (3) instrument location, (4) instrument sensitivity (i.e. no major repairs or extensive servicing), and (5) other modifications of this type. A qualitative verification of the MDL must be performed annually for each applicable method, analyte, instrument, and matrix and before a new instrument or method is utilized for client samples. Refer to ACZ's SOP *Demonstration of Capability & Method Detection Limit Studies* (SOPAD001) for additional information.

14.3 Practical Quantitation Limit (PQL) / Reporting Limit (RL)

At the MDL, data is not quantifiable, and the uncertainty is $\pm$ 100% (or $\pm$ MDL). The PQL (RL) represents the lowest quantitative level that can be achieved with good certainty during routine operations. Because data reported at or above the PQL is reproducible, the client or other end user will be assured that the result is valid and independent of variable analytical conditions. This reproducibility allows for comparison of analytical results over a relatively long period of time, which is important to the monitoring of environmental data. ACZ defines the PQL as a value typically 2 – 10 times the MDL. Reported values less than the PQL are qualified as estimated. The region between the MDL and PQL is a continuum of uncertainty, lacking distinct cutoff points, and the error below the PQL is increased to the extent that the statistical validity of the result is questionable.

15 SAMPLE DILUTIONS

Sample dilution may be necessary for one or more of the following reasons: (1) sample concentration exceeds the established measurement range of the procedure / method (2) sample volume or material is limited (3) matrix interference is indicated or suspected (4) sample matrix is reactive (5) aqueous sample contains high sediment (6) color, odor or other physical characteristics are present (7) For ICP and ICPMS, TDS is greater than 2000 mg/L. In all cases, the analyst must use good professional judgment when determining the most appropriate dilution. Whenever possible, analyze a client sample and its associated matrix spike(s) and/or matrix duplicate on the same dilution. If circumstances prohibit retesting, including reanalysis that would occur past the holding time, then the data must be reported with the appropriate qualifier(s).

For samples that contain high concentration of analyte(s), the analyst will use their knowledge of the measurement range of the procedure to determine an optimal dilution that yields quantifiable data with minimal error propagation. In general, prepare the dilution so the final concentration is near the mid-point of the measurement range. A sample must be retested on a smaller dilution if analyte concentration is less than the reporting limit – exceptions must be explained on the bench sheet. For multi-parameter analyses, it may not be possible to report all analytes within the desired range, and the analyst must use their best judgment when determining a reasonable dilution factor.

The following requirements pertain to all dilutions:

- Document all dilution factors on the bench sheet when the dilution is performed
- Assign the appropriate "D" qualifier if data for the diluted sample is less than the reporting limit
- Retest sample on smaller dilution if the result is less than the reporting limit (or document justification for accepting the data on the bench sheet or data review checklist)
- Document the reason for any dilution on the bench sheet [not required for sample values that exceed the measurement range of the procedure]
- Provide accurate documentation for the benefit of preparation of a case narrative, data validation, review by a regulatory agency or other third party, and reconstruction of the sample's history

16 ERROR CORRECTION PROTOCOL

When an error occurs in any type of record it must be crossed out with a **single line**, not erased, deleted, obliterated, or made illegible, and the correct value entered alongside. All changes to hard copy records must be initialed and dated by the person making the correction. Under no circumstances may White-Out® or any other substance be used to conceal data. Concealing or improperly altering data is fraudulent and may be cause for termination from ACZ. Equivalent measures must be taken to avoid loss or change of original data in the case of records stored electronically. Refer to section 10 for details of corrections made to electronic records. The following is an example of proper error correction:

fleece BWC 10-20-06

Mary had a little lamb, it's ~~feet~~ as white as snow. And everywhere that ~~Lary~~ went, the lamb was sure to go.

Mary BWC 10-20-06

17 COMPUTER / AUTOMATED PROCESSES

ACZ employs its proprietary LIMS2000 (Laboratory Information Management System) to acquire, record, process, store and archive our data. It is the primary application for all employees and encompasses the combination of hardware and software throughout the entire facility to provide the interface for tasks such as creating workgroups, reviewing data, and generating client reports. ACZ implements the defined standards of Good Automated Laboratory Practices (GALP) to establish a uniform set of procedures to assure that all LIMS data used by our clients are reliable, credible, and legally defensible.

17.1 Software

The software used to achieve GALP goals is a combination of industry standard commercial software and internally developed applications. Commercial software is purchased through professional and well-developed companies such as Oracle, Microsoft and Lab Vantage Systems that complete sufficient testing and quality control to assure their product(s) functions properly. Internal applications undergo testing before being implemented and distributed throughout the laboratory.

Instrument data is automatically backed up anytime a file is saved through a client-server process running on most instrument PCs. This ability allows ACZ to see any version of a file created or modified during data processing. Electronic records are protected, backed up and archived to prevent unauthorized access or amendment. Refer to section 10.0 of this document and ACZ's SOP *Backup and Archive of Instrument Data Files* (SOPAD044) for details.

17.2 Hardware

ACZ deploys many application servers using industry standard architecture. All critical servers are redundant so that one hardware failure will not cause a system failure. All servers run standard enterprise operating systems such as Microsoft Windows 2000 and SuSE Linux for file and print services, intranet, web hosting, several databases and the phone system. All servers are routinely backed up to tape to maintain a complete historical record of all data generated.

To the extent possible, instrument PCs comply with at least the recommendations of the instrument manufacturer and are connected to ACZ's network allowing transparent backup and access to computers by system administrators. On most instrument computers, a "bare metal" restore of the computer can be done for a minimum of down time in the event of a hardware failure.

17.3 Security

GALP security is controlled through a set of passwords. A log-in name and password are required to access the ACZ's network. User passwords must be at least five characters and must be changed when the user is prompted. Each user has a given set of network rights and is restricted to software necessary to complete their job functions as well as his/her own documents. Refer also to section 10.7.1 for additional information.

A very secure firewall protects the network from the outside world, or, Internet. The only traffic permitted access to the internal network is e-mail and World Wide Web access. Incoming and outgoing E-mail is scanned for viruses, then scanned for inappropriate content and quarantined if necessary. All web traffic that is potentially harmful is blocked by a scanning application running on a proxy server.

18 CLIENT SERVICES

18.1 Subcontracting

ACZ utilizes subcontract labs to perform analyses for various reasons. A subcontracted lab must, at a minimum, adhere to the same quality assurance standards implemented by ACZ and must be NELAC certified for the subcontracted analysis. When applicable, ACZ advises its clients in writing of its intentions to subcontract any portion of the testing to another party. Non-NELAC work performed by a subcontracted lab must be clearly identified in the subcontract lab's report. ACZ scans this report as an attachment to be included as part of ACZ's final report. A comment is added to ACZ's final report indicating which subcontracted laboratory performed the analyses. Refer to ACZ's SOP *Client Service Policies and Procedures* (SOPAD043) for additional information.

18.2 Data Reporting

Once all analyses and the entire review process have been completed, a client report is generated and submitted for final validation by the Project Manager. If necessary, a case narrative is written describing the details of the project and any non-conformances or other relevant issues. The PM electronically signs the report, and the Document Control department sends the report to the client in an electronic format. At a minimum, the following information appears on an ACZ analytical report:

Client Name	Sample Matrix
Client Address	Parameter/Analyte
Client Contact	Method Reference
Lab Sample ID	Result
Client Sample ID	Units
Client Project ID	LIMS Qualifier (U, B, J, H)
ACZ Report ID	MDL or LLD
Date/Time Sampled	PQL or RL
Date/Time Received	Analyst's Initials
Date/Time Analyzed	Extended Qualifiers (as separate page)

A complete electronic data package contains the analytical reports, the external chain of custody records, sample shipping documentation, and any other relevant project information. Department Reference Sheets explaining acronyms, qualifiers, and method references are also included. All of these documents are an integral part of the final data package and must always be viewed as a whole. To prevent the separation of reports, each page identifies the project number, the sequential page number, and the total number of pages in the data package. Refer to ACZ's SOP *Client Service Policies and Procedures* (SOPAD043) for more detail.

If requested by a client, custom and standard Electronic database deliverables (EDDs) are generated by the Document Control department. These deliverables, containing data in client specified format, are sent by e-mail with the client report. EDDs and analytical reports access data from the same Oracle tables, thus eliminating the possibility of inconsistent results. Refer to ACZ's SOP *Client Service Policies and Procedures* (SOPAD043) for more detail.

18.3 Data Confidentiality

ACZ has an obligation to each client to maintain custody of samples, data, and reports and to keep all data or other information confidential. To uphold this responsibility, ACZ retains custody of the information at all times – data

or other client information obtained by ACZ is not allowed to leave the premises. This includes but is not limited to Chains of Custody, raw data, workgroups, run logs, logbooks, reports, QC summaries, data packages and other media containing data. Client data cannot be released to anyone except the client (as directed on the Chain of Custody) or the client's designated representative, and project data, including any client information, is not to be discussed with anyone other than ACZ employees and/or the client without first receiving written permission from the client. Additionally, client-specific information is not to be documented on raw data, workgroups, logbooks, or other records that may be provided to any client as part of an extended data package. All information must be referenced using only the ACZ log-In number. Refer to ACZ's SOP *Ethics and Proactive Prevention Program* (SOPAD039) for additional details of policies pertaining to confidentiality.

With the rapid advances of computer and information technology, it is possible for an employee to work at home and access the same electronic data and documents they could access while at ACZ. Accessing data from outside of ACZ could potentially compromise security, confidentiality and custody issues. ACZ's policy on external computer access is as follows:

External access to the ACZ network is limited to employees that may need to access information remotely. Employees requiring such access use ACZ's Virtual Private Network (VPN). The VPN client is setup on the employee's computer so that it adheres to ACZ security standards. These standards include (1) a unique user name (2) a password with at least 12 characters, and (3) 128 bit encryption of data to and from the client from the ACZ servers. After the VPN server has authenticated the employee, the employee must logon to the ACZ domain through normal domain security in order to access any ACZ network resources. Most employees initiate a "Remote Desktop" connection to their office PCs, thus ensuring that ACZ data is never accessible from the client PC hard drive. For portable computers that must directly access the ACZ network, an additional security measure is mandatory –any portable ACZ PC must have an additional "BIOS" password. Without the additional password, the PC will not boot. This security measure is in place to prevent the portable PC from being used in case of loss or theft of the computer.

ACZ has implemented the latest available technology to protect our network from malicious attacks. The bridge/router connecting the internal network to the Internet is protected by the latest implementation of a Linux firewall. Only SMTP (e-mail) and HTTP traffic are allowed between the network and the Internet. Exchange server blocks all "dangerous" attachments, such as executables, macros and VB scripts.

18.4 Client Feedback

Handling client feedback is a joint effort between QA/QC, Project Managers, Production Supervisors, and Client Service representatives. If a client has a concern or complaint, either a Project Manager or Client Service Representative takes the call and initiates the feedback procedure by documenting the complaint or problem and requesting the assistance of the Production Supervisor and/or QA/QC Officer. If the issue cannot be easily resolved then it must be documented using FRMAD024, which is routed from the initiator to other appropriate parties, including the QA/QC Officer if necessary. All client feedback is submitted to upper management as part of the Management Review of the Quality System. Refer to ACZ's SOP *Client Service Policies and Procedures* (SOPAD043) for additional information.

19 RADIOCHEMISTRY INSTRUMENTATION

Radioanalytical instrumentation is located adjacent to the radiochemistry prep lab. In order to maintain appropriate temperature control in the instrument lab, separation must be maintained. The door between the two lab areas must be kept closed when not in use. Except as noted, instrument checks and other determinations must be performed and documented annually, or more often if necessary.

NOTE: To eliminate potential contamination, planchets must be stored in a covered container or in a drawer.

19.1 Gas-Flow Proportional Counter

19.1.1 *Instrument Reliability Test (Voltage Plateau Determination)* – The proper voltage plateau for alpha and beta is where the counting rate is consistent (should not exceed > 5% over a 150 volt change in anode voltage).

19.1.2 *Cross Talk (Carryover) Check* - Cross talk is defined as the percentage of alpha counts represented on the beta plateau. Once the amount of cross talk is determined, the cross talk settings are adjusted on the instrument to eliminate cross talk.

19.1.3 *Detector Efficiency Curve (Self Absorption)* - Efficiency curves are graphs plotting counts versus sample density and determine the efficiency of the alpha and beta counter based on sample density. This factor is part of the overall determination of sample activity.

19.1.4 *Background Checks* - Characteristic of most detectors is a background or instrument count rate attributed to cosmic radiation, radioactive contaminants in instrument parts, counting room construction material and/or the proximity of radioactive sources. Placing an empty planchet in the counting chamber and counting it for as long as the longest sample-counting duration can determine the background rate (or a background check can be completed overnight). An overnight background determination must be completed at least quarterly. The daily background rate must be analyzed daily for each detector.

19.1.5 *Instrument-Response Check Source* - This continuing calibration check verifies the instrument response and stability and is performed daily for each detector. If the source count is within two standard deviations (sigma) of the previously determined average count rate, instrument reliability and stability is established. If the check source is outside the ±2 sigma-warning limit, then the variability should be further investigated. If the check source is outside the ±3 sigma out of control limits, then no further samples should be analyzed until the problem is resolved. If insufficient data exists for control charts, ±10% of the initial value is considered acceptable.

19.2 Liquid Scintillation Counter

19.2.1 *Optimal Window* - When determining radionuclides by liquid scintillation, it is necessary to select the optimal window by counting a standard for five minutes and generating a sample spectrum. For better clarity, a log scale for the channel number axis should be used. On the graph, the region of interest is determined by the energy of the peak one is trying to quantitate. The optimal window is formed by extending this region by 10% on each side of the alpha peaks.

19.2.2 *Efficiency Quench Curve* – The liquid scintillation instrument, a Beckman LS 6000TA, automatically corrects for quenching by the H - Method. Refer to SOPRC010 for details.

19.2.3 *Background Check* - Two background sources must be checked while preparing the liquid scintillation counter for analysis. The electronic (or instrument) background is the electronic noise of the system and can be determined with an empty counting chamber and a dark vial typically filled with graphite. Count as long as a sample is typically counted. The second source of background is chamber background, which is caused by contamination from instrument parts, counting room construction materials, and/or proximity of radioactive sources. Chamber background can be determined by using a vial containing liquid scintillator and a 10mL volume of Type I water (low background water). For both checks, the counting duration should be equivalent to the longest sample counting duration. Both checks must be performed on a daily basis and recorded in the instrument logbook.

19.2.4 *Instrument-Response Check Source* - This continuing calibration check verifies instrument response and stability and must be performed daily. If the source count is within two standard deviations (sigma) of the previously determined average count rate, instrument reliability and stability is established. If the source rate is outside the ±2 sigma-warning limit then the variability should be further investigated. If the source check is outside the ±3 sigma out of control limits, then no further samples should be analyzed until the problem is resolved. Resolution might include a new efficiency curve, background checks, and/or instrument maintenance. If insufficient data exists for control charts, ±10% of the initial source value is considered acceptable. The source for this check is a Tritium standard.

19.3 Alpha Spectrometer

19.3.1 *Energy vs. Channel Calibration* - Each alpha spectrometer has a set number of channels associated to it. To associate these channels to a specific alpha particle, the channels must be calibrated. One known calibrated solid source is placed into the detector and analyzed for five minutes to determine its associated channel to its calibrated energy peak. Since the energy is linear across the channels, all of the channels now have an associated energy. This determination is performed on an annual basis, or whenever maintenance is performed that could potentially affect the calibration.

19.3.2 *Background Checks* - Characteristic of most detectors is a background or instrument count rate attributed to cosmic radiation, radioactive contaminants in instrument parts, counting room construction material and/or the proximity of radioactive sources. Placing an empty planchet in the counting chamber and counting it for as long as the longest sample-counting duration can determine the background rate (or a background check can be completed overnight). An overnight background determination must be completed at least quarterly.

19.3.3 *Instrument-Response Check Source* - This continuing calibration check verifies the instrument response and stability and is performed daily. If the source count is within two standard deviations (sigma) of the previously determined average count rate, instrument reliability and stability is established. If the source rate is outside the ±2 sigma-warning limit, then the variability should be further investigated. If the source check is outside the ±3 sigma out of control limits, then no further samples should be analyzed until the problem is resolved. Resolution might include a background check, and/or instrument maintenance. If insufficient data exists for control charts then ±10% of the true value is considered acceptable.

19.4 Gamma Spectrometer

19.4.1 *Background Checks* - Characteristic of most detectors is a background or instrument count rate attributed to cosmic radiation, radioactive contaminants in instrument parts, counting room construction material and/or the proximity of radioactive sources. The background rate can be determined by placing a blank water sample within a Marinelli beaker in the counting chamber

and counting it for as long as the longest sample-counting duration, or a background check can be completed overnight. A background check must be performed for every workgroup.

19.4.2 *Instrument-Response Check Source* - This continuing calibration check verifies instrument response and stability. This check is performed for every workgroup. If the source count is within two standard deviations (sigma) of the previously determined average count rate, instrument reliability and stability is established. If the source rate is outside the ±2 sigma-warning limit, then the variability should be further investigated. If the source check is outside the ±3 sigma control limits, then no further samples should be analyzed until the problem is resolved. Resolution might include a background check, and/or instrument maintenance. If insufficient data exists for control charts then ±10% of the true value is considered acceptable.

APPENDIX A Required Container Type, Preservation Techniques, and Holding Times

Parameter	Container	Preservation [a, b]	Maximum Holding Time [c]
Alkalinity	HDPE or Glass	4 °C	14 days
Acidity	HDPE or Glass	4 °C	14 days
Ammonia (N-NH_3)	HDPE or Glass	4 °C; H_2SO_4 to pH < 2	28 days
Anions	HDPE	4 °C	28 days (Br^-, F^-, Cl^-, SO_4^{2-})
BOD, CBOD	HDPE or Glass	4 °C	48 hours
COD	HDPE or Glass	4 °C; H_2SO_4 to pH < 2	28 days
Color	HDPE or Glass	4 °C	48 hours
Conductivity	HDPE or Glass	4 °C	28 days
Cyanide	HDPE or Glass	4 °C; NaOH to pH > 12	14 days
Chromium (VI)	HDPE or Glass	4 °C	Refer to SOP for holding time
Dissolved Oxygen	Glass	None required	Analyze immediately
Metals (except Cr^{6+}, Hg)	HDPE or Glass	HNO_3 to pH < 2	180 days
Mercury	HDPE or Glass	HNO_3 to pH < 2	28 days
N – NO_2 / NO_3	HDPE or Glass	4 °C; H_2SO_4 to pH < 2	28 days (48 hours if unpreserved)
N – NO_3	HDPE or Glass	4 °C; H_2SO_4 to pH < 2	28 days (48 hours if unpreserved)
N – NO_2	HDPE or Glass	4 °C	48 hours
Nitrogen, Total Kjeldahl	HDPE or Glass	4 °C; H_2SO_4 to pH < 2	28 days
Oil & Grease	Glass	4 °C; HCl or H_2SO_4 to pH < 2	28 days
Orthophosphate	HDPE or Glass	4 °C	48 hours
pH	HDPE or Glass	None required	Analyze immediately
Phenols	Glass	4 °C; H_2SO_4 to pH < 2	28 days
Phosphorus (Total)	HDPE or Glass	4 °C; H_2SO_4 to pH < 2	28 days

Sulfide	HDPE or Glass	4 ^{o}C; Zn acetate + NaOH to pH > 9	7 days

APPENDIX A Continued

Parameter	Container	Preservation	Maximum Holding Time
Sulfite	HDPE or Glass	4 °C; EDTA	Analyze immediately
Settleable Solids	HDPE or Glass	4 °C	48 hours
Total Organic Carbon	Glass only	4 °C; HCl or H_2SO_4 to pH < 2	28 days
Turbidity	HDPE or Glass	4 °C	48 hours
Total Dissolved Solids	HDPE or Glass	4 °C	7 days
Total Suspended Solids	HDPE or Glass	4 °C	7 days
Total Solids	HDPE or Glass	4 °C	7 days
Total Volatile Solids	HDPE or Glass	4 °C	7 days
Radon-222	Glass Vial [d]		4 days
Total Volatile Hydrocarbons	Glass Vial or jar [d]	4 °C; HCl to pH < 2 (water)	Refer to SOP for holding times
Total Petroleum Hydrocarbons	Amber Glass	4 °C	Refer to SOP for holding times
BTEX / MTBE	Glass Vial or jar [d]	4 °C; HCl to pH < 2 (water)	14 days
Organochlorine Pesticides	Glass Vial or jar [d]	4 °C; pH 5 – 9	Refer to SOP for holding times
PCBs	Amber Glass	4 °C	Refer to SOP for holding times
PAHs	Amber Glass	4 °C	Refer to SOP for holding times
BNAs (semi-volatiles)	Amber Glass	4 °C	Refer to SOP for holding times
VOAs (volatiles)	Glass Vial or jar [d]	4 °C; HCl to pH < 2 (water)	Refer to SOP for holding times
TCLP	Glass [d]	4 °C	Refer to SOP for holding times
Radchem (except Rn-222)	HDPE cube	HNO_3 to pH < 2	180 days

a. No pH adjustment for soil
b. Preservation with 0.008% $Na_2S_2O_3$ required only when residual chlorine is present.
c. Unless otherwise specified in the test SOP, complete sample preparation and analysis within holding time.
d. Teflon-lined septa or lid

APPENDIX B Utah BLI Certificate and List of Certified Parameters

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GARY HERBERT
Lieutenant Governor

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David N. Sundwall, MD
Executive Director

Epidemiology and Laboratory Services
Patrick F. Luedtke, MD, MPH.
Director of Public Health Laboratories

Bureau of Laboratory Improvement
David B Mendenhall, MPA, MT (ASCP)
Bureau Director

NELAP Recognized

STATE OF UTAH
DEPARTMENT OF HEALTH

ENVIRONMENTAL LABORATORY CERTIFICATION PROGRAM

CERTIFICATION

is hereby granted to

ACZ Laboratories, Inc.

2773 Downhill Drive
Steamboat Springs CO 80487

Scope of accreditiation is limited to the
State of Utah Accredited Fields of Accreditiation
Which accompanies this Certificate

Continued accredited status depends on successful
Ongoing particitpation in the program

EPA Number: CO00028
Expiration Date: 4/30/2008

Patrick F. Luedtke, MD, MPH.
Director of Public Health Laboratories
Deputy Director of Epidemiology and Laboratory Services

Utah Department of Health

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Bureau of Laboratory Improvement
David B Mendenhall, MPA, MT (ASCP)
Bureau Director

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6/1/2007

ACZ Laboratories, Inc.
Bradley Craig
2773 Downhill Drive
Steamboat Springs CO 80487

ID # ACZ
EPA ID: CO00028

Director,

On the basis of your most recent assessment, Proficiency Testing results and continuing compliance with the ELCP requirements, the laboratory listed is certified for environmental monitoring under the Safe Drinking Water Act and authorized to perform the following methods, for the analytes and matrix listed:

Drinking Water

Inorganics and Metals

200.8 [1994]	Antimony
200.8 [1994]	Arsenic
200.8 [1994]	Barium
200.8 [1994]	Beryllium
200.8 [1994]	Cadmium
200.8 [1994]	Chromium
200.8 [1994]	Nickel
200.8 [1994]	Selenium
200.8 [1994]	Thallium
200.8 [1994]	Uranium
245.1 [1994]	Mercury
335.4 [1993]	Cyanide
4500 (F-) C	Fluoride by Ion-Selective Method

Nitrate

353.2 [1993]	Nitrate/Nitrite

Nitrite

353.2 [1993]	Nitrite

Pb/Cu

200.8 [1994]	Copper
200.8 [1994]	Lead

Radionuclides

900.0	Gross Alpha & Beta Radioactivity in Drinking Water Evaporation Technique
900.0	Gross Alpha
900.0	Gross Beta
903.1	Radium 226 in Drinking Water Radon Emanation Technique
904.0	Radium 228 in Drinking Water Radiochemical Technique

The expiration for the laboratory's certification is 4/30/2008. The Utah Environmental Laboratory Certification Program (ELCP) encourages clients and data users to verify the most current certification letter for the authorized method. For further assistance please call Lorna Ward 801-584-8469.

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Safe Drinking Water Act
Page 2 of 2

The effective date of this certificate letter is: 5/24/2007.

The analytes by method which a laboratory is authorized to perform at any given time will be those indicated in the most recent certificate letter. The most recent certification letter supersedes all previous certification or authorization letters. It is the certified laboratory's responsibility to review this letter for discrepancies. The certified laboratory must document any discrepancies in this letter and send notice to this bureau within 15 days of receipt. This certificate letter will be recalled in the event your laboratory's certification is revoked.

Respectfully,

Patrick F. Lueedtke, MD, MPH.
Director of Public Health Laboratories
Deputy Director of Epidemiology and Laboratory Services

The expiration for the laboratory's certification is 4/30/2008. The Utah Environmental Laboratory Certification Program (ELCP) encourages clients and data users to verify the most current certification letter for the authorized method. For further assistance please call Lorna Ward 801-584-8469.

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Director of Public Health Laboratories

Bureau of Laboratory Improvement
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Bureau Director

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6/1/2007

ACZ Laboratories, Inc.
Bradley Craig
2773 Downhill Drive
Steamboat Springs CO 80487

ID # ACZ
EPA ID: CO00028

Director,

On the basis of your most recent assessment, Proficiency Testing results and continuing compliance with the ELCP requirements, the laboratory listed is certified for environmental monitoring under the Clean Water Act and authorized to perform the following methods, for the analytes and matrix listed:

Non-Potable Water

Inorganics and Metals

160.4 [1971]	Residue, Volatile (Gravimetric, Ignition at 550-C)
1631 C	Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescense Spectrometry
1664 A [1999]	Oil & Grease and Total Petroleum Hydrocarbons
180.1 [1993]	Turbidity
200.7 [1994]	Aluminum
200.7 [1994]	Antimony
200.7 [1994]	Arsenic
200.7 [1994]	Barium
200.7 [1994]	Beryllium
200.7 [1994]	Boron
200.7 [1994]	Cadmium
200.7 [1994]	Calcium
200.7 [1994]	Chromium, Total
200.7 [1994]	Cobalt
200.7 [1994]	Copper
200.7 [1994]	Iron
200.7 [1994]	Lead
200.7 [1994]	Lithium
200.7 [1994]	Magnesium
200.7 [1994]	Manganese
200.7 [1994]	Molybdenum
200.7 [1994]	Nickel
200.7 [1994]	Potassium
200.7 [1994]	Selenium
200.7 [1994]	Silica
200.7 [1994]	Silver
200.7 [1994]	Sodium
200.7 [1994]	Strontium
200.7 [1994]	Tin
200.7 [1994]	Titanium

The expiration for the laboratory's certification is 4/30/2008. The Utah Environmental Laboratory Certification Program (ELCP) encourages clients and data users to verify the most current certification letter for the authorized method. For further assistance please call Lorna Ward 801-584-8469.

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Clean Water Act
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Inorganics and Metals

200.7 [1994]	Vanadium
200.7 [1994]	Zinc
200.8 [1994]	Aluminum
200.8 [1994]	Antimony
200.8 [1994]	Arsenic
200.8 [1994]	Barium
200.8 [1994]	Beryllium
200.8 [1994]	Cadmium
200.8 [1994]	Chromium
200.8 [1994]	Cobalt
200.8 [1994]	Copper
200.8 [1994]	Lead
200.8 [1994]	Manganese
200.8 [1994]	Molybdenum
200.8 [1994]	Nickel
200.8 [1994]	Selenium
200.8 [1994]	Silver
200.8 [1994]	Thallium
200.8 [1994]	Uranium
200.8 [1994]	Vanadium
200.8 [1994]	Zinc
2310 B	Acidity (Nephelometric)
2320 B	Alkalinity (Titration)
2340 B	Hardness (Calculation)
245.1 [1994]	Mercury
2510 B [19th ED]	Conductivity (Laboratory) [SM 19th ED]
2540 B [19th ED]	Total Solids Dried at 103-105-C [SM 19th ED]
2540 C [19th ED	Total Dissolved Solids Dried at 180-C [SM 19th ED]
2540 D [19th ED	Total Suspended Solids Dried at 103-105-C [SM 19th ED]
2540 F [19th ED]	Settleable Solids [SM 19th ED]
300.0 [1993]	Bromide
300.0 [1993]	Chloride
300.0 [1993]	Fluoride
300.0 [1993]	Sulfate
3114 B [19th ED]	Selenium [SM 19th ED]
335.4 [1993]	Cyanide, Total
350.1 [1993]	Nitrogen, Ammonia
3500 (Cr) D [19t	Chromium VI (Colorimetric) [SM 19th ED]
351.2 [1993]	Nitrogen, Total Kjeldahl
353.2 [1993]	Nitrogen, Nitrate-Nitrite
365.1 [1993]	Phosphorous, Total
410.4 [1993]	Chemical Oxygen Demand
420.4 [1993]	Phenolics, Total
4500 (Cl-) E	Chloride (Ferricyanide, Automated)
4500 (CN-) I	Weak Acid Dissociable Cyanide
4500 (F-) C	Fluoride (Ion-Selective Electrode)
4500 (H+) B [19t	pH (Electrometric) [SM 19th ED]
4500 (SO42-) D	Sulfate (Gravimetric, Drying of Residue
5210 B [19th ED]	Biochemical Oxygen Demand 5-Day Test [SM 19th ED]
5210 B [19th ED]	Carboneous Biochemical Oxygen Demand (CBOD) [SM 19th ED]
5310 B [19th ED]	Total Organic Carbon (Combustion-Infrared) [SM 19th ED]

Organics

624	Purgeables
624	Bromodichloromethane

The expiration for the laboratory's certification is 4/30/2008. The Utah Environmental Laboratory Certification Program (ELCP) encourages clients and data users to verify the most current certification letter for the authorized method. For further assistance please call Lorna Ward 801-584-8469.

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Organics

624	Bromoform
624	Bromomethane
624	Carbon Tetrachloride
624	Chlorobenzene
624	Chloroethane
624	2-Chloroethylvinyl Ether
624	Chloroform
624	Chloromethane
624	Dibromochloromethane
624	1,2-Dichlorobenzene
624	1,3-Dichlorobenzene
624	1,4-Dichlorobenzene
624	1,1-Dichloroethane
624	1,2-Dichloroethane
624	1,1-Dichloroethene
624	trans-1,2-Dichloroethene
624	1,2-Dichloropropane
624	cis-1,3-Dichloropropene
624	trans-1,3-Dichloropropene
624	Ethylbenzene
624	Methylene Chloride
624	1,1,2,2-Tetrachloroethane
624	Tetrachloroethylene
624	Toluene
624	1,1,1-Trichloroethane
624	1,1,2-Trichloroethane
624	Trichloroethene
624	Trichlorofluoromethane
624	Vinyl Chloride
625	Base/Neutrals and Acids
625	Acenaphthene
625	Acenaphthylene
625	Anthracene
625	Benzidine
625	Benzo(a)anthracene
625	Benzo(b)fluoranthene
625	Benzo(k)fluoranthene
625	Benzo(g,h,i)perylene
625	Benzo(a)pyrene
625	Benzyl Butyl Phthalate
625	bis(2-Chloroethyl)ether
625	bis(2-Chloroethoxy)methane
625	bis(2-Ethylhexyl)phthalate
625	bis(2-Chloroisopropyl)ether
625	4-Bromophenyl Phenyl Ether
625	2-Chloronaphthalene
625	Chrysene
625	Dibenz(a,h)anthracene
625	Di-n-butylphthalate
625	3,3'-Dichlorobenzidine
625	Diethyl phthalate
625	Dimethyl phthalate
625	2,4-Dinitrotoluene
625	2,6-Dinitrotoluene

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Organics	
625	Di-n-octylphthalate
625	Fluoranthene
625	Fluorene
625	Hexachlorobenzene
625	Hexachlorobutadiene
625	Hexachlorocyclopentadiene
625	Hexachloroethane
625	Indeno(1,2,3-cd)pyrene
625	Isophorone
625	Naphthalene
625	Nitrobenzene
625	N-Nitrosodimethylamine
625	N-Nitrosodi-n-propylamine
625	N-Nitrosodiphenylamine
625	Phenanthrene
625	Pyrene
625	1,2,4-Trichlorobenzene
625	4-Chloro-3-methylphenol
625	2-Chlorophenol
625	2,4-Dichlorophenol
625	2,4-Dimethylphenol
625	2,4-Dinitrophenol
625	2-Methyl- 4,6-dinitrophenol
625	2-Nitrophenol
625	4-Nitrophenol
625	Pentachlorophenol
625	Phenol
625	2,4,6-Trichlorophenol
Radiological	
900.0	Gross Alpha
900.0	Gross Beta
903.0	Radium
903.0	radium-226
903.1	radium-226
904.0	radium-228
Solid & Chemical Materials	
Inorganics and Metals	
Sludge	Inorganic Pollutants

The effective date of this certificate letter is: 5/24/2007.

The analytes by method which a laboratory is authorized to perform at any given time will be those indicated in the most recent certificate letter. The most recent certification letter supersedes all previous certification or authorization letters. It is the certified laboratory's responsibility to review this letter for discrepancies. The certified laboratory must document any discrepancies in this letter and send notice to this bureau within 15 days of receipt. This certificate letter will be recalled in the event your laboratory's certification is revoked.

Respectfully,

Patrick F. Luedtke, MD, MPH.
Director of Public Health Laboratories
Deputy Director of Epidemiology and Laboratory Services

The expiration for the laboratory's certification is 4/30/2008. The Utah Environmental Laboratory Certification Program (ELCP) encourages clients and data users to verify the most current certification letter for the authorized method. For further assistance please call Lorna Ward 801-584-8469.

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Epidemiology and Laboratory Services
Patrick F. Luedtke, MD, MPH.
Director of Public Health Laboratories

Bureau of Laboratory Improvement
David B Mendenhall, MPA, MT (ASCP)
Bureau Director

NELAP Recognized

5/11/2007

ACZ Laboratories, Inc.
Bradley Craig
2773 Downhill Drive
Steamboat Springs CO 80487

ID # ACZ
Account # 8003345493

Director,

On the basis of your most recent assessment, Proficiency Testing results and continuing compliance with the ELCP requirements, the laboratory listed is certified for environmental monitoring under the Resource Conservation and Recovery Act and authorized to perform the following methods, for the analytes and matrix listed:

Characteristics

	Solid	Non-Potable Water	
1010 A	✔	✔	Ignitability
1311	✔	✔	Toxicity Characteristic Leaching Procedure Metals
1311	✔	✔	Toxicity Characteristic Leaching Procedure Semi-Volatiles
1311	✔	✔	Toxicity Characteristic Leaching Procedure Volatiles
1312	✔	✔	Synthetic Precipitation Leaching Procedure (TCLP Approval)

Inorganics

	Solid	Non-Potable Water	
9012 B	✔	✔	Total and Amenable Cyanide
9013	✔		Cyanide Extraction Procedure for Solids and Oils
9040 C		✔	pH
9045 D	✔		Soil and Waste pH
9070 A		✔	Total Recoverable Oil and Grease

Metal Digestion

	Solid	Non-Potable Water	
3005 A		✔	Acid Digestion Total Recoverable or Dissolved Metals
3010 A		✔	Acid Digestion for Total Metals
3050 B	✔		Acid Digestion of Sediments, Sludges and Soils
3051 A	✔		Microwave Acid Digestion of Sediment, Sludges, Soils & Oils
3052	✔		Microwave Acid Digestion of Silliceous and Organic Matrixes
3060 A	✔		Alkaline Digestion for Hexavalent Chromium

The expiration for the laboratory's certification is 4/30/2008. The Utah Environmental Laboratory Certification Program (ELCP) encourages clients and data users to verify the most current certification letter for the authorized method. For further assistance please call Lorna Ward 801-584-8469.

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Metals

	Solid	Non-Potable Water	
6010 B	✔	✔	Aluminum
6010 B	✔	✔	Antimony
6010 B	✔	✔	Arsenic
6010 B	✔	✔	Barium
6010 B	✔	✔	Beryllium
6010 B	✔	✔	Boron
6010 B	✔	✔	Cadmium
6010 B	✔	✔	Calcium
6010 B	✔	✔	Chromium
6010 B	✔	✔	Cobalt
6010 B	✔	✔	Copper
6010 B	✔	✔	Iron
6010 B	✔	✔	Lead
6010 B	✔	✔	Lithium
6010 B	✔	✔	Magnesium
6010 B	✔	✔	Manganese
6010 B	✔	✔	Molybdenum
6010 B	✔	✔	Nickel
6010 B	✔	✔	Potassium
6010 B	✔	✔	Selenium
6010 B	✔	✔	Silica
6010 B	✔	✔	Silicon
6010 B	✔	✔	Silver
6010 B	✔	✔	Sodium
6010 B	✔	✔	Strontium
6010 B	✔		Thallium
6010 B	✔	✔	Tin
6010 B	✔	✔	Titanium
6010 B	✔	✔	Vanadium
6010 B	✔	✔	Zinc
6020 [1994]	✔	✔	Aluminum
6020 [1994]	✔	✔	Antimony
6020 [1994]	✔	✔	Arsenic
6020 [1994]	✔	✔	Barium
6020 [1994]	✔	✔	Beryllium
6020 [1994]	✔	✔	Cadmium
6020 [1994]	✔	✔	Chromium
6020 [1994]	✔	✔	Cobalt
6020 [1994]	✔	✔	Copper
6020 [1994]	✔	✔	Lead
6020 [1994]	✔	✔	Manganese
6020 [1994]	✔	✔	Molybdenum
6020 [1994]	✔	✔	Nickel
6020 [1994]	✔	✔	Selenium
6020 [1994]	✔	✔	Silver
6020 [1994]	✔	✔	Thallium
6020 [1994]	✔	✔	Vanadium
6020 [1994]	✔	✔	Zinc
7196 A	✔	✔	Chromium, Hexavalent (Chromium, VI)
7470 A		✔	Mercury
7471 A	✔		Mercury

The expiration for the laboratory's certification is 4/30/2008. The Utah Environmental Laboratory Certification Program (ELCP) encourages clients and data users to verify the most current certification letter for the authorized method. For further assistance please call Lorna Ward 801-584-8469.

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Organic Extraction

	Solid	Non-Potable Water	
3510 C		✔	Separatory Funnel Liquid-Liquid Extractions
3520 C		✔	Continuous Liquid-Liquid Extraction
3540 C	✔		Soxhlet Extraction
3550 C	✔		Ultrasonic Extraction
3580 A	✔		Waste Dilution

Organic Instrumentation

	Solid	Non-Potable Water	
8015 B	✔	✔	Diesel Range Organics (DROs)
8015 B	✔	✔	Gasoline Range Organics (GROs)
8015 B	✔	✔	Nonhalogenated Organics Using GC/FID
8021 B	✔	✔	Aromatic and Halogenated Volatiles
8021 B	✔	✔	Benzene
8021 B	✔	✔	Ethylbenzene
8021 B	✔	✔	meta-Xylene
8021 B	✔	✔	ortho-Xylene
8021 B	✔	✔	para-Xylene
8021 B	✔	✔	Toluene
8021 B	✔	✔	Xylenes, Total
8082	✔	✔	Aroclor-1016 [PCB-1016]
8082	✔	✔	Aroclor-1221 PCB-1221]
8082	✔	✔	Aroclor-1232 [PCB-1232]
8082	✔	✔	Aroclor-1242 [PCB-1242]
8082	✔	✔	Aroclor-1248 [PCB-1248]
8082	✔	✔	Aroclor-1254 [PCB-1254]
8082	✔	✔	Aroclor-1260 [PCB-1260]
8082	✔	✔	PCBs
8260 B	✔	✔	1,1,1,2-Tetrachloroethane
8260 B	✔	✔	1,1,1-Trichloroethane
8260 B	✔	✔	1,1,2,2-Tetrachloroethane
8260 B	✔	✔	1,1,2-Trichloroethane
8260 B	✔	✔	1,1-Dichloroethane
8260 B	✔	✔	1,1-Dichloroethylene (-ethene)
8260 B	✔	✔	1,1-Dichloropropene
8260 B	✔	✔	1,2,3-Trichlorobenzene
8260 B	✔	✔	1,2,3-Trichloropropane
8260 B	✔	✔	1,2,4-Trichlorobenzene
8260 B	✔	✔	1,2,4-Trimethylbenzene
8260 B	✔	✔	1,2-Dibromo-3-chloropropane (DBCP, Dibromochloropropane)
8260 B	✔	✔	1,2-Dibromoethane (EDB, Ethylene dibromide)
8260 B	✔	✔	1,2-Dichlorobenzene
8260 B	✔	✔	1,2-Dichloroethane
8260 B	✔	✔	1,2-Dichloropropane
8260 B	✔	✔	1,3,5-Trimethylbenzene
8260 B	✔	✔	1,3-Dichlorobenzene
8260 B	✔	✔	1,3-Dichloropropane
8260 B	✔	✔	1,4-Dichlorobenzene
8260 B	✔	✔	2,2-Dichloropropane
8260 B	✔	✔	2-Chloroethyl Vinyl Ether
8260 B	✔	✔	2-Chlorotoluene

The expiration for the laboratory's certification is 4/30/2008. The Utah Environmental Laboratory Certification Program (ELCP) encourages clients and data users to verify the most current certification letter for the authorized method. For further assistance please call Lorna Ward 801-584-8469.

Utah Department of Health

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Resource Conservation and Recovery Act
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Organic Instrumentation

	Solid	Non-Potable Water	
8260 B	✔	✔	2-Hexanone
8260 B	✔	✔	4-Chlorotoluene
8260 B	✔	✔	4-Methyl-2-pentanone (MIBK, Isopropylacetone, Hexone)
8260 B	✔	✔	Acetone
8260 B	✔	✔	Acrylonitrile
8260 B	✔	✔	Benzene
8260 B	✔	✔	Bromobenzene
8260 B	✔	✔	Bromochloromethane
8260 B	✔	✔	Bromodichloromethane
8260 B	✔	✔	Bromoform
8260 B	✔	✔	Carbon Disulfide
8260 B	✔	✔	Carbon Tetrachloride
8260 B	✔	✔	Chlorobenzene
8260 B	✔	✔	Chlorodibromomethane [Dibromochloromethane]
8260 B	✔	✔	Chloroethane
8260 B	✔	✔	Chloroform
8260 B	✔	✔	cis-1,2-Dichloroethene (-ethylene)
8260 B	✔	✔	cis-1,3-dichloropropene
8260 B	✔	✔	Dibromomethane
8260 B	✔	✔	Dichlorodifluoromethane
8260 B	✔	✔	Ethylbenzene
8260 B	✔	✔	Hexachlorobutadiene
8260 B	✔	✔	Isopropylbenzene
8260 B	✔	✔	meta-Xylene
8260 B	✔	✔	Methyl bromide [Bromomethane]
8260 B	✔	✔	Methyl chloride [Chloromethane]
8260 B	✔	✔	Methyl Ethyl Ketone (MEK, 2-Butanone)
8260 B	✔	✔	Methyl-t-Butyl Ether (MTBE)
8260 B	✔	✔	Methylene Chloride
8260 B	✔	✔	n-Butylbenzene
8260 B	✔	✔	n-Propylbenzene
8260 B	✔	✔	Naphthalene
8260 B	✔	✔	ortho-Xylene
8260 B	✔	✔	para-Xylene
8260 B	✔	✔	sec-Butylbenzene
8260 B	✔	✔	Styrene
8260 B	✔	✔	tert-Butylbenzene
8260 B	✔	✔	Tetrachloroethylene (Perchloroethylene -ethene)
8260 B	✔	✔	Toluene
8260 B	✔	✔	trans-1,2-Dichloroethylene (-ethene)
8260 B	✔	✔	trans-1,3-Dichloropropylene (-propene)
8260 B	✔	✔	Trichloroethene (Trichloroethylene)
8260 B	✔	✔	Trichlorofluoromethane
8260 B	✔	✔	Vinyl Acetate
8260 B	✔	✔	Vinyl Chloride
8260 B	✔	✔	Volatile Organic Compounds
8260 B	✔	✔	Xylenes, Total
8270 C	✔	✔	1,2,4-Trichlorobenzene
8270 C	✔	✔	1,2-Dichlorobenzene
8270 C	✔	✔	1,3-Dichlorobenzene
8270 C	✔	✔	1,4-Dichlorobenzene

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Organic Instrumentation

	Solid	Non-Potable Water	
8270 C	✔	✔	2,4,5-Trichlorophenol
8270 C	✔	✔	2,4,6-Trichlorophenol
8270 C	✔	✔	2,4-Dichlorophenol
8270 C	✔	✔	2,4-Dimethylphenol
8270 C	✔	✔	2,4-Dinitrophenol
8270 C	✔	✔	2,4-Dinitrotoluene (2,4-DNT)
8270 C	✔	✔	2,6-Dinitrotoluene (2,6-DNT)
8270 C	✔	✔	2-Chloronaphthalene
8270 C	✔	✔	2-Chlorophenol
8270 C	✔	✔	2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)
8270 C	✔	✔	2-Methylnaphthalene
8270 C	✔	✔	2-Methylphenol (o-cresol, 2-Hydroxytoluene)
8270 C	✔	✔	2-Nitroaniline
8270 C	✔	✔	2-Nitrophenol
8270 C	✔	✔	3,3'-Dichlorobenzidine
8270 C	✔	✔	3-Methylphenol (m-cresol, 3-Hydroxytoluene)
8270 C	✔	✔	3-Nitroaniline
8270 C	✔	✔	4-Bromophenyl Phenyl Ether
8270 C	✔	✔	4-Chloro-3-methylphenol
8270 C	✔	✔	4-Chloroaniline
8270 C	✔	✔	4-Chlorophenyl Phenyl Ether
8270 C	✔	✔	4-Methylphenol (p-cresol, 4-Hydroxytoluene)
8270 C	✔	✔	4-Nitroaniline
8270 C	✔	✔	4-Nitrophenol
8270 C	✔	✔	Acenaphthene
8270 C	✔	✔	Acenaphthylene
8270 C	✔	✔	Anthracene
8270 C	✔	✔	Azobenzene
8270 C	✔	✔	Benzo(a)anthracene
8270 C	✔	✔	Benzo(a)pyrene
8270 C	✔	✔	Benzo(b)fluoranthene
8270 C	✔	✔	Benzo(g,h,i)perylene
8270 C	✔	✔	Benzo(k)fluoranthene
8270 C	✔	✔	Benzoic Acid
8270 C	✔	✔	Benzyl alcohol
8270 C	✔	✔	bis(2-chloroethoxy)methane
8270 C	✔	✔	bis(2-Chloroethyl)ether
8270 C	✔	✔	bis(2-chloroisopropyl)ether
8270 C	✔	✔	bis(2-Ethylhexyl) phthalate (DEHP)
8270 C	✔	✔	Butyl Benzyl Phthalate
8270 C	✔	✔	Chrysene
8270 C	✔	✔	Di-n-butyl phthalate
8270 C	✔	✔	Di-n-octyl Phthalate
8270 C	✔	✔	Dibenzo(a,h)anthracene
8270 C	✔	✔	Dibenzofuran
8270 C	✔	✔	Diethyl Phthalate
8270 C	✔	✔	Dimethyl Phthalate
8270 C	✔	✔	Fluoranthene
8270 C	✔	✔	Fluorene
8270 C	✔	✔	Hexachlorobenzene
8270 C	✔	✔	Hexachlorobutadiene

The expiration for the laboratory's certification is 4/30/2008. The Utah Environmental Laboratory Certification Program (ELCP) encourages clients and data users to verify the most current certification letter for the authorized method. For further assistance please call Lorna Ward 801-584-8469.

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Organic Instrumentation

	Solid	Non-Potable Water	
8270 C	✔	✔	Hexachlorocyclopentadiene
8270 C	✔	✔	Hexachloroethane
8270 C	✔	✔	Indeno(1,2,3-cd)pyrene
8270 C	✔	✔	Isophorone
8270 C	✔	✔	n-Nitroso-di-n-Propylamine
8270 C	✔	✔	n-Nitrosodimethylamine
8270 C	✔	✔	n-Nitrosodiphenylamine
8270 C	✔	✔	Naphthalene
8270 C	✔	✔	Nitrobenzene
8270 C	✔	✔	Pentachlorophenol
8270 C	✔	✔	Phenanthrene
8270 C	✔	✔	Phenol
8270 C	✔	✔	Pyrene
8270 C	✔	✔	Semivolatile Organic Compounds

Radiochemistry

	Solid	Non-Potable Water	
9310	✔	✔	Gross Alpha and Gross Beta
9315	✔	✔	Alpha Emit Radium Isotope
9320	✔	✔	Radium 228

Volatile Organic Preparation

	Solid	Non-Potable Water	
5030 B		✔	Purge-and-Trap for Aqueous Samples

The effective date of this certificate letter is: 5/1/2007.

The analytes by method which a laboratory is authorized to perform at any given time will be those indicated in the most recent certificate letter. The most recent certification letter supersedes all previous certification or authorization letters. It is the certified laboratory's responsibility to review this letter for discrepancies. The certified laboratory must document any discrepancies in this letter and send notice to this bureau within 15 days of receipt. This certificate letter will be recalled in the event your laboratory's certification is revoked.

Respectfully,

Patrick F. Luedtke, MD, MPH.
Director of Public Health Laboratories
Deputy Director of Epidemiology and Laboratory Services

The expiration for the laboratory's certification is 4/30/2008. The Utah Environmental Laboratory Certification Program (ELCP) encourages clients and data users to verify the most current certification letter for the authorized method. For further assistance please call Lorna Ward 801-584-8469.

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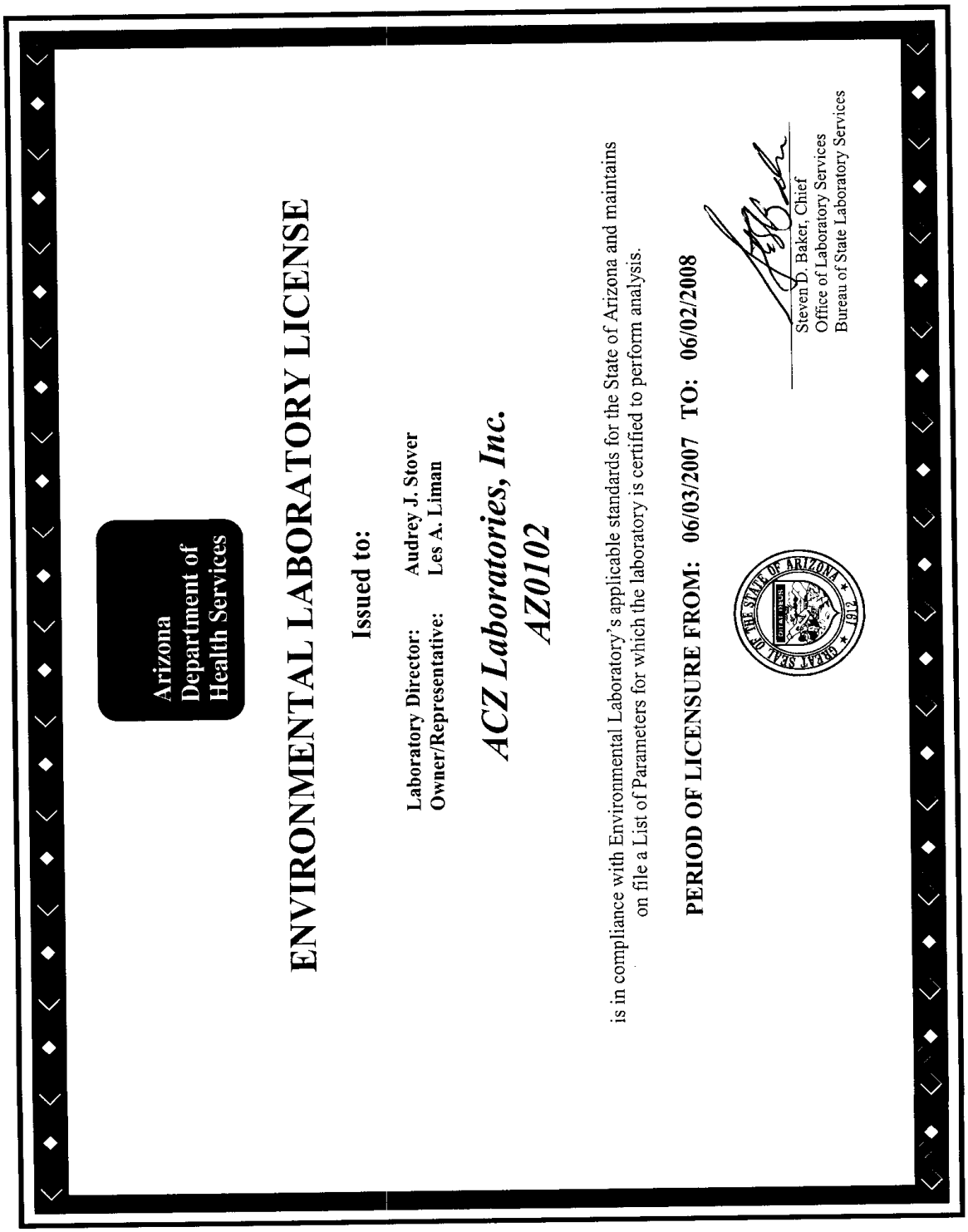
APPENDIX C ADHS Certificate and List of Certified Parameters



Arizona Department of Health Services

ENVIRONMENTAL LABORATORY LICENSE

Issued to:

Laboratory Director: **Audrey J. Stover**
Owner/Representative: **Les A. Liman**

ACZ Laboratories, Inc.
AZ0102

is in compliance with Environmental Laboratory's applicable standards for the State of Arizona and maintains on file a List of Parameters for which the laboratory is certified to perform analysis.

PERIOD OF LICENSURE FROM: 06/03/2007 TO: 06/02/2008

Steven D. Baker, Chief
Office of Laboratory Services
Bureau of State Laboratory Services

Arizona Department of Health Services
Office of Laboratory Licensure, Certification & Training
250 North 17th Avenue, Phoenix, AZ 85007

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Wednesday, June 27 2007

AZ License: **AZ0102**

Lab Director: **Ms. Audrey J. Stover**

Lab Name: ACZ Laboratories, Inc.
Phone: (970) 879-6590
Fax: (970) 879-2216

Program **HW**

Parameter	EPA Method	Billing Code	Cert Date
Alkline Digestion For Hexavalent Chromium	EPA 3060A	PREP2	05/09/07
Alpha-Emitting Radium Isotopes	EPA 9315	RADIO	09/23/97
Aluminum	EPA 6010B	MTL3	06/03/98
Aluminum	EPA 6020	MTL7	04/12/04
Antimony	EPA 6010B	MTL3	05/09/02
Antimony	EPA 6020	MTL7	02/24/97
Aromatic & Halogenated Vocs	EPA 8021B	VOC1	01/15/03
Arsenic	EPA 6010B	MTL3	05/09/02
Arsenic	EPA 6020	MTL7	02/24/97
Barium	EPA 6010B	MTL3	06/03/98
Barium	EPA 6020	MTL7	02/24/97
Beryllium	EPA 6010B	MTL3	05/01/92
Beryllium	EPA 6020	MTL7	02/24/97
Boron	EPA 6010B	MTL3	04/04/06
Cadmium	EPA 6010B	MTL3	06/03/98
Cadmium	EPA 6020	MTL7	02/24/97
Calcium	EPA 6010B	MTL3	06/03/98
Chromium Total	EPA 6010B	MTL3	06/03/98
Chromium Total	EPA 6020	MTL7	02/24/97
Chromium, Hexavalent	EPA 7196A	MTL4	04/12/04
Closed System Purge And Trap Extract. Vocs	EPA 5035A	MISC21	12/05/06
Cobalt	EPA 6010B	MTL3	06/03/98
Cobalt	EPA 6020	MTL7	02/24/97
Continious Liquid-Liquid Extraction	EPA 3520C	PREP2	05/09/02
Copper	EPA 6010B	MTL3	06/03/98
Copper	EPA 6020	MTL7	02/24/97
Corrosivity Ph Determination	EPA 9040C	HAZ1	12/05/06
Cyanide	EPA 9012B	MISC7	12/05/06
Cyanide Extractions For Solids And Oils	EPA 9013A	PREP3	12/05/06
Dissolved In Water	EPA 3005A	PREP1	05/09/02
Gross Alpha And Beta	EPA 9310	RADIO	09/23/97
Hem For Aqueous Samples	EPA 9070A	MISC6	05/09/07
Hem For Sludge,Sediment And Solid Samples	EPA 9071B	MISC6	12/05/06
Hydrogen Ion (Ph)	EPA 9045D	NIA6	12/05/06
Ignitability (Flash Point)	EPA 1010A	HAZ2	12/05/06
Iron	EPA 6010B	MTL3	06/03/98
Lead	EPA 6010B	MTL3	06/03/98
Lead	EPA 6020	MTL7	02/24/97
Lithium	EPA 6010B	MTL3	06/26/02

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Wednesday, June 27 2007

AZ License: AZ0102 **Lab Name: ACZ Laboratories, Inc.**

Program HW

Parameter	EPA Method	Billing Code	Cert Date
Magnesium	EPA 6010B	MTL3	06/03/98
Manganese	EPA 6010B	MTL3	06/03/98
Manganese	EPA 6020	MTL7	02/24/97
Mercury	EPA 7470A	MTL5	06/02/97
Mercury	EPA 7471A	MTL5	05/01/92
Microwave Assisted Digestions	EPA 3015A	PREP1	05/12/03
Microwave Assisted Digestions	EPA 3051	PREP1	06/12/03
Molybdenum	EPA 6010B	MTL3	06/03/98
Nickel	EPA 6010B	MTL3	05/01/92
Nickel	EPA 6020	MTL7	02/24/97
Nonhalogenated Organics Using Gc/Fid	EPA 8015D	VOC4	12/05/06
Paint Filter Liquids Test	EPA 9095B	MISC18	12/05/06
Pcbs By Gc	EPA 8082	SOC9	04/10/03
Potassium	EPA 6010B	MTL3	06/03/98
Purge And Trap For Aqueous Samples	EPA 5030C	PREP2	12/05/06
Radium 228	EPA 9320	RADIO	06/26/02
Sediments, Sludges And Soils	EPA 3050B	PREP1	05/09/02
Semivolatile Compounds By Gc/Ms	EPA 8270C	SOC16	06/03/98
Separatory Funnel Liquid-Liquid Extraction	EPA 3510C	PREP2	05/09/02
Silica	EPA 6010B	MTL3	04/04/06
Silver	EPA 6010B	MTL3	06/03/98
Silver	EPA 6020	MTL7	02/24/97
Sodium	EPA 6010B	MTL3	06/03/98
Soxlhet Extraction	EPA 3540C	PREP2	05/09/02
Splp	EPA 1312	HAZ6	02/15/96
Strontium	EPA 6010B	MTL3	05/09/02
Tclp	EPA 1311	HAZ5	05/01/92
Thallium	EPA 6010B	MTL3	06/26/02
Thallium	EPA 6020	MTL7	02/24/97
Tin	EPA 6010B	MTL3	06/03/98
Titanium	EPA 6010B	MTL3	04/04/06
Total Metals	EPA 3010A	PREP1	05/09/02
Total Recoverable In Water	EPA 3005A	PREP1	05/09/02
Ultrasonic Extraction	EPA 3550B	PREP2	05/09/02
Vocs By Gc/Ms	EPA 8260B	VOC8	06/03/98
Waste Dilution	EPA 3580A	PREP2	05/12/03
Zinc	EPA 6010B	MTL3	06/03/98
Zinc	EPA 6020	MTL7	02/24/97

Total Licensed Parameters in this Program: 77

Program SDW

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Wednesday, June 27 2007

AZ License: AZ0102 **Lab Name: ACZ Laboratories, Inc.**

Program SDW

Parameter	EPA Method	Billing Code	Cert Date
Alkalinity	SM 2320B	NIA1	04/10/03
Aluminum	EPA 200.7	MTL3	04/10/03
Antimony	EPA 200.8	MTL7	04/10/03
Arsenic	EPA 200.8	MTL7	04/10/03
Barium	EPA 200.8	MTL7	04/10/03
Beryllium	EPA 200.8	MTL7	04/10/03
Bromide	EPA 300.0	NIIIA1	04/10/03
Cadmium	EPA 200.8	MTL7	04/10/03
Calcium	EPA 200.7	MTL3	04/10/03
Carbon, Total Organic	EPA 5310B	MISC1	04/10/03
Chloride	EPA 300.0	NIIIA1	04/10/03
Chromium Total	EPA 200.8	MTL7	04/10/03
Copper	EPA 200.8	MTL7	04/10/03
Cyanide	EPA 335.4	MISC7	06/26/02
Cyanide	SM 4500 CN F	MISC7	04/10/03
Fluoride	EPA 300.0	NIIIA1	04/10/03
Fluoride	SM 4500-F C	NIB9	04/10/03
Gross Alpha	EPA 900	RADIO	05/12/03
Gross Beta	EPA 900	RADIO	04/10/03
Hardness	SM 2340B	MTL3	05/09/02
Hydrogen Ion (Ph)	SM 4500-H B	NIA6	05/09/07
Iron	EPA 200.7	MTL3	04/10/03
Lead	EPA 200.8	MTL7	04/10/03
Magnesium	EPA 200.7	MTL3	04/10/03
Manganese	EPA 200.7	MTL3	04/10/03
Mercury	EPA 245.1	MTL5	04/10/03
Nickel	EPA 200.8	MTL7	04/10/03
Nitrate	EPA 353.2	NIB1	04/10/03
Nitrite	EPA 353.2	NIIB4	06/26/02
Orthophosphate	EPA 365.1	NIIB5	04/10/03
Preliminary Filtration	SM 3030B	PREP1	12/24/03
Radium 226	EPA 903.1	RADIO	04/10/03
Radium 228	EPA 904	RADIO	04/10/03
Residue, Filterable (Tds)	SM 2540C	NIIA8	04/10/03
Selenium	EPA 200.8	MTL7	04/10/03
Silica	EPA 200.7	MTL3	04/10/03
Silver	EPA 200.8	MTL7	04/10/03
Sodium	EPA 200.7	MTL3	04/10/03
Specific Conductance	SM 2510B	NIA7	04/10/03
Strontium	EPA 200.7	MTL3	04/10/03
Sulfate	EPA 300.0	NIIIA1	04/10/03

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AZ License: AZ0102 **Lab Name: ACZ Laboratories, Inc.**

Program SDW

Parameter	EPA Method	Billing Code	Cert Date
Thallium	EPA 200.8	MTL7	04/10/03
Turbidity, Ntu: Nephelometric	EPA 180.1	NIA9	04/10/03
Uranium	EPA 200.8	MTL7	04/13/05
Zinc	EPA 200.7	MTL3	04/10/03

Total Licensed Parameters in this Program: 45

Program WW

Parameter	EPA Method	Billing Code	Cert Date
Acidity	SM 2310B	NIIA1	06/26/02
Alkalinity, Total	SM 2320B	NIA1	06/26/02
Aluminum	EPA 200.7	MTL3	10/16/95
Aluminum	EPA 200.8	MTL7	04/12/04
Ammonia	EPA 350.1	NIIB1	05/01/92
Antimony	EPA 200.7	MTL3	05/09/02
Antimony	EPA 200.8	MTL7	02/24/97
Arsenic	EPA 200.7	MTL3	05/09/02
Arsenic	EPA 200.8	MTL7	02/24/97
Barium	EPA 200.7	MTL3	10/16/95
Barium	EPA 200.8	MTL7	02/24/97
Base/Neutrals And Acids Excluding Pesticides	EPA 625	SOC16	05/12/03
Beryllium	EPA 200.7	MTL3	10/16/95
Beryllium	EPA 200.8	MTL7	02/24/97
Biochemical Oxygen Demand	SM 5210B	DEM1	05/09/07
Boron	EPA 200.7	MTL3	05/01/92
Bromide	EPA 300.0	NIIIA1	09/27/01
Cadmium	EPA 200.7	MTL3	10/16/95
Cadmium	EPA 200.8	MTL7	02/24/97
Calcium	EPA 200.7	MTL3	05/25/94
Chemical Oxygen Demand	EPA 410.4	DEM3	05/01/92
Chloride	EPA 300.0	NIIIA1	05/25/94
Chloride	SM 4500-CL E	NIA2	05/09/07
Chromium Total	EPA 200.7	MTL3	10/16/95
Chromium Total	EPA 200.8	MTL7	02/24/97
Chromium, Hexavalent	SM 3500-CR D	MTL8	05/09/02
Cobalt	EPA 200.7	MTL3	10/16/95
Cobalt	EPA 200.8	MTL7	02/24/97
Copper	EPA 200.7	MTL3	10/16/95
Copper	EPA 200.8	MTL7	02/24/97
Cyanide, Total	EPA 335.4	MISC7	05/08/07
Fluoride	EPA 300.0	NIIIA1	05/09/02
Fluoride	SM 4500-F C	NIB3	05/09/02

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AZ License: AZ0102 **Lab Name: ACZ Laboratories, Inc.**

Program WW

Parameter	EPA Method	Billing Code	Cert Date
Gross Alpha	EPA 900	RADIO	04/10/03
Gross Beta	EPA 900.0	RADIO	04/10/03
Hardness	SM 2340B	NIA5	01/12/06
Hydrogen Ion (Ph)	SM 4500-H B	NIA6	05/09/07
Iron	EPA 200.7	MTL3	10/16/95
Kjeldahl Nitrogen	EPA 351.2	NIIB3	05/09/02
Lead	EPA 200.7	MTL3	10/16/95
Lead	EPA 200.8	MTL7	02/24/97
Lithium	EPA 200.7	MTL3	04/10/03
Magnesium	EPA 200.7	MTL3	05/25/94
Manganese	EPA 200.7	MTL3	10/16/95
Manganese	EPA 200.8	MTL7	02/24/97
Mercury	EPA 1631E	MTL10	04/10/03
Mercury	EPA 245.1	MTL5	10/16/95
Molybdenum	EPA 200.7	MTL3	10/16/95
Molybdenum	EPA 200.8	MTL7	02/24/97
Nickel	EPA 200.7	MTL3	10/16/95
Nickel	EPA 200.8	MTL7	02/24/97
Nitrate-Nitrite (As N)	EPA 353.2	NIB1	05/01/92
Nitrite	EPA 353.2	NIIB4	05/09/07
Oil And Grease, Tph	EPA 1664A	MISC6	12/05/06
Orthophosphate	EPA 365.1	NIIB5	05/01/92
Phenols	EPA 420.4	MISC8	05/09/07
Phosphorus Total	EPA 365.1	NIIB6	05/01/92
Potassium	EPA 200.7	MTL3	05/25/94
Purgeables	EPA 624	VOC8	05/12/03
Radium 226	EPA 903.1	RADIO	04/10/03
Residue Filterable	SM 2540C	NIA8	12/05/06
Residue Nonfilterable	SM 2540D	NIIA5	12/05/06
Residue Total	SM 2540B	NIIA4	12/05/06
Residue Volatile	EPA 160.4	NIIA7	05/01/92
Residue, Settleable Solids	SM 2540F	NIIA6	05/01/92
Selenium	EPA 200.7	MTL3	05/09/02
Selenium	EPA 200.8	MTL7	02/24/97
Selenium	SM 3114B	MTL6	05/09/02
Silica, Dissolved	EPA 200.7	MTL3	05/01/92
Silver	EPA 200.7	MTL3	10/16/95
Silver	EPA 200.8	MTL7	02/24/97
Sodium	EPA 200.7	MTL3	05/25/94
Specific Conductance	SM 2510B	NIA7	05/24/07
Strontium	EPA 200.7	MTL3	05/09/02

Arizona Department of Health Services
Office of Laboratory Licensure, Certification & Training
250 North 17th Avenue, Phoenix, AZ 85007

Page: 6

Wednesday, June 27 2007

AZ License: AZ0102 **Lab Name: ACZ Laboratories, Inc.**

Program WW

Parameter	EPA Method	Billing Code	Cert Date
Sulfate	EPA 300.0	NIIIA1	05/25/94
Sulfate	SM 4500-SO4 D	NIB3	05/18/05
Thallium	EPA 200.8	MTL7	02/24/97
Tin	EPA 200.7	MTL3	05/09/02
Total Organic Carbon	SM 5310B	MISC1	05/09/07
Turbidity	EPA 180.1	NIA9	05/01/92
Uranium	EPA 200.8	MTL7	02/24/97
Vanadium	EPA 200.7	MTL3	10/16/95
Vanadium	EPA 200.8	MTL7	02/24/97
Zinc	EPA 200.7	MTL3	10/16/95
Zinc	EPA 200.8	MTL7	02/24/97

Total Licensed Parameters in this Program: 85

Instruments	Quantity	Date
GAS CHROMATOGRAPH	4	05/25/94
GAS CHROMATOGRAPH/MASS SPECTROMETER	3	05/09/02
RADIATION COUNTING INSTRUMENT	3	07/11/01
INDUCTIVELY COUPLED PLASMA/MASS SPECTROMETER	3	07/11/01
AUTOMATED AUTOANALYZER	2	05/16/07
ION CHROMATOGRAPH	1	05/09/07
INDUCTIVELY COUPLED PLASMA SPECTROMETER	1	04/04/06
ATOMIC ABSORPTION SPECTROPHOTOMETER	1	05/09/07
MERCURY ANALYZER	1	05/09/02

Softwares
ENVIROQUANT - GCMS
AGILENT - ICP/MS
LEEMAN MERCURY ANALYZER
TJA TRACE-ICP
ENVIROQUANT - HPLC
BERTHOLD LB770 - COUNTER FOR RADIOACTIVITY
TENNELEC LB 5100 - COUNTER FOR RADIOACTIVITY
CANBERRA XLB - COUNTER FOR RADIOACTIVITY

APPENDIX D

ACZ Laboratories, Inc.
2773 Downhill Drive
Steamboat Springs, CO 80487

DEPARTMENT REPORT FOR MANAGEMENT REVIEW OF THE QUALITY SYSTEM

Department: _____ Quarter Ending: _____

OPERATIONS: EVALUATE ALL OPERATIONS (FROM LOG-IN –REPORTING) AS IT PERTAINS TO THE DEPARTMENT

What operations-related issues within the company, including client feedback, have the department encountered during the last quarter? Were any of the issues reoccurring? What actions were taken to resolve the issues? What actions can be taken to reduce/eliminate these issues in the future?

RESOURCES & PERSONNEL: EVALUATE RESOURCES & PERSONNEL AS THEY PERTAIN TO THE DEPARTMENT

Did the department have adequate resources (supplies, instrumentation, facilities, etc.) and properly trained staff for the volume of work? What resources must be available for the work expected next quarter? What obstacles do employees within the department routinely experience that hinder efficiency/productivity?

QUALITY ASSURANCE & QUALITY CONTROL: EVALUATE QA/QC AS THEY PERTAIN TO THE DEPARTMENT

Are any failed QC indicators reoccurring? If so, describe. Were any changes to policies/procedures implemented during the past quarter as a result of corrective and/or preventive actions? If yes, were they effective? If no, what changes would be effective?

MISC: PROVIDE ADDITIONAL FEEDBACK

FRMQA041.08.06.02

ACZ Laboratories, Inc.
2773 Downhill Drive
Steamboat Springs, CO 80487

MANAGEMENT REVIEW OF THE QUALITY SYSTEM

DATE OF REVIEW : _____

Attendees:

SUITABILITY OF POLICIES & PROCEDURES :

Do ACZ's policies and procedures accurately reflect management's Quality Policy Statement? Are ACZ's policies and procedures effective? If no, what changes are necessary?

REVIEW OF STAFF RESOURCES & TRAINING:

Did ACZ have appropriate staff to handle the volume of work received during the past quarter? Was all staff properly trained and was training documented before a new analyze independently analyzed client samples?

REVIEW OF INSTRUMENTATION / EQUIPMENT, SUPPLIES & CONSUMABLES :

Did ACZ have necessary and properly functioning instrumentation and equipment to perform the volume of work received last quarter? Did ACZ have adequate supplies and consumables on hand to perform the volume of work?

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Steamboat Springs, CO 80487

MANAGEMENT REVIEW OF THE QUALITY SYSTEM

REVIEW OF RECENT INTERNAL AUDITS:

Did the QA/QC department adhere to its internal audit schedule? Did any department(s) have significant issues? Were corrective actions completed properly and within the agreed time frame? Was follow-up completed for all corrective actions?

REVIEW OF RECENT EXTERNAL AUDITS:

Did the audit report(s) cite any repeat deficiencies? Did any department(s) have significant issues? Were all corrective actions completed properly and within the agreed time frame? Was follow-up completed for all corrective actions?

REVIEW OF RECENT PROFICIENCY TESTING STUDIES:

A) Were all analyte values reported for each study?

WP	NA ☐	Yes ☐	No ☐
WS	NA ☐	Yes ☐	No ☐
RAD	NA ☐	Yes ☐	No ☐
Soil/UST	NA ☐	Yes ☐	No ☐

B) Did ACZ passed 2 out of the 3 most recent PT studies for each analyte?

WP	NA ☐	Yes ☐	No ☐
WS	NA ☐	Yes ☐	No ☐
RAD	NA ☐	Yes ☐	No ☐
Soil/UST	NA ☐	Yes ☐	No ☐

C) Were corrective actions completed within the agreed time frame for all studies?

WP	NA ☐	Yes ☐	No ☐
WS	NA ☐	Yes ☐	No ☐
RAD	NA ☐	Yes ☐	No ☐
Soil/UST	NA ☐	Yes ☐	No ☐

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MANAGEMENT REVIEW OF THE QUALITY SYSTEM

REVIEW OF RECENT CORRECTIVE / PREVENTATIVE ACTIONS:

What corrective / preventive actions were implemented during the past quarter? What trends are apparent? Were corrective actions completed within the agreed time frame? Have changes resulting from corrective / preventive actions been implemented? Are they effective?

REVIEW OF CLIENT COMPLAINTS/FEEDBACK:

Did ACZ receive client feedback (positive or negative) during the past quarter? For complaints received, did ACZ adhere to its client complaint policy? Were complaints handled in a manner satisfactory to the client? Were all complaints resolved? What quality indicators are repeated?

REVIEW OF CHANGES IN VOLUME / TYPE OF WORK:

Did ACZ experience a significant change in volume and/or type of work last quarter? How did we do? What improvements can be made? Is ACZ prepared for volume and/or type of work expected next quarter?

REVIEW OF ETHICS PROGRAM:

Were all Ombudsman issues addressed in a timely manner? Were any data intergrity issues/concerns brought to the attention of the Ombudsman issues or dilemmas? Were all employees trained on ACZ's Ethics and Proactive Prevention Program (SOPAD039)? Was follow-up training conducted within the time frame stated in SOPAD039?

ACZ Laboratories, Inc.
2773 Downhill Drive
Steamboat Springs, CO 80487

MANAGEMENT REVIEW OF THE QUALITY SYSTEM

REVIEW OF DEPARTMENTS:

Geochemistry

Clean Room / Prep

Inorganic Inst / Prep

Wet Chemistry Instrument

Wet Chemistry Manual

Organics

Radiochemistry

Log-In

Client Services (Sales / PMs)

Document Control

Information Systems

APPENDIX E REFERENCES UTILIZED BY ACZ

- "NELAC Standards," National Environmental Laboratory Accreditation Conference, (current version).
- "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act," USEPA, Federal Register Vol. 67, No. 205, October 23, 2002.
- "Manual for the Certification of Laboratories Analyzing Drinking Water," USEPA, (current version).
- "Methods for the Chemical Analysis of Water and Wastes," USEPA, EPA-600/4-79-020, March 1983.
- "Test Methods for Evaluating Solid Waste," USEPA, SW-846 Third Edition, Update III, December 1996.
- "Guidelines in Establishing Test Procedures for the Analysis of Wastewater Pollutants," Code of Federal Regulations 40, Parts 136, 141, 143.
- "Quality Assurance of Chemical Measurements," Taylor, J., Lewis Publishers, Michigan, 1987
- "Annual Book of Standards, Water Analysis," ASTM, 1989.
- "Quality Control in Analytical Chemistry," Kateman, G., Vol. 60, 1985.
- "Principles of Environmental Analysis, Analytical Chemistry," Keith, L.H., et al., Vol. 55, 1983.
- "Handbook for Analytical Quality Control in Water and Wastewater Laboratories," USEPA, 1979.
- "Guidance for the Data Quality Assessment: Practical Methods for Data Analysis," USEPA, EPA 600/R-96-084, July 2000.
- "Methods for the Determination of Metals in Environmental Samples," USEPA, EPA 600/4-91-010, June 1991.
- "Methods for the Determination of Metals in Environmental Samples," Supplement I [to EPA 600/4-91-010], USEPA, EPA 600/R-94-111, May 1994.
- "Methods for the Determination of Inorganic Substances in Environmental Samples," USEPA, EPA 600/R-93-100, August 1993.
- "Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater," USEPA, EPA 821/B-96-005, December 1996.
- "Prescribed Procedures for Measurement of Radioactivity in Drinking Water," USEPA, EPA 600/4-80-032. August 1980.
- "Determination of Lead-210, Thorium, Plutonium and Polonium-210 in Drinking Water: Methods 909, 910, 911, 912," 01A0004860 (Region 1 Library), March 1982.
- "Good Automated Laboratory Practices - Principles and Guidance to Regulations for Ensuring Data Integrity in Automated Laboratory Operations" USEPA, 2185, 1995.

APPENDIX F DEFINITIONS OF TERMS

Acceptance Criteria: specified limits places on characteristics of an item, process, or service defined in requirement documents.

Accreditation: verification by a competent, disinterested, third party that a laboratory possesses the capability to produce accurate test data, and that it can be relied upon in its day-to-day operations to maintain high standards of performance.

Accuracy: the degree of agreement between an observed value and an accepted reference value. Accuracy includes a combination of random error (precision) and systematic error (bias) components which are due to sampling and analytical operations; a data quality indicator.

Analytical Spike (AS): an aliquot of client sample to which a known amount of target analyte is added and that demonstrates the absence or presence of interference in the matrix. The AS is prepared exactly the same way as the LFB, only spiking into sample instead of reagent blank, and is not prepped (digested) prior to analysis. The AS may also be referred to as a post-digestion spike.

Analytical System: the combination of events, techniques, and procedures used to generate analytical results.

Audit: a systematic evaluation to determine the conformance to quantitative and qualitative specifications of some operational function or activity.

Batch: environmental samples that are prepared and/or analyzed together with the same process and personnel, using the same lot(s) of reagents. A **preparation batch** is composed of one to 20 environmental samples of the same matrix, meeting the above criteria and with a maximum time between the start of processing of the first and last sample in the batch to be 24 hours. An **analytical batch** is composed of 20 or less prepared environmental samples (extracts, digestates or concentrates) that are analyzed together as a group.

All required QC samples must be prepared and/or analyzed with each batch at the frequency required by the method, even if there are less than 20 client samples in the batch. If the workgroup has more than 20 samples, then sufficient batch QC must be analyzed for additional samples. Every batch of environmental samples is assigned a unique (i.e. traceable) six-digit numerical identifier called the LIMS Workgroup number.

Blank: a sample that has not been exposed to the analyzed sample stream utilized to monitor contamination during sampling, transport, storage, or analysis. The blank is subjected to the usual analytical and measurement process to establish a zero baseline or background value and is sometimes used to adjust or correct routine analytical results. See also Equipment Blank, Field Blank, Instrument Blank, Method Blank, Reagent Blank. Refer to section 11.3 for types of blanks.

Blind Sample: a sub-sample for analysis with a composition known to the submitter. The analyst or laboratory may know the identity of the sample but not its composition. It is used to test the analyst or laboratory's proficiency in the execution of the measurement process.

Calibration: to determine, by measurement or comparison with a standard, the correct value of each scale reading on a meter, instrument, or other device. The levels of applied calibration standard should bracket the range of planned or expected sample measurements.

Calibration Curve: the graphical relationship between the known values, such as concentrations, or a series of calibration standards and their instrument responses.

Case Narrative: Additional documentation provided in the client report that describes any abnormalities and deviations that may affect the analytical results and summarizes any issues in the data package that need to be highlighted for the data user to help them assess the usability of the data.

Chain of Custody Form: a legal record that documents the possession of the samples from the time of collection to receipt in the laboratory. This record generally includes: the number and types of containers; the mode of collection; the collector; time of collection; preservation; and requested analyses.

Continuing Calibration Blank (CCB): the same solution as the calibration blank, it detects baseline drift in the calibration of the instrument. When specified by the method, analyze a CCB immediately after each CCV, including the final CCV.

Continuing Calibration Verification (CCV): a solution of method analytes of known concentrations used to confirm the continued calibration of the instrument. The CCV is analyzed at the frequency indicated in the test SOP.

Corrective Action: the action taken to eliminate the causes of an existing nonconformity, defect, or other undesirable situation in order to prevent recurrence.

Data Audit: a qualitative and quantitative evaluation of the documentation and procedures associated with environmental measurements to verify that the resulting data are of acceptable quality (i.e. the data meet specified acceptance criteria)

Data Reduction: the process of transforming raw data by arithmetic or statistical calculations, standard curves, concentration factors, etc., and collation into a more useable form.

Demonstration of Capability (DOC): a procedure to establish the ability of the analyst to generate acceptable accuracy [and precision, if applicable].

Detection Limit: the lowest concentration or amount of target analyte that can be identified, measured, and reported with confidence that the analyte concentration is not a false positive value (see Method Detection Limit).

Document Control: the act of ensuring that documents (and revisions thereto) are proposed, reviewed for accuracy, approved for release by authorized personnel, distributed properly, and controlled to ensure use of the correct version at the location where the prescribed activity is performed.

Equipment Blank: a sample of analyte-free media that has been used to rinse common sampling equipment to check the effectiveness of decontamination procedures.

False Positive (Type I or alpha error): concluding that a substance is present when it truly is not.

False Negative (Type II or beta error): concluding that a substance is not present when it truly is.

Field Blank: a blank prepared in the field by filling a clean container with Type I water and appropriate preservative, if any, for the specific sampling activity being undertaken.

Holding Time (Maximum Allowable Holding Time): the maximum time that samples may be held prior to analysis and still be considered valid or not compromised.

Initial Calibration Blank (ICB): a solution identical to the calibration blank and confirms the absence of background contamination in the calibration blank. When specified by the method, an ICB is analyzed immediately after the ICV.

Initial Calibration Verification (ICV): a solution of method analytes of known concentrations intended to determine the validity of the instrument calibration. The ICV must be analyzed immediately after each calibration and must be prepared from a source independent of the calibration standards, preferably purchased from a different manufacturer.

Instrument Blank: an aliquot of Type I water or solvent processed through the instrument steps of the measurement process; used to determine presence of instrument contamination.

Internal Standard (IS): a known amount of standard added to a test portion of a sample as a reference for evaluating and controlling the precision and bias of the applied analytical method.

Laboratory Control Sample (however named, such as laboratory fortified blank, spiked blank, or QC check sample): a sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes. It is generally used to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system.

Laboratory Fortified Blank (LFB): a reagent blank spiked with a known concentration of analyte. The LFB is analyzed exactly like a sample and determines whether the methodology is in control and whether the laboratory is capable of making accurate and precise measurements.

Legal Chain of Custody Protocols: procedures employed to record the possession of samples from the time of sampling until analysis and are performed at the special request of the client. These protocols include the use of a Chain of Custody form that documents the collection, transport, and receipt of compliance samples by the laboratory. In addition, these protocols document all handling of the samples within the laboratory.

Linear Dynamic Range (LDR): concentration range over which the instrument response to analyte is linear.

Matrix Duplicate (DUP): a second aliquot of a client sample that is prepared and analyzed in the same manner as all other samples in the same workgroup. The DUP demonstrates the precision of the method.

Matrix Spike (spiked sample or fortified sample): a sample prepared by adding a known amount of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. Matrix spikes (MS or LFM) are used, for example, to determine the effect of the matrix on a method's recovery efficiency.

Matrix Spike Duplicate: a second replicate matrix spike prepared in the laboratory and analyzed to obtain a measure of the precision of the recovery for each analyte.

Maximum Contamination Limit (MCL): the numerical value expressing the maximum permissible level of contaminant in water that is delivered to any user of a public water system.

May: denotes permitted action, but not required action.

Method Blank: a sample of a matrix similar to the batch of associated samples (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as client samples through all steps of the analytical procedures, and in which no target analytes or interferences are present at concentrations that impact the analytical results for the sample analyses.

Method Detection Limit: the minimum concentration of an analyte, in a given fortified matrix, that can be measured and reported with 99% confidence that the concentration is greater than zero.

Must: denotes a requirement.

The NELAC Institute (TNI): a voluntary organization of state and federal environmental officials and interest groups purposed primarily to establish mutually acceptable standards for accrediting environmental laboratories.

Outlier (Statistical): an observation or data point that deviates markedly from other members of the population.

Performance Audit: the routine comparison of independently obtained qualitative and quantitative measurement system data with routinely obtained data in order to evaluate the proficiency of an analyst or laboratory.

Precision: the degree to which a set of observations or measurements of the same property, obtained under similar conditions, conform to themselves; a data quality indicator. Precision is usually expressed as standard deviation, variance or range, in either absolute or relative terms.

Preservation: refrigeration and/or reagents added at the time of sample collection (or later) to maintain the chemical and/or biological integrity of the sample.

Protocol: a detailed written procedure [SOP] for laboratory operation that must be strictly followed.

Quality Assurance: an integrated system of activities involving planning, quality control, quality assessment, reporting and quality improvement to ensure that a product or service meets defined standards of quality.

Quality Control: the overall system of technical activities whose purpose is to measure and control the quality of a product or service so that it meets the needs of users.

Quality Manual [QAP]: a document stating the management policies, objectives, principles, organizational structure and authority, responsibilities, accountability, and implementation of an agency, organization, or laboratory, to ensure the quality of its product and the utility of its product to its users.

Quality System: a structured and documented management system describing the policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an organization for ensuring quality in its work processes, products, and services. The quality system provides the framework for planning, implementing, and assessing work performed by the organization and for carrying out required quality assurance and quality control.

Quantitation Limit [Reporting Limit, Practical Quantitation Limit]: level, concentration, or quantity of a target variable (i.e. target analyte) below which data is reported as estimated. The quantitation limit may or may not be statistically determined, or may be an estimate that is based upon analyst experience or judgment.

Raw Data: any original factual information from a measurement activity or study recorded in a laboratory notebook, worksheets, records, memoranda, notes, or exact copies thereof that are necessary for reconstructing and evaluating the report of the activity or study.
Reagent Blank (method reagent blank): a sample consisting only of Type I water and reagent(s) without the target analyte(s) or sample matrix, introduced into the analytical procedure at the appropriate point and carried through all subsequent steps to determine the contribution of the reagents and of the involved analytical steps.

Reference Method: a method of known and documented accuracy and precision issued by an organization recognized as competent to do so (EPA, etc.). The reference method is included on the client report.

Sample Tracking: procedures employed to record the possession of the samples from the time of sampling until analysis, reporting, and archiving. These procedures include the use of a Chain of Custody form that documents the collection, transport, and receipt of compliance samples to the laboratory. In addition, access to the laboratory is limited and controlled to protect the integrity of the samples.

Sensitivity: the capability of a method or instrument to discriminate between measurement responses representing different levels (i.e. concentrations) of a variable of interest.

Shall: denotes a requirement that is mandatory whenever the criterion for conformance with the specification requires that there is no deviation. This does not prohibit the use of alternative approaches or methods for implementing the specification so long as the requirement is fulfilled.

Should: denotes a guideline of recommendation whenever noncompliance with the specification is permissible.

Signal to Noise Ratio (S/N): a dimensionless measure of the relative strength of an analytical signal (S) to the average strength of the background instrumental noise (N) for a particular sample.

Spike: a known amount of target analyte added to a blank sample or client sub-sample; used to determine the recovery efficiency or for other quality control purposes.

Standard Deviation: the measure of the degree of agreement (precision) among replicate analyses of a sample. The population standard deviation (n degrees of freedom) should only be used for more than 25 data points; otherwise, when referenced, standard deviation implies sample standard deviation (n-1 degrees of freedom).

Standard Operating Procedure (SOP): a written document which details the manner in which an operation, analysis, or action is performed. The techniques and procedures are thoroughly prescribed in the SOP and are the accepted process for performing certain routine or repetitive tasks.

Supervisor [however named]: the individual designated as being responsible for a particular area or category of scientific analysis. This responsibility includes direct day-to-day supervision of technical employees, supply and instrument adequacy and upkeep, quality assurance/quality control duties and ascertaining that technical employees have the required balance of education, training, and experience to perform the required analyses.

Surrogate (SURR): a substance with properties that mimic the analyte of interest. It is unlikely to be found in environmental samples and is added to them for quality control purposes.

Test Method: adoptions of a scientific technique for a specific measurement problem, as documented in a laboratory SOP or published by a recognized authority.

Traceability: the property of a result of a measurement whereby it can be related to appropriate standards, generally international or national standards, through an unbroken chain of comparisons.

APPENDIX G TECHNICAL DIRECTORS

Name	Department	Degree
James Rhudy	Organics	BA, Molecular Biology; BA, Biochemistry
Steve Pulford	Metals, Clean Room	BS, Chemical Engineering
Billy Grimes	Metals, Inorganic Inst, Wet Chemistry Manual	BA, Biology
Carol Poirot	Wet Chemistry Instrument, Radiochemistry	BS, Physics; MS, Material Sciences
Lee Thompson	Geochemistry	BS, Microbiology

APPENDIX F.4

QUALITY ASSURANCE MANUAL FOR TURNER LABORATORIES, INC.

Quality Assurance Plan

Revision #19

March 17, 2008

Turner Laboratories, Inc.
2445 N. Coyote Drive
Tucson, Arizona
(520) 882-5880 / (520) 882-9788

Arizona License #AZ0066

Copy #: _____

Issued to: _____

Date Issued: _____

Approved by: Shari Bauman
Shari L. Bauman, Laboratory Director — 3/25/08 Date

Nancy D. Turner
Nancy D. Turner, President — 3/25/08 Date

UNCONTROLLED

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Section 1 Introduction

Turner Laboratories, Inc. (Turner Laboratories) is a professional, independent, full-service laboratory that performs chemical and microbiological testing on a wide variety of sample matrices, including ground and surface water, wastewater, soils, sediments, sludges, industrial and hazardous wastes, and other materials.

This Quality Assurance Plan (QAP) has been developed to provide information on the general procedures, practices, and methods of compliance that Turner Laboratories implements to assure that the highest achievable standards are met.

The information in this QAP has been organized to conform to the requirements specified in the Arizona Administrative Register, A.A.C. R9-14-601 et seq. (December 2006), and the Manual for the Certification of Laboratories Analyzing Drinking Water, 5th Edition, EPA 815-R-05-004, (January 2005).

Section 1.1 Quality Policy

It is the policy of Turner Laboratories to ensure that all analytical data generated and processed will be scientifically sound, legally defensible, of known and documented quality, and will accurately reflect the materials tested. This is accomplished by implementing quality control procedures that are monitored and assessed during the entire analytical process. Personnel shall be fully qualified to perform the analyses through the combination of education, training and experience. The equipment and supplies shall be obtained as needed to provide for the utilization of established technology and methodology. The performance of personnel and equipment will be continuously monitored and documented. Corrective action must be implemented and documented immediately if a quality problem arises.

Implementation of this QAP is the responsibility of all employees within Turner Laboratories.

Section 1.2 Quality System

The purpose of the Quality Assurance (QA) program at Turner Laboratories is to ensure that our clients are provided with analytical data that is scientifically sound, legally defensible, and of known and documented quality. The concept of Quality Assurance can be extended to the general business operations of Turner Laboratories, and is expressed in the vision statement, issued under the authority of the President.

The objective of the quality assurance program at Turner Laboratories is to assure the accuracy and precision of all analytical results. Turner Laboratories has established specific quality assurance objectives for accuracy and precision that is used to determine the acceptability of the data. These objectives are method and matrix dependant and are provided in the standard operating procedures. Verification that these objectives have been achieved is recorded in the supporting documentation (raw data) and/or in the final report.

Section 2.0 Organization

Section 2.1 Facility

Turner Laboratories features over 8,400 square feet of laboratory equipped with state-of-the-art analytical and administrative support equipment. The laboratory has been designed and constructed to provide safeguards against cross-contamination of samples and is arranged according to work function, which enhances the efficiency of analytical operations. The ventilation system has been specially designed to meet the needs of the analyses performed in each work space. Turner Laboratories also ensures that good housekeeping and facilities maintenance are performed.

In addition, the laboratory work areas are designed for safe and efficient handling of a variety of sample types. These specialized areas (and access restrictions) include:

- Shipping and Receiving
- Sample Management Office, including controlled-access sample storage areas
- Metals Sample Preparation Area
- Metals Laboratory: ICP-AES, GFAA, CVAA
- Water Chemistry & General Chemistry Laboratory
- Semi-Volatile Organics Sample Preparation Area
- Semi-Volatile Organics Laboratory: GC, GC/MS, GC/ECD
- Volatile Organics Laboratory: GC/MS (2)
- Microbiology Laboratory
- Laboratory Management, Client Service, Report Generation and Administration
- Data Archival, Data Review and support functions areas
- Information Technology (IT) and Laboratory Information Management System (LIMS)

In addition, the designated areas for sample receiving, refrigerated sample storage, dedicated sample container preparation and shipping provide for the efficient and safe handling of a variety of sample types. The laboratory is equipped with state-of-the-art analytical and administrative support equipment. The equipment and instrumentation are appropriate for the procedures in use. Appendix C lists all the major analytical equipment illustrating the laboratory's overall capabilities and depth.

Turner Laboratories Contingency Plan consists of, but not limited to the following:

- Analysis of samples on back-up instrumentation
- Subcontract samples to a certified laboratory
- Ensure that qualified staff are available to perform the necessary work

Section 2.2 Responsibilities

Turner Laboratories is committed to the excellence of data quality and providing an environment that fosters such quality. Every person employed at Turner Laboratories is responsible for improving and maintaining the quality of our analytical services. Responsibilities of key positions within the laboratory are described below. A chart showing the laboratory organization and lines of responsibility is included in Appendix A.

- The **Laboratory Director** has overall responsibility for all elements of the laboratory's technical operations, implementation of the QAP, and ensuring that all data reported by the laboratory meets the objectives of the QAP. This laboratory director or his/her designee performs a final quality assurance review on all final reports issued by the laboratory.

- The **Inorganics Laboratory Supervisor** and the **Organics Laboratory Supervisor** supervise and train the analysts. They also ensure that the quality of all data reported by their laboratories meets the objectives of the QAP, and they ensure the accuracy, completeness, and timely review of standard operating procedures (SOP) for all procedures used.

- The **Quality Assurance Officer** is responsible for the implementation of the QAP in the laboratory. The quality assurance officer reports directly to the laboratory director and has the following general duties: ensures that the QAP is up to date and reflects current laboratory policy; ensures that SOPs are completed and reviewed for all test methods; performs regular, random reviews of data generated by the laboratory; ensures that internal audits of the laboratory are conducted as specified in the QAP; keeps abreast of regulatory changes and ensures that the laboratory remains in compliance; ensures that control charting of QC data occurs and that limits are updated regularly, where required; and, ensures that personnel complete the proper documentation for tests they perform (i.e. MDL studies, initial demonstration of capabilities, etc.).

- The **Sample Management Officer** ensures that sample management procedures meet our QAP objectives and ensures the accuracy, completeness, and timely review of SOPs for all sample management procedures. The sample management officer is responsible for the login of samples into LIMS.

- The **Administrative Assistant** supervises and schedules the work of the field sampling personnel. This employee also maintains contracts and technical records, and holds selected project management responsibilities.

- **Analysts** perform testing according to established SOPs and methods and ensure that the data quality meets specified criteria.

All analysts are required to provide a summary of their education and experience relevant to the compliance testing they will perform. The summaries are retained in their personnel training record and are subject to inspection by regulatory agencies. Documentation must include academic training, experience, specific qualifications for the position, certifications, and other specialized training.

Section 3 Personnel Qualifications

3.1 Personnel Training

Qualifications of personnel are retained in personnel training files. Documentation must include academic training, experience, specific qualifications for the position, certifications, and other specialized training.

The employees' quality assurance orientation must be performed at the start of employment. The training is documented in the personnel training file. The orientation includes the review, but not limited, to the following:

- Orientation to the facility and facility policies;
- Review of the Turner Laboratories' Safety Manual;
- Review of the Quality Assurance Plan (QAP); and
- Review of the data integrity, applicable methods and Standard Operating Procedures (SOP) for the testing to be performed.

Before reporting results, the analyst must document that he/she has completed the following:

- Training in the use of the instrumentation and appropriate techniques used for compliance testing. The training may be in-house, classroom experience, or manufacturer's training. Records must indicate the place, date and length of training;
- Completion of all activities as required in the method criteria for initial demonstration of capability;
- Successful analysis of unknown quality control sample and/or proficiency evaluation sample (sample may be prepared in-house as a blind sample to the analyst or may be purchased from an external source).

Documentation of these training requirements are maintained in the employee's personnel training record, as outlined in the Turner Laboratories Policy Statement, Policy No. 4 pertaining to the maintenance of personnel training records.

Section 3.2 Laboratory Ethics

One of the most important aspects of the success of Turner Laboratories is the emphasis placed on the integrity of the data provided and services performed. To promote product quality, employees are required to comply with certain standards of conduct and ethical practices. The following examples of Turner Laboratories' policy are representative of these standards, include but not limited to the following:

- Under no circumstances is the willful act of fraudulent manipulation of analytical data condoned. Such acts are to be reported immediately to senior management for appropriate corrective action. Unless specifically required in writing by a client, alteration, deviation or omission of written contractual requirements is not permitted. Such changes must be in writing and approved by senior management.

- Falsification of data in any form will not be tolerated. While much analytical data is subject to professional judgment and interpretation, outright falsification, whenever observed or discovered, will be documented, and appropriate remedies and punitive measures will be taken toward those individuals responsible. Employee discipline is progressive in its severity and each situation is handled individually in that the discipline is designed to fit the circumstances. Potential disciplinary actions may include a verbal warning, written warning, a second written notice (more severe and more strongly worded than a warning), and suspension without pay, demotion, or termination.

- It is the responsibility of all Turner Laboratories employees to safeguard sensitive company and client information. The nature of our business and the well being of our company and of our clients is dependent upon protecting and maintaining proprietary company/client information. All information, data, and reports (except that in the public domain) collected or assembled on behalf of a client is treated as confidential. Information may not be given to third parties without the consent of the client. Unauthorized release of confidential information about the company or its clients is taken seriously and is subject to formal disciplinary action.

As part of this commitment, every employee at Turner Laboratories signs and abides by a fraud-disclosure form that reads as follows:

> "If I should become aware of any of the following conditions or events by anyone during my employment at Turner Laboratories, I agree to notify the principals of Turner Laboratories immediately:
>
> 1. Short-cutting of any procedural steps, or QA/QC falsification;
> 2. Altering data in any manner whatsoever;
> 3. Altering time records to avoid missed holding times;
> 4. Any condition that would, if known, result in the rejection of any analytical report by any regulatory agency - federal, state or local.
>
> "Should it become known that any information has been suppressed by any employee that could endanger the State operating license of Turner Laboratories or affect the ability to produce accurate scientific measurements, counsel will be retained by Turner Laboratories for possible legal action."

Turner Laboratories makes every attempt to ensure that employees are free from any commercial, financial, or other undue pressures that might affect their quality of work.

Section 3.3 Client Confidentiality

Turner Laboratories professional ethics require that each employee maintain the highest degree of confidentiality when handling client affairs. Turner Laboratories shall ensure that all client documents and test results are confidential. In order to maintain this professional confidence, no employee shall disclose client information to outsiders, including other clients or third parties and members of one's own family.

Turner Laboratories has instituted procedures for protecting client confidentiality. A unique internal control number is assigned to individual samples by the LIMS. The assigned number is the primary mechanism for tracking a given sample through the laboratory system.

Under no circumstance will outside requests for client material be fulfilled unless prior written permission is received from the client to the Laboratory Director.

All employees at Turner Laboratories have signed a confidentiality agreement form regarding the information provided in this section that reads as follows:

"If I become aware of any of the above mentioned events during my employment at Turner Laboratories, I agree to notify the principals of Turner Laboratories immediately. Should it become known that any information has been disclosed by an employee, the employee will be terminated and counsel will be retained by Turner Laboratories for possible legal action."

Section 4 Documents and Records

Section 4.1 Controlled Documents

Turner Laboratories has an established document control system that forms part of the quality system. Controlled documents are those documents and data that are required for the operation of the quality system. These documents must be controlled by being replaced in whole when revised. The controlled documents include, but are not limited to:

- Quality Assurance Plan (QAP)
- Standard Operating Procedures (SOPs)
- Instrument Logbooks
- Standard Preparation Logbooks
- Nonconformance/Corrective Action Documents
- Instrument Maintenance Logbooks

Copies of controlled documents that are released, such as the Quality Assurance Plan and Standard Operating Procedures will be marked "Uncontrolled" and are not numbered. The control of the controlled documents is documented in an access log.

Section 4.2 Document Signatures

Controlled documents must have approval signatures. The Quality Assurance Plan will have the signature of the President and Laboratory Director. The Standard Operating Procedures will have the signatures of the Laboratory Director, Quality Assurance Manager, and analyst. Final reports that are issued by the laboratory will have the signature of the laboratory director or his/her designee that performs a final quality assurance review.

Section 4.3 Document Review and Revisions

The QAP is reviewed on an annual basis unless regulatory change necessitates an earlier revision. The SOPs are reviewed on an annual basis. Other QA documents that may require revision are reviewed during internal QA audit and are revised as needed.

Any revisions to controlled QA documents are prepared by the Laboratory Director. The QA Manager will review the document. All changes to records are signed or initialed by the responsible staff. Corrections are indicated by on-line mark through with a signature or initials.

Section 4.4 Document Retention & Disposal

The original observations, calculations and derived data, calibration records, audit reviews and the client reports retained for a minimum of five (5) years. The files are achieved in boxes according to department, instrument and/or client with inclusive dates. After 5 years of archival (unless the client or contract specifies otherwise), eligible archives (not including SOPs or QAP) are purged and destroyed. Disposal of purged materials is accomplished by shredding/destruction of the material.

Turner Laboratories archiving system includes all of the following items for each set of analyses performed:

- Benchsheets describing sample preparation (if appropriate) and analysis;
- Instrument parameters (or reference to the data acquisition method);
- Sample analysis sequence;
- Instrument printouts, including chromatograms and peak integration reports for all samples, standards, blanks, spikes and reruns;

- Logbook ID number for the appropriate standards;
- Copies of report sheets submitted to the work request file; and
- Copies of Nonconformity and Corrective Action Reports, if necessary.

Individual sets of analyses are identified by analysis date and service request number. Since many analyses are performed with computer-based data systems, the final sample concentrations can be automatically calculated. If additional calculations are needed, they are written on the integration report or securely stapled to the chromatogram, if done on a separate sheet.

In the event that Turner Laboratories should go out of business or be bought by another company, all clients will be notified immediately. Client records will be handled by one of the following:

- If the client wishes to have control of their data, they will be given the original copies.
- If another company buys Turner Laboratories and the client wishes to have control of their data, they will receive the original copies and an exact copy (with proper documentation) will be retained by the purchaser. The purchaser will be responsible for retaining the data for the remainder of the applicable time.

Section 4.5 Computer Hardware & Software

Turner Laboratories utilizes the commercially purchased Omega Laboratory Information Management System (LIMS). The LIMS is a secure, password protected database. The Laboratory Director monitors the analytical activities and database performance. Changes to the LIMS are controlled by the Laboratory Director. The electronic instrument files, LIMS and server system are electronically backed-up on a routine basis.

Documentation is maintained to demonstrate the validity of the software. For software that performs numerical manipulations, the results are verified by either hand calculations or using another software program.

All purchased software must be used in accordance with the terms of its software license.

Section 5 Processes & Operations

Section 5.1 Sampling

The quality of analytical results depends largely upon the quality of procedures used to collect and transport samples. Turner Laboratories does not sample substances, materials or products for subsequent environmental testing under the accreditation program. Turner Laboratories recommends to their clients to follow appropriate methodology and regulations, such as the requirements specified in 40 CFR Part 136 or the US EPA's SW-846.

Turner Laboratories suggest to clients to consider the following:

- Sample matrix;
- Quantity of sample needed for testing;
- Type of container;
- Type of sample preservation;
- Transport time;
- Storage (holding) time; and
- Complete documentation for chain-of-custody purposes.

At the clients' request, Turner Laboratories provides the following:

- Sample containers with the appropriate preservatives as specified in the applicable standard operating procedure;
- Shipping containers;
- Chain-of-custody forms; and
- Custody seals.

Where obtaining sample aliquots from a submitted sample is carried out as part of a test method, Turner Laboratories follows the appropriate procedures and techniques to obtain representative sub samples. Any deviation from standard procedures is recorded on the data package.

Section 5.2 Handling of Samples

The chain-of-custody is a system for tracing the possession of a sample from collection to final disposition. This system is implemented to protect the interests of the laboratory and the client. Changes to the sample custody must be recorded on a chain-of-custody form and must accompany the sample at all times.

Turner Laboratories requires clients to submit a completed chain-of-custody form with each sample or group of samples for analysis.

The chain-of-custody program consists of the following:

- The established protocol for sampling will be followed for all chain-of-custody samples. Sample containers and preservatives should adhere to EPA and/or other appropriate requirements;

- At the time of sampling, the sampler completes the information on the chain-of-custody form, including date, time, client's name, sample name, sample matrix, number of containers, required tests, and signature;

- At all times after sampling, the sample must be in either the actual physical possession of the currently responsible individual or under laboratory control;

- When a client delivers the sample to Turner Laboratories, Turner Laboratories staff documents all subsequent changes of possession that occurs;

- Responsibility for a particular sample concludes for one party at the point when delivery is documented to the next responsible party (the receiving laboratory or commercial carrier); and

- If the sample is to be transported to another laboratory (for testing not performed by Turner Laboratories), the carrier is selected based on holding time criteria. The delivery is documented and transfer of possession to the carrier on the chain-of-custody form or by retention of applicable shipping documents.

Complete sample handling procedures are available in Turner Laboratories SOP SC-1.

Section 5.3 Sample Receipt and Management

Established standard operating procedures for receiving samples ensure that the samples are received and logged into the laboratory that all associated documentation (including chain-of-custody forms) is complete and consistent with the samples received, and that storage and tracking are conducted so that the samples' integrity is maintained.

Verification of sample integrity is documented upon sample receipt on the Sample Receipt Checklist and requires the following conditions:

- The sample is clearly identified and matches the description on the chain-of-custody form;
- The condition of samples and sample containers meets method specifications;
- A sufficient quantity of sample is available so that all required tests can be performed;
- The sample is received within the specified holding time, and temperature requirement; and
- Preservation is confirmed by the analyst conducting the method.

If there is doubt as to the suitability of a sample or when the sample does not conform to the description provided, or the environmental test required is not specified in detail, Turner Laboratories will consult the client for further instructions before preceding and the discussion shall be recorded on the sample receipt checklist that is retained with the work order.

At Turner Laboratories, each sample is logged into the laboratory information management system (LIMS), a secure, password protected database that facilitates tracking and reporting of samples. The LIMS assigns a unique chronological laboratory identification number to each sample, and the sample management technician adds pertinent information concerning collection date and time, matrix, container, preservation, and required tests. The unique identification number is also documented in the sample record logbook. All sample receipt documentation is retained with the sample work order through to final reporting and then retained electronically.

The sample management technician affixes labels to the sample container(s) with the unique laboratory identification number and stores the sample until analysis (under refrigeration if required). Samples with expedited turn-around times or whose tests have short holding times are given directly to the appropriate analysts. The laboratory director or qualified designee reviews the work order for completeness and indicates approval electronically in the LIMS system.

To facilitate timely analysis of samples, the analysts generate daily backlog and/or holding time reports.

Turner Laboratories retains samples for thirty days after completion of analyses (unless other arrangements have been made) and then disposes of them using approved disposal practices (QAP Section 4.4). Complete sample receipt and management procedures are available in Turner Laboratories SOPs SC-1, SC-2 and SC-3.

Section 5.4 Standard Operation Procedures (SOPs)

Turner Laboratories employs methods and analytical procedures from a variety of sources. The primary method references are USEPA SW-846, Third Edition and Updates I, II, IIA, IIB, and III for hazardous wastes and USEPA 600/4-79-020. 600/4-88-039, 600/R-93-100, 600/R-94-111 and supplements and Standard Method for the Examination of Water and Wastewater. Other published procedures such as state-specific methods or in-house methods may be used. The implementation of methods by Turner Laboratories is described in the SOPs for each specific method. A list of the Turner Laboratories' SOPs and methods are provided in Appendix E.

Turner Laboratories maintains standard operating procedures (SOPs) and policies for all analytical procedures used at Turner Laboratories, including compliance and non-compliance methods. The protocols to monitor quality control and the acceptance criteria are provided for each method in each SOP.

All current and previous versions of SOPs and policies are retained in the quality assurance officer's office. The current SOPs are also available in the Laboratory Directors office and in each of the laboratories.

SOPs are reviewed at least once a year by the laboratory supervisors, the quality assurance officer, and the laboratory director. Minor changes, additions, and deletions are annotated on the procedure itself, and before changes are put into use for testing, the laboratory supervisor approves, dates, and initials them. A finalized copy of a SOP should be completed within 30 days for any major modifications.

Review of a SOP is documented by the reviewer's signature on the cover page; review of a policy is documented by the reviewer's signature at the bottom of the policy. These signatures document the SOPs or policy's acceptability as of the review date. New procedures are reviewed, dated, and signed when they are implemented. Each SOP refers to the mandated methodology.

Section 6 Calibration Procedures

All equipment used for environmental testing at Turner Laboratories are operated, maintained and calibrated according to the manufacturer's guidelines and recommendations, as well as to criteria set forth in the applicable analytical methodology. Operation and calibration are performed by personnel who have been properly trained in these procedures. Documentation of calibration information is maintained in appropriate reference files.

Brief descriptions of the calibration procedures for our major laboratory equipment and instruments are described below. Records are maintained to provide traceability of reference materials.

Any item of the equipment which has been subjected to overloading or mishandling, or has been shown by verification or otherwise to be defective; is taken out of service until it has been repaired or is replaced by new equipment. The equipment is placed back in service only after verifying by calibration that the equipment performs satisfactorily. An evaluation of the effect of this defect on previous calibrations or tests is made and documented appropriately. Calibration verification is performed according to in the applicable analytical methodology. Calibration verification procedures and criteria are listed in the appropriate SOP. Documentation of calibration verification is maintained in appropriate reference files.

Section 6.1 Chemical Standards

Analysis standards prepared from stock solutions are stored in containers consistent with their stability. The containers are labeled with the standard number, expiration date, concentration of analyte(s) and the preparers' initials. Only the highest quality chemicals are used as reference materials. Whenever possible, standard solutions will be traceable to national standards such as NIST or EPA certified reference materials. The type and standard preparation information is provided in the specific method SOP.

A standards log book is used to document the sources of primary standards, lot numbers of primary standards, date of receipt, expiration date, method of preparation of working stock standards, date of preparation of working standard, and the analysts initials. The procedure used for preparation of reagents is also documented in the standards logbook and includes weights, volumes, dilutions, and source of the stock solution or chemical reagent and lot numbers. Certification of manufacturer's analysis and/or traceability of primary standards/sources to EPA certified standards are retained in the laboratory.

Section 6.2 Temperature Control Devices

Temperatures are monitored and recorded for all of the temperature-regulating support equipment such as sample refrigerators, freezers, and standards refrigerators. Temperature record sheets contain daily-recorded temperatures, identification and location of equipment, and acceptance criteria.

All thermometers are identified according to location and serial number, and the calibration of these thermometers is checked annually against a National Institute of Standards and Technology (NIST) certified thermometer. The NIST thermometer should be recalibrated at least every 5 years or whenever the thermometer has been exposed to temperature extremes.

Infrared (IR) temperature detection devises should be verified annually using a NIST certified thermometer. Each day of use, a single check of the IR should be made by checking the temperature of a bottle of water at the temperature of interest that contains a calibrated thermometer. The temperature check is to be recorded on Temperature record sheets.

Section 6.3 Analytical Balance

The calibration of the analytical balance is performed daily, monthly and annually. The specific procedures are provided in Turner Laboratories' Policy No. 1.

Section 6.4 Pipets

The calibration of autopipettors used in the preparation of primary and secondary standards must be calibrated on the day the standards are prepared within +2 % of the set value. The pipets must be calibrated at the highest and lowest settings used. The results of all calibration verifications are recorded on worksheets and retained in the laboratory.

Section 6.5 Instruments

The accuracy of a chemical analysis is dependant on the quality of reference standards and reagents used during the preparation and analysis of the sample. The calibration procedures, frequency of initial and continuing verification and criteria for evaluation of calibration data are described in the individual methods. Detailed requirements are contained within the applicable SOP.

All instrument calibrations are documented in logbooks or data packages.

Section 7.0 Quality Control

Quality Control (QC) is the overall system of technical activities that measures the attributes and performance of a process, item, or service against defined standards to verify that they meet the established requirements. Individual methods require certain quality control criteria and acceptance, and are described in detail in the associated SOP.

Section 7.1 Method Detection Limit

The Method Detection Limit (MDL) is the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero. An MDL study requires that all sample processing steps of the analytical method be included in the determination of the method detection limit. Turner Laboratories establishes MDL's for each applicable method and analyte reported by the laboratory. Turner Laboratories revalidates these MDL's based on method set time frames or every 2 years, whichever is more frequent.

Turner Laboratories follows the procedures as described in 40 CFR, Part 136, Appendix B, Definition and Procedures for the Determination of the Method Detection Limit. This procedure is summarized in Turner Laboratories' Policy No. 5.

Section 7.2 Practical Quantitation Limit

The Practical Quantitation Limit (PQL) is the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. It is generally 3 to 10 times the MDL.

Section 7.3 Initial Demonstration of Capability

Each analyst must initially analyze 4 replicates of a standard/Laboratory Control Sample prior to the analysis of samples. The analyte(s) shall be diluted in a volume of clean quality system matrix. The mean recoveries and standard deviations for each analyte is calculated and compared with method or in-house limits as appropriate.

The Demonstration of Capability must be completed at any time there is a significant change in instrument type, personnel or test method.

The analysis of actual samples only begins if all parameters meet the acceptance criteria. If one or more of the tested parameters fail the acceptance criteria, the analyst will either determine the source of the problem and repeat the test for all parameters or repeat the test for the parameters that failed. Repeat failure will initiate the review of the methodology, correction of the problem and repeat analysis of all parameters.

Section 7.4 Quality Control Procedures

The specific types, frequencies, and processes for quality control sample analysis are described in detail in method-specific standard operating procedures. In each specific SOP, the sample types and frequencies are described in detail and brief descriptions are provided below.

Section 7.4.1 Method Blank (Laboratory Reagent Blank)

The method blank is either analyte-free water, subjected to the entire analytical process. The method blank is analyzed to demonstrate that the analytical system itself is not contaminated with the analyte(s) being measured. The method blank results should be below the Practical Quantitation Limit (PQL). Otherwise,

corrective action must be taken. A method blank is included with the analysis of every sample preparation batch, every 20 samples, or as stated in the method, whichever is more frequent.

Section 7.4.2 Calibration Blanks

For some methods, calibration blanks are prepared along with calibration standards to create a calibration curve. Calibration blanks are free of the analyte of interest and, where applicable, provide the zero point of the calibration curve.

Section 7.4.3 Continuing Calibration Blanks

Continuing calibration blanks (CCBs) are solutions of analyte-free water, reagent, or solvent that are analyzed in order to verify the system is contamination-free when CCV standards are analyzed. The frequency of CCB analysis is either once every ten samples or as indicated in the method, whichever is greater.

Section 7.4.4 Calibration Standards

Calibration standards are solutions of known concentration prepared from primary standard solutions that are, in turn, prepared from stock standard materials. Calibration standards are used to calibrate the instrument response with respect to analyte concentration. Standards are analyzed in accordance with the requirements stated in the particular method being used.

Section 7.4.5 Initial Calibration Verification Standards

Initial calibration verification standards (ICVs) are standards that are analyzed after calibration with newly prepared standard(s) but prior to sample analysis, in order to verify the validity and accuracy of the standards used in the calibration. Once it is determined that there is no reference material defect or systematic error in preparation of the calibration standard(s), standards are considered valid and may be used for subsequent calibrations and quantitative determinations (as expiration dates and methods allow). The ICV standards are prepared from materials obtained from a source independent of that used for preparing the calibration standards ("second-source"). ICVs are also analyzed in accordance with method-specific requirements.

Section 7.4.6 Continuing Calibration Verification Standards

Continuing calibration verification standards (CCVs) are mid-range standards that are analyzed in order to verify that the calibration of the analytical system is still acceptable. The frequency of CCV analysis is either once every ten samples, or as indicated in the method.

Section 7.4.7 Internal Standards

Internal standards are known amounts of specific compounds that are added to each sample following sample preparation or extraction. Internal standards are generally used for GC/MS and ICP-MS procedures to correct sample results that have been affected by changes in instrument conditions or changes caused by certain matrix effects. The requirements for evaluation of internal standards are specified in each method and SOP.

Section 7.4.8 Surrogates

Surrogates are organic compounds which are similar in chemical composition and chromatographic behavior to the analytes of interest, but which are not normally found in environmental samples. Depending on the analytical method, one or more of these compounds is added to method blanks, calibration and check standards, and samples (including duplicates, matrix spike samples, duplicate matrix spike samples and laboratory control samples) prior to extraction and analysis in order to monitor the method performance on each sample.

The percent recovery is calculated for each surrogate, and the recovery is a measurement of the overall method performance. The percent recovery is compared to the acceptance criteria per the method. Where criteria are not established the acceptance criteria shall be based upon internal criteria. If the surrogate recoveries are outside of acceptance criteria, appropriate corrective action should be followed.

Section 7.4.9 Laboratory Control Samples (Laboratory Fortified Blanks)

The laboratory control sample (LCS) is an aliquot of analyte-free water to which known amounts of the method analyte(s) is (are) added. A reference material of known matrix type, containing certified amounts of target analytes, may also be used as an LCS. The LCS sample is prepared and analyzed in the same analytical batch, and in exactly the same manner, as the other routine samples per the method or regulatory requirements. An LCS is prepared and analyzed at a minimum frequency of one LCS per 20 samples, with every analytical batch or as stated in the method, whichever is more frequent.

The percent recovery (% REC.) of the target analytes in the LCS are compared to the acceptance criteria per the method. The percent recovery assists in determining whether the methodology is in control and whether the laboratory is capable of making accurate and precise measurements at the required reporting limit. Comparison of batch-to-batch LCS analyses enables the laboratory to evaluate batch-to batch precision and accuracy. Acceptance criteria for LCS analyses are obtained through the use of control charts.

The LCS is prepared in duplicate as the LCSD. The relative percent difference between an LCS and LCSD is a measure of the precision for a given method and analytical batch. LCS/LCSD samples are performed at a minimum frequency of one per batch or per 20 samples.

Section 7.4.10 Matrix Spikes (Laboratory Fortified Sample Matrix)

Matrix spiked samples are aliquots of samples to which a known amount of the target analyte (or analytes) has been added. The samples are then prepared and analyzed in the same analytical batch, and in exactly the same manner as are routine samples. The stock solutions used for spiking the sample(s) are purchased and prepared independently of calibration standards. The spike recovery measures the effects of interferences caused by the sample matrix and reflects the accuracy of the method for the particular matrix in question. For the appropriate methods, matrix spiked samples are prepared and analyzed at a minimum frequency of one spiked sample (and one duplicate spiked sample, if appropriate) per 20 samples and determined based on the clients data quality objectives.

Depending on the method of analysis, a matrix spiked sample and duplicate matrix spiked sample (MS/MSD) are analyzed. The relative percent difference between an MS and MSD is a measure of the precision for a given method and analytical batch. Depending on the method of analysis, MS/MSD samples are performed at a minimum frequency of one set per 20 samples.

Section 7.4.11 Interference Check Samples

An interference check sample (ICS) is a solution containing both interfering and analyte elements of known concentration that can be analyzed to verify background and interelement correction factors in metals

analyses. The ICS is prepared to contain known concentrations of interfering elements that will provide an adequate test of the correction factors. The ICS is spiked with the elements of interest at concentrations of approximately ten times the instrument detection limits. The ICS is analyzed at the beginning and end of an analytical run or every eight hours, whichever is more frequent, and the results must be within ± 20% of the true values.

Section 7.4.12 Post Digestion Spikes

Post digestion spikes are samples prepared for metals analyses that have an analyte spike added to determine if matrix effects may be a factor in the results. The spike addition should produce a method-specified minimum concentration above the instrument detection limit. A post digestion spike is analyzed with each batch of samples and recovery criteria are specified for each method.

Section 7.5 Calculations

The Standard Operating Procedures include equations for the calculations that are applicable to each particular method. Several common calculations follow:

Section 7.5.1 Accuracy

Accuracy is the closeness or nearness of a data point or analytical result measured by the test method to the true value. Accuracy is expresses as a percentage of recovery (R) of the true value.

Accuracy of the Laboratory Control Samples is as follows:

$$\%\,R = \left(\frac{\text{Value of Spike in Pure water}}{\text{Value of Added Spike}} \right) \times 100$$

The matrix spike recovery is calculated according to:

$$\%\,R = \left(\frac{\text{Value of Spike Sample - Value of Unspiked Sample}}{\text{Value of Added Spike}} \right) \times 100$$

Section 7.5.2 Precision

Precision is the reproducibility of an analytical procedure resulting from replicate analyses of homogeneous sample regardless of the true value. The precision of a matrix spike sample (MS) and a matrix spiked duplicate (MSD) or by the analysis of replicate aliquots of a sample. Duplicates are used for those tests that are not amenable to spiking.

Precision is determined by calculation the Relative Percent Difference (%RPD) between the MS and MSD as follows:

$$\%\text{RPD} = \left(\frac{(X_1 - X_2)}{\left(\frac{X_1 + X_2}{2} \right)} \right) \times 100$$

Section 7.5.3 Control Limits and Charting

The generation of control charts is routinely performed at Turner Laboratories. Surrogate, Matrix Spike and LCS recoveries are monitored and charted. New control limits are generated periodically. The control charts are used to monitor the data generated to identify various trends in the analytical results. If trends in the data are perceived, various means of corrective action may then be employed in order to prevent future problems with the analytical system(s).

Control limits are also calculated for methods that do not have prescribed quality control limits. After review of the data by the Quality Assurance Manager, the new acceptance limits determined from the control charting replaces the previous limits and data is assessed using the new values. These control limits are updated when new statistical limits are generated for the appropriate surrogate, laboratory control sample, and matrix spike compounds (typically once a year) or when method prescribed limits change.

Section 7.5.4 Representativeness

Representativeness is the degree to which the field sample represents the overall sample site or material. This can be extended to the sample itself, in that representativeness is the degree to which the subsample that is analyzed represents the entire field sample submitted for analysis. Analytical SOPs specify appropriate sample handling and sample sizes to further ensure the sample aliquot that is analyzed is representative in entire sample.

Section 8.0 Data Reduction, Validation, and Reporting

Section 8.1 Data Reduction and Validation

All analysts performing testing must use the established, approved procedures and quality control mechanisms required by the procedure. If any aberrant or non-compliance results appear for the analyses or for the quality control, the analyst must follow the steps outlined in the QAP Section 15.

Results are generated by the analyst who performs the analysis and works up the data. All observations, data and calculations are recorded at the time they are made. All data is initially reviewed and processed by analysts using appropriate methods (e.g., chromatographic software, instrument printouts, hand calculation, etc.). Equations used for calculation of results are provided in the applicable analytical SOPs. The resulting data set is either manually entered (e.g., titrimetric or microbiological data) into an electronic report form in LIMS. The hardcopy version of the analytical report is then reviewed by the analyst for accuracy and forwarded to the supervisor, for secondary review.

All data calculations are written on printed data forms or provided on computer printouts, using the unique sample identification number assigned to the sample(s). When the entire data set has been found to be acceptable, a final copy of the report is printed and signed by the designated laboratory staff.

The laboratory director is responsible for all testing conducted in the laboratory, including the day-to-day analytical results and quality control practices. The data's integrity is reviewed based on the quality control parameters listed in the standard operating procedures. To ensure that the following five requirements have been met, the laboratory director reviews analytical results and the accompanying quality control documentation before releasing the final reports.

- The established monitoring programs have been conducted as required;
- All documentation is complete for sample test results and the associated quality control;
- Test results are reasonable according to historical data or special conditions for the sample;
- The quality control data are acceptable according to established ranges and other criteria; and
- The results have been transcribed without error.

The integrity of data is verified using a variety of measures, including method blanks, duplicate sample analyses, matrix spikes, and laboratory control samples. The calibration data, accuracy of check standards, system sensitivity, preventive maintenance documentation (equipment integrity), data transcriptions, and calculations are also reviewed. The quality control parameters vary per method and are provided in the individual SOPs.

Final, signed reports are issued only after they have been completely reviewed for accuracy, completeness, and appropriateness. Any exceptions from common practice or anomalies in the test results or accompanying quality assurance program are provided in the Case Narrative section of the final report.

Section 8.1 Reporting Procedures

The results of each test or series of tests carried out by Turner Laboratories are reported accurately, clearly, unambiguously and objectively and in accordance with the method conducted. The final reports are generated using the LIMS following the procedures in SOP- ADM-4. The final reports format includes the following:

- laboratory name, address, contact information,
- the assigned unique laboratory identification number,
- name and address of client,
- identification of method(s) used,

- client identification,
- date of sample receipt,
- sampling date and time,
- the environmental test result, unit of measurement, analysts initials, analysis date and time
- narrative clearly identified for any nonconformance, deviations, interpretations
- name, function and signature authorizing report, and date of issue
- a statement that the report shall not be reproduced except in full without written approval of the laboratory
- laboratory accreditation

Test results performed by subcontractors shall be clearly identified in the report and provided to the client on the signed subcontractor's stationary.

In the case of electronic transmission of results by facsimile or email, Turner Laboratories assures that all the responsible steps are taken to preserve confidentiality.

Amendments to the final report after issuance shall be made in the form of a "Revised Report" and will be clearly identified as such.

Section 9 Procurement of Quality Products

Quality products are products used in the laboratory that must meet a minimum quality requirement, such as gases, water, solvents, standards and sample/laboratory containers. Turner Laboratories purchases products that have certificates of analyses, certificates of cleanliness, etc. from reputable vendors. All certificates are retained on-site.

The procedure for the purchase, reception and storage of reagents and consumables can be found in the Turner Laboratories' Policy No 8.

Section 9.1 Subcontract of Laboratory Services

Turner Laboratories will subcontract laboratory services for analyses that Turner Laboratories is not certified to report or in situations where the instrument is not conforming to Quality Control Protocol. Only Arizona or NELAP accredited laboratories will be used for subcontract services. The laboratory performing the subcontracted work shall be indicated in the final report and non-NELAP accredited work shall be identified.

A subcontractor registry is maintained by the laboratory.

Section 10 Project Requirements

Turner Laboratories reviews all projects that are procured. The President and Laboratory Director review all materials associated with the project prior to quoting the project. When it is necessary to use methods not covered by standard methods, these methods are subject to agreement with the client.

When a customer requests a modification to a (such as a change in reporting limit, addition or deletion of target analyte(s), etc.), the project chemist handling that project must discuss the proposed deviation with the department manager in charge of the analysis and obtain their approval to accept the project. The project chemist is responsible for documenting the approved or allowed deviation from the standard operating procedure by placing a detailed description of the deviation attached to the quotation or in the project file and also providing an appropriate comment on the service request when the samples are received.

The goal is to ensure that Turner Laboratories can meet the client requirements before project initiation. Project correspondence is retained by the Laboratory Director.

Section 10.1 Client Services

Continuous improvement is a process in which management philosophy and operating methodology are committed to quality improvement in the organization. The following elements are essential to management:

- A focus on the needs of the customer or client
- Effective communication of customer needs among all participants
- Top management commitment, support and direction
- Reliance on standards and measures of performance to demonstrate satisfaction of customer needs.

Client complaints are received through the Laboratory Director and are recorded in the client files. The Laboratory Director communicates with the client to determine the details of the inquiries, including technical data problems, turn around time issues, etc.

Section 11 Audits

Quality audits are an essential part of the Turner Laboratories' quality assurance program. Audits of laboratories are performed to assess the degree of compliance to policies, procedures, and standards. There are two types of audits: System Audits are conducted to qualitatively evaluate the operational details of the QA program, and Performance Audits are conducted by analyzing performance evaluation samples in order to quantitatively evaluate the outputs of the various measurement systems.

Section 11.1 System Audits

The system audit examines the presence and appropriateness of laboratory systems. External system audits of Turner Laboratories are conducted regularly by various regulatory agencies and clients. Additionally, internal system audits of Turner Laboratories are conducted regularly. The internal audit procedures are described in Turner Laboratories' Policy No. 6.

The results of each audit are reported to the Laboratory Director for review and comment. Any deficiencies noted by the auditor are summarized in the audit report and corrective action is identified to correct each deficiency within a specified time period. All audit and review findings, and corrective actions are documented and retained by the Laboratory Director. Should problems impacting data quality be found during an internal audit, any client whose data is adversely impacted will be given written notification if not already provided.

Electronic data audits may be performed in conjunction with hardcopy data audits following the procedures outlined in SOP ADM-5. The electronic audits focus on organic chromatographic data and include an examination of audit trails, peak integrations, calibration practices and files, GCMS tuning data, peak response data, use of appropriate files, and other components of the analysis. The audit also verifies that the electronic data supports the hardcopy reported data.

Section 11.2 Performance Audits

Turner Laboratories also participates in the analysis of inter-laboratory proficiency testing (PT) samples. Participation in PT studies is performed on a regular basis and is designed to evaluate all analytical areas of the laboratory, to assess the accuracy and precision of the laboratory procedures and results. Turner Laboratories participates in performance evaluation programs, including the Water Pollution (WP) and Water Supply (WS) programs. A summary of our performance in these programs is included in Appendix D. All proficiency testing raw data and reports are retained by the Laboratory Director.

Section 12 Preventative Maintenance Activities

Preventative maintenance is a crucial element of Turner Laboratories' quality assurance program. The major instruments such as GC/MS systems, atomic absorption spectrometers, analytical balances, inductively coupled plasma emission spectrophotometers, and gas chromatographs are maintained either by qualified in-house personnel or under commercial service contracts. All instruments are operated and maintained according to the instrument operating manuals.

All routine and special maintenance activities pertaining to the instruments are recorded in instrument maintenance logbooks. The maintenance logbooks used at Turner Laboratories contain extensive information about the instruments used at the laboratory. When performing maintenance on an instrument (whether preventive or corrective), additional information about the problem, attempted repairs, etc. is also recorded in the notebook. Typical logbook entries include the following information:

- Details and symptoms of the problem;
- Repairs and/or maintenance performed;
- Description and/or part number of replaced parts;
- Source(s) of the replaced parts;
- Analyst's signature and date; and
- Demonstration of return to analytical control.

If equipment has been subjected to overloading or mishandling, has been shown to be defective or outside specified limits, the equipment is considered to be out of service until it has been repaired and shown by calibration or testing to be performing correctly.

The instrument maintenance activities are recorded in instrument run logs or maintenance logs. All instruments are operated and maintained according to the instrument operating manuals, method requirements, and specific Turner Laboratories policies where applicable.

Specific preventative maintenance procedures and schedules are discussed in the applicable SOPs.

Section 13 Nonconformance and Corrective Action Procedures

Turner Laboratories does not use any equipment, instrumentation, or reagents until these have been validated with the appropriate checks. However, at some time the laboratory may need to address anomalous results. A nonconformance is defined as any unapproved or unplanned deviation from standard operating procedure or policy. If there is failure to meet established quality assurance objectives, immediate corrective action is initiated.

Specific control limits and corrective action activities are described in the standard operating procedures and/or in the references listed therein.

The steps in the corrective action process are as follows:

- Identify the problem. When check results do not fall within the established criteria, or if a sample gives an unexpected result, the situation is defined as out-of-control. In such a case, the analyst must identify the reason for the disparity before any test results can be considered valid;
- Determine the cause of the problem;
- Implement corrective action;
- Verify that the problem has been corrected; and
- Document the problem, the action taken, and the subsequent in-control situation.

Corrective action may take several forms, including calculation checks, instrument maintenance and operation checks, review of analytical technique and methodology, and re-analysis of controls and samples. Corrective actions for specific instrumentation and equipment are indicated in the manufacturers' maintenance requirements. Corrective action for procedural quality assurance checks is delineated in the methodology.

Problems in analysis and corrective actions are documented on the raw data (chromatograms or reports), laboratory benchsheets, or instrument logs. If problems develop in any testing procedure that cannot be resolved through the corrective action performed, the samples for that test are referred to another laboratory until the problem is brought under control. If the analyses have been affected, the laboratory will notify the client immediately.

No sample results should be released until the test system is shown to be operating correctly. If it is not possible to correct the problem within established time frames, all test samples should be sent to an appropriately licensed, contract reference laboratory until the problem has been resolved.

The quality assurance officer or laboratory director has the necessary authority to stop work in the event of an out-of-control situation.

All nonconformance and corrective action activities are documented by the QA Manager or the Laboratory Director and retained by the Laboratory Director.

Section 14 Licensed Parameters

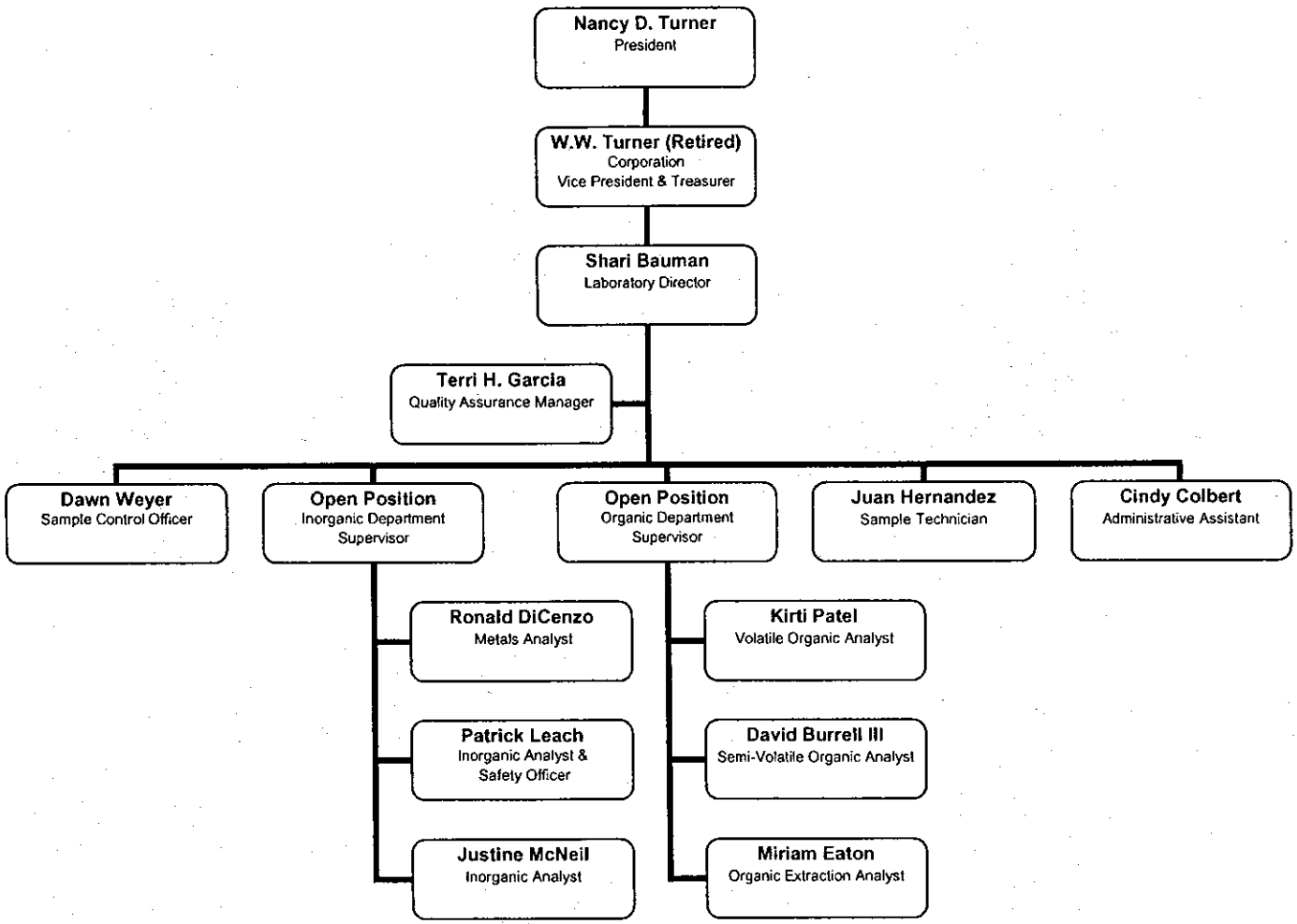
Appendix B contains copies of our current Arizona Department of Health Services "Environmental Laboratory License" and the list of licensed parameters and approved methods, differentiated by program (for example, drinking water or wastewater). This list demonstrates our capability for compliance testing. Additional capabilities may exist for non-compliance testing.

The laboratory license is prominently displayed at the laboratory facility.

APPENDIX A

Organizational Chart

Turner Laboratories, Inc. – February 2008



APPENDIX B

ADHS Environmental Laboratory License and List of Licensed Parameters/Approved Methods

Arizona Department of Health Services

ENVIRONMENTAL LABORATORY LICENSE

Issued to:

Laboratory Director: Shari Bauman
Owner/Representative: Nancy D. Turner

Turner Laboratories, Inc.
AZ0066

is in compliance with Environmental Laboratory's applicable standards for the State of Arizona and maintains on file a List of Parameters for which the laboratory is certified to perform analysis.

PERIOD OF LICENSURE FROM: 03/24/2008 TO: 03/23/2009

Steven D. Baker, Chief
Office of Laboratory Services
Bureau of State Laboratory Services

Arizona Department of Health Services
Office of Laboratory Licensure, Certification & Training
2 North 17th Avenue, Phoenix, AZ 85007
Thursday, December 20 2007

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AZ License: AZ0066
Lab Director: Ms. Shari Bauman

Lab Name: Turner Laboratories, Inc.
Phone: (520) 882-5880
Fax: (520) 882-9788

Program HW

Parameter	EPA Method	Billing Code	Cert Date
Aluminum	EPA 6010B	MTL3	05/13/98
Antimony	EPA 6010B	MTL3	05/13/98
Arsenic	EPA 6010B	MTL3	05/13/98
Barium	EPA 6010B	MTL3	05/13/98
Beryllium	EPA 6010B	MTL3	05/13/98
C10-C32 Hydrocarbons	8015AZ1	VOC4	02/09/99
Cadmium	EPA 6010B	MTL3	05/13/98
Calcium	EPA 6010B	MTL3	05/13/98
Chromium Total	EPA 6010B	MTL3	05/13/98
Closed System Purge And Trap Extract. Vocs	EPA 5035A	PREP2	12/05/06
Cobalt	EPA 6010B	MTL3	05/13/98
Continious Liquid-Liquid Extraction	EPA 3520C	PREP2	05/13/98
Copper	EPA 6010B	MTL3	05/13/98
Corrosivity Ph Determination	EPA 9040C	HAZ1	12/05/06
Corrosivity Ph Determination	EPA 9041A	NIA6	11/15/97
Dissolved In Water	EPA 3005A	PREP1	11/15/97
Flashpoint Determination	EPA 1030	HAZ2	05/01/02
Hydrogen Ion (Ph)	EPA 9045D	NIA6	12/05/06
Ignitability (Flash Point)	EPA 1010A	HAZ2	12/05/06
Iron	EPA 6010B	MTL3	05/13/98
Lead	EPA 6010B	MTL3	05/13/98
Magnesium	EPA 6010B	MTL3	05/13/98
Manganese	EPA 6010B	MTL3	05/13/98
Mercury	EPA 7470A	MTL5	03/02/92
Mercury	EPA 7471A	MTL5	11/15/97
Molybdenum	EPA 6010B	MTL3	05/13/98
Nickel	EPA 6010B	MTL3	05/13/98
Organochlorine Pesticides By Gc	EPA 8081A	SOC9	05/13/98
Paint Filter Liquids Test	EPA 9095B	MISC18	12/05/06
Pcbs By Gc	EPA 8082	SOC9	05/12/98
Pcbs In Waste Oil	600/4-81-045	SOC9	03/03/98
Potassium	EPA 6010B	MTL3	05/13/98
Purge And Trap For Aqueous Samples	EPA 5030C	PREP2	12/05/06
Sediments, Sludges And Soils	EPA 3050B	PREP1	05/13/98
Selenium	EPA 6010B	MTL3	05/13/98
Semivolatile Compounds By Gc/Ms	EPA 8270C	SOC16	05/13/98
Silver	EPA 6010B	MTL3	05/13/98
Sodium	EPA 6010B	MTL3	05/13/98
Spip	EPA 1312	HAZ6	08/08/94

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License: AZ0066 Lab Name: Turner Laboratories, Inc.

Program HW

Parameter	EPA Method	Billing Code	Cert Date
Sulfuric Acid/Permanganate Cleanup	EPA 3665A	PREP2	05/13/98
Tclp	EPA 1311	HAZ5	03/02/92
Thallium	EPA 6010B	MTL3	05/13/98
Tin	EPA 6010B	MTL3	05/13/98
Total Metals	EPA 3010A	PREP1	06/15/98
Total Recoverable In Water	EPA 3005A	PREP1	11/15/97
Ultrasonic Extraction	EPA 3550B	PREP2	05/13/98
Vanadium	EPA 6010B	MTL3	05/13/98
Vocs By Gc/Ms	EPA 8260B	VOC8	05/13/98
Zinc	EPA 6010B	MTL3	05/13/98

Total Licensed Parameters in this Program: 49

Program SDW

Parameter	EPA Method	Billing Code	Cert Date
Alkalinity	SM 2320B	NIA1	10/27/93
Aluminum	EPA 200.7	MTL3	07/16/96
Antimony	EPA 200.9	MTL2	10/01/96
Arsenic	EPA 200.9	MTL2	07/16/96
Barium	EPA 200.7	MTL3	10/08/92
Beryllium	EPA 200.7	MTL3	11/30/94
Cadmium	EPA 200.7	MTL3	10/08/92
Cadmium	EPA 200.9	MTL2	03/01/96
Calcium	EPA 200.7	MTL3	10/08/92
Chloride	EPA 300.0	NIIIA1	03/02/92
Chlorinated Pesticides, Herbicides By Gc-Ecd	EPA 508.1	SOC9	12/20/07
Chlorine	HACH 8167	NIA3	02/17/98
Chromium Total	EPA 200.7	MTL3	10/08/92
Chromium Total	EPA 200.9	MTL2	03/01/96
Color	SM 2120B	NIA4	03/02/92
Copper	EPA 200.7	MTL3	10/08/92
Corrosivity	SM 2330B	NIA5	03/02/92
Cyanide	EPA 335.4	MISC7	10/06/97
Edb And Dbcp	EPA 504.1	SOC5	11/14/97
Fluoride	EPA 300.0	NIIIA1	07/16/96
Fluoride	SM 4500-F C	NIB9	03/02/92
Haloacetic Acids	EPA 552.2	SOC25	07/11/05
Hardness	EPA 200.7, CA&MG	MTL3	12/05/02
Heterotrophic Bacteria	SIMPLATE	MIC9	09/20/06
Hydrogen Ion (Ph)	EPA 150.1	NIA6	03/02/92
Iron	EPA 200.7	MTL3	10/08/92
Lead	EPA 200.9	MTL2	03/02/92

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Parameter	EPA Method	Billing Code	Cert Date
Magnesium	EPA 200.7	MTL3	10/08/92
Manganese	EPA 200.7	MTL3	10/08/92
Mercury	EPA 245.1	MTL5	11/21/97
Nickel	EPA 200.7	MTL3	11/30/94
Nitrate	EPA 300.0	NIIIA1	03/02/92
Nitrite	EPA 300.0	NIIIA1	12/23/93
Orthophosphate	EPA 300.0	NIIIA1	07/16/96
Residue, Filterable (Tds)	SM 2540C	NIIA8	07/16/06
Selenium	EPA 200.9	MTL2	07/16/96
Silica	EPA 200.7	MTL3	07/16/96
Silica	SM 4500-SI D	MISC13	07/16/96
Silver	EPA 200.7	MTL3	10/08/92
Sodium	EPA 200.7	MTL3	10/08/92
Specific Conductance	SM 2510B	NIA7	03/18/98
Strontium	EPA 200.7	MTL3	10/08/92
Sulfate	EPA 300.0	NIIIA1	03/02/92
Thallium	EPA 200.9	MTL2	03/01/96
Total Coliforms And E. Coli By Colilert	SM 9223B	MIC3	07/25/06
Turbidity, Ntu: Nephelometric	EPA 180.1	NIA9	03/02/92
Vocs By Gc-Ms	EPA 524.2	VOC1	01/15/03
Zinc	EPA 200.7	MTL3	10/08/92

Total Licensed Parameters in this Program: 48

rogram WW

Parameter	EPA Method	Billing Code	Cert Date
Acrolein & Acrylonitrile - App For Screen Only	EPA 624	VOC8	12/05/06
Alkalinity, Total	SM 2320B	NIA1	10/27/93
Aluminum	EPA 200.7	MTL3	10/08/92
Ammonia	EPA 350.1	NIIB1	03/02/92
Antimony	EPA 200.7	MTL3	10/08/92
Antimony	EPA 200.9	MTL2	12/05/06
Arsenic	EPA 200.7	MTL3	10/08/92
Barium	EPA 200.7	MTL3	02/14/95
Base/Neutrals And Acids Excluding Pesticides	EPA 625	SOC16	03/02/92
Beryllium	EPA 200.7	MTL3	10/08/92
Biochemical Oxygen Demand	SM 5210B	DEM1	07/13/06
Boron	EPA 200.7	MTL3	10/08/92
Bromide	EPA 300.0	NIIIA1	03/02/92
Cadmium	EPA 200.7	MTL3	10/08/92
Calcium	EPA 200.7	MTL3	10/08/92
Chemical Oxygen Demand	EPA 410.4	DEM3	03/02/92

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Parameter	EPA Method	Billing Code	Cert Date
Chloride	EPA 300.0	NIIIA1	03/02/92
Chlorine Residual Total	HACH 8167	NIA3	12/05/06
Chlorine Total Residual	HACH 10014	NIA3	06/24/08
Chromium Total	EPA 200.7	MTL3	10/08/92
Chromium, Hexavalent	HACH 8023	MTL4	02/17/98
Cobalt	EPA 200.7	MTL3	10/08/92
Copper	EPA 200.7	MTL3	10/08/92
Cyanide Amenable To Chlorination	SM 4500-CN G	MISC7	12/05/06
Cyanide, Total	SM 4500-CNCE	MISC34	12/05/06
E. Coli By Colilert Mpn	SM 9223B	MIC3	08/02/04
Fluoride	EPA 300.0	NIIIA1	11/15/97
Fluoride	SM 4500-F C	NIB3	03/02/92
Hardness	EPA 200.7	MTL3	12/05/02
Iron	EPA 200.7	MTL3	10/08/92
Kjeldahl Nitrogen	EPA 351.1	NIIB3	03/02/92
Lead	EPA 200.7	MTL3	10/08/92
Magnesium	EPA 200.7	MTL3	10/18/96
Manganese	EPA 200.7	MTL3	10/08/92
Mercury	EPA 245.1	MTL5	02/27/97
Molybdenum	EPA 200.7	MTL3	10/08/92
Nickel	EPA 200.7	MTL3	10/08/92
Nitrate	EPA 300.0	NIIIA1	03/02/92
Nitrite (As N)	EPA 300.0	NIIIA1	03/02/92
Oil And Grease	EPA 1664A	MISC6	05/03/04
Organochlorine Pesticides And Polychlorinated Biphenyls	EPA 608	SOC9	03/02/92
Orthophosphate	HACH 8048	NIIB8	02/17/98
Oxygen, Dissolved	SM 4500-O G	NIA12	12/05/06
Phenols	EPA 420.1	MISC8	02/26/01
Phosphorous Total	HACH 8190	NIIB6	02/17/98
Potassium	EPA 200.7	MTL3	10/08/92
Purgeables	EPA 624	VOC8	11/15/97
Residue Filterable	SM 2540C	NIIA8	07/16/96
Residue Nonfilterable	SM 2540D	NIIA5	07/16/96
Residue Total	SM 2540B	NIIA4	12/05/06
Residue Volatile	EPA 160.4	NIIA7	03/02/92
Residue, Settleable Solids	SM 2540F	NIIA6	12/05/06
Selenium	EPA 200.7	MTL3	10/08/92
Silica, Dissolved	EPA 200.7	MTL3	03/02/92
Silica, Dissolved	SM 4500-SI D	MISC13	12/05/06
Silver	EPA 200.7	MTL3	10/08/92

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rogram WW

Parameter	EPA Method	Billing Code	Cert Date
Sodium	EPA 200.7	MTL3	10/08/92
Specific Conductance	SM 2510B	NIA7	12/05/06
Strontium	EPA 200.7	MTL3	10/15/96
Sulfate	EPA 300.0	NIIIA1	03/02/92
Sulfide	SM 4500-S F	MISC33	12/05/06
Thallium	EPA 200.7	MTL3	11/15/97
Thallium	EPA 200.9	MTL2	12/05/06
Tin	EPA 200.7	MTL3	10/08/92
Total Organic Carbon	SM 5310C	MISC1	12/05/06
Turbidity	EPA 180.1	NIA9	03/02/92
Vanadium	EPA 200.7	MTL3	10/08/92
Zinc	EPA 200.7	MTL3	10/08/92

Total Licensed Parameters in this Program: 68

Instruments	Quantity	Date
GAS CHROMATOGRAPH/MASS SPECTROMETER	3	10/05/95
GAS CHROMATOGRAPH	2	09/04/02
ATOMIC ABSORPTION SPECTROPHOTOMETER	1	09/04/02
ATOMIC ABSORPTION - COLD VAPOR	1	03/29/07
ION CHROMATOGRAPH	1	02/26/01
INDUCTIVELY COUPLED PLASMA SPECTROMETER	1	09/25/92

Softwares
PERKIN ELMER - ICP

APPENDIX C

List of Major Analytical Equipment

Organic Laboratory

Gas Chromatographs

- Hewlett-Packard 5890 with Dual ECD Detectors with Chemstation (EnviroQuant) Data System and HP 7673 Autosampler Trap – Indirectly linked to LIMS
- Hewlett-Packard 5890 with PID/FID Detectors with Chemstation (EnviroQuant) Data System and HP 7673 Autosampler Trap – Indirectly linked to LIMS
- Agilent 6890N with Dual Micro ECD Detectors with Chemstation (EnviroQuant) Data System, and Agilent 7683 B Autosampler

Gas Chromatograph/Mass Spectrometers

- Hewlett-Packard 5890/5972 with Chemstation (EnviroQuant) Data System, Tekmar ALS-2016/3000 Purge and Trap– Indirectly linked to LIMS
- Hewlett-Packard 5890/5971 with Chemstation (EnviroQuant) Data System, HP 7673 Autosampler – Indirectly linked to LIMS
- Hewlett-Packard 5890/5971 with Chemstation (EnviroQuant) Data System, OI 4560 Purge and Trap, Precision PTA-30 Vial Autosampler– Indirectly linked to LIMS

Total Organic Carbon Analyzer

- Dohrmann Phoenix 8000 UV-Persulfate TOC Analyzer with TOC Talk Software

Inorganic Laboratory

Inductively Coupled Argon Plasma Atomic Emission Spectrometer

- Perkin-Elmer Model 3000 XL, with Win Lab Data System – Data downloaded directly to LIMS

Atomic Absorption Spectrophotometers

- Perkin-Elmer Simma 6000 Graphite Furnace – Indirectly linked to LIMS
- Perkin Elmer FIMS 100 Automated Mercury Cold Vapor Analyzer

Ion Chromatograph

- Dionex DX-120 Liquid Chromatograph with Dionex Peaknet Software

Oxygen Meters

- YSI Model 5000

pH and Specific Ion Meter

- Orion SA 720 ISE Meter
- SympHony pH Meter
- Hannah EC 215

Spectrophotometers

- Bausch & Lomb Spectronic 20 (3)
- Hach DR-2000

Turbidimeters

- Hannah HI 93703
- Fisher DRT 100 (2)

Other Equipment

- Horizon Technology DryVap Concentrator System (2)
- Midi-Vap 3000
- Analytical Balances
- Automatic Composite Samplers (5) and Flow Module
- Flash Point Testers (2)
- Incubators
- Microscopes
- Ovens

Oil and Grease Equipment

- Horizon Technology SPE-DEX 3000 XL Automated Extractor System
- Horizon Technology Speed VAP II 9000 Solvent Evaporation System

MPN

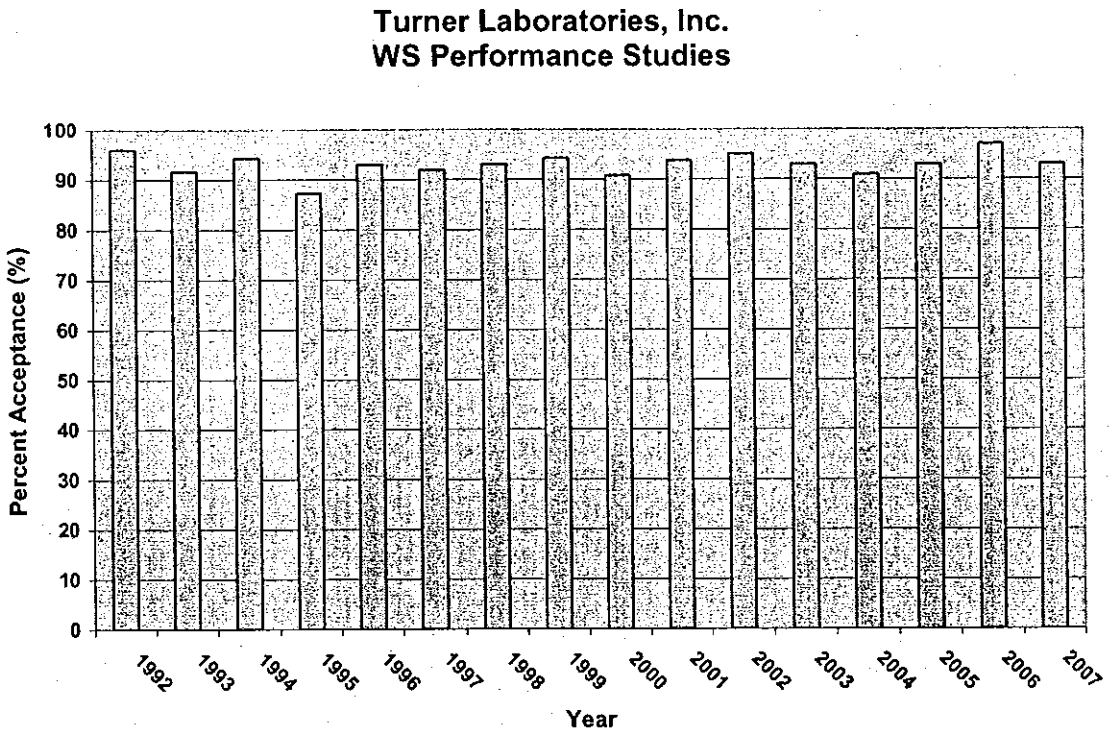
- IDEXX Quanti Tray/2000

Data Management Software System

- Omega System by Khemia Corporation with 18 networked PCs - Utilized for complete laboratory information management from sample receipt to final hardcopy report. Capable of generating electronic deliverables in various formats.

APPENDIX D

Summary of Turner Laboratories' WP & WS Performance


Turner Laboratories, Inc.
WS Performance Studies
Percent Acceptance (%)
100
90
80
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60
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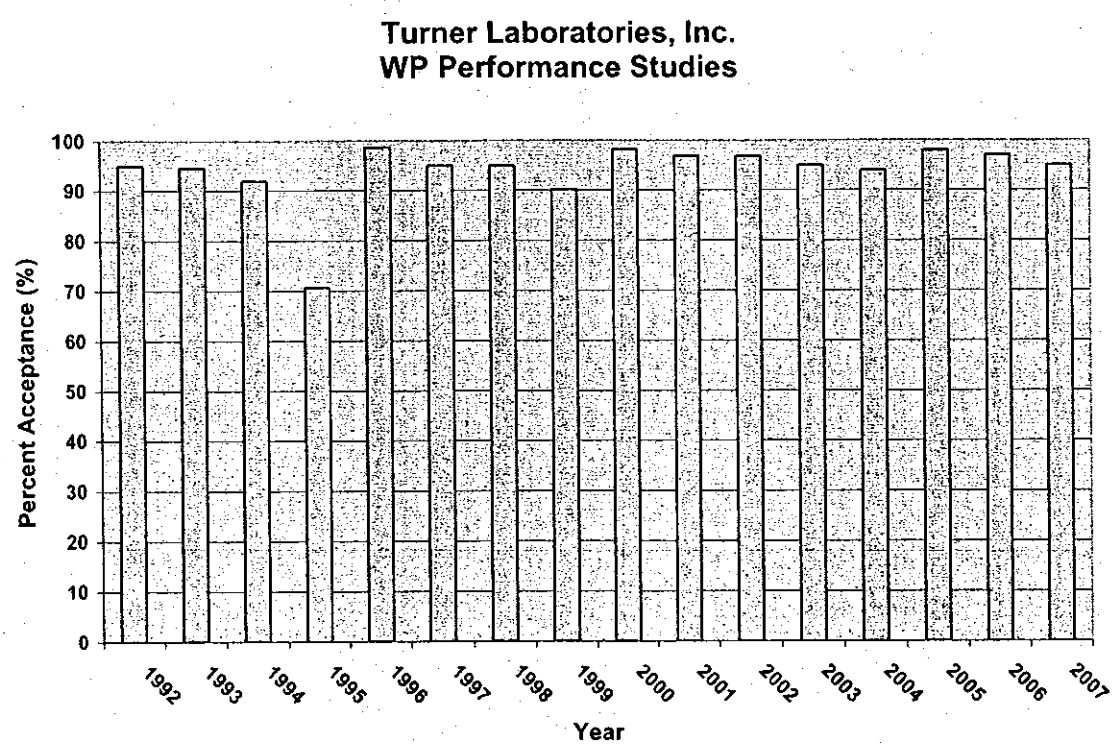
Turner Laboratories, Inc.
WP Performance Studies
Percent Acceptance (%)
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1992
1993
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1995
1996
1997
1998
1999
2000
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2002
2003
2004
2005
2006
2007
Year

APPENDIX E

Turner Laboratories' List of Standard Operating Procedures

LIST OF STANDARD OPERATING PROCEDURES

Department	SOP No.	SOP Title	Referenced Method	Comments
Sample Control	SC-1	Sample Receiving	---	
	SC-2	Shipping of Sub-Contract Samples	---	
	SC-3	Bottle Orders	---	
Microbiology	MICRO-1	NOT IN USE	---	Not in Use
	MICRO-2	Total/Fecal Coliform-MTF/MPN	SM 9221	Not in Use
	MICRO-3	Total/E. Coli Coliform-Colilert	SM 9223B	
	MICRO-4	Total/E. Coli Coliform-MPN by Quanti-Tray 2000	SM 9223B	
	MICRO-5	Heterotrophic Plate Count-HPC by SimPlate	SM 9251B	
Metals	METAL-1	Sample Prep., Metals in Water and WW (E200.2)	EPA 200.2	
	METAL-2	Sample Prep., Total/Dissolved. Metals in Water by ICP (E3005A)	EPA 3005A	
	METAL-3	Sample Prep., Total Metals in Solids by ICP and GFAA (E3050B)	EPA 3050B	
	METAL-4	Arsenic by GFAA	EPA 7060A/7000A	Not in Use
	METAL-5	TCLP (E1311)	EPA 1311	
	METAL-6	SPLP (E1312)	EPA 1312	
	METAL-7	Metals in Water and Soil by ICP (E200.7/6010B)	EPA 200.7/6010B	
	METAL-8	Metals by GFAA	EPA 200.9	
	METAL-9	Mercury by CVAA (E245.1/7470A/7471A)	EPA 245.1/ 7470A/7471A	
	METAL-10	Lead by GFAA (E7421)	EPA 7421	Not in Use
	METAL-11	Selenium by GFAA (E7740)	EPA 7740	Not in Use
Inorganics	INORG-1	Glassware Cleaning, Inorganics	---	
	INORG-2	Alkalinity	SM 2320B	
	INORG-3	Anions	EPA 300.0	
	INORG-4	Ammonia	EPA 350.1	
	INORG-5	BOD	SM 5210B	
	INORG-6	COD	EPA 410.4	
	INORG-7	Chlorine	HACH 8167	
	INORG-8	Hexavalent Chromium	HACH 8023	
	INORG-9	Color	SM 9120B	
	INORG-10	Conductivity	SM 2510B	
	INORG-11	Analytical Balance and Scale Use	---	
	INORG-12	Cyanide, Amenable	EPA 335.1/ SM 4500-CN-G	

LIST OF STANDARD OPERATING PROCEDURES (continued)

Department	SOP No.	SOP Title	Referenced Method	Comments
Inorganics	INORG-13	Cyanide	EPA 335.2/ SM 4500CN BE	
	INORG-14	Cyanide, WAD	SM 4500-CN-I	Not for Compliance
	INORG-15	Dissolved Oxygen	SM 4500-O-G	
	INORG-16	Exchangeable Sodium	---	Not for Compliance
	INORG-17	Flashpoint	EPA 1010A	
	INORG-18	Fluoride, Electrode	SM 4500-F-C	
	INORG-19	Hardness	SM2340B Calc	
	INORG-20	Minimum Resistivity	ARIZ 236A	Not for Compliance
	INORG-21	Oil and Grease, Gravimetric	EPA 413.1	Not in Use
	INORG-22	Oil and Grease, Infrared	EPA 413.2	Not in Use
	INORG-23	Paint Filter Liquids Test	EPA 9095B	
	INORG-24	pH - Water	EPA 150.1	
	INORG-25	pH - Solids	EPA 9040B/ 9041A/9045D	
	INORG-26	Phosphorous, Total and Orthophosphate	HACH 8048/8190	
	INORG-27	Reactivity	EPA SW-846 Chp 7. Sec. 7.3.1/7.3.4	
	INORG-28	Silica, Dissolved	SM 4500-Si-D	
	INORG-29	Soluble Salts	ARIZ 237A	Not for Compliance
	INORG-30	Sulfate, Gravimetric	SM 4500-SO4-D	Not in Use
	INORG-31	Sulfide, Titrimetric, Iodometry	SM 4500	
	INORG-32	Total Dissolved Solids	SM 2540C	
	INORG-33	Total Suspended Solids	SM 2540D	
	INORG-34	Total Solids	EPA 160.3	
	INORG-35	Volatile Solids	EPA 160.4	
	INORG-36	Settable Solids	EPA 160.5	
	INORG-37	Total Kjeldahl Nitrogen	EPA 351.1	
	INORG-38	Total Petroleum Hydrocarbons-Soil, Infrared	EPA 418.1AZ	Not in Use
	INORG-39	Total Petroleum Hydrocarbons-Water, Infrared	EPA 418.1	Not in Use
	INORG-40	Total Organic Carbon	SM 5310C	
	INORG-41	Turbidity	EPA 180.1	
	INORG-42	Field pH	---	
	INORG-43	Total Recoverable Phenolics	EPA 420.1	
	INORG-44	NOT IN USE	---	Not in Use
	INORG-45	Ignitability of Solids	EPA 1030	
	INORG-46	Oil & Grease & TPH SPE	EPA 1664A	

LIST OF STANDARD OPERATING PROCEDURES (continued)

Department	SOP No.	SOP Title	Referenced Method	Comments
Organics	ORG-1	Glassware Cleaning, Organics	---	
	ORG-2	EDB/DBCP in Drinking Water, Extraction	EPA 504.1	
	ORG-3	EDB/DBCP in Drinking Water, GC Analysis	EPA 504.1	
	ORG-4	PCBs in Oil, GC Analysis	EPA 600/4-81-045	
	ORG-5	NOT IN USE	---	Not in Use
	ORG-6	NOT IN USE	---	Not in Use
	ORG-7	Pesticides/PCBs in Water, Extraction	EPA 350C/3665A/ 8081A/8082/608	
	ORG-8	Pesticides/PCBs in Water, GC Analysis	EPA 608	
	ORG-9	NOT IN USE		Not in Use
	ORG-10	Pesticides/PCBs, Sonication Extraction	EPA 3550P/8081A/8082	
	ORG-11	NOT IN USE		Not in Use
	ORG-12	Semi-volatiles, Acid Extractables, Extraction	EPA 625	
	ORG-13	Semi-volatiles, BN Extractables, Extraction	EPA 625	
	ORG-14	Semi-volatiles in Waste Water, GCMS Analysis	EPA 625	
	ORG-15	NOT IN USE	---	Not in Use
	ORG-16	Semivolatiles in Waste, Sonication Extraction	EPA 3550B/8270C	
	ORG-17	Semivolatiles in Wastes, Waste Dilution Extraction	EPA 3580A	
	ORG-18	Semi-volatiles in Waste, GCMS Analysis	EPA 8270C	
	ORG-19	TPH, Fuel Fingerprint, GC Analysis	EPA 8015	Not for Compliance
	ORG-20	Total Petroleum Hydrocarbons, GC Analysis	8015AZR1	
	ORG-21	Volatiles in Drinking Water, GCMS Analysis	EPA 524.2	
	ORG-22	Volatiles in Waste Water, GC Analysis	EPA 601/602	Not in Use
	ORG-23	Volatiles, ATM in Waste Water, GC Analysis	EPA 602M	Not in Use
	ORG-24	Volatiles in Waste Water, GCMS Analysis	EPA 624	
	ORG-25	Volatiles in Water and Waste, GC Analysis	EPA 8021B	Not in Use
	ORG-26	Volatiles in Water and Waste, GCMS Analysis	EPA 8260B	

LIST OF STANDARD OPERATING PROCEDURES (continued)

Department	SOP No.	SOP Title	Referenced Method	Comments
Organics	ORG-27	Volatiles in Water, GCMS Analysis	EPA 8260B	
	ORG-28	Semi-volatile, Acid Extractables in Water, Extraction	EPA 3520C/8270C	
	ORG-29	Semi-volatile, BN Extractables in Water, Extraction	EPA 3520C/8270C	
	ORG-30	Pesticides/PCBs, Waste Dilution Extractions	EPA 350A/8081A/8082	
	ORG-31	Methanol in Water, GC Analysis	EPA 8015B Mod.	Not in Use
	ORG-32	Pesticides in Water and Waste, GC Analysis	EPA 8081A	
	ORG-33	PCBs in Water and Waste, GC Analysis	EPA 8082	
	ORG-34	Glutaraldehyde in Waste Water, GCMS Analysis	EPA 625	
	ORG-35	Glutaraldehyde, Neutral Extraction in Wastewater	EPA 625	
	ORG-36	Haloacetic Acids in Drinking Water, Extraction	EPA 552.2	
	ORG-37	Haloacetic Acid in Drinking Water, GC Analysis	EPA 552.2	
	ORG-38	TCLP Extraction	EPA 1311	
	ORG-39	Petroleum Hydrocarbons in Water, GC Analysis	8015 AZ R1- Mod	Not for Compliance
	ORG-40	Solid Phase Extraction	EPA 3535/508.1/608/1311/ 8081/8081	
	ORG-41	Chlorinated Pesticides, Herbicides & Organohalides	EPA 508.1	
Administrative	ADM-1	Data Entry into LIMS	---	
	ADM-2	Data Verification & Data Validation	---	
	ADM-3	Manual Integration of Chromatographic Peaks	---	
	ADM-4	Data Deliverables	---	
	ADM-5	Electronic Data Auditing	---	

APPENDIX F

Turner Laboratories' List of Policies

LIST OF POLICIES

Policy No.	Policy Statement Title
Policy No. 1	Calibration of the Mettler AE50 Analytical Balance
Policy No. 2	Air Monitoring in the Microbiology Laboratory
Policy No. 3	The Verification of Sterility of Micro Sample Containers
Policy No. 4	Maintenance of Personnel Training Records
Policy No. 5	Method Detection Limit Studies
Policy No. 6	Internal Laboratory Audit
Policy No. 7	Determination of Expiration Dates on Standards and Reagents
Policy No. 8	Characterization of Wastes: Hazardous and Non-Hazardous
Policy No. 9	Purchasing, Receiving, Inspection, Inventory, and Storage of Laboratory Materials
Policy No. 10	Client Complaints
Policy No. 11	Record Retention
Policy No. 12	Subcontract of Laboratory Services
Policy No. 13	Nonconformance and Corrective Action Procedures
Policy No. 14	Document Control Procedures

APPENDIX F.5

ADEQ DATA QUALIFIERS

Arizona Laboratory Data Qualifiers

Revision 1.0
03/20/2002

(Developed by the Technical Subcommittee of the Arizona Environmental Laboratory Advisory Committee. This is a revised list with additional qualifiers added to the original list dated 12/11/2000)

Microbiology:

A1 = Too numerous to count.

A2 = Sample incubation period exceeded method requirement.

A3 = Sample incubation period was shorter than method requirement.

A4 = Target organism detected in associated method blank.

A5 = Incubator/water bath temperature was outside method requirements.

A6 = Target organism not detected in associated positive control.

A7 = Micro sample received without adequate headspace.

Method blank:

B1 = Target analyte detected in method blank at or above the method reporting limit.

B2 = Non-target analyte detected in method blank and sample, producing interference.

B3 = Target analyte detected in calibration blank at or above the method reporting limit.

B4 = Target analyte detected in blank at/above method acceptance criteria.

B5 = Target analyte detected in method blank at or above the method reporting limit, but below trigger level or MCL.

B6 = Target analyte detected in calibration blank at or above the method reporting limit, but below trigger level or MCL.

B7 = Target analyte detected in method blank at or above the method reporting limit. Concentration found in the sample was 10 times above the concentration found in the method blank.

Confirmation:

C1 = Confirmatory analysis not performed as required by the method.

C2 = Confirmatory analysis not performed. Confirmation of analyte presence established by site historical data.

C3 = Qualitative confirmation performed. See case narrative.

C4 = Confirmatory analysis was past holding time.

C5 = Confirmatory analysis was past holding time. Original result not confirmed.

Dilution:

D1 = Sample required dilution due to matrix interference. See case narrative.

D2 = Sample required dilution due to high concentration of target analyte.

D3 = Sample dilution required due to insufficient sample.

D4 = Minimum reporting level (MRL) adjusted to reflect sample amount received and analyzed.

Estimated concentration:

E1 = Concentration estimated. Analyte exceeded calibration range. Reanalysis not possible due to insufficient sample.

E2 = Concentration estimated. Analyte exceeded calibration range. Reanalysis not performed due to sample matrix.

E3 = Concentration estimated. Analyte exceeded calibration range. Reanalysis not performed due to holding time requirements.

E4 = Concentration estimated. Analyte was detected below laboratory minimum reporting level (MRL).

E5 = Concentration estimated. Analyte was detected below laboratory minimum reporting level (MRL), but not confirmed by alternate analysis.

E6 = Concentration estimated. Internal standard recoveries did not meet method acceptance criteria.

E7 = Concentration estimated. Internal standard recoveries did not meet laboratory acceptance criteria.

Hold time:

H1 = Sample analysis performed past holding time. See case narrative.

H2 = Initial analysis within holding time. Reanalysis for the required dilution was past holding time.

H3 = Sample was received and analyzed past holding time.

H4 = Sample was extracted past required extraction holding time, but analyzed within analysis holding time. See case narrative.

BOD:

K1 = The sample dilutions set-up for the BOD analysis did not meet the oxygen depletion criteria of at least 2 mg/L. Any reported result is an estimated value.

K2 = The sample dilutions set up for the BOD analysis did not meet the criteria of a residual dissolved oxygen of at least 1 mg/L. Any reported result is an estimated value.

K3 = The seed depletion was outside the method acceptance limits.

K4 = The seed depletion was outside the method and laboratory acceptance limits. The reported result is an estimated value.

K5 = The dilution water D.O. depletion was > 0.2 mg/L.

K6 = Glucose/glutamic acid BOD was below method acceptance criteria.

K7 = A discrepancy between the BOD and COD results has been verified by reanalysis of the sample for COD.

K8 = Glucose/glutamic acid BOD was above method acceptance levels.

Laboratory fortified blank/blank spike:

L1 = The associated blank spike recovery was above laboratory acceptance limits. See case narrative.

L2 = The associated blank spike recovery was below laboratory acceptance limits. See case narrative.

L3 = The associated blank spike recovery was above method acceptance limits. See case narrative.

L4 = The associated blank spike recovery was below method acceptance limits. See case narrative.

Note: The L1, L2, L3 & L4 footnotes need to be added to all corresponding analytes for a sample.

Matrix spike:

M1 = Matrix spike recovery was high, the method control sample recovery was acceptable.

M2 = Matrix spike recovery was low, the method control sample recovery was acceptable.

M3 = The accuracy of the spike recovery value is reduced since the analyte concentration in the sample is disproportionate to spike level. The method control sample recovery was acceptable.

M4 = The analysis of the spiked sample required a dilution such that the spike concentration was diluted below the reporting limit. The method control sample recovery was acceptable.

M5 = Analyte concentration was determined by the method of standard addition (MSA).

M6 = Matrix spike recovery was high. Data reported per ADEQ policy 0154.000.

M7 = Matrix spike recovery was low. Data reported per ADEQ policy 0154.000.

General:

N1 = See case narrative.

N2 = See corrective action report.

Sample quality:

Q1 = Sample integrity was not maintained. See case narrative.

Q2 = Sample received with head space.

Q3 = Sample received with improper chemical preservation.

Q4 = Sample received and analyzed without chemical preservation.

Q5 = Sample received with inadequate chemical preservation, but preserved by the laboratory.

Q6 = Sample was received above recommended temperature.

Q7 = Sample inadequately dechlorinated.

Q8 = Insufficient sample received to meet method QC requirements. QC requirements satisfy ADEQ policies 0154 and 0155.

Q9 = Insufficient sample received to meet method QC requirements.

Q10= Sample received in inappropriate sample container.

Q11= Sample is heterogeneous. Sample homogeneity could not be readily achieved using routine laboratory practices.

Duplicates:

R1 = RPD exceeded the method control limit. See case narrative.

R2 = RPD exceeded the laboratory control limit. See case narrative.

R3 = Sample RPD between the primary and confirmatory analysis exceeded 40%. Per EPA Method 8000B, the higher value was reported.

R4 = MS/MSD RPD exceeded the method control limit. Recovery met acceptance criteria.

R5 = MS/MSD RPD exceeded the laboratory control limit. Recovery met acceptance criteria.

R6 = LFB/LFBD RPD exceeded the method control limit. Recovery met acceptance criteria.

R7 = LFB/LFBD RPD exceeded the laboratory control limit. Recovery met acceptance criteria.

R8 = Sample RPD exceeded the method control limit.

R9 = Sample RPD exceeded the laboratory control limit.

Surrogate:

S1 = Surrogate recovery was above laboratory acceptance limits, but within method acceptance limits.

S2 = Surrogate recovery was above laboratory and method acceptance limits.

S3 = Surrogate recovery was above laboratory acceptance limits, but within method acceptance limits. No target analytes were detected in the sample.

S4 = Surrogate recovery was above laboratory and method acceptance limits. No target analytes were detected in the sample.

S5 = Surrogate recovery was below laboratory acceptance limits, but within method acceptance limits.

S6 = Surrogate recovery was below laboratory and method acceptance limits. Reextraction and/or reanalysis confirms low recovery caused by matrix effect.

S7 = Surrogate recovery was below laboratory and method acceptance limits. Unable to confirm matrix effect.

S8 = The analysis of the sample required a dilution such that the surrogate concentration was diluted below the method acceptance criteria. The method control sample recovery was acceptable.

S9 = The analysis of the sample required a dilution such that the surrogate concentration was diluted below the laboratory acceptance criteria. The method control sample recovery was acceptable.

S10 = Surrogate recovery was above laboratory and method acceptance limits. See Case narrative.

S11 = Surrogate recovery was high. Data reported per ADEQ policy 0154.000.

S12 = Surrogate recovery was low. Data reported per ADEQ policy 0154.000.

Method/analyte discrepancies:

T1 = Method promulgated by EPA, but not by ADHS at this time.

T2 = Cited ADHS licensed method does not contain this analyte as part of method compound list.

T3 = Method not promulgated either by EPA or ADHS.

T4 = Tentatively identified compound. Concentration is estimated and based on the closest internal standard.

Calibration verification:

V1 = CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.

V2 = CCV recovery was above method acceptance limits. This target analyte was detected in the sample. The sample could not be reanalyzed due to insufficient sample.

V3 = CCV recovery was above method acceptance limits. This target analyte was detected in the sample, but the sample was not reanalyzed. See case narrative.

V4 = CCV recovery was below method acceptance limits. The sample could not be reanalyzed due to insufficient sample.

V5 = CCV recovery after a group of samples was above acceptance limits. This target analyte was not detected in the sample. Acceptable per EPA Method 8000B.

V6 = Data reported from one-pont calibration criteria per ADEQ policy 0155.000.

V7 = Calibration verification recovery was above the method control limit for this analyte, however the average % difference or % drift for all the analytes met method criteria.

V8 = Calibration verification recovery was below the method control limit for this analyte, however the average % difference or % drift for all the analytes met method criteria.

Calibration:

W1 = The % RSD for this compound was above 15%. The average % RSD for all compounds in the calibration met the 15% criteria as specified in EPA method 8000B.

THIRD QUARTER 2008
GROUNDWATER MONITORING REPORT
TASKS 1.0, 2.2 AND 2.3 OF AQUIFER CHARACTERIZATION PLAN
MITIGATION ORDER ON CONSENT DOCKET NO. P-121-07
COCHISE COUNTY, ARIZONA

Prepared for:

FREEPORT-MCMORAN
COPPER QUEEN BRANCH
36 West Highway 92
Bisbee, Arizona 85603

Prepared by:

HYDRO GEO CHEM, INC.
51 West Wetmore Road, Suite 101
Tucson, Arizona 85705
(520) 293-1500

October 27, 2008

THIRD QUARTER 2008
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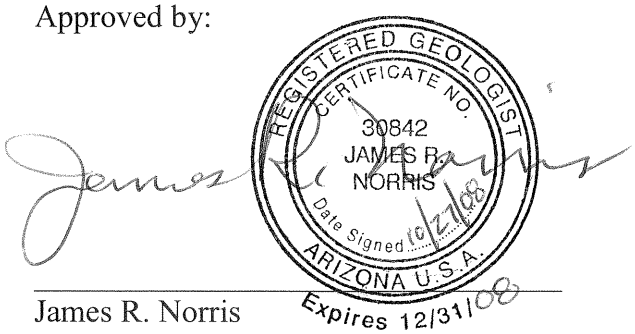
Approved by:



James R. Norris
Arizona Registered Geologist No. 30842

Prepared by:

Daniel R. Simpson
Senior Hydrogeologist

October 27, 2008

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2 Compilation of 2008 Analytical Results for Inorganic Analytes, pH, Temperature, and Specific Conductance
3 Compilation of 2008 Groundwater Elevation Data
4 Well Completion Depth, Screen Interval and Screened Lithology

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1 Generalized Geology and Well Locations
2 Sulfate Concentrations for Third Quarter 2008
3 Groundwater Elevations for Third Quarter 2008

APPENDICES

A Third Quarter 2008 Data Verification Report
B Analytical Reports from ACZ Laboratories, Inc.
C Hydro Geo Chem, Inc. Groundwater Sampling Forms

1. INTRODUCTION

This data report provides the results of groundwater monitoring conducted in the third quarter of 2008 in the vicinity of the Freeport-McMoRan Copper Queen Branch (CQB) pursuant to the Mitigation Order on Consent Docket No. P-121-07 (MO). Groundwater monitoring was conducted by CQB pursuant to Tasks 1, 2.2, and 2.3 of the Work Plan (Hydro Geo Chem, Inc. [HGC], 2008a) to characterize sulfate in the vicinity of the Concentrator Tailing Storage Area (CTSA). Pursuant to the MO, the Work Plan was submitted to Arizona Department of Environmental Quality (ADEQ) on December 17, 2007 (ADEQ, 2007). CQB initiated water sampling prior to work plan approval while ADEQ was commenting on the Work Plan and CQB was responding to ADEQ's comments. Revision 1 of the Work Plan was submitted to ADEQ on July 3, 2008 and ADEQ approved the Work Plan on August 3, 2008. HGC prepared this groundwater monitoring report on behalf of CQB.

1.1 Scope of Groundwater Monitoring

The scope of the groundwater monitoring program is described in Sections 3.2, 3.3.2, and 3.3.3 of the Work Plan (HGC, 2008a). Groundwater monitoring for Task 1 consisted of identifying private drinking water supply wells and public water supply system wells within one mile downgradient and crossgradient of the outer edge of the sulfate plume. Under Task 1, water supply wells are to be sampled for sulfate and water levels are to be recorded, if the well is equipped with a sounding tube.

Groundwater monitoring for Task 2.2 consists of water elevation measurement and collection of groundwater samples from wells in the vicinity of the CTSA. Task 2.3 addresses the installation and monitoring of additional offsite wells to define the extent of the sulfate plume and to further evaluate conditions in the former source area.

During the third quarter 2008, two measuring point elevation surveys were completed by Arizona Land Specialists (ALS) for private wells that had a measurable water level, Arizona Water Company (AWC) wells, and the newly installed Bisbee Mitigation Order (BMO) wells. A copy of the survey report completed by ALS is included as Appendix A.1.

1.1.1 Groundwater Monitoring for Task 1

Task 1 of the Work Plan consisted of a well inventory to identify potential private drinking water supply wells and public water supply systems located one mile downgradient and crossgradient of the sulfate plume from the CTSA and in the footprint of the plume. Samples of drinking water supply wells identified this quarter or sampled for trend analysis are analyzed for sulfate. Table 1 lists wells sampled and analyzed for the well inventory (HGC, 2008b).

1.1.2 Groundwater Monitoring for Task 2.2

The Work Plan identifies two purposes for the groundwater monitoring program required in Task 2.2: regional monitoring and plume monitoring. Regional monitoring is set on a semi-

annual basis during the first and third quarters of 2008 to characterize regional hydrologic conditions and any seasonality in water elevations. Samples for regional monitoring are analyzed for a suite of major element constituents to characterize general water quality conditions in addition to sulfate.

Plume monitoring is conducted quarterly at wells that are proximal to the sulfate plume in order to track the plume's location in the aquifer. Samples for plume monitoring are analyzed for sulfate only. This report presents the results of well inventory, regional, and plume monitoring conducted during the third quarter of 2008.

Table 1 lists wells identified in the Work Plan for quarterly and semi-annual monitoring, their availability for sampling in the third quarter of 2008, and their sampling status. Also included in Table 1 are wells added to the plume and regional monitoring program because they were accessible and in a usable location. Figure 1 presents a generalized geology map of the study area and well locations where data were collected during this reporting period.

Pursuant to the Work Plan, HGC and CQB contacted owners of wells identified for sampling in the Work Plan in order to obtain access for sampling. As described in Table 1, not all owners responded to the request for sampling and not all wells were suitable for sampling and water level measurements. In many cases, alternate wells were identified in lieu of wells that were unsuitable for sampling.

Analytical data for monitoring during the third quarter of 2008 were obtained from three sources: HGC, Naco Water Company (NWC) and Naco Sanitary District (NSD). In the third quarter of 2008, HGC collected groundwater samples at wells identified in Table 1 of the Work Plan and for wells identified during the well inventory investigation. NWC provided data for groundwater samples collected in March 2008 and NSD provided data for groundwater samples collected from their wells during the third quarter of 2008 for inclusion in this report.

Groundwater sampling and analysis methods used by HGC are described in the Quality Assurance Project Plan (QAPP) contained in Appendix F of the Work Plan (HGC, 2008a). Results of groundwater monitoring for Task 2.2 are presented in Section 2.

1.1.3 Groundwater Monitoring for Task 2.3

Section 2.3 of the Work Plan proposed the installation of additional offsite monitor wells to define the extent of the sulfate plume, to provide installations for ongoing monitoring, to characterize aquifer materials and hydraulic properties, and to determine bedrock depth. During March through September 2008 wells BMO-2008-1, BMO-2008-3B, BMO-2008-6B, BMO-2008-6M, BMO-2008-7M, BMO-2008-9M, BMO-2008-10GU, BMO-2008-10GL, and BMO-2008-11G, were installed, developed, and pump tested and water level and water quality samples collected according to Sections 4.2 and 4.3 of the QAPP. In addition, wells BMO-2008-5B and BMO-2008-5M were installed and water level measurements collected however, well development, pump testing, and water quality samples were collected at the end of the third quarter and analytical results are not available. Results for Wells BMO-2008-5B and BMO-

2008-5M will be reported in the fourth quarter 2008. Wells installed pursuant to Task 2.3 of the Work Plan are added to the quarterly plume monitoring list for Task 2.2. Results of groundwater monitoring for Task 2.3 are presented in Section 2.

2. GROUNDWATER MONITORING RESULTS

2.1 Results of Monitoring for Tasks 1, 2.2, and 2.3

Analytical results and groundwater elevation data for the third quarter of 2008 are tabulated in Table 2 and Table 3, respectively. Figure 2 shows the concentrations of dissolved sulfate in the wells sampled in the third quarter of 2008. The highest sulfate concentration measured at co-located wells was used for concentration contouring. Figure 3 shows groundwater elevations in the third quarter of 2008. Groundwater elevations were calculated using the depth to water measurements made under static (nonpumping) conditions for all wells shown.

2.2 Quality Assurance/Quality Control Review

Pursuant to Section 6.4 of the QAPP, data verification reports were prepared for quality assurance and quality control purposes. The data verification report for data collected by HGC during the third quarter of 2008 is included in Appendix A.

Analytical laboratory reports for samples collected by HGC in the third quarter of 2008 are provided in portable document format on the compact disc in Appendix B. Copies of groundwater sampling forms for samples collected by HGC are in Appendix C.

As determined by the analytical data verification review, all data for samples collected in the third quarter of 2008 by HGC are of acceptable quality for use in the aquifer characterization being conducted pursuant to the Work Plan.

3. DISCUSSION

This data report provides the results of groundwater monitoring conducted in the vicinity of the CTSA for the third quarter of 2008. The purpose of the groundwater monitoring was twofold: (1) to delineate the location of the sulfate plume and (2) to characterize the sulfate concentration and groundwater elevation in the regional aquifer. During the third quarter 2008, groundwater samples were collected from 78 plume and regional area wells and depth to water measurements were collected at 73 wells as presented in Table 1.

Groundwater samples and water level measurements were not collected from all the wells identified in the Work Plan for a variety of reasons, including owner limitations on access, unsuitable well construction, inability to contact the owner, obstruction in well, or a well no longer existing. The specific reason(s) for not sampling these wells are provided in Table 1. In some cases, alternate wells were identified and sampled as described in Table 1. Overall, groundwater monitoring conducted during the third quarter of 2008 is deemed to have met the objectives of identifying the location of the sulfate plume from the CTSA and providing potentiometric data in the vicinity of the CTSA.

3.1 Hydrogeologic Setting

Water quality samples have been collected from wells completed in three principal water-bearing units in the area: basin fill, Morita Formation, and Glance Conglomerate. Figure 1 shows that the Morita Formation and Glance Conglomerate outcrop on the east side of the study

area. The Morita Formation consists of red to buff siltstone and sandstone. The Glance Conglomerate is a polymictic conglomerate with a silty to sandy matrix. The Morita Formation and Glance Conglomerate are indurated bedrock. The basin fill unconformably overlies the bedrock units and consists of unconsolidated sand and gravel except in zones of cemented caliche. The bedrock units are believed to be transected by at least two faults; the northeast trending Black Gap fault and the northwest trending Abrigo fault. East of the Black Gap fault the basin fill is largely unsaturated and groundwater occurs in the Morita Formation and Glance Conglomerate. West of the Black Gap fault the basin fill is saturated and comprises a key aquifer overlying the Morita Formation and Glance Conglomerate aquifers. The results of monitoring need to be considered in the context of the hydrogeologic setting of the study area to interpret the apparent spatial distribution of sulfate and the patterns of groundwater elevation. Table 4 includes the well completion depth, screen interval, and screened lithology for wells sampled this quarter.

3.2 Sulfate Distribution

The results of groundwater monitoring show the lateral and vertical extent of the sulfate plume in the study area as defined by the 250 mg/L sulfate concentration contour. The distribution of sulfate concentrations at individual wells within the plume can appear complex in plan maps because some wells that are located near one another have large differences in concentration. These differences occur because the wells may sample different depths and the sulfate plume is three dimensional and plume water can be underlain or overlain by groundwater

with lower sulfate concentrations. The lateral and vertical distributions of sulfate are discussed below.

3.2.1 Lateral Distribution of Sulfate

Figure 2 is a contour map showing the areal distribution of sulfate in the third quarter 2008. The sulfate concentration contours on Figure 2 are inferred based on the maximum sulfate concentration at locations where closely spaced wells display different concentrations.

Based on the sulfate concentration data the sulfate plume extends to the southwest from the vicinity of the former evaporation pond to the vicinity of Naco and to the south to the vicinity of Bisbee Junction. The groundwater monitoring data indicate that the sulfate plume extends over an area of approximately 2.8 miles by 3.6 miles and is confined primarily to the basin fill and Morita Formation except near the former evaporation pond where wells in the Glance Conglomerate have sulfate concentrations greater than 1000 mg/L. West of the Black Gap fault the sulfate plume is contained primarily within the basin fill. East of the fault, where the basin fill is largely unsaturated, the sulfate plume is within the Morita Formation and Glance Conglomerate. The overall lateral extent of the sulfate plume has not changed significantly since the second quarter 2008.

3.2.2 Vertical Distribution of Sulfate

Evaluation of the vertical distribution of sulfate is based on sampling data for wells located in close proximity but completed at different elevations in the aquifer or in different aquifer units. Two patterns are observed with respect to the vertical distribution of sulfate. First, some wells completed in the uppermost few tens of feet of the basin fill aquifer have lower concentrations than wells completed at deeper portions of the basin fill. Second, the sulfate plume in certain areas is observed to be underlain by groundwater with lower concentrations of sulfate. Examples of the vertical distribution of sulfate are discussed below.

Sulfate stratification between the basin fill and the Morita Formation along Purdy Lane near Naco is displayed between wells FRANCO, HOBAN, and COB MW-1 screened in basin fill and nearby wells GARNER 635, TM-19A, and BMO-2008-7M screened in Morita Formation. Sulfate concentrations in the basin fill wells FRANCO, HOBAN, and COB MW-1 were 680 mg/L, 690 mg/L, and 730 mg/L, respectively (Figure 2). Sulfate concentrations in Morita Formation wells GARNER 635, TM-19A, and BMO-2008-7M were 37.4 mg/L, 55.3 mg/L, and 31.4 mg/L, respectively. These data indicate that the underlying Morita Formation exhibits sulfate concentrations approximately an order of magnitude lower than concentrations in the basin fill at that location. A similar relationship was observed in the first and second quarters of 2008 (HGC, 2008c).

However, about one mile northwest of the aforementioned wells, at co-located wells BMO-2008-6B and BMO-2008-6M on the west end of the study area, sulfate concentrations are

one order of magnitude higher in the Morita Formation than the basin fill. Well BMO-2008-6M screened from 350 to 440 ft bgs completed in the Morita Formation has a sulfate concentration of 182 mg/L and BMO-2008-6B screened from 195 to 255 ft bgs completed in basin fill had a sulfate concentration of 53.3 mg/L. More information on this area will be known when the water quality results of co-located wells BMO-2008-5B and BMO-2008-5M become available.

Stratification of sulfate is also present in wells BF-01 and TM-02A west of the former evaporation pond. Well BF-01 is completed to a depth of 400 ft bgs and is screened across the basin fill, Morita Formation, and Glance Conglomerate; although the water levels collected indicate that the basin fill is probably unsaturated. BF-01 had a sulfate concentration of 1330 mg/L while TM-02A, located approximately 500 feet south of BF-01 and screened from 825 to 925 ft bgs in the Morita Formation and Glance Conglomerate had a sulfate concentration of 14.4 mg/L. The sulfate concentrations in the Glance Conglomerate at TM-02A are approximately two orders of magnitude lower than those in the overlying Morita Formation and Glance Conglomerate at that location. A similar relationship was observed in the first and second quarters of 2008 (HGC, 2008c).

In the third quarter 2008, sulfate also appears to be stratified in the vicinity of co-located wells BMO-2008-10GU and BMO-2008-10GL screened at different depths in the Glance Conglomerate located south of the Abrigo fault and east of the Black Gap fault in the north central portion of the study area. BMO-2008-10GU was completed at a total depth of 449 feet below ground surface (ft bgs) and screened from 239 to 439 ft bgs while BMO-2008-10GL was completed at 820 ft bgs and screened from 700 to 800 ft bgs. Thus, the BMO-2008-10GU

sample represents groundwater approximately 360 feet deeper in the Glance Conglomerate than the BMO-2008-10GL sample. Sulfate concentrations in BMO-2008-10GU and BMO-2008-10GL were 2210 mg/L and 1320 mg/L, respectively, in the third quarter of 2008 (Figure 2). These data indicate that sulfate concentrations were stratified with the lower concentration at greater depths in the Glance Conglomerate at this location.

3.3 Groundwater Elevation

Groundwater elevations are shown on Figure 3. In general, groundwater elevations decrease from north to south east of the Black Gap fault in the region between the Bisbee airport and Bisbee Junction, and from east to west across the central portion of the study area west of the Black Gap fault. Comparison of the third quarter 2008 water elevations with those observed in previous quarters indicates about a 2 foot decrease in groundwater elevations and only minor differences in the apparent groundwater flow directions indicated by water level data.

The water level relationships are relatively complex due to the multiple aquifer units monitored and the complicated structural geology of the area. The apparent hydraulic gradient is steeper east of the Black Gap fault where groundwater is in bedrock units of the Morita Formation and Glance Conglomerate than is the hydraulic gradient west of the fault where groundwater is in basin fill. The higher hydraulic gradient is probably due to a lower average hydraulic conductivity in the bedrock compared to basin fill. The apparent groundwater flow direction east of the Black Gap fault is southerly to the vicinity of Bisbee Junction and then westerly. Convergent groundwater flow is suggested by the V-shaped contours pointed in the

upgradient direction in the vicinity of Bisbee Junction. West of the Black Gap fault, the apparent hydraulic gradient is shallower than east of the fault and the apparent groundwater flow direction is westerly. Several areas along Purdy Lane and near Naco exhibit apparent groundwater depressions, most likely associated with groundwater pumping.

The relationship between water levels east and west of the Black Gap fault is uncertain due to the different apparent hydraulic gradients and groundwater flow directions and the variability of water level data east of the Black Gap fault. The variability of water levels east of the Black Gap fault is indicated by the large differences in water elevation (sometimes up to several hundred feet) between wells in relatively close proximity to one another. This variability in water elevation is particularly evident in the Bisbee Junction area and in the area of the BIMA and NOTEMAN wells east of the former evaporation pond. The variability of water elevations east of the Black Gap fault indicates that the hydraulic properties of the bedrock are heterogeneous and that certain portions of the bedrock may not be hydraulically connected. The heterogeneity in hydraulic properties in bedrock is probably due to the restriction of groundwater flow to permeable features such as permeable beds, bedding planes, or fracture systems within bedrock which are not uniformly distributed throughout the area.

The water level elevations in co-located wells screened at different depths in basin fill and Morita Formation vary by less than seven feet in the west part of the study area. In the northeast part of the study area the water level varies over 200 feet at co-located wells BMO-2008-10GU and BMO-2008-10GL, screened at different depths in the Glance Conglomerate.

Anomalous water elevations are also observed west of the Black Gap fault at the SRC, BURKE, and BMO-2008-11G wells in the northwest portion of the study area. According to well driller logs, SRC and BURKE are screened in a shale bedrock and BMO-2008-11G is screened in the Glance Conglomerate all at depths greater than 600 ft bgs. The water level in SRC, BURKE, and BMO-2008-11G are anomalously low compared to the levels in wells that appear to be in basin fill and/or Morita Formation one mile to the south. The existing data suggest that these wells are within a hydrostratigraphic unit with a poor hydraulic connection to the aquifers to the south.

Although complex, the water level data provide important information on the direction and magnitude of hydraulic gradients which control the direction and movement of the sulfate plume. The results also display the effects of aquifer heterogeneities that need to be accounted for in the site conceptual model. This discussion of water level data is preliminary and will be verified by ongoing monitoring and augmented with data being collected by other Work Plan tasks.

3.4 Subsequent Groundwater Monitoring for Task 2.2

Task 2.2 (Sections 3.3.2 and Appendix F of the Work Plan) called for two semiannual groundwater monitoring events: one in winter and one in summer to characterize any seasonal influences on water quality and groundwater elevation. The winter semiannual sampling was conducted in the first quarter of 2008 (HGC, 2008c). The third quarter 2008 semiannual sampling constitutes the summer event, and completes the semiannual sampling program. Subsequent groundwater monitoring pursuant to Task 2.2 will be quarterly plume monitoring (Table 1). Wells installed for Task 2.3 will be added to the quarterly plume monitoring as they become available.

4. REFERENCES

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Hydro Geo Chem, Inc. (HGC). 2008a. Revision 1, Work Plan to Characterize and Mitigate Sulfate with Respect to Drinking Water Supplies in the Vicinity of the Concentrator Tailing Storage Area, Cochise County, Arizona. July 3, 2008.

HGC. 2008b. Well Inventory Report, Task 1 of Aquifer Characterization Plan for Mitigation Order on Consent No. P-121-07, Cochise County, Arizona. July 3, 2008.

HGC. 2008c. First and Second Quarters 2008, Groundwater Monitoring Report, Task 2.2 of Aquifer Characterization Plan, Mitigation Order on Consent Docket No. P-121-07, Cochise County, Arizona. July 30, 2008.

TABLES

TABLE 1
Summary of Groundwater Monitoring for
Third Quarter 2008

Well Name	ADWR 55 Registry No.	Owner	Monitoring Purpose	Casing or Well Depth (feet)	Q3-2008 Monitoring		Status
					Water Level Measured?	Water Quality Sample Collected?	
WELLS FOR QUARTERLY MONITORING							
AWC 03	616585	Arizona Water Company	Plume	269	YES	YES	Water quality sample collected August 2008
AWC 05	590620	Arizona Water Company	Plume	1183	YES	YES	Water quality sample collected August 2008
BF-01	539783	CQB	Plume	400	YES	YES	Water quality sample collected August 2008
BIMA	577927	Bisbee Municipal Airport	Plume	465	YES	YES	Water quality sample collected in July 2008
BULLARD	602134	Bullard	Plume	300	NO	NO	Well not operational; unable to collect water levels due to obstruction
BURKE	212268	Burke	Plume	781	YES	YES	Water quality sample collected in July 2008
COB MW-1	903992	City of Bisbee	Plume	420	YES	YES	Water quality sample collected in July 2008
COB MW-2	903984	City of Bisbee	Plume	170	YES	YES	Water quality sample collected in July 2008
COB WL	593116	City of Bisbee	Plume	150	YES	YES	Water quality sample collected in July 2008
COOPER	623564	Cooper, Teresa	Plume	325	NO	YES	Water quality samples collected in July 2008; unable to collect water level due to obstruction
COOPER C	637069	Cooper, Charles	Plume	220	YES	YES	Water quality sample collected in July 2008
CROWLEY	510298	Crowley	Plume	788	NO	NO	Dry
DODSON	644927	Dodson	Plume	200	YES	YES	Water quality sample collected in July 2008
GARNER 557	558557	Garner	Plume	300	YES	NO	Well identified for water level measurements only
GARNER 635[1]	587635	Garner	Plume	680	YES	YES	Water quality sample collected in July 2008
GGOOSE 546	628546	Galloping Goose Properties	Plume	800	NO	NO	Well not operational, unable to obtain water levels due to obstruction
GGOOSE 547	628547	Galloping Goose Properties	Plume	800	YES	YES	Water quality sample collected in August 2008
GL-03	539782	CQB	Plume	820	NO	YES	Water quality sample collected in August 2008
GREGG	630852	Gregg	Plume	ND	NO	NO	Dry
HULL 584	606854	Hull	Plume	25	NO	NO	Unable to locate well
MILLER 340	641340	Miller	Plume	200	NO	NO	Dry
MILLER 341	641341	Miller	Plume	100	NO	NO	Dry
NWC 02	562944	Naco Water Company	Plume	312	NO	NO	No Data
NWC 03	203321	Naco Water Company	Plume	312	NO	YES	Naco Water Company provided March 2008 Data
NWC 04 CAP	627685	Naco Water Company	Plume	379	NO	NO	Well Capped
NWC 05	627696	Naco Water Company[2]	Plume	175	ND	ND	No Data
OSBORN	643436	Osborn	Plume	150	NO	YES	Water quality sample collected in July 2008; unable to collect water level due to obstruction

TABLE 1
Summary of Groundwater Monitoring for
Third Quarter 2008

Well Name	ADWR 55 Registry No.	Owner	Monitoring Purpose	Casing or Well Depth (feet)	Q3-2008 Monitoring		Status
					Water Level Measured?	Water Quality Sample Collected?	
PARRA	576415	Parra	Plume	355	NO	YES	Water quality sample collected in July 2008; unable to collect water level due to obstruction
ROGERS 803	641803	Rogers, Ernest D	Plume	140	YES	YES	Water quality sample collected in July 2008
TM-02	522573	CQB	Plume	640	NO	NO	Pump intake above water level; unable to collect water levels due to obstruction
TM-02A	522574	CQB	Plume	925	YES	YES	Water quality sample collected in August 2008
TM-03	522575	CQB	Plume	200	YES	YES	Water quality sample collected in August 2008
TM-06 MILLER	522695	Miller	Plume	200	YES	YES	Water quality sample collected in August 2008
TM-07	522576	CQB	Plume	350	NO	YES	Water quality sample collected in August 2008; unable to collect water level due to obstruction
TM-10 USBP	522696	U.S. Border Patrol	Plume	290	NO	NO	Owner declined participation
TM-11 PIONKE	522815	Pionke	Plume	160	NO	NO	Dry
TM-13 MILLER	522698	Miller	Plume	200	NO	NO	Dry
TM-16	522578	CQB	Plume	115	YES	YES	Water quality sample collected in August 2008
TM-17	522700	CQB	Plume	200	NO	NO	Dry
TM-19	522581	CQB	Plume	210	NO	NO	Dry
TM-19A	522580	CQB	Plume	700	YES	YES	Water quality sample collected in August 2008
TM-41	562555	CQB	Plume	210	NO	NO	Dry <4580 ft amsl
TM-42	562554	CQB	Plume	250	YES	YES	Water quality sample collected in August 2008
TVI 875	568875	Turquoise Valley, Inc.	Plume	330	NO	YES	Water quality sample collected in July 2008, no access to well casing for water level measurements
WEED	544535	Weed	Plume	320	NO	YES	Water quality sample collected in July 2008; no access to well casing for water level measurements
WEISKOPF	641802	Weiskopf	Plume	200	YES	YES	Water quality sample collected in July 2008
MITIGATION ORDER WELLS INSTALLED IN 2008 FOR QUARTERLY MONITORING							
BMO-2008-1G	909474	CQB	Plume	310	YES	YES	Water quality sample collected in August 2008
BMO-2008-3B	909147	CQB	Plume	260	YES	YES	Water quality sample collected in July 2008
BMO-2008-5B	909653	CQB	Plume	290	YES	NO	Water quality sample collected September 30, 2008 after aquifer testing; results will be reported in Q4 08
BMO-2008-5M	909552	CQB	Plume	450	YES	NO	Water quality sample collected October 1, 2008 after aquifer testing; results will be reported in Q4 08
BMO-2008-6B	909146	CQB	Plume	265	YES	YES	Water quality sample collected in July 2008
BMO-2008-6M	909019	CQB	Plume	450	YES	YES	Water quality sample collected in July 2008
BMO-2008-7M	908794	CQB	Plume	670	YES	YES	Water quality sample collected in July 2008
BMO-2008-9M	909255	CQB	Plume	775	YES	YES	Water quality sample collected in August 2008

TABLE 1
Summary of Groundwater Monitoring for
Third Quarter 2008

Well Name	ADWR 55 Registry No.	Owner	Monitoring Purpose	Casing or Well Depth (feet)	Q3-2008 Monitoring		Status
					Water Level Measured?	Water Quality Sample Collected?	
BMO-2008-10GU	909272	CQB	Plume	449	YES	YES	Water quality sample collected in August 2008
BMO-2008-10GL	909435	CQB	Plume	810	YES	YES	Water quality sample collected in August 2008
BMO-2008-11G	909434	CQB	Plume	760	YES	YES	Water quality sample collected in August 2008
WELLS FOR SEMIANNUAL MONITORING							
COB WL ABND	570012	City of Bisbee	Regional	148	NO	NO	Well Abandoned
CONNOR	516399	Connor	Regional	220	NO	NO	Well Abandoned
EAST	599796	East	Regional	125	YES	YES	Water quality sample collected in July 2008
GALLANT	502527	Gallant	Regional	190	YES	YES	Water quality sample collected in July 2008
MILLER 342	641342	Miller	Regional	200	NO	NO	Dry
NSD 02	527587	Naco Sanitary District	Regional	120	NO	YES	Q3 2008 Water quality data provided by Naco Sanitary District
NSD 03	527586	Naco Sanitary District	Regional	100	NO	YES	Q3 2008 Water quality data provided by Naco Sanitary District
NWC 01	627682	Naco Water Company[2]	Regional	215	ND	ND	No data
NWC 06	575700	Naco Water Company	Regional	410	NO	YES	Naco Water Company provided March 2008 Data
PALMER	578819	Palmer	Regional	220	NO	YES	Water quality sample collected in July 2008; no access to well casing for water level measurements
POWER	624535	Power	Regional	100	YES	YES	Water quality sample collected in July 2008
TM-05 MILLER	522694	Miller	Regional	160	NO	NO	Dry
TM-08 SWAN	522817	Swan, George	Regional	817	NO	YES	Water quality sample collected in July 2008; however owner has declined further participation in monitoring program
TM-12 MILLER	522697	Miller	Regional	175	NO	NO	Dry
TM-14 NELSON	522816	Nelson	Regional	215	NO	YES	Dry
TM-15 MILLER	522699	Miller	Regional	325	YES	YES	Water quality sample collected in July 2008
TM-43	564729	CQB	Regional	830	YES	YES	Water quality sample collected in August 2008
TM-43A	564726	CQB	Regional	215	YES	YES	Water quality sample collected in August 2008
TM-43B	565004	CQB	Regional	215	YES	YES	Water quality sample collected in August 2008
TM-45	564728	CQB	Regional	520	NO	NO	Dry
WALKER	200393	Walker	Regional	120	YES	YES	Water quality sample collected in July 2008

TABLE 1
Summary of Groundwater Monitoring for
Third Quarter 2008

Well Name	ADWR 55 Registry No.	Owner	Monitoring Purpose	Casing or Well Depth (feet)	Q3-2008 Monitoring		Status
					Water Level Measured?	Water Quality Sample Collected?	
ADDITIONAL WELLS SAMPLED FOR Q3-08 MONITORING THAT WERE NOT IDENTIFIED IN THE WORK PLAN							
ANDERSON	613396	Anderson	Well Inventory	236	YES	YES	Water quality sample collected in July 2008
AWC 02	616586	Arizona Water Company	Plume	330	YES	YES	Water quality sample collected in August 2008
AWC 04	616584	Arizona Water Company	Plume	250	YES	YES	Water quality sample collected in August 2008
BANKS 986	647986	Banks	Well Inventory	435	NO	YES	Water quality sample collected in July 2008; unable to collect water level measurements due to obstruction
BANKS 987	647987	Banks	Well Inventory	339	YES	NO	Well identified for water level measurements only
BARTON 010	085010	Barton	Plume	300	YES	NO	Well not operational; identified for water level measurements only
BARTON 919	644919	Barton	Plume	130	YES	NO	Well not operational; identified for water level measurements only
BLOMMER	633472	Blommer	Well Inventory	380	NO	YES	Water quality sample collected in July 2008; unable to collect water level measurements due to obstruction
CAMPBELL	215509	Campbell	Well Inventory	350	NO	NO	Well identified for water level measurements only; unable to collect water level measurement due to obstruction
CHAMBERS	629807	Chambers	Well Inventory	245	NO	YES	Water quality samples collected in July 2008; no access to well casing for water level measurements
COB MW-3	906823	City of Bisbee	Plume	269	YES	YES	Water quality sample collected in July 2008
COLLINS[3]	565260	Collins	Well Inventory	320	YES	YES	Water quality sample collected August 2008
DOUGLASS 791	592791	Douglass	Well Inventory	200	YES	NO	Well not operational; identified for water level measurements only
DOUGLASS 792	529792	Douglass	Well Inventory	200	YES	NO	Well not operational; identified for water level measurements only
EPPELE 641	805641	Eppele	Well Inventory	265	YES	YES	Water quality sample collected in July 2008
FRANCO	500101	Franco	Well Inventory	200	NO	YES	Water quality sample collected in July 2008; unable to collect water level measurements due to obstruction
FULTZ	212447	Fultz	Well Inventory	300	NO	YES	Water quality sample collected in July 2008; unable to collect water levels because sounder diameter too large for access port
GOAR RANCH	610695	Goar	Well Inventory	250	YES	NO	Well identified for water level measurement only
HOBAN	805290	Hoban	Well Inventory	316	YES	YES	Water quality sample collected in July 2008
HOWARD	NR	Howard	Well Inventory	200	YES	YES	Water quality sample collected in July 2008
KEEFER	209744	Keefer	Well Inventory	245	YES	YES	Water quality sample collected in July 2008
MCCONNELL 265	539265	McConnell	Well Inventory	216	YES	YES	Water quality sample collected in July 2008
METZLER	35-71891	Metzler	Well Inventory	351	YES	YES	Water quality sample collected in July 2008
MINOR 317	063317	Minor	Well Inventory	155	NO	NO	New owner declined participation
MOORE	538847	Moore	Well Inventory	220	NO	YES	Water quality sample collected in July 2008; unable to collect water levels because sounder diameter too large for access port
NESS	509127	Ness	Well Inventory	812	YES	YES	Water quality sample collected in July 2008

TABLE 1
Summary of Groundwater Monitoring for
Third Quarter 2008

Well Name	ADWR 55 Registry No.	Owner	Monitoring Purpose	Casing or Well Depth (feet)	Q3-2008 Monitoring		Status
					Water Level Measured?	Water Quality Sample Collected?	
NOTEMAN	212483	Noteman	Well Inventory	400	YES	YES	Water quality sample collected in July 2008
NWC 04	551849	Naco Water Company	Well Inventory	462	NO	YES	Naco Water Company provided March 2008 Data
PANAGAKOS	35-76413	Panagakos	Well Inventory	200	NO	YES	Water quality sample collected in July 2008; no access to well casing for water level measurement
PIONKE	613395	Pionke	Well Inventory	300	YES	YES	Water quality sample collected in July 2008
POOL	509518	Pool	Well Inventory	313	YES	YES	Water quality sample collected in July 2008
RAMIREZ	216425	Ramirez	Well Inventory	300	NO	YES	Water quality sample collected in July 2008; no access to well casing for water level measurements
RAY	803772	Ray	Well Inventory	100	YES	YES	Water quality sample collected in July 2008
ROGERS E	216018	Rogers, Ernest M	Well Inventory	290	YES	YES	Water quality sample collected in July 2008
RUIZ	531770	Ruiz	Well Inventory	312	YES	YES	Water quality sample collected in July 2008
SCHWARTZ	210865	Schwartz	Well Inventory	305	YES	YES	Water quality sample collected in July 2008
SRC	211345	Specialty Restaurants Corporation, Inc.	Regional	965	YES	YES	Water quality sample collected in July 2008
STEPHENS	808560	Stephens	Well Inventory	NR	YES	NO	Well identified for water level measurement only
SUNBELT	201531	Sunbelt Marketing, Inc.	Plume	380	NO	NO	Dry
SWAN	NR	Swan, Alan	Well Inventory	NR	YES	YES	Water quality sample collected in July 2008
TVI 236	802236	Turquoise Valley, Inc.	Plume	222	YES	YES	Water quality sample collected in July 2008
TVI 713	567713	Turquoise Valley, Inc.	Well Inventory	200	YES	NO	Well identified for water level measurements only
ZANDER	205126	Zander	Well Inventory	280	YES	YES	Water quality sample collected in July 2008

Notes:
ADWR = Arizona Department of Water Resources
AWC = Arizona Water Company
BIMA = Bisbee Municipal Airport
COB WL = City of Bisbee Warren Lagoon
CQB = Freeport-McMoRan Copper Queen Branch
ft amsl = feet above mean sea level
ND = No Data
NR = No Record
NSD = Naco Sanitary District
SRC = Specialty Restaurants Corporation, Inc.
NWC = Naco Water Company
TVI = Turquoise Valley Inc.
35-71891 = ADWR 35 Database
[1] GARNER 635 also known as GW-47
[2] Naco Water Company sold well, personnel communication with NWC, 2008
[2] formally listed as ENGLUND

TABLE 2
Compilation of Groundwater Monitoring Results For Inorganic Analytes, pH, Temperature, and Specific Conductance

Well Name	ADWR 55 Registry No.	Sample Date	Field pH (SU)	Field Temp (deg C)	Field SC (µS/cm)	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrate/ Nitrite as N, dissolved	Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved	Potassium, dissolved	Sodium, dissolved	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Total Alkalinity	Residue, Filterable (TDS) @ 180°C	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
ANDERSON	613396	03/20/08	7.25	21.1	1176	431	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANDERSON	613396	05/05/08	7.03	21.8	1231	452	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANDERSON	613396	07/14/08	7.11	21.6	1260	472	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 02	616586	01/07/08	-	-	-	14	14	-	2.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 02	616586	03/03/08	-	-	-	16	16	-	2.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 02	616586	05/05/08	-	-	-	13.3	15.9	-	2.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 02	616586	08/12/08	7.01	22.3	630	14.3	17.8	0.2	2.42	2.42	<0.01	66.4	9.1	2.1	20.0	181	5	<2	186	280	255	1.10	4.7	5.0	3.1
AWC 03	616585	01/07/08	-	-	-	41	14	-	2.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 03	616585	03/03/08	-	-	-	38	14	-	2.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 03	616585	05/05/08	-	-	-	37.3	12.2	-	2.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 03	616585	08/12/08	7.28	22.4	469	38.8	15.5	0.2	2.28	2.28	<0.01	62.8	8.6	2.1	22.8	156	5	<2	162	290	260	1.12	4.6	4.9	3.2
AWC 04	616584	02/04/08	-	-	-	18	40	-	2.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 04	616584	04/07/08	-	-	-	18	45	-	2.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 04	616584	06/02/08	-	-	-	14.3	48	-	2.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 04	616584	08/12/08	7.08	22.5	458	21.6	47.5	0.1	1.94	1.94	<0.01	88.7	11.6	2.6	22.8	206	<2	<2	206	380	328	1.16	6.0	6.4	3.2
AWC 05	590620	02/04/08	-	-	-	13	15	-	1.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 05	590620	04/07/08	-	-	-	14	14	-	1.94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 05	590620	06/02/08	-	-	-	14.3	15.6	-	1.86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 05	590620	08/12/08	6.74	23.3	425	14.9	16.1	0.1	2.02	2.02	<0.01	50.6	6.2	2.2	35.6	164	8	<2	172	280	242	1.16	4.3	4.6	3.4
BANKS 986	647986	02/27/08	7.53	21.8	980	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BANKS 986	647986	05/12/08	7.40	22.1	1021	65.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BANKS 986	647986	07/21/08	7.43	22.9	1034	82.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BF-01	539783	03/04/08	6.46	21.9	2745	1320	30.4	<0.1	0.92	0.92	<0.01	621.0	100.0	4.5	60.2	610	<2	<2	610	2850	2510	1.14	40.8	42.0	1.4
BF-01	539783	05/23/08	6.41	18.3	2698	1450	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BF-01	539783	08/05/08	6.11	22.4	3095	1330	30	<2	1.09	1.09	<0.01	624	107	4.5	61.3	579	<2	<2	579	2820	2510	1.12	40.4	42.8	2.9
BIMA	577927	02/06/08	6.69	22.2	1335	210	105	0.1	6.80	6.80	<0.01	224.0	48.4	12.4	65.9	510	<2	<2	510	980	1000	0.98	18.0	18.4	1.1
BIMA	577927	04/25/08[1]	6.37	23.1	1521	190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA	577927	05/13/08[1]	6.58	22.7	1489	195	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA	577927	06/23/08[1]	6.30	23.3	1572	225	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA DUP	577927	06/23/08[1]	6.30	23.3	1572	196	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA	577927	07/29/08[1]	6.44	23.0	1647	204	101	0.1	7.85	7.85	<0.01	209	46.5	12.2	63.6	456	<2	<2	456	1040	945	1.10	16.8	17.4	1.8
BIMA	577927	08/28/08[1]	M	23.0	1776	256	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA	577927	09/23/08[1]	6.29	23.0	1741	296	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	02/05/08	7.43	20.2	714	206	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	04/21/08[1]	7.06	21.9	753	201	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	05/15/08[1]	7.16	22.2	845	211	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	06/23/08[1]	6.93	21.5	903	193	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	07/29/08[1]	7.21	22.2	921	203	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	08/27/08[1]	7.12	22.1	864	189	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	09/23/08[1]	7.16	22.3	818	193	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BMO-2008-1G	909474	08/27/08	7.09	24.2	808	107	76.3	0.1	13.5	13.5	<0.01	124	32.2	6.4	35.7	229	9	<2	238	580	588	0.99	10.1	10.6	2.4
BMO-2008-3B	909147	07/18/08	7.35	23.9	615	106	24	0.3	3.68	3.72	0.04	64.5	12.0	2.9	53.6	151	3	<2	154	390	373	1.05	6.2	6.6	3.1
BMO-2008-6B	909146	07/16/08	7.36	24.1	475	53.3	13	0.4	1.97	1.97	<0.01	59.7	10.2	3.0	26.2	151	9	<2	160	300	274	1.09	4.8	5.0	2.0
BMO-2008-6M	909019	07/10/08	NA	22.1	702	182	16	0.3	1.98	1.98	<0.01	104	17.9	3.60	32.5	144	9	<2	153	480	460	1.04	7.4	8.1	4.5
BMO-2008-7M	908794	07/14/08	7.63	25.2	500	31.4	10.4	0.3	1.55	1.55	<0.01	32.4	11.4	2.70	60.8	188	13	<2	201	290	282	1.03	5.1	5.3	1.9
BMO-2008-9M	909255	08/08/08	7.72	25.7	415	47.3	14	0.10	1.90	1.93	0.03	28.0	17.8	3.4	64.6	193	6	<2	199	320	306	1.05	5.5	5.7	1.8
BMO-2008-10GL	909435	08/20/08	6.22	29.5	2924	1320	30.0	<2	<0.02	<0.02	<0.01	579	167	10.5	90.5	870	<2	<2	870	2970	2720	1.09	46.0	46.9	1.0
BMO-2008-10GU	909272	08/04/08	6.41	23.6	3660	2210	60	<2	0.13	0.16	<0.01	649	311	15.3	37.6	984	<2	<2	984	3810	3870	0.98	67.8	60.0	-6.1
BMO-2008-11G	909434	08/22/08	8.02	28.2	359	14.2	2.8	0.2	0.56	0.56	<0.01	10.7	5.1	1.7	64.2	149	14	<2	163	220	205	1.07	3.6	3.8	2.7
BURKE	212268	02/07/08	7.17	23.0	411	29.5	31.8	0.3	1.83	1.83	<0.01	62.3	22.8	2.8	26.0	212	<2	<2	212	360	311	1.16	5.9	6.2	2.5
BURKE	212268	04/22/08	7.13	27.0	423	26	11	0.2	2.88	2.88	<0.01	52.1	22.0	2.3	16.9	191	<2	<2	191	260	-	-	-	-	-
BURKE	212268	08/05/08	7.06	26.8	496	21.9	10	0.2	2.81	2.85	<0.01	52.5	22.3	2.3	16.1	187	<2	<2	187	260	250	1.04	4.6	5.2	6.1

TABLE 2
Compilation of Groundwater Monitoring Results For Inorganic Analytes, pH, Temperature, and Specific Conductance

Well Name	ADWR 55 Registry No.	Sample Date	Field pH (SU)	Field Temp (deg C)	Field SC (µS/cm)	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrate/ Nitrite as N, dissolved	Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved	Potassium, dissolved	Sodium, dissolved	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Total Alkalinity	Residue, Filterable (TDS) @ 180°C	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
CAMPBELL	215509	02/05/08	7.87	18.3	823	211	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHAMBERS	629807	03/06/08	7.73	17.8	408	7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHAMBERS	629807	05/05/08	7.15	22.1	421	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHAMBERS	629807	07/14/08	7.43	23.2	434	5.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB MW-1	903992	02/22/08	6.93	21.2	1401	720	19.8	0.3	2.33	2.33	<0.01	257.0	64.5	7.7	56.5	206	11	<2	217	1360	1270	1.07	20.2	20.8	1.5
COB MW-1	903992	05/20/08	6.88	22.0	2050	980	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB MW-1	903992	07/30/08	6.88	21.7	1780	730	19.8	0.1	2.50	2.50	<0.01	273	69.3	8.0	58.9	223	<2	<2	223	1500	1300	1.15	20.5	22.1	3.8
COB MW-2	903984	02/22/08	7.28	20.2	417	41	19.4	0.3	6.49	6.49	<0.01	66.4	9.0	2.1	25.5	156	12	<2	168	340	298	1.14	5.2	5.2	0.0
COB MW-2	903984	05/20/08	7.32	21.2	490	40.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB MW-2	903984	07/30/08	7.34	20.8	511	37.6	19.9	<0.1	6.80	6.80	<0.01	66.3	9.0	2.1	26.6	158	<2	<2	158	330	286	1.15	4.9	5.2	3.0
COB MW-3	906823	02/28/08	7.39	21.0	416	57.8	16.2	0.2	2.0	2.0	<0.01	62.2	8.9	2.2	25.5	159	<2	<2	159	300	277	1.08	5.0	5.0	0.0
COB MW-3	906823	05/20/08	7.56	22.3	473	35.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB MW-3	906823	07/30/08	7.64	22.3	541	67.3	16.1	0.2	2.41	2.41	<0.01	66.1	9.2	2.4	26.5	149	<2	<2	149	320	288	1.11	5.0	5.2	2.0
COB WL	593116	02/22/08	6.99	20.6	919	90	106	0.3	3.91	3.91	<0.01	128	34.3	7.2	47.8	269	11	<2	280	650	603	1.08	10.8	11.5	3.1
COB WL	593116	05/20/08	7.30	21.9	1053	98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB WL	593116	07/30/08	7.17	22.0	1098	97.1	110	0.1	4.02	4.02	<0.01	130	35.0	7.5	51.5	274	<2	<2	274	700	613	1.14	10.9	11.8	4.0
COLLINS	565260	02/12/08	6.88	21.6	1470	520	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COLLINS	565260	05/29/08	7.01	22.0	1459	520	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COLLINS	565260	07/31/08	6.86	21.6	1502	536	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COOPER	623564	02/14/08	7.02	20.8	1892	33	17.5	0.3	2.82	2.82	<0.01	47.9	13.8	2.2	25.3	154	9	<2	163	270	254	1.06	4.6	4.7	1.1
COOPER	623564	05/14/08	8.08	22.1	419	34.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COOPER	623564	07/31/08	7.81	28.4	455	33.7	16.9	0.2	2.68	2.68	<0.01	48.9	13.3	2.1	24.6	150	7.0	<2	157	260	249	1.04	4.5	4.6	1.1
COOPER C	637069	03/20/08	6.93	21.3	2081	990	49	<0.1	3.09	3.10	0.01	393	59.8	6.0	45.0	229	<2	<2	229	1810	1690	1.07	27.0	26.7	0.6
COOPER C	637069	05/05/08	6.78	22.4	2139	990	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COOPER C	637069	07/15/08	6.86	22.3	2162	1040	46.5	<0.1	3.24	3.24	<0.01	386	58.8	5.8	43.3	235	<2	<2	235	1860	1740	1.07	28.1	26.2	-3.5
COOPER C DUP	637069	07/15/08	6.86	22.3	2162	960	46.4	0.1	3.25	3.25	<0.01	398	61.7	6.1	46.2	234	<2	<2	234	1860	1670	1.11	26.4	27.2	1.5
DODSON	644927	02/20/08	7.61	17.3	857	54	129	0.3	10.70	10.70	<0.01	111	37.5	12.3	41.2	252	14	<2	266	590	598	0.99	10.8	10.8	0.0
DODSON	644927	05/12/08	7.11	21.1	1118	34.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DODSON	644927	07/24/08	7.25	21.6	1233	49.3	160	0.2	13.1	13.1	<0.01	124	43.3	13.7	51.3	223	12	<2	235	740	646	1.15	11.2	12.4	5.1
EAST	599796	02/08/08	7.45	19.9	423	10.6	31.2	0.4	6.3	6.3	<0.01	59.9	24.3	2.5	31.6	227	<2	<2	227	320	325	0.98	6.1	6.4	2.4
EAST	599796	05/14/08	7.31	20.9	595	14.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EAST	599796	07/23/08	7.34	20.8	605	11.8	33.3	0.4	6.10	6.10	<0.01	59.5	24.4	2.4	31.4	217	6	<2	223	350	326	1.07	6.0	6.4	3.2
EPPELE 641	805641	03/11/08	7.98	21.4	646	21.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPPELE 641	805641	05/12/08	7.21	21.7	667	24.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPPELE 641	805641	07/21/08	7.49	23.9	605	19.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRANCO	500101	02/06/08	7.47	19.6	1301	670	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRANCO	500101	05/05/08	6.93	23.1	1557	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRANCO	500101	07/14/08	7.00	22.7	1586	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ	212447	02/27/08	6.76	21.1	1827	152	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ	212447	04/21/08[1]	6.74	22.0	1739	137	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ	212447	05/14/08[1]	6.88	22.3	1532	131	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ	212447	06/23/08[1]	6.74	22.0	1788	111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ	212447	07/29/08[1]	6.74	22.2	1989	152	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ	212447	08/28/08[1]	M	21.6	1889	137	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ	212447	09/23/08[1]	6.82	21.9	1821	137	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GALLANT	502527	02/11/08	7.46	20.2	604	17.9	12.7	0.2	3.0	3.04	<0.01	106	15.9	4.3	25.6	344	<2	<2	344	400	402	1.00	7.8	7.8	0.0
GALLANT	502527	07/23/08	7.26	21.2	925	20.9	56.9	0.1	19.2	19.2	<0.01	138	19.8	4.8	29.6	303	<2	<2	303	560	537	1.04	9.4	9.9	2.6
GARNER 557	558557	02/21/08	6.70	20.9	822	123	14.3	0.2	1.70	1.70	<0.01	62.2	10.2	2.5	58.1	171	13	<2	184	420	394	1.07	6.7	6.5	-1.5
GARNER 635	587635	02/04/08	7.61	22.7	479	37.8	13.7	0.2	1.68	1.69	0.01	39.2	8.2	2.8	65.0	182	<2	<2	182	290	284	1.02	4.9	5.5	5.8
GARNER 635	587635	05/05/08	7.26	24.9	468	35.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GARNER 635	587635	07/15/08	7.63	25.6	480	37.4	13.5	0.2	1.92	1.92	<0.01	37.6	7.8	2.5	60.2	163	16	<2	179	300	281	1.07	4.0	5.2	4.0
GGOOSE 547	628547	05/21/08	7.08	22.7	856	199	37.1	0.1	7.14	7.14	<0.01	113	32.9	5.5	25.6	194	<2	<2	194	600	561	1.07	9.6	9.6	0.0
GGOOSE 547	628547	08/15/08	7.02	24.8	915	178	35.4	0.1	8.90	8.90	<0.01	117	32.4	5.6	25.4	187	<2	<2	187	590	545	1.08	9.1	9.7	3.2
GL 03	539782	03/04/08	7.43	25.7	417	20.3	20.3	<0.1	0.75	0.77	0.02	46.7	22.8	2.6	18.7	192	<2	<2	192	260	250	1.04	4.8	5.1	3.0
GL 03	539782	05/22/08	7.06	25.3	647	43.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GL 03	539782	08/04/08	7.10	26.8	673	36.1	21.4	<0.1	0.60	0.62	0.02	68.7	38.9	3.4	19.5	278	<2	<2	278	400	358	1.12	6.9	7.5	4.2

TABLE 2
Compilation of Groundwater Monitoring Results For Inorganic Analytes, pH, Temperature, and Specific Conductance

Well Name	ADWR 55 Registry No.	Sample Date	Field pH (SU)	Field Temp (deg C)	Field SC (µS/cm)	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrate/ Nitrite as N, dissolved	Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved	Potassium, dissolved	Sodium, dissolved	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Total Alkalinity	Residue, Filterable (TDS) @ 180°C	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
HOBAN	805290	02/27/08	6.93	22.1	1359	510	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOBAN	805290	05/07/08	6.88	22.3	1532	670	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOBAN	805290	07/14/08	6.88	23.1	1719	690	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOWARD	NR	03/04/08	7.06	20.4	1280	571	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOWARD	NR	05/08/08	6.95	21.0	1494	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOWARD	NR	07/14/08	7.00	21.1	1566	610	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KEEFER	209744	02/06/08	7.70	19.0	378	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KEEFER	209744	05/06/08	7.19	20.3	512	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KEEFER	209744	07/16/08	7.21	21.4	539	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MCCONNELL 265	539265	02/20/08	7.21	21.1	1435	720	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MCCONNELL 265	539265	05/06/08	6.77	21.6	1668	737	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MCCONNELL 265	539265	07/15/08	6.91	22.3	1775	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
METZLER	35-71891	03/05/08	7.27	21.6	1055	317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
METZLER	35-71891	05/15/08	7.12	22.8	1051	329	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
METZLER	35-71891	07/31/08	7.16	22.5	1078	317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOORE	538847	02/20/08	7.69	22.2	362	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOORE	538847	05/08/08	7.09	22.4	432	7.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOORE	538847	07/16/08	7.34	23.0	482	9.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NESS	509127	07/24/08	7.35	26.5	563	50.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NOTEMAN	212483	02/05/08	6.70	19.9	1317	310	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NOTEMAN	212483	05/13/08	6.67	23.0	1445	272	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NOTEMAN	212483	07/24/08	6.68	24.2	1539	274	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NSD 02	527587	02/05/08	-	-	-	43	52.5	0.201	<1.0	-	<0.01	-	-	-	-	-	-	-	-	388	-	-	-	-	-
NSD 02	527587	07/07/08	8.02	21.0	609	44.0	42	0.0431	0.641	-	0.007	-	-	-	-	-	-	-	-	369	-	-	-	-	-
NSD 03	527586	02/05/08	-	-	-	70.7	14.1	0.186	3.2	-	<0.010	-	-	-	-	-	-	-	-	396	-	-	-	-	-
NSD 03	527586	07/07/08	7.64	21.0	570	58.9	11.6	0.041	3.20	-	0.011	-	-	-	-	-	-	-	-	372	-	-	-	-	-
NWC 03	203321	03/04/08	-	-	-	560	30	-	4.64	4.64	<0.1	-	-	-	-	-	-	-	-	1050	-	-	-	-	-
NWC 04	551849	03/04/08	-	-	-	240	41	-	6.33	6.33	<0.1	-	-	-	-	-	-	-	-	628	-	-	-	-	-
NWC 06	575700	03/04/08	-	-	-	7.9	13	-	1.73	1.73	<0.1	-	-	-	-	-	-	-	-	241	-	-	-	-	-
OSBORN	643436	02/25/08	7.35	22.4	508	16.4	18.2	0.3	3.76	3.76	<0.01	84.4	15.4	4.3	25.2	246	29	<2	275	370	357	1.04	6.6	6.7	0.8
OSBORN	643436	05/13/08	7.22	22.2	576	17.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OSBORN	643436	07/22/08	7.24	22.9	618	17.7	19.7	0.4	4.4	4.4	<0.01	80.3	15.0	4.2	24.7	252	29	<2	281	350	362	0.97	6.8	6.4	-3.0
OSBORN DUP	643436	07/22/08	7.24	22.9	618	17.5	19.6	0.3	4.7	4.7	<0.01	80.9	15.1	4.2	25.0	250	31	<2	281	350	364	0.96	6.8	6.4	-3.0
PALMER	578819	02/14/08	7.91	17.5	435	15.9	11.3	0.4	2.13	2.13	<0.01	31.9	27.1	5.4	50.1	235	15	< 2	251	300	308	0.97	5.8	6.1	2.5
PALMER	578819	05/13/08	7.92	22.9	508	16.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PALMER	578819	07/22/08	7.64	25.8	548	16.2	11.3	0.4	2.34	2.34	<0.01	30	25.4	5.1	47.9	226	39	<2	265	300	321	0.93	6.1	5.8	-2.5
PANAGAKOS	35-76413	04/21/08	6.80	20.5	1228	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PANAGAKOS	35-76413	07/21/08	6.95	21.9	1390	444	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PARRA	576415	02/11/08	7.08	21.8	1067	360	33.4	0.1	4.17	< 0.04	<0.01	178	50.4	4.4	31.6	177	<2	<2	177	880	783	1.12	12.3	14.5	8.2
PARRA	576415	05/15/08	7.10	21.8	1200	405	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PARRA	576415	07/31/08	7.00	22.4	1248	423	33.5	<0.1	4.23	4.23	<0.01	181	49.8	4.5	32.4	213	<2	<2	213	930	871	1.07	14.4	14.7	1.0
PARRA DUP	576415	07/31/08	7.00	22.4	1248	404	33.5	<0.1	4.33	4.33	<0.01	177	48.5	4.3	30.9	212	<2	<2	212	920	845	1.09	14.0	14.3	1.1
PIONKE	613395	02/06/08	7.53	19.9	910	394	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIONKE	613395	05/07/08	7.08	21.4	1100	391	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIONKE	613395	07/17/08	6.99	21.9	1209	420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
POOL	509518	02/20/08	7.95	20.9	497	134	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
POOL	509518	05/19/08	7.40	22.2	585	122	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
POOL	509518	07/31/08	7.47	22.3	599	117	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
POWER	624535	02/12/08	7.11	18.9	428	15.5	6.1	0.1	7.00	7.00	<0.01	95	7.6	3.8	7.4	242	<2	< 2	242	310	312	0.99	5.8	5.8	0.0
POWER	624535	07/22/08	7.10	21.7	795	20.2	37.8	<0.1	24.1	24.1	<0.01	124	11.0	3.8	13.6	222	29	<2	251	550	479	1.15	8.2	7.8	-2.5
RAMIREZ	216425	02/04/08	7.47	21.7	408	7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAMIREZ	216425	05/06/08	7.19	22.7	405	8.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAMIREZ	216425	07/17/08	7.32	24.5	439	8.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 2
Compilation of Groundwater Monitoring Results For Inorganic Analytes, pH, Temperature, and Specific Conductance

Well Name	ADWR 55 Registry No.	Sample Date	Field pH (SU)	Field Temp (deg C)	Field SC (µS/cm)	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrate/ Nitrite as N, dissolved	Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved	Potassium, dissolved	Sodium, dissolved	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Total Alkalinity	Residue, Filterable (TDS) @ 180°C	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
RAY	803772	02/15/08	7.30	19.1	1540	159	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY	803772	04/21/08[1]	6.92	21.3	1418	125	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY	803772	05/13/08[1]	7.05	20.9	1418	123	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY	803772	06/23/08[1]	6.87	21.1	1593	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY	803772	07/29/08[1]	6.98	21.8	1411	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY	803772	08/28/08[1]	M	21.1	1519	129	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY	803772	09/23/08[1]	6.90	22.2	1519	125	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS 803	641803	02/07/08	7.45	18.6	601	125	13.2	0.2	4.69	4.71	0.02	94	11.7	3.0	26.6	148	<2	<2	148	410	383	1.07	6.3	6.9	4.5
ROGERS 803	641803	04/21/08[1]	7.32	21.4	552	128	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS 803	641803	05/08/08[1]	7.14	21.2	622	141	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS 803	641803	06/23/08[1]	7.06	22.9	660	129	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS 803	641803	07/29/08[1]	6.78	23.1	339	134	13.1	0.2	4.3	4.3	<0.01	92.5	12.6	3.3	28.7	149	<2	<2	149	430	393	1.09	6.4	7.0	4.5
ROGERS 803	641803	08/28/08[1]	7.18	21.6	635	128																			
ROGERS 803	641803	09/23/08[1]	7.24	21.9	599	133	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS E	216018	02/04/08	7.40	21.0	435	4.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS E	216018	05/07/08	7.18	22.2	415	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS E	216018	07/17/08	7.28	23.0	446	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RUIZ	531770	02/05/08	7.73	18.2	445	263	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RUIZ	531770	05/15/08	7.23	25.9	965	265	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RUIZ	531770	07/30/08	6.99	22.1	999	243	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	02/08/08	7.52	21.5	506	158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	04/21/08[1]	7.23	21.7	563	122	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	05/19/08[1]	7.38	22.4	629	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	06/23/08[1]	7.02	22.1	674	129	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	07/29/08[1]	7.25	22.4	955	245	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	08/28/08[1]	M	22.3	669	131	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	09/23/08[1]	7.27	22.2	607	124	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SRC	211345	04/23/08	7.57	25.8	380	19.0	10	0.2	3.61	3.61	<0.01	25.8	16.3	2.1	48.2	174	<2	<2	174	230	-	-	-	-	-
SRC	211345	08/05/08	7.40	27.2	452	15.4	10.4	0.2	3.74	3.74	<0.01	26.8	17.8	2.0	44.6	173	<2	<2	173	250	238	1.05	4.3	4.8	5.5
SWAN	NR	02/13/08	7.28	20.7	467	24.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWAN	NR	05/14/08	7.24	21.2	479	23.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWAN	NR	07/24/08	7.35	22.4	506	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-02A	522574	03/04/08	8.67	22.6	302	12.3	8.6	0.3	<0.02	0.02	0.02	12.6	5.8	2.2	58.0	146	9	<2	155	190	196	0.97	3.6	3.7	1.4
TM-02A	522574	05/23/08	7.75	22.9	321	14.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-02A	522574	08/15/08	7.84	26.4	369	14.4	8.2	0.2	0.3	0.3	<0.01	14.7	5.2	2.4	60.2	143	8	<2	151	190	200	0.95	3.5	3.8	4.1
TM-03	522575	05/20/08	7.51	22.2	778	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-03	522575	08/06/08	7.08	21.6	828	97	40.7	0.2	7.68	7.68	<0.01	94.3	36.6	3.5	27.8	221	<2	<2	221	510	467	1.09	8.1	9.0	5.3
TM-06 MILLER	522695	02/27/08	7.44	19.6	457	13.9	7.1	0.3	0.96	0.96	<0.01	42.2	19.0	1.7	54.3	218	<2	<2	218	310	274	1.13	4.9	6.1	10.9
TM-06 MILLER	522695	05/20/08	7.50	20.7	506	32.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-06 MILLER	522695	08/04/08	7.41	20.7	529	31.3	18.0	0.7	0.89	0.89	<0.01	37.8	19.5	1.9	52.1	210	<2	<2	210	300	291	1.03	5.4	5.8	3.6
TM-07	522576	03/06/08	7.54	20.8	726	22.5	9	0.2	3.04	3.04	<0.01	49	15.8	2.0	22.6	133	9	<2	142	220	223	0.10	3.7	4.7	11.9
TM-07	522576	05/22/08	6.96	20.1	385	22.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-07	522576	08/06/08	7.04	22.8	519	22.2	8.9	0.2	2.52	2.52	<0.01	45.8	14.7	1.9	20.5	157	<2	<2	159	240	220	1.09	4.0	4.4	4.8
TM-08 SWAN	522817	02/13/08	7.63	25.2	511	12.6	32.1	0.3	5.3	5.3	<0.01	43.4	21.4	4.9	35.5	204	<2	< 2	204	310	296	1.1	5.6	5.6	0.0
TM-08 SWAN	522817	05/14/08	7.44	24.4	480	12.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-08 SWAN	522817	07/23/08	7.76	28.1	522	12.6	14.8	0.3	2.86	2.86	<0.01	<0.02	<0.02	1.1	128	204	11	<2	215	310	303	1.02	5.2	5.6	3.7
TM-14 NELSON	522816	02/08/08	7.64	21.6	319	32.9	12.5	0.3	1.82	1.82	<0.01	56.1	10.0	2.8	23.6	166	<2	<2	166	250	246	1.02	4.5	4.7	2.2
TM-15 MILLER	522699	02/27/08	7.66	21.9	344	14	7.1	0.4	1.56	1.56	<0.01	32.9	18.0	2.0	32.4	181	2	<2	183	220	224	0.98	4.2	4.6	4.5
TM-15 MILLER	522699	05/23/08	7.54	22.1	371	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-15 MILLER	522699	08/05/08	7.42	23.3	413	13.7	7.0	0.3	1.99	1.99	<0.01	29.8	18.9	2.0	32.0	173	-	-	174	210	216	0.97	4.1	4.5	4.7
TM-16	522578	03/05/08	7.17	20.6	1351	497	28.9	<0.1	6.80	6.90	<0.01	225	51.7	13.4	30.7	205	<2	<2	205	1030	1000	1.03	15.8	17.2	4.2
TM-16	522578	05/22/08	7.05	20.5	1304	522	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-16	522578	08/06/08	6.67	20.9	1410	466	28.1	<0.1	8.07	8.07	<0.01	215	52.7	13.3	30.0	191	<2	<2	191	1070	955	1.12	15.0	16.7	5.4
TM-19A	522580	03/06/08	8.02	22.2	240	56.1	15.4	0.1	0.26	0.26	<0.01	37.9	11.6	3.0	57.7	119	19	<2	138	280	273	1.03	4.3	5.4	11.3
TM-19A	522580	05/22/08	7.36	24.0	501	64.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-19A	522580	08/06/08	7.32	22.6	494	55.3	15.4	0.1	0.09	0.09	<0.01	37.3	10.8	2.9	53.0	153	5	-	158	270	272	0.99	4.7	5.1	4.1

TABLE 2
Compilation of Groundwater Monitoring Results For Inorganic Analytes, pH, Temperature, and Specific Conductance

Well Name	ADWR 55 Registry No.	Sample Date	Field pH (SU)	Field Temp (deg C)	Field SC (µS/cm)	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrate/ Nitrite as N, dissolved	Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved	Potassium, dissolved	Sodium, dissolved	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Total Alkalinity	Residue, Filterable (TDS) @ 180ºC	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
TM-42	562554	03/05/08	7.10	20.8	1342	482	27	0.2	6.55	6.55	<0.01	185	55.8	10.4	37.9	186	<2	<2	186	980	939	1.04	15.1	15.8	2.3
TM-42	562554	05/22/08	7.05	21.4	1270	483	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-42	562554	08/06/08	6.69	22.0	1388	467	27.3	0.2	7.20	7.20	<0.01	191	60.7	10.1	38.7	208	<2	<2	208	1010	952	1.04	15.3	16.5	3.8
TM-43	564729	03/03/08	8.57	21.0	341	2.1	7.7	0.3	0.04	0.04	<0.01	10.1	5.7	2.2	79.4	197	20	<2	217	250	246	1.02	4.6	4.5	-1.1
TM-43	564729	08/04/08	8.14	25.7	436	<5	12.0	<1	0.25	0.25	<0.01	10.4	5.8	2.0	79.7	174	12	<2	186	270	227	1.19	4.0	4.5	5.9
TM-43A	564726	03/03/08	6.17	19.9	2788	1420	31	<0.2	0.99	0.99	<0.01	570	181	4.5	42.1	713	<2	<2	713	3000	2680	1.19	45.0	45.0	0.3
TM-43A	564726	08/04/08	6.03	21.6	3149	1320	30.0	<0.2	1.31	1.31	<0.01	577	188	4.7	40.5	658	<2	<2	658	2950	2560	1.15	41.8	46.2	5.0
TM-43B	565004	03/03/08	6.79	20.6	514	0.7	5	<0.1	0.05	0.06	0.01	54.6	23.8	2.9	47.9	338	<2	<2	338	350	338	1.04	6.9	6.8	-0.7
TM-43B	565004	08/05/08	6.89	21.0	507	31.8	4.7	<0.1	0.03	0.03	<0.01	47.5	21.5	2.6	44.9	231	<2	<2	231	300	292	1.03	5.4	6.1	6.1
TM-43B DUP	565004	08/05/08	6.89	21.0	507	32.5	4.7	<0.1	0.11	0.11	<0.01	47.9	21.7	2.5	44.9	234	<2	<2	234	310	295	1.05	5.5	6.2	6.0
TVI 236	802236	03/20/08	7.48	20.0	488	31.3	26	0.1	3.90	3.93	0.03	70.5	9.3	1.9	25.6	178	<2	<2	178	310	289	1.07	5.2	5.4	1.9
TVI 236	802236	05/07/08	7.13	20.4	494	32.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TVI 236	802236	07/15/08	7.39	21.9	532	37.6	23.5	0.2	3.46	3.46	<0.01	70.4	9.3	1.8	26.3	161	11	<2	173	310	292	1.06	5.1	5.4	2.9
TVI 875	568875	02/21/08	7.28	21.1	739	244	20.1	0.2	2.99	2.99	<0.01	120	16.1	2.9	41.1	161	11	<2	172	630	565	1.12	9.3	9.2	-0.5
TVI 875	568875	05/07/08	7.09	21.2	833	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TVI 875	568875	07/15/08	7.27	22.4	925	274	20.2	0.2	3.0	3.0	<0.01	131	17.4	2.8	39.6	148	11	<2	160	640.0	598	1.07	9.7	9.7	0.0
WALKER	200393	02/13/08	7.05	20.2	650	20	4	0.2	2.26	2.26	<0.01	117	14.4	3.6	14.3	355	<2	<2	355	440	396	1.11	7.8	7.7	-0.6
WALKER	200393	07/23/08	7.25	20.7	740	45.4	37.8	0.3	7.24	7.24	<0.01	89	27.9	2.9	28.6	250	7	<2	257	450	421	1.07	7.6	8.0	2.6
WEED	544535	02/14/08	7.74	21.7	323	11.1	9	-	1.72	1.72	<0.02	35.6	14.5	2.2	30.0	162	5	<2	168	230	212	1.08	3.9	4.3	4.9
WEED	544535	05/15/08	7.22	22.7	365	12.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WEED	544535	07/30/08	7.42	32.0	407	11.5	10.1	0.3	1.92	1.92	<0.01	34.1	13.6	2.2	29.4	163	2	<2	165	230	209	1.10	3.9	4.1	2.5
WEISKOPF	641802	02/15/08	7.48	20.0	1072	500	33.1	0.2	4.74	4.74	<0.01	218	31.4	4.3	35.7	177	<2	<2	177	1010	950	1.06	15.3	15.2	-0.3
WEISKOPF	641802	05/07/08	7.10	21.8	1251	483	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WEISKOPF	641802	07/16/08	7.07	22.2	1399	560	26.0	0.1	4.29	4.29	<0.01	248	34.3	4.4	38.6	170	3	<2	173	1060	1040	1.0	16.3	17.0	2.1
ZANDER	205126	02/04/08	7.24	19.7	392	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZANDER	205126	05/06/08	7.26	21.2	404	6.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZANDER	205126	07/16/08	6.92	22.9	441	6.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

All units are in milligrams per liter (mg/l) unless otherwise noted
deg C = degrees Celsius
meq/l = milliequivalent per liter
M = pH Meter Malfunction
NR = No Record
- = Not Analyzed
ND = No Data
SC = Specific Conductance
SU = Standard Units
TDS = Total Dissolved Solids
µS/cm = microsiemens per centimeter
[1] Verified drinking water supply well, sample collected for sulfate trend analysis for interim action evaluation

TABLE 3
Compilation of 2008
Groundwater Elevation Data

Well Name	ADWR 55 Registry No.	UTM North	UTM East	Date	Measuring Point Elevation[1] (ft amsl)	Depth To Water (feet)	Groundwater Elevation (ft amsl)
ANDERSON	613396	3468816.065	601134.729	03/20/08	4580.34	145.46	4434.88
ANDERSON	613396	3468816.065	601134.729	05/05/08	4580.34	145.84	4434.50
ANDERSON	613396	3468816.065	601134.729	07/14/08	4580.34	146.16	4434.18
AWC 02	616586	3468549.357	598907.911	04/08/08 [2]	4541	116	4425.00
AWC 02	616586	3468549.357	598907.911	08/27/08	4547.64	121.12	4426.52
AWC 03	616585	3468681.898	599090.322	04/08/08 [2]	4531	112	4419.00
AWC 03	616585	3468681.898	599090.322	08/27/08	4539.52	119.40	4420.12
AWC 04	616584	3468717.084	598949.929	04/08/08 [2]	4531	108	4423.00
AWC 04	616584	3468717.084	598949.929	08/18/08	4540.48	112.56	4427.92
AWC 05	590620	3468541.692	599269.904	04/08/08 [2]	4548	284	4264.00
AWC 05	590620	3468541.692	599269.904	08/27/08	4542.51	299.65	4242.86
BARTON 010	085010	3469047.469	606201.084	05/12/08	4688.95	227.50	4461.45
BARTON 010	085010	3469047.469	606201.084	07/23/08	4688.95	276.06	4412.89
BARTON 919	644919	3469076.689	606243.850	05/12/08	4692.36	113.71	4578.65
BARTON 919	644919	3469076.689	606243.850	07/23/08	4692.36	113.56	4578.80
BANKS 987	647987	3469206.175	606981.921	02/27/08	4648.18	208.00	4440.18
BANKS 987	647987	3469206.175	606981.921	05/12/08	4648.18	216.30	4431.88
BANKS 987	647987	3469206.175	606981.921	07/21/08	4648.18	228.95	4419.23
BF-01	539783	3472151.593	604169.077	03/04/08	4835.23	348.99	4486.24
BF-01	539783	3472151.593	604169.077	05/23/08	4835.23	348.80	4486.43
BF-01	539783	3472151.593	604169.077	08/05/08	4835.23	348.66	4486.57
BIMA	577927	3471852.804	606001.245	05/13/08	4802.05	367.31	4434.74
BIMA	577927	3471852.804	606001.245	08/18/08	4802.05	370.24	4431.81
BMO-2008-1G	909474	3471723.644	606467.681	08/27/08	4805.10	62.05	4743.05
BMO-2008-3B	909147	3467919.582	602012.923	07/18/08	4583.97	138.05	4445.92
BMO-2008-5B	909653	3468994.395	600449.648	09/11/08	4585.73	145.10	4440.63
BMO-2008-5M	909552	3468993.961	600445.302	09/11/08	4585.63	146.65	4438.98
BMO-2008-6B	909146	3469820.644	600366.523	07/16/08	4627.44	190.13	4437.31
BMO-2008-6M	909019	3469813.885	600367.943	07/10/08	4626.90	191.63	4435.27
BMO-2008-7M	908794	3470029.283	603099.165	07/14/08	4688.33	238.31	4450.02
BMO-2008-9M	909255	3471121.675	604668.669	08/08/08	4762.61	287.17	4475.44
BMO-2008-10GU	909272	3471731.866	605267.551	08/04/08	4793.45	299.28	4494.17
BMO-2008-10GL	909435	3471702.043	605264.072	08/20/08	4792.21	521.75	4270.46
BMO-2008-11G	909434	3472626.482	603800.995	08/22/08	4844.67	577.76	4266.91
BURKE	212268	3473029.816	602230.087	04/22/08	4856.30	606.55	4249.75
BURKE	212268	3473029.816	602230.087	08/05/08	4856.30	605.86	4250.44
CAMPBELL	215509	3469320.340	606420.836	02/05/08	4694.29	180.60	4513.69
CAMPBELL	215509	3469320.340	606420.836	05/13/08	4694.29	181.80	4512.49
COB MW-1	903992	3469889.889	603153.259	02/22/08	4683.26	232.47	4450.79
COB MW-1	903992	3469889.889	603153.259	05/20/08	4683.26	233.12	4450.14
COB MW-1	903992	3469889.889	603153.259	07/30/08	4683.26	233.37	4449.89
COB MW-2	903984	3468114.836	600973.257	02/22/08	4566.21	122.85	4443.36
COB MW-2	903984	3468114.836	600973.257	05/20/08	4566.21	123.00	4443.21
COB MW-2	903984	3468114.836	600973.257	07/30/08	4566.21	123.53	4442.68
COB MW-3	906823	3468726.000	599169.225	02/28/08	4538.63	120.84	4417.79
COB MW-3	906823	3468726.000	599169.225	05/20/08	4538.63	125.00	4413.63
COB MW-3	906823	3468726.000	599169.225	07/30/08	4538.63	118.50	4420.13

TABLE 3
Compilation of 2008
Groundwater Elevation Data

Well Name	ADWR 55 Registry No.	UTM North	UTM East	Date	Measuring Point Elevation[1] (ft amsl)	Depth To Water (feet)	Groundwater Elevation (ft amsl)
COB WL	593116	3472502.012	606357.506	02/22/08	4832.06	56.50	4775.56
COB WL	593116	3472502.012	606357.506	05/20/08	4832.06	57.50	4774.56
COB WL	593116	3472502.012	606357.506	07/30/08	4832.06	58.64	4773.42
COLLINS	565260	3471341.335	602551.286	02/12/08	4733.72	289.47	4444.25
COLLINS	565260	3471341.335	602551.286	05/29/08	4733.72	288.53	4445.19
COLLINS	565260	3471341.335	602551.286	07/31/08	4733.72	290.08	4443.64
COOPER C	637069	3468913.011	601349.987	03/04/08	4595.06	155.08	4439.98
COOPER C	637069	3468913.011	601349.987	05/05/08	4595.06	155.34	4439.72
COOPER C	637069	3468913.011	601349.987	07/15/08	4595.06	156.01	4439.05
DODSON	644927	3469063.772	605594.560	05/12/08	4686.34	81.38	4604.96
DODSON	644927	3469063.772	605594.560	07/24/08	4686.34	82.20	4604.14
DOUGLASS 791	592791	3470222.677	607632.993	02/13/08	4703.27	22.11	4681.16
DOUGLASS 791	592791	3470222.677	607632.993	05/13/08	4703.27	24.60	4678.67
DOUGLASS 791	592791	3470222.677	607632.993	07/22/08	4703.27	27.00	4676.27
DOUGLASS 792	592792	3469829.115	607607.541	02/13/08	4681.73	87.76	4593.97
DOUGLASS 792	592792	3469829.115	607607.541	05/13/08	4681.73	87.21	4594.52
DOUGLASS 792	592792	3469829.115	607607.541	07/22/08	4681.73	86.90	4594.83
EAST	599796	3468712.215	607076.365	02/08/08	4626.01	50.20	4575.81
EAST	599796	3468712.215	607076.365	05/14/08	4626.01	52.45	4573.56
EAST	599796	3468712.215	607076.365	07/23/08	4626.01	52.16	4573.85
EPPELE 641	805641	3469229.942	607165.354	03/11/08	4642.86	29.52	4613.34
EPPELE 641	805641	3469229.942	607165.354	05/12/08	4642.86	30.64	4612.22
EPPELE 641	805641	3469229.942	607165.354	07/21/08	4642.86	25.59	4617.27
GALLANT	502527	3468524.363	607769.640	02/11/08	4599.58	28.32	4571.26
GALLANT	502527	3468524.363	607769.640	07/23/08	4599.58	33.05	4566.53
GARNER 557	558557	3468962.415	602659.240	02/21/08	4626.44	191.05	4435.39
GARNER 557	558557	3468962.415	602659.240	05/05/08	4626.44	191.28	4435.16
GARNER 557	558557	3468962.415	602659.240	07/15/08	4626.44	191.44	4435.00
GARNER 635	587635	3468967.902	602665.352	02/04/08	4628.29	193.20	4435.09
GARNER 635	587635	3468967.902	602665.352	05/05/08	4628.29	195.90	4432.39
GARNER 635	587635	3468967.902	602665.352	07/15/08	4628.29	193.58	4434.71
GGOOSE 547	628547	3469820.260	606256.657	05/21/08	4717.11	220.91	4496.20
GGOOSE 547	628547	3469820.260	606256.657	08/15/08	4717.11	238.48	4478.63
GL-03	539782	3472738.941	608379.424	05/22/08	4840.37	660.15	4180.22
GL-03	539782	3472738.941	608379.424	08/04/08	4840.37	659.79	4180.58
GOAR RANCH	610695	3468892.471	602454.751	02/21/08	4631.13	183.90	4447.23
GOAR RANCH	610695	3468892.471	602454.751	05/05/08	4631.13	188.11	4443.02
GOAR RANCH	610695	3468892.471	602454.751	07/16/08	4631.13	184.41	4446.72
HOBAN	805290	3468880.329	601705.848	02/27/08	4597.21	163.05	4434.16
HOBAN	805290	3468880.329	601705.848	05/07/08	4597.21	163.28	4433.93
HOBAN	805290	3468880.329	601705.848	07/14/08	4597.21	163.87	4433.34
HOWARD	NR	3468768.622	601281.936	03/04/08	4589.70	150.10	4439.60
HOWARD	NR	3468768.622	601281.936	05/08/08	4589.70	150.70	4439.00
HOWARD	NR	3468768.622	601281.936	07/14/08	4589.70	150.91	4438.79
KEEFER	209744	3468119.015	599879.175	02/06/08	4572.03	134.67	4437.36
KEEFER	209744	3468119.015	599879.175	05/06/08	4572.03	135.28	4436.75
KEEFER	209744	3468119.015	599879.175	07/16/08	4572.03	136.24	4435.79

TABLE 3
Compilation of 2008
Groundwater Elevation Data

Well Name	ADWR 55 Registry No.	UTM North	UTM East	Date	Measuring Point Elevation[1] (ft amsl)	Depth To Water (feet)	Groundwater Elevation (ft amsl)
MCCONNELL 265	539265	3468840.139	601463.094	02/20/08	4600.70	156.15	4444.55
MCCONNELL 265	539265	3468840.139	601463.094	05/06/08	4600.70	156.40	4444.30
MCCONNELL 265	539265	3468840.139	601463.094	07/15/08	4600.70	157.07	4443.63
METZLER	35-71891	3471381.176	602091.308	03/05/08	4728.53	288.30	4440.23
METZLER	35-71891	3471381.176	602091.308	05/15/08	4728.53	286.53	4442.00
METZLER	35-71891	3471381.176	602091.308	07/31/08	4728.53	286.82	4441.71
MINOR 317	633317	3468568.043	601172.150	02/12/08	4578.86	135.30	4443.56
NESS	509127	3471419.494	607866.391	07/24/08	4761.23	557.90	4203.33
NOTEMAN	212483	3471576.400	606053.800	05/13/08	4800.68	339.77	4460.91
NOTEMAN	212483	3471576.400	606053.800	08/27/08	4800.68	344.34	4456.34
OSBORN	643436	3470270.548	607031.823	05/13/08	4711.95	68.65	4643.30
OSBORN	643436	3470270.548	607031.823	08/05/08	4711.95	69.53	4642.42
PARRA	576415	3471263.549	602170.716	05/15/08	4727.21	279.78	4447.43
PARRA	576415	3471263.549	602170.716	08/18/08	4727.21	280.06	4447.15
PIONKE	613395	3468960.981	601045.471	07/17/08	4592.13	149.88	4442.25
POOL	509518	3470013.823	599683.603	02/20/08	4639.09	204.22	4434.87
POOL	509518	3470013.823	599683.603	05/19/08	4639.09	204.72	4434.37
POOL	509518	3470013.823	599683.603	07/31/08	4639.09	205.56	4433.53
POWER	624535	3472738.941	608379.424	02/12/08	4840.37	42.30	4798.07
POWER	624535	3472738.941	608379.424	07/22/08	4840.37	42.82	4797.55
RAY	803772	3469195.147	607083.422	02/15/08	4647.91	40.85	4607.06
RAY	803772	3469195.147	607083.422	05/13/08	4647.91	43.82	4604.09
RAY	803772	3469195.147	607083.422	07/29/08	4647.91	45.25	4602.66
ROGERS E	216018	3467636.029	600449.648	07/17/08	4590.66	149.65	4441.01
ROGERS 803	641803	3468417.386	600977.690	02/07/08	4579.02	129.85	4449.17
ROGERS 803	641803	3468417.386	600977.690	07/29/08	4579.02	131.86	4447.16
RUIZ	531770	3471424.219	602857.357	02/05/08	4735.18	293.29	4441.89
RUIZ	531770	3471424.219	602857.357	05/15/08	4735.18	293.57	4441.61
RUIZ	531770	3471424.219	602857.357	07/30/08	4735.18	293.86	4441.32
SCHWARTZ	210865	3468268.057	600811.529	02/08/08	4551.58	121.80	4429.78
SCHWARTZ	210865	3468268.057	600811.529	05/19/08	4551.58	123.49	4428.09
SCHWARTZ	210865	3468268.057	600811.529	07/29/08	4551.58	122.64	4428.94
SRC	211345	3472505.400	599723.300	04/23/08	4807.37	541.10	4266.27
SRC	211345	3472505.400	599723.300	08/05/08	4807.37	543.70	4263.67
STEPHENS	808560	3469072.799	606981.766	05/13/08	4651.22	44.94	4606.28
STEPHENS	808560	3469072.799	606981.766	08/05/08	4651.22	46.61	4604.61
SUNBELT	201531	3471735.149	605998.250	02/06/08	4806.52	352.10	4454.42
SUNBELT	201531	3471735.149	605998.250	05/15/08	4806.52	358.97	4447.55
SUNBELT	201531	3471735.149	605998.250	08/05/08	4806.52	Dry	<4426
SWAN	NR	3470648.298	607378.547	02/13/08	4716.59	26.50	4690.09
SWAN	NR	3470648.298	607378.547	05/14/08	4716.59	30.69	4685.90
SWAN	NR	3470648.298	607378.547	07/24/08	4716.59	32.06	4684.53
TM-02A	522574	3472008.794	604152.059	03/04/08	4808.43	346.62	4461.81
TM-02A	522574	3472008.794	604152.059	05/23/08	4808.43	346.16	4462.27
TM-02A	522574	3472008.794	604152.059	08/15/08	4808.43	353.91	4454.52
TM-03	522575	3473711.046	606366.130	03/12/08	4897.85	127.14	4770.71
TM-03	522575	3473711.046	606366.130	05/20/08	4897.85	127.40	4770.45
TM-03	522575	3473711.046	606366.130	08/06/08	4897.85	128.02	4769.83

TABLE 3
Compilation of 2008
Groundwater Elevation Data

Well Name	ADWR 55 Registry No.	UTM North	UTM East	Date	Measuring Point Elevation[1] (ft amsl)	Depth To Water (feet)	Groundwater Elevation (ft amsl)
TM-06 MILLER	522695	3468376.658	606055.975	02/26/08	4707.88	158.78	4549.10
TM-06 MILLER	522695	3468376.658	606055.975	05/20/08	4707.88	158.76	4549.12
TM-06 MILLER	522695	3468376.658	606055.975	08/04/08	4707.88	158.80	4549.08
TM-14 NELSON	522816	3470111.613	599624.302	02/08/08	4643.48	211.79	4431.69
TM-14 NELSON	522816	3470111.613	599624.302	07/16/08	4643.48	Dry	<4433
TM-15 MILLER	522699	3471427.504	599617.331	02/27/08	4729.26	294.90	4434.36
TM-16	522578	3469842.199	605588.075	03/05/08	4717.71	81.00	4636.71
TM-16	522578	3469842.199	605588.075	05/22/08	4717.71	81.24	4636.47
TM-16	522578	3469842.199	605588.075	08/06/08	4717.71	81.65	4636.06
TM-19A	522580	3469197.426	602458.710	03/06/08	4645.87	199.85	4446.02
TM-19A	522580	3469197.426	602458.710	05/22/08	4645.87	199.50	4446.37
TM-19A	522580	3469197.426	602458.710	08/06/08	4645.87	199.19	4446.68
TM-42	562554	3469104.903	603698.271	03/05/08	4666.67	211.04	4455.63
TM-42	562554	3469104.903	603698.271	05/22/08	4666.67	210.98	4455.69
TM-42	562554	3469104.903	603698.271	08/06/08	4666.67	211.55	4455.12
TM-43	564729	3474670.811	605365.062	03/03/08	4971.44	149.05	4822.39
TM-43	564729	3474670.811	605365.062	08/04/08	4971.44	148.70	4822.74
TM-43A	564726	3474661.168	605358.451	03/03/08	4969.95	133.71	4836.24
TM-43A	564726	3474661.168	605358.451	08/04/08	4969.95	133.71	4836.24
TM-43B	565004	3474379.892	605814.018	03/03/08	4922.18	64.00	4858.18
TM-43B	565004	3474379.892	605814.018	08/05/08	4922.18	65.21	4856.97
TVI 236	802236	3467978.431	600552.215	05/07/08	4561.98	123.30	4438.68
TVI 236	802236	3467978.431	600552.215	07/15/08	4561.98	121.55	4440.43
TVI 713	567713	3468412.946	600729.095	05/07/08	4567.22	127.10	4440.12
TVI 713	567713	3468412.946	600729.095	07/14/08	4567.22	126.30	4440.92
WALKER	200393	3468577.472	607564.689	02/13/08	4601.55	25.20	4576.35
WALKER	200393	3468577.472	607564.689	07/23/08	4601.55	42.65	4558.90
WEISKOPF	641802	3468658.855	601154.951	02/15/08	4586.89	143.31	4443.58
WEISKOPF	641802	3468658.855	601154.951	05/07/08	4586.89	143.90	4442.99
WEISKOPF	641802	3468658.855	601154.951	07/16/08	4586.89	144.22	4442.67
ZANDER	205126	3467998.486	599678.880	02/04/08	4580.94	144.85	4436.09
ZANDER	205126	3467998.486	599678.880	05/06/08	4580.94	145.33	4435.61
ZANDER	205126	3467998.486	599678.880	07/16/08	4580.94	146.40	4434.54

Notes:

[1] Survey Source: Hydro Geo Chem, Inc. (measuring point elevation = top of well casing)

[2] Based on digital elevation model (DEM) AWC, Responces to City of Bisbee's Aquifer Protection Permit P-100983 and AZPDES Permit No. AZ0025275 (2006)

ft amsl = feet above mean sea level

UTM = Universal Transverse Mercator Zone 12 Band R

TABLE 4
Well Completion Depth, Screen Interval, and Screened Lithology

Well Name	ADWR 55 Registry No.	Top of Casing Elevation (ft amsl)	Total Depth (ft bgs)	Screen Interval (ft bgs)	Screened Formation Lithology	Depth to Morita Formation (ft bgs)	Depth to Glance Conglomerate (ft bgs)	Comments
ANDERSON	613396	4580.34	236	ND	QTbf	NA	NA	No Log
AWC 02	616585	4541 [1]	330	100-215	QTbf	NA	NA	Geologic Log
AWC 03	616585	4538 [1]	269	83-269	QTbf	NA	NA	Geologic Log
AWC 04	590620	4531 [1]	250	ND	QTbf	NA	NA	Geologic Log
AWC 05	590620	4548 [1]	1183	163-603 623-1163	Km / Volcanics	400	No Glance	Geologic Log
BANKS 986	647986	ND	445	ND	Km [3]	31	NA	No Log
BANKS 987	647987	4648.18	339	ND	Km [3]	ND	NA	No Log
BARTON 010	085010	4688.95	300	180-300	Km [3, 4]	ND	NA	Geologic Log
BARTON 919	644919	4692.36	130	ND	QTbf [3]	NA	NA	Geologic Log
BF-01	539783	4835.23	400	325-385	QTbf / Km / Kg	350	380	Geologic Log
BIMA	577927	4802.05	465	345-465	Km [3, 4]	ND	ND	Red Rock, Red Shale
BLOMMER	633472	4735.61	380	ND	Km [2]	245	NA	No Log
BMO-2008-1G	909474	4805.10	310	180-300	Kg	40	170	Geologic Log
BMO-2008-3B	909147	4583.97	260	150-250	QTbf	NA	NA	Geologic Log
BMO-2008-5B	909653	4585.73	290	140-280	QTbf	NA	NA	Geologic Log
BMO-2008-5M	909552	4585.63	450	340-440	Km	290	No Glance	Geologic Log
BMO-2008-6B	909146	4627.44	265	195-255	QTbf	NA	NA	Geologic Log
BMO-2008-6M	909019	4626.90	450	340-440	Km	270	NA	Geologic Log
BMO-2008-7M	908794	4688.33	670	560-660	Km	490	NA	Geologic Log
BMO-2008-9M	909255	4792.21	775	665-765	Km	130	NA	Geologic Log
BMO-2008-10GU	909272	4793.45	449	239-439	Kg	No Morita	100	Geologic Log
BMO-2008-10GL	909435	4792.21	820	700-800	Kg	No Morita	100	Geologic Log
BMO-2008-11G	909434	4844.67	760	650-750	Kg	240	490	Geologic Log
BULLARD	602134	4730 [3]	300	215-300	QTbf	NA	NA	No Log
BURKE	212268	4856.30	781	661-781	Km	150	NA	Red shale
CAMPBELL	215509	4694.29	350	20-350	Km [2, 3]	ND	NA	No Log
CHAMBERS	629807	ND	245	ND	QTbf	NA	NA	No Log
COB MW-1	903992	4883.26	420	350-410	QTbf	NA	NA	Geologic Log
COB MW-2	903984	4566.21	170	92-152	QTbf	NA	NA	Geologic Log
COB MW-3	906823	4538.63	269	83-269	QTbf	NA	NA	Geologic Log
COB WL	593116	4832.06	150	90-150	Kg [3, 4]	No Morita	36	Geologic Log
COLLINS	565260	4733.72	320	260-320	Km [2]	ND	NA	Conglomerate

TABLE 4
Well Completion Depth, Screen Interval, and Screened Lithology

Well Name	ADWR 55 Registry No.	Top of Casing Elevation (ft amsl)	Total Depth (ft bgs)	Screen Interval (ft bgs)	Screened Formation Lithology	Depth to Morita Formation (ft bgs)	Depth to Glance Conglomerate (ft bgs)	Comments
COOPER	623564	ND	325	ND	QTbf	NA	NA	No Log
COOPER C	637069	4595.06	220	ND	QTbf	NA	NA	No Log
DODSON	644927	4686.34	200	ND	Km	ND	NA	No Log
DOUGLASS 791	592791	4703.27	200	0-200	Kg [3, 4]	No Morita	4	Conglomerate
DOUGLASS 792	529792	4681.73	200	0-200	Kg [3, 4]	No Morita	4	Conglomerate
EAST	599796	4626.01	125	85-125	Km [3]	20	NA	Geologic Log
EPPELE 641	805641	4642.86	265	ND	Km [3]	ND	NA	Geologic Log
FRANCO	500101	4620.51 [3]	200	180-200	QTbf	NA	NA	Geologic Log
FULTZ	212447	ND	300	200-300	Km [3, 4]	10	NA	Sand, Volcanic
GALLANT	502527	4599.58	190	40-60 80-140	Km [3, 4]	5	NA	Brown and Red Sandstone
GARNER 557	558557	4626.44	300	180-300	QTbf	NA	NA	Geologic Log
GARNER 635	587635	4628.29	680	580-660	Km	540	NA	Geologic Log
GGOOSE 546	628546	4700.51 [3]	800	ND	Km [2]	ND	ND	No Log
GGOOSE 547	628547	4717.11	800	ND	Km [2]	ND	ND	No Log
GL-03	539782	4924.31	820	780-820	Kg [4]	No Morita	175	Geologic Log
GOAR RANCH	610695	4631.13	250	ND	QTbf	NA	NA	No Log
HOBAN	805290	4597.21	316	ND	QTbf	NA	NA	No Log
HOWARD	NR	4589.7	200	ND	QTbf	NA	NA	No ADWR Record
KEEFER	209744	4572.03	245	185-245	QTbf	NA	NA	Geologic Log
MCCONNELL 265	539265	4600.7	216	174-216	QTbf	NA	NA	Geologic Log
METZLER	35-71891	4728.53	351	245-345	Km [2]	ND	NA	No Log
MINOR 317	063317	4578.86	155	ND	QTbf	NA	NA	No Log
MOORE	538847	ND	220	180-220	QTbf	NA	NA	Geologic Log
NESS	509127	4761.23	812	20-812 [6]	Km	20	NA	Conglomerate, Limestone, sandstone and shale
NOTEMAN	212483	4800.68	400	0-400	Km [2]	ND	ND	No Log
NSD 02	527587	4527 [5]	120	75-115	QTbf	NA	NA	Geologic Log
NSD 03	527586	4515 [5]	100	55-95	QTbf	NA	NA	Geologic Log
NWC 01	627682	ND	215	ND	QTbf	NA	NA	Geologic Log
NWC 02R	562944	4590 [1]	312	212-312	QTbf	NA	NA	Geologic Log
NWC 03R	203321	ND	312	252-312	QTbf	NA	NA	Geologic Log
NWC 04	551849	4685 [1]	462	322-462	Km	NA	NA	Geologic Log
NWC 05	627696	4687.71 [1]	175	ND	QTbf	NA	NA	Geologic Log

TABLE 4
Well Completion Depth, Screen Interval, and Screened Lithology

Well Name	ADWR 55 Registry No.	Top of Casing Elevation (ft amsl)	Total Depth (ft bgs)	Screen Interval (ft bgs)	Screened Formation Lithology	Depth to Morita Formation (ft bgs)	Depth to Glance Conglomerate (ft bgs)	Comments
NWC 06	575700	ND	410	180-340	QTbf	NA	NA	Geologic Log
OSBORN	643436	4711.95	150	122-258	Kg	150	NA	Geologic Log
PALMER	578819	ND	220	122-258	Km [3, 4]	80	NA	Geologic Log
PANAGAKOS	35-76413	ND	200	141-200	Km [3, 4]	NA	NA	Geologic Log
PARRA	576415	4727.21	355	255-355	Km [2]	ND	NA	Gravel, Rock, Sand, Clay
PIONKE	613395	ND	300	ND	QTbf	NA	NA	No Log
POOL	509518	4639.09	313	213-300	QTbf	NA	NA	Geologic Log
POWER	624535	4840.37	100	60-99	Kg [3]	ND	ND	No Log
RAMIREZ	216425	ND	300	250-300	QTbf	NA	NA	No Log
RAY	803772	4647.91	100	ND	Km [3]	ND	NA	No Log
ROGERS 803	641803	4579.02	140	ND	QTbf [2]	NA	NA	No Log
ROGERS E	216018	ND	290	240-285	QTbf [2]	NA	NA	Brown Rock
RUIZ	531770	4735.18	312	252-312	QTbf / Km	265	NA	Reddish Brown Sedimentary
SCHWARTZ	210865	4551.58	305	260-305	QTbf	NA	NA	Geologic Log
SRC	211345	4810.12	965	845-965	Km [2]	500	NA	Red Shale
STEPHENS	808560	4651.22	NR	ND	Km [2]	ND	ND	No ADWR Record
SUNBELT	201531	4806.52	380	300-380	Km / Kg [2]	2	320	Red Clay and Conglomerate
SWAN	NR	4716.59	150	38-110	Kg [2]	ND	ND	No ADWR Record
TM-02A	522574	4808.43	925	825-925	Kg [3]	345	640	Geologic Log
TM-03	522575	4897.85	200	150-200	Kg	NA	32	Geologic Log
TM-05 MILLER	522694	4598.06 [3]	160	120-160	QTbf [4, 5]	NA	NA	Geologic Log
TM-06 MILLER	522695	4707.88	200	150-200	Km [4, 5]	15	NA	Geologic Log
TM-07	522576	4768.93 [3]	350	259-349	Km [4, 5]	195	NA	Geologic Log
TM-08 SWAN	522817	4725.44	817	757-817	Kg [3]	No Morita	60	Geologic Log
TM-11 PIONKE	522815	4573.1 [3]	160	99-159	QTbf [4, 5]	NA	NA	Geologic Log
TM-12 MILLER	522697	4589.44 [3]	175	121-171	QTbf [4, 5]	NA	NA	Geologic Log
TM-13 MILLER	522698	4617.29 [3]	200	140-200	QTbf [4, 5]	NA	NA	Geologic Log
TM-14 NELSON	522816	4643.48	215	165-215	QTbf [4, 5]	NA	NA	Geologic Log
TM-15 MILLER	522699	4729.26	325	260-320	Km [4, 5]	220	NA	Geologic Log
TM-16	522578	4717.71	115	65-115	Km [3, 4, 5]	40	NA	Geologic Log
TM-19A	522580	4645.87	700	585-695	Km [3, 4]	535	NA	Geologic Log
TM-41	562555	4774.58	210	145-200	Km [4]	95	NA	Geologic Log
TM-42	562554	4666.67	250	180-240	Km [4]	65	NA	Geologic Log

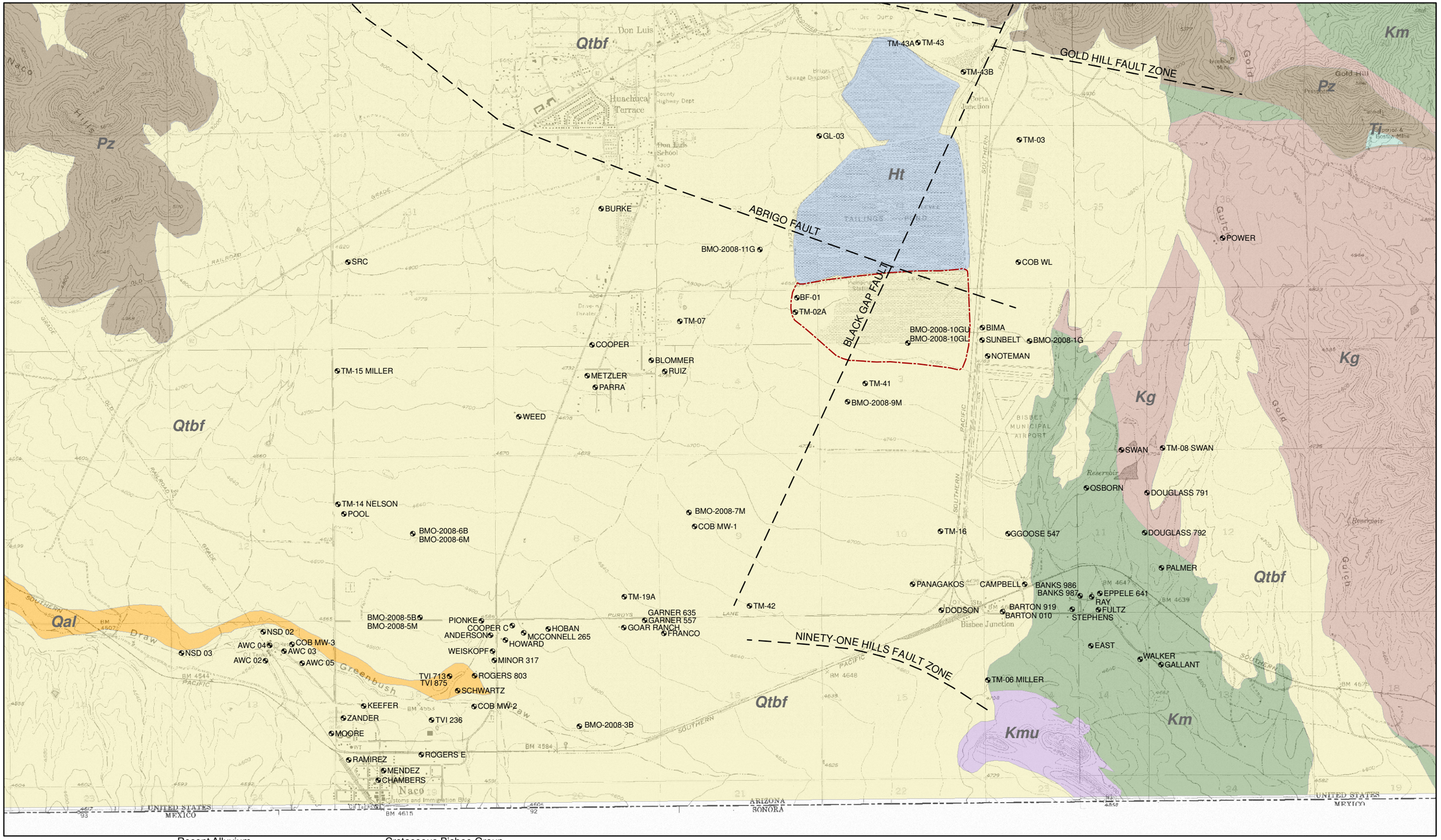
TABLE 4
Well Completion Depth, Screen Interval, and Screened Lithology

Well Name	ADWR 55 Registry No.	Top of Casing Elevation (ft amsl)	Total Depth (ft bgs)	Screen Interval (ft bgs)	Screened Formation Lithology	Depth to Morita Formation (ft bgs)	Depth to Glance Conglomerate (ft bgs)	Comments
TM-43	564729	4971.44	830	720-800	Km [4]	170	NA	Geologic Log
TM-43A	564726	4969.95	215	130-190	QTbf / Km [4]	150	NA	Geologic Log
TM-43B	565004	4922.18	215	150-190	Km [4]	80	NA	Geologic Log
TVI 236	802236	4561.98	222	ND	QTbf	NA	NA	No Log
TVI 713	567713	4567.22	200	80-144	QTbf [2]	NA	NA	Geologic Log
TVI 875	568875	ND	330	166-320	QTbf	NA	NA	Geologic Log
WALKER	200393	4601.55	120	80-100	Km [3, 4]	18	NA	Geologic Log
WEED	544535	4675 [3]	320	280-320	Km / Kg	270	317	Geologic Log
WEISKOPF	641802	4586.89	200	ND	QTbf [2]	NA	NA	No Log
ZANDER	205126	4580.94	280	220-260	QTbf	NA	NA	Geologic Log

Notes:

ADWR = Arizona Department of Water Resources
ft amsl = feet above mean sea level
ft bgs = feet below ground surface
QTbf = Quaternary-Tertiary basin fill
Km = Cretaceous Morita Formation
Kg = Cretaceous Glance Conglomerate
ND = No Data
NA = Not Applicable
NR = No Record
[1] Based on USGS topographic map
[2] Formation estimated based on well completion depth and lithology of nearby wells
[3] Based on Well Depth and Geology Map, Hayes and Landis (1964)
[4] Based on Well Drillers Report to ADWR (1994)
[5] Based on Geologic Log in Phelps Dodge, Aquifer Protection Permit Application, Cochise County, Arizona. (1990)
[6] Open hole

FIGURES



Legend

- Well ID
- Faults
- Former Evaporation Ponds

Recent Alluvium
- Ht Holocene Tailings
- Qal Quaternary Alluvium

Basin Fill
- QTbf Quaternary - Tertiary Basin Fill

Bedrock Complex
- Ti Tertiary Intrusive

Cretaceous Bisbee Group
- Kmu Mural Limestone
- Km Morita Formation
- Kg Glance Conglomerate

Paleozoic Sedimentary Formations, Undifferentiated
- Pz

0 1,000 2,000 3,000 Feet

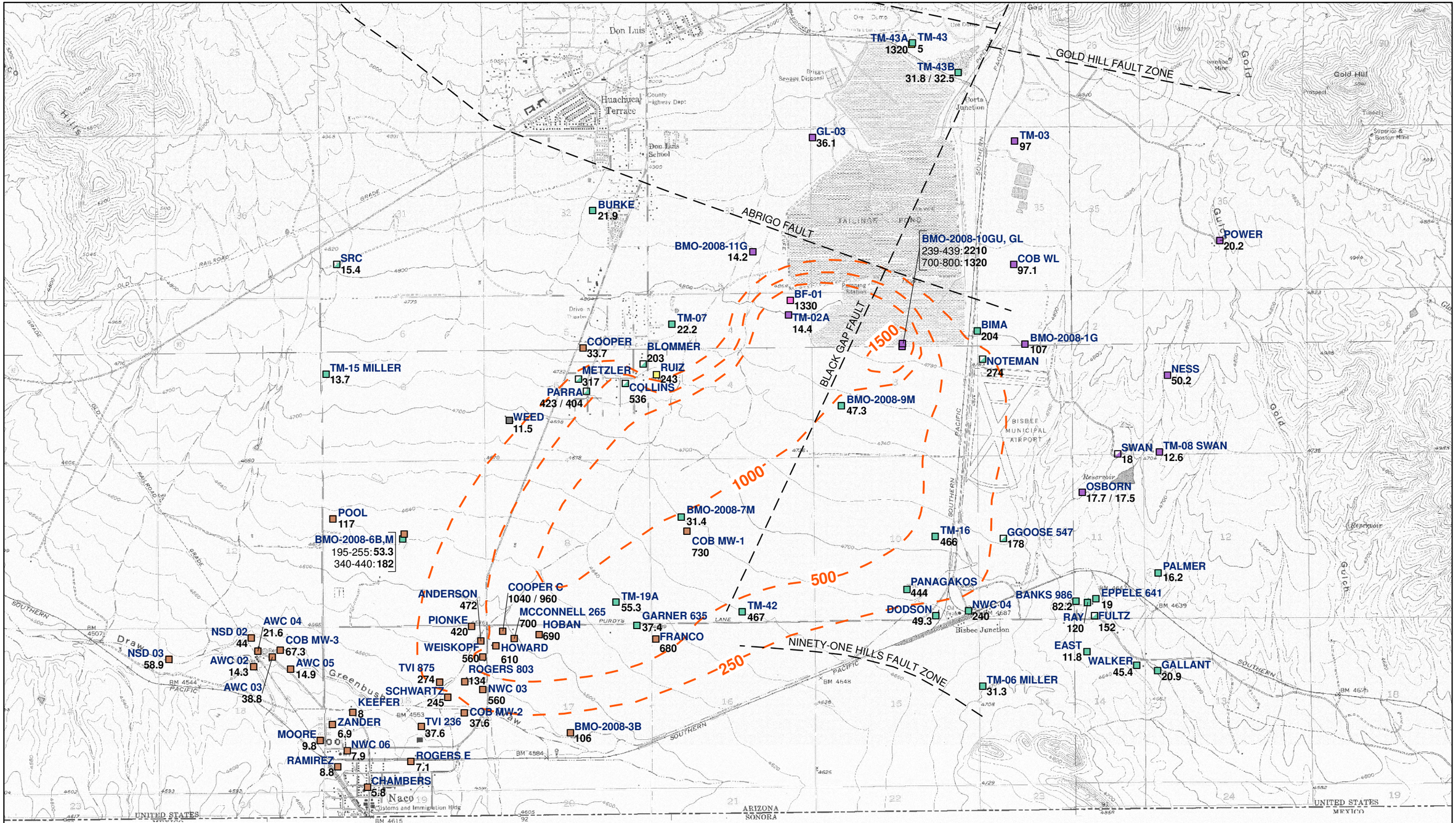
PROJECTION:
UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

GENERALIZED GEOLOGY AND WELL LOCATIONS

Approved	Date	Author	Date	File Name	Figure
DRS	10/09/08	RAM	10/09/08	8720107G	1



NOTE: Sulfate results for Naco Water Company (NWC) from March 2008.

Legend

- TM-19A Well ID
- 56.1 Sulfate Concentration (mg/L)
- 250 Sulfate Isoline (mg/L)
- Faults (inferred)

Co-located Wells

- Well ID
- Screen (ft bgs): Sulfate Concentration (mg/L)

Screened Formation

- Basin Fill
- Basin Fill and Morita Formation
- Basin Fill, Morita Formation and Glance Conglomerate
- Morita Formation
- Morita Formation- Estimated
- Morita Formation and Glance Conglomerate
- Glance Conglomerate
- Glance Conglomerate-Estimated

0 1,000 2,000 3,000 Feet

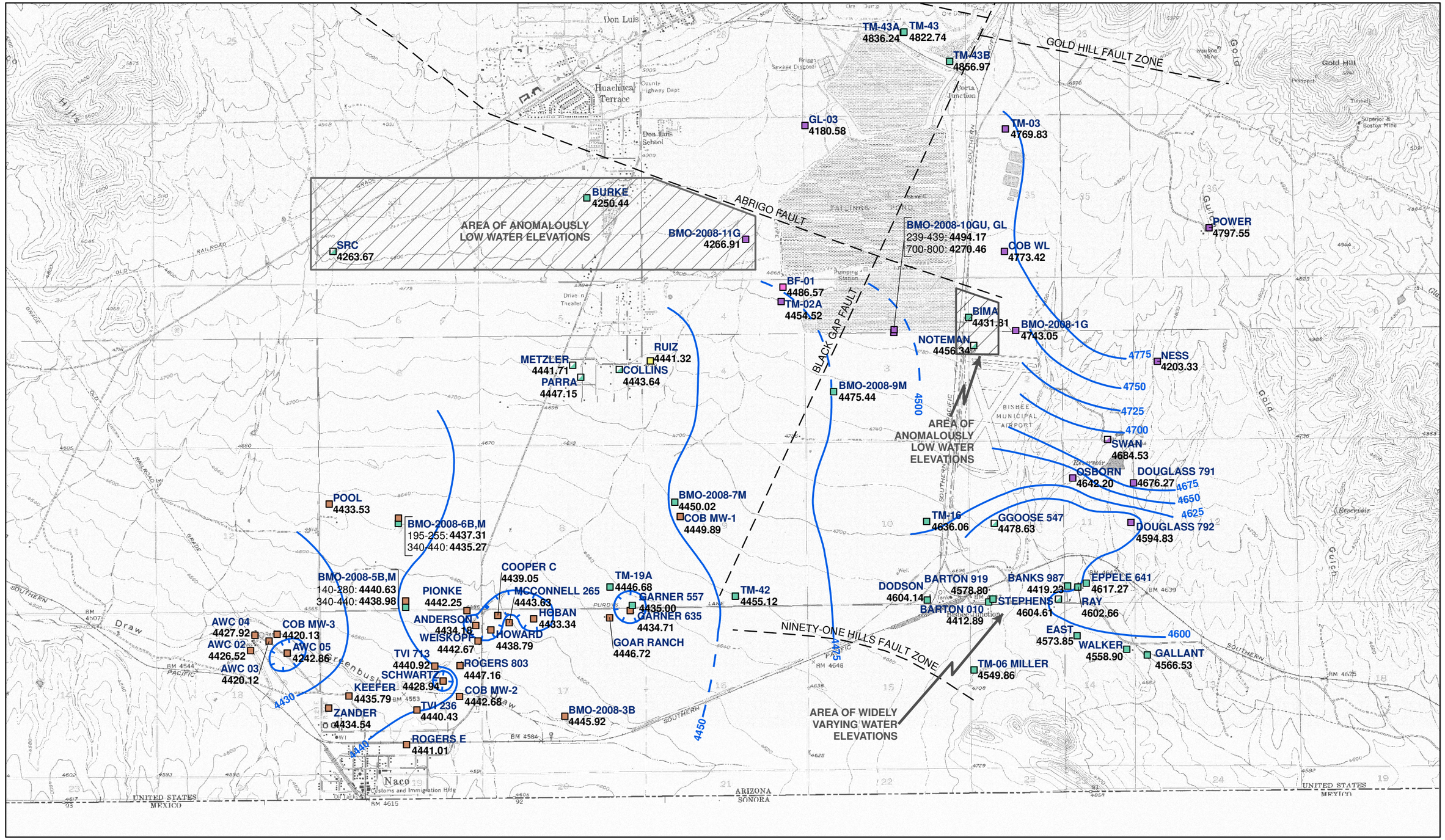
PROJECTION: UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

SULFATE CONCENTRATIONS FOR THIRD QUARTER 2008

Approved	Date	Author	Date	File Name	Figure
DRS	10/20/08	RAM	10/20/08	8720102G	2



Legend

- TVI-713 Well ID
- 4440.92 Groundwater Elevation (ft amsl)
- Groundwater Elevation Contours (dashed where inferred)
- Groundwater Depression
- Faults (inferred)
- Co-located Wells
- Well ID
  Screen (ft bgs): Water Elevation (ft amsl)

Screened Formation

- Basin Fill
- Basin Fill and Morita Formation
- Basin Fill, Morita Formation and Glance Conglomerate
- Morita Formation
- Morita Formation- Estimated
- Morita Formation and Glance Conglomerate
- Glance Conglomerate
- Glance Conglomerate-Estimated

0 1,000 2,000 3,000 Feet

PROJECTION:
UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

GROUNDWATER ELEVATIONS FOR THIRD QUARTER 2008

Approved	Date	Author	Date	File Name	Figure
DRS	10/23/08	RAM	10/23/08	8720105G	3

APPENDIX A

THIRD QUARTER 2008
DATA VERIFICATION REPORT

APPENDIX A

THIRD QUARTER 2008
DATA VERIFICATION REPORT

Prepared for:

FREEPORT-MCMORAN
COPPER QUEEN BRANCH
36 West Highway 92
Bisbee, Arizona 85603

Prepared by:

HYDRO GEO CHEM, INC.
51 West Wetmore Road
Tucson, Arizona 85705
(520) 293-1500

October 27, 2008

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APPENDIX

A.1 Arizona Land Specialists, Inc. Well Survey

1. INTRODUCTION

This report summarizes the data verification review of groundwater samples collected and analyzed during the third quarter 2008 (Q3-2008) by Hydro Geo Chem, Inc. (HGC) pursuant to Mitigation Order on Consent Docket No. P-121-07 (MO) (ADEQ, 2007). HGC collected groundwater samples from wells identified in Table 1 of the Work Plan (HGC, 2008a) and groundwater samples collected as part of the well inventory investigation (HGC, 2008b). All analytical results for groundwater samples collected for this project during the third quarter of 2008 were provided to HGC by Naco Sanitary District (NSD), Naco Water Company (NWC) or ACZ Laboratories, Inc. (ACZ) for preparation of the Third Quarter 2008 Groundwater Monitoring Report. Data verification for samples collected and analyzed by others entities and reported by HGC is not provided in this report.

Quality assurance (QA) and quality control (QC) procedures are specified in the *Quality Assurance Project Plan for Aquifer Characterization Plan* (QAPP) (Appendix F of HGC, 2008a) for field sampling, chain-of-custody (COC) documentation, laboratory analysis, and reporting. This report reviews field sampling for samples collected by HGC. Additionally, sample handling and laboratory QA/QC data are evaluated according to the data quality indicators (DQIs) given in the QAPP.

Appendix C of the main text of this report contains laboratory reports for Q3-2008 samples collected by HGC including COC forms, laboratory correspondence, QC summaries, data qualifiers, and any case narratives. The Q3-2008 analytical results for all 102 samples

collected by HGC are contained in 28 reports having the ACZ Project numbers identified in Table A.1.

The results of the internal QA/QC tests performed by ACZ are presented with the laboratory reports included in Appendix C. Based on the results of surrogate spike recoveries, matrix spike/recovery and matrix spike duplicate tests, ACZ did not advise HGC of any modifications that should be made regarding the usability and data validation status of the laboratory test results.

2. HGC FIELD OPERATIONS

Field operations for this project consisted of the following for all monitoring wells sampled by HGC:

- Static water level measurement,
- Well purging,
- Collection of water quality field parameters (pH in standard units [SU], specific conductance [SC] in microsiemens per centimeter [µS/cm], and temperature in degrees Celsius [°C]),
- Collection of groundwater samples for water quality analysis,
- Collection of groundwater quality assurance and quality control samples, and
- Equipment decontamination.

Documentation of the field activities was evaluated for quality assurance and has been deemed to have met the documentation requirements stated in the QAPP.

2.1 Water Level Monitoring

Static water level measurements were attempted at each well that was sampled and at all wells where water level monitoring was conducted by HGC. Water levels were measured while the well pump was off however, it was not always possible to ascertain from the well owners how long the pump had been off. Before measuring the water level at each well, the battery on the water level indicator was checked and the sensitivity level was adjusted, if necessary. Each measurement was collected and verified by measuring the depth to water multiple times in order to obtain a consistent reading and accurate measurement.

2.2 Groundwater Sampling

During this monitoring period groundwater samples were collected from wells designated for sampling in the semi-annual regional monitoring schedule and well inventory tasks of the Work Plan. More detailed information regarding the wells sampled for water quality and water level measurements is listed in Table 1 of the main text.

2.2.1 Pre-Sampling Field Activities

On each day of sampling, the pH[1] and SC[2] probe was calibrated. In addition, the water level indicator was checked for a signal, which indicates a working meter and sufficient battery strength. On each day where sampling extended for more than half a day, a mid-day calibration check was performed on the pH and SC probe to ensure accurate measurement.

In addition to calibrating the instruments each day, measures were taken to 1) properly decontaminate field equipment, 2) ensure the appropriate storage and transport temperature of the samples, and 3) document activities related to the collection of groundwater samples as part of this project. These objectives were met by 1) replenishing or obtaining supplies of deionized water and ice daily, 2) use of the proper preservative and sample collection containers, 3) properly packing the samples on ice during field activities, 4) using deionized water to properly decontaminate field equipment prior to the start of sampling each day and after sampling at each

[1] Field pH meter was calibrated using a two point calibration and pH buffers 4 and 7
[2] Field SC meter was calibrated using a standard stock solution of 1413 µS/cm

well, and 5) obtaining the appropriate field notebook in order to document field activities related to the groundwater monitoring program.

2.2.2 Well Purging, Field Measurements, and Sample Collection

Ideally, three wetted casing volumes were purged from each well prior to sampling. However, when three casing volumes could not be purged, this information was noted on the groundwater sampling form (Appendix C) at each well for which this was the case. Purge water was discharged to the ground surface.

Field measurements were collected at varying intervals during well purging at each well where a water quality sample was collected. Field parameters were monitored until a consistent measurement was obtained.

During this monitoring period, filtered and unfiltered groundwater samples were collected for analysis from 78 plume monitor wells. Groundwater for filtered and unfiltered samples was collected using a single container to collect an initial sample for separation into bottles for filtered and unfiltered analyses. After collecting the initial sample, the unfiltered sample was collected by pouring a 500 milliliter (mL) aliquot of the initial sample into a non-preserved bottle for alkalinity analysis. Then each filtered sample was collected by filtering the remaining portion of the initial sample into a 250 mL bottle using a clean filtration apparatus and one unused, disposable 0.45-micron filter. All bottles were provided by ACZ. Bottles were

checked for the correct preservative and maintained in a clean and secure work area, until used in the field.

2.2.3 Post-Sampling Field Activities

Post sampling field activities consisted of equipment decontamination, sample storage, and sample shipping. Field equipment that comes into contact with the sample was decontaminated using a small amount of Alconox® detergent and deionized water. After washing, the equipment was rinsed thoroughly with de-ionized water.

After sample collection, samples from each well were placed into a plastic bag and stored on ice until they could be packed securely for shipping to ACZ. In addition, each set of samples collected from each well was individually bagged (without ice) to prevent the label from getting soaked with water and rubbing off or becoming illegible.

2.3 Well Survey

On August 6 and September 11, 2008, measuring point elevation surveys were completed for wells NESS, PIONKE, ROGERS E, Arizona Water Company (AWC) AWC02, AWC03, AWC04, AWC05, and the newly installed Bisbee Mitigation Order (BMO) wells BMO-2008-1G, BMO-2008-3B, BMO-2008-3M, BMO-2008-5B, BMO-2008-5M, BMO-2008-6B, BMO-2008-6M, BMO-2008-7M, BMO-2008-9M, BMO-2008-10GU, BMO-2008-10GL, and BMO-

2008-11G. The surveys were conducted by Arizona Land Specialists, Inc. (ALS). These data are shown in Table 3 and Figure 2 of the main report.

3. SAMPLE HANDLING

All samples collected by HGC were shipped to ACZ for analysis. COC documentation accompanied all samples submitted and included the sample name, collection date and time. COCs contained in laboratory reports included the date and time the samples were received by ACZ. As noted on the analytical data reports from ACZ, all of the sample bottles were received intact, properly preserved, and in good condition.

The temperatures of the following six shipping containers (identified by their laboratory login numbers) exceeded 4 °C upon receipt at the laboratory.

ACZ Project ID	Sample Collection Date	Sample Relinquished Date	Sample Received Date by ACZ	Temperature Upon Receipt (°C)
L70537	07/16/08	07/16/08	07/17/08	4.2
L70589	07/18/08	07/18/08	07/19/08	5
L70744	07/24/08	07/24/08	07/25/08	5
L70761	07/24/08	07/25/08	07/28/08	25.3
L70974	07/31/08	07/31/08	08/06/08	25.5
L71377	08/22/08	08/22/08	08/23/08	4.9

As noted in the above table, the samples were shipped the same day or within one day of sample collection, and the time between sample collection and receipt of samples by ACZ ranged from one to six days. This temperature exceedance is not considered to have a significant impact on the analytical results pertaining to the sulfate analysis for these samples.

4. LABORATORY QUALITY CONTROL

As specified in the QAPP, laboratory QC was maintained for all analysis through proper licensure, the use of approved analytical methods, QC measurements, appropriate turn-around-time for analysis (timeliness), method detection limits (MDLs), and practical quantitation limits (PQLs). Each of these controls is discussed in the following subsections.

The review of laboratory QC included a review to identify any qualified data and an assessment to determine their significance. Additionally, the laboratory QC summaries were reviewed to verify that results met QA criteria.

4.1 Licensure

ACZ is licensed with the Arizona Department of Health Services (license number AZ0102) and is accredited in accordance with the National Environmental Laboratory Accreditation Conference.

4.2 Analytical Methods

The following list identifies the approved U.S. Environmental Protection Agency (EPA) methods that meet the requirements stated in section 5.3 of the QAPP regarding target methods and target MDLs:

- EPA 300.0 (Ion-Chromatography [IC]): sulfate, chloride, fluoride

- EPA 200.7 (Inductively Coupled Plasma [ICP]): calcium, magnesium, potassium, sodium
- EPA 353.2 (Automated Cadmium Reduction [ACR]): nitrate/nitrite
- SM2320B (Titration): alkalinity
- EPA 160.1 (Gravimetric): total dissolved solids

Two of these methods, IC (EPA 300.0) and ICP (EPA 200.7), involve direct injection of the sample into the analytical instrument, which does not require the analysis of preparation blanks. The other methods listed are classical wet chemistry techniques that require the use of preparation blanks under the ACZ quality assurance plan and the QAPP.

4.3 Method Detection Limits (MDLs) and Practical Quantification Limits (PQLs)

The MDLs and PQLs of the analytical methods used by ACZ are shown in the following table. The MDLs for analyses of samples were equal to or less than the target MDLs identified in the QAPP.

Method	MDL (mg/L)	PQL (mg/L)	Target MDL[1] (mg/L)
EPA 300.0 (SO4)	0.5	3	10
EPA 200.7 (Ca and Mg)	0.2	1	0.2
EPA 200.7 (K and Na)	0.3	2	0.3
SM2320B	2	20	2
EPA 300.0 (Cl)	0.5	5	1
EPA 300.0 (F)	0.1	0.5	0.1
EPA 352.2	0.02	0.1	0.02
EPA 160.1	10	20	10

mglL = milligrams per liter
[1] Target MDL from Table F.2 of QAPP

4.4 Timeliness

Holding times were derived from the EPA methods utilized and were calculated beginning from the time of sample collection. The majority of samples submitted to the laboratory were analyzed within their recommended method specific holding time except for nitrate/nitrite as N, nitrite, and TDS analyses in the following: Samples collected on July 31, 2008 (FB073108, EQB073108 and DUP073108) and August 4, 2008 (TM-06 MILLER), were qualified with an "HE" flag, indicating analysis performed past the holding time because sample was received with less than half the holding time remaining. One sample collected on July 14, 2008 (BMO-2008-7M) was qualified with an "HC" flag, indicating that the initial analysis was within the holding time however, reanalysis was past the holding time, which was required due to a QC failure during the initial analysis. No data were rejected on the basis of the holding time exceedances and were accepted as usable.

4.5 Quality Control Measurements

The following QC samples were prepared and analyzed:

- Preparation blanks, calibration blanks, and calibration verification standards
- Analytical spikes and analytical spike duplicates
- Laboratory control samples
- Laboratory duplicate samples
- Field blank samples

4.5.1 Preparation Blanks, Calibration Blanks, and Calibration Verification Standards

Preparation blanks were run with each group of samples submitted for alkalinity and TDS analysis. All preparation blanks were prepared from analyte-free water and treated as routine samples. Analytical results of all of the preparation blanks showed that no target analytes were detected at the indicated MDL.

Results from the analyses of the initial calibration blanks and initial calibration verification standards conducted by EPA Methods 300.0, 200.7, and 353.2 also were reviewed. The results of each initial calibration blank analyzed showed no detections of the target analyte. All analytical results for the initial calibration verification standards and laboratory fortified blanks that were analyzed showed percent recoveries that were within the acceptance criteria specified by the ACZ QA plan and the QAPP.

4.5.2 Analytical Spikes and Analytical Spike Duplicates

Analytical spike and spike duplicate samples were analyzed for the following EPA Methods: 300.0, 200.7, and 353.2. Spike recoveries for most analytes were within the range of acceptability based on the acceptance criteria set by ACZ. Instances in which analytical spike recoveries were either high, low, or unusable were qualified with an “M1”, “M2”, or “M3” flag, respectively. In each case the method control sample recoveries were acceptable. Although some analytical spikes and analytical spike duplicates were outside the acceptance limits and

qualified with an “MA” flag, these recoveries are not considered to affect the overall accuracy of the dataset because the Relative Percent Difference (RPD) was within the acceptance limits.

4.5.3 Laboratory Control Samples

Laboratory control samples were run for each group of samples submitted for alkalinity and total dissolved solids. Recoveries for all laboratory control samples were within the acceptance criteria specified by ACZ.

4.5.4 Laboratory Duplicate Samples

Analyses of laboratory duplicate samples were also reviewed as part of this quality data verification report. Field duplicate samples are discussed in Section 5.1. The RPDs for most laboratory duplicate samples were within 20 percent, which is the tolerance range set by the laboratory. In many instances, the data were qualified with an “RA” flag indicating that the RPD was not used for data validation because the sample concentration was less than ten times the MDL, which is too low for accurate evaluation according to ACZ. In all cases where the RPD could be calculated, the results met QA criteria and demonstrate an appropriate level of precision in laboratory analysis of these samples.

4.5.5 Field Blank Samples

During the third quarter of 2008, eight field blank samples were collected. Four field blank samples using unfiltered deionized water (FB071508, FB072208, FB073108, and FB080508) and four equipment blanks using filtered deionized water (EQB071508, EQB072208, EQB073108, and EQB080508). Samples were collected in the field and submitted along with other samples to evaluate the potential for contaminant introduction under field conditions. As required by Section 4.2.1.5 of the QAPP, a minimum of one field blank and one equipment blank sample were collected for every twenty samples. Analytical results from field blank samples EQB072208, FB073108, and EQB-073108 showed no detections. However, detections in field blank samples EQB-071508 included nitrate and nitrate/nitrite as N, FB071508 included calcium, nitrate, nitrate/nitrite as N, and sulfate, EQB072208 included calcium, bicarbonate as CaCO3, alkalinity, nitrate, nitrate/nitrite as N, and sulfate, FB072208 included bicarbonate as CaCO3 and alkalinity, and EQB080508 included nitrate and nitrate/nitrite as N, and nitrite; all between the MDL and PQL with the exception of FB071508 with calcium detected at 1.2 mg/L and EQB072208 with nitrate and nitrate/nitrite as N both detected at 0.45 mg/L. The low level detections of these analytes are not considered significant given the concentrations of these constituents in the samples.

5. DATA QUALITY INDICATORS

The QAPP provides several DQIs for assessing the overall quality of the data. These DQIs include the following:

- Precision
- Bias
- Accuracy
- Representativeness
- Comparability
- Completeness
- Sensitivity

Each of these DQIs is discussed below in relation to the Q3-2008 groundwater sampling and analysis conducted by HGC.

5.1 Precision

Precision indicates how well a measurement can be reproduced. Precision is quantified by calculating the RPD between duplicate samples. For the purposes of QA/QC, precision was quantified by calculating the RPDs between duplicates among the following groups of duplicate samples:

- Laboratory duplicate samples
- Field duplicate samples

As discussed in Sections 4.5.2 and 4.5.4, there were no exceedances of RPD QA criteria for any laboratory duplicates. During this monitoring period, a total of four field duplicate samples (DUP071508, DUP072208, DUP073108, and DUP030608) were collected by HGC for filtered and unfiltered analysis. The collection of four duplicate samples meets the QA/QC goal of collecting one duplicate sample for every twenty groundwater samples collected, as stated in Section 4.2.1.5 of the QAPP.

Results for the four duplicate field samples collected are provided in the Table A.2. The range of RPD values was between zero and 8 percent all within the 20 percent acceptance criteria for field duplicates, as stated in Section 3.3.1 of the QAPP. Overall, the DQI for precision is deemed to be met.

5.2 Bias

Bias is a systematic distortion of measurements causing consistent errors in one direction. Bias is managed in this data set by the consistent application of standardized sample collection and analysis procedures.

5.3 Accuracy

Accuracy is a measure of the agreement of a measurement to a known value and is measured using the recoveries from laboratory control samples. As discussed in Sections 4.5.1, 4.5.2, and 4.5.3 respectively, there were no significant exceedances of the recovery QA criteria

for any of the calibration standards, analytical spikes, or laboratory control standards. Based on this information, the overall accuracy of the data is judged sufficient for the purpose of aquifer characterization.

5.4 Representativeness

All samples were taken from locations specified in the Work Plan (HGC, 2008a) using sampling procedures specified in the QAPP. Therefore, the samples are judged to provide a good representation of groundwater quality at the sampled locations. The analytical data are judged to be representative of groundwater conditions because the analyses used standard procedures and methods that met QA/QC guidelines of the QAPP.

5.5 Comparability

All samples were collected using standardized procedures (HGC, 2008a) and were analyzed by ACZ using standardized methods. Insofar as standardized sample collection and analytical methods are adhered to, the sample results should be comparable.

5.6 Completeness

All samples collected were subsequently analyzed and reported by ACZ are judged to satisfy the QA/QC criteria for this project and are deemed usable for aquifer characterization. Thus, the completeness of analytical results is 100 percent.

5.7 Sensitivity

The analytical methods used to analyze the samples meet the MDL requirements specified in Table F.2 of the QAPP. Therefore, the analytical sensitivity is considered acceptable for use in aquifer characterization.

5.8 Auxiliary Data Quality Indicators

Auxiliary DQIs are indicators that, although not mentioned in the QAPP, are useful for assessing the reliability of the laboratory analyses. These auxiliary DQIs include the laboratory measured cation-anion balance and the ratio between measured and calculated TDS. Each of these auxiliary indicators is discussed below.

5.8.1 Cation-Anion Balance

The concentration in milliequivalents per liter (meq/L) of cations and of anions in groundwater should theoretically be approximately the same. Therefore, the balance between

anions and cations is one measure of the overall quality of the laboratory measurements. The cation-anion balance can be expressed as the difference between the milliequivalents of cations and the milliequivalents of anions divided by the sum of the milliequivalents of both cations and anions. When computed in this manner, a cation-anion balance of 5 percent is considered good (Scott Habermahl, ACZ project manager, personal communication). The cation-anion balance for all samples is presented in Table 2 and was below 5 percent for all samples except for the samples listed below. Overall, the cation-anion balance for all samples does not indicate any analytical errors. Cation-anion balances outside of 5 percent may indicate the presence of other ions not included in the analysis and ion balance.

Well and Sample ID	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
BMO-2008-10GU	67.8	60.0	-6.1
BURKE	4.6	5.2	6.1
DODSON	11.2	12.4	5.1
SRC	4.3	4.8	5.5
TM-03	8.1	9.0	5.3
TM-16	15.0	16.7	5.4
TM-43	4.0	4.5	5.9
TM-43B	5.4	6.1	6.1

meq/L = milliequivalents per liter

5.8.2 TDS Ratio

The ratio between the measured and computed concentration of TDS is also an indicator of the overall quality of the sample analyses. A TDS ratio between 0.8 and 1.2 is considered good (Scott Habermahl, ACZ project manager, personal communication). The ratios for all samples are presented in Table 2 and fall inside the acceptance criteria specified by ACZ. Overall, the low TDS ratios for all samples indicate no apparent analytical errors.

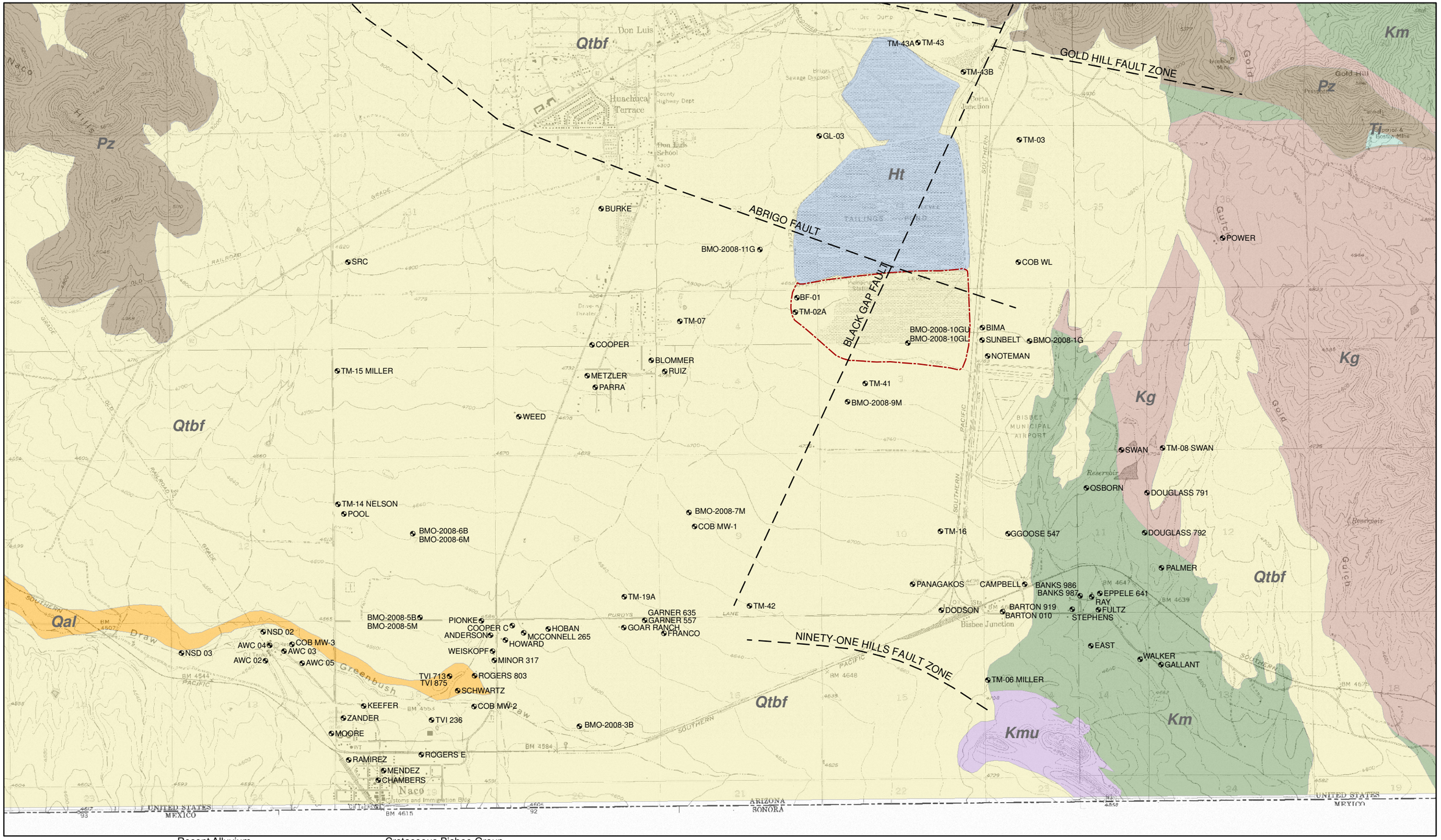
6. REFERENCES

Arizona Department of Environmental Quality. 2007. Mitigation Order on Consent, Docket No. P-121-07, In the Matter of: Phelps Dodge Corporation, Copper Queen Branch, located at 36 West Highway 92, Bisbee, Arizona, ADEQ Identification Number 100531. November 14, 2007.

Hydro Geo Chem, Inc. (HGC). 2008a. Revision 1, Work Plan to Characterize and Mitigate Sulfate with Respect to Drinking Water Supplies in the Vicinity of the Concentrator Tailing Storage Area, Cochise County, Arizona. July 3, 2008.

HGC. 2008b. Well Inventory Report, Task 1 of Aquifer Characterization Plan for Mitigation Order on Consent No. P-121-07, Cochise County, Arizona. July 28, 2008.

TABLES



Legend

- Well ID
- Faults
- Former Evaporation Ponds

Recent Alluvium
- Ht Holocene Tailings
- Qal Quaternary Alluvium

Basin Fill
- QTbf Quaternary - Tertiary Basin Fill

Bedrock Complex
- Ti Tertiary Intrusive

Cretaceous Bisbee Group
- Kmu Mural Limestone
- Km Morita Formation
- Kg Glance Conglomerate

Paleozoic Sedimentary Formations, Undifferentiated
- Pz

0 1,000 2,000 3,000 Feet

PROJECTION:
UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

GENERALIZED GEOLOGY AND WELL LOCATIONS

Approved	Date	Author	Date	File Name	Figure
DRS	10/09/08	RAM	10/09/08	8720107G	1

TABLE A.1
ACZ PROJECT ID AND ASSOCIATED WELLS

ACZ Project ID	Wells Reported
Number of wells sampled: 78 *Number of duplicate samples collected: 4* *Number of field blank samples collected: 8*	
L70440	BMO-2008-6M
L70490	BMO-2008-7M
L70502	ANDERSON, HOBAN, CHAMBERS, FRANCO, HOWARD, TVI 236, TVI 875, COOPER C, MCCONNELL 265, GARNER 635, DUP071508, EQB071508, FB071508
L70525	WEISKOPF, MOORE, ZANDER, KEEFER
L70537	BMO-2008-6B
L70567	PIONKE, ROGERS E, RAMIREZ
L70589	BMO-2008-3B
L70659	BANKS 986, PANAGAKOS, EPPELE 641, POWER, PALMER 819, OSBORN, DUP072208, EQB072208, FB072208
L70696	EAST, WALKER, GALLANT, TM-08 SWAN
L70744	DODSON
L70761	NESS, SWAN, NOTEMAN
L70795	BLOMMER, ROGERS 803, SCHWARTZ, BIMA, RAY
L70861	FULTZ, COBMW-1, COBMW-2, COBMW-3, COB-WL, RUIZ, WEED
L70942	TM-43A, TM-43, GL-03
L70943	BMO-2008-10GU
L70959	TM-06 MILLER, TM-43B, BF-01, SRC, BURKE, TM-15 MILLER, DUP080508, EQB080508, FB080508
L70974	COLLINS, , PARRA, METZLER, COOPER, POOL, FB073108, EQB073108, DUP073108
L70992	TM-03, TM-16, TM-42, TM-07, TM-19A
L71042	BMO-2008-9M
L71104	AWC02
L71107	AWC03, AWC04, AWC05
L71205	GGOOSE 547, TM-02A
L71263	BINYON
L71307	BMO-2008-10GL
L71377	BMO-2008-11G
L71448	BMO-2008-1G
L71508	BLOMMER, ROGERS 803, SCHWARTZ, BIMA, RAY, FULTZ
L72036	BLOMMER, ROGERS 803, SCHWARTZ, BIMA, RAY, FULTZ

TABLE A.2
RELATIVE PERCENT DIFFERENCE (RPD) OF DUPLICATE SAMPLES

Well and Sample ID	COOPER C			OSBORN			PARRA			TM-43B		
ACZ Project ID	L70502	L70502		L70659	L70659		L70974	L70974		L70959	L70959	
Parameter	Sample (mg/L)	Duplicate (mg/L)	RPD (%)	Sample (mg/L)	Duplicate (mg/L)	RPD (%)	Sample (mg/L)	Duplicate (mg/L)	RPD (%)	Sample (mg/L)	Duplicate (mg/L)	RPD (%)
Calcium	386	398	3.06	80.3	80.9	0.74	181	177	2.23	47.5	47.9	0.84
Magnesium	58.8	61.7	4.81	15.0	15.1	0.66	49.8	48.5	2.64	21.5	21.7	0.93
Potassium	5.8	6.1	5.04	4.2	4.2	0.00	4.5	4.3	4.55	2.6	2.5	3.92
Sodium	43.3	46.2	6.48	24.7	25.0	1.21	32.4	30.9	4.74	44.9	44.9	0.00
Bicarbonate as CaO_3	235	234	0.43	252	250	0.80	213	212	0.47	231	234	1.29
Carbonate as $CaCO_3$	<2	<2	*	29	31	6.67	<2	<2	*	<2	<2	*
Hydroxide as $CaCO_3$	<2	<2	*	<2	<2	*	<2	<2	*	<2	<2	*
Total Alkalinity	235	234	0.43	281	281	0.00	213	212	0.47	231	234	1.29
Sum of Anions	28.1	26.4	6.24	6.8	6.8	0.00	14.4	14	2.82	5.4	5.5	1.83
Sum of Cations	26.2	27.2	3.75	6.4	6.4	0.00	14.7	14.3	2.76	6.1	6.2	1.63
Chloride	46.5	46.4	0.22	19.7	19.6	0.51	33.5	33.5	0.00	4.7	4.7	0.00
Fluoride	<0.1	0.1	*	0.4	0.3	*	<0.1	<0.1	*	<0.1	<0.1	*
Nitrate	3.24	3.25	0.31	4.38	4.65	5.98	4.23	4.33	2.34	0.03	0.11	*
Nitrate/Nitrite	3.24	3.25	0.31	4.38	4.65	5.98	4.23	4.33	2.34	0.03	0.11	*
Nitrite	<0.01	<0.01	*	<0.01	<0.01	*	<0.01	<0.01	*	<0.01	<0.01	*
TDS	1860	1860	0.00	350	364	3.92	930	920	1.08	300	310	3.28
Sulfate, dissolved	1040	960	8.00	17.7	17.5	1.14	423	404	4.59	31.8	32.5	2.18

ACZ = ACZ Laboratories, Inc.
mg/L = milligrams per liter
* RPD was not used for data validation; sample concentration too low for accurate evaluation (<10x MDL)

APPENDIX A.1

ARIZONA LAND SPECIALISTS, INC. WELL SURVEY

ARIZONA LAND SPECIALISTS, INC.
FREEPORT-MCMORAN COPPER QUEEN BRANCH MONITOR WELL SURVEY

ALS POINT No.	DESCRIPTION	ELEVATION (FEET) NAVD88	UTM NAD83 NORTHING	UTM NAD83 EASTING
6900	TINTOWN (PID CF0397)	5070.12	3475060.983	604074.441
6901	RECORDS (CCLDP)	5088.01	3477526.103	605370.569
6902	AMARILLAS (PID DG9433)	4895.67	3473292.330	601929.297
6903	AVANT (CCLDP)	4857.26	3472267.450	607587.441
6953	BMO-2008-10GU	4793.45	3471731.866	605267.551
6954	BMO-2008-10GU PAD	4792.95		
6955	BMO-2008-10GL	4792.21	3471702.043	605264.072
6956	BMO-2008-10GL PAD	4791.69		
6957	BMO-2008-9M	4762.61	3471121.675	604668.669
6958	BMO-2008-9M PAD	4762.13		
6959	BMO-2008-7M	4688.33	3470029.283	603099.165
6960	BMO-2008-7M PAD	4687.86		
6961	NESS	4761.23	3471419.494	607866.391
6963	BMO-2008-6B	4627.44	3469820.644	600366.523
6964	BMO-2008-6B PAD	4626.93		
6965	BMO-2008-6M	4626.90	3469813.885	600367.943
6966	BMO-2008-6M PAD	4626.40		
6967	BMO-2008-3B	4583.97	3467919.582	602012.923
6968	BMO-2008-3B PAD	4583.47		
6969	AWC-05	4542.51	3468541.692	599269.904
6970	AWC-03	4539.52	3468681.898	599090.322
6971	AWC-04	4540.48	3468717.084	598949.929
6972	AWC-02	4547.64	3468549.357	598907.911
6973	ROGERS E	4590.66	3467636.029	600449.648
6980	PIONKE	4592.13	3468960.981	601045.471
6986	BMO-2008-5B	4585.73	3468994.395	600438.375
6987	BMO-2008-5M	4585.63	3468993.961	600445.302
6988	BMO-2008-1G	4805.10	3471723.644	606467.681
6989	BMO-2008-1G PAD	4804.60		
6990	BMO-2008-11G	4844.67	3472626.482	603800.995
6991	BMO-2008-11G PAD	4844.09		

UTM = Universal Transverse Mercator Zone 12, Band R



APPENDIX B

ANALYTICAL REPORTS FROM ACZ LABORATORIES, INC.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

September 15, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000
ACZ Project ID: L71508

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 29, 2008. This project has been assigned to ACZ's project number, L71508. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L71508. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after October 15, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: BLOMMER

ACZ Sample ID: ***L71508-01***
Date Sampled: *08/27/08 16:43*
Date Received: *08/29/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	189		*	mg/L	3	10	09/10/08 16:25	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: ROGERS 803

ACZ Sample ID: ***L71508-02***
Date Sampled: *08/28/08 07:50*
Date Received: *08/29/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	128		*	mg/L	3	10	09/10/08 16:43	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: SCHWARTZ

ACZ Sample ID: ***L71508-03***
Date Sampled: *08/28/08 09:10*
Date Received: *08/29/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	131		*	mg/L	3	10	09/10/08 17:37	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: BIMA

ACZ Sample ID: ***L71508-04***
Date Sampled: *08/28/08 09:55*
Date Received: *08/29/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	256		*	mg/L	3	10	09/10/08 17:55	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: RAY

ACZ Sample ID: ***L71508-05***
Date Sampled: *08/28/08 12:25*
Date Received: *08/29/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	129		*	mg/L	3	10	09/10/08 18:13	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: FLUTZ

ACZ Sample ID: ***L71508-06***
Date Sampled: *08/28/08 10:50*
Date Received: *08/29/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	137			mg/L	3	10	09/10/08 18:31	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 8720000

ACZ Project ID: ***L71508***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG251471													
WG251471ICV	ICV	08/11/08 15:32	WI080822-1	50.1		49.34	mg/L	98.5	90	110			
WG251471ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG251471LFB	LFB	09/10/08 14:00	WI080702-9	30		29.02	mg/L	96.7	90	110			
L71404-01DUP	DUP	09/10/08 14:36			67.4	67.4	mg/L				0	20	
L71508-06DUP	DUP	09/10/08 18:49			137	148.3	mg/L				7.9	20	
L71541-01AS	AS	09/10/08 19:26	WI080702-9	30	3	31.25	mg/L	94.2	90	110			
L71422-01AS	AS	09/10/08 23:21	WI080702-9	300	453	717.9	mg/L	88.3	90	110			M2

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L71508***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L71508-01	WG251471	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L71508-02	WG251471	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L71508-03	WG251471	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L71508-04	WG251471	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L71508-05	WG251471	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

Hydro Geo Chem, Inc. ACZ Project ID: ***L71508***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L71508
Date Received: 8/29/2008
Received By:
Date Printed: 8/29/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
1802	3.2	12

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L71508
Date Received: 8/29/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L71508-01	BLOMMER									X		
L71508-02	ROGERS 803									X		
L71508-03	SCHWARTZ									X		
L71508-04	BIMA									X		
L71508-05	RAY									X		
L71508-06	FLUTZ									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L71508

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 West Wetmore Road
Company: Hydro Geo Chem Inc.	Tucson, AZ 85705
E-mail: dans@hgcinc.com	Telephone: (520) 293-1500 x 133

Copy of Report to:

Name: Jim Norris	E-mail: jimn@hgcinc.com
Company: Hydro Geo Chem Inc.	Telephone: (520) 293-1500 x 112

Invoice to:

Name: Jim Norris	Address: 51 West Wetmore Road
Company: Hydro Geo Chem Inc.	Tucson, AZ 85705
E-mail: jimn@hgcinc.com	Telephone: (520) 293-1500 x 112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES X / NO

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: SO4 IC

Project/PO #: 8720000

Reporting state for compliance testing: AZ

Sampler's Name: Mark Arneson

Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO4
BLOMMER	8/27/08: 1643	GW	1	X
ROGERS 803	8-28-08: 750	GW	1	X
SCHWARTZ	8-28-08: 910	GW	1	X
BIMA	8-28-08: 955	GW	1	X
RAY	8-28-09: 1225	GW	1	X
FULTZ	8-28-08: 10:50	GW	1	X

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	8-28-08: 1430	WPC	8-29-08 10:36

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

September 16, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

Project ID: 872000, T2.3
ACZ Project ID: L71377

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 23, 2008. This project has been assigned to ACZ's project number, L71377. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L71377. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after October 16, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872000, T2.3
Sample ID: BMO-2008-11G

ACZ Sample ID: ***L71377-01***
Date Sampled: *08/22/08 12:30*
Date Received: *08/23/08*
Sample Matrix: *Ground Water*

Field Data

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity (Field)	Field Measurement	359			mS/cm			08/22/08 12:30	nb
pH (Field)	Field Measurement	8.0			units			08/22/08 12:30	nb
Temperature (Field)	Field Measurement	28.2		*	C			08/22/08 12:30	nb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	10.7			mg/L	0.2	1	09/03/08 23:39	aeh
Magnesium, dissolved	M200.7 ICP	5.1			mg/L	0.2	1	09/03/08 23:39	aeh
Potassium, dissolved	M200.7 ICP	1.7	B		mg/L	0.3	2	09/05/08 1:21	ear/aeh
Sodium, dissolved	M200.7 ICP	64.2			mg/L	0.3	2	09/03/08 23:39	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		149			mg/L	2	20	08/26/08 0:00	gkj
Carbonate as CaCO3		14	B		mg/L	2	20	08/26/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	08/26/08 0:00	gkj
Total Alkalinity		163			mg/L	2	20	08/26/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.7			%			09/15/08 0:00	calc
Sum of Anions		3.6			meq/L	0.1	0.5	09/15/08 0:00	calc
Sum of Cations		3.8			meq/L	0.1	0.5	09/15/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	2.8	B	*	mg/L	0.5	3	08/28/08 8:44	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	09/12/08 22:36	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.56			mg/L	0.02	0.1	09/15/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.56			mg/L	0.02	0.1	08/23/08 17:41	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/23/08 17:41	pjb
Residue, Filterable (TDS) @180C	SM2540C	220			mg/L	10	20	08/28/08 12:16	kah
Sulfate	300.0 - Ion Chromatography	14.2			mg/L	0.5	3	08/28/08 8:44	aml
TDS (calculated)	Calculation	205			mg/L	10	50	09/15/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.07						09/15/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L71377***

Project ID: 872000, T2.3

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250567													
WG250567LCSW2	LCSW	08/25/08 15:31	WC080814-1	820.0001		782.1	mg/L	95.4	90	110			
WG250567PBW2	PBW	08/25/08 18:40				U	mg/L		-20	20			
WG250567LCSW5	LCSW	08/25/08 18:51	WC080814-1	820.0001		775.8	mg/L	94.6	90	110			
WG250567PBW3	PBW	08/25/08 22:13				U	mg/L		-20	20			
WG250567LCSW8	LCSW	08/25/08 22:25	WC080814-1	820.0001		780.9	mg/L	95.2	90	110			
WG250567PBW4	PBW	08/26/08 0:54				U	mg/L		-20	20			
WG250567LCSW11	LCSW	08/26/08 1:06	WC080814-1	820.0001		779.6	mg/L	95.1	90	110			
L71384-01DUP	DUP	08/26/08 3:35			27	25.9	mg/L				4.2	20	
WG250567LCSW14	LCSW	08/26/08 3:48	WC080814-1	820.0001		785.8	mg/L	95.8	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG251115													
WG251115ICV	ICV	09/03/08 22:04	II080818-1	100		100.86	mg/L	100.9	95	105			
WG251115ICB	ICB	09/03/08 22:08				U	mg/L		-0.6	0.6			
WG251115LFB	LFB	09/03/08 22:20	II080828-2	67.97008		70.79	mg/L	104.1	85	115			
L71354-05AS	AS	09/03/08 23:13	II080828-2	67.97008	6.3	76.2	mg/L	102.8	85	115			
L71354-05ASD	ASD	09/03/08 23:16	II080828-2	67.97008	6.3	76.17	mg/L	102.8	85	115	0.04	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250770													
WG250770ICV	ICV	08/11/08 15:32	WI080822-1	19.98		20.49	mg/L	102.6	90	110			
WG250770ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250770ICV1	ICV	08/27/08 23:41	WI080822-1	19.98		19.96	mg/L	99.9	90	110			
WG250770ICB1	ICB	08/27/08 23:59				U	mg/L		-1.5	1.5			
WG250770ICV1	ICV	09/01/08 15:27	WI080822-1	19.98		19.23	mg/L	96.2	90	110			
WG250770ICB1	ICB	09/01/08 15:45				U	mg/L		-1.5	1.5			
WG250770LFB	LFB	09/01/08 16:03	WI080702-9	30		28.64	mg/L	95.5	90	110			
WG250770ICV1	ICV	09/02/08 4:43	WI080822-1	19.98		20.04	mg/L	100.3	90	110			
L71313-02AS	AS	09/02/08 19:45	WI080702-9	30	2.1	30.04	mg/L	93.1	90	110			
L71313-02DUP	DUP	09/02/08 20:04			2.1	2.12	mg/L				0.9	20	RA

Hydro Geo Chem, Inc. ACZ Project ID: ***L71377***

Project ID: 872000, T2.3

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG251636													
WG251636ICV	ICV	08/11/08 15:32	WI080822-1	4		4.07	mg/L	101.8	90	110			
WG251636ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG251636ICV1	ICV	09/12/08 16:16	WI080822-1	4		3.89	mg/L	97.3	90	110			
WG251636ICB1	ICB	09/12/08 16:34				U	mg/L		-0.3	0.3			
WG251636LFB	LFB	09/12/08 16:52	WI080702-9	1.5		1.41	mg/L	94	90	110			
L71334-03DUP	DUP	09/12/08 21:41			U	U	mg/L				0	20	RA
L71334-04AS	AS	09/12/08 22:18	WI080702-9	30	U	25.6	mg/L	85.3	90	110			M2

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG251115													
WG251115ICV	ICV	09/03/08 22:04	II080818-1	100		102.63	mg/L	102.6	95	105			
WG251115ICB	ICB	09/03/08 22:08				U	mg/L		-0.6	0.6			
WG251115LFB	LFB	09/03/08 22:20	II080828-2	49.96908		51.66	mg/L	103.4	85	115			
L71354-05AS	AS	09/03/08 23:13	II080828-2	49.96908	.2	51.44	mg/L	102.5	85	115			
L71354-05ASD	ASD	09/03/08 23:16	II080828-2	49.96908	.2	51.51	mg/L	102.7	85	115	0.14	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250516													
WG250516ICV	ICV	08/23/08 17:38	WI080613-1	2.416		2.472	mg/L	102.3	90	110			
WG250516ICB	ICB	08/23/08 17:39				U	mg/L		-0.06	0.06			
WG250516LFB	LFB	08/23/08 17:40	WI080312-1	2		2.011	mg/L	100.6	90	110			
L71377-01DUP	DUP	08/23/08 17:43			.56	.547	mg/L				2.3	20	
L71377-01AS	AS	08/23/08 17:44	WI080312-1	2	.56	2.666	mg/L	105.3	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250516													
WG250516ICV	ICV	08/23/08 17:38	WI080613-1	.609		.625	mg/L	102.6	90	110			
WG250516ICB	ICB	08/23/08 17:39				U	mg/L		-0.03	0.03			
WG250516LFB	LFB	08/23/08 17:40	WI080312-1	1		.982	mg/L	98.2	90	110			
L71377-01DUP	DUP	08/23/08 17:43			U	U	mg/L				0	20	RA
L71377-01AS	AS	08/23/08 17:44	WI080312-1	1	U	1.056	mg/L	105.6	90	110			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG251188													
WG251188ICV	ICV	09/04/08 23:58	II080818-1	20		20.13	mg/L	100.7	95	105			
WG251188ICB	ICB	09/05/08 0:02				U	mg/L		-0.9	0.9			
WG251188LFB	LFB	09/05/08 0:16	II080828-2	99.76186		101.81	mg/L	102.1	85	115			
L71377-01AS	AS	09/05/08 1:32	II080828-2	99.76186	1.7	110.92	mg/L	109.5	85	115			
L71377-01ASD	ASD	09/05/08 1:36	II080828-2	99.76186	1.7	111.07	mg/L	109.6	85	115	0.14	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L71377***

Project ID: 872000, T2.3

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250822													
WG250822PBW	PBW	08/28/08 12:15				10	mg/L		-20	20			
WG250822LCSW	LCSW	08/28/08 12:15	PCN30193	260		268	mg/L	103.1	80	120			
L71404-01DUP	DUP	08/28/08 12:22			430	416	mg/L				3.3	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG251115													
WG251115ICV	ICV	09/03/08 22:04	I080818-1	100		101.81	mg/L	101.8	95	105			
WG251115ICB	ICB	09/03/08 22:08				U	mg/L		-0.9	0.9			
WG251115LFB	LFB	09/03/08 22:20	I080828-2	98.21624		100.3	mg/L	102.1	85	115			
L71354-05AS	AS	09/03/08 23:13	I080828-2	98.21624	10.9	110.04	mg/L	100.9	85	115			
L71354-05ASD	ASD	09/03/08 23:16	I080828-2	98.21624	10.9	109.61	mg/L	100.5	85	115	0.39	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250770													
WG250770ICV	ICV	08/11/08 15:32	WI080822-1	50.1		49.34	mg/L	98.5	90	110			
WG250770ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250770ICV1	ICV	08/27/08 23:41	WI080822-1	50.1		50.8	mg/L	101.4	90	110			
WG250770ICB1	ICB	08/27/08 23:59				U	mg/L		-1.5	1.5			
WG250770ICV1	ICV	09/01/08 15:27	WI080822-1	50.1		46.54	mg/L	92.9	90	110			
WG250770ICB1	ICB	09/01/08 15:45				U	mg/L		-1.5	1.5			
WG250770LFB	LFB	09/01/08 16:03	WI080702-9	30		27.58	mg/L	91.9	90	110			
L71313-02AS	AS	09/01/08 23:17	WI080702-9	150	141	290.6	mg/L	99.7	90	110			
L71313-02DUP	DUP	09/01/08 23:36			141	139.4	mg/L				1.1	20	
WG250770ICV1	ICV	09/02/08 4:43	WI080822-1	50.1		49.65	mg/L	99.1	90	110			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L71377***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L71377-01	WG250770	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG251636	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250516	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc. ACZ Project ID: ***L71377***

Field Data

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Temperature (Field)	Field Measurement

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872000, T2.3

ACZ Project ID: L71377
Date Received: 8/23/2008
Received By:
Date Printed: 8/23/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6769	4.9	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872000, T2.3

ACZ Project ID: L71377
Date Received: 8/23/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L71377-01	RMO-2008-11G		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L71397

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd, Ste. 100 Tucson, AZ 85705
Company: Hydro Geo Chem, Inc	
E-mail: dans@hgcinc.com	Telephone: (520) 293-1500 x. 133

Copy of Report to:

Name: N/A	E-mail: N/A
Company:	Telephone:

Invoice to:

Name: Same as Above	Address: Same as Above
Company:	
E-mail:	Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☐ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCOB-GW

Project/PO #: 872000, T2.3

Reporting state for compliance testing: AZ

Sampler's Name: NJ, Babb

Are any samples NRC licensable material?

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCOB-GW							
EMO-2008-11G	8-22-08/12:30	GW	3	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

water quality parameters

pH = 8.02

µs = 359

T°C = 28.2

sample depth = 588.58

purge rate = 1.7 gpm

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Neil J. Babb	8-22-08/13:15	MK	8-23-08 11:27

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

September 09, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

Project ID: 872000 T2.3
ACZ Project ID: L71307

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 21, 2008. This project has been assigned to ACZ's project number, L71307. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L71307. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after October 09, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872000 T2.3
Sample ID: BMO-2008-10GL

ACZ Sample ID: ***L71307-01***
Date Sampled: *08/20/08 13:45*
Date Received: *08/21/08*
Sample Matrix: *Ground Water*

Field Data

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity (Field)	Field Measurement	2924			mS/cm			08/20/08 13:45	njb
pH (Field)	Field Measurement	6.2			units			08/20/08 13:45	njb
Temperature (Field)	Field Measurement	29.5		*	C			08/20/08 13:45	njb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	579			mg/L	0.4	2	09/03/08 13:42	aeh
Magnesium, dissolved	M200.7 ICP	167			mg/L	0.4	2	09/04/08 14:50	ear
Potassium, dissolved	M200.7 ICP	10.5			mg/L	0.6	3	09/05/08 17:14	aeh
Sodium, dissolved	M200.7 ICP	90.5			mg/L	0.6	3	08/29/08 21:58	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		870			mg/L	2	20	08/25/08 0:00	gkj
Carbonate as CaCO3			U		mg/L	2	20	08/25/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	08/25/08 0:00	gkj
Total Alkalinity		870			mg/L	2	20	08/25/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.0			%			09/09/08 0:00	calc
Sum of Anions		46.0			meq/L	0.1	0.5	09/09/08 0:00	calc
Sum of Cations		46.9			meq/L	0.1	0.5	09/09/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	30	B	*	mg/L	10	50	08/26/08 20:24	ccp
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	2	10	09/02/08 11:04	ccp
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2		U		mg/L	0.02	0.1	09/09/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U		mg/L	0.02	0.1	08/21/08 19:07	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.02	B	*	mg/L	0.01	0.05	08/21/08 19:07	pjb
Residue, Filterable (TDS) @180C	SM2540C	2970		*	mg/L	10	20	08/26/08 14:05	gkj
Sulfate	300.0 - Ion Chromatography	1320		*	mg/L	10	50	09/02/08 11:04	ccp
TDS (calculated)	Calculation	2720			mg/L	10	50	09/09/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.09						09/09/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L71307***

Project ID: 872000 T2.3

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250567													
WG250567LCSW2	LCSW	08/25/08 15:31	WC080814-1	820.0001		782.1	mg/L	95.4	90	110			
WG250567PBW2	PBW	08/25/08 18:40				U	mg/L		-20	20			
WG250567LCSW5	LCSW	08/25/08 18:51	WC080814-1	820.0001		775.8	mg/L	94.6	90	110			
L71329-01DUP	DUP	08/25/08 22:07			113	109.8	mg/L				2.9	20	
WG250567PBW3	PBW	08/25/08 22:13				U	mg/L		-20	20			
WG250567LCSW8	LCSW	08/25/08 22:25	WC080814-1	820.0001		780.9	mg/L	95.2	90	110			
WG250567PBW4	PBW	08/26/08 0:54				U	mg/L		-20	20			
WG250567LCSW11	LCSW	08/26/08 1:06	WC080814-1	820.0001		779.6	mg/L	95.1	90	110			
WG250567LCSW14	LCSW	08/26/08 3:48	WC080814-1	820.0001		785.8	mg/L	95.8	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250995													
WG250995ICV	ICV	09/03/08 12:23	II080818-1	100		100.27	mg/L	100.3	95	105			
WG250995ICB	ICB	09/03/08 12:27				U	mg/L		-0.6	0.6			
WG250995LFB	LFB	09/03/08 12:39	II080828-2	67.97008		75.01	mg/L	110.4	85	115			
L71305-03AS	AS	09/03/08 13:29	II080828-2	67.97008	74.3	145.72	mg/L	105.1	85	115			
L71305-03ASD	ASD	09/03/08 13:32	II080828-2	67.97008	74.3	145.32	mg/L	104.5	85	115	0.27	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250459													
WG250459ICV	ICV	08/11/08 15:32	WI080822-1	19.98		20.49	mg/L	102.6	90	110			
WG250459ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250459ICV1	ICV	08/26/08 11:20	WI080822-1	19.98		19.76	mg/L	98.9	90	110			
WG250459ICB1	ICB	08/26/08 11:38				U	mg/L		-1.5	1.5			
WG250459LFB	LFB	08/26/08 11:57	WI080702-9	30		29.85	mg/L	99.5	90	110			
L71151-01AS	AS	08/26/08 16:46	WI080702-9	30	9	39.14	mg/L	100.5	90	110			
L71151-01DUP	DUP	08/26/08 17:04			9	9.02	mg/L				0.2	20	
WG250459ICV1	ICV	08/27/08 21:16	WI080822-1	19.98		19.69	mg/L	98.5	90	110			
WG250459ICB1	ICB	08/27/08 21:34				U	mg/L		-1.5	1.5			

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG250973													
WG250973ICV	ICV	09/02/08 8:21	WI080822-1	4		3.91	mg/L	97.8	90	110			
WG250973ICB	ICB	09/02/08 8:39				U	mg/L		-0.3	0.3			
WG250973LFB	LFB	09/02/08 8:57	WI080702-9	1.5		1.41	mg/L	94	90	110			
L71205-01DUP	DUP	09/02/08 9:33			.1	.13	mg/L				26.1	20	RA
L71205-02AS	AS	09/02/08 10:09	WI080702-9	1.5	.2	1.68	mg/L	98.7	90	110			

Hydro Geo Chem, Inc. ACZ Project ID: ***L71307***

Project ID: 872000 T2.3

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG251181													
WG251181ICV	ICV	09/04/08 13:33	II080818-1	100		99.89	mg/L	99.9	95	105			
WG251181ICB	ICB	09/04/08 13:37				U	mg/L		-0.6	0.6			
WG251181LFB	LFB	09/04/08 13:49	II080828-2	49.96908		50.37	mg/L	100.8	85	115			
L71305-03AS	AS	09/04/08 14:38	II080828-2	49.96908	20.9	70.06	mg/L	98.4	85	115			
L71305-03ASD	ASD	09/04/08 14:41	II080828-2	49.96908	20.9	69.92	mg/L	98.1	85	115	0.2	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250416													
WG250416ICV	ICV	08/21/08 18:27	WI080613-1	2.416		2.277	mg/L	94.2	90	110			
WG250416ICB	ICB	08/21/08 18:28				.033	mg/L		-0.06	0.06			
WG250416LFB1	LFB	08/21/08 18:32	WI080312-1	2		1.899	mg/L	95	90	110			
L71297-08AS	AS	08/21/08 18:53	WI080312-1	2	.84	2.683	mg/L	92.2	90	110			
WG250416LFB2	LFB	08/21/08 19:11	WI080312-1	2		1.818	mg/L	90.9	90	110			
L71297-09DUP	DUP	08/21/08 19:48			4.66	4.691	mg/L				0.7	20	

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250416													
WG250416ICV	ICV	08/21/08 18:27	WI080613-1	.609		.621	mg/L	102	90	110			
WG250416ICB	ICB	08/21/08 18:28				U	mg/L		-0.03	0.03			
WG250416LFB1	LFB	08/21/08 18:32	WI080312-1	1		1.031	mg/L	103.1	90	110			
L71297-08AS	AS	08/21/08 18:53	WI080312-1	1		.973	mg/L	97.3	90	110			
L71297-09DUP	DUP	08/21/08 18:56				U	mg/L				0	20	RA
WG250416LFB2	LFB	08/21/08 19:11	WI080312-1	1		.979	mg/L	97.9	90	110			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG251303													
WG251303ICV	ICV	09/05/08 15:51	II080818-1	20		20.01	mg/L	100.1	95	105			
WG251303ICB	ICB	09/05/08 15:55				U	mg/L		-0.9	0.9			
WG251303LFB	LFB	09/05/08 16:07	II080828-2	99.76186		101.85	mg/L	102.1	85	115			
L71305-03AS	AS	09/05/08 17:01	II080828-2	99.76186	2.7	106.14	mg/L	103.7	85	115			
L71305-03ASD	ASD	09/05/08 17:04	II080828-2	99.76186	2.7	105.79	mg/L	103.3	85	115	0.33	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250624													
WG250624PBW	PBW	08/26/08 13:40				U	mg/L		-20	20			
WG250624LCSW	LCSW	08/26/08 13:41	PCN30193	260		260	mg/L	100	80	120			
L71394-06DUP	DUP	08/26/08 14:14			U	10	mg/L				0	20	RA

Hydro Geo Chem, Inc. ACZ Project ID: ***L71307***

Project ID: 872000 T2.3

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250920													
WG250920ICV	ICV	08/29/08 20:16	I080818-1	100		104.73	mg/L	104.7	95	105			
WG250920ICB	ICB	08/29/08 20:20				U	mg/L		-0.9	0.9			
WG250920LFB	LFB	08/29/08 20:33	I080828-2	98.21624		102.88	mg/L	104.7	85	115			
L71305-01AS	AS	08/29/08 21:32	I080828-2	98.21624	2.8	107.08	mg/L	106.2	85	115			
L71305-01ASD	ASD	08/29/08 21:36	I080828-2	98.21624	2.8	106.52	mg/L	105.6	85	115	0.52	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250973													
WG250973ICV	ICV	09/02/08 8:21	WI080822-1	50.1		50.12	mg/L	100	90	110			
WG250973ICB	ICB	09/02/08 8:39				U	mg/L		-1.5	1.5			
WG250973LFB	LFB	09/02/08 8:57	WI080702-9	30		30.27	mg/L	100.9	90	110			
L71205-02AS	AS	09/02/08 10:09	WI080702-9	30	14.4	43.62	mg/L	97.4	90	110			
L71205-01DUP	DUP	09/02/08 11:40			178	174.6	mg/L				1.9	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L71307***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L71307-01	WG250459	Chloride	M300.0 - Ion Chromatography	DD	Sample required dilution due to matrix color or odor.
	WG250973	Fluoride	M300.0 - Ion Chromatography	DD	Sample required dilution due to matrix color or odor.
			M300.0 - Ion Chromatography	DF	Sample required dilution due to high sediment.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250416	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250624	Residue, Filterable (TDS) @180C	SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250973	Sulfate	300.0 - Ion Chromatography	DD	Sample required dilution due to matrix color or odor.
			300.0 - Ion Chromatography	DF	Sample required dilution due to high sediment.

Hydro Geo Chem, Inc. ACZ Project ID: ***L71307***

Field Data

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Temperature (Field)	Field Measurement

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872000 T2.3

ACZ Project ID: L71307
Date Received: 8/21/2008
Received By:
Date Printed: 8/21/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6753	2.8	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc. L71307

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd., Ste. 100 Tucson, AZ 85705
Company: HGC, INC.	
E-mail: dans@hgcinc.com	Telephone:

Copy of Report to:

Name: N/A	E-mail: N/A
Company:	Telephone:

Invoice to:

Name: Same as above	Address: Same as above
Company:	
E-mail:	Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☐ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW

Project/PO #: 872000, T0.3

Reporting state for compliance testing: AZ

Sampler's Name: N.J. Babb

Are any samples NRC licensable material?

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB-GW							
Rmw-2008-10GL	8-20-08/13:45	GW	3	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

H_2O quality parameters:

pH = 6.22

μs = 2904

T°C = 29.5

Sample Depth to H_2O = 576.57'

purge volume = ~~gals~~

@ 1.1 gpm 313.5 gals

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
N.J. Babb	8-20-08/14:50	WKL	8-21-08/1107

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

September 09, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000
ACZ Project ID: L71263

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 20, 2008. This project has been assigned to ACZ's project number, L71263. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L71263. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after October 09, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: BINYON

ACZ Sample ID: ***L71263-01***
Date Sampled: *08/18/08 13:30*
Date Received: *08/20/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	13.0			mg/L	0.5	3	09/02/08 10:46	ccp

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic QC Summary

Hydro Geo Chem, Inc.
Project ID: 8720000

ACZ Project ID: ***L71263***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250973													
WG250973ICV	ICV	09/02/08 8:21	WI080822-1	50.1		50.12	mg/L	100	90	110			
WG250973ICB	ICB	09/02/08 8:39				U	mg/L		-1.5	1.5			
WG250973LFB	LFB	09/02/08 8:57	WI080702-9	30		30.27	mg/L	100.9	90	110			
L71205-02AS	AS	09/02/08 10:09	WI080702-9	30	14.4	43.62	mg/L	97.4	90	110			
L71205-01DUP	DUP	09/02/08 11:40			178	174.6	mg/L				1.9	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L71263***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

Hydro Geo Chem, Inc. ACZ Project ID: ***L71263***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L71263
Date Received: 8/20/2008
Received By:
Date Printed: 8/20/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6736	1.6	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L71263
Date Received: 8/20/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L71263-01	BINYON									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L71263

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name:	Dan Simpson	Address:	51 West Wetmore Road
Company:	Hydro Geo Chem Inc.		Tucson, AZ 85705
E-mail:	dans@hgcinc.com	Telephone:	(520) 293-1500 x 133

Copy of Report to:

Name:	Jim Norris	E-mail:	jimn@hgcinc.com
Company:	Hydro Geo Chem Inc.	Telephone:	(520) 293-1500 x 112

Invoice to:

Name:	Jim Norris	Address:	51 West Wetmore Road
Company:	Hydro Geo Chem Inc.		Tucson, AZ 85705
E-mail:	jimn@hgcinc.com	Telephone:	(520) 293-1500 x 112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: SO4 IC

Project/PO #: 8720000

Reporting state for compliance testing: AZ

Sampler's Name: Mark Arneson

Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO4							
BINYON	6-18-08 1330	GW	1	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	6/19/08 1500		8:20 8/20/08

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

September 15, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Rebecca Sawyer

Project ID: 8720000
ACZ Project ID: L71205

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 16, 2008. This project has been assigned to ACZ's project number, L71205. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L71205. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after October 15, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Case Narrative

Hydro Geo Chem, Inc.

September 15, 2008

Project ID: 8720000
ACZ Project ID: L71205

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 2 ground water samples from Hydro Geo Chem, Inc. on August 16, 2008. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L71205. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. The Alkalinity on L71205-02 has been qualified with the N1 flag on extended qual report. The chemist noted that the sample required to be centrifuged prior to analysis.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: GGOOSE 547

ACZ Sample ID: ***L71205-01***
Date Sampled: *08/15/08 11:50*
Date Received: *08/16/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	117			mg/L	0.2	1	08/27/08 2:52	aeh
Magnesium, dissolved	M200.7 ICP	32.4			mg/L	0.2	1	08/27/08 2:52	aeh
Potassium, dissolved	M200.7 ICP	5.6			mg/L	0.3	2	08/27/08 18:30	aeh
Sodium, dissolved	M200.7 ICP	25.4			mg/L	0.3	2	08/27/08 2:52	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		187			mg/L	2	20	08/21/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	08/21/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	08/21/08 0:00	jlf
Total Alkalinity		187			mg/L	2	20	08/21/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.2			%			09/09/08 0:00	calc
Sum of Anions		9.1			meq/L	0.1	0.5	09/09/08 0:00	calc
Sum of Cations		9.7			meq/L	0.1	0.5	09/09/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	35.4			mg/L	0.5	3	08/26/08 19:11	ccp
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	09/02/08 9:15	ccp
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	8.90			mg/L	0.08	0.4	09/09/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	8.90			mg/L	0.08	0.4	08/16/08 16:32	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/16/08 15:41	pjb
Residue, Filterable (TDS) @180C	SM2540C	590			mg/L	10	20	08/20/08 13:04	kah
Sulfate	300.0 - Ion Chromatography	178			mg/L	3	10	09/02/08 11:22	ccp
TDS (calculated)	Calculation	545			mg/L	10	50	09/09/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.08						09/09/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: TM-02A

ACZ Sample ID: ***L71205-02***
Date Sampled: *08/15/08 15:30*
Date Received: *08/16/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	14.7			mg/L	0.2	1	08/27/08 3:02	aeh
Magnesium, dissolved	M200.7 ICP	5.2			mg/L	0.2	1	08/27/08 3:02	aeh
Potassium, dissolved	M200.7 ICP	2.4			mg/L	0.3	2	08/27/08 18:33	aeh
Sodium, dissolved	M200.7 ICP	60.2			mg/L	0.3	2	08/27/08 3:02	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		143			mg/L	2	20	08/21/08 0:00	jlf
Carbonate as CaCO3		8	B		mg/L	2	20	08/21/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	08/21/08 0:00	jlf
Total Alkalinity		151		*	mg/L	2	20	08/21/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.1			%			09/09/08 0:00	calc
Sum of Anions		3.5			meq/L	0.1	0.5	09/09/08 0:00	calc
Sum of Cations		3.8			meq/L	0.1	0.5	09/09/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	8.2			mg/L	0.5	3	08/26/08 19:29	ccp
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	09/02/08 9:51	ccp
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.25			mg/L	0.02	0.1	09/09/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.25			mg/L	0.02	0.1	08/16/08 15:42	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/16/08 15:42	pjb
Residue, Filterable (TDS) @180C	SM2540C	190			mg/L	10	20	08/20/08 13:05	kah
Sulfate	300.0 - Ion Chromatography	14.4			mg/L	0.5	3	09/02/08 9:51	ccp
TDS (calculated)	Calculation	200			mg/L	10	50	09/09/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.95						09/09/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L71205***

Project ID: 8720000

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250396													
WG250396PBW1	PBW	08/21/08 17:18				15.1	mg/L		-20	20			
WG250396LCSW2	LCSW	08/21/08 17:30	WC080814-1	820.0001		803.4	mg/L	98	90	110			
WG250396PBW2	PBW	08/21/08 20:21				U	mg/L		-20	20			
WG250396LCSW5	LCSW	08/21/08 20:34	WC080814-1	820.0001		808.9	mg/L	98.6	90	110			
L71212-01DUP	DUP	08/21/08 22:02			250	248.5	mg/L				0.6	20	
WG250396PBW3	PBW	08/21/08 23:52				U	mg/L		-20	20			
WG250396LCSW8	LCSW	08/22/08 0:03	WC080814-1	820.0001		779.2	mg/L	95	90	110			
WG250396PBW4	PBW	08/22/08 3:11				U	mg/L		-20	20			
WG250396LCSW11	LCSW	08/22/08 3:24	WC080814-1	820.0001		822.6	mg/L	100.3	90	110			
WG250396LCSW14	LCSW	08/22/08 6:28	WC080814-1	820.0001		822.5	mg/L	100.3	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250638													
WG250638ICV	ICV	08/27/08 2:05	II080818-1	100		99.76	mg/L	99.8	95	105			
WG250638ICB	ICB	08/27/08 2:09				U	mg/L		-0.6	0.6			
WG250638LFB	LFB	08/27/08 2:22	II080811-3	67.97008		71.49	mg/L	105.2	85	115			
L71043-01AS	AS	08/27/08 2:28	II080811-3	67.97008	66.7	132.63	mg/L	97	85	115			
L71043-01ASD	ASD	08/27/08 2:32	II080811-3	67.97008	66.7	131.48	mg/L	95.3	85	115	0.87	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250459													
WG250459ICV	ICV	08/11/08 15:32	WI080822-1	19.98		20.49	mg/L	102.6	90	110			
WG250459ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250459ICV1	ICV	08/26/08 11:20	WI080822-1	19.98		19.76	mg/L	98.9	90	110			
WG250459ICB1	ICB	08/26/08 11:38				U	mg/L		-1.5	1.5			
WG250459LFB	LFB	08/26/08 11:57	WI080702-9	30		29.85	mg/L	99.5	90	110			
L71151-01AS	AS	08/26/08 16:46	WI080702-9	30	9	39.14	mg/L	100.5	90	110			
L71151-01DUP	DUP	08/26/08 17:04			9	9.02	mg/L				0.2	20	
WG250459ICV1	ICV	08/27/08 21:16	WI080822-1	19.98		19.69	mg/L	98.5	90	110			
WG250459ICB1	ICB	08/27/08 21:34				U	mg/L		-1.5	1.5			

Hydro Geo Chem, Inc. ACZ Project ID: ***L71205***

Project ID: 8720000

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG250973													
WG250973ICV	ICV	09/02/08 8:21	WI080822-1	4		3.91	mg/L	97.8	90	110			
WG250973ICB	ICB	09/02/08 8:39				U	mg/L		-0.3	0.3			
WG250973LFB	LFB	09/02/08 8:57	WI080702-9	1.5		1.41	mg/L	94	90	110			
L71205-01DUP	DUP	09/02/08 9:33			.1	.13	mg/L				26.1	20	RA
L71205-02AS	AS	09/02/08 10:09	WI080702-9	1.5	.2	1.68	mg/L	98.7	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250638													
WG250638ICV	ICV	08/27/08 2:05	II080818-1	100		99.98	mg/L	100	95	105			
WG250638ICB	ICB	08/27/08 2:09				U	mg/L		-0.6	0.6			
WG250638LFB	LFB	08/27/08 2:22	II080811-3	49.96908		51.58	mg/L	103.2	85	115			
L71043-01AS	AS	08/27/08 2:28	II080811-3	49.96908	18.6	70.01	mg/L	102.9	85	115			
L71043-01ASD	ASD	08/27/08 2:32	II080811-3	49.96908	18.6	69.63	mg/L	102.1	85	115	0.54	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250118													
WG250118ICV	ICV	08/16/08 15:23	WI080613-1	2.416		2.439	mg/L	101	90	110			
WG250118ICB	ICB	08/16/08 15:24				U	mg/L		-0.06	0.06			
WG250118LFB	LFB	08/16/08 15:28	WI080312-1	2		2.01	mg/L	100.5	90	110			
L71203-02DUP	DUP	08/16/08 15:33			2.16	2.146	mg/L				0.7	20	
L71203-01AS	AS	08/16/08 15:57	WI080312-1	10	3.6	14.17	mg/L	105.7	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250118													
WG250118ICV	ICV	08/16/08 15:23	WI080613-1	.609		.631	mg/L	103.6	90	110			
WG250118ICB	ICB	08/16/08 15:24				U	mg/L		-0.03	0.03			
WG250118LFB	LFB	08/16/08 15:28	WI080312-1	1		1.01	mg/L	101	90	110			
L71203-01AS	AS	08/16/08 15:30	WI080312-1	1	.06	1.128	mg/L	106.8	90	110			
L71203-02DUP	DUP	08/16/08 15:33				U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250731													
WG250731ICV	ICV	08/27/08 17:35	II080818-1	20		20.37	mg/L	101.9	95	105			
WG250731ICB	ICB	08/27/08 17:39				U	mg/L		-0.9	0.9			
WG250731LFB	LFB	08/27/08 17:53	II080811-3	99.76186		105.46	mg/L	105.7	85	115			
L71043-01AS	AS	08/27/08 18:01	II080811-3	99.76186	3.1	115.16	mg/L	112.3	85	115			
L71043-01ASD	ASD	08/27/08 18:04	II080811-3	99.76186	3.1	111.73	mg/L	108.9	85	115	3.02	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L71205***
Project ID: 8720000

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250297													
WG250297PBW	PBW	08/20/08 13:00				U	mg/L		-20	20			
WG250297LCSW	LCSW	08/20/08 13:01	PCN30192	260		264	mg/L	101.5	80	120			
L71226-05DUP	DUP	08/20/08 13:13			6520	6506	mg/L				0.2	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250638													
WG250638ICV	ICV	08/27/08 2:05	II080818-1	100		100.53	mg/L	100.5	95	105			
WG250638ICB	ICB	08/27/08 2:09				U	mg/L		-0.9	0.9			
WG250638LFB	LFB	08/27/08 2:22	II080811-3	98.21624		101.22	mg/L	103.1	85	115			
L71043-01AS	AS	08/27/08 2:28	II080811-3	98.21624	53.2	150.2	mg/L	98.8	85	115			
L71043-01ASD	ASD	08/27/08 2:32	II080811-3	98.21624	53.2	149.12	mg/L	97.7	85	115	0.72	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250973													
WG250973ICV	ICV	09/02/08 8:21	WI080822-1	50.1		50.12	mg/L	100	90	110			
WG250973ICB	ICB	09/02/08 8:39				U	mg/L		-1.5	1.5			
WG250973LFB	LFB	09/02/08 8:57	WI080702-9	30		30.27	mg/L	100.9	90	110			
L71205-02AS	AS	09/02/08 10:09	WI080702-9	30	14.4	43.62	mg/L	97.4	90	110			
L71205-01DUP	DUP	09/02/08 11:40			178	174.6	mg/L				1.9	20	

ACZ Laboratories, Inc.
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Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L71205***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L71205-01	WG250973	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250118	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L71205-02	WG250973	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250118	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250396	Total Alkalinity	SM2320B - Titration	N1	See Case Narrative.

Hydro Geo Chem, Inc. ACZ Project ID: ***L71205***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
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Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L71205
Date Received: 8/16/2008
Received By:
Date Printed: 8/16/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
2098	2.1	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L71205
Date Received: 8/16/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L71205-01	GGOOSE 547		Y									
L71205-02	TM-02A		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L71205

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name:	Dan Simpson
Company:	Hydro Geo Chem, Inc.
E-mail:	dans@hgcinc.com
Address:	51 West Wetmore Road, Suite 101
	Tucson, Arizona 85705
Telephone:	520-293-1500 x133

Copy of Report to:

Name:	Rebecca Sawyer
Company:	Freeport-McMoRan Copper Queen Branch
E-mail:	Rebecca_Sawyer@fmi.com
Telephone:	520-432-6206

Invoice to:

Name:	Jim Norris
Company:	Hydro Geo Chem, Inc.
E-mail:	jimn@hgcinc.com
Address:	51 West Wetmore Road, Suite 101
	Tucson, Arizona 85705
Telephone:	520-293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #:	FMCQB-GW
Project/PO #:	8720000
Reporting state for compliance testing:	Arizona
Sampler's Name:	Mark Arneson
Are any samples NRC licensable material?	No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB-GW							
GGOOSE 547	08/15/08: 11:50	GW	3	X							
TM-02A	08/15/08: 15:30	GW	3	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	8/16/08 4:30	MSS	8-16-08 11:09

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

September 05, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000
ACZ Project ID: L71107

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 13, 2008. This project has been assigned to ACZ's project number, L71107. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L71107. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after October 05, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: AWC-03

ACZ Sample ID: ***L71107-01***
Date Sampled: *08/12/08 09:45*
Date Received: *08/13/08*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP							08/21/08 20:07	jws

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.03	0.2	08/22/08 22:29	ear/aeh
Barium, dissolved	M200.7 ICP	0.345			mg/L	0.003	0.02	08/22/08 22:29	ear/aeh
Boron, dissolved	M200.7 ICP	0.04	B		mg/L	0.01	0.05	08/22/08 22:29	ear/aeh
Calcium, dissolved	M200.7 ICP	62.8		*	mg/L	0.2	1	08/22/08 22:29	ear/aeh
Iron, dissolved	M200.7 ICP		U		mg/L	0.02	0.05	08/22/08 22:29	ear/aeh
Iron, total	M200.7 ICP	0.02	B		mg/L	0.02	0.05	08/26/08 17:33	ear/aeh
Magnesium, dissolved	M200.7 ICP	8.6			mg/L	0.2	1	08/22/08 22:29	ear/aeh
Manganese, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	08/22/08 22:29	ear/aeh
Manganese, total	M200.7 ICP		U		mg/L	0.005	0.03	08/26/08 17:33	ear/aeh
Potassium, dissolved	M200.7 ICP	2.1			mg/L	0.3	2	08/22/08 22:29	ear/aeh
Silica, total	M200.7 ICP	34.7			mg/L	0.4	2	08/26/08 17:33	ear/aeh
Sodium, dissolved	M200.7 ICP	22.8			mg/L	0.3	2	08/22/08 22:29	ear/aeh
Strontium, dissolved	M200.7 ICP	0.59			mg/L	0.01	0.05	08/22/08 22:29	ear/aeh

** Please refer to Qualifier Reports for details.*

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: AWC-03

ACZ Sample ID: ***L71107-01***
Date Sampled: *08/12/08 09:45*
Date Received: *08/13/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		156			mg/L	2	20	08/14/08 0:00	tbd
Carbonate as CaCO3		5	B		mg/L	2	20	08/14/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/14/08 0:00	tbd
Total Alkalinity		162			mg/L	2	20	08/14/08 0:00	tbd
Carbon, total organic (TOC)	SM5310B	5		*	mg/L	1	5	08/19/08 19:04	scp
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.2			%			09/04/08 0:00	calc
Sum of Anions		4.6			meq/L	0.1	0.5	09/04/08 0:00	calc
Sum of Cations		4.9			meq/L	0.1	0.5	09/04/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	15.5		*	mg/L	0.5	3	08/21/08 6:26	aml
Coliforms, fecal	SM9222D - Membrane Filter	0	H	*	#/100ml	1	5	08/13/08 13:20	kah
Conductivity @25C	SM2510B	463			umhos/cm	1	10	08/14/08 22:10	tbd
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	08/21/08 6:26	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.28			mg/L	0.02	0.1	09/04/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.28		*	mg/L	0.02	0.1	08/13/08 20:21	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/13/08 20:21	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate		U	*	mg/L	0.05	0.5	09/03/08 14:11	ccp
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	0.05		*	mg/L	0.01	0.05	08/13/08 21:55	pjb
Residue, Filterable (TDS) @180C	SM2540C	290			mg/L	10	20	08/14/08 17:07	tbd
Residue, Non-Filterable (TSS) @105C	SM2540D		U	*	mg/L	5	20	08/18/08 14:52	gkj
Sulfate	300.0 - Ion Chromatography	38.8			mg/L	0.5	3	08/21/08 6:26	aml
Sulfide as S	376.2 - Methylene Blue		U	*	mg/L	0.02	0.1	08/14/08 13:08	kah
TDS (calculated)	Calculation	260			mg/L	10	50	09/04/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.12						09/04/08 0:00	calc
Turbidity	M180.1 - Nephelometric	0.2	B		NTU	0.1	0.5	08/13/08 16:24	tbd

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: AWC-04

ACZ Sample ID: ***L71107-02***
Date Sampled: *08/12/08 10:20*
Date Received: *08/13/08*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP							08/21/08 20:23	jws

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.03	0.2	08/25/08 22:09	ear/aeh
Barium, dissolved	M200.7 ICP	0.551			mg/L	0.003	0.02	08/25/08 22:09	ear/aeh
Boron, dissolved	M200.7 ICP	0.04	B		mg/L	0.01	0.05	08/25/08 22:09	ear/aeh
Calcium, dissolved	M200.7 ICP	88.7			mg/L	0.2	1	08/25/08 22:09	ear/aeh
Iron, dissolved	M200.7 ICP		U		mg/L	0.02	0.05	08/25/08 22:09	ear/aeh
Iron, total	M200.7 ICP	0.05	B		mg/L	0.02	0.05	08/26/08 17:44	ear/aeh
Magnesium, dissolved	M200.7 ICP	11.6			mg/L	0.2	1	08/25/08 22:09	ear/aeh
Manganese, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	08/25/08 22:09	ear/aeh
Manganese, total	M200.7 ICP		U		mg/L	0.005	0.03	08/26/08 17:44	ear/aeh
Potassium, dissolved	M200.7 ICP	2.6			mg/L	0.3	2	08/26/08 13:36	aeh
Silica, total	M200.7 ICP	35.3			mg/L	0.4	2	08/26/08 17:44	ear/aeh
Sodium, dissolved	M200.7 ICP	22.8			mg/L	0.3	2	08/25/08 22:09	ear/aeh
Strontium, dissolved	M200.7 ICP	0.66			mg/L	0.01	0.05	08/25/08 22:09	ear/aeh

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: AWC-04

ACZ Sample ID: ***L71107-02***
Date Sampled: *08/12/08 10:20*
Date Received: *08/13/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		206			mg/L	2	20	08/14/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/14/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/14/08 0:00	tbd
Total Alkalinity		206			mg/L	2	20	08/14/08 0:00	tbd
Carbon, total organic (TOC)	SM5310B	7		*	mg/L	1	5	08/19/08 19:33	scp
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.2			%			09/04/08 0:00	calc
Sum of Anions		6.0			meq/L	0.1	0.5	09/04/08 0:00	calc
Sum of Cations		6.4			meq/L	0.1	0.5	09/04/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	47.5		*	mg/L	0.5	3	08/21/08 7:20	aml
Coliforms, fecal	SM9222D - Membrane Filter	0	H	*	#/100ml	1	5	08/13/08 13:30	kah
Conductivity @25C	SM2510B	614			umhos/cm	1	10	08/14/08 22:18	tbd
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	08/21/08 7:20	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.94			mg/L	0.02	0.1	09/04/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.94		*	mg/L	0.02	0.1	08/13/08 20:22	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/13/08 20:22	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate		U	*	mg/L	0.05	0.5	09/03/08 14:12	ccp
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	0.06		*	mg/L	0.01	0.05	08/13/08 21:52	pjb
Residue, Filterable (TDS) @180C	SM2540C	380			mg/L	10	20	08/14/08 17:08	tbd
Residue, Non-Filterable (TSS) @105C	SM2540D		U	*	mg/L	5	20	08/18/08 14:54	gkj
Sulfate	300.0 - Ion Chromatography	21.6			mg/L	0.5	3	08/21/08 7:20	aml
Sulfide as S	376.2 - Methylene Blue		U	*	mg/L	0.02	0.1	08/14/08 13:14	kah
TDS (calculated)	Calculation	328			mg/L	10	50	09/04/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.16						09/04/08 0:00	calc
Turbidity	M180.1 - Nephelometric	0.3	B		NTU	0.1	0.5	08/13/08 16:25	tbd

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: AWC-05

ACZ Sample ID: ***L71107-03***
Date Sampled: *08/12/08 09:40*
Date Received: *08/13/08*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP							08/21/08 20:39	jws

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.03	0.2	08/25/08 22:19	ear/aeh
Barium, dissolved	M200.7 ICP	0.306			mg/L	0.003	0.02	08/25/08 22:19	ear/aeh
Boron, dissolved	M200.7 ICP	0.07			mg/L	0.01	0.05	08/25/08 22:19	ear/aeh
Calcium, dissolved	M200.7 ICP	50.6			mg/L	0.2	1	08/25/08 22:19	ear/aeh
Iron, dissolved	M200.7 ICP		U		mg/L	0.02	0.05	08/25/08 22:19	ear/aeh
Iron, total	M200.7 ICP		U		mg/L	0.02	0.05	08/26/08 17:48	ear/aeh
Magnesium, dissolved	M200.7 ICP	6.2			mg/L	0.2	1	08/25/08 22:19	ear/aeh
Manganese, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	08/25/08 22:19	ear/aeh
Manganese, total	M200.7 ICP		U		mg/L	0.005	0.03	08/26/08 17:48	ear/aeh
Potassium, dissolved	M200.7 ICP	2.2			mg/L	0.3	2	08/26/08 13:46	aeh
Silica, total	M200.7 ICP	37.7			mg/L	0.4	2	08/26/08 17:48	ear/aeh
Sodium, dissolved	M200.7 ICP	35.6			mg/L	0.3	2	08/25/08 22:19	ear/aeh
Strontium, dissolved	M200.7 ICP	0.62			mg/L	0.01	0.05	08/25/08 22:19	ear/aeh

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: AWC-05

ACZ Sample ID: ***L71107-03***
Date Sampled: *08/12/08 09:40*
Date Received: *08/13/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		164			mg/L	2	20	08/14/08 0:00	tbd
Carbonate as CaCO3		8	B		mg/L	2	20	08/14/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/14/08 0:00	tbd
Total Alkalinity		172			mg/L	2	20	08/14/08 0:00	tbd
Carbon, total organic (TOC)	SM5310B	5		*	mg/L	1	5	08/19/08 19:47	scp
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.4			%			09/04/08 0:00	calc
Sum of Anions		4.3			meq/L	0.1	0.5	09/04/08 0:00	calc
Sum of Cations		4.6			meq/L	0.1	0.5	09/04/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	16.1		*	mg/L	0.5	3	08/21/08 7:39	aml
Coliforms, fecal	SM9222D - Membrane Filter	0	H	*	#/100ml	1	5	08/13/08 13:40	kah
Conductivity @25C	SM2510B	434			umhos/cm	1	10	08/14/08 22:26	tbd
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	08/21/08 7:39	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.02			mg/L	0.02	0.1	09/04/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.02		*	mg/L	0.02	0.1	08/13/08 20:23	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/13/08 20:23	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate		U	*	mg/L	0.05	0.5	09/03/08 14:13	ccp
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	0.06		*	mg/L	0.01	0.05	08/13/08 21:54	pjb
Residue, Filterable (TDS) @180C	SM2540C	280			mg/L	10	20	08/15/08 14:32	jlf
Residue, Non-Filterable (TSS) @105C	SM2540D		U	*	mg/L	5	20	08/18/08 14:55	gkj
Sulfate	300.0 - Ion Chromatography	14.9			mg/L	0.5	3	08/21/08 7:39	aml
Sulfide as S	376.2 - Methylene Blue		U	*	mg/L	0.02	0.1	08/14/08 13:21	kah
TDS (calculated)	Calculation	242			mg/L	10	50	09/04/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.16						09/04/08 0:00	calc
Turbidity	M180.1 - Nephelometric	0.2	B		NTU	0.1	0.5	08/13/08 16:26	tbd

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L71107***

Project ID: 8720000

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249962													
WG249962PBW2	PBW	08/14/08 15:05				U	mg/L		-20	20			
WG249962LCSW5	LCSW	08/14/08 15:16	WC080814-1	820.0001		776.2	mg/L	94.7	90	110			
WG249962PBW3	PBW	08/14/08 18:05				U	mg/L		-20	20			
WG249962LCSW8	LCSW	08/14/08 18:16	WC080814-1	820.0001		780	mg/L	95.1	90	110			
WG249962PBW4	PBW	08/14/08 21:17				U	mg/L		-20	20			
WG249962LCSW11	LCSW	08/14/08 21:29	WC080814-1	820.0001		780.8	mg/L	95.2	90	110			
L71110-01DUP	DUP	08/14/08 22:55			60	61.3	mg/L				2.1	20	
WG249962LCSW14	LCSW	08/15/08 0:29	WC080814-1	820.0001		783	mg/L	95.5	90	110			

Aluminum, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250458													
WG250458ICV	ICV	08/22/08 20:27	II080818-1	2		2.031	mg/L	101.6	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.09	0.09			
WG250458LFB	LFB	08/22/08 20:45	II080811-3	1		1.031	mg/L	103.1	85	115			
L71074-01AS	AS	08/22/08 21:44	II080811-3	1	.05	1.087	mg/L	103.7	85	115			
L71074-01ASD	ASD	08/22/08 21:48	II080811-3	1	.05	1.078	mg/L	102.8	85	115	0.83	20	
WG250461													
WG250461ICV	ICV	08/25/08 21:49	II080818-1	2		1.998	mg/L	99.9	95	105			
WG250461ICB	ICB	08/25/08 21:53				U	mg/L		-0.09	0.09			
WG250461LFB	LFB	08/25/08 22:06	II080811-3	1		1.011	mg/L	101.1	85	115			
L71107-02AS	AS	08/25/08 22:13	II080811-3	1	U	1.018	mg/L	101.8	85	115			
L71107-02ASD	ASD	08/25/08 22:16	II080811-3	1	U	1.011	mg/L	101.1	85	115	0.69	20	

Barium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250458													
WG250458ICV	ICV	08/22/08 20:27	II080818-1	2		2.0795	mg/L	104	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.009	0.009			
WG250458LFB	LFB	08/22/08 20:45	II080811-3	.5		.5308	mg/L	106.2	85	115			
L71074-01AS	AS	08/22/08 21:44	II080811-3	.5	.125	.6424	mg/L	103.5	85	115			
L71074-01ASD	ASD	08/22/08 21:48	II080811-3	.5	.125	.6382	mg/L	102.6	85	115	0.66	20	
WG250461													
WG250461ICV	ICV	08/25/08 21:49	II080818-1	2		2.0197	mg/L	101	95	105			
WG250461ICB	ICB	08/25/08 21:53				U	mg/L		-0.009	0.009			
WG250461LFB	LFB	08/25/08 22:06	II080811-3	.5		.5197	mg/L	103.9	85	115			
L71107-02AS	AS	08/25/08 22:13	II080811-3	.5	.551	1.0524	mg/L	100.3	85	115			
L71107-02ASD	ASD	08/25/08 22:16	II080811-3	.5	.551	1.0512	mg/L	100	85	115	0.11	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L71107***
Project ID: 8720000

Boron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250458													
WG250458ICV	ICV	08/22/08 20:27	I080818-1	2		1.947	mg/L	97.4	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.03	0.03			
WG250458LFB	LFB	08/22/08 20:45	I080811-3	.5005		.522	mg/L	104.3	85	115			
L71074-01AS	AS	08/22/08 21:44	I080811-3	.5005	.06	.577	mg/L	103.3	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I080811-3	.5005	.06	.577	mg/L	103.3	85	115	0	20	
WG250461													
WG250461ICV	ICV	08/25/08 21:49	I080818-1	2		2.008	mg/L	100.4	95	105			
WG250461ICB	ICB	08/25/08 21:53				U	mg/L		-0.03	0.03			
WG250461LFB	LFB	08/25/08 22:06	I080811-3	.5005		.544	mg/L	108.7	85	115			
L71107-02AS	AS	08/25/08 22:13	I080811-3	.5005	.04	.584	mg/L	108.7	85	115			
L71107-02ASD	ASD	08/25/08 22:16	I080811-3	.5005	.04	.58	mg/L	107.9	85	115	0.69	20	

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250458													
WG250458ICV	ICV	08/22/08 20:27	I080818-1	100		96.57	mg/L	96.6	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.6	0.6			
WG250458LFB	LFB	08/22/08 20:45	I080811-3	67.97008		68.2	mg/L	100.3	85	115			
L71074-01AS	AS	08/22/08 21:44	I080811-3	67.97008	209	262.8	mg/L	79.2	85	115			M1
L71074-01ASD	ASD	08/22/08 21:48	I080811-3	67.97008	209	262.95	mg/L	79.4	85	115	0.06	20	M1
WG250461													
WG250461ICV	ICV	08/25/08 21:49	I080818-1	100		100.39	mg/L	100.4	95	105			
WG250461ICB	ICB	08/25/08 21:53				U	mg/L		-0.6	0.6			
WG250461LFB	LFB	08/25/08 22:06	I080811-3	67.97008		71.5	mg/L	105.2	85	115			
L71107-02AS	AS	08/25/08 22:13	I080811-3	67.97008	88.7	151.03	mg/L	91.7	85	115			
L71107-02ASD	ASD	08/25/08 22:16	I080811-3	67.97008	88.7	151.21	mg/L	92	85	115	0.12	20	

Carbon, total organic (TOC) SM5310B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250195													
WG250195ICV	ICV	08/19/08 14:34	WI080718-3	75		74.1	mg/L	98.8	90	110			
WG250195ICB	ICB	08/19/08 14:48				U	mg/L		-3	3			
WG250195LFB1	LFB	08/19/08 15:02	WI080714-2	50		46.2	mg/L	92.4	90	110			
L71104-03AS	AS	08/19/08 18:50	WI080714-2	50	10	58.7	mg/L	97.4	90	110			
L71107-01DUP	DUP	08/19/08 19:18			5	4.1	mg/L				19.8	20	RA
WG250195LFB2	LFB	08/20/08 12:12	WI080714-2	50		47	mg/L	94	90	110			

Hydro Geo Chem, Inc. ACZ Project ID: ***L71107***
Project ID: 8720000

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250293													
WG250293ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG250293ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250293ICV1	ICV	08/20/08 23:29	WI080521-1	19.98		20.29	mg/L	101.6	90	110			
WG250293ICB1	ICB	08/20/08 23:48				U	mg/L		-1.5	1.5			
WG250293LFB	LFB	08/21/08 0:06	WI080702-9	30		28.81	mg/L	96	90	110			
L71074-05AS	AS	08/21/08 4:56	WI080702-9	300	47	381.1	mg/L	111.4	90	110			M1
L71074-05DUP	DUP	08/21/08 5:14			47	47.3	mg/L				0.6	20	RA

Conductivity @25C SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249962													
WG249962LCSW1	LCSW	08/14/08 12:06	PCN29501	1408.8		1439	µmhos/cm	102.1	90	110			
WG249962LCSW4	LCSW	08/14/08 15:06	PCN29501	1408.8		1425	µmhos/cm	101.1	90	110			
WG249962LCSW7	LCSW	08/14/08 18:07	PCN29501	1408.8		1421	µmhos/cm	100.9	90	110			
WG249962LCSW10	LCSW	08/14/08 21:18	PCN29501	1408.8		1423	µmhos/cm	101	90	110			
L71110-01DUP	DUP	08/14/08 22:55			554	550	µmhos/cm				0.7	20	
WG249962LCSW13	LCSW	08/15/08 0:18	PCN29501	1408.8		1428	µmhos/cm	101.4	90	110			

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG250293													
WG250293ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG250293ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG250293ICV1	ICV	08/20/08 23:29	WI080521-1	4		4.12	mg/L	103	90	110			
WG250293ICB1	ICB	08/20/08 23:48				.18	mg/L		-0.3	0.3			
WG250293LFB	LFB	08/21/08 0:06	WI080702-9	1.5		1.44	mg/L	96	90	110			
L71074-05AS	AS	08/21/08 4:56	WI080702-9	15	1	16.8	mg/L	105.3	90	110			
L71074-05DUP	DUP	08/21/08 5:14			1	1.3	mg/L				26.1	20	RA

Hydro Geo Chem, Inc. ACZ Project ID: ***L71107***

Project ID: 8720000

Iron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250458													
WG250458ICV	ICV	08/22/08 20:27	I080818-1	2		1.945	mg/L	97.3	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.06	0.06			
WG250458LFB	LFB	08/22/08 20:45	I080811-3	1		1.052	mg/L	105.2	85	115			
L71074-01AS	AS	08/22/08 21:44	I080811-3	1	U	1.06	mg/L	106	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I080811-3	1	U	1.034	mg/L	103.4	85	115	2.48	20	
WG250461													
WG250461ICV	ICV	08/25/08 21:49	I080818-1	2		1.975	mg/L	98.8	95	105			
WG250461ICB	ICB	08/25/08 21:53				U	mg/L		-0.06	0.06			
WG250461LFB	LFB	08/25/08 22:06	I080811-3	1		1.078	mg/L	107.8	85	115			
L71107-02AS	AS	08/25/08 22:13	I080811-3	1	U	1.091	mg/L	109.1	85	115			
L71107-02ASD	ASD	08/25/08 22:16	I080811-3	1	U	1.085	mg/L	108.5	85	115	0.55	20	

Iron, total M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250628													
WG250628ICV	ICV	08/26/08 16:53	I080820-1	2		1.925	mg/L	96.3	95	105			
WG250628ICB	ICB	08/26/08 16:57				U	mg/L		-0.06	0.06			
WG250403LRB	LRB	08/26/08 17:12				U	mg/L		-0.044	0.044			
WG250403LFB	LFB	08/26/08 17:15	I080811-3	1		1.082	mg/L	108.2	85	115			
L71104-02LFM	LFM	08/26/08 17:22	I080811-3	1	2.78	3.704	mg/L	92.4	70	130			
L71104-02LFMD	LFMD	08/26/08 17:26	I080811-3	1	2.78	3.748	mg/L	96.8	70	130	1.18	20	
L71113-03LFM	LFM	08/26/08 18:49	I080811-3	1	.14	1.156	mg/L	101.6	70	130			
L71113-03LFMD	LFMD	08/26/08 18:53	I080811-3	1	.14	1.189	mg/L	104.9	70	130	2.81	20	

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250458													
WG250458ICV	ICV	08/22/08 20:27	I080818-1	100		99.56	mg/L	99.6	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.6	0.6			
WG250458LFB	LFB	08/22/08 20:45	I080811-3	49.96908		51.22	mg/L	102.5	85	115			
L71074-01AS	AS	08/22/08 21:44	I080811-3	49.96908	50.7	99.45	mg/L	97.6	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I080811-3	49.96908	50.7	98.93	mg/L	96.5	85	115	0.52	20	
WG250461													
WG250461ICV	ICV	08/25/08 21:49	I080818-1	100		101.47	mg/L	101.5	95	105			
WG250461ICB	ICB	08/25/08 21:53				U	mg/L		-0.6	0.6			
WG250461LFB	LFB	08/25/08 22:06	I080811-3	49.96908		52.02	mg/L	104.1	85	115			
L71107-02AS	AS	08/25/08 22:13	I080811-3	49.96908	11.6	62.87	mg/L	102.6	85	115			
L71107-02ASD	ASD	08/25/08 22:16	I080811-3	49.96908	11.6	62.44	mg/L	101.7	85	115	0.69	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L71107***
Project ID: 8720000

Manganese, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250458													
WG250458ICV	ICV	08/22/08 20:27	I080818-1	2		1.9549	mg/L	97.7	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.015	0.015			
WG250458LFB	LFB	08/22/08 20:45	I080811-3	.5		.5377	mg/L	107.5	85	115			
L71074-01AS	AS	08/22/08 21:44	I080811-3	.5	.441	.9455	mg/L	100.9	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I080811-3	.5	.441	.9385	mg/L	99.5	85	115	0.74	20	
WG250461													
WG250461ICV	ICV	08/25/08 21:49	I080818-1	2		1.9924	mg/L	99.6	95	105			
WG250461ICB	ICB	08/25/08 21:53				U	mg/L		-0.015	0.015			
WG250461LFB	LFB	08/25/08 22:06	I080811-3	.5		.5604	mg/L	112.1	85	115			
L71107-02AS	AS	08/25/08 22:13	I080811-3	.5	U	.5688	mg/L	113.8	85	115			
L71107-02ASD	ASD	08/25/08 22:16	I080811-3	.5	U	.5666	mg/L	113.3	85	115	0.39	20	

Manganese, total M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250628													
WG250628ICV	ICV	08/26/08 16:53	I080820-1	2		1.949	mg/L	97.5	95	105			
WG250628ICB	ICB	08/26/08 16:57				U	mg/L		-0.015	0.015			
WG250403LRB	LRB	08/26/08 17:12				U	mg/L		-0.011	0.011			
WG250403LFB	LFB	08/26/08 17:15	I080811-3	.5		.5621	mg/L	112.4	85	115			
L71104-02LFM	LFM	08/26/08 17:22	I080811-3	.5	.057	.5919	mg/L	107	70	130			
L71104-02LFMD	LFMD	08/26/08 17:26	I080811-3	.5	.057	.5963	mg/L	107.9	70	130	0.74	20	
L71113-03LFM	LFM	08/26/08 18:49	I080811-3	.5	U	.5257	mg/L	105.1	70	130			
L71113-03LFMD	LFMD	08/26/08 18:53	I080811-3	.5	U	.5248	mg/L	105	70	130	0.17	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249944													
WG249944ICV	ICV	08/13/08 20:02	WI080613-1	2.416		2.432	mg/L	100.7	90	110			
WG249944ICB	ICB	08/13/08 20:03				U	mg/L		-0.06	0.06			
WG249944LFB1	LFB	08/13/08 20:06	WI080312-1	2		1.931	mg/L	96.6	90	110			
L71095-01AS	AS	08/13/08 20:08	WI080312-1	2	.03	1.974	mg/L	97.2	90	110			
L71095-02DUP	DUP	08/13/08 20:10			.04	.039	mg/L				2.5	20	RA
WG249944LFB2	LFB	08/13/08 20:42	WI080312-1	2		1.967	mg/L	98.4	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249944													
WG249944ICV	ICV	08/13/08 20:02	WI080613-1	.609		.628	mg/L	103.1	90	110			
WG249944ICB	ICB	08/13/08 20:03				U	mg/L		-0.03	0.03			
WG249944LFB1	LFB	08/13/08 20:06	WI080312-1	1		.977	mg/L	97.7	90	110			
L71095-01AS	AS	08/13/08 20:08	WI080312-1	1		.962	mg/L	96.2	90	110			
L71095-02DUP	DUP	08/13/08 20:10				U	mg/L				0	20	RA
WG249944LFB2	LFB	08/13/08 20:42	WI080312-1	1		1.009	mg/L	100.9	90	110			

Hydro Geo Chem, Inc. ACZ Project ID: ***L71107***
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Nitrogen, ammonia M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG251099													
WG251099ICV	ICV	09/03/08 14:01	WI080903-3	.999		.984	mg/L	98.5	90	110			
WG251099ICB	ICB	09/03/08 14:02				U	mg/L		-0.15	0.15			
WG251099LFB	LFB	09/03/08 14:03	WI080903-5	3		2.971	mg/L	99	90	110			
L70958-08DUP	DUP	09/03/08 14:07			.13	.138	mg/L				6	20	RA
WG251099ICV1	ICV	09/03/08 14:43	WI080903-3	.999		.977	mg/L	97.8	90	110			
WG251099ICB1	ICB	09/03/08 14:44				U	mg/L		-0.15	0.15			
L70958-06AS	AS	09/03/08 14:46	WI080903-5	3	U	3.021	mg/L	100.7	90	110			

Phosphorus, ortho dissolved M365.1 - Automated Ascorbic Acid

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249947													
WG249947ICV	ICV	08/13/08 21:42	WI080401-4	.65228		.65	mg/L	99.7	90	110			
WG249947ICB	ICB	08/13/08 21:43				U	mg/L		-0.03	0.03			
WG249947LFB	LFB	08/13/08 21:45	WI080730-3	.5		.507	mg/L	101.4	90	110			
L71104-01AS	AS	08/13/08 21:47	WI080730-3	.5	.05	.585	mg/L	107	90	110			
L71104-02DUP	DUP	08/13/08 21:49			.06	.062	mg/L				3.3	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250458													
WG250458ICV	ICV	08/22/08 20:27	II080818-1	20		20.61	mg/L	103.1	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.9	0.9			
WG250458LFB	LFB	08/22/08 20:45	II080811-3	99.76186		105.88	mg/L	106.1	85	115			
L71074-01AS	AS	08/22/08 21:44	II080811-3	99.76186	6.3	114.34	mg/L	108.3	85	115			
L71074-01ASD	ASD	08/22/08 21:48	II080811-3	99.76186	6.3	112.84	mg/L	106.8	85	115	1.32	20	
WG250548													
WG250548ICV	ICV	08/26/08 11:25	II080818-1	20		20.53	mg/L	102.7	95	105			
WG250548ICB	ICB	08/26/08 11:28				U	mg/L		-0.9	0.9			
WG250611													
WG250611LFB	LFB	08/26/08 13:33	II080811-3	99.76186		107.19	mg/L	107.4	85	115			
L71107-02AS	AS	08/26/08 13:39	II080811-3	99.76186	2.6	114.46	mg/L	112.1	85	115			
L71107-02ASD	ASD	08/26/08 13:43	II080811-3	99.76186	2.6	114.45	mg/L	112.1	85	115	0.01	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250005													
WG250005PBW	PBW	08/14/08 16:45				U	mg/L		-20	20			
WG250005LCSW	LCSW	08/14/08 16:46	PCN30201	260		272	mg/L	104.6	80	120			
L71165-01DUP	DUP	08/14/08 17:14			930	922	mg/L				0.9	20	
WG250081													
WG250081PBW	PBW	08/15/08 14:30				U	mg/L		-20	20			
WG250081LCSW	LCSW	08/15/08 14:31	PCN30201	260		278	mg/L	106.9	80	120			
L71113-01DUP	DUP	08/15/08 14:45			1390	1416	mg/L				1.9	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L71107***
Project ID: 8720000

Residue, Non-Filterable (TSS) @105C SM2540D

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250162													
WG250162PBW	PBW	08/18/08 14:45				U	mg/L		-15	15			
WG250162LCSW	LCSW	08/18/08 14:46	PCN30192	160		143	mg/L	89.4	80	120			
L71113-04DUP	DUP	08/18/08 15:03			U	U	mg/L				0	20	RA

Silica, total M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250628													
WG250628ICV	ICV	08/26/08 16:53	II080820-1	42.8		44.47	mg/L	103.9	95	105			
WG250628ICB	ICB	08/26/08 16:57				U	mg/L		-1.2	1.2			
WG250403LRB	LRB	08/26/08 17:12				U	mg/L		-0.88	0.88			
WG250403LFB	LFB	08/26/08 17:15	II080811-3	21.4		24.45	mg/L	114.3	85	115			
L71104-02LFM	LFM	08/26/08 17:22	II080811-3	21.4	37.1	52.48	mg/L	71.9	70	130			
L71104-02LFMD	LFMD	08/26/08 17:26	II080811-3	21.4	37.1	55.45	mg/L	85.7	70	130	5.5	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250458													
WG250458ICV	ICV	08/22/08 20:27	II080818-1	100		102.68	mg/L	102.7	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.9	0.9			
WG250458LFB	LFB	08/22/08 20:45	II080811-3	98.21624		104.19	mg/L	106.1	85	115			
L71074-01AS	AS	08/22/08 21:44	II080811-3	98.21624	45.3	147.69	mg/L	104.2	85	115			
L71074-01ASD	ASD	08/22/08 21:48	II080811-3	98.21624	45.3	146.56	mg/L	103.1	85	115	0.77	20	
WG250461													
WG250461ICV	ICV	08/25/08 21:49	II080818-1	100		101.31	mg/L	101.3	95	105			
WG250461ICB	ICB	08/25/08 21:53				U	mg/L		-0.9	0.9			
WG250461LFB	LFB	08/25/08 22:06	II080811-3	98.21624		100.69	mg/L	102.5	85	115			
L71107-02AS	AS	08/25/08 22:13	II080811-3	98.21624	22.8	121.36	mg/L	100.4	85	115			
L71107-02ASD	ASD	08/25/08 22:16	II080811-3	98.21624	22.8	120.5	mg/L	99.5	85	115	0.71	20	

Strontium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250458													
WG250458ICV	ICV	08/22/08 20:27	II080818-1	2		2.106	mg/L	105.3	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.03	0.03			
WG250458LFB	LFB	08/22/08 20:45	II080811-3	.5		.545	mg/L	109	85	115			
L71074-01AS	AS	08/22/08 21:44	II080811-3	.5	.8	1.28	mg/L	96	85	115			
L71074-01ASD	ASD	08/22/08 21:48	II080811-3	.5	.8	1.275	mg/L	95	85	115	0.39	20	
WG250461													
WG250461ICV	ICV	08/25/08 21:49	II080818-1	2		2.077	mg/L	103.9	95	105			
WG250461ICB	ICB	08/25/08 21:53				U	mg/L		-0.03	0.03			
WG250461LFB	LFB	08/25/08 22:06	II080811-3	.5		.548	mg/L	109.6	85	115			
L71107-02AS	AS	08/25/08 22:13	II080811-3	.5	.66	1.179	mg/L	103.8	85	115			
L71107-02ASD	ASD	08/25/08 22:16	II080811-3	.5	.66	1.171	mg/L	102.2	85	115	0.68	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L71107***

Project ID: 8720000

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250293													
WG250293ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG250293ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250293ICV1	ICV	08/20/08 23:29	WI080521-1	50.1		49	mg/L	97.8	90	110			
WG250293ICB1	ICB	08/20/08 23:48				.91	mg/L		-1.5	1.5			
WG250293LFB	LFB	08/21/08 0:06	WI080702-9	30		27.86	mg/L	92.9	90	110			
L71074-05AS	AS	08/21/08 17:53	WI080702-9	600	1160	1764	mg/L	100.7	90	110			
L71074-05DUP	DUP	08/21/08 18:11			1160	1148	mg/L				1	20	

Sulfide as S 376.2 - Methylene Blue

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249966													
WG249966ICV	ICV	08/14/08 10:59	WC080814-7	.388		.355	mg/L	91.5	90	110			
WG249966ICB	ICB	08/14/08 11:05				U	mg/L		-0.06	0.06			
WG249966LFB	LFB	08/14/08 11:11	WC080814-9	.3191067		.36	mg/L	112.8	80	120			
L71107-03AS	AS	08/14/08 13:27	WC080814-9	.3191067	U	.231	mg/L	72.4	75	125			M2
L71107-03DUP	DUP	08/14/08 13:47			U	U	mg/L				0	20	RA

Turbidity M180.1 - Nephelometric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249940													
WG249940ICV	ICV	08/13/08 16:20	PCN29103	180		184	NTU	102.2	90	110			
WG249940ICB	ICB	08/13/08 16:20				U	NTU		-0.3	0.3			
L71113-04DUP	DUP	08/13/08 16:33			1.5	1.68	NTU				11.3	20	

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Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L71107***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L71107-01	WG250458	Calcium, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG250195	Carbon, total organic (TOC)	SM5310B	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250293	Chloride	M300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249912	Coliforms, fecal	SM9222D - Membrane Filter	A5	Incubator/water bath temperature was outside method requirements.
			SM9222D - Membrane Filter	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
	WG250293	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249944	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG251099	Nitrogen, ammonia	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249947	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250162	Residue, Non-Filterable (TSS) @105C	SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249966	Sulfide as S	376.2 - Methylene Blue	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			376.2 - Methylene Blue	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

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Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L71107***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L71107-02	WG250195	Carbon, total organic (TOC)	SM5310B	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250293	Chloride	M300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249912	Coliforms, fecal	SM9222D - Membrane Filter	A5	Incubator/water bath temperature was outside method requirements.
			SM9222D - Membrane Filter	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
	WG250293	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249944	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG251099	Nitrogen, ammonia	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249947	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250162	Residue, Non-Filterable (TSS) @105C	SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249966	Sulfide as S	376.2 - Methylene Blue	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			376.2 - Methylene Blue	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L71107***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L71107-03	WG250195	Carbon, total organic (TOC)	SM5310B	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250293	Chloride	M300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249912	Coliforms, fecal	SM9222D - Membrane Filter	A5	Incubator/water bath temperature was outside method requirements.
			SM9222D - Membrane Filter	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
	WG250293	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249944	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG251099	Nitrogen, ammonia	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249947	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250162	Residue, Non-Filterable (TSS) @105C	SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249966	Sulfide as S	376.2 - Methylene Blue	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			376.2 - Methylene Blue	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc. ACZ Project ID: ***L71107***

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Coliforms, fecal	SM9222D - Membrane Filter
Residue, Non-Filterable (TSS) @105C	SM2540D
Sulfide as S	376.2 - Methylene Blue

ACZ Laboratories, Inc.
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Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L71107
Date Received: 8/13/2008
Received By:
Date Printed: 8/13/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?		X	
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

Some Holddates are past including Fecal Coliforms.

Contact (For any discrepancies, the client must be contacted)

The client was not contacted.

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
2032	0.5	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L71107
Date Received: 8/13/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L71107-01	AWC-03	Y	Y			Y			Y			
L71107-02	AWC-04	Y	Y			Y			Y			
L71107-03	AWC-05	Y	Y			Y			Y			

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

September 05, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000
ACZ Project ID: L71104

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 13, 2008. This project has been assigned to ACZ's project number, L71104. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L71104. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after October 05, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: AWC-02

ACZ Sample ID: ***L71104-01***
Date Sampled: *08/12/08 10:40*
Date Received: *08/13/08*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP							08/19/08 1:05	jws

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.03	0.2	08/22/08 22:18	ear/aeh
Barium, dissolved	M200.7 ICP	0.494			mg/L	0.003	0.02	08/22/08 22:18	ear/aeh
Boron, dissolved	M200.7 ICP	0.03	B		mg/L	0.01	0.05	08/22/08 22:18	ear/aeh
Calcium, dissolved	M200.7 ICP	66.4		*	mg/L	0.2	1	08/22/08 22:18	ear/aeh
Iron, dissolved	M200.7 ICP		U		mg/L	0.02	0.05	08/22/08 22:18	ear/aeh
Iron, total	M200.7 ICP		U		mg/L	0.02	0.05	08/21/08 22:12	aeh
Magnesium, dissolved	M200.7 ICP	9.1			mg/L	0.2	1	08/22/08 22:18	ear/aeh
Manganese, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	08/22/08 22:18	ear/aeh
Manganese, total	M200.7 ICP		U		mg/L	0.005	0.03	08/21/08 22:12	aeh
Potassium, dissolved	M200.7 ICP	2.1			mg/L	0.3	2	08/22/08 22:18	ear/aeh
Silica, total	M200.7 ICP	32.4		*	mg/L	0.4	2	08/21/08 22:12	aeh
Sodium, dissolved	M200.7 ICP	20.0			mg/L	0.3	2	08/22/08 22:18	ear/aeh
Strontium, dissolved	M200.7 ICP	0.59			mg/L	0.01	0.05	08/22/08 22:18	ear/aeh

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: AWC-02

ACZ Sample ID: ***L71104-01***
Date Sampled: *08/12/08 10:40*
Date Received: *08/13/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		181			mg/L	2	20	08/14/08 0:00	tbd
Carbonate as CaCO3		5	B		mg/L	2	20	08/14/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/14/08 0:00	tbd
Total Alkalinity		186			mg/L	2	20	08/14/08 0:00	tbd
Carbon, total organic (TOC)	SM5310B	6		*	mg/L	1	5	08/19/08 18:07	scp
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.1			%			09/04/08 0:00	calc
Sum of Anions		4.7			meq/L	0.1	0.5	09/04/08 0:00	calc
Sum of Cations		5.0			meq/L	0.1	0.5	09/04/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	17.8		*	mg/L	0.5	3	08/21/08 5:32	aml
Coliforms, fecal	SM9222D - Membrane Filter	0	H	*	#/100ml	1	5	08/13/08 12:51	kah
Conductivity @25C	SM2510B	461			umhos/cm	1	10	08/14/08 21:02	tbd
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	08/21/08 5:32	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.42			mg/L	0.02	0.1	09/04/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.42		*	mg/L	0.02	0.1	08/13/08 20:14	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/13/08 20:14	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate		U	*	mg/L	0.05	0.5	08/22/08 19:24	pjb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	0.05	B	*	mg/L	0.01	0.05	08/13/08 21:46	pjb
Residue, Filterable (TDS) @180C	SM2540C	280			mg/L	10	20	08/14/08 17:03	tbd
Residue, Non-Filterable (TSS) @105C	SM2540D		U	*	mg/L	5	20	08/18/08 14:48	gkj
Sulfate	300.0 - Ion Chromatography	14.3			mg/L	0.5	3	08/21/08 5:32	aml
Sulfide as S	376.2 - Methylene Blue		U	*	mg/L	0.02	0.1	08/14/08 12:29	kah
TDS (calculated)	Calculation	255			mg/L	10	50	09/04/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.10						09/04/08 0:00	calc
Turbidity	M180.1 - Nephelometric	0.4	B		NTU	0.1	0.5	08/13/08 16:21	tbd

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: PIONKE

ACZ Sample ID: ***L71104-02***
Date Sampled: *08/12/08 14:00*
Date Received: *08/13/08*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP							08/21/08 19:02	jws

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.03	0.2	08/22/08 22:22	ear/aeh
Barium, dissolved	M200.7 ICP	0.038			mg/L	0.003	0.02	08/22/08 22:22	ear/aeh
Boron, dissolved	M200.7 ICP	0.07			mg/L	0.01	0.05	08/22/08 22:22	ear/aeh
Calcium, dissolved	M200.7 ICP	193		*	mg/L	0.2	1	08/22/08 22:22	ear/aeh
Iron, dissolved	M200.7 ICP	0.02	B		mg/L	0.02	0.05	08/22/08 22:22	ear/aeh
Iron, total	M200.7 ICP	2.78			mg/L	0.02	0.05	08/26/08 17:19	ear/aeh
Magnesium, dissolved	M200.7 ICP	30.3			mg/L	0.2	1	08/22/08 22:22	ear/aeh
Manganese, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	08/22/08 22:22	ear/aeh
Manganese, total	M200.7 ICP	0.057			mg/L	0.005	0.03	08/26/08 17:19	ear/aeh
Potassium, dissolved	M200.7 ICP	4.1			mg/L	0.3	2	08/22/08 22:22	ear/aeh
Silica, total	M200.7 ICP	37.1			mg/L	0.4	2	08/26/08 17:19	ear/aeh
Sodium, dissolved	M200.7 ICP	32.7			mg/L	0.3	2	08/22/08 22:22	ear/aeh
Strontium, dissolved	M200.7 ICP	1.83			mg/L	0.01	0.05	08/22/08 22:22	ear/aeh

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: PIONKE

ACZ Sample ID: ***L71104-02***
Date Sampled: *08/12/08 14:00*
Date Received: *08/13/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		189			mg/L	2	20	08/14/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/14/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/14/08 0:00	tbd
Total Alkalinity		189			mg/L	2	20	08/14/08 0:00	tbd
Carbon, total organic (TOC)	SM5310B	5	B	*	mg/L	1	5	08/19/08 18:22	scp
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.1			%			09/04/08 0:00	calc
Sum of Anions		13.4			meq/L	0.1	0.5	09/04/08 0:00	calc
Sum of Cations		13.7			meq/L	0.1	0.5	09/04/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	19	B	*	mg/L	5	30	08/21/08 5:50	aml
Coliforms, fecal	SM9222D - Membrane Filter	0		*	#/100ml	1	5	08/13/08 13:01	kah
Conductivity @25C	SM2510B	1160			umhos/cm	1	10	08/14/08 21:41	tbd
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	1	5	08/21/08 5:50	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	3.50			mg/L	0.02	0.1	09/04/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	3.50		*	mg/L	0.02	0.1	08/13/08 20:15	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/13/08 20:15	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate		U	*	mg/L	0.5	5	08/22/08 19:41	pjb
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	0.06		*	mg/L	0.01	0.05	08/13/08 21:48	pjb
Residue, Filterable (TDS) @180C	SM2540C	880			mg/L	10	20	08/14/08 17:04	tbd
Residue, Non-Filterable (TSS) @105C	SM2540D	5	B	*	mg/L	5	20	08/18/08 14:49	gkj
Sulfate	300.0 - Ion Chromatography	423		*	mg/L	5	30	08/21/08 5:50	aml
Sulfide as S	376.2 - Methylene Blue		U	*	mg/L	0.02	0.1	08/14/08 12:48	kah
TDS (calculated)	Calculation	833			mg/L	10	50	09/04/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.06						09/04/08 0:00	calc
Turbidity	M180.1 - Nephelometric	31.0			NTU	0.1	0.5	08/13/08 16:22	tbd

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: MCCONNELL265

ACZ Sample ID: ***L71104-03***
Date Sampled: *08/12/08 14:50*
Date Received: *08/13/08*
Sample Matrix: *Ground Water*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP							08/21/08 19:51	jws

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP		U		mg/L	0.03	0.2	08/22/08 22:25	ear/aeh
Barium, dissolved	M200.7 ICP	0.035			mg/L	0.003	0.02	08/22/08 22:25	ear/aeh
Boron, dissolved	M200.7 ICP	0.11			mg/L	0.01	0.05	08/22/08 22:25	ear/aeh
Calcium, dissolved	M200.7 ICP	306		*	mg/L	0.2	1	08/22/08 22:25	ear/aeh
Iron, dissolved	M200.7 ICP	0.04	B		mg/L	0.02	0.05	08/22/08 22:25	ear/aeh
Iron, total	M200.7 ICP	0.53			mg/L	0.02	0.05	08/26/08 17:30	ear/aeh
Magnesium, dissolved	M200.7 ICP	51.3			mg/L	0.2	1	08/22/08 22:25	ear/aeh
Manganese, dissolved	M200.7 ICP		U		mg/L	0.005	0.03	08/22/08 22:25	ear/aeh
Manganese, total	M200.7 ICP	0.007	B		mg/L	0.005	0.03	08/26/08 17:30	ear/aeh
Potassium, dissolved	M200.7 ICP	5.9			mg/L	0.3	2	08/22/08 22:25	ear/aeh
Silica, total	M200.7 ICP	37.1			mg/L	0.4	2	08/26/08 17:30	ear/aeh
Sodium, dissolved	M200.7 ICP	43.8			mg/L	0.3	2	08/22/08 22:25	ear/aeh
Strontium, dissolved	M200.7 ICP	2.65			mg/L	0.01	0.05	08/22/08 22:25	ear/aeh

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: MCCONNELL265

ACZ Sample ID: ***L71104-03***
Date Sampled: *08/12/08 14:50*
Date Received: *08/13/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		257			mg/L	2	20	08/14/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/14/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/14/08 0:00	tbd
Total Alkalinity		257			mg/L	2	20	08/14/08 0:00	tbd
Carbon, total organic (TOC)	SM5310B	10		*	mg/L	1	5	08/19/08 18:36	scp
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.4			%			09/04/08 0:00	calc
Sum of Anions		21.1			meq/L	0.1	0.5	09/04/08 0:00	calc
Sum of Cations		21.7			meq/L	0.1	0.5	09/04/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	21	B	*	mg/L	5	30	08/21/08 6:08	aml
Coliforms, fecal	SM9222D - Membrane Filter	0		*	#/100ml	1	5	08/13/08 13:11	kah
Conductivity @25C	SM2510B	1720			umhos/cm	1	10	08/14/08 21:49	tbd
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	1	5	08/21/08 6:08	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.74			mg/L	0.02	0.1	09/04/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.74		*	mg/L	0.02	0.1	08/13/08 20:20	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/13/08 20:20	pjb
Nitrogen, ammonia	M350.1 - Automated Phenate		U	*	mg/L	0.05	0.5	09/03/08 14:10	ccp
Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	0.03	B	*	mg/L	0.01	0.05	08/13/08 21:50	pjb
Residue, Filterable (TDS) @180C	SM2540C	1430			mg/L	10	20	08/14/08 17:05	tbd
Residue, Non-Filterable (TSS) @105C	SM2540D		U	*	mg/L	5	20	08/18/08 14:51	gkj
Sulfate	300.0 - Ion Chromatography	725		*	mg/L	5	30	08/21/08 6:08	aml
Sulfide as S	376.2 - Methylene Blue		U	*	mg/L	0.02	0.1	08/14/08 12:55	kah
TDS (calculated)	Calculation	1320			mg/L	10	50	09/04/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.08						09/04/08 0:00	calc
Turbidity	M180.1 - Nephelometric	3.4			NTU	0.1	0.5	08/13/08 16:23	tbd

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L71104***
Project ID: 8720000

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249962													
WG249962PBW2	PBW	08/14/08 15:05				U	mg/L		-20	20			
WG249962LCSW5	LCSW	08/14/08 15:16	WC080814-1	820.0001		776.2	mg/L	94.7	90	110			
WG249962PBW3	PBW	08/14/08 18:05				U	mg/L		-20	20			
WG249962LCSW8	LCSW	08/14/08 18:16	WC080814-1	820.0001		780	mg/L	95.1	90	110			
L71104-01DUP	DUP	08/14/08 21:11			186	183.2	mg/L				1.5	20	
WG249962PBW4	PBW	08/14/08 21:17				U	mg/L		-20	20			
WG249962LCSW11	LCSW	08/14/08 21:29	WC080814-1	820.0001		780.8	mg/L	95.2	90	110			
L71110-01DUP	DUP	08/14/08 22:55			60	61.3	mg/L				2.1	20	
WG249962LCSW14	LCSW	08/15/08 0:29	WC080814-1	820.0001		783	mg/L	95.5	90	110			

Aluminum, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250458													
WG250458ICV	ICV	08/22/08 20:27	II080818-1	2		2.031	mg/L	101.6	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.09	0.09			
WG250458LFB	LFB	08/22/08 20:45	II080811-3	1		1.031	mg/L	103.1	85	115			
L71074-01AS	AS	08/22/08 21:44	II080811-3	1	.05	1.087	mg/L	103.7	85	115			
L71074-01ASD	ASD	08/22/08 21:48	II080811-3	1	.05	1.078	mg/L	102.8	85	115	0.83	20	

Barium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250458													
WG250458ICV	ICV	08/22/08 20:27	II080818-1	2		2.0795	mg/L	104	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.009	0.009			
WG250458LFB	LFB	08/22/08 20:45	II080811-3	.5		.5308	mg/L	106.2	85	115			
L71074-01AS	AS	08/22/08 21:44	II080811-3	.5	.125	.6424	mg/L	103.5	85	115			
L71074-01ASD	ASD	08/22/08 21:48	II080811-3	.5	.125	.6382	mg/L	102.6	85	115	0.66	20	

Boron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250458													
WG250458ICV	ICV	08/22/08 20:27	II080818-1	2		1.947	mg/L	97.4	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.03	0.03			
WG250458LFB	LFB	08/22/08 20:45	II080811-3	.5005		.522	mg/L	104.3	85	115			
L71074-01AS	AS	08/22/08 21:44	II080811-3	.5005	.06	.577	mg/L	103.3	85	115			
L71074-01ASD	ASD	08/22/08 21:48	II080811-3	.5005	.06	.577	mg/L	103.3	85	115	0	20	

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250458													
WG250458ICV	ICV	08/22/08 20:27	II080818-1	100		96.57	mg/L	96.6	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.6	0.6			
WG250458LFB	LFB	08/22/08 20:45	II080811-3	67.97008		68.2	mg/L	100.3	85	115			
L71074-01AS	AS	08/22/08 21:44	II080811-3	67.97008	209	262.8	mg/L	79.2	85	115			M1
L71074-01ASD	ASD	08/22/08 21:48	II080811-3	67.97008	209	262.95	mg/L	79.4	85	115	0.06	20	M1

Hydro Geo Chem, Inc. ACZ Project ID: ***L71104***

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Carbon, total organic (TOC) SM5310B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250195													
WG250195ICV	ICV	08/19/08 14:34	WI080718-3	75		74.1	mg/L	98.8	90	110			
WG250195ICB	ICB	08/19/08 14:48				U	mg/L		-3	3			
WG250195LFB1	LFB	08/19/08 15:02	WI080714-2	50		46.2	mg/L	92.4	90	110			
L71074-01AS	AS	08/19/08 15:31	WI080714-2	50	8	55.8	mg/L	95.6	90	110			
L71074-02DUP	DUP	08/19/08 15:59			3	3	mg/L				0	20	RA
L71104-03AS	AS	08/19/08 18:50	WI080714-2	50	10	58.7	mg/L	97.4	90	110			
L71107-01DUP	DUP	08/19/08 19:18			5	4.1	mg/L				19.8	20	RA
WG250195LFB2	LFB	08/20/08 12:12	WI080714-2	50		47	mg/L	94	90	110			

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250293													
WG250293ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG250293ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250293ICV1	ICV	08/20/08 23:29	WI080521-1	19.98		20.29	mg/L	101.6	90	110			
WG250293ICB1	ICB	08/20/08 23:48				U	mg/L		-1.5	1.5			
WG250293LFB	LFB	08/21/08 0:06	WI080702-9	30		28.81	mg/L	96	90	110			
L71074-05AS	AS	08/21/08 4:56	WI080702-9	300	47	381.1	mg/L	111.4	90	110			M1
L71074-05DUP	DUP	08/21/08 5:14			47	47.3	mg/L				0.6	20	RA

Conductivity @25C SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249962													
WG249962LCSW1	LCSW	08/14/08 12:06	PCN29501	1408.8		1439	umhos/cm	102.1	90	110			
WG249962LCSW4	LCSW	08/14/08 15:06	PCN29501	1408.8		1425	umhos/cm	101.1	90	110			
WG249962LCSW7	LCSW	08/14/08 18:07	PCN29501	1408.8		1421	umhos/cm	100.9	90	110			
L71104-01DUP	DUP	08/14/08 21:11			461	459	umhos/cm				0.4	20	
WG249962LCSW10	LCSW	08/14/08 21:18	PCN29501	1408.8		1423	umhos/cm	101	90	110			
L71110-01DUP	DUP	08/14/08 22:55			554	550	umhos/cm				0.7	20	
WG249962LCSW13	LCSW	08/15/08 0:18	PCN29501	1408.8		1428	umhos/cm	101.4	90	110			

Hydro Geo Chem, Inc. ACZ Project ID: ***L71104***

Project ID: 8720000

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG250293													
WG250293ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG250293ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG250293ICV1	ICV	08/20/08 23:29	WI080521-1	4		4.12	mg/L	103	90	110			
WG250293ICB1	ICB	08/20/08 23:48				.18	mg/L		-0.3	0.3			
WG250293LFB	LFB	08/21/08 0:06	WI080702-9	1.5		1.44	mg/L	96	90	110			
L71074-05AS	AS	08/21/08 4:56	WI080702-9	15	1	16.8	mg/L	105.3	90	110			
L71074-05DUP	DUP	08/21/08 5:14			1	1.3	mg/L				26.1	20	RA

Iron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250458													
WG250458ICV	ICV	08/22/08 20:27	II080818-1	2		1.945	mg/L	97.3	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.06	0.06			
WG250458LFB	LFB	08/22/08 20:45	II080811-3	1		1.052	mg/L	105.2	85	115			
L71074-01AS	AS	08/22/08 21:44	II080811-3	1	U	1.06	mg/L	106	85	115			
L71074-01ASD	ASD	08/22/08 21:48	II080811-3	1	U	1.034	mg/L	103.4	85	115	2.48	20	

Iron, total M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250382													
WG250382ICV	ICV	08/21/08 20:14	II080820-1	2		1.928	mg/L	96.4	95	105			
WG250382ICB	ICB	08/21/08 20:18				U	mg/L		-0.06	0.06			
WG250176LRB	LRB	08/21/08 20:32				U	mg/L		-0.044	0.044			
WG250176LFB	LFB	08/21/08 20:36	II080811-3	1		.998	mg/L	99.8	85	115			
L71096-04LFM	LFM	08/21/08 21:31	II080811-3	1	.39	1.452	mg/L	106.2	70	130			
L71096-04LFMD	LFMD	08/21/08 21:34	II080811-3	1	.39	1.401	mg/L	101.1	70	130	3.58	20	
WG250628													
WG250628ICV	ICV	08/26/08 16:53	II080820-1	2		1.925	mg/L	96.3	95	105			
WG250628ICB	ICB	08/26/08 16:57				U	mg/L		-0.06	0.06			
WG250403LRB	LRB	08/26/08 17:12				U	mg/L		-0.044	0.044			
WG250403LFB	LFB	08/26/08 17:15	II080811-3	1		1.082	mg/L	108.2	85	115			
L71104-02LFM	LFM	08/26/08 17:22	II080811-3	1	2.78	3.704	mg/L	92.4	70	130			
L71104-02LFMD	LFMD	08/26/08 17:26	II080811-3	1	2.78	3.748	mg/L	96.8	70	130	1.18	20	
L71113-03LFM	LFM	08/26/08 18:49	II080811-3	1	.14	1.156	mg/L	101.6	70	130			
L71113-03LFMD	LFMD	08/26/08 18:53	II080811-3	1	.14	1.189	mg/L	104.9	70	130	2.81	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L71104***

Project ID: 8720000

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250458													
WG250458ICV	ICV	08/22/08 20:27	I080818-1	100		99.56	mg/L	99.6	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.6	0.6			
WG250458LFB	LFB	08/22/08 20:45	I080811-3	49.96908		51.22	mg/L	102.5	85	115			
L71074-01AS	AS	08/22/08 21:44	I080811-3	49.96908	50.7	99.45	mg/L	97.6	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I080811-3	49.96908	50.7	98.93	mg/L	96.5	85	115	0.52	20	

Manganese, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250458													
WG250458ICV	ICV	08/22/08 20:27	I080818-1	2		1.9549	mg/L	97.7	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.015	0.015			
WG250458LFB	LFB	08/22/08 20:45	I080811-3	.5		.5377	mg/L	107.5	85	115			
L71074-01AS	AS	08/22/08 21:44	I080811-3	.5	.441	.9455	mg/L	100.9	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I080811-3	.5	.441	.9385	mg/L	99.5	85	115	0.74	20	

Manganese, total M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250382													
WG250382ICV	ICV	08/21/08 20:14	I080820-1	2		1.9932	mg/L	99.7	95	105			
WG250382ICB	ICB	08/21/08 20:18				U	mg/L		-0.015	0.015			
WG250176LRB	LRB	08/21/08 20:32				U	mg/L		-0.011	0.011			
WG250176LFB	LFB	08/21/08 20:36	I080811-3	.5		.5347	mg/L	106.9	85	115			
L71096-04LFM	LFM	08/21/08 21:31	I080811-3	.5	.112	.674	mg/L	112.4	70	130			
L71096-04LFMD	LFMD	08/21/08 21:34	I080811-3	.5	.112	.6709	mg/L	111.8	70	130	0.46	20	
WG250628													
WG250628ICV	ICV	08/26/08 16:53	I080820-1	2		1.949	mg/L	97.5	95	105			
WG250628ICB	ICB	08/26/08 16:57				U	mg/L		-0.015	0.015			
WG250403LRB	LRB	08/26/08 17:12				U	mg/L		-0.011	0.011			
WG250403LFB	LFB	08/26/08 17:15	I080811-3	.5		.5621	mg/L	112.4	85	115			
L71104-02LFM	LFM	08/26/08 17:22	I080811-3	.5	.057	.5919	mg/L	107	70	130			
L71104-02LFMD	LFMD	08/26/08 17:26	I080811-3	.5	.057	.5963	mg/L	107.9	70	130	0.74	20	
L71113-03LFM	LFM	08/26/08 18:49	I080811-3	.5	U	.5257	mg/L	105.1	70	130			
L71113-03LFMD	LFMD	08/26/08 18:53	I080811-3	.5	U	.5248	mg/L	105	70	130	0.17	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249944													
WG249944ICV	ICV	08/13/08 20:02	WI080613-1	2.416		2.432	mg/L	100.7	90	110			
WG249944ICB	ICB	08/13/08 20:03				U	mg/L		-0.06	0.06			
WG249944LFB1	LFB	08/13/08 20:06	WI080312-1	2		1.931	mg/L	96.6	90	110			
L71095-01AS	AS	08/13/08 20:08	WI080312-1	2	.03	1.974	mg/L	97.2	90	110			
L71095-02DUP	DUP	08/13/08 20:10			.04	.039	mg/L				2.5	20	RA
WG249944LFB2	LFB	08/13/08 20:42	WI080312-1	2		1.967	mg/L	98.4	90	110			

Hydro Geo Chem, Inc. ACZ Project ID: ***L71104***

Project ID: 8720000

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249944													
WG249944ICV	ICV	08/13/08 20:02	WI080613-1	.609		.628	mg/L	103.1	90	110			
WG249944ICB	ICB	08/13/08 20:03				U	mg/L		-0.03	0.03			
WG249944LFB1	LFB	08/13/08 20:06	WI080312-1	1		.977	mg/L	97.7	90	110			
L71095-01AS	AS	08/13/08 20:08	WI080312-1	1		.962	mg/L	96.2	90	110			
L71095-02DUP	DUP	08/13/08 20:10				U	mg/L				0	20	RA
WG249944LFB2	LFB	08/13/08 20:42	WI080312-1	1		1.009	mg/L	100.9	90	110			

Nitrogen, ammonia M350.1 - Automated Phenate

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250362													
WG250362ICV	ICV	08/22/08 17:28	WI080723-1	11.988		12.51	mg/L	104.4	90	110			
WG250362ICB	ICB	08/22/08 17:30				U	mg/L		-0.15	0.15			
WG250496													
WG250496ICV	ICV	08/22/08 18:52	WI080723-1	11.988		11.902	mg/L	99.3	90	110			
WG250496ICB	ICB	08/22/08 18:53				U	mg/L		-0.15	0.15			
WG250496LFB1	LFB	08/22/08 18:54	WI080603-3	10		10.008	mg/L	100.1	90	110			
L70929-01AS	AS	08/22/08 18:56	WI080603-3	10	.32	10.438	mg/L	101.2	90	110			
L71027-01DUP	DUP	08/22/08 18:58			U	U	mg/L				0	20	RA
L71064-01AS	AS	08/22/08 19:11	WI080603-3	10	U	9.738	mg/L	97.4	90	110			
L71064-02DUP	DUP	08/22/08 19:14			U	U	mg/L				0	20	RA
WG250496LFB2	LFB	08/22/08 19:26	WI080603-3	10		9.883	mg/L	98.8	90	110			
WG251099													
WG251099ICV	ICV	09/03/08 14:01	WI080903-3	.999		.984	mg/L	98.5	90	110			
WG251099ICB	ICB	09/03/08 14:02				U	mg/L		-0.15	0.15			
WG251099LFB	LFB	09/03/08 14:03	WI080903-5	3		2.971	mg/L	99	90	110			
L70958-08DUP	DUP	09/03/08 14:07			.13	.138	mg/L				6	20	RA
WG251099ICV1	ICV	09/03/08 14:43	WI080903-3	.999		.977	mg/L	97.8	90	110			
WG251099ICB1	ICB	09/03/08 14:44				U	mg/L		-0.15	0.15			
L70958-06AS	AS	09/03/08 14:46	WI080903-5	3	U	3.021	mg/L	100.7	90	110			

Phosphorus, ortho dissolved M365.1 - Automated Ascorbic Acid

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249947													
WG249947ICV	ICV	08/13/08 21:42	WI080401-4	.65228		.65	mg/L	99.7	90	110			
WG249947ICB	ICB	08/13/08 21:43				U	mg/L		-0.03	0.03			
WG249947LFB	LFB	08/13/08 21:45	WI080730-3	.5		.507	mg/L	101.4	90	110			
L71104-01AS	AS	08/13/08 21:47	WI080730-3	.5	.05	.585	mg/L	107	90	110			
L71104-02DUP	DUP	08/13/08 21:49			.06	.062	mg/L				3.3	20	RA

Hydro Geo Chem, Inc. ACZ Project ID: ***L71104***
Project ID: 8720000

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250458													
WG250458ICV	ICV	08/22/08 20:27	II080818-1	20		20.61	mg/L	103.1	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.9	0.9			
WG250458LFB	LFB	08/22/08 20:45	II080811-3	99.76186		105.88	mg/L	106.1	85	115			
L71074-01AS	AS	08/22/08 21:44	II080811-3	99.76186	6.3	114.34	mg/L	108.3	85	115			
L71074-01ASD	ASD	08/22/08 21:48	II080811-3	99.76186	6.3	112.84	mg/L	106.8	85	115	1.32	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250005													
WG250005PBW	PBW	08/14/08 16:45				U	mg/L		-20	20			
WG250005LCSW	LCSW	08/14/08 16:46	PCN30201	260		272	mg/L	104.6	80	120			
L71165-01DUP	DUP	08/14/08 17:14			930	922	mg/L				0.9	20	

Residue, Non-Filterable (TSS) @105C SM2540D

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250162													
WG250162PBW	PBW	08/18/08 14:45				U	mg/L		-15	15			
WG250162LCSW	LCSW	08/18/08 14:46	PCN30192	160		143	mg/L	89.4	80	120			
L71113-04DUP	DUP	08/18/08 15:03			U	U	mg/L				0	20	RA

Silica, total M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250382													
WG250382ICV	ICV	08/21/08 20:14	II080820-1	42.8		42.13	mg/L	98.4	95	105			
WG250382ICB	ICB	08/21/08 20:18				U	mg/L		-1.2	1.2			
WG250176LRB	LRB	08/21/08 20:32				U	mg/L		-0.88	0.88			
WG250176LFB	LFB	08/21/08 20:36	II080811-3	21.4		21.2	mg/L	99.1	85	115			
L71096-04LFM	LFM	08/21/08 21:31	II080811-3	21.4	27.3	43.21	mg/L	74.3	70	130			
L71096-04LFMD	LFMD	08/21/08 21:34	II080811-3	21.4	27.3	36.33	mg/L	42.2	70	130	17.3	20	MA
WG250628													
WG250628ICV	ICV	08/26/08 16:53	II080820-1	42.8		44.47	mg/L	103.9	95	105			
WG250628ICB	ICB	08/26/08 16:57				U	mg/L		-1.2	1.2			
WG250403LRB	LRB	08/26/08 17:12				U	mg/L		-0.88	0.88			
WG250403LFB	LFB	08/26/08 17:15	II080811-3	21.4		24.45	mg/L	114.3	85	115			
L71104-02LFM	LFM	08/26/08 17:22	II080811-3	21.4	37.1	52.48	mg/L	71.9	70	130			
L71104-02LFMD	LFMD	08/26/08 17:26	II080811-3	21.4	37.1	55.45	mg/L	85.7	70	130	5.5	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250458													
WG250458ICV	ICV	08/22/08 20:27	II080818-1	100		102.68	mg/L	102.7	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.9	0.9			
WG250458LFB	LFB	08/22/08 20:45	II080811-3	98.21624		104.19	mg/L	106.1	85	115			
L71074-01AS	AS	08/22/08 21:44	II080811-3	98.21624	45.3	147.69	mg/L	104.2	85	115			
L71074-01ASD	ASD	08/22/08 21:48	II080811-3	98.21624	45.3	146.56	mg/L	103.1	85	115	0.77	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L71104***
Project ID: 8720000

Strontium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250458													
WG250458ICV	ICV	08/22/08 20:27	I080818-1	2		2.106	mg/L	105.3	95	105			
WG250458ICB	ICB	08/22/08 20:31				U	mg/L		-0.03	0.03			
WG250458LFB	LFB	08/22/08 20:45	I080811-3	.5		.545	mg/L	109	85	115			
L71074-01AS	AS	08/22/08 21:44	I080811-3	.5	.8	1.28	mg/L	96	85	115			
L71074-01ASD	ASD	08/22/08 21:48	I080811-3	.5	.8	1.275	mg/L	95	85	115	0.39	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250293													
WG250293ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG250293ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250293ICV1	ICV	08/20/08 23:29	WI080521-1	50.1		49	mg/L	97.8	90	110			
WG250293ICB1	ICB	08/20/08 23:48				.91	mg/L		-1.5	1.5			
WG250293LFB	LFB	08/21/08 0:06	WI080702-9	30		27.86	mg/L	92.9	90	110			
L71074-05AS	AS	08/21/08 17:53	WI080702-9	600	1160	1764	mg/L	100.7	90	110			
L71074-05DUP	DUP	08/21/08 18:11			1160	1148	mg/L				1	20	

Sulfide as S 376.2 - Methylene Blue

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249966													
WG249966ICV	ICV	08/14/08 10:59	WC080814-7	.388		.355	mg/L	91.5	90	110			
WG249966ICB	ICB	08/14/08 11:05				U	mg/L		-0.06	0.06			
WG249966LFB	LFB	08/14/08 11:11	WC080814-9	.3191067		.36	mg/L	112.8	80	120			
L71104-01AS	AS	08/14/08 12:36	WC080814-9	.3191067	U	.097	mg/L	30.4	75	125			M2
L71104-01DUP	DUP	08/14/08 12:42			U	U	mg/L				0	20	RA

Turbidity M180.1 - Nephelometric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249940													
WG249940ICV	ICV	08/13/08 16:20	PCN29103	180		184	NTU	102.2	90	110			
WG249940ICB	ICB	08/13/08 16:20				U	NTU		-0.3	0.3			
L71113-04DUP	DUP	08/13/08 16:33			1.5	1.68	NTU				11.3	20	

Hydro Geo Chem, Inc.

ACZ Project ID: ***L71104***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L71104-01	WG250458	Calcium, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG250382	Silica, total	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG250195	Carbon, total organic (TOC)	SM5310B	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250293	Chloride	M300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249912	Coliforms, fecal	SM9222D - Membrane Filter	A5	Incubator/water bath temperature was outside method requirements.
			SM9222D - Membrane Filter	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
	WG250293	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249944	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250496	Nitrogen, ammonia	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249947	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250162	Residue, Non-Filterable (TSS) @105C	SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249966	Sulfide as S	376.2 - Methylene Blue	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			376.2 - Methylene Blue	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L71104***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L71104-02	WG250458	Calcium, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG250195	Carbon, total organic (TOC)	SM5310B	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250293	Chloride	M300.0 - Ion Chromatography	D1	Sample required dilution due to matrix.
			M300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249912	Coliforms, fecal	SM9222D - Membrane Filter	A5	Incubator/water bath temperature was outside method requirements.
	WG250293	Fluoride	M300.0 - Ion Chromatography	D1	Sample required dilution due to matrix.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249944	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250496	Nitrogen, ammonia	M350.1 - Automated Phenate	DB	Sample required dilution due to low bias result.
			M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249947	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250162	Residue, Non-Filterable (TSS) @105C	SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250293	Sulfate	300.0 - Ion Chromatography	D1	Sample required dilution due to matrix.
	WG249966	Sulfide as S	376.2 - Methylene Blue	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			376.2 - Methylene Blue	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

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Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L71104***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L71104-03	WG250458	Calcium, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG250195	Carbon, total organic (TOC)	SM5310B	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250293	Chloride	M300.0 - Ion Chromatography	D1	Sample required dilution due to matrix.
			M300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249912	Coliforms, fecal	SM9222D - Membrane Filter	A5	Incubator/water bath temperature was outside method requirements.
	WG250293	Fluoride	M300.0 - Ion Chromatography	D1	Sample required dilution due to matrix.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249944	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG251099	Nitrogen, ammonia	M350.1 - Automated Phenate	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249947	Phosphorus, ortho dissolved	M365.1 - Automated Ascorbic Acid	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250162	Residue, Non-Filterable (TSS) @105C	SM2540D	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250293	Sulfate	300.0 - Ion Chromatography	D1	Sample required dilution due to matrix.
	WG249966	Sulfide as S	376.2 - Methylene Blue	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			376.2 - Methylene Blue	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc. ACZ Project ID: ***L71104***

Wet Chemistry

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Coliforms, fecal	SM9222D - Membrane Filter
Residue, Non-Filterable (TSS) @105C	SM2540D
Sulfide as S	376.2 - Methylene Blue

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L71104
Date Received: 8/13/2008
Received By:
Date Printed: 8/13/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?		X	
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

Some Holddates are past, including Fecal Coliform.

Contact (For any discrepancies, the client must be contacted)

The client was not contacted.

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6687	0.3	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L71104
Date Received: 8/13/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L71104-01	AWC-02	Y	Y			Y						
L71104-02	PIONKE	Y	Y			Y						
L71104-03	MCCONNELL265	Y	Y			Y						

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. 71104

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc.
E-mail: dans@hgcinc.com

Address: 51 W Wetmore Rd
Tucson AZ 85705
Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.

E-mail: Jimn@hgcinc.com
Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc.
E-mail: Jimn@hgcinc.com

Address: 51 W. Wetmore Rd
Tucson AZ 85705
Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-WT
Project/PO #: 4720000
Reporting state for compliance testing: AZ
Sampler's Name: Mark Aimeson
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB-WT							
AWL-02	8/12/08: 1040	GW	7	X							
PIONKE	8/12/08! 1400	GW	7	X							
MCCONNELL 265	8/12/08! 1450	GW	7	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	8/12/08 1530		8-13-08 1058

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

August 21, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000 T2.3
ACZ Project ID: L71042

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 09, 2008. This project has been assigned to ACZ's project number, L71042. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L71042. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 21, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000 T2.3
Sample ID: BMO-2008-9M

ACZ Sample ID: ***L71042-01***
Date Sampled: *08/08/08 13:45*
Date Received: *08/09/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	28.0			mg/L	0.2	1	08/19/08 3:17	aeh
Magnesium, dissolved	M200.7 ICP	17.8			mg/L	0.2	1	08/19/08 3:17	aeh
Potassium, dissolved	M200.7 ICP	3.4			mg/L	0.3	2	08/21/08 10:51	ear/aeh
Sodium, dissolved	M200.7 ICP	64.6		*	mg/L	0.3	2	08/19/08 3:17	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		193			mg/L	2	20	08/13/08 0:00	tbd
Carbonate as CaCO3		6	B		mg/L	2	20	08/13/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/13/08 0:00	tbd
Total Alkalinity		199			mg/L	2	20	08/13/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.8			%			08/21/08 15:50	calc
Sum of Anions		5.5			meq/L	0.1	0.5	08/21/08 15:50	calc
Sum of Cations		5.7			meq/L	0.1	0.5	08/21/08 15:50	calc
Chloride	M300.0 - Ion Chromatography	14.2		*	mg/L	0.5	3	08/18/08 5:34	aml
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	08/18/08 5:34	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.90			mg/L	0.02	0.1	08/21/08 15:50	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.93			mg/L	0.02	0.1	08/09/08 16:39	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.03	B	*	mg/L	0.01	0.05	08/09/08 16:39	pjb
Residue, Filterable (TDS) @180C	SM2540C	320			mg/L	10	20	08/12/08 16:54	tbd
Sulfate	300.0 - Ion Chromatography	47.3			mg/L	0.5	3	08/18/08 5:34	aml
TDS (calculated)	Calculation	306			mg/L	10	50	08/21/08 15:50	calc
TDS (ratio - measured/calculated)	Calculation	1.05						08/21/08 15:50	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic QC Summary

Hydro Geo Chem, Inc. ACZ Project ID: ***L71042***

Project ID: 8720000 T2.3

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249881													
WG249881PBW1	PBW	08/13/08 11:02				13.9	mg/L		-20	20			
WG249881LCSW2	LCSW	08/13/08 11:14	WC080722-2	820		785.5	mg/L	95.8	90	110			
WG249881PBW2	PBW	08/13/08 14:09				U	mg/L		-20	20			
WG249881LCSW5	LCSW	08/13/08 14:21	WC080722-2	820		785.2	mg/L	95.8	90	110			
WG249881PBW3	PBW	08/13/08 17:32				U	mg/L		-20	20			
WG249881LCSW8	LCSW	08/13/08 17:45	WC080722-2	820		788.6	mg/L	96.2	90	110			
L71042-01DUP	DUP	08/13/08 19:05			199	199.1	mg/L				0.1	20	
WG249881PBW4	PBW	08/13/08 20:37				U	mg/L		-20	20			
WG249881LCSW11	LCSW	08/13/08 20:47	WC080722-2	820		789.9	mg/L	96.3	90	110			
WG249881LCSW14	LCSW	08/13/08 23:49	WC080722-2	820		792.4	mg/L	96.6	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250186													
WG250186ICV	ICV	08/19/08 2:13	II080717-3	100		100.18	mg/L	100.2	95	105			
WG250186ICB	ICB	08/19/08 2:17				U	mg/L		-0.6	0.6			
WG250186LFB	LFB	08/19/08 2:30	II080811-3	67.97008		70.67	mg/L	104	85	115			
L70890-01AS	AS	08/19/08 2:37	II080811-3	67.97008	109	169.78	mg/L	89.4	85	115			
L70890-01ASD	ASD	08/19/08 2:40	II080811-3	67.97008	109	172.05	mg/L	92.8	85	115	1.33	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250125													
WG250125ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG250125ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250125ICV1	ICV	08/17/08 20:49	WI080521-1	19.98		20.2	mg/L	101.1	90	110			
WG250125ICB1	ICB	08/17/08 21:07				U	mg/L		-1.5	1.5			
WG250125LFB1	LFB	08/17/08 21:25	WI080702-9	30		31.73	mg/L	105.8	90	110			
L70895-01AS	AS	08/18/08 2:15	WI080702-9	150	6	152.1	mg/L	97.4	90	110			
L70895-01DUP	DUP	08/18/08 2:33			6	6.6	mg/L				9.5	20	RA
WG250125LFB2	LFB	08/18/08 6:10	WI080702-9	30		28.38	mg/L	94.6	90	110			

Hydro Geo Chem, Inc. ACZ Project ID: ***L71042***

Project ID: 8720000 T2.3

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG250125													
WG250125ICV1	ICV	08/17/08 20:49	WI080521-1	4		4.06	mg/L	101.5	90	110			
WG250125ICB1	ICB	08/17/08 21:07				U	mg/L		-0.3	0.3			
WG250125LFB1	LFB	08/17/08 21:25	WI080702-9	1.5		1.52	mg/L	101.3	90	110			
L70895-01AS	AS	08/18/08 2:15	WI080702-9	7.5	2.5	9.91	mg/L	98.8	90	110			
L70895-01DUP	DUP	08/18/08 2:33			2.5	2.81	mg/L				11.7	20	RA
WG250125LFB2	LFB	08/19/08 22:49	WI080702-9	1.5		1.36	mg/L	90.7	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250186													
WG250186ICV	ICV	08/19/08 2:13	II080717-3	100		101.58	mg/L	101.6	95	105			
WG250186ICB	ICB	08/19/08 2:17				U	mg/L		-0.6	0.6			
WG250186LFB	LFB	08/19/08 2:30	II080811-3	49.96908		51.41	mg/L	102.9	85	115			
L70890-01AS	AS	08/19/08 2:37	II080811-3	49.96908	108	154.25	mg/L	92.6	85	115			
L70890-01ASD	ASD	08/19/08 2:40	II080811-3	49.96908	108	157.33	mg/L	98.7	85	115	1.98	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249722													
WG249722ICV	ICV	08/09/08 16:33	WI080613-1	2.416		2.422	mg/L	100.2	90	110			
WG249722ICB	ICB	08/09/08 16:34				U	mg/L		-0.06	0.06			
WG249722LFB	LFB	08/09/08 16:38	WI080312-1	2		1.934	mg/L	96.7	90	110			
L71042-01DUP	DUP	08/09/08 16:40			1.93	1.942	mg/L				0.6	20	
L71042-01AS	AS	08/09/08 16:42	WI080312-1	2	1.93	3.777	mg/L	92.4	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249722													
WG249722ICV	ICV	08/09/08 16:33	WI080613-1	.609		.626	mg/L	102.8	90	110			
WG249722ICB	ICB	08/09/08 16:34				U	mg/L		-0.03	0.03			
WG249722LFB	LFB	08/09/08 16:38	WI080312-1	1		.975	mg/L	97.5	90	110			
L71042-01DUP	DUP	08/09/08 16:40			.03	.022	mg/L				30.8	20	RA
L71042-01AS	AS	08/09/08 16:42	WI080312-1	1	.03	.958	mg/L	92.8	90	110			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250354													
WG250354ICV	ICV	08/21/08 10:05	II080818-1	20		20.07	mg/L	100.4	95	105			
WG250354ICB	ICB	08/21/08 10:08				U	mg/L		-0.9	0.9			
WG250354LFB	LFB	08/21/08 10:22	II080811-3	99.76186		101.94	mg/L	102.2	85	115			
L71042-01AS	AS	08/21/08 10:54	II080811-3	99.76186	3.4	109.71	mg/L	106.6	85	115			
L71042-01ASD	ASD	08/21/08 10:58	II080811-3	99.76186	3.4	108.08	mg/L	104.9	85	115	1.5	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L71042***

Project ID: 8720000 T2.3

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249859													
WG249859PBW	PBW	08/12/08 16:50				U	mg/L		-20	20			
WG249859LCSW	LCSW	08/12/08 16:51	PCN30201	260		276	mg/L	106.2	80	120			
L71073-01DUP	DUP	08/12/08 17:06			2400	2408	mg/L				0.3	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250186													
WG250186ICV	ICV	08/19/08 2:13	II080717-3	100		101.1	mg/L	101.1	95	105			
WG250186ICB	ICB	08/19/08 2:17				U	mg/L		-0.9	0.9			
WG250186LFB	LFB	08/19/08 2:30	II080811-3	98.21624		100.6	mg/L	102.4	85	115			
L70890-01AS	AS	08/19/08 2:37	II080811-3	98.21624	261	335.58	mg/L	75.9	85	115			M2
L70890-01ASD	ASD	08/19/08 2:40	II080811-3	98.21624	261	335.63	mg/L	76	85	115	0.01	20	M2

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250125													
WG250125ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG250125ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250125ICV1	ICV	08/17/08 20:49	WI080521-1	50.1		50.63	mg/L	101.1	90	110			
WG250125ICB1	ICB	08/17/08 21:07				U	mg/L		-1.5	1.5			
WG250125LFB1	LFB	08/17/08 21:25	WI080702-9	30		32.21	mg/L	107.4	90	110			
L70895-01AS	AS	08/18/08 2:15	WI080702-9	150	201	352.8	mg/L	101.2	90	110			
L70895-01DUP	DUP	08/18/08 2:33			201	230.5	mg/L				13.7	20	
WG250125LFB2	LFB	08/18/08 6:10	WI080702-9	30		28.75	mg/L	95.8	90	110			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L71042***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L71042-01	WG250186	Sodium, dissolved	M200.7 ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG250125	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249722	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc. ACZ Project ID: ***L71042***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000 T2.3

ACZ Project ID: L71042
Date Received: 8/9/2008
Received By:
Date Printed: 8/9/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6654	2.8	13

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000 T2.3

ACZ Project ID: L71042
Date Received: 8/9/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L71042-01	BMO-2008-9M		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

L71042

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W Wetmore
Company: HydroGeoChem Inc	Tucson AZ 85705
E-mail: dans@hgcinc.com	Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris	E-mail: jimn@hgcinc.com
Company: HydroGeoChem	Telephone: 520-293-1500 x112

Invoice to:

Name: Jim Norris	Address: 51 W Wetmore
Company: HGC Inc	Tucson AZ 85705
E-mail: jimn@hgcinc.com	Telephone: 520-293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW

Project/PO #: 8720000 T23

Reporting state for compliance testing: AZ

Sampler's Name: John Villinski

Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB-GW							
BMO-2008-9M	8/8/08-13:45	GW	3	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	8/8/08-15:30	MLS	8.9.08 11:12

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

August 21, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000
ACZ Project ID: L70992

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 07, 2008. This project has been assigned to ACZ's project number, L70992. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70992. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 21, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: TM-03

ACZ Sample ID: ***L70992-01***
Date Sampled: *08/06/08 07:20*
Date Received: *08/07/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	94.3			mg/L	0.2	1	08/19/08 0:46	ear/aeh
Magnesium, dissolved	M200.7 ICP	36.6			mg/L	0.2	1	08/19/08 0:46	ear/aeh
Potassium, dissolved	M200.7 ICP	3.5			mg/L	0.3	2	08/19/08 18:40	aeh
Sodium, dissolved	M200.7 ICP	27.8			mg/L	0.3	2	08/19/08 0:46	ear/aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		221			mg/L	2	20	08/13/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/13/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/13/08 0:00	tbd
Total Alkalinity		221			mg/L	2	20	08/13/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		5.3			%			08/21/08 12:16	calc
Sum of Anions		8.1			meq/L	0.1	0.5	08/21/08 12:16	calc
Sum of Cations		9.0			meq/L	0.1	0.5	08/21/08 12:16	calc
Chloride	M300.0 - Ion Chromatography	40.7		*	mg/L	0.5	3	08/18/08 3:28	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	08/18/08 3:28	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	7.68			mg/L	0.08	0.4	08/21/08 12:16	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	7.68			mg/L	0.08	0.4	08/07/08 20:23	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/07/08 20:09	pjb
Residue, Filterable (TDS) @180C	SM2540C	510		*	mg/L	10	20	08/11/08 9:46	gkj
Sulfate	300.0 - Ion Chromatography	97			mg/L	3	10	08/19/08 21:18	aml
TDS (calculated)	Calculation	467			mg/L	10	50	08/21/08 12:16	calc
TDS (ratio - measured/calculated)	Calculation	1.09						08/21/08 12:16	calc

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: TM-16

ACZ Sample ID: ***L70992-02***
Date Sampled: *08/06/08 08:10*
Date Received: *08/07/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	215			mg/L	0.2	1	08/19/08 0:49	ear/aeh
Magnesium, dissolved	M200.7 ICP	52.7			mg/L	0.2	1	08/19/08 0:49	ear/aeh
Potassium, dissolved	M200.7 ICP	13.3			mg/L	0.3	2	08/19/08 18:43	aeh
Sodium, dissolved	M200.7 ICP	30.0			mg/L	0.3	2	08/19/08 0:49	ear/aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		191			mg/L	2	20	08/13/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/13/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/13/08 0:00	tbd
Total Alkalinity		191			mg/L	2	20	08/13/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		5.4			%			08/21/08 12:16	calc
Sum of Anions		15.0			meq/L	0.1	0.5	08/21/08 12:16	calc
Sum of Cations		16.7			meq/L	0.1	0.5	08/21/08 12:16	calc
Chloride	M300.0 - Ion Chromatography	28.1		*	mg/L	0.5	3	08/18/08 3:46	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	08/18/08 3:46	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	8.07			mg/L	0.08	0.4	08/21/08 12:16	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	8.07			mg/L	0.08	0.4	08/07/08 20:25	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/07/08 20:12	pjb
Residue, Filterable (TDS) @180C	SM2540C	1070		*	mg/L	10	20	08/11/08 9:48	gkj
Sulfate	300.0 - Ion Chromatography	466			mg/L	5	30	08/19/08 21:36	aml
TDS (calculated)	Calculation	955			mg/L	10	50	08/21/08 12:16	calc
TDS (ratio - measured/calculated)	Calculation	1.12						08/21/08 12:16	calc

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: TM-42

ACZ Sample ID: ***L70992-03***
Date Sampled: *08/06/08 08:53*
Date Received: *08/07/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	191			mg/L	0.2	1	08/19/08 0:59	ear/aeh
Magnesium, dissolved	M200.7 ICP	60.7			mg/L	0.2	1	08/19/08 0:59	ear/aeh
Potassium, dissolved	M200.7 ICP	10.1			mg/L	0.3	2	08/19/08 18:46	aeh
Sodium, dissolved	M200.7 ICP	38.7			mg/L	0.3	2	08/19/08 0:59	ear/aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		208			mg/L	2	20	08/13/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/13/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/13/08 0:00	tbd
Total Alkalinity		208			mg/L	2	20	08/13/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.8			%			08/21/08 12:16	calc
Sum of Anions		15.3			meq/L	0.1	0.5	08/21/08 12:16	calc
Sum of Cations		16.5			meq/L	0.1	0.5	08/21/08 12:16	calc
Chloride	M300.0 - Ion Chromatography	27.3		*	mg/L	0.5	3	08/18/08 4:40	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	08/18/08 4:40	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	7.20			mg/L	0.08	0.4	08/21/08 12:16	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	7.20			mg/L	0.08	0.4	08/07/08 20:27	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/07/08 20:17	pjb
Residue, Filterable (TDS) @180C	SM2540C	1010		*	mg/L	10	20	08/11/08 9:50	gkj
Sulfate	300.0 - Ion Chromatography	467			mg/L	5	30	08/19/08 22:30	aml
TDS (calculated)	Calculation	952			mg/L	10	50	08/21/08 12:16	calc
TDS (ratio - measured/calculated)	Calculation	1.06						08/21/08 12:16	calc

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: TM-07

ACZ Sample ID: ***L70992-04***
Date Sampled: *08/06/08 10:50*
Date Received: *08/07/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	45.8			mg/L	0.2	1	08/19/08 1:02	ear/aeh
Magnesium, dissolved	M200.7 ICP	14.7			mg/L	0.2	1	08/19/08 1:02	ear/aeh
Potassium, dissolved	M200.7 ICP	1.9	B		mg/L	0.3	2	08/19/08 18:50	aeh
Sodium, dissolved	M200.7 ICP	20.5			mg/L	0.3	2	08/19/08 1:02	ear/aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		157			mg/L	2	20	08/13/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/13/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/13/08 0:00	tbd
Total Alkalinity		159			mg/L	2	20	08/13/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.8			%			08/21/08 12:16	calc
Sum of Anions		4.0			meq/L	0.1	0.5	08/21/08 12:16	calc
Sum of Cations		4.4			meq/L	0.1	0.5	08/21/08 12:16	calc
Chloride	M300.0 - Ion Chromatography	8.9		*	mg/L	0.5	3	08/18/08 4:58	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	08/18/08 4:58	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.52			mg/L	0.02	0.1	08/21/08 12:16	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.52			mg/L	0.02	0.1	08/07/08 20:18	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/07/08 20:18	pjb
Residue, Filterable (TDS) @180C	SM2540C	240		*	mg/L	10	20	08/11/08 9:52	gkj
Sulfate	300.0 - Ion Chromatography	22.2			mg/L	0.5	3	08/18/08 4:58	aml
TDS (calculated)	Calculation	220			mg/L	10	50	08/21/08 12:16	calc
TDS (ratio - measured/calculated)	Calculation	1.09						08/21/08 12:16	calc

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: TM-19A

ACZ Sample ID: ***L70992-05***
Date Sampled: *08/06/08 09:40*
Date Received: *08/07/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	37.3			mg/L	0.2	1	08/19/08 1:06	ear/aeh
Magnesium, dissolved	M200.7 ICP	10.8			mg/L	0.2	1	08/19/08 1:06	ear/aeh
Potassium, dissolved	M200.7 ICP	2.9			mg/L	0.3	2	08/19/08 18:53	aeh
Sodium, dissolved	M200.7 ICP	53.0			mg/L	0.3	2	08/19/08 1:06	ear/aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		153			mg/L	2	20	08/13/08 0:00	tbd
Carbonate as CaCO3		5	B		mg/L	2	20	08/13/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/13/08 0:00	tbd
Total Alkalinity		158			mg/L	2	20	08/13/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.1			%			08/21/08 12:16	calc
Sum of Anions		4.7			meq/L	0.1	0.5	08/21/08 12:16	calc
Sum of Cations		5.1			meq/L	0.1	0.5	08/21/08 12:16	calc
Chloride	M300.0 - Ion Chromatography	15.4		*	mg/L	0.5	3	08/18/08 5:16	aml
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	08/18/08 5:16	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.09	B		mg/L	0.02	0.1	08/21/08 12:16	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.09	B		mg/L	0.02	0.1	08/07/08 20:19	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/07/08 20:19	pjb
Residue, Filterable (TDS) @180C	SM2540C	270		*	mg/L	10	20	08/11/08 9:53	gkj
Sulfate	300.0 - Ion Chromatography	55.3			mg/L	0.5	3	08/18/08 5:16	aml
TDS (calculated)	Calculation	272			mg/L	10	50	08/21/08 12:16	calc
TDS (ratio - measured/calculated)	Calculation	0.99						08/21/08 12:16	calc

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Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L70992***
Project ID: 8720000

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249881													
WG249881PBW1	PBW	08/13/08 11:02				13.9	mg/L		-20	20			
WG249881LCSW2	LCSW	08/13/08 11:14	WC080722-2	820		785.5	mg/L	95.8	90	110			
L70999-01DUP	DUP	08/13/08 12:37			23	23.7	mg/L				3	20	
WG249881PBW2	PBW	08/13/08 14:09				U	mg/L		-20	20			
WG249881LCSW5	LCSW	08/13/08 14:21	WC080722-2	820		785.2	mg/L	95.8	90	110			
WG249881PBW3	PBW	08/13/08 17:32				U	mg/L		-20	20			
WG249881LCSW8	LCSW	08/13/08 17:45	WC080722-2	820		788.6	mg/L	96.2	90	110			
WG249881PBW4	PBW	08/13/08 20:37				U	mg/L		-20	20			
WG249881LCSW11	LCSW	08/13/08 20:47	WC080722-2	820		789.9	mg/L	96.3	90	110			
WG249881LCSW14	LCSW	08/13/08 23:49	WC080722-2	820		792.4	mg/L	96.6	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250168													
WG250168ICV	ICV	08/19/08 0:03	II080717-3	100		99.96	mg/L	100	95	105			
WG250168ICB	ICB	08/19/08 0:07				U	mg/L		-0.6	0.6			
WG250168LFB	LFB	08/19/08 0:19	II080811-3	67.97008		70.82	mg/L	104.2	85	115			
L70987-02AS	AS	08/19/08 0:26	II080811-3	67.97008	215	276.1	mg/L	89.9	85	115			
L70987-02ASD	ASD	08/19/08 0:29	II080811-3	67.97008	215	276.72	mg/L	90.8	85	115	0.22	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250125													
WG250125ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG250125ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250125ICV1	ICV	08/17/08 20:49	WI080521-1	19.98		20.2	mg/L	101.1	90	110			
WG250125ICB1	ICB	08/17/08 21:07				U	mg/L		-1.5	1.5			
WG250125LFB1	LFB	08/17/08 21:25	WI080702-9	30		31.73	mg/L	105.8	90	110			
L70895-01AS	AS	08/18/08 2:15	WI080702-9	150	6	152.1	mg/L	97.4	90	110			
L70895-01DUP	DUP	08/18/08 2:33			6	6.6	mg/L				9.5	20	RA
WG250125LFB2	LFB	08/18/08 6:10	WI080702-9	30		28.38	mg/L	94.6	90	110			

Hydro Geo Chem, Inc. ACZ Project ID: ***L70992***
Project ID: 8720000

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG250125													
WG250125ICV1	ICV	08/17/08 20:49	WI080521-1	4		4.06	mg/L	101.5	90	110			
WG250125ICB1	ICB	08/17/08 21:07				U	mg/L		-0.3	0.3			
WG250125LFB1	LFB	08/17/08 21:25	WI080702-9	1.5		1.52	mg/L	101.3	90	110			
L70895-01AS	AS	08/18/08 2:15	WI080702-9	7.5	2.5	9.91	mg/L	98.8	90	110			
L70895-01DUP	DUP	08/18/08 2:33			2.5	2.81	mg/L				11.7	20	RA
WG250125LFB2	LFB	08/19/08 22:49	WI080702-9	1.5		1.36	mg/L	90.7	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250168													
WG250168ICV	ICV	08/19/08 0:03	II080717-3	100		101.39	mg/L	101.4	95	105			
WG250168ICB	ICB	08/19/08 0:07				U	mg/L		-0.6	0.6			
WG250168LFB	LFB	08/19/08 0:19	II080811-3	49.96908		51.49	mg/L	103	85	115			
L70987-02AS	AS	08/19/08 0:26	II080811-3	49.96908	32.3	85.47	mg/L	106.4	85	115			
L70987-02ASD	ASD	08/19/08 0:29	II080811-3	49.96908	32.3	86.52	mg/L	108.5	85	115	1.22	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249641													
WG249641ICV	ICV	08/07/08 19:41	WI080613-1	2.416		2.443	mg/L	101.1	90	110			
WG249641ICB	ICB	08/07/08 19:42				U	mg/L		-0.06	0.06			
WG249641LFB	LFB	08/07/08 19:46	WI080312-1	2		2.019	mg/L	101	90	110			
L70985-03AS	AS	08/07/08 20:08	WI080312-1	2	.04	2.102	mg/L	103.1	90	110			
L70992-01DUP	DUP	08/07/08 20:24			7.68	7.702	mg/L				0.3	20	

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249641													
WG249641ICV	ICV	08/07/08 19:41	WI080613-1	.609		.626	mg/L	102.8	90	110			
WG249641ICB	ICB	08/07/08 19:42				U	mg/L		-0.03	0.03			
WG249641LFB	LFB	08/07/08 19:46	WI080312-1	1		1.011	mg/L	101.1	90	110			
L70985-03AS	AS	08/07/08 20:08	WI080312-1	1		.977	mg/L	97.7	90	110			
L70992-01DUP	DUP	08/07/08 20:10			U	U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250226													
WG250226ICV	ICV	08/19/08 17:54	II080818-1	20		20.19	mg/L	101	95	105			
WG250226ICB	ICB	08/19/08 17:57				U	mg/L		-0.9	0.9			
WG250226LFB	LFB	08/19/08 18:10	II080811-3	99.76186		105.81	mg/L	106.1	85	115			
L70890-01AS	AS	08/19/08 18:17	II080811-3	99.76186	1.6	112.04	mg/L	110.7	85	115			
L70890-01ASD	ASD	08/19/08 18:20	II080811-3	99.76186	1.6	111.47	mg/L	110.1	85	115	0.51	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L70992***
Project ID: 8720000

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249740													
WG249740PBW	PBW	08/11/08 9:40				U	mg/L		-20	20			
WG249740LCSW	LCSW	08/11/08 9:41	PCN30201	260		276	mg/L	106.2	80	120			
L71007-01DUP	DUP	08/11/08 10:00			20	36	mg/L				57.1	20	RA

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250168													
WG250168ICV	ICV	08/19/08 0:03	II080717-3	100		101.16	mg/L	101.2	95	105			
WG250168ICB	ICB	08/19/08 0:07				U	mg/L		-0.9	0.9			
WG250168LFB	LFB	08/19/08 0:19	II080811-3	98.21624		100.38	mg/L	102.2	85	115			
L70987-02AS	AS	08/19/08 0:26	II080811-3	98.21624	23.1	121.74	mg/L	100.4	85	115			
L70987-02ASD	ASD	08/19/08 0:29	II080811-3	98.21624	23.1	120.81	mg/L	99.5	85	115	0.77	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250125													
WG250125ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG250125ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250125ICV1	ICV	08/17/08 20:49	WI080521-1	50.1		50.63	mg/L	101.1	90	110			
WG250125ICB1	ICB	08/17/08 21:07				U	mg/L		-1.5	1.5			
WG250125LFB1	LFB	08/17/08 21:25	WI080702-9	30		32.21	mg/L	107.4	90	110			
L70895-01AS	AS	08/18/08 2:15	WI080702-9	150	201	352.8	mg/L	101.2	90	110			
L70895-01DUP	DUP	08/18/08 2:33			201	230.5	mg/L				13.7	20	
WG250125LFB2	LFB	08/18/08 6:10	WI080702-9	30		28.75	mg/L	95.8	90	110			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L70992***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70992-01	WG250125	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249641	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249740	Residue, Filterable (TDS) @180C	SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70992-02	WG250125	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249641	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249740	Residue, Filterable (TDS) @180C	SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70992-03	WG250125	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249641	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249740	Residue, Filterable (TDS) @180C	SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70992-04	WG250125	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249641	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249740	Residue, Filterable (TDS) @180C	SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70992-05	WG250125	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249641	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249740	Residue, Filterable (TDS) @180C	SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc. ACZ Project ID: ***L70992***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70992
Date Received: 8/7/2008
Received By:
Date Printed: 8/7/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6645	0.3	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70992
Date Received: 8/7/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L70992-01	TM-03		Y									
L70992-02	TM-16		Y									
L70992-03	TM-42		Y									
L70992-04	TM-07		Y									
L70992-05	TM-19A		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L70992

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd
Tucson AZ 85705
Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.
E-mail: Jimn@hgcinc.com
Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc.
E-mail: Jimn@hgcinc.com
Address: 51 W. Wetmore Rd.
Tucson, AZ 85705
Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMICQB-GW
Project/PO #: 8720000
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? AZ

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB-GW
TM-03	8/6/08: 7:20	GW	3	X
TM-16	8/6/08: 8:10	GW	3	X
TM-42	8/6/08: 8:53	GW	3	X
TM-07	8/6/08: 10:50	GW	3	X
TM-19A	8/6/08: 9:40	GW	3	X

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	8/6/08 12:45		8-7-08 11:40

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

August 21, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000
ACZ Project ID: L70974

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 06, 2008. This project has been assigned to ACZ's project number, L70974. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70974. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 21, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Case Narrative

Hydro Geo Chem, Inc.

August 21, 2008

Project ID: 8720000
ACZ Project ID: L70974

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 8 ground water samples from Hydro Geo Chem, Inc. on August 6, 2008. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L70974. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Samples were received outside the EPA recommended temperature of 0-6 degrees C.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: COLLINS

ACZ Sample ID: ***L70974-01***
Date Sampled: *07/31/08 07:46*
Date Received: *08/06/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	536			mg/L	5	30	08/17/08 14:47	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: FB073108

ACZ Sample ID: ***L70974-02***
Date Sampled: *07/31/08 08:45*
Date Received: *08/06/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP		U		mg/L	0.2	1	08/19/08 2:52	ear/aeh
Magnesium, dissolved	M200.7 ICP		U		mg/L	0.2	1	08/19/08 2:52	ear/aeh
Potassium, dissolved	M200.7 ICP		U		mg/L	0.3	2	08/19/08 2:52	ear/aeh
Sodium, dissolved	M200.7 ICP		U		mg/L	0.3	2	08/19/08 2:52	ear/aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Total Alkalinity			U		mg/L	2	20	08/08/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		n/a			%			08/20/08 15:01	calc
Sum of Anions		N/A			meq/L	0.1	0.5	08/20/08 15:01	calc
Sum of Cations			U		meq/L	0.1	0.5	08/20/08 15:01	calc
Chloride	M300.0 - Ion Chromatography		U		mg/L	0.5	3	08/17/08 0:15	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	08/17/08 0:15	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2		U		mg/L	0.02	0.1	08/20/08 15:01	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U		mg/L	0.02	0.1	08/06/08 19:45	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/06/08 19:45	pjb
Residue, Filterable (TDS) @180C	SM2540C		HU	*	mg/L	10	20	08/11/08 16:48	tbd
Sulfate	300.0 - Ion Chromatography		U		mg/L	0.5	3	08/17/08 0:15	aml
TDS (calculated)	Calculation		U		mg/L	10	50	08/20/08 15:01	calc
TDS (ratio - measured/calculated)	Calculation	n/a						08/20/08 15:01	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: EQB073108

ACZ Sample ID: ***L70974-03***
Date Sampled: *07/31/08 08:53*
Date Received: *08/06/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP		U		mg/L	0.2	1	08/19/08 3:03	ear/aeh
Magnesium, dissolved	M200.7 ICP		U		mg/L	0.2	1	08/19/08 3:03	ear/aeh
Potassium, dissolved	M200.7 ICP		U		mg/L	0.3	2	08/19/08 3:03	ear/aeh
Sodium, dissolved	M200.7 ICP		U		mg/L	0.3	2	08/19/08 3:03	ear/aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Total Alkalinity			U		mg/L	2	20	08/08/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		n/a			%			08/20/08 15:01	calc
Sum of Anions		N/A			meq/L	0.1	0.5	08/20/08 15:01	calc
Sum of Cations			U		meq/L	0.1	0.5	08/20/08 15:01	calc
Chloride	M300.0 - Ion Chromatography		U		mg/L	0.5	3	08/17/08 0:33	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	08/17/08 0:33	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2		U		mg/L	0.02	0.1	08/20/08 15:01	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U		mg/L	0.02	0.1	08/06/08 19:46	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/06/08 19:46	pjb
Residue, Filterable (TDS) @180C	SM2540C		HU	*	mg/L	10	20	08/11/08 16:50	tbd
Sulfate	300.0 - Ion Chromatography		U		mg/L	0.5	3	08/17/08 0:33	aml
TDS (calculated)	Calculation		U		mg/L	10	50	08/20/08 15:01	calc
TDS (ratio - measured/calculated)	Calculation	n/a						08/20/08 15:01	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: PARRA

ACZ Sample ID: ***L70974-04***
Date Sampled: *07/31/08 09:07*
Date Received: *08/06/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	181			mg/L	0.2	1	08/19/08 3:14	ear/aeh
Magnesium, dissolved	M200.7 ICP	49.8			mg/L	0.2	1	08/19/08 3:14	ear/aeh
Potassium, dissolved	M200.7 ICP	4.5			mg/L	0.3	2	08/19/08 3:14	ear/aeh
Sodium, dissolved	M200.7 ICP	32.4			mg/L	0.3	2	08/19/08 3:14	ear/aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		213			mg/L	2	20	08/08/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Total Alkalinity		213			mg/L	2	20	08/08/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.0			%			08/20/08 15:01	calc
Sum of Anions		14.4			meq/L	0.1	0.5	08/20/08 15:01	calc
Sum of Cations		14.7			meq/L	0.1	0.5	08/20/08 15:01	calc
Chloride	M300.0 - Ion Chromatography	33.5			mg/L	0.5	3	08/17/08 0:51	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	08/17/08 0:51	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	4.23			mg/L	0.04	0.2	08/20/08 15:01	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	4.23			mg/L	0.04	0.2	08/06/08 20:10	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/06/08 19:47	pjb
Residue, Filterable (TDS) @180C	SM2540C	930			mg/L	10	20	08/11/08 16:52	tbd
Sulfate	300.0 - Ion Chromatography	423			mg/L	5	30	08/17/08 15:05	aml
TDS (calculated)	Calculation	871			mg/L	10	50	08/20/08 15:01	calc
TDS (ratio - measured/calculated)	Calculation	1.07						08/20/08 15:01	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: DUP073108

ACZ Sample ID: ***L70974-05***
Date Sampled: *07/31/08 00:00*
Date Received: *08/06/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	177			mg/L	0.2	1	08/19/08 3:18	ear/aeh
Magnesium, dissolved	M200.7 ICP	48.5			mg/L	0.2	1	08/19/08 3:18	ear/aeh
Potassium, dissolved	M200.7 ICP	4.3			mg/L	0.3	2	08/19/08 3:18	ear/aeh
Sodium, dissolved	M200.7 ICP	30.9			mg/L	0.3	2	08/19/08 3:18	ear/aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		212			mg/L	2	20	08/08/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Total Alkalinity		212			mg/L	2	20	08/08/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.1			%			08/20/08 15:01	calc
Sum of Anions		14.0			meq/L	0.1	0.5	08/20/08 15:01	calc
Sum of Cations		14.3			meq/L	0.1	0.5	08/20/08 15:01	calc
Chloride	M300.0 - Ion Chromatography	33.5		*	mg/L	0.5	3	08/17/08 2:04	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	08/17/08 2:04	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	4.33			mg/L	0.04	0.2	08/20/08 15:01	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	4.33			mg/L	0.04	0.2	08/06/08 20:12	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/06/08 19:48	pjb
Residue, Filterable (TDS) @180C	SM2540C	920	H	*	mg/L	10	20	08/11/08 16:54	tbd
Sulfate	300.0 - Ion Chromatography	404			mg/L	5	30	08/17/08 16:18	aml
TDS (calculated)	Calculation	845			mg/L	10	50	08/20/08 15:01	calc
TDS (ratio - measured/calculated)	Calculation	1.09						08/20/08 15:01	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: METZLER

ACZ Sample ID: ***L70974-06***
Date Sampled: *07/31/08 10:30*
Date Received: *08/06/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	317			mg/L	5	30	08/17/08 16:36	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: COOPER

ACZ Sample ID: ***L70974-07***
Date Sampled: *07/31/08 11:15*
Date Received: *08/06/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	48.9			mg/L	0.2	1	08/19/08 3:21	ear/aeh
Magnesium, dissolved	M200.7 ICP	13.3			mg/L	0.2	1	08/19/08 3:21	ear/aeh
Potassium, dissolved	M200.7 ICP	2.1			mg/L	0.3	2	08/19/08 3:21	ear/aeh
Sodium, dissolved	M200.7 ICP	24.6			mg/L	0.3	2	08/19/08 3:21	ear/aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		150			mg/L	2	20	08/08/08 0:00	tbd
Carbonate as CaCO3		7	B		mg/L	2	20	08/08/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Total Alkalinity		157			mg/L	2	20	08/08/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.1			%			08/20/08 15:01	calc
Sum of Anions		4.5			meq/L	0.1	0.5	08/20/08 15:01	calc
Sum of Cations		4.6			meq/L	0.1	0.5	08/20/08 15:01	calc
Chloride	M300.0 - Ion Chromatography	16.9			mg/L	0.5	3	08/17/08 2:40	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	08/17/08 2:40	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.68			mg/L	0.02	0.1	08/20/08 15:01	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.68			mg/L	0.02	0.1	08/06/08 19:50	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/06/08 19:50	pjb
Residue, Filterable (TDS) @180C	SM2540C	260			mg/L	10	20	08/11/08 16:56	tbd
Sulfate	300.0 - Ion Chromatography	33.7			mg/L	0.5	3	08/17/08 2:40	aml
TDS (calculated)	Calculation	249			mg/L	10	50	08/20/08 15:01	calc
TDS (ratio - measured/calculated)	Calculation	1.04						08/20/08 15:01	calc

Arizona license number: AZ0102

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: POOL

ACZ Sample ID: ***L70974-08***
Date Sampled: *07/31/08 12:30*
Date Received: *08/06/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	117			mg/L	3	10	08/17/08 16:54	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L70974***

Project ID: 8720000

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249610													
WG249610PBW1	PBW	08/07/08 16:15				12.1	mg/L		-20	20			
WG249610LCSW2	LCSW	08/07/08 16:27	WC080722-2	820		781	mg/L	95.2	90	110			
WG249610PBW2	PBW	08/07/08 19:00				U	mg/L		-20	20			
WG249610LCSW5	LCSW	08/07/08 19:12	WC080722-2	820		786.3	mg/L	95.9	90	110			
WG249610PBW3	PBW	08/07/08 22:06				U	mg/L		-20	20			
WG249610LCSW8	LCSW	08/07/08 22:19	WC080722-2	820		782.6	mg/L	95.4	90	110			
WG249610PBW4	PBW	08/08/08 1:09				U	mg/L		-20	20			
WG249610LCSW11	LCSW	08/08/08 1:20	WC080722-2	820		787.9	mg/L	96.1	90	110			
L70979-02DUP	DUP	08/08/08 3:00			623	642.2	mg/L				3	20	
WG249610LCSW14	LCSW	08/08/08 4:39	WC080722-2	820		789.3	mg/L	96.3	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250165													
WG250165ICV	ICV	08/19/08 1:40	II080717-3	100		97.37	mg/L	97.4	95	105			
WG250165ICB	ICB	08/19/08 1:43				U	mg/L		-0.6	0.6			
WG250165LFB	LFB	08/19/08 1:58	II080811-3	67.97008		66.33	mg/L	97.6	85	115			
L70974-02AS	AS	08/19/08 2:56	II080811-3	67.97008	U	69.33	mg/L	102	85	115			
L70974-02ASD	ASD	08/19/08 3:00	II080811-3	67.97008	U	70.29	mg/L	103.4	85	115	1.38	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250049													
WG250049ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG250049ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250049LFB1	LFB	08/16/08 17:00	WI080702-9	30		32.68	mg/L	108.9	90	110			
L70974-04AS	AS	08/17/08 1:09	WI080702-9	30	33.5	62.68	mg/L	97.3	90	110			
L70974-04DUP	DUP	08/17/08 1:27			33.5	33.5	mg/L				0	20	
WG250049LFB2	LFB	08/17/08 1:45	WI080702-9	30		28.44	mg/L	94.8	90	110			
L70981-06AS	AS	08/17/08 5:41	WI080702-9	30	.9	30.62	mg/L	99.1	90	110			
L70981-06DUP	DUP	08/17/08 5:59			.9	.85	mg/L				5.7	20	RA

Hydro Geo Chem, Inc. ACZ Project ID: ***L70974***

Project ID: 8720000

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG250049													
WG250049ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG250049ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG250049LFB1	LFB	08/16/08 17:00	WI080702-9	1.5		1.55	mg/L	103.3	90	110			
L70974-04AS	AS	08/17/08 1:09	WI080702-9	1.5	U	1.51	mg/L	100.7	90	110			
L70974-04DUP	DUP	08/17/08 1:27			U	U	mg/L				0	20	RA
L70981-06AS	AS	08/17/08 5:41	WI080702-9	1.5	U	1.5	mg/L	100	90	110			
L70981-06DUP	DUP	08/17/08 5:59			U	U	mg/L				0	20	RA
WG250049LFB2	LFB	08/17/08 15:59	WI080702-9	1.5		1.49	mg/L	99.3	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250165													
WG250165ICV	ICV	08/19/08 1:40	II080717-3	100		97.33	mg/L	97.3	95	105			
WG250165ICB	ICB	08/19/08 1:43				U	mg/L		-0.6	0.6			
WG250165LFB	LFB	08/19/08 1:58	II080811-3	49.96908		48.27	mg/L	96.6	85	115			
L70974-02AS	AS	08/19/08 2:56	II080811-3	49.96908	U	51.12	mg/L	102.3	85	115			
L70974-02ASD	ASD	08/19/08 3:00	II080811-3	49.96908	U	51.3	mg/L	102.7	85	115	0.35	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249553													
WG249553ICV	ICV	08/06/08 19:08	WI080613-1	2.416		2.422	mg/L	100.2	90	110			
WG249553ICB	ICB	08/06/08 19:10				U	mg/L		-0.06	0.06			
WG249553LFB1	LFB	08/06/08 19:12	WI080312-1	2		2	mg/L	100	90	110			
L70967-01AS	AS	08/06/08 19:33	WI080312-1	2	U	2.083	mg/L	104.2	90	110			
L70967-02DUP	DUP	08/06/08 19:36			.39	.386	mg/L				1	20	
WG249553LFB2	LFB	08/06/08 19:51	WI080312-1	2		2.057	mg/L	102.9	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249553													
WG249553ICV	ICV	08/06/08 19:08	WI080613-1	.609		.601	mg/L	98.7	90	110			
WG249553ICB	ICB	08/06/08 19:10				U	mg/L		-0.03	0.03			
WG249553LFB1	LFB	08/06/08 19:12	WI080312-1	1		.992	mg/L	99.2	90	110			
L70967-01AS	AS	08/06/08 19:33	WI080312-1	1	U	.999	mg/L	99.9	90	110			
L70967-02DUP	DUP	08/06/08 19:36			U	U	mg/L				0	20	RA
WG249553LFB2	LFB	08/06/08 19:51	WI080312-1	1		.994	mg/L	99.4	90	110			

Hydro Geo Chem, Inc. ACZ Project ID: ***L70974***

Project ID: 8720000

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250165													
WG250165ICV	ICV	08/19/08 1:40	I080717-3	20		20.34	mg/L	101.7	95	105			
WG250165ICB	ICB	08/19/08 1:43				U	mg/L		-0.9	0.9			
WG250165LFB	LFB	08/19/08 1:58	I080811-3	99.76186		100.96	mg/L	101.2	85	115			
L70974-02AS	AS	08/19/08 2:56	I080811-3	99.76186	U	106.47	mg/L	106.7	85	115			
L70974-02ASD	ASD	08/19/08 3:00	I080811-3	99.76186	U	107.51	mg/L	107.8	85	115	0.97	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249794													
WG249794PBW	PBW	08/11/08 16:45				U	mg/L		-20	20			
WG249794LCSW	LCSW	08/11/08 16:46	PCN30201	260		254	mg/L	97.7	80	120			
L71037-03DUP	DUP	08/11/08 17:08			570	558	mg/L				2.1	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250165													
WG250165ICV	ICV	08/19/08 1:40	I080717-3	100		101.3	mg/L	101.3	95	105			
WG250165ICV	ICV	08/19/08 1:40	I080717-3	100		102.21	mg/L	102.2	95	105			
WG250165ICB	ICB	08/19/08 1:43				U	mg/L		-6	6			
WG250165ICB	ICB	08/19/08 1:43				U	mg/L		-0.9	0.9			
WG250165LFB	LFB	08/19/08 1:58	I080811-3	98.21624		99.93	mg/L	101.7	85	115			
WG250165LFB	LFB	08/19/08 1:58	I080811-3	98.21624		98.4	mg/L	100.2	85	115			
L70974-02AS	AS	08/19/08 2:56	I080811-3	98.21624	U	105.36	mg/L	107.3	85	115			
L70974-02ASD	ASD	08/19/08 3:00	I080811-3	98.21624	U	105.96	mg/L	107.9	85	115	0.57	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250049													
WG250049ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG250049ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250049LFB2	LFB	08/17/08 1:45	WI080702-9	30		30.01	mg/L	100	90	110			
L70974-04AS	AS	08/17/08 15:23	WI080702-9	300	423	712.7	mg/L	96.6	90	110			
L70974-04DUP	DUP	08/17/08 15:41			423	446.2	mg/L				5.3	20	
L70981-06AS	AS	08/17/08 19:37	WI080702-9	150	174	320.3	mg/L	97.5	90	110			
L70981-06DUP	DUP	08/17/08 19:55			174	181.4	mg/L				4.2	20	
WG250049LFB1	LFB	08/19/08 17:22	WI080702-9	30		30.63	mg/L	102.1	90	110			

ACZ Laboratories, Inc.
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Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L70974***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70974-02	WG250049	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249794	Residue, Filterable (TDS) @180C	SM2540C	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
L70974-03	WG250049	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249794	Residue, Filterable (TDS) @180C	SM2540C	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
L70974-04	WG250049	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70974-05	WG250049	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249794	Residue, Filterable (TDS) @180C	SM2540C	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
L70974-07	WG250049	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc. ACZ Project ID: ***L70974***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
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Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70974
Date Received: 8/6/2008
Received By:
Date Printed: 8/6/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6630	25.5	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70974
Date Received: 8/6/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L70974-01	COLLINS									X		
L70974-02	FB		Y									
L70974-03	EQB		Y									
L70974-04	PARRA		Y									
L70974-05	DUP		Y									
L70974-06	METZLER									X		
L70974-07	COOPER		Y									
L70974-08	POOL									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH _Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

August 21, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000
ACZ Project ID: L70959

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 06, 2008. This project has been assigned to ACZ's project number, L70959. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70959. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 21, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: TM-06 MILLER

ACZ Sample ID: ***L70959-01***
Date Sampled: *08/04/08 16:00*
Date Received: *08/06/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	37.8			mg/L	0.2	1	08/18/08 18:36	aeh
Magnesium, dissolved	M200.7 ICP	19.5			mg/L	0.2	1	08/18/08 18:36	aeh
Potassium, dissolved	M200.7 ICP	1.9	B		mg/L	0.3	2	08/19/08 14:07	aeh
Sodium, dissolved	M200.7 ICP	52.1			mg/L	0.3	2	08/18/08 18:36	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		210			mg/L	2	20	08/07/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Total Alkalinity		210			mg/L	2	20	08/07/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.6			%			08/21/08 15:27	calc
Sum of Anions		5.4			meq/L	0.1	0.5	08/21/08 15:27	calc
Sum of Cations		5.8			meq/L	0.1	0.5	08/21/08 15:27	calc
Chloride	M300.0 - Ion Chromatography	18.0		*	mg/L	0.5	3	08/16/08 19:25	aml
Fluoride	M300.0 - Ion Chromatography	0.7		*	mg/L	0.1	0.5	08/16/08 19:25	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.89			mg/L	0.02	0.1	08/21/08 15:27	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.89	H	*	mg/L	0.02	0.1	08/06/08 19:14	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		HU	*	mg/L	0.01	0.05	08/06/08 19:14	pjb
Residue, Filterable (TDS) @180C	SM2540C	300			mg/L	10	20	08/07/08 16:26	tbd
Sulfate	300.0 - Ion Chromatography	31.3			mg/L	0.5	3	08/16/08 19:25	aml
TDS (calculated)	Calculation	291			mg/L	10	50	08/21/08 15:27	calc
TDS (ratio - measured/calculated)	Calculation	1.03						08/21/08 15:27	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: TM-43B

ACZ Sample ID: ***L70959-02***
Date Sampled: *08/05/08 08:10*
Date Received: *08/06/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	47.5			mg/L	0.2	1	08/18/08 18:47	aeh
Magnesium, dissolved	M200.7 ICP	21.5			mg/L	0.2	1	08/18/08 18:47	aeh
Potassium, dissolved	M200.7 ICP	2.6			mg/L	0.3	2	08/19/08 14:17	aeh
Sodium, dissolved	M200.7 ICP	44.9			mg/L	0.3	2	08/18/08 18:47	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		231			mg/L	2	20	08/07/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Total Alkalinity		231			mg/L	2	20	08/07/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		6.1			%			08/21/08 15:27	calc
Sum of Anions		5.4			meq/L	0.1	0.5	08/21/08 15:27	calc
Sum of Cations		6.1			meq/L	0.1	0.5	08/21/08 15:27	calc
Chloride	M300.0 - Ion Chromatography	4.7		*	mg/L	0.5	3	08/16/08 19:43	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	08/16/08 19:43	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.03	B		mg/L	0.02	0.1	08/21/08 15:27	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.03	B	*	mg/L	0.02	0.1	08/06/08 19:16	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/06/08 19:16	pjb
Residue, Filterable (TDS) @180C	SM2540C	300			mg/L	10	20	08/07/08 16:27	tbd
Sulfate	300.0 - Ion Chromatography	31.8			mg/L	0.5	3	08/16/08 19:43	aml
TDS (calculated)	Calculation	292			mg/L	10	50	08/21/08 15:27	calc
TDS (ratio - measured/calculated)	Calculation	1.03						08/21/08 15:27	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: BF-01

ACZ Sample ID: ***L70959-03***
Date Sampled: *08/05/08 09:20*
Date Received: *08/06/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	624			mg/L	0.4	2	08/18/08 18:50	aeh
Magnesium, dissolved	M200.7 ICP	107			mg/L	0.4	2	08/18/08 18:50	aeh
Potassium, dissolved	M200.7 ICP	4.5			mg/L	0.6	3	08/19/08 14:20	aeh
Sodium, dissolved	M200.7 ICP	61.3			mg/L	0.6	3	08/18/08 18:50	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		579			mg/L	2	20	08/07/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Total Alkalinity		579			mg/L	2	20	08/07/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.9			%			08/21/08 15:27	calc
Sum of Anions		40.4			meq/L	0.1	0.5	08/21/08 15:27	calc
Sum of Cations		42.8			meq/L	0.1	0.5	08/21/08 15:27	calc
Chloride	M300.0 - Ion Chromatography	30	B	*	mg/L	10	50	08/16/08 20:38	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	2	10	08/16/08 20:38	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.09			mg/L	0.02	0.1	08/21/08 15:27	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.09		*	mg/L	0.02	0.1	08/06/08 19:19	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/06/08 19:19	pjb
Residue, Filterable (TDS) @180C	SM2540C	2820			mg/L	10	20	08/07/08 16:29	tbd
Sulfate	300.0 - Ion Chromatography	1330		*	mg/L	10	50	08/16/08 20:38	aml
TDS (calculated)	Calculation	2510			mg/L	10	50	08/21/08 15:27	calc
TDS (ratio - measured/calculated)	Calculation	1.12						08/21/08 15:27	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: SRC

ACZ Sample ID: ***L70959-04***
Date Sampled: *08/05/08 11:10*
Date Received: *08/06/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	26.8			mg/L	0.2	1	08/18/08 18:53	aeh
Magnesium, dissolved	M200.7 ICP	17.8			mg/L	0.2	1	08/18/08 18:53	aeh
Potassium, dissolved	M200.7 ICP	2.0			mg/L	0.3	2	08/21/08 10:25	ear/aeh
Sodium, dissolved	M200.7 ICP	44.6			mg/L	0.3	2	08/18/08 18:53	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		173			mg/L	2	20	08/08/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Total Alkalinity		173		*	mg/L	2	20	08/08/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		5.5			%			08/21/08 15:27	calc
Sum of Anions		4.3			meq/L	0.1	0.5	08/21/08 15:27	calc
Sum of Cations		4.8			meq/L	0.1	0.5	08/21/08 15:27	calc
Chloride	M300.0 - Ion Chromatography	10.4			mg/L	0.5	3	08/16/08 21:32	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	08/16/08 21:32	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	3.74			mg/L	0.02	0.1	08/21/08 15:27	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	3.74		*	mg/L	0.02	0.1	08/06/08 19:20	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/06/08 19:20	pjb
Residue, Filterable (TDS) @180C	SM2540C	250			mg/L	10	20	08/07/08 16:30	tbd
Sulfate	300.0 - Ion Chromatography	15.4			mg/L	0.5	3	08/16/08 21:32	aml
TDS (calculated)	Calculation	238			mg/L	10	50	08/21/08 15:27	calc
TDS (ratio - measured/calculated)	Calculation	1.05						08/21/08 15:27	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: BURKE

ACZ Sample ID: ***L70959-05***
Date Sampled: *08/05/08 12:25*
Date Received: *08/06/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	52.5			mg/L	0.2	1	08/18/08 18:57	aeh
Magnesium, dissolved	M200.7 ICP	22.3			mg/L	0.2	1	08/18/08 18:57	aeh
Potassium, dissolved	M200.7 ICP	2.3			mg/L	0.3	2	08/21/08 10:28	ear/aeh
Sodium, dissolved	M200.7 ICP	16.1			mg/L	0.3	2	08/18/08 18:57	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		187			mg/L	2	20	08/08/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Total Alkalinity		187		*	mg/L	2	20	08/08/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		6.1			%			08/21/08 15:27	calc
Sum of Anions		4.6			meq/L	0.1	0.5	08/21/08 15:27	calc
Sum of Cations		5.2			meq/L	0.1	0.5	08/21/08 15:27	calc
Chloride	M300.0 - Ion Chromatography	9.9			mg/L	0.5	3	08/16/08 21:50	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	08/16/08 21:50	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.81			mg/L	0.02	0.1	08/21/08 15:27	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.85		*	mg/L	0.02	0.1	08/06/08 19:21	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.04	B	*	mg/L	0.01	0.05	08/06/08 19:21	pjb
Residue, Filterable (TDS) @180C	SM2540C	260			mg/L	10	20	08/07/08 16:31	tbd
Sulfate	300.0 - Ion Chromatography	21.9			mg/L	0.5	3	08/16/08 21:50	aml
TDS (calculated)	Calculation	250			mg/L	10	50	08/21/08 15:27	calc
TDS (ratio - measured/calculated)	Calculation	1.04						08/21/08 15:27	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: TM-15 MILLER

ACZ Sample ID: ***L70959-06***
Date Sampled: *08/05/08 13:10*
Date Received: *08/06/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	29.8			mg/L	0.2	1	08/18/08 19:06	aeh
Magnesium, dissolved	M200.7 ICP	18.9			mg/L	0.2	1	08/18/08 19:06	aeh
Potassium, dissolved	M200.7 ICP	2.0			mg/L	0.3	2	08/21/08 10:31	ear/aeh
Sodium, dissolved	M200.7 ICP	32.0			mg/L	0.3	2	08/18/08 19:06	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		173			mg/L	2	20	08/08/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Total Alkalinity		174		*	mg/L	2	20	08/08/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.7			%			08/21/08 15:27	calc
Sum of Anions		4.1			meq/L	0.1	0.5	08/21/08 15:27	calc
Sum of Cations		4.5			meq/L	0.1	0.5	08/21/08 15:27	calc
Chloride	M300.0 - Ion Chromatography	7.0			mg/L	0.5	3	08/16/08 22:08	aml
Fluoride	M300.0 - Ion Chromatography	0.3	B	*	mg/L	0.1	0.5	08/16/08 22:08	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.99			mg/L	0.02	0.1	08/21/08 15:27	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.99		*	mg/L	0.02	0.1	08/06/08 19:22	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/06/08 19:22	pjb
Residue, Filterable (TDS) @180C	SM2540C	210			mg/L	10	20	08/07/08 16:33	tbd
Sulfate	300.0 - Ion Chromatography	13.7			mg/L	0.5	3	08/16/08 22:08	aml
TDS (calculated)	Calculation	216			mg/L	10	50	08/21/08 15:27	calc
TDS (ratio - measured/calculated)	Calculation	0.97						08/21/08 15:27	calc

Arizona license number: AZ0102

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: DUP080508

ACZ Sample ID: ***L70959-07***
Date Sampled: *08/05/08 00:00*
Date Received: *08/06/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	47.9			mg/L	0.2	1	08/18/08 19:10	aeh
Magnesium, dissolved	M200.7 ICP	21.7			mg/L	0.2	1	08/18/08 19:10	aeh
Potassium, dissolved	M200.7 ICP	2.5			mg/L	0.3	2	08/21/08 10:35	ear/aeh
Sodium, dissolved	M200.7 ICP	44.9			mg/L	0.3	2	08/18/08 19:10	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		234			mg/L	2	20	08/08/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Total Alkalinity		234		*	mg/L	2	20	08/08/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		6.0			%			08/21/08 15:27	calc
Sum of Anions		5.5			meq/L	0.1	0.5	08/21/08 15:27	calc
Sum of Cations		6.2			meq/L	0.1	0.5	08/21/08 15:27	calc
Chloride	M300.0 - Ion Chromatography	4.7			mg/L	0.5	3	08/16/08 22:26	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	08/16/08 22:26	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.11			mg/L	0.02	0.1	08/21/08 15:27	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.11		*	mg/L	0.02	0.1	08/06/08 19:27	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/06/08 19:27	pjb
Residue, Filterable (TDS) @180C	SM2540C	310			mg/L	10	20	08/07/08 16:35	tbd
Sulfate	300.0 - Ion Chromatography	32.5			mg/L	0.5	3	08/16/08 22:26	aml
TDS (calculated)	Calculation	295			mg/L	10	50	08/21/08 15:27	calc
TDS (ratio - measured/calculated)	Calculation	1.05						08/21/08 15:27	calc

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: EQB080508

ACZ Sample ID: ***L70959-08***
Date Sampled: *08/05/08 00:00*
Date Received: *08/06/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP		U		mg/L	0.2	1	08/18/08 19:13	aeh
Magnesium, dissolved	M200.7 ICP		U		mg/L	0.2	1	08/18/08 19:13	aeh
Potassium, dissolved	M200.7 ICP		U		mg/L	0.3	2	08/21/08 10:38	ear/aeh
Sodium, dissolved	M200.7 ICP		U		mg/L	0.3	2	08/18/08 19:13	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Total Alkalinity			U	*	mg/L	2	20	08/08/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		n/a			%			08/21/08 15:27	calc
Sum of Anions			U		meq/L	0.1	0.5	08/21/08 15:27	calc
Sum of Cations			U		meq/L	0.1	0.5	08/21/08 15:27	calc
Chloride	M300.0 - Ion Chromatography		U		mg/L	0.5	3	08/16/08 22:44	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	08/16/08 22:44	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.03	B		mg/L	0.02	0.1	08/21/08 15:27	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.04	B	*	mg/L	0.02	0.1	08/06/08 19:28	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.01	B	*	mg/L	0.01	0.05	08/06/08 19:28	pjb
Residue, Filterable (TDS) @180C	SM2540C		U	*	mg/L	10	20	08/07/08 16:36	tbd
Sulfate	300.0 - Ion Chromatography		U		mg/L	0.5	3	08/16/08 22:44	aml
TDS (calculated)	Calculation		U		mg/L	10	50	08/21/08 15:27	calc
TDS (ratio - measured/calculated)	Calculation	n/a						08/21/08 15:27	calc

Arizona license number: AZ0102

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: FB080508

ACZ Sample ID: ***L70959-09***
Date Sampled: *08/05/08 00:00*
Date Received: *08/06/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP		U		mg/L	0.2	1	08/18/08 19:16	aeh
Magnesium, dissolved	M200.7 ICP		U		mg/L	0.2	1	08/18/08 19:16	aeh
Potassium, dissolved	M200.7 ICP		U		mg/L	0.3	2	08/21/08 10:41	ear/aeh
Sodium, dissolved	M200.7 ICP		U		mg/L	0.3	2	08/18/08 19:16	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/08/08 0:00	tbd
Total Alkalinity			U	*	mg/L	2	20	08/08/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		n/a			%			08/21/08 15:27	calc
Sum of Anions		N/A			meq/L	0.1	0.5	08/21/08 15:27	calc
Sum of Cations			U		meq/L	0.1	0.5	08/21/08 15:27	calc
Chloride	M300.0 - Ion Chromatography		U		mg/L	0.5	3	08/16/08 23:02	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	08/16/08 23:02	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2		U		mg/L	0.02	0.1	08/21/08 15:27	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.02	0.1	08/06/08 19:30	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/06/08 19:30	pjb
Residue, Filterable (TDS) @180C	SM2540C		U	*	mg/L	10	20	08/07/08 16:38	tbd
Sulfate	300.0 - Ion Chromatography		U		mg/L	0.5	3	08/16/08 23:02	aml
TDS (calculated)	Calculation		U		mg/L	10	50	08/21/08 15:27	calc
TDS (ratio - measured/calculated)	Calculation	n/a						08/21/08 15:27	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L70959***
Project ID: 8720000

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249610													
WG249610PBW1	PBW	08/07/08 16:15				12.1	mg/L		-20	20			
WG249610LCSW2	LCSW	08/07/08 16:27	WC080722-2	820		781	mg/L	95.2	90	110			
WG249610PBW2	PBW	08/07/08 19:00				U	mg/L		-20	20			
WG249610LCSW5	LCSW	08/07/08 19:12	WC080722-2	820		786.3	mg/L	95.9	90	110			
WG249610PBW3	PBW	08/07/08 22:06				U	mg/L		-20	20			
WG249610LCSW8	LCSW	08/07/08 22:19	WC080722-2	820		782.6	mg/L	95.4	90	110			
L70959-03DUP	DUP	08/07/08 23:53			579	579.9	mg/L				0.2	20	
L70968-01DUP	DUP	08/08/08 1:03			6	5.5	mg/L				8.7	20	RA
WG249610PBW4	PBW	08/08/08 1:09				U	mg/L		-20	20			
WG249610LCSW11	LCSW	08/08/08 1:20	WC080722-2	820		787.9	mg/L	96.1	90	110			
WG249610LCSW14	LCSW	08/08/08 4:39	WC080722-2	820		789.3	mg/L	96.3	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250159													
WG250159ICV	ICV	08/18/08 17:30	II080717-3	100		99.65	mg/L	99.7	95	105			
WG250159ICB	ICB	08/18/08 17:34				U	mg/L		-0.6	0.6			
WG250159LFB	LFB	08/18/08 17:46	II080811-3	67.97008		69.38	mg/L	102.1	85	115			
L70959-01AS	AS	08/18/08 18:40	II080811-3	67.97008	37.8	104.81	mg/L	98.6	85	115			
L70959-01ASD	ASD	08/18/08 18:43	II080811-3	67.97008	37.8	106.29	mg/L	100.8	85	115	1.4	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250049													
WG250049ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG250049ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250049LFB1	LFB	08/16/08 17:00	WI080702-9	30		32.68	mg/L	108.9	90	110			
L70959-03AS	AS	08/16/08 20:56	WI080702-9	600	30	626	mg/L	99.3	90	110			
L70959-03DUP	DUP	08/16/08 21:14			30	32	mg/L				6.5	20	RA
L70974-04AS	AS	08/17/08 1:09	WI080702-9	30	33.5	62.68	mg/L	97.3	90	110			
L70974-04DUP	DUP	08/17/08 1:27			33.5	33.5	mg/L				0	20	
WG250049LFB2	LFB	08/17/08 1:45	WI080702-9	30		28.44	mg/L	94.8	90	110			

Hydro Geo Chem, Inc. ACZ Project ID: ***L70959***

Project ID: 8720000

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG250049													
WG250049ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG250049ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG250049LFB1	LFB	08/16/08 17:00	WI080702-9	1.5		1.55	mg/L	103.3	90	110			
L70959-03AS	AS	08/16/08 20:56	WI080702-9	30	U	27.7	mg/L	92.3	90	110			
L70959-03DUP	DUP	08/16/08 21:14			U	U	mg/L				0	20	RA
L70974-04AS	AS	08/17/08 1:09	WI080702-9	1.5	U	1.51	mg/L	100.7	90	110			
L70974-04DUP	DUP	08/17/08 1:27			U	U	mg/L				0	20	RA
WG250049LFB2	LFB	08/17/08 15:59	WI080702-9	1.5		1.49	mg/L	99.3	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250159													
WG250159ICV	ICV	08/18/08 17:30	II080717-3	100		101.54	mg/L	101.5	95	105			
WG250159ICB	ICB	08/18/08 17:34				U	mg/L		-0.6	0.6			
WG250159LFB	LFB	08/18/08 17:46	II080811-3	49.96908		50.49	mg/L	101	85	115			
L70959-01AS	AS	08/18/08 18:40	II080811-3	49.96908	19.5	71.86	mg/L	104.8	85	115			
L70959-01ASD	ASD	08/18/08 18:43	II080811-3	49.96908	19.5	72.84	mg/L	106.7	85	115	1.35	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249553													
WG249553ICV	ICV	08/06/08 19:08	WI080613-1	2.416		2.422	mg/L	100.2	90	110			
WG249553ICB	ICB	08/06/08 19:10				U	mg/L		-0.06	0.06			
WG249553LFB1	LFB	08/06/08 19:12	WI080312-1	2		2	mg/L	100	90	110			
L70959-01AS	AS	08/06/08 19:15	WI080312-1	2	.89	2.914	mg/L	101.2	90	110			
L70959-02DUP	DUP	08/06/08 19:17			.03	.037	mg/L				20.9	20	RA
WG249553LFB2	LFB	08/06/08 19:51	WI080312-1	2		2.057	mg/L	102.9	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249553													
WG249553ICV	ICV	08/06/08 19:08	WI080613-1	.609		.601	mg/L	98.7	90	110			
WG249553ICB	ICB	08/06/08 19:10				U	mg/L		-0.03	0.03			
WG249553LFB1	LFB	08/06/08 19:12	WI080312-1	1		.992	mg/L	99.2	90	110			
L70959-01AS	AS	08/06/08 19:15	WI080312-1	1		1.012	mg/L	101.2	90	110			
L70959-02DUP	DUP	08/06/08 19:17			U	U	mg/L				0	20	RA
WG249553LFB2	LFB	08/06/08 19:51	WI080312-1	1		.994	mg/L	99.4	90	110			

Hydro Geo Chem, Inc. ACZ Project ID: ***L70959***

Project ID: 8720000

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250208													
WG250208ICV	ICV	08/19/08 11:02	II080818-1	20		20.56	mg/L	102.8	95	105			
WG250208ICB	ICB	08/19/08 11:05				U	mg/L		-0.9	0.9			
WG250227													
WG250227LFB	LFB	08/19/08 13:21	II080811-3	99.76186		100.71	mg/L	101	85	115			
L70959-01AS	AS	08/19/08 14:10	II080811-3	99.76186	1.9	111.53	mg/L	109.9	85	115			
L70959-01ASD	ASD	08/19/08 14:13	II080811-3	99.76186	1.9	111.52	mg/L	109.9	85	115	0.01	20	
WG250354													
WG250354ICV	ICV	08/21/08 10:05	II080818-1	20		20.07	mg/L	100.4	95	105			
WG250354ICB	ICB	08/21/08 10:08				U	mg/L		-0.9	0.9			
WG250354LFB	LFB	08/21/08 10:22	II080811-3	99.76186		101.94	mg/L	102.2	85	115			
L71042-01AS	AS	08/21/08 10:54	II080811-3	99.76186	3.4	109.71	mg/L	106.6	85	115			
L71042-01ASD	ASD	08/21/08 10:58	II080811-3	99.76186	3.4	108.08	mg/L	104.9	85	115	1.5	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249625													
WG249625PBW	PBW	08/07/08 16:20				U	mg/L		-20	20			
WG249625LCSW	LCSW	08/07/08 16:21	PCN30201	260		262	mg/L	100.8	80	120			
L70959-06DUP	DUP	08/07/08 16:34			210	224	mg/L				6.5	20	
L70999-07DUP	DUP	08/07/08 16:49			U	U	mg/L				0	20	RA

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250159													
WG250159ICV	ICV	08/18/08 17:30	II080717-3	100		100.05	mg/L	100.1	95	105			
WG250159ICB	ICB	08/18/08 17:34				U	mg/L		-0.9	0.9			
WG250159LFB	LFB	08/18/08 17:46	II080811-3	98.21624		98.42	mg/L	100.2	85	115			
L70959-01AS	AS	08/18/08 18:40	II080811-3	98.21624	52.1	142.59	mg/L	92.1	85	115			
L70959-01ASD	ASD	08/18/08 18:43	II080811-3	98.21624	52.1	144.5	mg/L	94.1	85	115	1.33	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250049													
WG250049ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG250049ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
L70959-03AS	AS	08/16/08 20:56	WI080702-9	600	1330	1921	mg/L	98.5	90	110			
L70959-03DUP	DUP	08/16/08 21:14			1330	1455	mg/L				9	20	
WG250049LFB2	LFB	08/17/08 1:45	WI080702-9	30		30.01	mg/L	100	90	110			
L70974-04AS	AS	08/17/08 15:23	WI080702-9	300	423	712.7	mg/L	96.6	90	110			
L70974-04DUP	DUP	08/17/08 15:41			423	446.2	mg/L				5.3	20	
WG250049LFB1	LFB	08/19/08 17:22	WI080702-9	30		30.63	mg/L	102.1	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: ***L70959***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70959-01	WG250049	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70959-02	WG250049	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70959-03	WG250049	Chloride	M300.0 - Ion Chromatography	DH	Sample required dilution due to high TDS and/or EC value.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	DH	Sample required dilution due to high TDS and/or EC value.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250049	Sulfate	300.0 - Ion Chromatography	DH	Sample required dilution due to high TDS and/or EC value.
L70959-04	WG250049	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249610	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc.

ACZ Project ID: ***L70959***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70959-05	WG250049	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249610	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70959-06	WG250049	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249610	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70959-07	WG250049	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249610	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70959-08	WG250049	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249625	Residue, Filterable (TDS) @180C	SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249610	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L70959***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70959-09	WG250049	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249553	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249625	Residue, Filterable (TDS) @180C	SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249610	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc. ACZ Project ID: ***L70959***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70959
Date Received: 8/6/2008
Received By:
Date Printed: 8/6/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6628	3.7	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70959
Date Received: 8/6/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L70959-01	TM-06 MILLER		Y									
L70959-02	TM-43B		Y									
L70959-03	BF-01		Y									
L70959-04	SRC		Y									
L70959-05	BURKE		Y									
L70959-06	TM-15 MILLER		Y									
L70959-07	DUP080508		Y									
L70959-08	EQB080508		Y									
L70959-09	FB080508		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH _Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

August 25, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000T2.3
ACZ Project ID: L70943

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 05, 2008. This project has been assigned to ACZ's project number, L70943. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70943. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 25, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000T2.3
Sample ID: BMO-2008-10GU

ACZ Sample ID: ***L70943-01***
Date Sampled: *08/04/08 14:45*
Date Received: *08/05/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	649		*	mg/L	0.4	2	08/18/08 18:30	aeh
Magnesium, dissolved	M200.7 ICP	311			mg/L	0.4	2	08/18/08 18:30	aeh
Potassium, dissolved	M200.7 ICP	15.3		*	mg/L	0.6	3	08/19/08 14:03	aeh
Sodium, dissolved	M200.7 ICP	37.6			mg/L	0.6	3	08/18/08 18:30	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		984			mg/L	2	20	08/07/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Total Alkalinity		984			mg/L	2	20	08/07/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-6.1			%			08/25/08 10:47	calc
Sum of Anions		67.8			meq/L	0.1	0.5	08/25/08 10:47	calc
Sum of Cations		60.0			meq/L	0.1	0.5	08/25/08 10:47	calc
Chloride	M300.0 - Ion Chromatography	60		*	mg/L	10	50	08/16/08 19:07	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	2	10	08/16/08 19:07	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.13			mg/L	0.02	0.1	08/25/08 10:47	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.16		*	mg/L	0.02	0.1	08/05/08 21:21	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.03	B	*	mg/L	0.01	0.05	08/05/08 21:21	pjb
Residue, Filterable (TDS) @180C	SM2540C	3810			mg/L	10	20	08/07/08 16:23	tbd
Sulfate	300.0 - Ion Chromatography	2210		*	mg/L	30	100	08/21/08 15:10	aml
TDS (calculated)	Calculation	3870			mg/L	10	50	08/25/08 10:47	calc
TDS (ratio - measured/calculated)	Calculation	0.98						08/25/08 10:47	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L70943***

Project ID: 8720000T2.3

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249610													
WG249610PBW1	PBW	08/07/08 16:15				12.1	mg/L		-20	20			
WG249610LCSW2	LCSW	08/07/08 16:27	WC080722-2	820		781	mg/L	95.2	90	110			
WG249610PBW2	PBW	08/07/08 19:00				U	mg/L		-20	20			
WG249610LCSW5	LCSW	08/07/08 19:12	WC080722-2	820		786.3	mg/L	95.9	90	110			
WG249610PBW3	PBW	08/07/08 22:06				U	mg/L		-20	20			
WG249610LCSW8	LCSW	08/07/08 22:19	WC080722-2	820		782.6	mg/L	95.4	90	110			
L70959-03DUP	DUP	08/07/08 23:53			579	579.9	mg/L				0.2	20	
WG249610PBW4	PBW	08/08/08 1:09				U	mg/L		-20	20			
WG249610LCSW11	LCSW	08/08/08 1:20	WC080722-2	820		787.9	mg/L	96.1	90	110			
WG249610LCSW14	LCSW	08/08/08 4:39	WC080722-2	820		789.3	mg/L	96.3	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250159													
WG250159ICV	ICV	08/18/08 17:30	II080717-3	100		99.65	mg/L	99.7	95	105			
WG250159ICB	ICB	08/18/08 17:34				U	mg/L		-0.6	0.6			
WG250159LFB	LFB	08/18/08 17:46	II080811-3	67.97008		69.38	mg/L	102.1	85	115			
L70941-04AS	AS	08/18/08 18:03	II080811-3	67.97008	477	528.33	mg/L	75.5	85	115			M3
L70941-04ASD	ASD	08/18/08 18:07	II080811-3	67.97008	477	531.45	mg/L	80.1	85	115	0.59	20	M3

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250049													
WG250049ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG250049ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250049LFB1	LFB	08/16/08 17:00	WI080702-9	30		32.68	mg/L	108.9	90	110			
L70959-03AS	AS	08/16/08 20:56	WI080702-9	600	30	626	mg/L	99.3	90	110			
L70959-03DUP	DUP	08/16/08 21:14			30	32	mg/L				6.5	20	RA
WG250049LFB2	LFB	08/17/08 1:45	WI080702-9	30		28.44	mg/L	94.8	90	110			

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG250049													
WG250049ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG250049ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG250049LFB1	LFB	08/16/08 17:00	WI080702-9	1.5		1.55	mg/L	103.3	90	110			
L70959-03AS	AS	08/16/08 20:56	WI080702-9	30	U	27.7	mg/L	92.3	90	110			
L70959-03DUP	DUP	08/16/08 21:14			U	U	mg/L				0	20	RA
WG250049LFB2	LFB	08/17/08 15:59	WI080702-9	1.5		1.49	mg/L	99.3	90	110			

Hydro Geo Chem, Inc. ACZ Project ID: ***L70943***

Project ID: 8720000T2.3

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250159													
WG250159ICV	ICV	08/18/08 17:30	I080717-3	100		101.54	mg/L	101.5	95	105			
WG250159ICB	ICB	08/18/08 17:34				U	mg/L		-0.6	0.6			
WG250159LFB	LFB	08/18/08 17:46	I080811-3	49.96908		50.49	mg/L	101	85	115			
L70941-04AS	AS	08/18/08 18:03	I080811-3	49.96908	63.9	119.22	mg/L	110.7	85	115			
L70941-04ASD	ASD	08/18/08 18:07	I080811-3	49.96908	63.9	120.76	mg/L	113.8	85	115	1.28	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249473													
WG249473ICV	ICV	08/05/08 20:59	WI080613-1	2.416		2.38	mg/L	98.5	90	110			
WG249473ICB	ICB	08/05/08 21:00				U	mg/L		-0.06	0.06			
WG249473LFB	LFB	08/05/08 21:04	WI080312-1	2		1.923	mg/L	96.2	90	110			
L70919-01AS	AS	08/05/08 21:06	WI080312-1	2	.4	2.3	mg/L	95	90	110			
L70925-01DUP	DUP	08/05/08 21:09			U	U	mg/L				0	20	RA

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249473													
WG249473ICV	ICV	08/05/08 20:59	WI080613-1	.609		.611	mg/L	100.3	90	110			
WG249473ICB	ICB	08/05/08 21:00				U	mg/L		-0.03	0.03			
WG249473LFB	LFB	08/05/08 21:04	WI080312-1	1		.97	mg/L	97	90	110			
L70919-01AS	AS	08/05/08 21:06	WI080312-1	1	U	.943	mg/L	94.3	90	110			
L70925-01DUP	DUP	08/05/08 21:09			U	U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250208													
WG250208ICV	ICV	08/19/08 11:02	I080818-1	20		20.56	mg/L	102.8	95	105			
WG250208ICB	ICB	08/19/08 11:05				U	mg/L		-0.9	0.9			
WG250227													
WG250227LFB	LFB	08/19/08 13:21	I080811-3	99.76186		100.71	mg/L	101	85	115			
L70941-04AS	AS	08/19/08 13:37	I080811-3	99.76186	13.1	126.15	mg/L	113.3	85	115			
L70941-04ASD	ASD	08/19/08 13:40	I080811-3	99.76186	13.1	128.48	mg/L	115.7	85	115	1.83	20	MA

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249625													
WG249625PBW	PBW	08/07/08 16:20				U	mg/L		-20	20			
WG249625LCSW	LCSW	08/07/08 16:21	PCN30201	260		262	mg/L	100.8	80	120			
L70959-06DUP	DUP	08/07/08 16:34			210	224	mg/L				6.5	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L70943***

Project ID: 8720000T2.3

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250159													
WG250159ICV	ICV	08/18/08 17:30	II080717-3	100		100.05	mg/L	100.1	95	105			
WG250159ICB	ICB	08/18/08 17:34				U	mg/L		-0.9	0.9			
WG250159LFB	LFB	08/18/08 17:46	II080811-3	98.21624		98.42	mg/L	100.2	85	115			
L70941-04AS	AS	08/18/08 18:03	II080811-3	98.21624	59.6	152.17	mg/L	94.3	85	115			
L70941-04ASD	ASD	08/18/08 18:07	II080811-3	98.21624	59.6	152.36	mg/L	94.4	85	115	0.12	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250381													
WG250381ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG250381ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250381LFB	LFB	08/21/08 14:16	WI080702-9	30		28.14	mg/L	93.8	90	110			
L70800-06DUP	DUP	08/21/08 14:52			1560	1620	mg/L				3.8	20	
L70943-01AS	AS	08/21/08 15:28	WI080702-9	1500	2210	3152	mg/L	62.8	90	110			M2

ACZ Laboratories, Inc.
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Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L70943***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70943-01	WG250159	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG250227	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG250049	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	DH	Sample required dilution due to high TDS and/or EC value.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249473	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG250381	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

Hydro Geo Chem, Inc. ACZ Project ID: ***L70943***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
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Sample Receipt

Hydro Geo Chem, Inc.
8720000T2.3

ACZ Project ID: L70943
Date Received: 8/5/2008
Received By:
Date Printed: 8/5/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6622	3.2	13

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

Telephone extension changed in Report to section.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000T2.3

ACZ Project ID: L70943
Date Received: 8/5/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L70943-01	WELL 10 GU		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L70943

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc.
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd Tucson, AZ 85705
Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc
E-mail: Jimn@hgcinc.com
Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc
E-mail: Jimn@hgcinc.com
Address: 51 W. Wetmore Rd. Tucson, AZ 85705
Telephone: (520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 8720000 T2,3
Reporting state for compliance testing: AZ
Sampler's Name:
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB-GW								
WELL 10 GW	8-4-08/14:45	GW	3	X								

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	8-4-08/15:30	WPL	8-5-08 10:37

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

August 21, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000
ACZ Project ID: L70942

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on August 05, 2008. This project has been assigned to ACZ's project number, L70942. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70942. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 21, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: TM-43A

ACZ Sample ID: ***L70942-01***
Date Sampled: *08/04/08 09:44*
Date Received: *08/05/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	577		*	mg/L	0.4	2	08/18/08 18:13	aeh
Magnesium, dissolved	M200.7 ICP	188			mg/L	0.4	2	08/18/08 18:13	aeh
Potassium, dissolved	M200.7 ICP	4.7		*	mg/L	0.6	3	08/19/08 13:54	aeh
Sodium, dissolved	M200.7 ICP	40.5			mg/L	0.6	3	08/18/08 18:13	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		658			mg/L	2	20	08/07/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Total Alkalinity		658			mg/L	2	20	08/07/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		5.0			%			08/20/08 0:00	calc
Sum of Anions		41.8			meq/L	0.1	0.5	08/20/08 0:00	calc
Sum of Cations		46.2			meq/L	0.1	0.5	08/20/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	30		*	mg/L	1	5	08/14/08 8:43	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.2	1	08/14/08 8:43	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.31			mg/L	0.02	0.1	08/20/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.31		*	mg/L	0.02	0.1	08/05/08 21:17	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/05/08 21:17	pjb
Residue, Filterable (TDS) @180C	SM2540C	2950			mg/L	10	20	08/07/08 13:32	kah
Sulfate	300.0 - Ion Chromatography	1320			mg/L	30	100	08/16/08 0:18	aml
TDS (calculated)	Calculation	2560			mg/L	10	50	08/20/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.15						08/20/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: TM-43

ACZ Sample ID: ***L70942-02***
Date Sampled: *08/04/08 13:00*
Date Received: *08/05/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	10.4		*	mg/L	0.2	1	08/18/08 18:17	aeh
Magnesium, dissolved	M200.7 ICP	5.8			mg/L	0.2	1	08/18/08 18:17	aeh
Potassium, dissolved	M200.7 ICP	2.0		*	mg/L	0.3	2	08/19/08 13:57	aeh
Sodium, dissolved	M200.7 ICP	79.7			mg/L	0.3	2	08/18/08 18:17	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		174			mg/L	2	20	08/07/08 0:00	tbd
Carbonate as CaCO3		12	B		mg/L	2	20	08/07/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Total Alkalinity		186			mg/L	2	20	08/07/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		5.9			%			08/20/08 0:00	calc
Sum of Anions		4.0			meq/L	0.1	0.5	08/20/08 0:00	calc
Sum of Cations		4.5			meq/L	0.1	0.5	08/20/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	12	B	*	mg/L	5	30	08/14/08 9:02	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	1	5	08/14/08 9:02	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.25			mg/L	0.02	0.1	08/20/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.25		*	mg/L	0.02	0.1	08/05/08 21:19	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	08/05/08 21:19	pjb
Residue, Filterable (TDS) @180C	SM2540C	270			mg/L	10	20	08/07/08 13:33	kah
Sulfate	300.0 - Ion Chromatography		U	*	mg/L	5	30	08/16/08 0:36	aml
TDS (calculated)	Calculation	227			mg/L	10	50	08/20/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.19						08/20/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: GL-03

ACZ Sample ID: ***L70942-03***
Date Sampled: *08/04/08 14:55*
Date Received: *08/05/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	68.7		*	mg/L	0.2	1	08/18/08 18:26	aeh
Magnesium, dissolved	M200.7 ICP	38.9			mg/L	0.2	1	08/18/08 18:26	aeh
Potassium, dissolved	M200.7 ICP	3.4		*	mg/L	0.3	2	08/19/08 14:00	aeh
Sodium, dissolved	M200.7 ICP	19.5			mg/L	0.3	2	08/18/08 18:26	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		278			mg/L	2	20	08/07/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	08/07/08 0:00	tbd
Total Alkalinity		278			mg/L	2	20	08/07/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.2			%			08/20/08 0:00	calc
Sum of Anions		6.9			meq/L	0.1	0.5	08/20/08 0:00	calc
Sum of Cations		7.5			meq/L	0.1	0.5	08/20/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	21.4			mg/L	0.5	3	08/14/08 9:20	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	08/14/08 9:20	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.60			mg/L	0.02	0.1	08/20/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.62		*	mg/L	0.02	0.1	08/05/08 21:20	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.02	B	*	mg/L	0.01	0.05	08/05/08 21:20	pjb
Residue, Filterable (TDS) @180C	SM2540C	400			mg/L	10	20	08/07/08 13:34	kah
Sulfate	300.0 - Ion Chromatography	36.1			mg/L	0.5	3	08/14/08 9:20	aml
TDS (calculated)	Calculation	358			mg/L	10	50	08/20/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.12						08/20/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L70942***
Project ID: 8720000

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249610													
WG249610PBW1	PBW	08/07/08 16:15				12.1	mg/L		-20	20			
WG249610LCSW2	LCSW	08/07/08 16:27	WC080722-2	820		781	mg/L	95.2	90	110			
WG249610PBW2	PBW	08/07/08 19:00				U	mg/L		-20	20			
WG249610LCSW5	LCSW	08/07/08 19:12	WC080722-2	820		786.3	mg/L	95.9	90	110			
WG249610PBW3	PBW	08/07/08 22:06				U	mg/L		-20	20			
WG249610LCSW8	LCSW	08/07/08 22:19	WC080722-2	820		782.6	mg/L	95.4	90	110			
L70959-03DUP	DUP	08/07/08 23:53			579	579.9	mg/L				0.2	20	
WG249610PBW4	PBW	08/08/08 1:09				U	mg/L		-20	20			
WG249610LCSW11	LCSW	08/08/08 1:20	WC080722-2	820		787.9	mg/L	96.1	90	110			
WG249610LCSW14	LCSW	08/08/08 4:39	WC080722-2	820		789.3	mg/L	96.3	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250159													
WG250159ICV	ICV	08/18/08 17:30	II080717-3	100		99.65	mg/L	99.7	95	105			
WG250159ICB	ICB	08/18/08 17:34				U	mg/L		-0.6	0.6			
WG250159LFB	LFB	08/18/08 17:46	II080811-3	67.97008		69.38	mg/L	102.1	85	115			
L70941-04AS	AS	08/18/08 18:03	II080811-3	67.97008	477	528.33	mg/L	75.5	85	115			M3
L70941-04ASD	ASD	08/18/08 18:07	II080811-3	67.97008	477	531.45	mg/L	80.1	85	115	0.59	20	M3

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG249905													
WG249905ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249905ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG249905LFB1	LFB	08/13/08 20:21	WI080702-9	30		28.83	mg/L	96.1	90	110			
WG249905LFB2	LFB	08/14/08 5:06	WI080702-9	30		29.43	mg/L	98.1	90	110			
L70933-03AS	AS	08/14/08 5:42	WI080702-9	60	99	157	mg/L	96.7	90	110			
L70933-03DUP	DUP	08/14/08 6:01			99	105.1	mg/L				6	20	

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG249905													
WG249905ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249905ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG249905LFB1	LFB	08/13/08 20:21	WI080702-9	1.5		1.38	mg/L	92	90	110			
WG249905LFB2	LFB	08/14/08 5:06	WI080702-9	1.5		1.35	mg/L	90	90	110			
L70933-03AS	AS	08/14/08 5:42	WI080702-9	3	U	2.86	mg/L	95.3	90	110			
L70933-03DUP	DUP	08/14/08 6:01			U	U	mg/L				0	20	RA

Hydro Geo Chem, Inc. ACZ Project ID: ***L70942***

Project ID: 8720000

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250159													
WG250159ICV	ICV	08/18/08 17:30	I080717-3	100		101.54	mg/L	101.5	95	105			
WG250159ICB	ICB	08/18/08 17:34				U	mg/L		-0.6	0.6			
WG250159LFB	LFB	08/18/08 17:46	I080811-3	49.96908		50.49	mg/L	101	85	115			
L70941-04AS	AS	08/18/08 18:03	I080811-3	49.96908	63.9	119.22	mg/L	110.7	85	115			
L70941-04ASD	ASD	08/18/08 18:07	I080811-3	49.96908	63.9	120.76	mg/L	113.8	85	115	1.28	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249473													
WG249473ICV	ICV	08/05/08 20:59	WI080613-1	2.416		2.38	mg/L	98.5	90	110			
WG249473ICB	ICB	08/05/08 21:00				U	mg/L		-0.06	0.06			
WG249473LFB	LFB	08/05/08 21:04	WI080312-1	2		1.923	mg/L	96.2	90	110			
L70919-01AS	AS	08/05/08 21:06	WI080312-1	2	.4	2.3	mg/L	95	90	110			
L70925-01DUP	DUP	08/05/08 21:09			U	U	mg/L				0	20	RA

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249473													
WG249473ICV	ICV	08/05/08 20:59	WI080613-1	.609		.611	mg/L	100.3	90	110			
WG249473ICB	ICB	08/05/08 21:00				U	mg/L		-0.03	0.03			
WG249473LFB	LFB	08/05/08 21:04	WI080312-1	1		.97	mg/L	97	90	110			
L70919-01AS	AS	08/05/08 21:06	WI080312-1	1	U	.943	mg/L	94.3	90	110			
L70925-01DUP	DUP	08/05/08 21:09			U	U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250208													
WG250208ICV	ICV	08/19/08 11:02	I080818-1	20		20.56	mg/L	102.8	95	105			
WG250208ICB	ICB	08/19/08 11:05				U	mg/L		-0.9	0.9			
WG250227													
WG250227LFB	LFB	08/19/08 13:21	I080811-3	99.76186		100.71	mg/L	101	85	115			
L70941-04AS	AS	08/19/08 13:37	I080811-3	99.76186	13.1	126.15	mg/L	113.3	85	115			
L70941-04ASD	ASD	08/19/08 13:40	I080811-3	99.76186	13.1	128.48	mg/L	115.7	85	115	1.83	20	MA

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249600													
WG249600PBW	PBW	08/07/08 13:15				U	mg/L		-20	20			
WG249600LCSW	LCSW	08/07/08 13:15	PCN30201	260		268	mg/L	103.1	80	120			
L70942-03DUP	DUP	08/07/08 13:34			400	390	mg/L				2.5	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L70942***
Project ID: 8720000

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG250159													
WG250159ICV	ICV	08/18/08 17:30	I080717-3	100		100.05	mg/L	100.1	95	105			
WG250159ICB	ICB	08/18/08 17:34				U	mg/L		-0.9	0.9			
WG250159LFB	LFB	08/18/08 17:46	I080811-3	98.21624		98.42	mg/L	100.2	85	115			
L70941-04AS	AS	08/18/08 18:03	I080811-3	98.21624	59.6	152.17	mg/L	94.3	85	115			
L70941-04ASD	ASD	08/18/08 18:07	I080811-3	98.21624	59.6	152.36	mg/L	94.4	85	115	0.12	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG249905													
WG249905ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG249905ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG249905LFB1	LFB	08/13/08 20:21	WI080702-9	30		30.06	mg/L	100.2	90	110			
WG249905LFB2	LFB	08/14/08 5:06	WI080702-9	30		29.86	mg/L	99.5	90	110			
L70933-03AS	AS	08/15/08 21:17	WI080702-9	1500	1350	2769	mg/L	94.6	90	110			
L70933-03DUP	DUP	08/15/08 21:35			1350	1342	mg/L				0.6	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L70942***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70942-01	WG250159	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG250227	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG249905	Chloride	M300.0 - Ion Chromatography	DH	Sample required dilution due to high TDS and/or EC value.
		Fluoride	M300.0 - Ion Chromatography	DH	Sample required dilution due to high TDS and/or EC value.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249473	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70942-02	WG250159	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG250227	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG249905	Chloride	M300.0 - Ion Chromatography	D1	Sample required dilution due to matrix.
		Fluoride	M300.0 - Ion Chromatography	D1	Sample required dilution due to matrix.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249473	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249905	Sulfate	300.0 - Ion Chromatography	D1	Sample required dilution due to matrix.
L70942-03	WG250159	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG250227	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG249905	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249473	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70942
Date Received: 8/5/2008
Received By:
Date Printed: 8/5/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
2119	1.5	13

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70942
Date Received: 8/5/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L70942-01	TM-43A		Y									
L70942-02	TM-43		Y									
L70942-03	GL-03		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L4044

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: HydroGeoChem Inc
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd
Tucson AZ 85705
Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc
E-mail: jimn@hgcinc.com
Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc
E-mail: jimn@hgcinc.com
Address: 51 W. Wetmore Rd.
Tucson, AZ 85705
Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 87200200
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB-GW							
TM-43A	8-4-08 : 9:44	GW	3	X							
TM-43	8-4-08 : 13:00	GW	3	X							
GL-03	8-4-08 : 14:55	GW	3	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	8-4-08 1520		8-5-08 10:45

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

August 18, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000
ACZ Project ID: L70861

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 31, 2008. This project has been assigned to ACZ's project number, L70861. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70861. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 18, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: FULTZ

ACZ Sample ID: ***L70861-01***
Date Sampled: *07/29/08 16:40*
Date Received: *07/31/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	152			mg/L	1	5	08/13/08 18:14	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: COB MW-1

ACZ Sample ID: ***L70861-02***
Date Sampled: *07/30/08 08:00*
Date Received: *07/31/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	273			mg/L	0.2	1	08/14/08 20:45	ear/aeh
Magnesium, dissolved	M200.7 ICP	69.3			mg/L	0.2	1	08/14/08 20:45	ear/aeh
Potassium, dissolved	M200.7 ICP	8.0			mg/L	0.3	2	08/14/08 20:45	ear/aeh
Sodium, dissolved	M200.7 ICP	58.9			mg/L	0.3	2	08/14/08 20:45	ear/aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		223			mg/L	2	20	08/04/08 0:00	gkj
Carbonate as CaCO3			U		mg/L	2	20	08/04/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	08/04/08 0:00	gkj
Total Alkalinity		223			mg/L	2	20	08/04/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.8			%			08/18/08 14:42	calc
Sum of Anions		20.5			meq/L	0.1	0.5	08/18/08 14:42	calc
Sum of Cations		22.1			meq/L	0.1	0.5	08/18/08 14:42	calc
Chloride	M300.0 - Ion Chromatography	19.8		*	mg/L	0.5	3	08/12/08 3:11	aml
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	08/12/08 3:11	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.50			mg/L	0.02	0.1	08/18/08 14:42	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.50			mg/L	0.02	0.1	07/31/08 19:38	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U		mg/L	0.01	0.05	07/31/08 19:38	pjb
Residue, Filterable (TDS) @180C	SM2540C	1500			mg/L	10	20	08/04/08 13:33	tbd
Sulfate	300.0 - Ion Chromatography	730			mg/L	10	50	08/13/08 18:32	aml
TDS (calculated)	Calculation	1300			mg/L	10	50	08/18/08 14:42	calc
TDS (ratio - measured/calculated)	Calculation	1.15						08/18/08 14:42	calc

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: COB WL

ACZ Sample ID: ***L70861-03***
Date Sampled: *07/30/08 09:17*
Date Received: *07/31/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	130			mg/L	0.2	1	08/14/08 20:49	ear/aeh
Magnesium, dissolved	M200.7 ICP	35.0			mg/L	0.2	1	08/14/08 20:49	ear/aeh
Potassium, dissolved	M200.7 ICP	7.5			mg/L	0.3	2	08/14/08 20:49	ear/aeh
Sodium, dissolved	M200.7 ICP	51.5			mg/L	0.3	2	08/14/08 20:49	ear/aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		274			mg/L	2	20	08/04/08 0:00	gkj
Carbonate as CaCO3			U		mg/L	2	20	08/04/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	08/04/08 0:00	gkj
Total Alkalinity		274			mg/L	2	20	08/04/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.0			%			08/18/08 14:42	calc
Sum of Anions		10.9			meq/L	0.1	0.5	08/18/08 14:42	calc
Sum of Cations		11.8			meq/L	0.1	0.5	08/18/08 14:42	calc
Chloride	M300.0 - Ion Chromatography	110		*	mg/L	1	5	08/13/08 18:50	aml
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	08/12/08 3:30	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	4.02			mg/L	0.06	0.3	08/18/08 14:42	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	4.02			mg/L	0.06	0.3	07/31/08 20:00	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U		mg/L	0.01	0.05	07/31/08 19:39	pjb
Residue, Filterable (TDS) @180C	SM2540C	700			mg/L	10	20	08/04/08 13:34	tbd
Sulfate	300.0 - Ion Chromatography	97.1			mg/L	0.5	3	08/12/08 3:30	aml
TDS (calculated)	Calculation	613			mg/L	10	50	08/18/08 14:42	calc
TDS (ratio - measured/calculated)	Calculation	1.14						08/18/08 14:42	calc

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: COB MW-2

ACZ Sample ID: ***L70861-04***
Date Sampled: *07/30/08 10:20*
Date Received: *07/31/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	66.3			mg/L	0.2	1	08/14/08 20:53	ear/aeh
Magnesium, dissolved	M200.7 ICP	9.0			mg/L	0.2	1	08/14/08 20:53	ear/aeh
Potassium, dissolved	M200.7 ICP	2.1			mg/L	0.3	2	08/14/08 20:53	ear/aeh
Sodium, dissolved	M200.7 ICP	26.6			mg/L	0.3	2	08/14/08 20:53	ear/aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		158			mg/L	2	20	08/04/08 0:00	gkj
Carbonate as CaCO3			U		mg/L	2	20	08/04/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	08/04/08 0:00	gkj
Total Alkalinity		158			mg/L	2	20	08/04/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.0			%			08/18/08 14:42	calc
Sum of Anions		4.9			meq/L	0.1	0.5	08/18/08 14:42	calc
Sum of Cations		5.2			meq/L	0.1	0.5	08/18/08 14:42	calc
Chloride	M300.0 - Ion Chromatography	19.9		*	mg/L	0.5	3	08/14/08 2:23	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	08/14/08 2:23	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	6.80			mg/L	0.06	0.3	08/18/08 14:42	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	6.80	H		mg/L	0.06	0.3	08/01/08 19:57	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U		mg/L	0.01	0.05	07/31/08 19:40	pjb
Residue, Filterable (TDS) @180C	SM2540C	330			mg/L	10	20	08/04/08 13:36	tbd
Sulfate	300.0 - Ion Chromatography	37.6		*	mg/L	0.5	3	08/14/08 2:23	aml
TDS (calculated)	Calculation	286			mg/L	10	50	08/18/08 14:42	calc
TDS (ratio - measured/calculated)	Calculation	1.15						08/18/08 14:42	calc

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: COB MW-3

ACZ Sample ID: ***L70861-05***
Date Sampled: *07/30/08 11:27*
Date Received: *07/31/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	66.1			mg/L	0.2	1	08/14/08 21:04	ear/aeh
Magnesium, dissolved	M200.7 ICP	9.2			mg/L	0.2	1	08/14/08 21:04	ear/aeh
Potassium, dissolved	M200.7 ICP	2.4			mg/L	0.3	2	08/14/08 21:04	ear/aeh
Sodium, dissolved	M200.7 ICP	26.5			mg/L	0.3	2	08/14/08 21:04	ear/aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		149			mg/L	2	20	08/04/08 0:00	gkj
Carbonate as CaCO3			U		mg/L	2	20	08/04/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	08/04/08 0:00	gkj
Total Alkalinity		149		*	mg/L	2	20	08/04/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.0			%			08/18/08 14:43	calc
Sum of Anions		5.0			meq/L	0.1	0.5	08/18/08 14:43	calc
Sum of Cations		5.2			meq/L	0.1	0.5	08/18/08 14:43	calc
Chloride	M300.0 - Ion Chromatography	16.1		*	mg/L	0.5	3	08/14/08 2:41	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	08/14/08 2:41	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.41			mg/L	0.02	0.1	08/18/08 14:43	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.41			mg/L	0.02	0.1	07/31/08 19:41	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U		mg/L	0.01	0.05	07/31/08 19:41	pjb
Residue, Filterable (TDS) @180C	SM2540C	320			mg/L	10	20	08/04/08 13:37	tbd
Sulfate	300.0 - Ion Chromatography	67.3		*	mg/L	0.5	3	08/14/08 2:41	aml
TDS (calculated)	Calculation	288			mg/L	10	50	08/18/08 14:43	calc
TDS (ratio - measured/calculated)	Calculation	1.11						08/18/08 14:43	calc

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: RUIZ

ACZ Sample ID: ***L70861-06***
Date Sampled: *07/30/08 12:35*
Date Received: *07/31/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	243		*	mg/L	5	30	08/15/08 20:22	aml

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** Please refer to Qualifier Reports for details.*

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: WEED

ACZ Sample ID: ***L70861-07***
Date Sampled: *07/30/08 13:15*
Date Received: *07/31/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	34.1			mg/L	0.2	1	08/14/08 21:07	ear/aeh
Magnesium, dissolved	M200.7 ICP	13.6			mg/L	0.2	1	08/14/08 21:07	ear/aeh
Potassium, dissolved	M200.7 ICP	2.2			mg/L	0.3	2	08/14/08 21:07	ear/aeh
Sodium, dissolved	M200.7 ICP	29.4			mg/L	0.3	2	08/14/08 21:07	ear/aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		163			mg/L	2	20	08/04/08 0:00	gkj
Carbonate as CaCO3		2	B		mg/L	2	20	08/04/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	08/04/08 0:00	gkj
Total Alkalinity		165		*	mg/L	2	20	08/04/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.5			%			08/18/08 14:43	calc
Sum of Anions		3.9			meq/L	0.1	0.5	08/18/08 14:43	calc
Sum of Cations		4.1			meq/L	0.1	0.5	08/18/08 14:43	calc
Chloride	M300.0 - Ion Chromatography	10.1		*	mg/L	0.5	3	08/14/08 3:54	aml
Fluoride	M300.0 - Ion Chromatography	0.3	B	*	mg/L	0.1	0.5	08/14/08 3:54	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.92			mg/L	0.02	0.1	08/18/08 14:43	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.92			mg/L	0.02	0.1	07/31/08 19:44	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/31/08 19:44	pjb
Residue, Filterable (TDS) @180C	SM2540C	230			mg/L	10	20	08/04/08 13:38	tbd
Sulfate	300.0 - Ion Chromatography	11.5		*	mg/L	0.5	3	08/14/08 3:54	aml
TDS (calculated)	Calculation	209			mg/L	10	50	08/18/08 14:43	calc
TDS (ratio - measured/calculated)	Calculation	1.10						08/18/08 14:43	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L70861***

Project ID: 8720000

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249346													
WG249346PBW1	PBW	08/04/08 15:10				3.1	mg/L		-20	20			
WG249346LCSW2	LCSW	08/04/08 15:21	WC080722-2	820		782.1	mg/L	95.4	90	110			
L70861-04DUP	DUP	08/04/08 17:59			158	158.6	mg/L				0.4	20	
WG249346PBW2	PBW	08/04/08 18:05				U	mg/L		-20	20			
WG249346LCSW5	LCSW	08/04/08 18:18	WC080722-2	820		788	mg/L	96.1	90	110			
L70878-06DUP	DUP	08/04/08 19:44			12	12.4	mg/L				3.3	20	RA
WG249346PBW3	PBW	08/04/08 21:15				U	mg/L		-20	20			
WG249346LCSW8	LCSW	08/04/08 21:27	WC080722-2	820		787.9	mg/L	96.1	90	110			
WG249346PBW4	PBW	08/05/08 1:34				U	mg/L		-20	20			
WG249346LCSW11	LCSW	08/05/08 1:47	WC080722-2	820		796	mg/L	97.1	90	110			
WG249346LCSW14	LCSW	08/05/08 4:20	WC080722-2	820		793.9	mg/L	96.8	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249973													
WG249973ICV	ICV	08/14/08 20:13	II080717-3	100		95.07	mg/L	95.1	95	105			
WG249973ICB	ICB	08/14/08 20:17				U	mg/L		-0.6	0.6			
WG249973LFB	LFB	08/14/08 20:31	II080811-3	67.97008		65.04	mg/L	95.7	85	115			
L70729-01AS	AS	08/14/08 20:38	II080811-3	67.97008	2.1	70.03	mg/L	99.9	85	115			
L70729-01ASD	ASD	08/14/08 20:42	II080811-3	67.97008	2.1	71.34	mg/L	101.9	85	115	1.85	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG249769LFB	LFB	08/11/08 19:02	WI080702-9	30		30.35	mg/L	101.2	90	110			
L70800-05AS	AS	08/11/08 23:52	WI080702-9	30	1.9	31.23	mg/L	97.8	90	110			
L70800-05DUP	DUP	08/12/08 0:10			1.9	1.95	mg/L				2.6	20	RA
WG249905													
WG249905ICV	ICV	08/11/08 15:32	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG249905ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG249905LFB1	LFB	08/13/08 20:21	WI080702-9	30		28.83	mg/L	96.1	90	110			
L70755-09AS	AS	08/14/08 1:11	WI080702-9	30	U	30.65	mg/L	102.2	90	110			
L70755-09DUP	DUP	08/14/08 1:29			U	U	mg/L				0	20	RA
WG249905LFB2	LFB	08/14/08 5:06	WI080702-9	30		29.43	mg/L	98.1	90	110			

Hydro Geo Chem, Inc. ACZ Project ID: ***L70861***

Project ID: 8720000

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG249769LFB	LFB	08/11/08 19:02	WI080702-9	1.5		1.45	mg/L	96.7	90	110			
L70800-05AS	AS	08/11/08 23:52	WI080702-9	1.5	U	1.83	mg/L	122	90	110			M1
L70800-05DUP	DUP	08/12/08 0:10			U	U	mg/L				0	20	RA
WG249905													
WG249905ICV	ICV	08/11/08 15:32	WI080521-1	4		4.07	mg/L	101.8	90	110			
WG249905ICB	ICB	08/11/08 15:50				U	mg/L		-0.3	0.3			
WG249905LFB1	LFB	08/13/08 20:21	WI080702-9	1.5		1.38	mg/L	92	90	110			
L70755-09AS	AS	08/14/08 1:11	WI080702-9	1.5	U	1.38	mg/L	92	90	110			
L70755-09DUP	DUP	08/14/08 1:29			U	U	mg/L				0	20	RA
WG249905LFB2	LFB	08/14/08 5:06	WI080702-9	1.5		1.35	mg/L	90	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249973													
WG249973ICV	ICV	08/14/08 20:13	II080717-3	100		96.19	mg/L	96.2	95	105			
WG249973ICB	ICB	08/14/08 20:17				U	mg/L		-0.6	0.6			
WG249973LFB	LFB	08/14/08 20:31	II080811-3	49.96908		47.61	mg/L	95.3	85	115			
L70729-01AS	AS	08/14/08 20:38	II080811-3	49.96908	1.9	51.58	mg/L	99.4	85	115			
L70729-01ASD	ASD	08/14/08 20:42	II080811-3	49.96908	1.9	52.63	mg/L	101.5	85	115	2.02	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249221													
WG249221ICV	ICV	07/31/08 19:02	WI080613-1	2.416		2.383	mg/L	98.6	90	110			
WG249221ICB	ICB	07/31/08 19:03				U	mg/L		-0.06	0.06			
WG249221LFB1	LFB	07/31/08 19:06	WI080312-1	2		1.961	mg/L	98.1	90	110			
L70847-04DUP	DUP	07/31/08 19:29			1.12	1.137	mg/L				1.5	20	
WG249221LFB2	LFB	07/31/08 19:43	WI080312-1	2		1.987	mg/L	99.4	90	110			
L70861-07DUP	DUP	07/31/08 19:45			1.92	1.886	mg/L				1.8	20	
L70861-07AS	AS	07/31/08 19:50	WI080312-1	2	1.92	3.926	mg/L	100.3	90	110			
L70847-03AS	AS	07/31/08 19:59	WI080312-1	10	4.2	14.87	mg/L	106.7	90	110			
WG249291													
WG249291ICV	ICV	08/01/08 19:14	WI080613-1	2.416		2.441	mg/L	101	90	110			
WG249291ICB	ICB	08/01/08 19:15				U	mg/L		-0.06	0.06			
WG249291LFB	LFB	08/01/08 19:19	WI080312-1	2		2.021	mg/L	101.1	90	110			
L70868-01AS	AS	08/01/08 19:23	WI080312-1	2	.1	2.136	mg/L	101.8	90	110			
L70883-01DUP	DUP	08/01/08 20:00			12.8	12.84	mg/L				0.3	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L70861***
Project ID: 8720000

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249221													
WG249221ICV	ICV	07/31/08 19:02	WI080613-1	.609		.614	mg/L	100.8	90	110			
WG249221ICB	ICB	07/31/08 19:03				U	mg/L		-0.03	0.03			
WG249221LFB1	LFB	07/31/08 19:06	WI080312-1	1		.983	mg/L	98.3	90	110			
L70847-03AS	AS	07/31/08 19:26	WI080312-1	1	.63	1.563	mg/L	93.3	90	110			
L70847-04DUP	DUP	07/31/08 19:29			.15	.149	mg/L				0.7	20	
WG249221LFB2	LFB	07/31/08 19:43	WI080312-1	1		.98	mg/L	98	90	110			
L70861-07DUP	DUP	07/31/08 19:45			U	U	mg/L				0	20	RA
L70861-07AS	AS	07/31/08 19:50	WI080312-1	1	U	1.009	mg/L	100.9	90	110			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249973													
WG249973ICV	ICV	08/14/08 20:13	II080717-3	20		20.42	mg/L	102.1	95	105			
WG249973ICB	ICB	08/14/08 20:17				U	mg/L		-0.9	0.9			
WG249973LFB	LFB	08/14/08 20:31	II080811-3	99.76186		99.86	mg/L	100.1	85	115			
L70729-01AS	AS	08/14/08 20:38	II080811-3	99.76186	1.8	110.05	mg/L	108.5	85	115			
L70729-01ASD	ASD	08/14/08 20:42	II080811-3	99.76186	1.8	113.12	mg/L	111.6	85	115	2.75	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249358													
WG249358PBW	PBW	08/04/08 13:10				U	mg/L		-20	20			
WG249358LCSW	LCSW	08/04/08 13:11	PCN30200	260		278	mg/L	106.9	80	120			
L70861-07DUP	DUP	08/04/08 13:39			230	230	mg/L				0	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249973													
WG249973ICV	ICV	08/14/08 20:13	II080717-3	100		101.37	mg/L	101.4	95	105			
WG249973ICB	ICB	08/14/08 20:17				U	mg/L		-0.9	0.9			
WG249973LFB	LFB	08/14/08 20:31	II080811-3	98.21624		98.55	mg/L	100.3	85	115			
L70729-01AS	AS	08/14/08 20:38	II080811-3	98.21624	253	343.89	mg/L	92.5	85	115			
L70729-01ASD	ASD	08/14/08 20:42	II080811-3	98.21624	253	348.77	mg/L	97.5	85	115	1.41	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L70861***

Project ID: 8720000

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG249769LFB	LFB	08/11/08 19:02	WI080702-9	30		29.9	mg/L	99.7	90	110			
L70800-05AS	AS	08/11/08 23:52	WI080702-9	30	11.3	41.78	mg/L	101.6	90	110			
L70800-05DUP	DUP	08/12/08 0:10			11.3	11.77	mg/L				4.1	20	
WG249905													
WG249905ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG249905ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG249905LFB1	LFB	08/13/08 20:21	WI080702-9	30		30.06	mg/L	100.2	90	110			
L70755-09AS	AS	08/14/08 1:11	WI080702-9	30	U	31.15	mg/L	103.8	90	110			
L70755-09DUP	DUP	08/14/08 1:29			U	U	mg/L				0	20	RA
WG249905LFB2	LFB	08/14/08 5:06	WI080702-9	30		29.86	mg/L	99.5	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: ***L70861***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70861-02	WG249769	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70861-03	WG249769	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70861-04	WG249905	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70861-05	WG249905	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249346	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70861-06	WG249905	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70861-07	WG249905	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249221	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249905	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249346	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70861
Date Received: 7/31/2008
Received By:
Date Printed: 7/31/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?	X		
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6572	1	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

Line 3 time changed.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70861
Date Received: 7/31/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L70861-01	FULTZ									X		
L70861-02	COB MW-1		Y									
L70861-03	COB WL		Y									
L70861-04	COB MW-2		Y									
L70861-05	COB MW-3		Y									
L70861-06	RUIZ									X		
L70861-07	WEED		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH _Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L70861

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro GeoChem Inc
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: Hydro Geo Chem
E-mail: jimn@hgcinc.com
Telephone: 520-293-1500 x112

Invoice to:

Name: Jim Norris
Company: Hydro Geo Chem
E-mail: jimn@hgcinc.com
Address: 51 W. Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES X / NO

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCOB-GW
Project/PO #: 8720000
Reporting state for compliance testing: AZ
Sampler's Name: John Villinski
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	504	FMCOB-GW						
FULTZ	7/29/08 - 16:40	GW	1	X							
COB MW-1	7/30/08 - 8:00	GW	3		X						
COB WL	7/30/08 - 8:55	GW	3		X						
COB MW-2	7/30/08 - 10:20	GW	3		X						
COB MW-3	7/30/08 - 11:27	GW	3		X						
RUIZ	7/30/08 - 12:35	GW	1	X							
WEED	7/30/08 - 13:15	GW	3		X						

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	7/30/08 - 14:30		7-31-08 10:55

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

August 21, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000
ACZ Project ID: L70795

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 30, 2008. This project has been assigned to ACZ's project number, L70795. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70795. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 21, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: BLOMMER

ACZ Sample ID: ***L70795-01***
Date Sampled: *07/29/08 09:38*
Date Received: *07/30/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	203			mg/L	3	10	08/12/08 13:09	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: ROGERS 803

ACZ Sample ID: ***L70795-02***
Date Sampled: *07/29/08 10:15*
Date Received: *07/30/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	92.5			mg/L	0.2	1	08/11/08 23:54	ear/aeh
Magnesium, dissolved	M200.7 ICP	12.6			mg/L	0.2	1	08/09/08 19:41	ear/aeh
Potassium, dissolved	M200.7 ICP	3.3			mg/L	0.3	2	08/09/08 19:41	ear/aeh
Sodium, dissolved	M200.7 ICP	28.7			mg/L	0.3	2	08/09/08 19:41	ear/aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		149			mg/L	2	20	07/31/08 0:00	gkj
Carbonate as CaCO3			U		mg/L	2	20	07/31/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	07/31/08 0:00	gkj
Total Alkalinity		149			mg/L	2	20	07/31/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.5			%			08/21/08 0:00	calc
Sum of Anions		6.4			meq/L	0.1	0.5	08/21/08 0:00	calc
Sum of Cations		7.0			meq/L	0.1	0.5	08/21/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	13.1			mg/L	0.5	3	08/05/08 10:18	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	08/05/08 10:18	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	4.3			mg/L	0.1	0.5	08/21/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	4.3		*	mg/L	0.1	0.5	07/30/08 20:21	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/30/08 18:53	pjb
Residue, Filterable (TDS) @180C	SM2540C	430			mg/L	10	20	08/01/08 16:46	tbd
Sulfate	300.0 - Ion Chromatography	134			mg/L	3	10	08/12/08 13:27	aml
TDS (calculated)	Calculation	393			mg/L	10	50	08/21/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.09						08/21/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: SCHWARZ

ACZ Sample ID: ***L70795-03***
Date Sampled: *07/29/08 11:55*
Date Received: *07/30/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	245			mg/L	5	30	08/12/08 13:45	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: BIMA

ACZ Sample ID: ***L70795-04***
Date Sampled: *07/29/08 12:50*
Date Received: *07/30/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	209			mg/L	0.2	1	08/11/08 23:57	ear/aeh
Magnesium, dissolved	M200.7 ICP	46.5			mg/L	0.2	1	08/09/08 19:44	ear/aeh
Potassium, dissolved	M200.7 ICP	12.2			mg/L	0.3	2	08/09/08 19:44	ear/aeh
Sodium, dissolved	M200.7 ICP	63.6			mg/L	0.3	2	08/09/08 19:44	ear/aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		456			mg/L	2	20	07/31/08 0:00	gkj
Carbonate as CaCO3			U		mg/L	2	20	07/31/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	07/31/08 0:00	gkj
Total Alkalinity		456			mg/L	2	20	07/31/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.8			%			08/21/08 0:00	calc
Sum of Anions		16.8			meq/L	0.1	0.5	08/21/08 0:00	calc
Sum of Cations		17.4			meq/L	0.1	0.5	08/21/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	101			mg/L	0.5	3	08/05/08 10:54	aml
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	08/05/08 10:54	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	7.85			mg/L	0.08	0.4	08/21/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	7.85		*	mg/L	0.08	0.4	07/30/08 20:27	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/30/08 18:55	pjb
Residue, Filterable (TDS) @180C	SM2540C	1040			mg/L	10	20	08/01/08 16:47	tbd
Sulfate	300.0 - Ion Chromatography	204			mg/L	3	10	08/12/08 14:03	aml
TDS (calculated)	Calculation	945			mg/L	10	50	08/21/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.10						08/21/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: RAY

ACZ Sample ID: ***L70795-05***
Date Sampled: *07/29/08 13:55*
Date Received: *07/30/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	120			mg/L	3	10	08/12/08 14:21	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L70795***

Project ID: 8720000

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249121													
WG249121PBW2	PBW	07/30/08 22:35				U	mg/L		-20	20			
WG249121LCSW5	LCSW	07/30/08 22:47	WC080722-2	820		788.9	mg/L	96.2	90	110			
WG249121PBW3	PBW	07/31/08 2:22				U	mg/L		-20	20			
WG249121LCSW8	LCSW	07/31/08 2:34	WC080722-2	820		789.8	mg/L	96.3	90	110			
L70796-01DUP	DUP	07/31/08 4:33			2030	2039	mg/L				0.4	20	
WG249121PBW4	PBW	07/31/08 6:00				U	mg/L		-20	20			
WG249121LCSW11	LCSW	07/31/08 6:12	WC080722-2	820		793.4	mg/L	96.8	90	110			
WG249121LCSW14	LCSW	07/31/08 8:24	WC080722-2	820		797.8	mg/L	97.3	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249747													
WG249747ICV	ICV	08/11/08 23:05	II080717-3	100		94.76	mg/L	94.8	95	105			
WG249747ICB	ICB	08/11/08 23:08				U	mg/L		-0.6	0.6			
WG249747LFB	LFB	08/11/08 23:21	II080730-2	67.97008		66.84	mg/L	98.3	85	115			
L70784-01AS	AS	08/11/08 23:28	II080730-2	679.7008	471	1119.5	mg/L	95.4	85	115			
L70784-01ASD	ASD	08/11/08 23:31	II080730-2	679.7008	471	1074.2	mg/L	88.7	85	115	4.13	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249370													
WG249370ICV1	ICV	07/10/08 13:41	WI080521-1	19.98		20.35	mg/L	101.9	90	110			
WG249370ICB1	ICB	07/10/08 13:59				U	mg/L		-1.5	1.5			
WG249370ICV	ICV	08/05/08 2:27	WI080521-1	19.98		20.23	mg/L	101.3	90	110			
WG249370ICB	ICB	08/05/08 2:46				U	mg/L		-1.5	1.5			
WG249370LFB	LFB	08/05/08 3:04	WI080702-9	30		28.98	mg/L	96.6	90	110			
L70781-18AS	AS	08/05/08 7:53	WI080702-9	30	11	39.64	mg/L	95.5	90	110			
L70781-18DUP	DUP	08/05/08 8:11			11	10.97	mg/L				0.3	20	

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249370													
WG249370ICV1	ICV	07/10/08 13:41	WI080521-1	4		4.11	mg/L	102.8	90	110			
WG249370ICB1	ICB	07/10/08 13:59				U	mg/L		-0.3	0.3			
WG249370ICV	ICV	08/05/08 2:27	WI080521-1	4		4.04	mg/L	101	90	110			
WG249370ICB	ICB	08/05/08 2:46				U	mg/L		-0.3	0.3			
WG249370LFB	LFB	08/05/08 3:04	WI080702-9	1.5		1.45	mg/L	96.7	90	110			
L70781-18AS	AS	08/05/08 7:53	WI080702-9	1.5	.5	1.89	mg/L	92.7	90	110			
L70781-18DUP	DUP	08/05/08 8:11			.5	.5	mg/L				0	20	RA

Hydro Geo Chem, Inc. ACZ Project ID: ***L70795***
Project ID: 8720000

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249678													
WG249678ICV	ICV	08/09/08 18:51	II080717-3	100		95.35	mg/L	95.4	95	105			
WG249678ICB	ICB	08/09/08 18:54				U	mg/L		-0.6	0.6			
WG249678LFB	LFB	08/09/08 19:08	II080730-2	49.96908		51.45	mg/L	103	85	115			
L70784-01AS	AS	08/09/08 19:14	II080730-2	499.6908	1050	1538	mg/L	97.7	85	115			
L70784-01ASD	ASD	08/09/08 19:18	II080730-2	499.6908	1050	1493.6	mg/L	88.8	85	115	2.93	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249125													
WG249125ICV	ICV	07/30/08 18:28	WI080613-1	2.416		2.402	mg/L	99.4	90	110			
WG249125ICB	ICB	07/30/08 18:29				U	mg/L		-0.06	0.06			
WG249127													
WG249127ICV	ICV	07/30/08 18:48	WI080613-1	2.416		2.441	mg/L	101	90	110			
WG249127ICB	ICB	07/30/08 18:49				U	mg/L		-0.06	0.06			
WG249127LFB1	LFB	07/30/08 18:52	WI080312-1	2		2.019	mg/L	101	90	110			
WG249127LFB2	LFB	07/30/08 20:02	WI080312-1	2		2.085	mg/L	104.3	90	110			
L70795-02AS	AS	07/30/08 20:25	WI080312-1	10	4.3	15.58	mg/L	112.8	90	110			M1
L70795-04DUP	DUP	07/30/08 20:28			7.85	7.786	mg/L				0.8	20	

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249125													
WG249125ICV	ICV	07/30/08 18:28	WI080613-1	.609		.607	mg/L	99.7	90	110			
WG249125ICB	ICB	07/30/08 18:29				U	mg/L		-0.03	0.03			
WG249127													
WG249127ICV	ICV	07/30/08 18:48	WI080613-1	.609		.609	mg/L	100	90	110			
WG249127ICB	ICB	07/30/08 18:49				U	mg/L		-0.03	0.03			
WG249127LFB1	LFB	07/30/08 18:52	WI080312-1	1		.982	mg/L	98.2	90	110			
L70795-02AS	AS	07/30/08 18:54	WI080312-1	1	U	.974	mg/L	97.4	90	110			
L70795-04DUP	DUP	07/30/08 18:57			U	U	mg/L				0	20	RA
WG249127LFB2	LFB	07/30/08 20:02	WI080312-1	1		.982	mg/L	98.2	90	110			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249678													
WG249678ICV	ICV	08/09/08 18:51	II080717-3	20		20.01	mg/L	100.1	95	105			
WG249678ICB	ICB	08/09/08 18:54				U	mg/L		-0.9	0.9			
WG249678LFB	LFB	08/09/08 19:08	II080730-2	99.76186		107.02	mg/L	107.3	85	115			
L70784-01AS	AS	08/09/08 19:14	II080730-2	997.6186	12	1073.6	mg/L	106.4	85	115			
L70784-01ASD	ASD	08/09/08 19:18	II080730-2	997.6186	12	1047.2	mg/L	103.8	85	115	2.49	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L70795***
Project ID: 8720000

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249285													
WG249285PBW	PBW	08/01/08 16:40				U	mg/L		-20	20			
WG249285LCSW	LCSW	08/01/08 16:41	PCN30200	260		260	mg/L	100	80	120			
L70810-06DUP	DUP	08/01/08 16:58			440	440	mg/L				0	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249678													
WG249678ICV	ICV	08/09/08 18:51	II080717-3	100		99.88	mg/L	99.9	95	105			
WG249678ICB	ICB	08/09/08 18:54				U	mg/L		-0.9	0.9			
WG249678LFB	LFB	08/09/08 19:08	II080730-2	98.21624		106	mg/L	107.9	85	115			
L70784-01AS	AS	08/09/08 19:14	II080730-2	982.1624	198	1242	mg/L	106.3	85	115			
L70784-01ASD	ASD	08/09/08 19:18	II080730-2	982.1624	198	1209.4	mg/L	103	85	115	2.66	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249655													
WG249655ICV	ICV	08/07/08 18:07	WI080521-1	50.1		50.33	mg/L	100.5	90	110			
WG249655ICB	ICB	08/07/08 18:25				U	mg/L		-1.5	1.5			
WG249663													
WG249663ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG249663ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
L70781-14AS	AS	08/12/08 10:44	WI080702-9	30	35.1	62.52	mg/L	91.4	90	110			
L70781-14DUP	DUP	08/12/08 11:02			35.1	34.94	mg/L				0.5	20	
WG249663LFB1	LFB	08/12/08 14:40	WI080702-9	30		30.95	mg/L	103.2	90	110			
WG249663LFB2	LFB	08/13/08 15:49	WI080702-9	30		30.43	mg/L	101.4	90	110			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L70795***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70795-02	WG249370	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249127	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70795-04	WG249370	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249127	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc. ACZ Project ID: ***L70795***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70795
Date Received: 7/30/2008
Received By:
Date Printed: 7/30/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?	X		
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6561	3.1	13

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70795
Date Received: 7/30/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L70795-01	BLOMMER									X		
L70795-02	ROGERS 803		Y									
L70795-03	SCHWARZ									X		
L70795-04	BIMA		Y									
L70795-05	RAY									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L70475

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore
Company: Hydro Geo Chem Inc	Tucson AZ 85705
E-mail: dans@hgcinc.com	Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris	E-mail: jimn@hgcinc.com
Company: Hydro Geo Chem	Telephone: 520-293-1500 x112

Invoice to:

Name: Jim Norris	Address: 51 W. Wetmore
Company: Hydro Geo Chem	Tucson AZ 85705
E-mail: jimn@hgcinc.com	Telephone: 520-293-1500 x133

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB GW

Project/PO #: 8720000

Reporting state for compliance testing: AZ

Sampler's Name: John Villinski

Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB-GW	SO4						
Blommer	7/29/08-9:38	GW	1		X						
Rogers 803	7/29/08-10:15	GW	3	X							
Schwarz	7/29/08-11:55	GW	1		X						
BIMA	7/29/08-12:50	GW	3	X							
RAY	7/29/08-13:55	GW	1		X						

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	7/29/08-15:30	WPL	7-30-08 9:56

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

August 21, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 872000 T2.2
ACZ Project ID: L70761

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 28, 2008. This project has been assigned to ACZ's project number, L70761. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70761. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 21, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Case Narrative

Hydro Geo Chem, Inc.

August 21, 2008

Project ID: 872000 T2.2
ACZ Project ID: L70761

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 3 ground water samples from Hydro Geo Chem, Inc. on July 28, 2008. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L70761. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Samples were received outside the EPA recommended temperature of 0-6 degrees C.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872000 T2.2
Sample ID: NESS

ACZ Sample ID: ***L70761-01***
Date Sampled: *07/24/08 09:30*
Date Received: *07/28/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	50.2		*	mg/L	0.5	3	08/04/08 19:12	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872000 T2.2
Sample ID: SWAN

ACZ Sample ID: ***L70761-02***
Date Sampled: *07/24/08 13:53*
Date Received: *07/28/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	220			mg/L	30	100	08/16/08 17:18	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 872000 T2.2
Sample ID: NOTEMAN

ACZ Sample ID: ***L70761-03***
Date Sampled: *07/24/08 16:25*
Date Received: *07/28/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	274		*	mg/L	5	30	08/08/08 22:27	aml

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L70761***

Project ID: 872000 T2.2

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249363													
WG249363ICV	ICV	08/04/08 16:30	WI080521-1	50.1		49.97	mg/L	99.7	90	110			
WG249363ICB	ICB	08/04/08 16:48				U	mg/L		-1.5	1.5			
WG249363LFB	LFB	08/04/08 17:06	WI080702-9	30		30.81	mg/L	102.7	90	110			
L70666-01AS	AS	08/04/08 17:42	WI080702-9	60	119	159	mg/L	66.7	90	110			M2
L70666-01DUP	DUP	08/04/08 18:00			119	129.9	mg/L				8.8	20	
WG249655													
WG249655ICV	ICV	08/07/08 18:07	WI080521-1	50.1		50.33	mg/L	100.5	90	110			
WG249655ICB	ICB	08/07/08 18:25				U	mg/L		-1.5	1.5			
WG249663													
L70666-03AS	AS	08/08/08 21:33	WI080702-9	60	108	157.7	mg/L	82.8	90	110			M2
L70666-03DUP	DUP	08/08/08 21:51			108	110.7	mg/L				2.5	20	
WG249663ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG249663ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG249663LFB1	LFB	08/12/08 14:40	WI080702-9	30		30.95	mg/L	103.2	90	110			
WG249663LFB2	LFB	08/13/08 15:49	WI080702-9	30		30.43	mg/L	101.4	90	110			
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG250049													
WG250049ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.34	mg/L	98.5	90	110			
WG250049ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
L70959-03AS	AS	08/16/08 20:56	WI080702-9	600	1330	1921	mg/L	98.5	90	110			
L70959-03DUP	DUP	08/16/08 21:14			1330	1455	mg/L				9	20	
WG250049LFB2	LFB	08/17/08 1:45	WI080702-9	30		30.01	mg/L	100	90	110			
WG250049LFB1	LFB	08/19/08 17:22	WI080702-9	30		30.63	mg/L	102.1	90	110			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L70761***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70761-01	WG249363	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L70761-03	WG249663	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

Hydro Geo Chem, Inc. ACZ Project ID: ***L70761***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872000 T2.2

ACZ Project ID: L70761
Date Received: 7/28/2008
Received By:
Date Printed: 7/28/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6548	25.3	16

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
872000 T2.2

ACZ Project ID: L70761
Date Received: 7/28/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L70761-01	NESS									X		
L70761-02	SWAN									X		
L70761-03	NOTEMAN									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L707761

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W Wetmore
Company: Hydro Geo Chem Inc	Tucson AZ 85705
E-mail: dans@hgcinc.com	Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris	E-mail: jimn@hgcinc.com
Company: Hydro Geo Chem Inc	Telephone: 520-293-1500 x112

Invoice to:

Name: Jim Norris	Address: 51 W. Wetmore
Company: Hydro Geo Chem Inc	Tucson AZ 85705
E-mail: jimn@hgcinc.com	Telephone: 520-293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQRS-GW

Project/PO #: 872000 T22

Reporting state for compliance testing: AZ

Sampler's Name: John Villinski

Are any samples NRC licensable material? no

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQRS-GW							
NESS	7/24/08-9:30a	GW	1	X							
SWAN	7/24/08-13:53	GW	1	X							
Noteman	7/24/08-16:25	GW	1	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	7/25/08-13:00		7.28.08 10:40

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

August 08, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000
ACZ Project ID: L70744

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 25, 2008. This project has been assigned to ACZ's project number, L70744. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70744. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 08, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: DODSON

ACZ Sample ID: ***L70744-01***
Date Sampled: *07/24/08 12:30*
Date Received: *07/25/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	124			mg/L	0.2	1	08/06/08 19:24	nek/aeh
Magnesium, dissolved	M200.7 ICP	43.3			mg/L	0.2	1	08/06/08 19:24	nek/aeh
Potassium, dissolved	M200.7 ICP	13.7			mg/L	0.3	2	08/06/08 19:24	nek/aeh
Sodium, dissolved	M200.7 ICP	51.3			mg/L	0.3	2	08/06/08 19:24	nek/aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		223			mg/L	2	20	07/30/08 0:00	gkj
Carbonate as CaCO3		12	B		mg/L	2	20	07/30/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	07/30/08 0:00	gkj
Total Alkalinity		235		*	mg/L	2	20	07/30/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		5.1			%			08/08/08 0:00	calc
Sum of Anions		11.2			meq/L	0.1	0.5	08/08/08 0:00	calc
Sum of Cations		12.4			meq/L	0.1	0.5	08/08/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	160			mg/L	5	30	07/31/08 18:34	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	07/30/08 1:43	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	13.1			mg/L	0.2	1	08/08/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	13.1			mg/L	0.2	1	07/25/08 21:52	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/25/08 21:35	pjb
Residue, Filterable (TDS) @180C	SM2540C	740			mg/L	10	20	07/30/08 8:59	tbd
Sulfate	300.0 - Ion Chromatography	49.3			mg/L	0.5	3	07/30/08 1:43	aml
TDS (calculated)	Calculation	646			mg/L	10	50	08/08/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.15						08/08/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L70744***

Project ID: 8720000

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249121													
WG249121PBW1	PBW	07/30/08 19:19				24.8	mg/L		-20	20			B4
WG249121LCSW2	LCSW	07/30/08 19:31	WC080722-2	820		793.4	mg/L	96.8	90	110			
L70755-03DUP	DUP	07/30/08 22:20			148	148.7	mg/L				0.5	20	
WG249121PBW2	PBW	07/30/08 22:35				U	mg/L		-20	20			
WG249121LCSW5	LCSW	07/30/08 22:47	WC080722-2	820		788.9	mg/L	96.2	90	110			
WG249121PBW3	PBW	07/31/08 2:22				U	mg/L		-20	20			
WG249121LCSW8	LCSW	07/31/08 2:34	WC080722-2	820		789.8	mg/L	96.3	90	110			
WG249121PBW4	PBW	07/31/08 6:00				U	mg/L		-20	20			
WG249121LCSW11	LCSW	07/31/08 6:12	WC080722-2	820		793.4	mg/L	96.8	90	110			
WG249121LCSW14	LCSW	07/31/08 8:24	WC080722-2	820		797.8	mg/L	97.3	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249490													
WG249490ICV	ICV	08/06/08 17:35	II080717-3	100		97.88	mg/L	97.9	95	105			
WG249490ICB	ICB	08/06/08 17:39				U	mg/L		-0.6	0.6			
WG249490LFB	LFB	08/06/08 17:52	II080730-2	67.97008		70.68	mg/L	104	85	115			
L70727-02AS	AS	08/06/08 18:48	II080730-2	67.97008	118	183.61	mg/L	96.5	85	115			
L70727-02ASD	ASD	08/06/08 18:51	II080730-2	67.97008	118	178.17	mg/L	88.5	85	115	3.01	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248969													
WG248969ICV	ICV	07/29/08 16:40	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG248969ICB	ICB	07/29/08 16:58				U	mg/L		-1.5	1.5			
WG248969LFB	LFB	07/29/08 17:16	WI080702-9	30		27.55	mg/L	91.8	90	110			
L70659-06AS	AS	07/29/08 22:06	WI080702-9	30	19.7	48.38	mg/L	95.6	90	110			
L70659-06DUP	DUP	07/29/08 22:24			19.7	19.71	mg/L				0.1	20	

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248969													
WG248969ICV	ICV	07/29/08 16:40	WI080521-1	4		3.97	mg/L	99.3	90	110			
WG248969ICB	ICB	07/29/08 16:58				U	mg/L		-0.3	0.3			
L70659-06AS	AS	07/29/08 22:06	WI080702-9	1.5	.4	1.74	mg/L	89.3	90	110			M2
L70659-06DUP	DUP	07/29/08 22:24			.4	.35	mg/L				13.3	20	RA
WG248969LFB	LFB	07/31/08 17:58	WI080702-9	1.5		1.47	mg/L	98	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249490													
WG249490ICV	ICV	08/06/08 17:35	II080717-3	100		100.6	mg/L	100.6	95	105			
WG249490ICB	ICB	08/06/08 17:39				U	mg/L		-0.6	0.6			
WG249490LFB	LFB	08/06/08 17:52	II080730-2	49.96908		52.33	mg/L	104.7	85	115			
L70727-02AS	AS	08/06/08 18:48	II080730-2	49.96908	61.2	110.43	mg/L	98.5	85	115			
L70727-02ASD	ASD	08/06/08 18:51	II080730-2	49.96908	61.2	110.02	mg/L	97.7	85	115	0.37	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L70744***
Project ID: 8720000

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248841													
WG248841ICV	ICV	07/25/08 20:54	WI080613-1	2.416		2.448	mg/L	101.3	90	110			
WG248841ICB	ICB	07/25/08 20:55				U	mg/L		-0.06	0.06			
WG248841LFB	LFB	07/25/08 20:59	WI080312-1	2		2.085	mg/L	104.3	90	110			
L70723-02AS	AS	07/25/08 21:20	WI080312-1	2	.03	2.131	mg/L	105.1	90	110			
L70723-03DUP	DUP	07/25/08 21:23			.29	.3	mg/L				3.4	20	

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248841													
WG248841ICV	ICV	07/25/08 20:54	WI080613-1	.609		.624	mg/L	102.5	90	110			
WG248841ICB	ICB	07/25/08 20:55				U	mg/L		-0.03	0.03			
WG248841LFB	LFB	07/25/08 20:59	WI080312-1	1		1.01	mg/L	101	90	110			
L70723-02AS	AS	07/25/08 21:20	WI080312-1	1		.988	mg/L	98.8	90	110			
L70723-03DUP	DUP	07/25/08 21:23				U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249490													
WG249490ICV	ICV	08/06/08 17:35	II080717-3	20		20.39	mg/L	102	95	105			
WG249490ICB	ICB	08/06/08 17:39				U	mg/L		-0.9	0.9			
WG249490LFB	LFB	08/06/08 17:52	II080730-2	99.76186		105.09	mg/L	105.3	85	115			
L70727-02AS	AS	08/06/08 18:48	II080730-2	99.76186	.6	108.29	mg/L	107.9	85	115			
L70727-02ASD	ASD	08/06/08 18:51	II080730-2	99.76186	.6	109.44	mg/L	109.1	85	115	1.06	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249033													
WG249033PBW	PBW	07/30/08 8:40				U	mg/L		-20	20			
WG249033LCSW	LCSW	07/30/08 8:41	PCN30200	260		262	mg/L	100.8	80	120			
L70744-01DUP	DUP	07/30/08 9:00			740	738	mg/L				0.3	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249490													
WG249490ICV	ICV	08/06/08 17:35	II080717-3	100		101.66	mg/L	101.7	95	105			
WG249490ICB	ICB	08/06/08 17:39				U	mg/L		-0.9	0.9			
WG249490LFB	LFB	08/06/08 17:52	II080730-2	98.21624		103.51	mg/L	105.4	85	115			
L70727-02AS	AS	08/06/08 18:48	II080730-2	98.21624	90.4	188.7	mg/L	100.1	85	115			
L70727-02ASD	ASD	08/06/08 18:51	II080730-2	98.21624	90.4	189.95	mg/L	101.4	85	115	0.66	20	

Hydro Geo Chem, Inc.
Project ID: 8720000

ACZ Project ID: ***L70744***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248969													
WG248969ICV	ICV	07/29/08 16:40	WI080521-1	50.1		52.89	mg/L	105.6	90	110			
WG248969ICB	ICB	07/29/08 16:58				U	mg/L		-1.5	1.5			
WG248969LFB	LFB	07/29/08 17:16	WI080702-9	30		29.5	mg/L	98.3	90	110			
L70659-06AS	AS	07/29/08 22:06	WI080702-9	30	17.7	45.45	mg/L	92.5	90	110			
L70659-06DUP	DUP	07/29/08 22:24			17.7	17.69	mg/L				0.1	20	

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Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L70744***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70744-01	WG248969	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248841	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG249121	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
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Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70744
Date Received: 7/25/2008
Received By:
Date Printed: 7/25/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?			
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6537	5	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70744
Date Received: 7/25/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L70744-01	DODSON		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L70744

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: HydroGeoChem Inc
E-mail: dans@hgcinc.com
Address: 51 W Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HydroGeo Chem
E-mail: jimn@hgcinc.com
Telephone: 520-293-1500 x112

Invoice to:

Name: Jim Norris
Company: HydroGeoChem Inc
E-mail: jimn@hgcinc.com
Address: 51 W Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x 112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 8720000
Reporting state for compliance testing: AZ
Sampler's Name: John Villinski
Are any samples NRC licensable material? N

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB GW							
DORSON	7-24-08 12:30	GW	3								

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	7-24-08/3:10	MS	7.25.08 10:35

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

August 05, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000
ACZ Project ID: L70696

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 24, 2008. This project has been assigned to ACZ's project number, L70696. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70696. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 05, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: EAST

ACZ Sample ID: ***L70696-01***
Date Sampled: *07/23/08 08:48*
Date Received: *07/24/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	59.5			mg/L	0.2	1	07/30/08 17:53	aeh
Magnesium, dissolved	M200.7 ICP	24.4			mg/L	0.2	1	07/30/08 17:53	aeh
Potassium, dissolved	M200.7 ICP	2.4			mg/L	0.3	2	07/30/08 17:53	aeh
Sodium, dissolved	M200.7 ICP	31.4			mg/L	0.3	2	07/30/08 17:53	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		217			mg/L	2	20	07/25/08 0:00	jlf
Carbonate as CaCO3		6	B		mg/L	2	20	07/25/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	07/25/08 0:00	jlf
Total Alkalinity		223			mg/L	2	20	07/25/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.2			%			08/05/08 0:00	calc
Sum of Anions		6.0			meq/L	0.1	0.5	08/05/08 0:00	calc
Sum of Cations		6.4			meq/L	0.1	0.5	08/05/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	33.3			mg/L	0.5	3	07/29/08 23:36	aml
Fluoride	M300.0 - Ion Chromatography	0.4	B	*	mg/L	0.1	0.5	07/29/08 23:36	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	6.10			mg/L	0.06	0.3	08/05/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	6.10		*	mg/L	0.06	0.3	07/24/08 19:04	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/24/08 18:52	pjb
Residue, Filterable (TDS) @180C	SM2540C	350			mg/L	10	20	07/28/08 9:32	tbd
Sulfate	300.0 - Ion Chromatography	11.8			mg/L	0.5	3	07/29/08 23:36	aml
TDS (calculated)	Calculation	326			mg/L	10	50	08/05/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.07						08/05/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: WALKER

ACZ Sample ID: ***L70696-02***
Date Sampled: *07/23/08 09:38*
Date Received: *07/24/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	88.7			mg/L	0.2	1	07/30/08 17:56	aeh
Magnesium, dissolved	M200.7 ICP	27.9			mg/L	0.2	1	07/30/08 17:56	aeh
Potassium, dissolved	M200.7 ICP	2.9			mg/L	0.3	2	07/30/08 17:56	aeh
Sodium, dissolved	M200.7 ICP	28.6			mg/L	0.3	2	07/30/08 17:56	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		250			mg/L	2	20	07/25/08 0:00	jlf
Carbonate as CaCO3		7	B		mg/L	2	20	07/25/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	07/25/08 0:00	jlf
Total Alkalinity		257			mg/L	2	20	07/25/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.6			%			08/05/08 0:00	calc
Sum of Anions		7.6			meq/L	0.1	0.5	08/05/08 0:00	calc
Sum of Cations		8.0			meq/L	0.1	0.5	08/05/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	37.8			mg/L	0.5	3	07/30/08 0:31	aml
Fluoride	M300.0 - Ion Chromatography	0.3	B	*	mg/L	0.1	0.5	07/30/08 0:31	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	7.24			mg/L	0.08	0.4	08/05/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	7.24		*	mg/L	0.08	0.4	07/24/08 19:05	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/24/08 18:53	pjb
Residue, Filterable (TDS) @180C	SM2540C	450			mg/L	10	20	07/28/08 9:34	tbd
Sulfate	300.0 - Ion Chromatography	45.4			mg/L	0.5	3	07/30/08 0:31	aml
TDS (calculated)	Calculation	421			mg/L	10	50	08/05/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.07						08/05/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: GALLANT

ACZ Sample ID: ***L70696-03***
Date Sampled: *07/23/08 10:50*
Date Received: *07/24/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	138			mg/L	0.2	1	07/30/08 18:06	aeh
Magnesium, dissolved	M200.7 ICP	19.8			mg/L	0.2	1	07/30/08 18:06	aeh
Potassium, dissolved	M200.7 ICP	4.8			mg/L	0.3	2	07/30/08 18:06	aeh
Sodium, dissolved	M200.7 ICP	29.6			mg/L	0.3	2	07/30/08 18:06	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		303			mg/L	2	20	07/25/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	07/25/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	07/25/08 0:00	jlf
Total Alkalinity		303			mg/L	2	20	07/25/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.6			%			08/05/08 0:00	calc
Sum of Anions		9.4			meq/L	0.1	0.5	08/05/08 0:00	calc
Sum of Cations		9.9			meq/L	0.1	0.5	08/05/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	56.9			mg/L	0.5	3	07/30/08 0:49	aml
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	07/30/08 0:49	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	19.2			mg/L	0.3	2	08/05/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	19.2		*	mg/L	0.3	2	07/24/08 19:06	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/24/08 18:58	pjb
Residue, Filterable (TDS) @180C	SM2540C	560			mg/L	10	20	07/28/08 9:35	tbd
Sulfate	300.0 - Ion Chromatography	20.9			mg/L	0.5	3	07/30/08 0:49	aml
TDS (calculated)	Calculation	537			mg/L	10	50	08/05/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.04						08/05/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: SWAN TM08

ACZ Sample ID: ***L70696-04***
Date Sampled: *07/23/08 14:37*
Date Received: *07/24/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP		U		mg/L	0.2	1	07/30/08 18:09	aeh
Magnesium, dissolved	M200.7 ICP		U		mg/L	0.2	1	07/30/08 18:09	aeh
Potassium, dissolved	M200.7 ICP	1.1	B		mg/L	0.3	2	07/30/08 18:09	aeh
Sodium, dissolved	M200.7 ICP	128			mg/L	0.3	2	07/30/08 18:09	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		204			mg/L	2	20	07/25/08 0:00	jlf
Carbonate as CaCO3		11	B		mg/L	2	20	07/25/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	07/25/08 0:00	jlf
Total Alkalinity		215			mg/L	2	20	07/25/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.7			%			08/05/08 0:00	calc
Sum of Anions		5.2			meq/L	0.1	0.5	08/05/08 0:00	calc
Sum of Cations		5.6			meq/L	0.1	0.5	08/05/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	14.8			mg/L	0.5	3	07/30/08 1:07	aml
Fluoride	M300.0 - Ion Chromatography	0.3	B	*	mg/L	0.1	0.5	07/30/08 1:07	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.86			mg/L	0.02	0.1	08/05/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.86		*	mg/L	0.02	0.1	07/24/08 18:59	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/24/08 18:59	pjb
Residue, Filterable (TDS) @180C	SM2540C	310			mg/L	10	20	07/28/08 9:37	tbd
Sulfate	300.0 - Ion Chromatography	12.6			mg/L	0.5	3	07/30/08 1:07	aml
TDS (calculated)	Calculation	303			mg/L	10	50	08/05/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.02						08/05/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L70696***
Project ID: 8720000

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248834													
WG248834PBW2	PBW	07/25/08 19:25				U	mg/L		-20	20			
WG248834LCSW5	LCSW	07/25/08 19:38	WC080722-2	820		789.7	mg/L	96.3	90	110			
WG248834PBW3	PBW	07/25/08 21:25				U	mg/L		-20	20			
WG248834LCSW8	LCSW	07/25/08 21:38	WC080722-2	820		793.1	mg/L	96.7	90	110			
L70697-06DUP	DUP	07/26/08 0:02			36	35.5	mg/L				1.4	20	
WG248834PBW4	PBW	07/26/08 0:09				U	mg/L		-20	20			
WG248834LCSW11	LCSW	07/26/08 0:20	WC080722-2	820		791.8	mg/L	96.6	90	110			
WG248834LCSW14	LCSW	07/26/08 3:39	WC080722-2	820		802.7	mg/L	97.9	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249104													
WG249104ICV	ICV	07/30/08 17:11	II080717-3	100		100.51	mg/L	100.5	95	105			
WG249104ICB	ICB	07/30/08 17:15				U	mg/L		-0.6	0.6			
WG249104LFB	LFB	07/30/08 17:28	II080730-2	67.97008		71.88	mg/L	105.8	85	115			
L70694-06AS	AS	07/30/08 17:37	II080730-2	67.97008	U	70.65	mg/L	103.9	85	115			
L70694-06ASD	ASD	07/30/08 17:40	II080730-2	67.97008	U	70.88	mg/L	104.3	85	115	0.33	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248969													
WG248969ICV	ICV	07/29/08 16:40	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG248969ICB	ICB	07/29/08 16:58				U	mg/L		-1.5	1.5			
WG248969LFB	LFB	07/29/08 17:16	WI080702-9	30		27.55	mg/L	91.8	90	110			
L70659-06AS	AS	07/29/08 22:06	WI080702-9	30	19.7	48.38	mg/L	95.6	90	110			
L70659-06DUP	DUP	07/29/08 22:24			19.7	19.71	mg/L				0.1	20	

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248969													
WG248969ICV	ICV	07/29/08 16:40	WI080521-1	4		3.97	mg/L	99.3	90	110			
WG248969ICB	ICB	07/29/08 16:58				U	mg/L		-0.3	0.3			
L70659-06AS	AS	07/29/08 22:06	WI080702-9	1.5	.4	1.74	mg/L	89.3	90	110			M2
L70659-06DUP	DUP	07/29/08 22:24			.4	.35	mg/L				13.3	20	RA
WG248969LFB	LFB	07/31/08 17:58	WI080702-9	1.5		1.47	mg/L	98	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249104													
WG249104ICV	ICV	07/30/08 17:11	II080717-3	100		100.22	mg/L	100.2	95	105			
WG249104ICB	ICB	07/30/08 17:15				U	mg/L		-0.6	0.6			
WG249104LFB	LFB	07/30/08 17:28	II080730-2	49.96908		53.43	mg/L	106.9	85	115			
L70694-06AS	AS	07/30/08 17:37	II080730-2	49.96908	U	52.77	mg/L	105.6	85	115			
L70694-06ASD	ASD	07/30/08 17:40	II080730-2	49.96908	U	52.66	mg/L	105.4	85	115	0.21	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L70696***
Project ID: 8720000

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248761													
WG248761ICV	ICV	07/24/08 18:39	WI080613-1	2.416		2.449	mg/L	101.4	90	110			
WG248761ICB	ICB	07/24/08 18:40				U	mg/L		-0.06	0.06			
WG248761LFB	LFB	07/24/08 18:45	WI080312-1	2		1.975	mg/L	98.8	90	110			
L70693-01DUP	DUP	07/24/08 18:50			.05	.056	mg/L				11.3	20	RA
L70692-01AS	AS	07/24/08 19:03	WI080312-1	10	4.4	15.2	mg/L	108	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248761													
WG248761ICV	ICV	07/24/08 18:39	WI080613-1	.609		.631	mg/L	103.6	90	110			
WG248761ICB	ICB	07/24/08 18:40				U	mg/L		-0.03	0.03			
WG248761LFB	LFB	07/24/08 18:45	WI080312-1	1		.989	mg/L	98.9	90	110			
L70692-01AS	AS	07/24/08 18:48	WI080312-1	1	U	.981	mg/L	98.1	90	110			
L70693-01DUP	DUP	07/24/08 18:50			U	U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249104													
WG249104ICV	ICV	07/30/08 17:11	II080717-3	20		20.52	mg/L	102.6	95	105			
WG249104ICB	ICB	07/30/08 17:15				U	mg/L		-0.9	0.9			
WG249104LFB	LFB	07/30/08 17:28	II080730-2	99.76186		105.56	mg/L	105.8	85	115			
L70694-06AS	AS	07/30/08 17:37	II080730-2	99.76186	U	104.03	mg/L	104.3	85	115			
L70694-06ASD	ASD	07/30/08 17:40	II080730-2	99.76186	U	104.15	mg/L	104.4	85	115	0.12	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248891													
WG248891PBW	PBW	07/28/08 9:25				U	mg/L		-20	20			
WG248891LCSW	LCSW	07/28/08 9:26	PCN30199	260		280	mg/L	107.7	80	120			
L70723-01DUP	DUP	07/28/08 9:43			180	176	mg/L				2.2	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249104													
WG249104ICV	ICV	07/30/08 17:11	II080717-3	100		100.31	mg/L	100.3	95	105			
WG249104ICB	ICB	07/30/08 17:15				U	mg/L		-0.9	0.9			
WG249104LFB	LFB	07/30/08 17:28	II080730-2	98.21624		102.84	mg/L	104.7	85	115			
L70694-06AS	AS	07/30/08 17:37	II080730-2	98.21624	U	101.4	mg/L	103.2	85	115			
L70694-06ASD	ASD	07/30/08 17:40	II080730-2	98.21624	U	101.47	mg/L	103.3	85	115	0.07	20	

Hydro Geo Chem, Inc.
Project ID: 8720000

ACZ Project ID: ***L70696***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248969													
WG248969ICV	ICV	07/29/08 16:40	WI080521-1	50.1		52.89	mg/L	105.6	90	110			
WG248969ICB	ICB	07/29/08 16:58				U	mg/L		-1.5	1.5			
WG248969LFB	LFB	07/29/08 17:16	WI080702-9	30		29.5	mg/L	98.3	90	110			
L70659-06AS	AS	07/29/08 22:06	WI080702-9	30	17.7	45.45	mg/L	92.5	90	110			
L70659-06DUP	DUP	07/29/08 22:24			17.7	17.69	mg/L				0.1	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L70696***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70696-01	WG248969	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248761	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70696-02	WG248969	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248761	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70696-03	WG248969	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248761	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70696-04	WG248969	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248761	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc. ACZ Project ID: ***L70696***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70696
Date Received: 7/24/2008
Received By:
Date Printed: 7/24/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6520	1.6	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70696
Date Received: 7/24/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L70696-01	EAST		Y									
L70696-02	WALKER		Y									
L70696-03	GALLANT		Y									
L70696-04	SWAN TM08		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

L706916

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: HydroGeoChem Inc
E-mail: dans@hgcinc.com

Address: 51 W. Wetmore Rd
Tucson AZ 85705
Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HydroGeoChem, Inc

E-mail: jimn@hgcinc.com
Telephone: 520-293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc
E-mail: jimn@hgcinc.com

Address: 51 West Wetmore
Tucson AZ 85705
Telephone: (520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 8720000
Reporting state for compliance testing: AZ
Sampler's Name: John Villinski
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB-GW							
East ~~7720~~ V	7/23/08 8:48a	GW	3	X							
Walker ~~3930~~ V	7/23/08 9:38a	GW	3	X							
Gallant ~~5270~~ V	7/23/08 10:50a	GW	3	X							
SWAN TMW	7/23/08 14:37p	GW	3	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	7-23-08 13:30		7.24.08 10:22

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

August 05, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000
ACZ Project ID: L70659

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 23, 2008. This project has been assigned to ACZ's project number, L70659. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70659. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 05, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: BANKS 986

ACZ Sample ID: ***L70659-01***
Date Sampled: *07/21/08 12:05*
Date Received: *07/23/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	82.2			mg/L	0.5	3	07/29/08 19:41	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: PANAGAKOS

ACZ Sample ID: ***L70659-02***
Date Sampled: *07/21/08 15:55*
Date Received: *07/23/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	444			mg/L	5	30	07/31/08 18:16	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: EPPELE 641

ACZ Sample ID: ***L70659-03***
Date Sampled: *07/21/08 16:15*
Date Received: *07/23/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	19.0			mg/L	0.5	3	07/29/08 20:53	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: POWER

ACZ Sample ID: ***L70659-04***
Date Sampled: *07/22/08 10:35*
Date Received: *07/23/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	124			mg/L	0.2	1	07/29/08 19:14	aeh
Magnesium, dissolved	M200.7 ICP	11.0			mg/L	0.2	1	07/29/08 19:14	aeh
Potassium, dissolved	M200.7 ICP	3.8		*	mg/L	0.3	2	07/29/08 19:14	aeh
Sodium, dissolved	M200.7 ICP	13.6		*	mg/L	0.3	2	07/29/08 19:14	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		222			mg/L	2	20	07/25/08 0:00	tbd
Carbonate as CaCO3		29			mg/L	2	20	07/25/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	07/25/08 0:00	tbd
Total Alkalinity		251		*	mg/L	2	20	07/25/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-2.5			%			08/05/08 0:00	calc
Sum of Anions		8.2			meq/L	0.1	0.5	08/05/08 0:00	calc
Sum of Cations		7.8			meq/L	0.1	0.5	08/05/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	37.8			mg/L	0.5	3	07/29/08 21:11	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	07/29/08 21:11	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	24.1			mg/L	0.4	2	08/05/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	24.1		*	mg/L	0.4	2	07/23/08 20:43	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/23/08 20:12	pjb
Residue, Filterable (TDS) @180C	SM2540C	550			mg/L	10	20	07/25/08 16:02	gkj
Sulfate	300.0 - Ion Chromatography	20.2			mg/L	0.5	3	07/29/08 21:11	aml
TDS (calculated)	Calculation	479			mg/L	10	50	08/05/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.15						08/05/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: PALMER 819

ACZ Sample ID: ***L70659-05***
Date Sampled: *07/22/08 12:35*
Date Received: *07/23/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	30.0			mg/L	0.2	1	07/29/08 19:17	aeh
Magnesium, dissolved	M200.7 ICP	25.4			mg/L	0.2	1	07/29/08 19:17	aeh
Potassium, dissolved	M200.7 ICP	5.1		*	mg/L	0.3	2	07/29/08 19:17	aeh
Sodium, dissolved	M200.7 ICP	47.9		*	mg/L	0.3	2	07/29/08 19:17	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		226			mg/L	2	20	07/25/08 0:00	tbd
Carbonate as CaCO3		39			mg/L	2	20	07/25/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	07/25/08 0:00	tbd
Total Alkalinity		265		*	mg/L	2	20	07/25/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-2.5			%			08/05/08 0:00	calc
Sum of Anions		6.1			meq/L	0.1	0.5	08/05/08 0:00	calc
Sum of Cations		5.8			meq/L	0.1	0.5	08/05/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	11.3			mg/L	0.5	3	07/29/08 21:29	aml
Fluoride	M300.0 - Ion Chromatography	0.4	B	*	mg/L	0.1	0.5	07/29/08 21:29	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.34			mg/L	0.02	0.1	08/05/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.34		*	mg/L	0.02	0.1	07/23/08 20:13	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/23/08 20:13	pjb
Residue, Filterable (TDS) @180C	SM2540C	300			mg/L	10	20	07/25/08 16:03	gkj
Sulfate	300.0 - Ion Chromatography	16.2			mg/L	0.5	3	07/29/08 21:29	aml
TDS (calculated)	Calculation	321			mg/L	10	50	08/05/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.93						08/05/08 0:00	calc

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: OSBORN

ACZ Sample ID: ***L70659-06***
Date Sampled: *07/22/08 13:42*
Date Received: *07/23/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	80.3			mg/L	0.2	1	07/29/08 19:21	aeh
Magnesium, dissolved	M200.7 ICP	15.0			mg/L	0.2	1	07/29/08 19:21	aeh
Potassium, dissolved	M200.7 ICP	4.2		*	mg/L	0.3	2	07/29/08 19:21	aeh
Sodium, dissolved	M200.7 ICP	24.7		*	mg/L	0.3	2	07/29/08 19:21	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		252			mg/L	2	20	07/25/08 0:00	tbd
Carbonate as CaCO3		29			mg/L	2	20	07/25/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	07/25/08 0:00	tbd
Total Alkalinity		281		*	mg/L	2	20	07/25/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-3.0			%			08/05/08 0:00	calc
Sum of Anions		6.8			meq/L	0.1	0.5	08/05/08 0:00	calc
Sum of Cations		6.4			meq/L	0.1	0.5	08/05/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	19.7			mg/L	0.5	3	07/29/08 21:48	aml
Fluoride	M300.0 - Ion Chromatography	0.4	B	*	mg/L	0.1	0.5	07/29/08 21:48	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	4.38			mg/L	0.06	0.3	08/05/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	4.38		*	mg/L	0.06	0.3	07/23/08 20:44	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/23/08 20:14	pjb
Residue, Filterable (TDS) @180C	SM2540C	350			mg/L	10	20	07/25/08 16:05	gkj
Sulfate	300.0 - Ion Chromatography	17.7			mg/L	0.5	3	07/29/08 21:48	aml
TDS (calculated)	Calculation	362			mg/L	10	50	08/05/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.97						08/05/08 0:00	calc

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: DUP072208

ACZ Sample ID: ***L70659-07***
Date Sampled: *07/22/08 00:00*
Date Received: *07/23/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	80.9			mg/L	0.2	1	07/29/08 19:25	aeh
Magnesium, dissolved	M200.7 ICP	15.1			mg/L	0.2	1	07/29/08 19:25	aeh
Potassium, dissolved	M200.7 ICP	4.2			mg/L	0.3	2	07/29/08 19:25	aeh
Sodium, dissolved	M200.7 ICP	25.0			mg/L	0.3	2	07/29/08 19:25	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		250			mg/L	2	20	07/25/08 0:00	tbd
Carbonate as CaCO3		31			mg/L	2	20	07/25/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	07/25/08 0:00	tbd
Total Alkalinity		281		*	mg/L	2	20	07/25/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-3.0			%			08/05/08 0:00	calc
Sum of Anions		6.8			meq/L	0.1	0.5	08/05/08 0:00	calc
Sum of Cations		6.4			meq/L	0.1	0.5	08/05/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	19.6			mg/L	0.5	3	07/29/08 22:42	aml
Fluoride	M300.0 - Ion Chromatography	0.3	B	*	mg/L	0.1	0.5	07/29/08 22:42	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	4.65			mg/L	0.06	0.3	08/05/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	4.65		*	mg/L	0.06	0.3	07/23/08 20:46	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/23/08 20:16	pjb
Residue, Filterable (TDS) @180C	SM2540C	350			mg/L	10	20	07/25/08 16:06	gkj
Sulfate	300.0 - Ion Chromatography	17.5			mg/L	0.5	3	07/29/08 22:42	aml
TDS (calculated)	Calculation	364			mg/L	10	50	08/05/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.96						08/05/08 0:00	calc

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: EQB-72208

ACZ Sample ID: ***L70659-08***
Date Sampled: *07/22/08 00:00*
Date Received: *07/23/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	0.2	B		mg/L	0.2	1	07/29/08 19:35	aeh
Magnesium, dissolved	M200.7 ICP		U		mg/L	0.2	1	07/29/08 19:35	aeh
Potassium, dissolved	M200.7 ICP		U		mg/L	0.3	2	07/29/08 19:35	aeh
Sodium, dissolved	M200.7 ICP		U		mg/L	0.3	2	07/29/08 19:35	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		3	B		mg/L	2	20	07/25/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	07/25/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	07/25/08 0:00	tbd
Total Alkalinity		3	B	*	mg/L	2	20	07/25/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		n/a			%			08/05/08 0:00	calc
Sum of Anions		0.1	B		meq/L	0.1	0.5	08/05/08 0:00	calc
Sum of Cations			U		meq/L	0.1	0.5	08/05/08 0:00	calc
Chloride	M300.0 - Ion Chromatography		U		mg/L	0.5	3	07/29/08 23:00	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	07/29/08 23:00	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.45			mg/L	0.02	0.1	08/05/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.45		*	mg/L	0.02	0.1	07/23/08 20:17	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U		mg/L	0.01	0.05	07/23/08 20:17	pjb
Residue, Filterable (TDS) @180C	SM2540C		U		mg/L	10	20	07/25/08 16:07	gkj
Sulfate	300.0 - Ion Chromatography	0.5	B		mg/L	0.5	3	07/29/08 23:00	aml
TDS (calculated)	Calculation		U		mg/L	10	50	08/05/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	n/a						08/05/08 0:00	calc

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ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: FB072208

ACZ Sample ID: ***L70659-09***
Date Sampled: *07/22/08 00:00*
Date Received: *07/23/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP		U		mg/L	0.2	1	07/29/08 19:46	aeh
Magnesium, dissolved	M200.7 ICP		U		mg/L	0.2	1	07/29/08 19:46	aeh
Potassium, dissolved	M200.7 ICP		U		mg/L	0.3	2	07/29/08 19:46	aeh
Sodium, dissolved	M200.7 ICP		U		mg/L	0.3	2	07/29/08 19:46	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		5	B		mg/L	2	20	07/25/08 0:00	tbd
Carbonate as CaCO3			U		mg/L	2	20	07/25/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	07/25/08 0:00	tbd
Total Alkalinity		5	B	*	mg/L	2	20	07/25/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		n/a			%			08/05/08 0:00	calc
Sum of Anions		0.1	B		meq/L	0.1	0.5	08/05/08 0:00	calc
Sum of Cations			U		meq/L	0.1	0.5	08/05/08 0:00	calc
Chloride	M300.0 - Ion Chromatography		U		mg/L	0.5	3	07/29/08 23:18	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	07/29/08 23:18	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2		U		mg/L	0.02	0.1	08/05/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.02	0.1	07/23/08 20:19	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/23/08 20:19	pjb
Residue, Filterable (TDS) @180C	SM2540C		U		mg/L	10	20	07/25/08 16:09	gkj
Sulfate	300.0 - Ion Chromatography		U		mg/L	0.5	3	07/29/08 23:18	aml
TDS (calculated)	Calculation		U		mg/L	10	50	08/05/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	n/a						08/05/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L70659***

Project ID: 8720000

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248727													
WG248727PBW2	PBW	07/24/08 18:27				2.9	mg/L		-20	20			
WG248727LCSW5	LCSW	07/24/08 18:40	WC080722-2	820		828.5	mg/L	101	90	110			
WG248727PBW3	PBW	07/24/08 21:35				2.3	mg/L		-20	20			
WG248727LCSW8	LCSW	07/24/08 21:48	WC080722-2	820		827	mg/L	100.9	90	110			
L70659-09DUP	DUP	07/25/08 0:44			5	U	mg/L				200	20	RA
WG248727PBW4	PBW	07/25/08 0:50				2.5	mg/L		-20	20			
WG248727LCSW11	LCSW	07/25/08 1:03	WC080722-2	820		822.5	mg/L	100.3	90	110			
WG248727LCSW14	LCSW	07/25/08 4:16	WC080722-2	820		829.4	mg/L	101.1	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248991													
WG248991ICV	ICV	07/29/08 18:12	II080717-3	100		96.63	mg/L	96.6	95	105			
WG248991ICB	ICB	07/29/08 18:16				U	mg/L		-0.6	0.6			
WG248991LFB	LFB	07/29/08 18:30	II080724-3	67.97008		62.32	mg/L	91.7	85	115			
L70658-01AS	AS	07/29/08 18:37	II080724-3	67.97008	7.2	83.62	mg/L	112.4	85	115			
L70658-01ASD	ASD	07/29/08 18:41	II080724-3	67.97008	7.2	81.41	mg/L	109.2	85	115	2.68	20	
L70659-07AS	AS	07/29/08 19:28	II080724-3	67.97008	80.9	147.86	mg/L	98.5	85	115			
L70659-07ASD	ASD	07/29/08 19:32	II080724-3	67.97008	80.9	147.51	mg/L	98	85	115	0.24	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248969													
WG248969ICV	ICV	07/29/08 16:40	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG248969ICB	ICB	07/29/08 16:58				U	mg/L		-1.5	1.5			
WG248969LFB	LFB	07/29/08 17:16	WI080702-9	30		27.55	mg/L	91.8	90	110			
L70472-01AS	AS	07/29/08 17:52	WI080702-9	30	17.1	45.4	mg/L	94.3	90	110			
L70472-01DUP	DUP	07/29/08 18:10			17.1	17.16	mg/L				0.4	20	
L70659-06AS	AS	07/29/08 22:06	WI080702-9	30	19.7	48.38	mg/L	95.6	90	110			
L70659-06DUP	DUP	07/29/08 22:24			19.7	19.71	mg/L				0.1	20	

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248969													
WG248969ICV	ICV	07/29/08 16:40	WI080521-1	4		3.97	mg/L	99.3	90	110			
WG248969ICB	ICB	07/29/08 16:58				U	mg/L		-0.3	0.3			
L70472-01AS	AS	07/29/08 17:52	WI080702-9	1.5	.2	1.62	mg/L	94.7	90	110			
L70472-01DUP	DUP	07/29/08 18:10			.2	.24	mg/L				18.2	20	RA
L70659-06AS	AS	07/29/08 22:06	WI080702-9	1.5	.4	1.74	mg/L	89.3	90	110			M2
L70659-06DUP	DUP	07/29/08 22:24			.4	.35	mg/L				13.3	20	RA
WG248969LFB	LFB	07/31/08 17:58	WI080702-9	1.5		1.47	mg/L	98	90	110			

Hydro Geo Chem, Inc. ACZ Project ID: ***L70659***
Project ID: 8720000

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248991													
WG248991ICV	ICV	07/29/08 18:12	II080717-3	100		98.44	mg/L	98.4	95	105			
WG248991ICB	ICB	07/29/08 18:16				U	mg/L		-0.6	0.6			
WG248991LFB	LFB	07/29/08 18:30	II080724-3	49.96908		46.48	mg/L	93	85	115			
L70658-01AS	AS	07/29/08 18:37	II080724-3	49.96908	1.3	57.93	mg/L	113.3	85	115			
L70658-01ASD	ASD	07/29/08 18:41	II080724-3	49.96908	1.3	56.86	mg/L	111.2	85	115	1.86	20	
L70659-07AS	AS	07/29/08 19:28	II080724-3	49.96908	15.1	67.99	mg/L	105.8	85	115			
L70659-07ASD	ASD	07/29/08 19:32	II080724-3	49.96908	15.1	68.29	mg/L	106.4	85	115	0.44	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248685													
WG248685ICV	ICV	07/23/08 19:51	WI080613-1	2.416		2.414	mg/L	99.9	90	110			
WG248685ICB	ICB	07/23/08 19:52				U	mg/L		-0.06	0.06			
WG248685LFB	LFB	07/23/08 19:57	WI080312-1	2		1.954	mg/L	97.7	90	110			
L70645-01DUP	DUP	07/23/08 20:02			.15	.152	mg/L				1.3	20	RA
L70659-08AS	AS	07/23/08 20:18	WI080312-1	2	.45	1.959	mg/L	75.5	90	110			M2
L70659-09DUP	DUP	07/23/08 20:21			U	.026	mg/L				200	20	RA
L70644-01AS	AS	07/23/08 20:36	WI080312-1	10	5.1	15.41	mg/L	103.1	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248685													
WG248685ICV	ICV	07/23/08 19:51	WI080613-1	.609		.56	mg/L	92	90	110			
WG248685ICB	ICB	07/23/08 19:52				U	mg/L		-0.03	0.03			
WG248685LFB	LFB	07/23/08 19:57	WI080312-1	1		.977	mg/L	97.7	90	110			
L70644-01AS	AS	07/23/08 20:00	WI080312-1	1	.19	1.151	mg/L	96.1	90	110			
L70645-01DUP	DUP	07/23/08 20:02			U	U	mg/L				0	20	RA
L70659-08AS	AS	07/23/08 20:18	WI080312-1	1	U	.938	mg/L	93.8	90	110			
L70659-09DUP	DUP	07/23/08 20:21			U	U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248991													
WG248991ICV	ICV	07/29/08 18:12	II080717-3	20		20.43	mg/L	102.2	95	105			
WG248991ICB	ICB	07/29/08 18:16				U	mg/L		-0.9	0.9			
WG248991LFB	LFB	07/29/08 18:30	II080724-3	99.76186		94.9	mg/L	95.1	85	115			
L70658-01AS	AS	07/29/08 18:37	II080724-3	99.76186	.7	116.77	mg/L	116.3	85	115			MA
L70658-01ASD	ASD	07/29/08 18:41	II080724-3	99.76186	.7	115.03	mg/L	114.6	85	115	1.5	20	
L70659-07AS	AS	07/29/08 19:28	II080724-3	99.76186	4.2	115.37	mg/L	111.4	85	115			
L70659-07ASD	ASD	07/29/08 19:32	II080724-3	99.76186	4.2	116.22	mg/L	112.3	85	115	0.73	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248837													
WG248837PBW	PBW	07/25/08 16:00				U	mg/L		-20	20			
WG248837LCSW	LCSW	07/25/08 16:01	PCN30199	260		268	mg/L	103.1	80	120			
L70689-01DUP	DUP	07/25/08 16:15			4550	4562	mg/L				0.3	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L70659***

Project ID: 8720000

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248991													
WG248991ICV	ICV	07/29/08 18:12	II080717-3	100		101.61	mg/L	101.6	95	105			
WG248991ICB	ICB	07/29/08 18:16				U	mg/L		-0.9	0.9			
WG248991LFB	LFB	07/29/08 18:30	II080724-3	98.21624		93.97	mg/L	95.7	85	115			
L70658-01AS	AS	07/29/08 18:37	II080724-3	98.21624	2.5	115.92	mg/L	115.5	85	115			MA
L70658-01ASD	ASD	07/29/08 18:41	II080724-3	98.21624	2.5	113.88	mg/L	113.4	85	115	1.78	20	
L70659-07AS	AS	07/29/08 19:28	II080724-3	98.21624	25	131.93	mg/L	108.9	85	115			
L70659-07ASD	ASD	07/29/08 19:32	II080724-3	98.21624	25	132.46	mg/L	109.4	85	115	0.4	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248969													
WG248969ICV	ICV	07/29/08 16:40	WI080521-1	50.1		52.89	mg/L	105.6	90	110			
WG248969ICB	ICB	07/29/08 16:58				U	mg/L		-1.5	1.5			
WG248969LFB	LFB	07/29/08 17:16	WI080702-9	30		29.5	mg/L	98.3	90	110			
L70472-01AS	AS	07/29/08 17:52	WI080702-9	30	5.9	33.89	mg/L	93.3	90	110			
L70472-01DUP	DUP	07/29/08 18:10			5.9	5.91	mg/L				0.2	20	
L70659-06AS	AS	07/29/08 22:06	WI080702-9	30	17.7	45.45	mg/L	92.5	90	110			
L70659-06DUP	DUP	07/29/08 22:24			17.7	17.69	mg/L				0.1	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L70659***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70659-04	WG248991	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Sodium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG248969	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248685	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248727	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70659-05	WG248991	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Sodium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG248969	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248685	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248727	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70659-06	WG248991	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Sodium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG248969	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248685	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248727	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc.

ACZ Project ID: ***L70659***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70659-07	WG248969	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248685	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248727	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70659-08	WG248969	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248685	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248727	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70659-09	WG248969	Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248685	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248727	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc. ACZ Project ID: ***L70659***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70659
Date Received: 7/23/2008
Received By:
Date Printed: 7/24/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?		X	
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

The following items were not in agreement: number of containers. Only 1 container was received for samples 1 thru 3. The chain of custody indicated that three containers were sent for these samples.

Contact (For any discrepancies, the client must be contacted)

The client was not contacted.

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
566	1.2	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70659
Date Received: 7/23/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L70659-01	BANKS 986									X		
L70659-02	PANAGAKOS 413									X		
L70659-03	EPPELE 641									X		
L70659-04	POWER 535		Y									
L70659-05	PALMER 819		Y									
L70659-06	OSBURN 436		Y									
L70659-07	DUP		Y									
L70659-08	EQB		Y									
L70659-09	FB		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH _Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L70659 — **CHAIN of CUSTODY**

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc
E-mail: dans@hgcinc.com
Address: 51 West Wetmore Rd
Tucson AZ 85705
Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc
E-mail: jimn@hgcinc.com
Telephone: 520-293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC In
E-mail: jimn@hgcinc.com
Address: 51 W. Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 8720000
Reporting state for compliance testing: AZ
Sampler's Name: John Villinski
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO4	FMCQB-GW
BANKS 986	7/21/08 12:05	GW	3	X	
Panagakos 413	7/21/08 15:55	GW	3	X	
EPPELE 641	7/21/08 16:15	GW	3	X	
POWER 535	7/22/08 10:35	GW	3		X
PALMER 819	7/22/08 12:35	GW	3		X
OSBORN 436	7/22/08 13:42	GW	3		X
DUP	7/08		3		X
EQB	7/08		3		X
FB	7/08		3		X

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	7/[illegible]08 15:05		7-23-08 10:33

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 30, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

Project ID: 8720000
ACZ Project ID: L70589

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 19, 2008. This project has been assigned to ACZ's project number, L70589. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70589. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 30, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: BM0-2008-3B

ACZ Sample ID: ***L70589-01***
Date Sampled: *07/18/08 11:25*
Date Received: *07/19/08*
Sample Matrix: *Ground Water*

Field Data

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity (Field)	Field Measurement	615			mS/cm			07/18/08 11:25	nb
pH (Field)	Field Measurement	7.4			units			07/18/08 11:25	nb
Temperature (Field)	Field Measurement	23.9		*	C			07/18/08 11:25	nb

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	64.5			mg/L	0.2	1	07/26/08 19:55	aeh
Magnesium, dissolved	M200.7 ICP	12.0			mg/L	0.2	1	07/26/08 19:55	aeh
Potassium, dissolved	M200.7 ICP	2.9		*	mg/L	0.3	2	07/26/08 19:55	aeh
Sodium, dissolved	M200.7 ICP	53.6		*	mg/L	0.3	2	07/26/08 19:55	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		151			mg/L	2	20	07/22/08 0:00	ear
Carbonate as CaCO3		3	B		mg/L	2	20	07/22/08 0:00	ear
Hydroxide as CaCO3			U		mg/L	2	20	07/22/08 0:00	ear
Total Alkalinity		154		*	mg/L	2	20	07/22/08 0:00	ear
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.1			%			07/30/08 0:00	calc
Sum of Anions		6.2			meq/L	0.1	0.5	07/30/08 0:00	calc
Sum of Cations		6.6			meq/L	0.1	0.5	07/30/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	23.8			mg/L	0.5	3	07/28/08 5:37	aml
Fluoride	M300.0 - Ion Chromatography	0.3	B	*	mg/L	0.1	0.5	07/28/08 5:37	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	3.68			mg/L	0.06	0.3	07/30/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	3.72			mg/L	0.06	0.3	07/19/08 15:00	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.04	B	*	mg/L	0.01	0.05	07/19/08 14:36	pjb
Residue, Filterable (TDS) @180C	SM2540C	390			mg/L	10	20	07/22/08 15:10	tbd
Sulfate	300.0 - Ion Chromatography	106			mg/L	3	10	07/28/08 17:19	aml
TDS (calculated)	Calculation	373			mg/L	10	50	07/30/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.05						07/30/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L70589***

Project ID: 8720000

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248569													
WG248569PBW1	PBW	07/22/08 15:55				20.6	mg/L		-20	20			B4
WG248569LCSW2	LCSW	07/22/08 16:06	WC080722-2	820		788.5	mg/L	96.2	90	110			
L70595-02DUP	DUP	07/22/08 17:30			44	44.4	mg/L				0.9	20	
WG248569PBW2	PBW	07/22/08 18:29				U	mg/L		-20	20			
WG248569LCSW5	LCSW	07/22/08 18:42	WC080722-2	820		787.1	mg/L	96	90	110			
WG248569PBW3	PBW	07/22/08 20:37				U	mg/L		-20	20			
WG248569LCSW8	LCSW	07/22/08 20:49	WC080722-2	820		786.4	mg/L	95.9	90	110			
WG248569PBW4	PBW	07/22/08 23:10				U	mg/L		-20	20			
WG248569LCSW11	LCSW	07/22/08 23:22	WC080722-2	820		787.1	mg/L	96	90	110			
WG248569LCSW17	LCSW	07/23/08 11:50	WC080722-2	820		794.1	mg/L	96.8	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248849													
WG248849ICV	ICV	07/26/08 18:06	II080717-3	100		96.3	mg/L	96.3	95	105			
WG248849ICB	ICB	07/26/08 18:09				U	mg/L		-0.6	0.6			
WG248849LFB	LFB	07/26/08 18:23	II080724-3	67.97008		70.63	mg/L	103.9	85	115			
L70452-01AS	AS	07/26/08 19:15	II080724-3	67.97008	342	418.89	mg/L	113.1	85	115			
L70452-01ASD	ASD	07/26/08 19:19	II080724-3	67.97008	342	401.03	mg/L	86.8	85	115	4.36	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248877													
WG248877ICV	ICV	07/28/08 1:06	WI080521-1	19.98		20.63	mg/L	103.3	90	110			
WG248877ICB	ICB	07/28/08 1:24				U	mg/L		-1.5	1.5			
WG248877LFB	LFB	07/28/08 1:42	WI080702-9	30		30.09	mg/L	100.3	90	110			
L70537-01DUP	DUP	07/28/08 5:19			13.3	13.68	mg/L				2.8	20	
L70589-01AS	AS	07/28/08 5:56	WI080702-9	30	23.8	51.45	mg/L	92.2	90	110			

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248877													
WG248877ICV	ICV	07/28/08 1:06	WI080521-1	4		4	mg/L	100	90	110			
WG248877ICB	ICB	07/28/08 1:24				U	mg/L		-0.3	0.3			
WG248877LFB	LFB	07/28/08 1:42	WI080702-9	1.5		1.44	mg/L	96	90	110			
L70537-01DUP	DUP	07/28/08 5:19			.4	.35	mg/L				13.3	20	RA
L70589-01AS	AS	07/28/08 5:56	WI080702-9	1.5	.3	1.65	mg/L	90	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248849													
WG248849ICV	ICV	07/26/08 18:06	II080717-3	100		99.05	mg/L	99.1	95	105			
WG248849ICB	ICB	07/26/08 18:09				U	mg/L		-0.6	0.6			
WG248849LFB	LFB	07/26/08 18:23	II080724-3	49.96908		52.7	mg/L	105.5	85	115			
L70452-01AS	AS	07/26/08 19:15	II080724-3	49.96908	48.1	105.37	mg/L	114.6	85	115			
L70452-01ASD	ASD	07/26/08 19:19	II080724-3	49.96908	48.1	99.14	mg/L	102.1	85	115	6.09	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L70589***
Project ID: 8720000

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248425													
WG248425ICV	ICV	07/19/08 14:30	WI080613-1	2.416		2.473	mg/L	102.4	90	110			
WG248425ICB	ICB	07/19/08 14:31				U	mg/L		-0.06	0.06			
WG248425LFB	LFB	07/19/08 14:35	WI080312-1	2		2.077	mg/L	103.9	90	110			
WG248425ICV1	ICV	07/19/08 14:58	WI080613-1	2.416		2.535	mg/L	104.9	90	110			
WG248425ICB1	ICB	07/19/08 14:59				U	mg/L		-0.06	0.06			
L70589-01DUP	DUP	07/19/08 15:02			3.72	3.882	mg/L				4.3	20	
L70589-01AS	AS	07/19/08 15:03	WI080312-1	6	3.72	10.19	mg/L	107.8	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248425													
WG248425ICV	ICV	07/19/08 14:30	WI080613-1	.609		.567	mg/L	93.1	90	110			
WG248425ICB	ICB	07/19/08 14:31				U	mg/L		-0.03	0.03			
WG248425LFB	LFB	07/19/08 14:35	WI080312-1	1		1.038	mg/L	103.8	90	110			
L70589-01DUP	DUP	07/19/08 14:38			.04	.038	mg/L				5.1	20	RA
L70589-01AS	AS	07/19/08 14:39	WI080312-1	1	.04	1.101	mg/L	106.1	90	110			
WG248425ICV1	ICV	07/19/08 14:58	WI080613-1	.609		.578	mg/L	94.9	90	110			
WG248425ICB1	ICB	07/19/08 14:59				U	mg/L		-0.03	0.03			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248849													
WG248849ICV	ICV	07/26/08 18:06	II080717-3	20		20.86	mg/L	104.3	95	105			
WG248849ICB	ICB	07/26/08 18:09				U	mg/L		-0.9	0.9			
WG248849LFB	LFB	07/26/08 18:23	II080724-3	99.76186		109.28	mg/L	109.5	85	115			
L70452-01AS	AS	07/26/08 19:15	II080724-3	99.76186	3.4	125.58	mg/L	122.5	85	115			MA
L70452-01ASD	ASD	07/26/08 19:19	II080724-3	99.76186	3.4	116.82	mg/L	113.7	85	115	7.23	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248578													
WG248578PBW	PBW	07/22/08 15:05				U	mg/L		-20	20			
WG248578LCSW	LCSW	07/22/08 15:06	PCN30199	260		258	mg/L	99.2	80	120			
L70604-03DUP	DUP	07/22/08 15:28			370	368	mg/L				0.5	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248849													
WG248849ICV	ICV	07/26/08 18:06	II080717-3	100		104.08	mg/L	104.1	95	105			
WG248849ICB	ICB	07/26/08 18:09				U	mg/L		-0.9	0.9			
WG248849LFB	LFB	07/26/08 18:23	II080724-3	98.21624		108.81	mg/L	110.8	85	115			
L70452-01AS	AS	07/26/08 19:15	II080724-3	98.21624	46.4	165.31	mg/L	121.1	85	115			MA
L70452-01ASD	ASD	07/26/08 19:19	II080724-3	98.21624	46.4	153.64	mg/L	109.2	85	115	7.32	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic QC Summary

Hydro Geo Chem, Inc.
Project ID: 8720000

ACZ Project ID: ***L70589***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248877													
WG248877ICV	ICV	07/28/08 1:06	WI080521-1	50.1		53.46	mg/L	106.7	90	110			
WG248877ICB	ICB	07/28/08 1:24				U	mg/L		-1.5	1.5			
WG248877LFB	LFB	07/28/08 1:42	WI080702-9	30		31.99	mg/L	106.6	90	110			
L70537-01DUP	DUP	07/28/08 5:19			53.3	53.82	mg/L				1	20	
L70589-01AS	AS	07/28/08 17:37	WI080702-9	150	106	244.9	mg/L	92.6	90	110			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L70589***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70589-01	WG248849	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Sodium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG248877	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248425	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248569	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.

Hydro Geo Chem, Inc. ACZ Project ID: ***L70589***

Field Data

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Temperature (Field)	Field Measurement

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70589
Date Received: 7/19/2008
Received By:
Date Printed: 7/19/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6490	5	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70589
Date Received: 7/19/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L70589-01	BM0-2008-3B		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L705891

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: HGC, INC,
E-mail: dans@hgcinc.

Address: 51 W. Wetmore Rd, ste. 100
Tucson, AZ 85705
Telephone: (520) 293-1500

Copy of Report to:

Name:
Company:

E-mail:
Telephone:

Invoice to:

Name:
Company:
E-mail:

Address:
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☐ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 872000
Reporting state for compliance testing: AZ
Sampler's Name: NJ, Babb
Are any samples NRC licensable material?

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB-GW								
BMO-2008-3B	7-18-08/ 11:25	GW	3	X								
	4 per Bottle MS 7-19-08											

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

pH = 7.35
T°F = 75°F
μ_S = 615

DTW = 148.54

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Neil J. Babb	7-18-08/1215	MS	7-19-08 10:58

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

August 04, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000
ACZ Project ID: L70576

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 18, 2008. This project has been assigned to ACZ's project number, L70576. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70576. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 04, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: PIONKE

ACZ Sample ID: ***L70576-01***
Date Sampled: *07/17/08 09:15*
Date Received: *07/18/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	420		*	mg/L	5	30	07/29/08 13:02	aml

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: ROGERS E

ACZ Sample ID: ***L70576-02***
Date Sampled: *07/17/08 10:36*
Date Received: *07/18/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	7.1		*	mg/L	0.5	3	07/28/08 23:03	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: RAMIREZ

ACZ Sample ID: ***L70576-03***
Date Sampled: *07/17/08 11:35*
Date Received: *07/18/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	8.8		*	mg/L	0.5	3	07/28/08 23:21	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 8720000

ACZ Project ID: ***L70576***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248915													
WG248915ICV	ICV	07/28/08 18:31	WI080521-1	50.1		54.03	mg/L	107.8	90	110			
WG248915ICB	ICB	07/28/08 18:50				.71	mg/L		-1.5	1.5			
WG248915LFB	LFB	07/28/08 19:08	WI080702-9	30		29.5	mg/L	98.3	90	110			
L70469-01DUP	DUP	07/28/08 19:44			4310	4541	mg/L				5.2	20	
L70469-02AS	AS	07/29/08 12:26	WI080702-9	600	750	1249	mg/L	83.2	90	110			M2

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L70576***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70576-01	WG248915	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L70576-02	WG248915	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L70576-03	WG248915	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

Certification Qualifiers

Hydro Geo Chem, Inc. ACZ Project ID: ***L70576***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70576
Date Received: 7/18/2008
Received By:
Date Printed: 7/18/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6481	1.2	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70576
Date Received: 7/18/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L70576-01	PIONKE									X		
L70576-02	ROGERS E									X		
L70576-03	RAMIREZ									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

L705740

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc.
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd
Tucson, AZ 85705
Telephone: 520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Telephone: 520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Address: 51 W. Wetmore Rd
Tucson, AZ 85705
Telephone: 520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 8720000
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	$SO_4^{=}$
PIONKE	7-17-08: 9:15	GW	1	X
ROGERS E	7-17-08: 10:36	GW	1	X
RAMIREZ	7-17-08: 11:35	GW	1	X

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	7-17-08: 12:15		7-18-08 10:02

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 30, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

Project ID: 8720000
ACZ Project ID: L70537

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 17, 2008. This project has been assigned to ACZ's project number, L70537. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70537. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 30, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: BMO-2008-6B

ACZ Sample ID: ***L70537-01***
Date Sampled: *07/16/08 12:00*
Date Received: *07/17/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	59.7			mg/L	0.2	1	07/26/08 16:07	aeh
Magnesium, dissolved	M200.7 ICP	10.2			mg/L	0.2	1	07/26/08 16:07	aeh
Potassium, dissolved	M200.7 ICP	3.0			mg/L	0.3	2	07/29/08 12:20	aeh
Sodium, dissolved	M200.7 ICP	26.2			mg/L	0.3	2	07/26/08 16:07	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		151			mg/L	2	20	07/21/08 0:00	tbd
Carbonate as CaCO3		9	B		mg/L	2	20	07/21/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	07/21/08 0:00	tbd
Total Alkalinity		160			mg/L	2	20	07/21/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.0			%			07/30/08 0:00	calc
Sum of Anions		4.8			meq/L	0.1	0.5	07/30/08 0:00	calc
Sum of Cations		5.0			meq/L	0.1	0.5	07/30/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	13.3			mg/L	0.5	3	07/28/08 4:25	aml
Fluoride	M300.0 - Ion Chromatography	0.4	B	*	mg/L	0.1	0.5	07/28/08 4:25	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.97			mg/L	0.02	0.1	07/30/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.97		*	mg/L	0.02	0.1	07/17/08 19:37	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/17/08 19:37	pjb
Residue, Filterable (TDS) @180C	SM2540C	300			mg/L	10	20	07/18/08 14:15	tbd
Sulfate	300.0 - Ion Chromatography	53.3			mg/L	0.5	3	07/28/08 4:25	aml
TDS (calculated)	Calculation	274			mg/L	10	50	07/30/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.09						07/30/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L70537***
Project ID: 8720000

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248454													
WG248454PBW2	PBW	07/21/08 17:31				U	mg/L		-20	20			
WG248454LCSW5	LCSW	07/21/08 17:44	WC080702-8	820		789.7	mg/L	96.3	90	110			
WG248454PBW3	PBW	07/21/08 20:42				U	mg/L		-20	20			
WG248454LCSW8	LCSW	07/21/08 20:55	WC080702-8	820		789.2	mg/L	96.2	90	110			
L70551-02DUP	DUP	07/21/08 22:29			20	20.7	mg/L				3.4	20	
WG248454PBW4	PBW	07/22/08 0:15				U	mg/L		-20	20			
WG248454LCSW11	LCSW	07/22/08 0:27	WC080702-8	820		796.8	mg/L	97.2	90	110			
WG248454LCSW14	LCSW	07/22/08 3:39	WC080702-8	820		798.5	mg/L	97.4	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248821													
WG248821ICV	ICV	07/26/08 15:35	II080717-3	100		99.13	mg/L	99.1	95	105			
WG248821ICB	ICB	07/26/08 15:39				U	mg/L		-0.6	0.6			
WG248821LFB	LFB	07/26/08 15:51	II080724-3	67.97008		74.17	mg/L	109.1	85	115			
L70531-06AS	AS	07/26/08 15:57	II080724-3	67.97008	90.9	158.53	mg/L	99.5	85	115			
L70531-06ASD	ASD	07/26/08 16:01	II080724-3	67.97008	90.9	157.06	mg/L	97.3	85	115	0.93	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248877													
WG248877ICV	ICV	07/28/08 1:06	WI080521-1	19.98		20.63	mg/L	103.3	90	110			
WG248877ICB	ICB	07/28/08 1:24				U	mg/L		-1.5	1.5			
WG248877LFB	LFB	07/28/08 1:42	WI080702-9	30		30.09	mg/L	100.3	90	110			
L70537-01DUP	DUP	07/28/08 5:19			13.3	13.68	mg/L				2.8	20	
L70589-01AS	AS	07/28/08 5:56	WI080702-9	30	23.8	51.45	mg/L	92.2	90	110			

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248877													
WG248877ICV	ICV	07/28/08 1:06	WI080521-1	4		4	mg/L	100	90	110			
WG248877ICB	ICB	07/28/08 1:24				U	mg/L		-0.3	0.3			
WG248877LFB	LFB	07/28/08 1:42	WI080702-9	1.5		1.44	mg/L	96	90	110			
L70537-01DUP	DUP	07/28/08 5:19			.4	.35	mg/L				13.3	20	RA
L70589-01AS	AS	07/28/08 5:56	WI080702-9	1.5	.3	1.65	mg/L	90	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248821													
WG248821ICV	ICV	07/26/08 15:35	II080717-3	100		98.93	mg/L	98.9	95	105			
WG248821ICB	ICB	07/26/08 15:39				U	mg/L		-0.6	0.6			
WG248821LFB	LFB	07/26/08 15:51	II080724-3	49.96908		53.83	mg/L	107.7	85	115			
L70531-06AS	AS	07/26/08 15:57	II080724-3	49.96908	45.6	97.01	mg/L	102.9	85	115			
L70531-06ASD	ASD	07/26/08 16:01	II080724-3	49.96908	45.6	95.57	mg/L	100	85	115	1.5	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L70537***
Project ID: 8720000

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248324													
WG248324ICV	ICV	07/17/08 19:01	WI080613-1	2.416		2.454	mg/L	101.6	90	110			
WG248324ICB	ICB	07/17/08 19:02				U	mg/L		-0.06	0.06			
WG248324LFB	LFB	07/17/08 19:06	WI080312-1	2		2.065	mg/L	103.3	90	110			
L70521-10AS	AS	07/17/08 19:27	WI080312-1	2	.04	2.071	mg/L	101.6	90	110			
L70524-01DUP	DUP	07/17/08 19:30			U	2.3	mg/L				200	20	RA

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248324													
WG248324ICV	ICV	07/17/08 19:01	WI080613-1	.609		.57	mg/L	93.6	90	110			
WG248324ICB	ICB	07/17/08 19:02				U	mg/L		-0.03	0.03			
WG248324LFB	LFB	07/17/08 19:06	WI080312-1	1		1.033	mg/L	103.3	90	110			
L70521-10AS	AS	07/17/08 19:27	WI080312-1	1	U	.973	mg/L	97.3	90	110			
L70524-01DUP	DUP	07/17/08 19:30			1	1.1	mg/L				9.5	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248978													
WG248978ICV	ICV	07/29/08 11:47	II080717-3	20		19.81	mg/L	99.1	95	105			
WG248978ICB	ICB	07/29/08 11:51				U	mg/L		-0.9	0.9			
WG248978LFB	LFB	07/29/08 12:04	II080724-3	99.76186		104.06	mg/L	104.3	85	115			
L70531-06AS	AS	07/29/08 12:10	II080724-3	99.76186	4.4	105.91	mg/L	101.8	85	115			
L70531-06ASD	ASD	07/29/08 12:14	II080724-3	99.76186	4.4	106.64	mg/L	102.5	85	115	0.69	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248378													
WG248378PBW	PBW	07/18/08 14:05				U	mg/L		-20	20			
WG248378LCSW	LCSW	07/18/08 14:07	PCN30198	260		282	mg/L	108.5	80	120			
L70567-05DUP	DUP	07/18/08 14:36			1810	1820	mg/L				0.6	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248821													
WG248821ICV	ICV	07/26/08 15:35	II080717-3	100		99.43	mg/L	99.4	95	105			
WG248821ICB	ICB	07/26/08 15:39				.38	mg/L		-0.9	0.9			
WG248821LFB	LFB	07/26/08 15:51	II080724-3	98.21624		105.92	mg/L	107.8	85	115			
L70531-06AS	AS	07/26/08 15:57	II080724-3	98.21624	92	189.67	mg/L	99.4	85	115			
L70531-06ASD	ASD	07/26/08 16:01	II080724-3	98.21624	92	188.79	mg/L	98.5	85	115	0.47	20	

Hydro Geo Chem, Inc.
Project ID: 8720000

ACZ Project ID: ***L70537***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248877													
WG248877ICV	ICV	07/28/08 1:06	WI080521-1	50.1		53.46	mg/L	106.7	90	110			
WG248877ICB	ICB	07/28/08 1:24				U	mg/L		-1.5	1.5			
WG248877LFB	LFB	07/28/08 1:42	WI080702-9	30		31.99	mg/L	106.6	90	110			
L70537-01DUP	DUP	07/28/08 5:19			53.3	53.82	mg/L				1	20	
L70589-01AS	AS	07/28/08 17:37	WI080702-9	150	106	244.9	mg/L	92.6	90	110			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L70537***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70537-01	WG248877	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248324	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc. ACZ Project ID: ***L70537***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70537
Date Received: 7/17/2008
Received By:
Date Printed: 7/17/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6472	4.2	13

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70537
Date Received: 7/17/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L70537-01	BMO-2008-6B		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L70537

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore, Ste. 100 Tucson, AZ 85705
Company: HGC, INC	
E-mail: dans@hgcinc.com	Telephone: (520) 293-1500 x.133

Copy of Report to:

Name:	E-mail:
Company:	Telephone:

Invoice to:

Name:	Address:
Company:	
E-mail:	Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

YES ☐ NO ☐

PROJECT INFORMATION

Quote #: FMCQB-GW

Project/PO #: 8720000

Reporting state for compliance testing: AZ

Sampler's Name: NJ Babb

Are any samples NRC licensable material?

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB-GW
BMO-2008-6B	7/16/08 @ 12:00	GW	3	X

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

pH = 7.36
T°F = 75.3°F
µS = 475

DTW = 203.95
GPM = 3.9

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Neil J. Babb	7-16-08/13:15	MSS	7-17-08 10:45

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

August 01, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000 T2.2
ACZ Project ID: L70525

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 17, 2008. This project has been assigned to ACZ's project number, L70525. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70525. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after September 01, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

Tony Antalek has reviewed and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000 T2.2
Sample ID: WEISKOPF

ACZ Sample ID: ***L70525-01***
Date Sampled: *07/16/08 09:05*
Date Received: *07/17/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	248			mg/L	0.2	1	07/26/08 18:01	aeh
Magnesium, dissolved	M200.7 ICP	34.3			mg/L	0.2	1	07/26/08 18:01	aeh
Potassium, dissolved	M200.7 ICP	4.4			mg/L	0.3	2	07/30/08 12:08	aeh
Sodium, dissolved	M200.7 ICP	38.6			mg/L	0.3	2	07/26/08 18:01	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		170			mg/L	2	20	07/21/08 0:00	tbd
Carbonate as CaCO3		3	B		mg/L	2	20	07/21/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	07/21/08 0:00	tbd
Total Alkalinity		173			mg/L	2	20	07/21/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.1			%			08/01/08 0:00	calc
Sum of Anions		16.3			meq/L	0.1	0.5	08/01/08 0:00	calc
Sum of Cations		17.0			meq/L	0.1	0.5	08/01/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	26.0		*	mg/L	0.5	3	07/28/08 20:56	aml
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	07/28/08 20:56	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	4.29			mg/L	0.04	0.2	08/01/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	4.29		*	mg/L	0.04	0.2	07/17/08 19:41	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/17/08 19:31	pjb
Residue, Filterable (TDS) @180C	SM2540C	1060			mg/L	10	20	07/18/08 14:12	tbd
Sulfate	300.0 - Ion Chromatography	560		*	mg/L	10	50	07/29/08 12:44	aml
TDS (calculated)	Calculation	1040			mg/L	10	50	08/01/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.02						08/01/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000 T2.2
Sample ID: MOORE

ACZ Sample ID: ***L70525-02***
Date Sampled: *07/16/08 11:05*
Date Received: *07/17/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	9.8		*	mg/L	0.5	3	07/28/08 21:14	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000 T2.2
Sample ID: ZANDER

ACZ Sample ID: ***L70525-03***
Date Sampled: *07/16/08 12:03*
Date Received: *07/17/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	6.9		*	mg/L	0.5	3	07/28/08 21:33	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000 T2.2
Sample ID: KEEFER

ACZ Sample ID: ***L70525-04***
Date Sampled: *07/16/08 14:10*
Date Received: *07/17/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	8.0		*	mg/L	0.5	3	07/28/08 21:51	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L70525***

Project ID: 8720000 T2.2

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248454													
WG248454PBW2	PBW	07/21/08 17:31				U	mg/L		-20	20			
WG248454LCSW5	LCSW	07/21/08 17:44	WC080702-8	820		789.7	mg/L	96.3	90	110			
L70527-04DUP	DUP	07/21/08 20:37			129	129.7	mg/L				0.5	20	
WG248454PBW3	PBW	07/21/08 20:42				U	mg/L		-20	20			
WG248454LCSW8	LCSW	07/21/08 20:55	WC080702-8	820		789.2	mg/L	96.2	90	110			
WG248454PBW4	PBW	07/22/08 0:15				U	mg/L		-20	20			
WG248454LCSW11	LCSW	07/22/08 0:27	WC080702-8	820		796.8	mg/L	97.2	90	110			
WG248454LCSW14	LCSW	07/22/08 3:39	WC080702-8	820		798.5	mg/L	97.4	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248816													
WG248816ICV	ICV	07/26/08 17:42	II080717-3	100		99.47	mg/L	99.5	95	105			
WG248816ICB	ICB	07/26/08 17:46				U	mg/L		-0.6	0.6			
WG248816LFB	LFB	07/26/08 17:58	II080724-3	67.97008		77.72	mg/L	114.3	85	115			
L70525-01AS	AS	07/26/08 18:04	II080724-3	67.97008	248	315.46	mg/L	99.2	85	115			
L70525-01ASD	ASD	07/26/08 18:08	II080724-3	67.97008	248	315.47	mg/L	99.3	85	115	0	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248915													
WG248915ICV	ICV	07/28/08 18:31	WI080521-1	19.98		20.46	mg/L	102.4	90	110			
WG248915ICB	ICB	07/28/08 18:50				U	mg/L		-1.5	1.5			
WG248915LFB	LFB	07/28/08 19:08	WI080702-9	30		29.15	mg/L	97.2	90	110			
L70469-01DUP	DUP	07/28/08 19:44			40	39	mg/L				2.5	20	RA
L70469-02AS	AS	07/28/08 20:20	WI080702-9	30	30.3	59.06	mg/L	95.9	90	110			

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248915													
WG248915ICV	ICV	07/28/08 18:31	WI080521-1	4		4	mg/L	100	90	110			
WG248915ICB	ICB	07/28/08 18:50				U	mg/L		-0.3	0.3			
WG248915LFB	LFB	07/28/08 19:08	WI080702-9	1.5		1.45	mg/L	96.7	90	110			
L70469-01DUP	DUP	07/28/08 19:44			U	U	mg/L				0	20	RA
L70469-02AS	AS	07/28/08 20:20	WI080702-9	1.5	1.4	2.76	mg/L	90.7	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248816													
WG248816ICV	ICV	07/26/08 17:42	II080717-3	100		98.73	mg/L	98.7	95	105			
WG248816ICB	ICB	07/26/08 17:46				U	mg/L		-0.6	0.6			
WG248816LFB	LFB	07/26/08 17:58	II080724-3	49.96908		54.86	mg/L	109.8	85	115			
L70525-01AS	AS	07/26/08 18:04	II080724-3	49.96908	34.3	89.93	mg/L	111.3	85	115			
L70525-01ASD	ASD	07/26/08 18:08	II080724-3	49.96908	34.3	90.2	mg/L	111.9	85	115	0.3	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L70525***

Project ID: 8720000 T2.2

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248324													
WG248324ICV	ICV	07/17/08 19:01	WI080613-1	2.416		2.454	mg/L	101.6	90	110			
WG248324ICB	ICB	07/17/08 19:02				U	mg/L		-0.06	0.06			
WG248324LFB	LFB	07/17/08 19:06	WI080312-1	2		2.065	mg/L	103.3	90	110			
L70521-10AS	AS	07/17/08 19:27	WI080312-1	2	.04	2.071	mg/L	101.6	90	110			
L70524-01DUP	DUP	07/17/08 19:30			U	2.3	mg/L				200	20	RA

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248324													
WG248324ICV	ICV	07/17/08 19:01	WI080613-1	.609		.57	mg/L	93.6	90	110			
WG248324ICB	ICB	07/17/08 19:02				U	mg/L		-0.03	0.03			
WG248324LFB	LFB	07/17/08 19:06	WI080312-1	1		1.033	mg/L	103.3	90	110			
L70521-10AS	AS	07/17/08 19:27	WI080312-1	1	U	.973	mg/L	97.3	90	110			
L70524-01DUP	DUP	07/17/08 19:30			1	1.1	mg/L				9.5	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248977													
WG248977ICV	ICV	07/30/08 11:48	II080717-3	20		20.24	mg/L	101.2	95	105			
WG248977ICB	ICB	07/30/08 11:51				U	mg/L		-0.9	0.9			
WG248977LFB	LFB	07/30/08 12:04	II080724-3	99.76186		100.46	mg/L	100.7	85	115			
L70525-01AS	AS	07/30/08 12:11	II080724-3	99.76186	4.4	111.48	mg/L	107.3	85	115			
L70525-01ASD	ASD	07/30/08 12:14	II080724-3	99.76186	4.4	111.84	mg/L	107.7	85	115	0.32	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248378													
WG248378PBW	PBW	07/18/08 14:05				U	mg/L		-20	20			
WG248378LCSW	LCSW	07/18/08 14:07	PCN30198	260		282	mg/L	108.5	80	120			
L70567-05DUP	DUP	07/18/08 14:36			1810	1820	mg/L				0.6	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248816													
WG248816ICV	ICV	07/26/08 17:42	II080717-3	100		98.61	mg/L	98.6	95	105			
WG248816ICB	ICB	07/26/08 17:46				U	mg/L		-0.9	0.9			
WG248816LFB	LFB	07/26/08 17:58	II080724-3	98.21624		107.62	mg/L	109.6	85	115			
L70525-01AS	AS	07/26/08 18:04	II080724-3	98.21624	38.6	147.74	mg/L	111.1	85	115			
L70525-01ASD	ASD	07/26/08 18:08	II080724-3	98.21624	38.6	148.55	mg/L	111.9	85	115	0.55	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L70525***

Project ID: 8720000 T2.2

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248915													
WG248915ICV	ICV	07/28/08 18:31	WI080521-1	50.1		54.03	mg/L	107.8	90	110			
WG248915ICB	ICB	07/28/08 18:50				.71	mg/L		-1.5	1.5			
WG248915LFB	LFB	07/28/08 19:08	WI080702-9	30		29.5	mg/L	98.3	90	110			
L70469-01DUP	DUP	07/28/08 19:44			4310	4541	mg/L				5.2	20	
L70469-02AS	AS	07/29/08 12:26	WI080702-9	600	750	1249	mg/L	83.2	90	110			M2

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L70525***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70525-01	WG248915	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248324	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248915	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L70525-02	WG248915	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L70525-03	WG248915	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L70525-04	WG248915	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

Hydro Geo Chem, Inc. ACZ Project ID: ***L70525***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000 T2.2

ACZ Project ID: L70525
Date Received: 7/17/2008
Received By:
Date Printed: 7/17/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
1837	1.8	17

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000 T2.2

ACZ Project ID: L70525
Date Received: 7/17/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L70525-01	WEISKOPF		Y									
L70525-02	MOORE									X		
L70525-03	ZANDER									X		
L70525-04	KEEFER									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L-70525 — **CHAIN of CUSTODY**

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Dan Simpson
Company: HydroGeoChem Inc
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd. Tucson, AZ 85705
Telephone: (520) 293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Telephone: (520) 293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Address: 51 W. Wetmore Rd Tucson, AZ 85705
Telephone: (520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 8720000 T2.2
Reporting state for compliance testing: AZ
Sampler's Name: Mark Arneson
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB-GW	SO_4						
WEISKOPF	7-16-08: 9:05	GW	3	X							
MOORE	7-16-08: 11:05	GW	1		X						
ZANDER	7-16-08: 12:03	GW	1		X						
KEEFER	7-16-08: 14:10	GW	1		X						

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
[signature]	7-16-08: 1500	[signature]	7-17-08 10:44

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 30, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000T2.2
ACZ Project ID: L70502

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 16, 2008. This project has been assigned to ACZ's project number, L70502. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70502. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 30, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000T2.2
Sample ID: ANDERSON

ACZ Sample ID: ***L70502-01***
Date Sampled: *07/14/08 10:30*
Date Received: *07/16/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	472			mg/L	5	30	07/27/08 21:29	aml

Arizona license number: AZ0102

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000T2.2
Sample ID: HOBAN

ACZ Sample ID: ***L70502-02***
Date Sampled: *07/14/08 11:47*
Date Received: *07/16/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	690			mg/L	10	50	07/27/08 21:47	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000T2.2
Sample ID: CHAMBERS

ACZ Sample ID: ***L70502-03***
Date Sampled: *07/14/08 12:35*
Date Received: *07/16/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	5.8			mg/L	0.5	3	07/25/08 20:18	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000T2.2
Sample ID: FRANCO

ACZ Sample ID: ***L70502-04***
Date Sampled: *07/14/08 15:30*
Date Received: *07/16/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	680			mg/L	10	50	07/27/08 22:05	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000T2.2
Sample ID: HOWARD

ACZ Sample ID: ***L70502-05***
Date Sampled: *07/14/08 16:12*
Date Received: *07/16/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	610			mg/L	10	50	07/27/08 22:59	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000T2.2
Sample ID: TVI236

ACZ Sample ID: ***L70502-06***
Date Sampled: *07/15/08 08:25*
Date Received: *07/16/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	70.4			mg/L	0.2	1	07/24/08 20:34	aeh
Magnesium, dissolved	M200.7 ICP	9.3			mg/L	0.2	1	07/24/08 20:34	aeh
Potassium, dissolved	M200.7 ICP	1.8	B	*	mg/L	0.3	2	07/24/08 20:34	aeh
Sodium, dissolved	M200.7 ICP	26.3			mg/L	0.3	2	07/24/08 20:34	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		161			mg/L	2	20	07/18/08 0:00	gkj
Carbonate as CaCO3		11	B		mg/L	2	20	07/18/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Total Alkalinity		173		*	mg/L	2	20	07/18/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		2.9			%			07/29/08 0:00	calc
Sum of Anions		5.1			meq/L	0.1	0.5	07/29/08 0:00	calc
Sum of Cations		5.4			meq/L	0.1	0.5	07/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	23.5		*	mg/L	0.5	3	07/25/08 21:49	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	07/25/08 21:49	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	3.46			mg/L	0.06	0.3	07/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	3.46			mg/L	0.06	0.3	07/16/08 19:17	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/16/08 18:42	pjb
Residue, Filterable (TDS) @180C	SM2540C	310			mg/L	10	20	07/18/08 9:19	tbd
Sulfate	300.0 - Ion Chromatography	37.6			mg/L	0.5	3	07/25/08 21:49	aml
TDS (calculated)	Calculation	292			mg/L	10	50	07/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.06						07/29/08 0:00	calc

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ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000T2.2
Sample ID: TVI875

ACZ Sample ID: ***L70502-07***
Date Sampled: *07/15/08 09:00*
Date Received: *07/16/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	131			mg/L	0.2	1	07/24/08 20:38	aeh
Magnesium, dissolved	M200.7 ICP	17.4			mg/L	0.2	1	07/24/08 20:38	aeh
Potassium, dissolved	M200.7 ICP	2.8		*	mg/L	0.3	2	07/24/08 20:38	aeh
Sodium, dissolved	M200.7 ICP	39.6			mg/L	0.3	2	07/24/08 20:38	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		148			mg/L	2	20	07/18/08 0:00	gkj
Carbonate as CaCO3		11	B		mg/L	2	20	07/18/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Total Alkalinity		160		*	mg/L	2	20	07/18/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		0.0			%			07/29/08 0:00	calc
Sum of Anions		9.7			meq/L	0.1	0.5	07/29/08 0:00	calc
Sum of Cations		9.7			meq/L	0.1	0.5	07/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	20.2		*	mg/L	0.5	3	07/25/08 22:07	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	07/25/08 22:07	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	3.00			mg/L	0.02	0.1	07/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	3.00			mg/L	0.02	0.1	07/16/08 18:44	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/16/08 18:44	pjb
Residue, Filterable (TDS) @180C	SM2540C	640			mg/L	10	20	07/18/08 9:21	tbd
Sulfate	300.0 - Ion Chromatography	274			mg/L	5	30	07/27/08 23:17	aml
TDS (calculated)	Calculation	598			mg/L	10	50	07/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.07						07/29/08 0:00	calc

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000T2.2
Sample ID: COOPER C

ACZ Sample ID: ***L70502-08***
Date Sampled: *07/15/08 10:18*
Date Received: *07/16/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	386			mg/L	0.2	1	07/24/08 20:49	aeh
Magnesium, dissolved	M200.7 ICP	58.8			mg/L	0.2	1	07/24/08 20:49	aeh
Potassium, dissolved	M200.7 ICP	5.8		*	mg/L	0.3	2	07/24/08 20:49	aeh
Sodium, dissolved	M200.7 ICP	43.3			mg/L	0.3	2	07/24/08 20:49	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		235			mg/L	2	20	07/18/08 0:00	gkj
Carbonate as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Total Alkalinity		235		*	mg/L	2	20	07/18/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-3.5			%			07/29/08 0:00	calc
Sum of Anions		28.1			meq/L	0.1	0.5	07/29/08 0:00	calc
Sum of Cations		26.2			meq/L	0.1	0.5	07/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	46.5		*	mg/L	0.5	3	07/25/08 22:25	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	07/25/08 22:25	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	3.24			mg/L	0.02	0.1	07/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	3.24			mg/L	0.02	0.1	07/16/08 18:47	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/16/08 18:47	pjb
Residue, Filterable (TDS) @180C	SM2540C	1860			mg/L	10	20	07/18/08 9:25	tbd
Sulfate	300.0 - Ion Chromatography	1040			mg/L	10	50	07/27/08 23:35	aml
TDS (calculated)	Calculation	1740			mg/L	10	50	07/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.07						07/29/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000T2.2
Sample ID: MCCONNELL26

ACZ Sample ID: ***L70502-09***
Date Sampled: *07/15/08 11:30*
Date Received: *07/16/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	700			mg/L	10	50	07/27/08 23:53	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000T2.2
Sample ID: GARNER 635

ACZ Sample ID: ***L70502-10***
Date Sampled: *07/15/08 14:10*
Date Received: *07/16/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	37.6			mg/L	0.2	1	07/24/08 20:52	aeh
Magnesium, dissolved	M200.7 ICP	7.8			mg/L	0.2	1	07/24/08 20:52	aeh
Potassium, dissolved	M200.7 ICP	2.5		*	mg/L	0.3	2	07/24/08 20:52	aeh
Sodium, dissolved	M200.7 ICP	60.2			mg/L	0.3	2	07/24/08 20:52	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		163			mg/L	2	20	07/18/08 0:00	gkj
Carbonate as CaCO3		16	B		mg/L	2	20	07/18/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Total Alkalinity		179		*	mg/L	2	20	07/18/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.0			%			07/29/08 0:00	calc
Sum of Anions		4.8			meq/L	0.1	0.5	07/29/08 0:00	calc
Sum of Cations		5.2			meq/L	0.1	0.5	07/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	13.5		*	mg/L	0.5	3	07/25/08 23:38	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	07/25/08 23:38	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.92			mg/L	0.02	0.1	07/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.92			mg/L	0.02	0.1	07/16/08 18:48	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/16/08 18:48	pjb
Residue, Filterable (TDS) @180C	SM2540C	300			mg/L	10	20	07/18/08 9:27	tbd
Sulfate	300.0 - Ion Chromatography	37.4			mg/L	0.5	3	07/25/08 23:38	aml
TDS (calculated)	Calculation	281			mg/L	10	50	07/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.07						07/29/08 0:00	calc

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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000T2.2
Sample ID: DUP071508

ACZ Sample ID: ***L70502-11***
Date Sampled: *07/15/08 00:00*
Date Received: *07/16/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	398			mg/L	0.2	1	07/24/08 20:56	aeh
Magnesium, dissolved	M200.7 ICP	61.7			mg/L	0.2	1	07/24/08 20:56	aeh
Potassium, dissolved	M200.7 ICP	6.1		*	mg/L	0.3	2	07/24/08 20:56	aeh
Sodium, dissolved	M200.7 ICP	46.2			mg/L	0.3	2	07/24/08 20:56	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		234			mg/L	2	20	07/18/08 0:00	gkj
Carbonate as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Total Alkalinity		234		*	mg/L	2	20	07/18/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.5			%			07/29/08 0:00	calc
Sum of Anions		26.4			meq/L	0.1	0.5	07/29/08 0:00	calc
Sum of Cations		27.2			meq/L	0.1	0.5	07/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	46.4		*	mg/L	0.5	3	07/25/08 23:56	aml
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	07/25/08 23:56	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	3.25			mg/L	0.02	0.1	07/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	3.25			mg/L	0.02	0.1	07/16/08 18:49	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/16/08 18:49	pjb
Residue, Filterable (TDS) @180C	SM2540C	1860			mg/L	10	20	07/18/08 9:29	tbd
Sulfate	300.0 - Ion Chromatography	960			mg/L	10	50	07/28/08 0:12	aml
TDS (calculated)	Calculation	1670			mg/L	10	50	07/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.11						07/29/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000T2.2
Sample ID: EQB071508

ACZ Sample ID: ***L70502-12***
Date Sampled: *07/15/08 00:00*
Date Received: *07/16/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP		U		mg/L	0.2	1	07/24/08 21:00	aeh
Magnesium, dissolved	M200.7 ICP		U		mg/L	0.2	1	07/24/08 21:00	aeh
Potassium, dissolved	M200.7 ICP		U	*	mg/L	0.3	2	07/24/08 21:00	aeh
Sodium, dissolved	M200.7 ICP		U		mg/L	0.3	2	07/24/08 21:00	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Carbonate as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Total Alkalinity			U	*	mg/L	2	20	07/18/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		n/a			%			07/29/08 0:00	calc
Sum of Anions			U		meq/L	0.1	0.5	07/29/08 0:00	calc
Sum of Cations			U		meq/L	0.1	0.5	07/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography		U	*	mg/L	0.5	3	07/26/08 0:14	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	07/26/08 0:14	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.02	B		mg/L	0.02	0.1	07/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.02	B		mg/L	0.02	0.1	07/16/08 18:54	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/16/08 18:54	pjb
Residue, Filterable (TDS) @180C	SM2540C		U		mg/L	10	20	07/18/08 9:31	tbd
Sulfate	300.0 - Ion Chromatography		U		mg/L	0.5	3	07/26/08 0:14	aml
TDS (calculated)	Calculation		U		mg/L	10	50	07/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	n/a						07/29/08 0:00	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000T2.2
Sample ID: FB071508

ACZ Sample ID: ***L70502-13***
Date Sampled: *07/15/08 00:00*
Date Received: *07/16/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	1.2			mg/L	0.2	1	07/24/08 21:03	aeh
Magnesium, dissolved	M200.7 ICP		U		mg/L	0.2	1	07/24/08 21:03	aeh
Potassium, dissolved	M200.7 ICP		U	*	mg/L	0.3	2	07/24/08 21:03	aeh
Sodium, dissolved	M200.7 ICP		U		mg/L	0.3	2	07/24/08 21:03	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Carbonate as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	07/18/08 0:00	gkj
Total Alkalinity			U	*	mg/L	2	20	07/18/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		n/a			%			07/29/08 0:00	calc
Sum of Anions			U		meq/L	0.1	0.5	07/29/08 0:00	calc
Sum of Cations			U		meq/L	0.1	0.5	07/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography		U	*	mg/L	0.5	3	07/26/08 0:32	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	07/26/08 0:32	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.02	B		mg/L	0.02	0.1	07/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.02	B		mg/L	0.02	0.1	07/16/08 18:55	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/16/08 18:55	pjb
Residue, Filterable (TDS) @180C	SM2540C		U		mg/L	10	20	07/18/08 9:33	tbd
Sulfate	300.0 - Ion Chromatography	0.6	B		mg/L	0.5	3	07/26/08 0:32	aml
TDS (calculated)	Calculation		U		mg/L	10	50	07/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	n/a						07/29/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L70502***

Project ID: 8720000T2.2

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248282													
WG248282PBW2	PBW	07/17/08 18:40				U	mg/L		-20	20			
WG248282LCSW5	LCSW	07/17/08 18:53	WC080702-8	820		791.1	mg/L	96.5	90	110			
WG248282PBW3	PBW	07/17/08 21:25				U	mg/L		-20	20			
WG248282LCSW8	LCSW	07/17/08 21:38	WC080702-8	820		790.4	mg/L	96.4	90	110			
WG248282PBW4	PBW	07/17/08 23:36				U	mg/L		-20	20			
WG248282LCSW11	LCSW	07/17/08 23:48	WC080702-8	820		792.4	mg/L	96.6	90	110			
L70502-13DUP	DUP	07/18/08 1:57			U	U	mg/L				0	20	RA
WG248282LCSW14	LCSW	07/18/08 2:09	WC080702-8	820		791.2	mg/L	96.5	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248739													
WG248739ICV	ICV	07/24/08 19:58	II080717-3	100		98.1	mg/L	98.1	95	105			
WG248739ICB	ICB	07/24/08 20:02				U	mg/L		-0.6	0.6			
WG248739LFB	LFB	07/24/08 20:16	II080708-3	67.97008		66.86	mg/L	98.4	85	115			
L70501-02AS	AS	07/24/08 20:23	II080708-3	67.97008	57.2	125.76	mg/L	100.9	85	115			
L70501-02ASD	ASD	07/24/08 20:27	II080708-3	67.97008	57.2	127.26	mg/L	103.1	85	115	1.19	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248754													
WG248754ICV	ICV	07/25/08 7:22	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG248754ICB	ICB	07/25/08 7:40				U	mg/L		-1.5	1.5			
WG248754LFB	LFB	07/25/08 7:58	WI080702-9	30		30.71	mg/L	102.4	90	110			
L68068-19AS	AS	07/25/08 8:34	WI080702-9	30	U	28.3	mg/L	94.3	90	110			
L70319-01DUP	DUP	07/25/08 9:28			7.1	7.1	mg/L				0	20	
L70502-04AS	AS	07/25/08 20:55	WI080702-9	30	22.2	48.66	mg/L	88.2	90	110			M2
L70502-04DUP	DUP	07/25/08 21:13			22.2	22.11	mg/L				0.4	20	

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248754													
WG248754ICV	ICV	07/25/08 7:22	WI080521-1	4		3.92	mg/L	98	90	110			
WG248754ICB	ICB	07/25/08 7:40				U	mg/L		-0.3	0.3			
WG248754LFB	LFB	07/25/08 7:58	WI080702-9	1.5		1.48	mg/L	98.7	90	110			
L68068-19AS	AS	07/25/08 8:34	WI080702-9	1.5	U	1.4	mg/L	93.3	90	110			
L70319-01DUP	DUP	07/25/08 9:28			7.8	7.79	mg/L				0.1	20	
L70502-04AS	AS	07/25/08 20:55	WI080702-9	1.5	.2	1.5	mg/L	86.7	90	110			M2
L70502-04DUP	DUP	07/25/08 21:13			.2	.18	mg/L				10.5	20	RA

Hydro Geo Chem, Inc. ACZ Project ID: ***L70502***
Project ID: 8720000T2.2

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248739													
WG248739ICV	ICV	07/24/08 19:58	II080717-3	100		99.92	mg/L	99.9	95	105			
WG248739ICB	ICB	07/24/08 20:02				U	mg/L		-0.6	0.6			
WG248739LFB	LFB	07/24/08 20:16	II080708-3	49.96908		50.47	mg/L	101	85	115			
L70501-02AS	AS	07/24/08 20:23	II080708-3	49.96908	55.6	105.97	mg/L	100.8	85	115			
L70501-02ASD	ASD	07/24/08 20:27	II080708-3	49.96908	55.6	108.81	mg/L	106.5	85	115	2.64	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248236													
WG248236ICV	ICV	07/16/08 18:35	WI080613-1	2.416		2.487	mg/L	102.9	90	110			
WG248236ICB	ICB	07/16/08 18:36				U	mg/L		-0.06	0.06			
WG248236LFB	LFB	07/16/08 18:40	WI080312-1	2		2.054	mg/L	102.7	90	110			
L70502-07DUP	DUP	07/16/08 18:45			3	3.011	mg/L				0.4	20	
L70502-06AS	AS	07/16/08 19:19	WI080312-1	6	3.46	9.683	mg/L	103.7	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248236													
WG248236ICV	ICV	07/16/08 18:35	WI080613-1	.609		.584	mg/L	95.9	90	110			
WG248236ICB	ICB	07/16/08 18:36				U	mg/L		-0.03	0.03			
WG248236LFB	LFB	07/16/08 18:40	WI080312-1	1		1.014	mg/L	101.4	90	110			
L70502-06AS	AS	07/16/08 18:43	WI080312-1	1	U	.976	mg/L	97.6	90	110			
L70502-07DUP	DUP	07/16/08 18:45			U	U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248739													
WG248739ICV	ICV	07/24/08 19:58	II080717-3	20		19.88	mg/L	99.4	95	105			
WG248739ICB	ICB	07/24/08 20:02				U	mg/L		-0.9	0.9			
WG248739LFB	LFB	07/24/08 20:16	II080708-3	99.76186		100.33	mg/L	100.6	85	115			
L70501-02AS	AS	07/24/08 20:23	II080708-3	99.76186	11.5	121.49	mg/L	110.3	85	115			
L70501-02ASD	ASD	07/24/08 20:27	II080708-3	99.76186	11.5	126.69	mg/L	115.5	85	115	4.19	20	MA

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248329													
WG248329PBW	PBW	07/18/08 9:00				U	mg/L		-20	20			
WG248329LCSW	LCSW	07/18/08 9:01	PCN30198	260		284	mg/L	109.2	80	120			
L70502-07DUP	DUP	07/18/08 9:23			640	644	mg/L				0.6	20	
L70521-10DUP	DUP	07/18/08 9:44			720	698	mg/L				3.1	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L70502***

Project ID: 8720000T2.2

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248739													
WG248739ICV	ICV	07/24/08 19:58	II080717-3	100		98.17	mg/L	98.2	95	105			
WG248739ICB	ICB	07/24/08 20:02				U	mg/L		-0.9	0.9			
WG248739LFB	LFB	07/24/08 20:16	II080708-3	98.21624		98.84	mg/L	100.6	85	115			
L70501-02AS	AS	07/24/08 20:23	II080708-3	98.21624	122	216.05	mg/L	95.8	85	115			
L70501-02ASD	ASD	07/24/08 20:27	II080708-3	98.21624	122	224.19	mg/L	104	85	115	3.7	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248754													
WG248754ICV	ICV	07/25/08 7:22	WI080521-1	50.1		50.24	mg/L	100.3	90	110			
WG248754ICB	ICB	07/25/08 7:40				U	mg/L		-1.5	1.5			
WG248754LFB	LFB	07/25/08 7:58	WI080702-9	30		32.04	mg/L	106.8	90	110			
L68068-19AS	AS	07/25/08 8:34	WI080702-9	30	3.9	33.36	mg/L	98.2	90	110			
L70319-01DUP	DUP	07/26/08 1:09			149	154.2	mg/L				3.4	20	
L70502-04AS	AS	07/27/08 22:23	WI080702-9	600	680	1242	mg/L	93.7	90	110			
L70502-04DUP	DUP	07/27/08 22:41			680	774	mg/L				12.9	20	

Hydro Geo Chem, Inc.

ACZ Project ID: ***L70502***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70502-06	WG248739	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG248754	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248236	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248282	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70502-07	WG248739	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG248754	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248236	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248282	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70502-08	WG248739	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG248754	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248236	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248282	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc.

ACZ Project ID: ***L70502***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70502-10	WG248739	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG248754	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248236	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248282	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70502-11	WG248739	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG248754	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248236	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248282	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L70502-12	WG248739	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG248754	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248236	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248282	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L70502***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70502-13	WG248739	Potassium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG248754	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248236	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248282	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc. ACZ Project ID: ***L70502***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000T2.2

ACZ Project ID: L70502
Date Received: 7/16/2008
Received By:
Date Printed: 7/16/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?	X		
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
2140	0.8	16

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000T2.2

ACZ Project ID: L70502
Date Received: 7/16/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L70502-01	ANDERSON									X		
L70502-02	HOBAN									X		
L70502-03	CHAMBERS									X		
L70502-04	FRANCO									X		
L70502-05	HOWARD									X		
L70502-06	TVI236		Y									
L70502-07	TVI875		Y									
L70502-08	COOPER C		Y									
L70502-09	MCCONNELL26									X		
L70502-10	GARNER 635		Y									
L70502-11	DUP071508		Y									
L70502-12	EQB071508		Y									
L70502-13	FB071508		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH ,Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L70502 **CHAIN of CUSTODY**

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd Tucson, AZ 85705
Company: Hydro Geo Chem Inc.	
E-mail: dans@hgcinc.com	Telephone: (520) 293-1500 x132

Copy of Report to:

Name: Jim Norris	E-mail: jimn@hgcinc.com
Company: HGC Inc.	Telephone: (520) 293-1500 x112

Invoice to:

Name: Jim Norris	Address: 51 W. Wetmore Rd. Tucson AZ 85705
Company: HGC Inc.	
E-mail: jimn@hgcinc.com	Telephone: (520) 293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW

Project/PO #: 8720000 T2.2

Reporting state for compliance testing: AZ

Sampler's Name: Mark Arneson

Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB-GW	SO_4						
~~MADL~~ ANDERSON	7-14-08: 10:30	GW	1		X						
HOBAN	7-14-08: 11:47	GW	1		X						
CHAMBERS	7-14-08: 12:35	GW	1		X						
FRANCO	7-14-08: 15:30	GW	1		X						
HOWARD	7-14-08: 16:12	GW	1		X						
TVI 236	7-15-08: 8:25	GW	3	X							
TVI 875	7-15-08: 9:00	GW	3	X							
COOPER C	7-15-08: 10:18	GW	3	X							
MCCONNELL 265	7-15-08: 11:30	GW	1		X						
GARNER 635	7-15-08 14:10		3	X							

LEGEND: SX = SONDE

Matrix | SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 2

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	7-15-08: 1500	UPC	7-16-08 10:16

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc. L70502

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name:	Address:
Company: Same as Page 1	
E-mail:	Telephone:

Copy of Report to:

Name:	E-mail:
Company:	Telephone:

Invoice to:

Name:	Address:
Company: Same as Page 1	
E-mail:	Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW

Project/PO #:

Reporting state for compliance testing:

Sampler's Name:

Are any samples NRC licensable material?

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB-GW							
DUP071508	7-15-08	GW	3	X							
EQB071508	7-15-08	GW	3	X							
FB 071508	7-15-08	GW	3	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 2 of 2

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	7-15-08 1500	WRL	7-16-08 10:10

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 30, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

Project ID: 8720000
ACZ Project ID: L70490

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 15, 2008. This project has been assigned to ACZ's project number, L70490. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70490. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 30, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: BMO-2008-7M

ACZ Sample ID: ***L70490-01***
Date Sampled: *07/14/08 12:15*
Date Received: *07/15/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	32.4			mg/L	0.2	1	07/25/08 17:48	aeh
Magnesium, dissolved	M200.7 ICP	11.4			mg/L	0.2	1	07/25/08 0:27	aeh
Potassium, dissolved	M200.7 ICP	2.7			mg/L	0.3	2	07/25/08 0:27	aeh
Sodium, dissolved	M200.7 ICP	60.8			mg/L	0.3	2	07/25/08 0:27	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		188			mg/L	2	20	07/21/08 0:00	tbd
Carbonate as CaCO3		13	B		mg/L	2	20	07/21/08 0:00	tbd
Hydroxide as CaCO3			U		mg/L	2	20	07/21/08 0:00	tbd
Total Alkalinity		201		*	mg/L	2	20	07/21/08 0:00	tbd
Cation-Anion Balance	Calculation								
Cation-Anion Balance		1.9			%			07/29/08 0:00	calc
Sum of Anions		5.1			meq/L	0.1	0.5	07/29/08 0:00	calc
Sum of Cations		5.3			meq/L	0.1	0.5	07/29/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	10.4			mg/L	0.5	3	07/25/08 10:41	aml
Fluoride	M300.0 - Ion Chromatography	0.3	B		mg/L	0.1	0.5	07/25/08 10:41	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.55			mg/L	0.02	0.1	07/29/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.55			mg/L	0.02	0.1	07/15/08 20:01	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		UH	*	mg/L	0.01	0.05	07/22/08 19:55	pjb
Residue, Filterable (TDS) @180C	SM2540C	290			mg/L	10	20	07/17/08 15:41	tbd
Sulfate	300.0 - Ion Chromatography	31.4			mg/L	0.5	3	07/25/08 10:41	aml
TDS (calculated)	Calculation	282			mg/L	10	50	07/29/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.03						07/29/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L70490***

Project ID: 8720000

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248454													
WG248454PBW1	PBW	07/21/08 14:25				25.3	mg/L		-20	20			B4
WG248454LCSW2	LCSW	07/21/08 14:37	WC080702-8	820		786	mg/L	95.9	90	110			
L70504-07DUP	DUP	07/21/08 16:10			457	457.6	mg/L				0.1	20	
WG248454PBW2	PBW	07/21/08 17:31				U	mg/L		-20	20			
WG248454LCSW5	LCSW	07/21/08 17:44	WC080702-8	820		789.7	mg/L	96.3	90	110			
WG248454PBW3	PBW	07/21/08 20:42				U	mg/L		-20	20			
WG248454LCSW8	LCSW	07/21/08 20:55	WC080702-8	820		789.2	mg/L	96.2	90	110			
WG248454PBW4	PBW	07/22/08 0:15				U	mg/L		-20	20			
WG248454LCSW11	LCSW	07/22/08 0:27	WC080702-8	820		796.8	mg/L	97.2	90	110			
WG248454LCSW14	LCSW	07/22/08 3:39	WC080702-8	820		798.5	mg/L	97.4	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248802													
WG248802ICV	ICV	07/25/08 17:03	II080717-3	100		99.26	mg/L	99.3	95	105			
WG248802ICB	ICB	07/25/08 17:07				U	mg/L		-0.6	0.6			
WG248802LFB	LFB	07/25/08 17:19	II080724-3	67.97008		77.22	mg/L	113.6	85	115			
L70485-08AS	AS	07/25/08 17:26	II080724-3	67.97008	21.6	96.68	mg/L	110.5	85	115			
L70485-08ASD	ASD	07/25/08 17:29	II080724-3	67.97008	21.6	93.6	mg/L	105.9	85	115	3.24	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248754													
WG248754ICV	ICV	07/25/08 7:22	WI080521-1	19.98		20.49	mg/L	102.6	90	110			
WG248754ICB	ICB	07/25/08 7:40				U	mg/L		-1.5	1.5			
WG248754LFB	LFB	07/25/08 7:58	WI080702-9	30		30.71	mg/L	102.4	90	110			
L68068-19AS	AS	07/25/08 8:34	WI080702-9	30	U	28.3	mg/L	94.3	90	110			
L70319-01DUP	DUP	07/25/08 9:28			7.1	7.1	mg/L				0	20	

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248754													
WG248754ICV	ICV	07/25/08 7:22	WI080521-1	4		3.92	mg/L	98	90	110			
WG248754ICB	ICB	07/25/08 7:40				U	mg/L		-0.3	0.3			
WG248754LFB	LFB	07/25/08 7:58	WI080702-9	1.5		1.48	mg/L	98.7	90	110			
L68068-19AS	AS	07/25/08 8:34	WI080702-9	1.5	U	1.4	mg/L	93.3	90	110			
L70319-01DUP	DUP	07/25/08 9:28			7.8	7.79	mg/L				0.1	20	

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248737													
WG248737ICV	ICV	07/24/08 22:29	II080717-3	100		100.42	mg/L	100.4	95	105			
WG248737ICB	ICB	07/24/08 22:33				U	mg/L		-0.6	0.6			
WG248737LFB	LFB	07/24/08 22:48	II080708-3	49.96908		53.29	mg/L	106.6	85	115			
L70485-06AS	AS	07/24/08 23:47	II080708-3	49.96908	9.1	61.84	mg/L	105.5	85	115			
L70485-06ASD	ASD	07/24/08 23:51	II080708-3	49.96908	9.1	62.62	mg/L	107.1	85	115	1.25	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L70490***
Project ID: 8720000

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248161													
WG248161ICV	ICV	07/15/08 19:25	WI080613-1	2.416		2.404	mg/L	99.5	90	110			
WG248161ICB	ICB	07/15/08 19:26				U	mg/L		-0.06	0.06			
WG248161LFB	LFB	07/15/08 19:30	WI080312-1	2		1.926	mg/L	96.3	90	110			
L70428-08AS	AS	07/15/08 20:04	WI080312-1	6	3.33	9.581	mg/L	104.2	90	110			
L70430-01DUP	DUP	07/15/08 20:06			4.27	4.23	mg/L				0.9	20	

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248605													
WG248605ICV	ICV	07/22/08 19:43	WI080613-1	.609		.58	mg/L	95.2	90	110			
WG248605ICB	ICB	07/22/08 19:44				U	mg/L		-0.03	0.03			
WG248605LFB1	LFB	07/22/08 19:49	WI080312-1	1		1.007	mg/L	100.7	90	110			
L70469-02AS	AS	07/22/08 19:51	WI080312-1	1	U	.998	mg/L	99.8	90	110			
L70469-03DUP	DUP	07/22/08 19:54			U	U	mg/L				0	20	RA
WG248605LFB2	LFB	07/22/08 20:28	WI080312-1	1		1.011	mg/L	101.1	90	110			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248737													
WG248737ICV	ICV	07/24/08 22:29	II080717-3	20		20.89	mg/L	104.5	95	105			
WG248737ICB	ICB	07/24/08 22:33				U	mg/L		-0.9	0.9			
WG248737LFB	LFB	07/24/08 22:48	II080708-3	99.76186		110.6	mg/L	110.9	85	115			
L70485-06AS	AS	07/24/08 23:47	II080708-3	99.76186	.5	113.63	mg/L	113.4	85	115			
L70485-06ASD	ASD	07/24/08 23:51	II080708-3	99.76186	.5	114.37	mg/L	114.1	85	115	0.65	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248309													
WG248309PBW	PBW	07/17/08 15:30				10	mg/L		-20	20			
WG248309LCSW	LCSW	07/17/08 15:31	PCN30198	260		272	mg/L	104.6	80	120			
L70504-05DUP	DUP	07/17/08 15:53			1080	1072	mg/L				0.7	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248737													
WG248737ICV	ICV	07/24/08 22:29	II080717-3	100		102.8	mg/L	102.8	95	105			
WG248737ICB	ICB	07/24/08 22:33				U	mg/L		-0.9	0.9			
WG248737LFB	LFB	07/24/08 22:48	II080708-3	98.21624		107.38	mg/L	109.3	85	115			
L70485-06AS	AS	07/24/08 23:47	II080708-3	98.21624	9	115.3	mg/L	108.2	85	115			
L70485-06ASD	ASD	07/24/08 23:51	II080708-3	98.21624	9	116.13	mg/L	109.1	85	115	0.72	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic QC Summary

Hydro Geo Chem, Inc.
Project ID: 8720000

ACZ Project ID: ***L70490***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248754													
WG248754ICV	ICV	07/25/08 7:22	WI080521-1	50.1		50.24	mg/L	100.3	90	110			
WG248754ICB	ICB	07/25/08 7:40				U	mg/L		-1.5	1.5			
WG248754LFB	LFB	07/25/08 7:58	WI080702-9	30		32.04	mg/L	106.8	90	110			
L68068-19AS	AS	07/25/08 8:34	WI080702-9	30	3.9	33.36	mg/L	98.2	90	110			
L70319-01DUP	DUP	07/26/08 1:09			149	154.2	mg/L				3.4	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L70490***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70490-01	WG248605	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.
			M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248454	Total Alkalinity	SM2320B - Titration	B4	Target analyte detected in blank at or above the acceptance criteria.

Hydro Geo Chem, Inc. ACZ Project ID: ***L70490***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70490
Date Received: 7/15/2008
Received By:
Date Printed: 7/15/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6465	0.8	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L70490
Date Received: 7/15/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L70490-01	BMO-2008-7M		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L70490

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: HGC, INC
E-mail: dans@hgcinc.com
Address: 51 West Wetmore, Ste. 100 Tucson, AZ 85705
Telephone: (520) 293-1500

Copy of Report to:

Name: N/A
Company:
E-mail:
Telephone: N/A

Invoice to:

Name:
Company:
E-mail:
Address:
Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☐ NO ☐
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 872000
Reporting state for compliance testing: AZ
Sampler's Name: NJ, Babb
Are any samples NRC licensable material?

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB-GW
BMO-2008-7M	7-14-08/12:15	GW	3	X

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

pH = 7.63
µs = 500
T°f = 77.4 °f

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Nathan Babb	7-14-08/13:00	WPL	7-15-08 10:02

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000,T2.3
Sample ID: BMO-2008-6M

ACZ Sample ID: ***L70440-01***
Date Sampled: *07/10/08 12:30*
Date Received: *07/11/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	104		*	mg/L	0.2	1	07/23/08 17:29	aeh
Magnesium, dissolved	M200.7 ICP	17.9		*	mg/L	0.2	1	07/23/08 17:29	aeh
Potassium, dissolved	M200.7 ICP	3.6		*	mg/L	0.3	2	07/23/08 17:29	aeh
Sodium, dissolved	M200.7 ICP	32.5			mg/L	0.3	2	07/23/08 17:29	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		144			mg/L	2	20	07/14/08 0:00	gkj
Carbonate as CaCO3		9	B		mg/L	2	20	07/14/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	07/14/08 0:00	gkj
Total Alkalinity		153		*	mg/L	2	20	07/14/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.5			%			07/28/08 0:00	calc
Sum of Anions		7.4			meq/L	0.1	0.5	07/28/08 0:00	calc
Sum of Cations		8.1			meq/L	0.1	0.5	07/28/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	15.8		*	mg/L	0.5	3	07/25/08 5:15	aml
Fluoride	M300.0 - Ion Chromatography	0.3	B	*	mg/L	0.1	0.5	07/25/08 5:15	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.98			mg/L	0.02	0.1	07/28/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.98		*	mg/L	0.02	0.1	07/11/08 20:30	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	07/11/08 20:30	pjb
Residue, Filterable (TDS) @180C	SM2540C	480			mg/L	10	20	07/15/08 16:50	ear
Sulfate	300.0 - Ion Chromatography	182		*	mg/L	3	10	07/25/08 18:12	aml
TDS (calculated)	Calculation	460			mg/L	10	50	07/28/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.04						07/28/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L70440***

Project ID: 8720000,T2.3

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248028													
WG248028PBW2	PBW	07/14/08 16:16				U	mg/L		-20	20			
WG248028LCSW5	LCSW	07/14/08 16:28	WC080702-8	820		786.3	mg/L	95.9	90	110			
WG248028PBW3	PBW	07/14/08 19:20				U	mg/L		-20	20			
WG248028LCSW8	LCSW	07/14/08 19:32	WC080702-8	820		785	mg/L	95.7	90	110			
L70446-01DUP	DUP	07/14/08 20:45			U	U	mg/L				0	20	RA
WG248028PBW4	PBW	07/14/08 22:24				U	mg/L		-20	20			
WG248028LCSW11	LCSW	07/14/08 22:37	WC080702-8	820		790	mg/L	96.3	90	110			
WG248028LCSW14	LCSW	07/15/08 2:21	WC080702-8	820		791.9	mg/L	96.6	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248576													
WG248576ICV	ICV	07/23/08 16:53	II080717-3	100		95.23	mg/L	95.2	95	105			
WG248576ICB	ICB	07/23/08 16:57				U	mg/L		-0.6	0.6			
WG248576LFB	LFB	07/23/08 17:11	II080708-3	67.97008		72.72	mg/L	107	85	115			
L70432-03AS	AS	07/23/08 17:18	II080708-3	67.97008	2.9	79.23	mg/L	112.3	85	115			
L70432-03ASD	ASD	07/23/08 17:22	II080708-3	67.97008	2.9	81.95	mg/L	116.3	85	115	3.38	20	MA

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248704													
WG248704ICV	ICV	07/24/08 20:11	WI080521-1	19.98		20.46	mg/L	102.4	90	110			
WG248704ICB	ICB	07/24/08 20:29				U	mg/L		-1.5	1.5			
WG248704LFB	LFB	07/24/08 20:48	WI080702-9	30		30.27	mg/L	100.9	90	110			
L70408-15AS	AS	07/25/08 2:50	WI080702-9	600	80	528	mg/L	74.7	90	110			M2
L70408-15DUP	DUP	07/25/08 3:08			80	79	mg/L				1.3	20	RA

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248704													
WG248704ICV	ICV	07/24/08 20:11	WI080521-1	4		3.98	mg/L	99.5	90	110			
WG248704ICB	ICB	07/24/08 20:29				U	mg/L		-0.3	0.3			
WG248704LFB	LFB	07/24/08 20:48	WI080702-9	1.5		1.47	mg/L	98	90	110			
L70408-15AS	AS	07/25/08 2:50	WI080702-9	30	U	21.5	mg/L	71.7	90	110			M2
L70408-15DUP	DUP	07/25/08 3:08			U	U	mg/L				0	20	RA

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248576													
WG248576ICV	ICV	07/23/08 16:53	II080717-3	100		97.68	mg/L	97.7	95	105			
WG248576ICB	ICB	07/23/08 16:57				U	mg/L		-0.6	0.6			
WG248576LFB	LFB	07/23/08 17:11	II080708-3	49.96908		54.71	mg/L	109.5	85	115			
L70432-03AS	AS	07/23/08 17:18	II080708-3	49.96908	.5	57.79	mg/L	114.7	85	115			
L70432-03ASD	ASD	07/23/08 17:22	II080708-3	49.96908	.5	58.56	mg/L	116.2	85	115	1.32	20	MA

Hydro Geo Chem, Inc. ACZ Project ID: ***L70440***

Project ID: 8720000,T2.3

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG247990													
WG247990ICV	ICV	07/11/08 18:43	WI080613-1	2.416		2.421	mg/L	100.2	90	110			
WG247990ICB	ICB	07/11/08 18:45				U	mg/L		-0.06	0.06			
WG247992													
WG247992ICV	ICV	07/11/08 20:22	WI080613-1	2.416		2.541	mg/L	105.2	90	110			
WG247992ICB	ICB	07/11/08 20:23				U	mg/L		-0.06	0.06			
WG247992LFB	LFB	07/11/08 20:24	WI080312-1	2		2.09	mg/L	104.5	90	110			
L70428-12AS	AS	07/11/08 20:36	WI080312-1	4	2.13	6.594	mg/L	111.6	90	110			M1
L70428-13DUP	DUP	07/11/08 20:42			9.4	9.44	mg/L				0.4	20	

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG247990													
WG247990ICV	ICV	07/11/08 18:43	WI080613-1	.609		.57	mg/L	93.6	90	110			
WG247990ICB	ICB	07/11/08 18:45				U	mg/L		-0.03	0.03			
WG247992													
WG247992ICV	ICV	07/11/08 20:22	WI080613-1	.609		.569	mg/L	93.4	90	110			
WG247992ICB	ICB	07/11/08 20:23				U	mg/L		-0.03	0.03			
WG247992LFB	LFB	07/11/08 20:24	WI080312-1	1		.983	mg/L	98.3	90	110			
L70428-12AS	AS	07/11/08 20:27	WI080312-1	1	.04	1.059	mg/L	101.9	90	110			
L70428-13DUP	DUP	07/11/08 20:29			.03	.019	mg/L				44.9	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248576													
WG248576ICV	ICV	07/23/08 16:53	II080717-3	20		19.9	mg/L	99.5	95	105			
WG248576ICB	ICB	07/23/08 16:57				U	mg/L		-0.9	0.9			
WG248576LFB	LFB	07/23/08 17:11	II080708-3	99.76186		110.72	mg/L	111	85	115			
L70432-03AS	AS	07/23/08 17:18	II080708-3	99.76186	U	116.08	mg/L	116.4	85	115			M1
L70432-03ASD	ASD	07/23/08 17:22	II080708-3	99.76186	U	116.68	mg/L	117	85	115	0.52	20	M1

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248146													
WG248146PBW	PBW	07/15/08 16:30				U	mg/L		-20	20			
WG248146LCSW	LCSW	07/15/08 16:31	PCN30198	260		250	mg/L	96.2	80	120			
L70450-04DUP	DUP	07/15/08 16:59			5460	5492	mg/L				0.6	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L70440***

Project ID: 8720000,T2.3

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248576													
WG248576ICV	ICV	07/23/08 16:53	II080717-3	100		98.05	mg/L	98.1	95	105			
WG248576ICV	ICV	07/23/08 16:53	II080717-3	100		96.7	mg/L	96.7	95	105			
WG248576ICB	ICB	07/23/08 16:57				U	mg/L		-6	6			
WG248576ICB	ICB	07/23/08 16:57				U	mg/L		-0.9	0.9			
WG248576LFB	LFB	07/23/08 17:11	II080708-3	98.21624		106.2	mg/L	108.1	85	115			
WG248576LFB	LFB	07/23/08 17:11	II080708-3	98.21624		108.15	mg/L	110.1	85	115			
L70432-03AS	AS	07/23/08 17:18	II080708-3	98.21624	1.1	113.33	mg/L	114.3	85	115			
L70432-03ASD	ASD	07/23/08 17:22	II080708-3	98.21624	1.1	113.92	mg/L	114.9	85	115	0.52	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG248704													
WG248704ICV	ICV	07/24/08 20:11	WI080521-1	50.1		50.7	mg/L	101.2	90	110			
WG248704ICB	ICB	07/24/08 20:29				U	mg/L		-1.5	1.5			
WG248704LFB	LFB	07/24/08 20:48	WI080702-9	30		32.02	mg/L	106.7	90	110			
L67329-26DUP	DUP	07/24/08 22:18			13.9	16.17	mg/L				15.1	20	
L70408-15AS	AS	07/25/08 2:50	WI080702-9	600	890	1248	mg/L	59.7	90	110			M2
L70408-15DUP	DUP	07/25/08 3:08			890	902	mg/L				1.3	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L70440***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L70440-01	WG248576	Calcium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Magnesium, dissolved	M200.7 ICP	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
		Potassium, dissolved	M200.7 ICP	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG248704	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG247992	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG248704	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG248028	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Hydro Geo Chem, Inc. ACZ Project ID: ***L70440***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000,T2.3

ACZ Project ID: L70440
Date Received: 7/11/2008
Received By:
Date Printed: 7/11/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA6444	1.1	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000,T2.3

ACZ Project ID: L70440
Date Received: 7/11/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L70440-01	BMO-2008-GM		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

July 28, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

Project ID: 8720000,T2.3
ACZ Project ID: L70440

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on July 11, 2008. This project has been assigned to ACZ's project number, L70440. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L70440. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 28, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc. L70440

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd Tucson, AZ 85705
Company: HGC, Inc.	
E-mail: dans@hgcinc.com	Telephone: (520) 293-1500

Copy of Report to:

Name: ~~[illegible]~~	E-mail:
Company: ~~HGC, Inc~~	Telephone:

Invoice to:

Name:	Address:
Company: Same as above?	
E-mail:	Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☐ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #:

Project/PO #: 8720000, T2.3

Reporting state for compliance testing: AZ

Sampler's Name: N.J. Babb

Are any samples NRC licensable material?

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCAB-GW							
BMO-2008-6M	7-10-08/12:30	GW	1	X							
BMO-2008-6M	7-10-08/12:30	GW	1	X							
BMO-2008-6M	7-10-08/12:30	GW	1	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

T°C @ Sample Time = 22.1 °C

MS @ Sample Time = 702

⊗ Note pH meter malfunction

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Neil J. Babb	7-10-08/12:35		7-10-08/12:35
	7-10-08/14:35		
		WPL	7/11/08 10:30

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Revised Analytical Report

Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Rd. Suite 101
Tucson, AZ 85705

October 06, 2008

Cc: Jim Norris

Project ID: 8720000
ACZ Project ID: L72036

Dan Simpson:

Enclosed are revised analytical reports for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on September 25, 2008 and reported on October 02, 2008. Refer to the case narrative for an explanation of the changes. This project was assigned to ACZ's project number, L72036. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L72036. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all the requirements of NELAC.

This report should be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after November 02, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years. Please notify your Project Manager if you have other needs.

If you have any questions, please contact your Project Manager or Customer Service Representative.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Case Narrative

Hydro Geo Chem, Inc.

October 06, 2008

Project ID: 8720000
ACZ Project ID: L72036

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 6 ground water samples from Hydro Geo Chem, Inc. on September 25, 2008. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L72036. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

Any analyses not performed within EPA recommended holding times have been qualified with an "H" flag.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

This project has been revised to edit the sample identification on L72036-05 and -06. They were originally reported switched.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: ROGERS 803

ACZ Sample ID: ***L72036-01***
Date Sampled: *09/23/08 09:55*
Date Received: *09/25/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	133		*	mg/L	3	10	10/01/08 23:38	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: SCHWARTZ

ACZ Sample ID: ***L72036-02***
Date Sampled: *09/23/08 11:15*
Date Received: *09/25/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	124		*	mg/L	3	10	10/01/08 23:56	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: BLOMMER

ACZ Sample ID: ***L72036-03***
Date Sampled: *09/23/08 12:15*
Date Received: *09/25/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	193		*	mg/L	5	30	10/02/08 0:14	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: RAY

ACZ Sample ID: ***L72036-04***
Date Sampled: *09/23/08 13:45*
Date Received: *09/25/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	125		*	mg/L	5	30	10/02/08 1:08	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: FULTZ

ACZ Sample ID: ***L72036-05***
Date Sampled: *09/23/08 15:05*
Date Received: *09/25/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	137		*	mg/L	5	30	10/02/08 1:26	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: BIMA

ACZ Sample ID: ***L72036-06***
Date Sampled: *09/23/08 16:15*
Date Received: *09/25/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	296		*	mg/L	5	30	10/02/08 1:44	aml

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L72036***

Project ID: 8720000

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG249769													
WG249769ICV	ICV	08/11/08 15:32	WI080521-1	50.1		49.38	mg/L	98.6	90	110			
WG249769ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG252835													
WG252835ICV	ICV	08/11/08 15:32	WI080919-1	50.1		49.34	mg/L	98.5	90	110			
WG252835ICB	ICB	08/11/08 15:50				U	mg/L		-1.5	1.5			
WG252835ICV1	ICV	10/01/08 8:26	WI080919-1	50.1		51	mg/L	101.8	90	110			
WG252835ICB1	ICB	10/01/08 8:44				U	mg/L		-1.5	1.5			
WG252835LFB	LFB	10/01/08 9:02	WI080702-9	30		32.91	mg/L	109.7	90	110			
L71963-01DUP	DUP	10/01/08 9:56			109	113.4	mg/L				4	20	
L71963-01AS	AS	10/01/08 10:15	WI080702-9	300	109	448.5	mg/L	113.2	90	110			M1
WG252835ICV1	ICV	10/01/08 21:31	WI080919-1	50.1		48.98	mg/L	97.8	90	110			
WG252835ICB1	ICB	10/01/08 21:49				U	mg/L		-1.5	1.5			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L72036***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L72036-01	WG252835	Sulfate	300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72036-02	WG252835	Sulfate	300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72036-03	WG252835	Sulfate	300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72036-04	WG252835	Sulfate	300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72036-05	WG252835	Sulfate	300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72036-06	WG252835	Sulfate	300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.

Hydro Geo Chem, Inc. ACZ Project ID: ***L72036***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L72036
Date Received: 9/25/2008
Received By: lcp
Date Printed: 10/6/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id		Temp (°C)	Rad (µR/hr)
2231		0.4	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L72036
Date Received: 9/25/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L72036-01	ROGERS 803									X		
L72036-02	SCHWARTZ									X		
L72036-03	BLOMMER									X		
L72036-04	RAY									X		
L72036-05	FULTZ									X		
L72036-06	BIMA									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: lcp

L72036

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name:	Dan Simpson	Address:	51 West Wetmore Road
Company:	Hydro Geo Chem Inc.		Tucson, AZ 85705
E-mail:	dans@hgcinc.com	Telephone:	(520) 293-1500 x 133

Copy of Report to:

Name:	Jim Norris	E-mail:	jimn@hgcinc.com
Company:	Hydro Geo Chem Inc.	Telephone:	(520) 293-1500 x 112

Invoice to:

Name:	Jim Norris	Address:	51 West Wetmore Road
Company:	Hydro Geo Chem Inc.		Tucson, AZ 85705
E-mail:	jimn@hgcinc.com	Telephone:	(520) 293-1500 x 112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW

Project/PO #: 8720000

Reporting state for compliance testing: AZ

Sampler's Name: Mark Arneson

Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO4							
ROGERS 803	9-23-08: 0955	GW	1	X							
SCHWARTZ	9-23-08: 1115	GW	1	X							
BLOMMER	9-23-08: 1215	GW	1	X							
RAY	9-23-08: 1345	GW	1	X							
BIMA	9-23-08: 1505	GW	1	X							
FULTZ	9-23-08: 1615	GW	1	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	9-24-08:1500		9-25-08 10:49

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

APPENDIX C

HYDRO GEO CHEM, INC. GROUNDWATER SAMPLING FORMS

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-14-08
Well ID:	ANDERSON	Weather:	Clear
ADWR No.	613396	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	236	Time:	9:15
Casing Diameter (in):	8"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	146.16	GPS:	601134N.3468816E Zone 12 Band R
1 Casing Volume (gals):	234	Elevation:	4596 ft. amsl
3 Casing Volumes (gals):	704		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:21	10	30	6.96	22.4	1182	Clear	No	open bib at 9:18
9:26	"	80	7.11	21.5	1201	"	"	
9:36	"	180	7.04	21.5	1258	"	"	
9:46	"	280	7.12	21.5	1269	"	"	
9:56	"	380	7.07	21.5	1252	"	"	
10:06	"	480	7.12	21.6	1256	"	"	
10:16	"	580	7.11	21.6	1256	"	"	
10:26	"	680	7.11	21.6	1260	"	"	
	Total Discharge 720 gal							

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
ANDERSON	10:30	Plastic	~~500~~ ~~250~~ ml	1	EPA 300.0	None	Filtered

Additional Comments: Residents are home and well has been in use over the weekend and this morning.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	08/12/08
Well ID:	AWC 02	Weather:	Overcast 75°
ADWR No.	616586	Collected By:	Mark Arneson

WELL DATA

Well Depth (ft bls):	333	Time:	1005
Casing Diameter (in):	20	Point of Measurement:	Top of Sounding Tube
Static Water Level (ft bmp):	NA; Pump On	GPS:	ALS to Survey Well August 18, 2008
1 Casing Volume (gals):	NA	Elevation:	ALS to Survey Well August 18, 2008
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1020	-	-	7.01	22.3	630	Clear	No	-

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
AWC 02	1020	Plastic	*	7	FMCQB-WT	*	-

Additional Comments: * (1) 500 ml Raw; (1) 250 ml Raw/Nitric; (1) 125 ml Raw/NaOH & Zinc Acetate
(1) 125 ml Filtered/Nitric; (1) 250 ml Filtered; (1) 100 ml Raw/Sodium Thiosulfate
(1) 250 ml Raw/Sulfuric

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	08/12/08
Well ID:	AWC 03	Weather:	Overcast 75°
ADWR No.	616585	Collected By:	Mark Arneson

WELL DATA

Well Depth (ft bls):	270	Time:	0958
Casing Diameter (in):	16	Point of Measurement:	Top of Sounding Tube
Static Water Level (ft bmp):	NA; Pump On	GPS:	ALS to Survey Well August 18, 2008
1 Casing Volume (gals):	NA	Elevation:	ALS to Survey Well August 18, 2008
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1000	-	-	7.28	22.4	469	Clear	No	-

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
AWC 03	1000	Plastic	*	7	FMCQB-WT	*	-

Additional Comments: * (1) 500 ml Raw; (1) 250 ml Raw/Nitric; (1) 125 ml Raw/NaOH & Zinc Acetate
(1) 125 ml Filtered/Nitric; (1) 250 ml Filtered; (1) 100 ml Raw/Sodium Thiosulfate
(1) 250 ml Raw/Sulfuric

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	08/12/08
Well ID:	AWC 04	Weather:	Overcast 75°
ADWR No.	616584	Collected By:	Mark Arneson

WELL DATA

Well Depth (ft bls):	337	Time:	1020
Casing Diameter (in):	16	Point of Measurement:	Top of Sounding Tube
Static Water Level (ft bmp):	NA; Pump On	GPS:	ALS to Survey Well August 18, 2008
1 Casing Volume (gals):	NA	Elevation:	ALS to Survey Well August 18, 2008
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1040	-	-	7.08	22.5	458	Clear	No	-

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
AWC 04	1040	Plastic	*	7	FMCQB-WT	*	-

Additional Comments: * (1) 500 ml Raw; (1) 250 ml Raw/Nitric; (1) 125 ml Raw/NaOH & Zinc Acetate
(1) 125 ml Filtered/Nitric; (1) 250 ml Filtered; (1) 100 ml Raw/Sodium Thiosulfate
(1) 250 ml Raw/Sulfuric

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	08/12/08
Well ID:	AWC 05	Weather:	Overcast 75°
ADWR No.	590620	Collected By:	Mark Arneson

WELL DATA

Well Depth (ft bls):	1183	Time:	0930
Casing Diameter (in):	16	Point of Measurement:	Top of Sounding Tube
Static Water Level (ft bmp):	NA; Pump On	GPS:	ALS to Survey Well August 18, 2008
1 Casing Volume (gals):	NA	Elevation:	ALS to Survey Well August 18, 2008
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
0950	-	-	6.74	23.3	425	Clear	No	-

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
AWC 05	0950	Plastic	*	7	FMCQB-WT	*	-

Additional Comments: * (1) 500 ml Raw; (1) 250 ml Raw/Nitric; (1) 125 ml Raw/NaOH & Zinc Acetate
(1) 125 ml Filtered/Nitric; (1) 250 ml Filtered; (1) 100 ml Raw/Sodium Thiosulfate
(1) 250 ml Raw/Sulfuric

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-21-05
Well ID:	Banks 986	Weather:	Sunny
ADWR No.	55-647986	Collected By:	~~MARK ARNESON~~ John Villinski

WELL DATA

Well Depth (ft bls):	435.8	Time:	09:30 (measured monitoring well 3x w/ 2 sounders)
Casing Diameter (in):	6'	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	228.95 (647987)	GPS:	on file Zone 12 Band R
1 Casing Volume (gals):	303.75	Elevation:	on file ft. amsl
3 Casing Volumes (gals):	911. (151 gal/in)		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:58	6	18	7.56	22.7	1033	—	—	clear
10:05	6	90	7.59	22.5	1040	"	"	"
10:20	6	180	7.55	22.3	1033	"	"	"
10:35	7.5	293	7.47	22.5	1026	"	"	"
10:50	7.5	405	7.46	22.4	1021	"	"	"
11:05	7.5	518	7.44	22.3	1012	"	"	"
11:15	7.5	593	7.43	23.4	1014	"	"	"
11:30	7.5	705	7.47	22.6	1040	"	"	"
11:45	7.5	818	7.44	22.8	1034	"	"	"
11:58	7.0	909	7.43	22.9	1034	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Banks 986	12:05	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: Measured WL at unused well in back - static water level. Supply well in use, 40 gal pressurized tank 958 gallons total

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-23-08
Well ID:	Barton 010	Weather:	partly cloudy
ADWR No.	55-850 10	Collected By:	~~MARK ARNESON~~ John Willinski

WELL DATA

Well Depth (ft bis):	300' B	Time:	11:40
Casing Diameter (in):	~~8~~ 6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	276.06	GPS:	on file Zone 12 Band R
1 Casing Volume (gals):		Elevation:	on file ft. amsl
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: Brought up alot of clay/silt on the probe

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-23-08
Well ID:	Barton 919	Weather:	Partly Cloudy
ADWR No.	644919	Collected By:	~~MARK ARNESON~~ John Villinski

WELL DATA

Well Depth (ft bis):	130	Time:	11:33
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	113.56	GPS:	on file Zone 12 Band R
1 Casing Volume (gals):	*	Elevation:	on file ft. amsl
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: Dogs bark but do not bite.

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Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-5-08
Well ID:	BF-01	Weather:	Clear
ADWR No.	539783	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	400	Time:	8:40
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	348.66	GPS:	347215N 604169E
1 Casing Volume (gals):	33.5	Elevation:	ft amsl 4835
3 Casing Volumes (gals):	101		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:45	6	6	6.11	22.6	3114	clear	No	Pump on 8:44
8:48	11	24	6.11	22.4	3095			
8:51	Pumped down - no flow							
		Total Discharge 42 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BF-01	9:20	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-29-08
Well ID:	BIMA	Weather:	Mostly Sunny
ADWR No.	577927	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	460'	Time:	~~[illegible]~~ 12:17
Casing Diameter (in):	4'	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	(obstructed @ 350) (found obs @ 4')	GPS:	
1 Casing Volume (gals):	72	Elevation:	ft amsl
3 Casing Volumes (gals):	< 215		

pump on @ 12:20

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
12:22	12	24	6.49	23.0	1645	clear	no	—
12:26	8	56	6.45	22.8	1645	clear	no	"
12:31	8	96	6.46	22.8	1629	"	"	"
12:36	8	136	6.45	23.1	1644	"	"	"
12:41	8	176	6.47	22.9	1645	"	"	"
12:46	8	216	6.49	23.0	1647	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BIMA	12:50	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 125 ml with HNO3 Preservative, (1) 250 ml and (1) 500 ml Unfiltered

8/18/08 370.24

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	872002.2	Client:	PHELPS DODGE COPPER QUEEN BRANCH
Well ID:	BINYON	Date:	8-18-08
ADWR No.	594938	Weather:	clear
Location:	1188 E Border Rd	Collected By:	Mark Arneson

WELL DATA

Well Depth (ft bls):	260	Static Water Level (ft bmp):	85.17
Casing Diameter (in):	4	Date/Time:	8-18-08 12:41
Well Use:	Domestic	Point of Measurement:	TOC
3 Casing Volumes:	114 X3= 342	GPS:	608533 3468553
		Elevation:	4654

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH	Temp (°C)	Specific Conductance (µScm)	Color	Odor	Comments
1310	10	20	7.30	24.2	521	clear	No	Pump on 1308
1315	9	65	7.49	23.7	518	"	"	
1320	9	110	7.44	23.0	519	"	"	
1325	9	155	7.44	22.9	518	"	"	

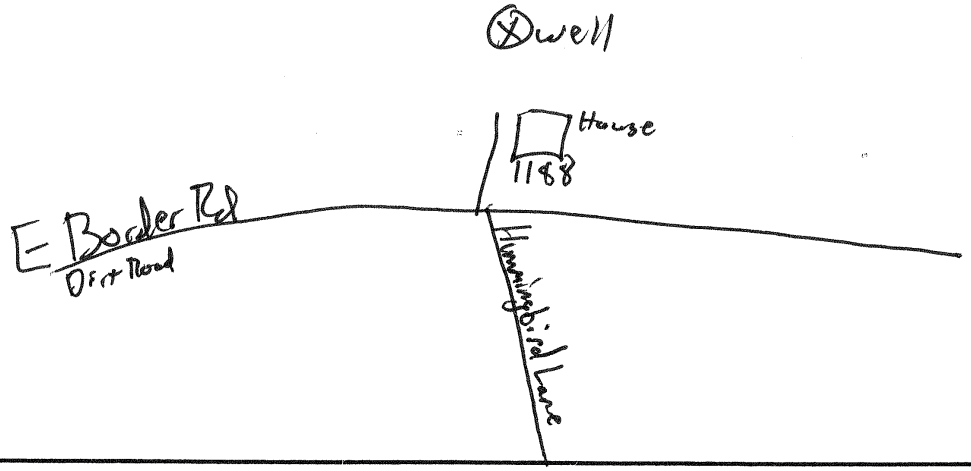
* NOT PART OF WELL INVENTORY PROGRAM *

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Notes
BINYON	1330	HDPE	250ml	1	300.0	None	Filtered

Additional Comments: At owners request I will stop purging

Water System Schematic:



HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-29-08
Well ID:	Blommer	Weather:	Clear, warm
ADWR No.	633472	Collected By:	John Villinski
	2254 S Barnett Rd		

WELL DATA

Well Depth (ft bls):	350	Time:	9:10
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	obstructed @ ~275'	GPS:	
1 Casing Volume (gals):	~110	Elevation:	ft amsl
3 Casing Volumes (gals):	~330		

9:15 pump on

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (galions)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:17	9	18	7.11	23.7	912	clear	no	—
9:22	9	63	7.21	22.1	922	"	"	"
9:26	9	99	7.25	22.3	916	"	"	"
9:30	9.5	137	7.21	22.3	919	"	"	"
9:34	9.5	175	7.21	22.2	921	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Blommer	9:38	Plastic	250	1	EPA 300.0	none	Filtered

Additional Comments: ~~3 (1) 125 ml with HNO3 Preservative~~, (1) 250 ml and ~~(1) 500 ml Unfiltered~~

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.3	Date:	08/27/08
Well ID:	BMO-2008-1G	Weather:	
ADWR No:	909474	Collected By:	Neil Babb

WELL DATA

Well Depth (ft bls):	320	Time:	1300	
Casing Diameter (in):	5"	Point of Measurement:	Top of Casing	
Static Water Level (ft bmp):	62.05	GPS:	ALS to Survey 09/03/08	UTM NAD 83
1 Casing Volume (gals):	NA	Elevation:	ALS to Survey 09/03/08	NAVD 88
3 Casing Volumes (gals):	NA			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
-	-	-	7.09	24.2	808	-	-	-
Sample Collected after Aquifer Testing								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BMO-2008-1G	1300	Plastic	*	3	FMCQB-GW	*	-

Additional Comments: * 500 ml raw, 125 ml filtered nitric, and 250 ml filtered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	07/18/08
Well ID:	BMO-2008-3B	Weather:	Sunny
ADWR No:	909147	Collected By:	Neil Babb

WELL DATA

Well Depth (ft bls):	265	Time:	0758		
Casing Diameter (in):	5"	Point of Measurement:	Top of Casing		
Static Water Level (ft bmp):	138.05	GPS:	3467919 N	602012 E	UTM NAD 83
1 Casing Volume (gals):		Elevation:	44583.97	ft amsl	NAVD 88
3 Casing Volumes (gals):					

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°F)	Specific Conductance (µS/cm)	Color	Odor	Comment
1125	-	-	7.35	75	615			
Sample Collected after Aquifer Testing								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BMO-2008-3B	1125	Plastic	*	3	FMCQB-GW	*	-

Additional Comments: * 500 ml raw, 125 ml filtered nitric, and 250 ml filtered

HYDRO GEO CHEM, INC.

Well Development Form

Well No: 3B Project No. 5720000

Name/Number

Date: 7-18-08

Sampler: NJ. Babb

WELL INFORMATION

Casing Diameter ("d", in.): 5"

Well/Packer Depth ("a", ft): 261.6

One Wetted Casing Volume: (a - b) • d^2 • 0.0408 = 126

Screened Interval (ft) From: 150 To: 250

Depth to Water ("b", ft): @ 138.05 @ 7:53

Gallons, (3 Casing Volumes 378 gal) - gals

BAIL & PURGE INFO AND FIELD MEASUREMENTS

Time Started: 8:27

Purge Method: 10 hp submersible pump

Pump Setting: Intake @ 240'

Time Completed:

Total Development Time: -min

Total Bail & Purge Volume: -gallons

Bailed 40-gals

Actual or Elapsed Time (Min)	Extraction Rate/Vol (gpm)	Temp ~~°C~~ °F	Conductivity (µS/cm)	pH	Turbidity (NTUs)	DTW (ft btoc)	Notes
8:27	20-21	N/A	N/A	N/A	N/A	138.05	pump-on
8:33	15gpm	74.3	678	7.29		140.28	Discharge clear
8:47	"	74.6	643	7.39		~~141.12~~	" "
9:00	~~14~~ 14.5	74.8	635	7.42		140.12	" " 62 mins @ 15 GPM
9:15	14.5	75.5	633	7.44		140.09	" " gals = 930.2
9:29							→ Increased to 2nd step
9:38	41	75.4	624	7.49		144.4	Discharge clear
9:57	41	76.0	621	7.47		144.51	" "
10:13	41	74.8	620	7.46		144.53	" "
10:42	63	75.6	609	7.43		148.34	" "
11:07	"	76.0	611	7.40		—	
11:17	"	75.0	615	7.35		148.54	
11:25							→ obtained samples

1st step

2nd step

3rd step

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	07/16/08
Well ID:	BMO-2008-6B	Weather:	Sunny
ADWR No:	909146	Collected By:	Neil Babb

WELL DATA

Well Depth (ft bls):	265	Time:	0840		
Casing Diameter (in):	5"	Point of Measurement:	Top of Casing		
Static Water Level (ft bmp):	190.13	GPS:	3469280 N	600366 E	UTM NAD 83
1 Casing Volume (gals):		Elevation:	4627.44	ft amsl	NAVD 88
3 Casing Volumes (gals):					

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°F)	Specific Conductance (µS/cm)	Color	Odor	Comment
1200	-	-	7.36	75.3	475			
Sample Collected after Aquifer Testing								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BMO-2008-6B	1200	Plastic	*	3	FMCQB-GW	*	-

Additional Comments: * 500 ml raw, 125 ml filtered nitric, and 250 ml filtered

HYDRO GEO CHEM, INC.

Well Development Form

Well No: 6B Project No. 8720000

Name/Number: _____ Date: 7-16-08

Sampler: NJ. Babb

WELL INFORMATION

Casing Diameter ("d", in.): 5"

Well/Packer Depth ("a", ft): 265.

One Wetted Casing Volume: (a - b) • d^2 • 0.0408 = 76.4

Screened Interval (ft) From: 195 To: 255

Depth to Water ("b", ft): @ 190.13

Gallons, (3 Casing Volumes ___ gal) 230 - gals

BAIL & PURGE INFO AND FIELD MEASUREMENTS

Time Started: 8:43

Purge Method: 3/4hp submersible

Pump Setting: 241 @ 1, 2, & 3.8 gpm

Time Completed: _____

Total Development Time: ___-min

Total Bail & Purge Volume: ___-gallons

7-7-08 Approx. 50 gals bailed

Actual or Elapsed Time (Min)	Extraction Rate/Vol (gpm)	Temp ~~oC~~ oF	Conductivity (µS/cm)	pH	Turbidity (NTUs)	DTW (ft btoc)	Notes
8:43	1.0 gpm						pump on
8:50	"	75.5	478	7.54		191.04	discharge clear
9:00	"	76.3	465	7.47		191.35	slightly cloudy, yellowish-orange
9:17	"	76.9	464	7.67		191.40	slightly cloudy; clearing
9:40	"	77.6	467	7.66		191.43	mostly clear (63 min @ 1gpm = 63 gals)
9:45	Increase to 2nd	←				→	Increase to 2.0 gpm target
10:30	1.7 gpm	78.4	474	7.56		192.30	mostly clear
10:48	"	77.4	473	7.37			mostly clear
10:50	Increased to 3rd step						
10:58	3.8	76.2	470	7.37		196.59	
11:10	"	75.0	471	7.39		—	discharge clear
11:31	3.9	75.2	478	7.40		202.04	clear
12:58		75.6	475	7.36		2	clear
12:00	←					~~203.95~~ →	obtained samples

1st step

6 min @ 1.7 = 11 gals

2nd step

3rd step

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	07/10/08
Well ID:	BMO-2008-6M	Weather:	Sunny
ADWR No:	909019	Collected By:	Neil Babb

WELL DATA

Well Depth (ft bls):	450	Time:	0815		
Casing Diameter (in):	5"	Point of Measurement:	Top of Casing		
Static Water Level (ft bmp):	191.63	GPS:	3469813 N	600367 E	UTM NAD 83
1 Casing Volume (gals):		Elevation:	4626.90	ft amsl	NAVD 88
3 Casing Volumes (gals):					

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1230	-	-	NR	22.1	702			
Sample Collected after Aquifer Testing								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BMO-2008-6M	1230	Plastic	*	3	FMCQB-GW	*	-

Additional Comments: * 500 ml raw, 125 ml filtered nitric, and 250 ml filtered

NR = Not Recorded, Probe Malfunction

HYDRO GEO CHEM, INC.
Well Development Form

Well No: 6M Project No. 8720000
Date: 7-10-08

Name/Number: Aq. Test
Sampler: NJ. Babb

WELL INFORMATION

Casing Diameter ("d", in.): 5"
Well/Packer Depth ("a", ft): 452.3
One Wetted Casing Volume: (a - b) • d^2 • 0.0408 = 265.88

Screened Interval (ft) From: Top 340 To: Bottom 440
Depth to Water ("b", ft): 191.63 @ 8:15
Gallons, (3 Casing Volumes ~~gal~~ 797.65 gals

BAIL & PURGE INFO AND FIELD MEASUREMENTS

Time Started:
Purge Method: 10 hp submersible pump
Pump Setting: 420' bgs

Time Completed:
Total Development Time: -min
Total Bail & Purge Volume: -gallons

Actual or Elapsed Time (Min)	Extraction Rate/Vol (gpm)	Temp (°C)	Conductivity (µS/cm)	pH	Turbidity (NTUs)	DTW (ft btoc)	BMO-2008-6M, Aq. Test Notes 3 steps
	25-30gpm				N/A		Begin Test; 25-30gpm Target
9:15	8gpm	22.4	700	NA		192.4	Slightly Turbid - orange/brown fine seds
9:30	6gpm	24.0	698	NA		192.18	Clear,
9:50	6gpm	24.6	698			192.19	Clear
10:00	39gpm	22.8	699			206.16	Clear
11:29	60gpm	22.0	699			219.72	Clear
12:30							obtained samples

John V. has yellow copy; delivered to TUCSON ~~[illegible]~~ fed EX.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	07/14/08
Well ID:	BMO-2008-7M	Weather:	Overcast
ADWR No:	908794	Collected By:	Neil Babb

WELL DATA

Well Depth (ft bls):	670	Time:	0815		
Casing Diameter (in):	5"	Point of Measurement:	Top of Casing		
Static Water Level (ft bmp):	238.31	GPS:	3470029 N	603099 E	UTM NAD 83
1 Casing Volume (gals):		Elevation:	4688.33	ft amsl	NAVD 88
3 Casing Volumes (gals):					

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°F)	Specific Conductance (µS/cm)	Color	Odor	Comment
1215	-	-	7.63	77.4	500			
Sample Collected after Aquifer Testing								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BMO-2008-7M	1215	Plastic	*	3	FMCQB-GW	*	-

Additional Comments: * 500 ml raw, 125 ml filtered nitric, and 250 ml filtered

HYDRO GEO CHEM, INC.
Well Development Form

Name/Number: PDCQ15, Bisbee, AZ
Sampler: NJ. Babb

Well No: 7M Project No. 8720000
Date: 7-14-08

WELL INFORMATION

Casing Diameter ("d", in.): ~~[illegible]~~ 5" in
Well/Packer Depth ("a", ft): 670
One Wetted Casing Volume: (a - b) • d^2 • 0.0408 = _____

Screened Interval (ft) From: 560 To: 660
Depth to Water ("b", ft): 278.31 @ 8:15
Gallons, (3 Casing Volumes ___ gal)

BAIL & PURGE INFO AND FIELD MEASUREMENTS

Time Started: 8:43
Purge Method: 10 hp submersible pump
Pump Setting: 420' bgs @ 3-steps (6 rms)

Time Completed: _____
Total Development Time: ___-min
Total Bail & Purge Volume: ___-gallons

	Actual or Elapsed Time (Min)	meter & Extraction Rate/Vol (gpm) manual	Temp ~~(°C)~~ °F	Conductivity (µS/cm)	pH	Pressure ~~Turbidity (NTUs)~~ gauge (PSI)	DTW (ft btoc)	Notes
	8:43	N/A	—	—	—	over-200 psi		Pump-on
11 gpm	8:44	11 gpm	—	—	—	8 gpm @ meter	242.51	Discharge clear
	8:47	"	70.9	513	7.53	11 gpm @ hose	244.53	
	9:05	"	75.3	495	7.81	"	—	Discharge cloudy, semi-transparent, orangish-brown color
	9:16	"	75.4	490	7.69	"	245.80	mostly clear
	9:28	"	76.4	497	7.71	"	246.19	clear
	9:38	"	"	495	7.73	"		9:40 " " DTW ⇒ 246.39
	9:44	Increased to 2nd step	—	—	—	—	—	
	9:46	22-25 gpm	—	—	—	180-185	—	Discharge slightly cloudy;
20-23 gpm	10:07	20-23 gpm	75.9	504	7.66	181	265.70	Discharge clear
	10:22	" "	75.4	503	7.64	20-23 gpm	267.18	" "
	10:35	20-23 gpm	"	"	7.74	" "	268.40	" "
	10:47	Increased to 3rd step	—	—	—	—	~~[illegible]~~	" "
	10:50	30-35 gpm	76.6	504	7.69	PSI=142	~~[illegible]~~ 285.45	" "
	11:20	30-35	77.1	505	7.64	PSI=141	—	Discharge clear
	11:40	30-35	76.0	503	7.65	PSI=140	294.54	" "
	12:05	30-35	77.4	500	7.63		296.55	
	12:15	→						obtained 7M samples

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	08/08/08
Well ID:	BMO-2008-9M	Weather:	Overcast
ADWR No:	909255	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	785	Time:	1350	(08/07/08)	
Casing Diameter (in):	5"	Point of Measurement:	Top of Casing		
Static Water Level (ft bmp):	287.17	GPS:	3471121 N	604668 E	UTM NAD 83
1 Casing Volume (gals):		Elevation:	4762.61	ft amsl	NAVD 88
3 Casing Volumes (gals):					

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1345	-	-	7.72	25.7	415	Clear	No	
Sample Collected after Aquifer Testing								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BMO-2008-9M	1345	Plastic	*	3	FMCQB-GW	*	-

Additional Comments: * 500 ml raw, 125 ml filtered nitric, and 250 ml filtered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	08/04/08
Well ID:	BMO-2008-10GU	Weather:	Sunny
ADWR No:	909272	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	700	Time:	0935		
Casing Diameter (in):	5"	Point of Measurement:	Top of Casing		
Static Water Level (ft bmp):	299.28	GPS:	3471731 N	605267 E	UTM NAD 83
1 Casing Volume (gals):		Elevation:	4793.45	ft amsl	NAVD 88
3 Casing Volumes (gals):					

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1415	-	-	6.41	23.6	3660	Clear	No	
Sample Collected after Aquifer Testing								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BMO-2008-10GU	1415	Plastic	*	3	FMCQB-GW	*	-

Additional Comments: * 500 ml raw, 125 ml filtered nitric, and 250 ml filtered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.3	Date:	08/20/08
Well ID:	BMO-2008-10GL	Weather:	
ADWR No:	909435	Collected By:	Neil Babb

WELL DATA

Well Depth (ft bls):	810	Time:	1345		
Casing Diameter (in):	5"	Point of Measurement:	Top of Casing		
Static Water Level (ft bmp):	521.75	GPS:	3471702 N	605264 E	UTM NAD 83
1 Casing Volume (gals):	NA	Elevation:	4792.21	ft amsl	NAVD 88
3 Casing Volumes (gals):	NA				

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
-	-	-	6.22	29.5	2924	-	-	-
Sample Collected after Aquifer Testing								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BMO-2008-10GL	1345	Plastic	*	3	FMCQB-GW	*	-

Additional Comments: * 500 ml raw, 125 ml filtered nitric, and 250 ml filtered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.3	Date:	08/22/08
Well ID:	BMO-2008-11G	Weather:	
ADWR No:	909434	Collected By:	Neil Babb

WELL DATA

Well Depth (ft bls):	760	Time:	1230	
Casing Diameter (in):	5"	Point of Measurement:	Top of Casing	
Static Water Level (ft bmp):	577.76	GPS:	ALS to Survey 09/03/08	UTM NAD 83
1 Casing Volume (gals):	NA	Elevation:	ALS to Survey 09/03/08	NAVD 88
3 Casing Volumes (gals):	NA			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
-	-	-	8.02	28.2	359	-	-	-
Sample Collected after Aquifer Testing								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BMO-2008-11G	1230	Plastic	*	3	FMCQB-GW	*	-

Additional Comments: * 500 ml raw, 125 ml filtered nitric, and 250 ml filtered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-5-08
Well ID:	BURKE	Weather:	clear
ADWR No.	212268	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	780	Time:	12:10
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	605.86	GPS:	3473029N 602230E
1 Casing Volume (gals):	NA	Elevation:	ft amsl 4856
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
12:15			7.06	26.8	496	Clear	No	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BURKE	12:25	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

Per owner request, sample was taken directly from well head. No purge. Owner stated that this well is pumping 40-50 gal per day for summer irrigation.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-5-08
Well ID:	CAMPBELL	Weather:	~~MM~~ Clear
ADWR No.	215509	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	350	Time:	15:45
Casing Diameter (in):	5"	Point of Measurement:	TOC
Static Water Level (ft bmp):		GPS:	3469322 606416
1 Casing Volume (gals):	N/A	Elevation:	4687
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments:

WATER LEVEL ONLY

Can not obtain measurement as Mr. Campbell has pump/pipe, wires, and other tubing in well casing.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-14-08
Well ID:	CHAMBERS	Weather:	Cloudy
ADWR No.	629807	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bis):	245	Time:	12:05
Casing Diameter (in):	6	Point of Measurement:	Top of Casing No Access
Static Water Level (ft bmp):	NA	GPS:	600024N 3467385E one 12 Band R
1 Casing Volume (gals):	NA	Elevation:	4592 ft. amsl
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1214	8	16	7.34	24.3	431	Clear	No	open b.d. @ 12:12
1216	"	32	7.37	23.6	431	"	"	
1223	"	88	7.41	23.1	432	"	"	
1228	"	128	7.43	23.3	437	"	"	
1233	"	168	7.43	23.2	434	"	"	
		Total Discharge 184 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
CHAMBERS	12:35	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: Well pump was running upon arrival. Resident stated that they use it all the time. It serves 2 houses. 12:28 yard is near capacity

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-30-08
Well ID:	COB MW-1	Weather:	Sunny
ADWR No.	903992	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	420	Time:	7:10
Casing Diameter (in):	8"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	233.37	GPS:	
1 Casing Volume (gals):	486	Elevation:	ft amsl
3 Casing Volumes (gals):	1457		

pump on @ 7:15

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
7:17	12	24	7.05	21.3	1582	clear	no	—
7:24	12	96	7.01	21.6	1563	"	"	"
7:29	12	146	6.96	21.7	1622	"	"	"
7:35	12	218	6.94	21.6	1698	"	"	"
7:40	12	278	6.91	21.7	1718	"	"	"
7:45	12	338	6.91	21.7	1742	"	"	"
7:50	12	398	6.90	21.6	1770	"	"	"
7:55	12	458	6.88	21.7	1780	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
COB MW-1	8:00	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 125 ml with HNO3 Preservative, (1) 250 ml and (1) 500 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-30-08
Well ID:	COB MW-2	Weather:	Sunny
ADWR No.	903984	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	162	Time:	9:55
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	122.68	GPS:	
1 Casing Volume (gals):	25	Elevation:	ft amsl
3 Casing Volumes (gals):	75		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:57	7.5	7.5	7.28	21.9	520	clear	no	—
10:00	7.5	30	7.30	21.1	508	"	"	"
10:04	7.5	60	7.32	21.0	511	"	"	"
10:08	7.5	90	7.32	21.0	510	"	"	"
10:12	7.5	120	7.33	20.9	510	"	"	"
10:16	7.5	150	7.34	20.8	511	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
COB MW-2	10:20	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 125 ml with HNO3 Preservative, (1) 250 ml and (1) 500 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-30-08
Well ID:	COBMW-3	Weather:	Sunny, warm
ADWR No.	906823	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	300	Time:	10:50
Casing Diameter (in):	4 in	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	118.5	GPS:	
1 Casing Volume (gals):	118	Elevation:	ft amsl
3 Casing Volumes (gals):	355		

10:55

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
11:00	30	150	7.41	21.8	538	clear	no	
11:05	30	300	7.57	21.3	535	"	"	"
11:10	30	450	7.59	21.3	540	"	"	"
11:15	30	600	7.59	21.7	543	"	"	"
11:20	30	750	7.64	22.3	541	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
COBMW3	11:27	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 125 ml with HNO3 Preservative, (1) 250 ml and (1) 500 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-30-08
Well ID:	COB WL	Weather:	Mostly Sunny
ADWR No.	599535	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	150'	Time:	8:35
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	58.64	GPS:	
1 Casing Volume (gals):	59	Elevation:	ft amsl
3 Casing Volumes (gals):	178		

pump @ 847.

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:49	7.5	15	6.95	21.9	1094	clear	no	—
8:54	7.5	52.5	6.97	21.4	1092	"	"	"
8:59	7.5	90	7.03	21.2	1094	"	"	"
9:05	2	102	7.19	21.7	1094	"	"	"
9:12	2	116	7.17	22.0	1098	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
COB WL	9:17	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 125 ml with HNO3 Preservative, (1) 250 ml and (1) 500 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-31-08
Well ID:	Collins	Weather:	Sunny
ADWR No.	565260	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	320	Time:	7:24
Casing Diameter (in):	4 1/2	Point of Measurement:	TOC
Static Water Level (ft bmp):	290.08	GPS:	
1 Casing Volume (gals):	24.8	Elevation:	
3 Casing Volumes (gals):	74.4		

pump on 7:34 @ 12 gpm

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
7:35	12	12	6.78	23.8	1496	clear	no	—
7:38	12	48	6.81	21.8	1503	"	"	"
7:40	12	72	6.84	21.5	1505	"	"	"
7:43	12	108	6.86	21.6	1507	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Collins	7:46	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: well in use by the wife before I got there - shower jets

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-31-08
Well ID:	Cooper	Weather:	Sunny, Warm
ADWR No.	623564	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	325	Time:	
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	cannot measure	GPS:	
1 Casing Volume (gals):		Elevation:	ft amsl
3 Casing Volumes (gals):			

pump on @ 10:48 @ 9gpm

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:50	9	18	7.83	28.0	463	clear	no	—
10:58	9	90	7.83	28.2	457	"	"	"
11:03	9	135	7.84	28.4	454	"	"	"
11:08	9	180	7.84	28.4	457	"	"	"
11:13	9	225	7.81	28.4	455	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Cooper	11:15	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 125 ml with HNO3 Preservative, (1) 250 ml and (1) 500 ml Unfiltered

Woman w/ 3 young children living @ 2171 S Naco Hwy Catherine would not answer the door again when I was leaving, could not get more information

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-15-08
Well ID:	COOPER C	Weather:	Clear
ADWR No.	637069	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	220	Time:	9:46
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	156.01	GPS:	6013508N 346891.5E Zone 12 Band R
1 Casing Volume (gals):	94	Elevation:	4607 ft. amsl
3 Casing Volumes (gals):	282		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:50	10	20	6.74	25.2	2104	Clear	No	Open b/h at 9:48
9:55	"	70	6.84	22.9	2133	"	"	
10:00	"	120	6.85	22.5	2150	"	"	
10:05	"	170	6.85	22.3	2145	"	"	
10:10	"	220	6.87	22.3	2146	"	"	
10:15	"	270	6.86	22.3	2162	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
COOPER C	10:18	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

Duplicate Sample Collected (DUP071508)

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-15-08
Well ID:	COOPER C	Weather:	Clear
ADWR No.		Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	220	Time:	9:46
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	156.01	GPS:	Zone 12 Band R
1 Casing Volume (gals):		Elevation:	ft. amsl
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
DUP071508	10:18	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-15-08
Well ID:	FB 071508	Weather:	Cloudy
ADWR No.	NA	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	NA	Time:	14:40
Casing Diameter (in):	NA	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	NA	GPS:	NA Zone 12 Band R
1 Casing Volume (gals):	NA	Elevation:	NA ft. amsl
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
		Field BLank						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
FB071508	14:40	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-15-08
Well ID:	EQB 071508	Weather:	Cloudy
ADWR No.		Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	NA	Time:	14:35
Casing Diameter (in):	NA	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	NA	GPS:	NA Zone 12 Band R
1 Casing Volume (gals):	NA	Elevation:	NA ft. amsl
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
	Equipment Blank							

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
EQB 071508	14:35	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-24-08
Well ID:	Dodson	Weather:	Clear
ADWR No.	644927	Collected By:	~~MARK ARNESON~~ JOhn Villinger

WELL DATA

Well Depth (ft bis):	180	Time:	11:40
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	82.2	GPS:	on file Zone 12 Band R
1 Casing Volume (gals):	144	Elevation:	on file ft. amsl
3 Casing Volumes (gals):	431		

on @ 11:48 12gpm

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
11:49	12	12	7.28	22.0	1087	clear	no	—
11:53	12	60	7.29	21.7	1093	"	"	"
11:57	12	108	7.29	21.4	1127	"	"	"
12:01	12	156	7.26	21.4	1163	"	"	"
12:07	12	228	7.26	21.5	1191	"	"	"
12:11	12	276	7.25	21.3	1202	"	"	"
12:15	12	324	7.27	21.4	1220	"	"	"
12:19	12	372	7.27	21.4	1221	"	"	"
12:25	15	452	7.25	21.6	1233	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Dodson	12:30	Plastic	250 ml	3	EPA 300.0	None	Filtered

Additional Comments: Not living in the house currently. He said he may use ~100 gallons per week

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-22-08
Well ID:	Douglass 791	Weather:	partly cloudy
ADWR No.	55-592791	Collected By:	~~MARK ARNESON~~ John Vilinski

WELL DATA

Well Depth (ft bis):	200'	Time:	12:55
Casing Diameter (in):	5"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	27.00	GPS:	Zone 12 Band R
1 Casing Volume (gals):		Elevation:	ft. amsl
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-22-08
Well ID:	DOUGLASS 792	Weather:	Partly Cloudy
ADWR No.	592792	Collected By:	~~MARK ARNESON~~ John Villiash

WELL DATA

Well Depth (ft bls):	200'	Time:	12:04
Casing Diameter (in):	5"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	86.90	GPS:	on file Zone 12 Band R
1 Casing Volume (gals):	X not in use	Elevation:	on file ft. amsl
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-23-08
Well ID:	East ~~796~~	Weather:	Clear
ADWR No.	599796	Collected By:	~~MARK ARNESON~~ John Villarreal

WELL DATA

Well Depth (ft bls):	125	Time:	8:15
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	52.16	GPS:	on file Zone 12 Band R
1 Casing Volume (gals):	107	Elevation:	on file ft. amsl
3 Casing Volumes (gals):	321 pump on 8:25		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:26	14.3	14.3	7.~~25~~	20.9	579	Clear	no	—
8:29	14.3	57	7.34	20.8	586	"	"	"
8:32	14.3	100	7.33	20.8	591	"	"	"
8:35	14.3	143	7.34	20.7	598	"	"	"
8:38	14.3	186	7.34	20.7	601	"	"	"
8:41	14.3	229	7.34	20.7	601	"	"	"
8:45	14.3	287	7.34	20.8	605	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
East 796	8:48	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

Well is in use. Was used right before I arrived to clean sidewalk. No static #.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-21-07
Well ID:	Epelle 641	Weather:	partly cloudy
ADWR No.	805641	Collected By:	~~MARK ARNESON~~ John Villinski

WELL DATA

Well Depth (ft bis):	265	Time:	~~2559~~ 12:18
Casing Diameter (in):	8	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	25.59	GPS:	on file Zone 12 Band R
1 Casing Volume (gals):	625	Elevation:	on file ft. amsl
3 Casing Volumes (gals):	1875		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
12:22	10	70	7.00	22.8	~~333~~667	clear	None	—
12:37	12	180	7.36	21.6	671	"	"	"
12:52	13.5	383	7.39	21.7	674	"	"	"
13:07	13.5	585	7.42	21.4	679	"	"	"
13:22	13.5	788	7.47	21.7	681	"	"	"
13:35	—	1024	well pumped dry - watched it happen					
16:10	12	1084	7.49	23.9	605	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
EPPELE	16:15	Plastic	250 ml	1	EPA 300.0	None	~~Filtered~~

Additional Comments: well goes dry after 1hr or so. let recover then sample

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-14-08
Well ID:	FRANCO	Weather:	Rain
ADWR No.	500101	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	200	Time:	15:08
Casing Diameter (in):	6	Point of Measurement:	Top of Casing Obstructed
Static Water Level (ft bmp):	NA	GPS:	602851N 3468828E Zone 12 Band R
1 Casing Volume (gals):	NA	Elevation:	4619 ft. amsl
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
15:11	10	10	6.99	26.5	1571	Clear	No	15:10 open b.h
15:13	"	30	7.01	23.4	1596	"	"	
15:18	"	80	7.02	22.8	1583	"	"	
15:23	"	130	7.00	22.8	1583	"	"	
15:28	"	180	7.00	22.7	1586	"	"	
		Total Discharge 200 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
FRANCO	15:30	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: Four houses share this well

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7/29/08
Well ID:	FULTZ	Weather:	Sunny
ADWR No.	21247	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	300	Time:	16:20
Casing Diameter (in):	8	Point of Measurement:	—
Static Water Level (ft bmp):	obs. @ 63'	GPS:	—
1 Casing Volume (gals):		Elevation:	—
3 Casing Volumes (gals):			

pump on @ 16:00

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
16:05	10	50	6.74	24.3	1988	clear	no	—
16:10	10	100	6.74	22.9	1987	"	"	"
16:15	10	150	6.73	22.3	1996	"	"	"
16:21	10	210	6.74	22.1	1997	"	"	"
16:26	10	260	6.75	22.0	1988	"	"	"
16:30	10	300	6.74	22.2	1989	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Fultz	16:40	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: Well was just on for the cooler. Richard tried to remove rubber covering - provided access to sounding hole - obstruction @ 6.3 ft. no WL

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-23-08
Well ID:	Gallant ~~527~~	Weather:	Partly Cloudy
ADWR No.	55-502527	Collected By:	~~MARK ARNESON~~ John Villhauk

WELL DATA

Well Depth (ft bls):	190	Time:	9:57
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	33.05	GPS:	on file Zone 12 Band R
1 Casing Volume (gals):	230	Elevation:	on file ft. amsl
3 Casing Volumes (gals):	691		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:00	15	15	7.30	22.6	936	clear	no	
10:05	15	90	7.22	21.5	932	"	"	"
10:10	15	165	7.24	21.4	932	"	"	"
10:15	15	240	7.23	21.5	932	"	"	"
10:20	15	315	7.23	21.5	931	"	"	"
10:25	15	390	7.24	21.4	930	"	"	"
10:30	15	465	7.22	21.3	928	"	"	"
10:35	15	540	7.23	21.1	927	"	"	"
10:40	15	615	7.24	21.2	927	"	"	"
10:45	15	690	7.26	21.2	925	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Gallant 527	10:50	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-15-08
Well ID:	GARNER 557	Weather:	Cloudy
ADWR No.	558557	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bis):	300*	Time:	12:32
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	191.44	GPS:	602652N 3468958E Zone 12 Band R
1 Casing Volume (gals):		Elevation:	4628 ft. amsl
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

Water Level Measure Only

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-15-08
Well ID:	GARNER 635	Weather:	Cloudy
ADWR No.	587635	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	680	Time:	1235
Casing Diameter (in):	5"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	193.58	GPS:	6026648 3468972E Zone 12 Band R
1 Casing Volume (gals):	496	Elevation:	4616 ft. amsl
3 Casing Volumes (gals):	1488		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
12:45	18	36	7.39	26.6	489	clear	No	open b.h. 12:43
12:50	"	126	7.59	24.7	486	"	"	
13:00	"	306	7.60	25.5	487	"	"	
13:10	"	486	7.63	25.8	480	"	"	
13:20	"	666	7.58	26.0	487	"	"	
13:30	"	846	7.64	26.2	480	"	"	
13:40	"	1026	7.61	26.2	489	"	"	
13:50	"	1206	7.63	25.7	487	"	"	
14:00	"	1386	7.61	25.7	486	"	"	
14:05	"	1476	7.63	25.6	480	"	"	

Total Discharge 1566 gal

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
GARNER 635	14:10	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-15-08
Well ID:	GGOOSE 547	Weather:	Cloudy
ADWR No.	628547	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	800	Time:	9:15	
Casing Diameter (in):	6	Point of Measurement:	Top of Casing	
Static Water Level (ft bmp):	238.48	GPS:	3469820 N	606256 E UTM NAD 83
1 Casing Volume (gals):	824.7	Elevation:	4717.11	ft. amsl NAVD 88
3 Casing Volumes (gals):	2474			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:21	15	60	6.57	24.0	879	Clear	No	Pumps on 9:17
9:30	"	195	6.96	23.7	898	"	"	
9:40	"	345	7.05	23.9	930	"	"	
10:00	"	645	7.07	23.5	915	"	"	
10:20	"	945	7.07	23.4	920	"	"	
10:23	19							Flow increased
10:30	19	1033	7.08	23.7	918	"	"	
11:00	"	1603	7.07	24.1	926	"	"	Flow steady
11:30	"	2173	7.07	24.6	928	"	"	"
11:40	"	2363	7.02	24.8	915			
		Total Discharge 2363 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
GGOOSE 547	11:50	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	6-4-08
Well ID:	GL-03	Weather:	Cloudy
ADWR No.	539782	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	820	Time:	1411
Casing Diameter (in):	4	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	659.79	GPS:	3472738N 608374E
1 Casing Volume (gals):	104	Elevation:	ft amsl 4840
3 Casing Volumes (gals):	312		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1414	8.0	16	7.08	22.0	718	clear	No	Pumpon 1412
1417	"	40	6.94	23.6	756	Lt Gray	"	
1420	"	64	7.26	25.8	646	clear	"	
1425	"	104	7.25	26.3	648	"	"	
1430	"	144	7.10	26.6	679	"	"	
1435		184	7.10	26.8	673	dark	No	
1436	Flow dropped 3-4 gpm							
1436	Flow stopped - Allow Recovery							
		Total Discharge 185 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
GL-03	14:55	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-16-08
Well ID:	GOAR RANCH	Weather:	Clear
ADWR No.	610695	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	250	Time:	11:42
Casing Diameter (in):	7"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	184.41	GPS:	602449N 3468491E Zone 12 Band R
1 Casing Volume (gals):	NA	Elevation:	4596 ft. amsl
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: Water Level measure only

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-14-08
Well ID:	HOBAN	Weather:	Clear
ADWR No.	805290	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bis):	316	Time:	11:00
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	163.87	GPS:	601706N 3468878E Zone 12 Band R
1 Casing Volume (gals):	223	Elevation:	4588 ft. amsl
3 Casing Volumes (gals):	670 45m³		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
11:03	15	30	6.99	24.0	1562	clear	No	open b.b 11:01
11:08	11	105	7.01	22.9	1537	"	"	
11:13	"	180	7.02	22.9	1491	"	"	
11:18	"	255	7.00	22.6	1541	"	"	
11:23	"	330	6.97	22.8	1624	"	"	
11:33	"	480	6.87	22.8	1613	"	"	
11:43	"	630	6.88	23.1	1719	"	"	
		Total Discharge 705 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
HOBAN	11:47	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-14-08
Well ID:	HOWARD	Weather:	Rain
ADWR No.	~~UNKNOWN~~ NO RECORD	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	200	Time:	15:47
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	150.91	GPS:	601291N 3468769E Zone 12 Band R
1 Casing Volume (gals):	73	Elevation:	4595 ft. amsl
3 Casing Volumes (gals):	220		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
15:50	11	11	7.02	23.8	1524	clear	No	open b.i.d at 15:49
15:53	"	44	7.08	21.6	1424	"	"	
15:57	"	88	7.02	21.1	1448	"	"	
16:01	"	132	7.00	20.9	1504	"	"	
16:05	"	176	7.02	21.0	1541	"	"	
16:09	"	220	7.00	21.1	1566			
		Total Discharge 253 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
HOWARD	16:12	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: Unsure of well activity as no one is home.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-16-08
Well ID:	KEEFER	Weather:	cloudy
ADWR No.	209744	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	250	Time:	1325
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	136.24	GPS:	599881N 3468112E Zone 12 Band R
1 Casing Volume (gals):	167	Elevation:	4567 ft. amsl
3 Casing Volumes (gals):	503		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
13:36	15	30	7.07	23.8	467	Clear	No	open bib at 13:34
13:40	"	90	7.24	23.8	476	"	"	
13:45	"	165	7.28	22.3	483	"	"	
13:50	"	240	7.26	22.1	492	"	"	
14:00	"	390	7.28	22.4	507	"	"	
14:05	"	465	7.21	21.4	539	"	"	
		Total Discharge 540 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
KEEFER	14:10	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-15-08
Well ID:	MCCONNELL 265	Weather:	Cloudy
ADWR No.	539265	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	216'	Time:	
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	157.07	GPS:	601463N 3468844E Zone 12 Band R
1 Casing Volume (gals):	86.6	Elevation:	4604 ft. amsl
3 Casing Volumes (gals):	260		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
11:02	10	20	6.82	24.5	1746	Clear	No	Open b.h. @ 11:00
11:05	"	50	6.88	23.0	1740	"	"	
11:10	"	100	6.86	22.1	1751	"	"	
11:15	"	150	6.87	22.0	1754	"	"	
11:20	"	200	6.91	21.8	1748	"	"	
11:25	"	250	6.91	22.3	1775	"	"	
		Total Discharge 300 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
MCCONNELL265	11:30	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	08/12/08
Well ID:	MCCONNELL 265	Weather:	Sunny 85°
ADWR No.	539265	Collected By:	Mark Arneson

WELL DATA

Well Depth (ft bls):	216	Time:	1415
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	154.70	GPS:	3468840 N 601463 E UTM NAD83
1 Casing Volume (gals):	90	Elevation:	4600.70 ft amsl
3 Casing Volumes (gals):	270		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1424	0	0	-	-	-	-	-	-
1425	12	12	6.77	25.4	1740	Brown	No	-
1430	12	72	7.16	22.5	1742	"	"	-
1435	12	132	7.12	22.5	1767	Clear	"	-
1440	12	192	7.11	21.9	1764	"	"	-
1445	12	252	7.11	21.7	1763	"	"	-
1450	12	302	6.82	21.7	1762	"	"	-

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
MCCONNELL 265	1450	Plastic	*	7	FMCQB-WT	*	-

Additional Comments: * (1) 500 ml Raw; (1) 250 ml Raw/Nitric; (1) 125 ml Raw/NaOH & Zinc Acetate
(1) 125 ml Filtered/Nitric; (1) 250 ml Filtered; (1) 100 ml Raw/Sodium Thiosulfate
(1) 250 ml Raw/Sulfuric

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-31-08
Well ID:	METZLER	Weather:	Sunny, Breezy
ADWR No.	35-71891	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	351	Time:	9:35
Casing Diameter (in):	6	Point of Measurement:	TOC
Static Water Level (ft bmp):	286.82	GPS:	12R 0602094 UTM 3471380
1 Casing Volume (gals):	94	Elevation:	4733
3 Casing Volumes (gals):	283		

Pump on @ 9:40 @ 6gpm 47 mins

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:41	6	6	7.15	23.0	1067	Clear	no	—
9:47	6	42	7.17	22.4	1082	"	"	"
9:52	6	72	7.16	22.3	1069	"	"	"
9:58	6	108	7.15	22.4	1075	"	"	"
10:03	6	138	7.13	22.4	1088	"	"	"
10:08	6	168	7.13	22.4	1079	"	"	"
10:13	6	198	7.12	22.4	1082	"	"	"
10:18	6	228	7.15	22.5	1079	"	"	"
10:28	6	288	7.16	22.5	1078	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Metzler	10:30	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: Cooler was on when I got there

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Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-16-08
Well ID:	MOORE	Weather:	Clear
ADWR No.	538847	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bis):	220	Time:	10:25
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	No Access	GPS:	599560N 3467845E Zone 12 Band R
1 Casing Volume (gals):	NA	Elevation:	4574 ft. amsl
3 Casing Volumes (gals):	418		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:30	12	24	7.27	25.5	475	Clear	No	open bib at 10:28
10:35	"	84	7.32	23.4	472	"	"	
10:40	"	144	7.32	23.0	477	"	"	
10:45	"	204	7.34	23.2	477	"	"	
10:55	"	324	7.35	23.2	479	"	"	
11:00		384	7.34	23.0	482			
		Total Discharge 444 gal.						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
MOORE	11:05	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: I will use w/ measure written on control box dated 1997 of 125' btoc for purge volume.

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Groundwater Sampling Form

268-30

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-24-08
Well ID:	NESS	Weather:	Partly cloudy
ADWR No.	509127	Collected By:	~~MARK ARNESON~~ John Villinski

WELL DATA

Well Depth (ft bls):	cased 700', drilled 900'	Time:	10:05
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	~~557~~ 590	GPS:	need Zone 12 Band R
1 Casing Volume (gals):		Elevation:	need ft. amsl
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:54	—	—	7.35	26.5	563	clear	no	—

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
NESS	9:30	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: Dan Jarvis - Well drilled to 900' & cased to 700'
Water level ~600'. Drillers broke through Granite layer.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-24-08
Well ID:	NOTEMAN	Weather:	post-rain/partly cloudy
ADWR No.	212483	Collected By:	~~MARK ARNESON~~ John Villinski

WELL DATA

Well Depth (ft bls):	470	Time:	
Casing Diameter (in):	5	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	obstructed	GPS:	Zone 12 Band R
1 Casing Volume (gals):		Elevation:	ft. amsl
3 Casing Volumes (gals):			

Pump on 16:02 @ 15 gpm

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
16:06	15	60	6.68	23.9	1544	clear	no	—
16:10	15	120	6.68	24.0	1541	"	"	—
16:14	15	180	6.67	24.4	1540	rosy	no	—
16:18	15	240	6.68	24.2	1539	clear	—	—

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Noteman	16:25	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments:

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Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	6-5-08
Well ID:	OSBORN	Weather:	Cloudy
ADWR No.		Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	258	Time:	14:55
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	69.53	GPS:	3470274 607030
1 Casing Volume (gals):	NA	Elevation:	4712
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: WATER LEVEL ONLY

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Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-22-08
Well ID:	Osborn ~~436~~	Weather:	Cloudy
ADWR No.	643436	Collected By:	~~MARK ARNESON~~ John Vitkauski

WELL DATA

Well Depth (ft bls):	258	Time:	still obstructed don measure
Casing Diameter (in):	8	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):		GPS:	Zone 12 Band R
1 Casing Volume (gals):	est on 2/25/08 = 73	Elevation:	ft. amsl
3 Casing Volumes (gals):	221		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
13:17	10	10	7.23	23.4	621	clear	no	—
13:21	10	50	7.22	23.2	620	"	"	"
13:25	10	90	7.24	23.4	625	"	"	"
13:29	10	130	7.22	23.0	619	"	"	"
13:33	10	170	7.22	22.8	620	"	"	"
13:37	10	210	7.24	22.9	618	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Osborn 436	13:42	Plastic	*	3	EPA 300.0	*	
DUP072208	13:43	—	—	—	"	—	—

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-22-08
Well ID:		Weather:	Partly Cloudy
ADWR No.		Collected By:	~~MARK ABNEY~~ John Villinski

WELL DATA

Well Depth (ft bls):		Time:	
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):		GPS:	
1 Casing Volume (gals):		Elevation:	ft amsl
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
FB 072208	—	Plastic	*	3	EPA 300.0	*	
EQB072208		"	"	3	"	"	"

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-22-08
Well ID:	Palmer 819	Weather:	Partly cloudy
ADWR No.	55-578819	Collected By:	~~MARK ARNESON~~ John Willing

WELL DATA

Well Depth (ft bis):	220	Time:	~
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	~~no access~~	GPS:	Zone 12 Band R
1 Casing Volume (gals):		Elevation:	ft. amsl
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
~~12:25~~	~	~	~~7.83~~	~~30.8~~	~~554~~	clear	No	~
12:35	~	~	7.64	25.8	548	clear	No	~

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
PALMER 819	12:35	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: Sample directly from Tank - 1st sample was sitting in hose - discarded.

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Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-21-08
Well ID:	Panagakos ~~413~~	Weather:	cloudy
ADWR No.	35-76413	Collected By:	~~MARK ARNESON~~ John Villinski

WELL DATA

Well Depth (ft bis):	200	Time:	no access
Casing Diameter (in):	8	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	est. 60	GPS:	on file Zone 12 Band R
1 Casing Volume (gals):	365	Elevation:	on file ft. amsl
3 Casing Volumes (gals):	1096		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
14:10	10	50	6.90	23.6	1435	clear	NO	—
14:20	10	150	6.87	22.1	1191	"	"	—
14:30	10	250	6.97	21.9	1218	"	"	"
14:40	10	350	6.97	22.1	1290	"	"	"
14:50	10	450	6.94	21.8	1325	"	"	"
15:00	10	550	6.97	21.8	1350	"	"	"
15:10	10	650	6.97	21.8	1360	"	"	"
15:20	10	750	6.94	21.8	1371	"	"	"
15:30	10	850	6.95	21.8	1388	"	"	"
15:40	10	950	6.93	21.8	1390	"	"	"
15:50	10	1050	6.95	21.9	1390	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Panagakos 413	13:~~55~~	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: pump on @ 14:05. well is used for irrigation. No WL access - est. ~60 ft bmp. Total pumped 1100 gallons. Talked w/ Mr Panagakos - informed me that original OTW was 40', now, a few years ago when new ~~not~~ pump installed, ~140 ft.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-31-08
Well ID:	Parra	Weather:	Sunny
ADWR No.	576415	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	355'	Time:	—
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	263' from 1999	GPS:	
1 Casing Volume (gals):	95 (use WL=290')	Elevation:	ft amsl
3 Casing Volumes (gals):	286		

pump on @ 8:18 @ 6.5 gpm

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:20	6.5	13	6.94	22.4	1244	clear	no	—
8:25	6.5	45	6.98	22.2	1253	"	"	"
8:31	6.5	84	6.98	22.1	1248	"	"	"
8:38	7.5	137	7.01	22.2	1247	"	"	"
8:46	7.5	197	6.98	22.4	1247	"	"	"
8:56	6.5	262	7.01	22.4	1250	"	"	"
9:04	6.5	314	7.00	22.4	1248	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Parra	9:07	Plastic	*	3	EPA 300.0	*	
DUP073108	9:10	"	"	3	"	"	

Additional Comments: * (1) 125 ml with HNO3 Preservative, (1) 250 ml and (1) 500 ml Unfiltered

well obstructed @ 60'. almost got probe stuck @ 42'. Estimate depth to WL @ 290 like RUIZ & COLLINS

Normal household use this morning

8/18/08 280.06

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-31-08
Well ID:		Weather:	Sunny
ADWR No.		Collected By:	~~MARY JEFFSON~~ John Villinski

WELL DATA

Well Depth (ft bls):		Time:	
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):		GPS:	
1 Casing Volume (gals):		Elevation:	ft amsl
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
FB 073108		Plastic	*	3	EPA 300.0	*	
EQB 073108		"	"	3	"	"	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-17-08
Well ID:	PIONKE	Weather:	Clear
ADWR No.	613395	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bis):	330	Time:	8:15
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	149.88	GPS:	6010481N 348956E Zone 12 Band R
1 Casing Volume (gals):	264	Elevation:	4592 ft. amsl
3 Casing Volumes (gals):	793 45min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:32	18	36	6.85	23.3	1202	Clear	No	Open Valve 8:30
8:35	"	90	6.94	22.1	1230	"	"	
8:40	"	180	6.97	21.9	1203	"	"	
8:45	"	270	7.01	22.1	1199	"	"	
8:55	"	450	6.96	21.9	1189	"	"	
9:05	"	630	7.00	21.9	1190	"	"	
9:12	"	756	6.99	21.9	1209	"	"	
		Total Discharge 810 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
PIONKE	9:15	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	08/12/08
Well ID:	PIONKE	Weather:	Sunny 85°
ADWR No.	613395	Collected By:	Mark Arneson

WELL DATA

Well Depth (ft bls):	330	Time:	1305
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	149.91	GPS:	3468956 N 601048 E
1 Casing Volume (gals):	264	Elevation:	ALS to Survey August 18, 2008
3 Casing Volumes (gals):	793		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1330	15	15	6.92	25.3	1178	Clear	No	-
1335	15	90	7.07	22.5	1002	"	"	-
1340	15	165	7.16	22	1134	"	"	-
1345	15	220	7.12	21.7	1199	"	"	-
1350	15	275	7.11	21.6	1202	"	"	-
1355	15	330	7.11	21.6	1198	"	"	-

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
PIONKE	1400	Plastic	*	7	FMCQB-WT	*	-

Additional Comments: * (1) 500 ml Raw; (1) 250 ml Raw/Nitric; (1) 125 ml Raw/NaOH & Zinc Acetate
(1) 125 ml Filtered/Nitric; (1) 250 ml Filtered; (1) 100 ml Raw/Sodium Thiosulfate
(1) 250 ml Raw/Sulfuric

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-31-08
Well ID:	POOL	Weather:	Sunny, windy
ADWR No.	509518	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	~~205~~ 313	Time:	11.48
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	205.56	GPS:	
1 Casing Volume (gals):	158	Elevation:	
3 Casing Volumes (gals):	473 (32 min		

pump on @ 11:58 15 gpm

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
12:00	15	30	7.58	23.0	587	clear	no	—
12:08	15	150	7.51	22.3	603	"	"	"
12:13	15	225	7.50	22.2	603	"	"	"
12:18	15	300	7.51	22.4	600	"	"	"
12:23	15	375	7.50	22.3	601	"	"	"
12:28	15	450	7.47	22.3	595	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
POOL	12:30	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Lynn 520-432-5106

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-22-08
Well ID:	~~B~~ Power ~~535~~	Weather:	Sunny / Warm e
ADWR No.	55-624535	Collected By:	~~MARK ARNESON~~ John Villinski

WELL DATA

Well Depth (ft bls):	100	Time:	9:41
Casing Diameter (in):	7	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	42.82 (measured in unused well)	GPS:	on file Zone 12 Band R
1 Casing Volume (gals):	114	Elevation:	on file ft. amsl
3 Casing Volumes (gals):	343		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:46	14.3	14.3	6.97	22.3	607	clear	no	—
9:49	14.3	57	6.97	21.8	759	"	"	—
9:52	12	93	6.97	21.7	767	"	"	—
9:55	11.1	126	6.92	21.5				
9:56	well ran	dry →			127 gals - let recover			
10:26	—	—	pump on					
10:30		~~5~~			795	clear	no	
			7.10	21.7				
10:35		sample						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Power 535	10:35	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

Cannot access pump well- measured WL in unused well. Pumped the well dry in 10 mins. Need garden hose

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-17-08
Well ID:	RAMIREZ	Weather:	clear
ADWR No.	216425	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bis):	300'	Time:	10:55
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	Obstructed	GPS:	599731N 3467586E Zone 12 Band R
1 Casing Volume (gals):	NA	Elevation:	4594 ft. amsl
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
11:00	12	36	7.24	26.2	440	clear	No	open b:b at 10:57
11:05	"	96	7.29	24.1	443	"	"	
11:10	"	156	7.25	24.3	459	"	"	
11:20	"	276	7.28	24.4	437	"	"	
11:30	"	396	7.32	24.5	439	"	"	
		Total Discharge 456 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
RAMIREZ	11:35	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: This well was running on arrival. Cannot get w/l here as it is obstructed. 11:20 New landscape areas are flooded

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-29-08
Well ID:	Ray	Weather:	clear, warm
ADWR No.	803772	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	100'	Time:	~~45.25~~ 13:05
Casing Diameter (in):	8"	Point of Measurement:	TOC
Static Water Level (ft bmp):	45.25	GPS:	
1 Casing Volume (gals):	143	Elevation:	
3 Casing Volumes (gals):	429		

pump on @ 13:08 43 min

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
13:11	10	30	6.86	23	1450	clear	no	—
13:17	10	90	6.96	22.9	1445	"	"	"
13:22	10	140	6.98	21.5	1427	"	"	"
13:27	10	190	6.99	21.2	1390	"	"	"
13:32	10	240	6.99	21.6	1412	"	"	"
13:37	10	290	6.99	21.4	1406	"	"	"
13:42	10	340	7.00	21.5	1409			
13:48	10	400	6.99	21.4	1412			
13:52	10	440	6.98	21.8	1411			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
RAY	13:55	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: Maria Ray [redacted] had Doctors appt in morning so sampling was sched. for the afternoon. Water off for 4+ hrs before sampling. Mrs Ray is buying water - not being provided any - what is her sulfate level?

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-17-08
Well ID:	ROGERS E	Weather:	clear
ADWR No.	216018	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	285	Time:	9:48
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	149.65	GPS:	600464N 3467634E Zone 12 Band R
1 Casing Volume (gals):	198.8	Elevation:	4607 ft. amsl
3 Casing Volumes (gals):	596 40min		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:58	15	45	7.25	24.9	450	clear	No	open bib at 9:55
10:00	"	75	7.31	23.5	445	"	"	
10:10	"	225	7.22	23.0	442	"	"	flow is steady
10:20	"	375	7.24	23.0	443	"	"	
10:30	"	525	7.28	23.0	449	"	"	
10:33	"	570	7.28	23.0	446	"	"	
		Total Discharge 615 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
ROGERS E	10:36	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-29-08
Well ID:	Rogers 803	Weather:	P. Cloudy
ADWR No.	641803	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	140'	Time:	~~1316~~ 10:00
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	131.86	GPS:	
1 Casing Volume (gals):	12	Elevation:	ft amsl
3 Casing Volumes (gals):	36		

pump on 10:08

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:07	18	10	7.26	25.9	6.94	clear	no	—
10:10	10	40	6.81	23.1	340	"	"	"
10:12	10	60	6.78	23.1	339	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Rogers 803	10:15	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 125 ml with HNO3 Preservative, (1) 250 ml and (1) 500 ml Unfiltered

1st sample may have carry-over in hose

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-30-08
Well ID:	Ruiz	Weather:	Sunny
ADWR No.	[redacted] 531770	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	312	Time:	12:05
Casing Diameter (in):	6	Point of Measurement:	TOC
Static Water Level (ft bmp):	293.86	GPS:	
1 Casing Volume (gals):	26.6	Elevation:	
3 Casing Volumes (gals):	80		

12:12

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
12:15	4.5	13.5	6.95	22.8	996	clear	no	—
12:19	4.5	31.5	6.95	21.9	997	clear	"	"
12:23	4.5	49.5	6.97	21.8	995	"	"	"
12:27	4.5	67.5	6.96	21.8	~~999~~	"	"	"
12:31	4.5	85.5	6.99	22.1	999			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
RUIZ	12:35	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: If Jim knows you are coming, he will have it set for you that you can turn the switch on the electrical box and the pump will go on

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-29-08
Well ID:	Schwarz	Weather:	mostly Sunny
ADWR No.	210865	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	305'	Time:	10:45
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	122.64	GPS:	
1 Casing Volume (gals):	264	Elevation:	
3 Casing Volumes (gals):	793		

pump on @ 10:46 (66 min purge)

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:48	12	24	7.06	23.4	1156	clear	no	—
10:54	12	96	7.12	22.8	1139	"	"	"
11:00	12	168	7.15	22.4	1082	"	"	"
11:06	12	240	7.19	22.4	1003	"	"	"
11:12	12	312	7.23	22.4	972	"	"	"
11:18	12	384	7.22	22.3	956	"	"	"
11:25	12	468	7.25	22.3	954	"	"	"
11:32	12	552	7.17	22.4	952	"	"	"
11:39	12	636	7.26	22.3	954			
11:46	12	720	7.26	22.5	949			
11:52	12	804	7.25	22.4	955			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Schwarz	11:55	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: did one load of wash before I came. Was off all night

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-5-08
Well ID:	SRC	Weather:	Clear
ADWR No.	211345	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	965	Time:	9:55
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	543.70	GPS:	3472505N 599723E
1 Casing Volume (gals):	618.8	Elevation:	ft amsl 4807
3 Casing Volumes (gals):	1856		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:05	30	150	7.21	24.2	483	Pink	No	Pump on @ 10:00
10:10	20	250	7.33	26.3	452	light pink	No	
10:15	15	325	7.47	25.5	454	" "	"	
10:35	8	485	7.53	26.4	455	" "	"	
10:50	8	605	7.44	27.1	451	" "	"	
11:00	8	685	7.40	27.2	452	" "	"	
		Total Discharge 765 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
SRC	11:10	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

Pump is set at 760' btoc

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-5-08
Well ID:	STEPHENS	Weather:	Clear
ADWR No.		Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):		Time:	1600
Casing Diameter (in):		Point of Measurement:	TOC
Static Water Level (ft bmp):	46.61	GPS:	
1 Casing Volume (gals):		Elevation:	
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: WL ONLY

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-5-08
Well ID:	SUNBELT	Weather:	Cloudy
ADWR No.		Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	380	Time:	15:30
Casing Diameter (in):	6"	Point of Measurement:	TOC
Static Water Level (ft bmp):	Dry	GPS:	3471737 6060008
1 Casing Volume (gals):	NA	Elevation:	4788
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: Water LEVEL ONLY
TD'd bottom of well at 380' with 2 different Sounders — Dry

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7/24/08
Well ID:	SWAN	Weather:	clear
ADWR No.	——	Collected By:	~~MARK ARNESON~~ John Villinski

WELL DATA

Well Depth (ft bls):	98	Time:	1:20
Casing Diameter (in):	4	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	32.06	GPS:	on site Zone 12 Band R
1 Casing Volume (gals):	66	Elevation:	on site ft. amsl
3 Casing Volumes (gals):	198		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1:33	12	12	7.22	27.1	513	clear	no	——
1:36	12	48	7.30	24.6	539	"	"	"
1:39	12	84	7.33	24.2	513	"	"	"
1:42	12	120	7.35	22.8	509	"	"	"
1:45	12	156	7.34	22.6	505	"	"	"
1:49	12	204	7.35	22.4	506	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
SWAN	13:53	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: ——

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-15-08
Well ID:	TM-02A	Weather:	Clear
ADWR No.	522574	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	925	Time:	13:00	
Casing Diameter (in):	4	Point of Measurement:	Top of Casing	
Static Water Level (ft bmp):	353.91	GPS:	3472008N 604152E	UTM NAD 83
1 Casing Volume (gals):	368	Elevation:	4808.43 ft. amsl	NAVD 88
3 Casing Volumes (gals):	1107			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1340	9	162	7.77	28.3	383	lt tan	No	Pump on 1322
1400	9	342	7.83	25.5	379	clear	NO	
1420	9	522	7.86	25.2	371	"	"	
1440	7	662	7.88	25.6	369	"	"	
1500	7	802	7.83	26.2	366	"	"	
1515	5	877	7.84	26.4	369	"	"	
1525	Flow is down to <2 gpm							
		Total Discharge 952 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-02A	15:30	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-6-08
Well ID:	TM-03	Weather:	Clear
ADWR No.	522575	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	200	Time:	6:55
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	128.02	GPS:	347371N 606366E
1 Casing Volume (gals):	47	Elevation:	ft amsl 4897
3 Casing Volumes (gals):	141		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
705	10	10	7.16	21.3	829	clear	No	Pumpon 7:04
709	11	40	7.21	21.4	841	"	"	
710	"	60	7.17	21.5	839	"	"	
712	"	80	7.08	21.5	838	"	"	
714	"	100	7.08	21.5	834	"	"	
716	"	120	7.07	21.5	830	"	"	
718	"	140	7.08	21.6	828	"	"	
	Total Discharge 160 gal							

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-03	7:20	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-4-08
Well ID:	TM-06 MILLER	Weather:	Clear
ADWR No.	522695	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	200	Time:	15:36
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	158.80	GPS:	368346N 606055E
1 Casing Volume (gals):	26.8	Elevation:	ft amsl 4707
3 Casing Volumes (gals):	81		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1549	10	10	7.49	22.1	534	Gray	No	Pump on 15:48
1551	"	30	7.37	21.0	522	clear	"	
1554	"	60	7.42	21.0	527	"	"	
1556	"	80	7.41	20.7	529	"	"	
		Total Discharge 120 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-06 MILLER	16:00	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-6-08
Well ID:	TM-07	Weather:	clear
ADWR No.	522576	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	350	Time:	10:10
Casing Diameter (in):	4	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	obstructed at 70'	GPS:	3471918N 603010E
1 Casing Volume (gals):	NA	Elevation:	ft amsl 4759
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1017	8	8	7.04	22.8	519	clear	No	pumped 10/6
1018	pumped dry - allow Recharge							
		Total Discharge 20gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-07	10:50	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

Purge For Stability if possible

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-23-08
Well ID:	SwanTM08	Weather:	partly cloudy
ADWR No.	522817	Collected By:	~~MARK ARNESON~~ John Villinski

WELL DATA

Well Depth (ft bls):	817	Time:	13:40
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	no higher 600'	GPS:	on file Zone 12 Band R
1 Casing Volume (gals):	141	Elevation:	on file ft. amsl
3 Casing Volumes (gals):	425 (47 min)		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
13:47	9	18	7.96	28.7	516	clear	ne	—
13:51	9	54	7.94	28.6	519	clear	no	—
13:58	9	117	7.97	28.0	518	"	"	—
14:03	9	162	7.94	28.5	524	"	"	—
14:09	9	210	7.85	28.4	528	"	"	—
14:16	9	273	7.82	27.4	514	"	"	—
14:21	9	318	7.77	27.7	522	"	"	"
14:29	9	390	7.76	28.2	521	"	"	"
14:34	9	435	7.76	28.1	522	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
SWANTM08	14:37	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

Kim Wilson heard that someone got a measurement ~ 700', Not certain — guess WL no higher than 600'

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-16-08
Well ID:	TM-14 Nelson	Weather:	Clear
ADWR No.	522816	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	215	Time:	9:40
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	210.02	GPS:	599627N 3470110E Zone 12 Band R
1 Casing Volume (gals):	7.3	Elevation:	4618 ft. amsl
3 Casing Volumes (gals):	22.0		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
955	6	6	7.22	27.6	474	Clear	No	Grab @ 9:54
9.56	Out of Water							

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
~~TM-14 NELSON~~		~~Plastic~~	*	3	~~EPA 300.0~~	*	

Additional Comments: * ~~(1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered~~

This well is dry and will not pump any water.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8.5-08
Well ID:	TM-15 MILLER	Weather:	Clear
ADWR No.	522699	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	325	Time:	12:57
Casing Diameter (in):	4	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	No Access	GPS:	3471427N 599617E
1 Casing Volume (gals):	N/A	Elevation:	ft amsl 4730
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1300	6.0	16	7.24	24.0	411	clear	yes	pumpon 1258
1303	"	34	7.45	23.3	415	"	No	
1304	"	48	7.46	23.3	417	"	"	
1307	"	72	7.42	23.3	413			
		Total Discharge 96gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-15 MILLER	13:10	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-6-08
Well ID:	TM-16	Weather:	Clear
ADWR No.	522578	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	115	Time:	7:58
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	81.65	GPS:	347427N 599617E
1 Casing Volume (gals):	21.7	Elevation:	ft amsl 4729
3 Casing Volumes (gals):	66		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:03	10	10	6.70	21.4	1395	Clear	No	Pumpon at 8:02
8:05	"	30	6.68	21.0	1403	"	"	
8:07	"	50	6.66	20.9	1412	"	"	
8:08	"	60	6.67	20.9	1410	"	"	
		Total Discharge 80 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-16	8:10	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-6-08
Well ID:	TM-19A	Weather:	Clear
ADWR No.	522581	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	210	Time:	9:25
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	199.19	GPS:	602458E 3469197N
1 Casing Volume (gals):	7	Elevation:	ft amsl 4646
3 Casing Volumes (gals):	21		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:35	15	15	6.85	23.1	518	clear	No	Pumpon 9:34
9:36	"	30	7.22	22.4	493	"	"	
9:38	"		7.32	22.6	494	"	"	
		Total Discharge 90 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-19A	9:40	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-6-08
Well ID:	TM-41	Weather:	Clear
ADWR No.	562555	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	210	Time:	16:11
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	DRY	GPS:	347308N 604838
1 Casing Volume (gals):		Elevation:	ft amsl 4770
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

Dry. Sent Sounder to bottom of sounding tube

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-6-08
Well ID:	TM-42	Weather:	Clear
ADWR No.	562554	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	250	Time:	8:35
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	211.55	GPS:	603698E 3469104N
1 Casing Volume (gals):	25	Elevation:	ft amsl 4667
3 Casing Volumes (gals):	75		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:38	6	6	6.65	22.4	1397	Clear	No	pump on 8:32
8:40	"	18	6.64	21.8	1396	"	"	
8:42	5	38	6.62	21.9	1410	"	"	
8:45	5	53	6.64	21.9	1393	"	"	
8:48	5	68	6.65	21.9	1380	"	"	
8:50	5	78	6.69	22.0	1388	"	"	
		Total Discharge 93 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-42	8:53	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-4-08
Well ID:	TM-43	Weather:	Clear
ADWR No.	564729	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	~~250~~ 830	Time:	0955
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	148.70	GPS:	3478670N 605365E
1 Casing Volume (gals):	444	Elevation: ft amsl	4971
3 Casing Volumes (gals):	1334		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1012	8	16	8.31	22.7	442	lt gray	yes	Pumpon 10'10
1016	"	48	8.24	22.3	428	clear	"	
1021	"	88	8.28	22.6	422	"	"	
1031	"	168	8.15	23.1	418	"	"	
1041	"	248	8.17	23.3	421	"	slight	
1101	"	408	8.03	24.1	429	"	"	
1131	"	648	7.96	24.8	436	"	"	
1201	"	888	7.90	25.3	442	"	"	
1231	"	1128	7.91	25.7	434			
~~1300~~ MD	"		8.14	25.7	436			
1255		1320						

Total Discharge 1360 gal

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-43	13:00	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-4-08
Well ID:	TM-43A	Weather:	Clear
ADWR No.	564726	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	215	Time:	9:10
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	133.71	GPS:	347466N 605358E
1 Casing Volume (gals):	53	Elevation:	ft amsl 4970
3 Casing Volumes (gals):	160 gal		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
924	6	12	6.00	22.3	3239	clear	No	Pump on 9:22
927	"	60	6.07	21.6	2996	"	"	
931	"	84	6.11	21.6	3019	"	"	
935	5	104	6.09	21.7	3080	"	"	
940	5	129	6.06	21.5	3113	"	"	
945	5	154	6.03	21.6	3149	"	"	
		Total Discharge 154 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-43A	9:44	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	8-5-08
Well ID:	TM-43B	Weather:	Clear
ADWR No.	565004	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	215	Time:	6:28
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	65.21	GPS:	3474379N 605414E
1 Casing Volume (gals):	97.7	Elevation:	ft amsl 4922
3 Casing Volumes (gals):	293		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
6:43	6	6	6.85	20.7	643	Black	yes	Pump on 6:42
6:45	"	18	6.96	20.9	532	Clear	"	
6:49	"	42	6.98	20.8	511	"	"	
6:53	"	66	6.92	20.8	509	"	"	flow steady
6:59	"	102	6.91	20.8	505	"	"	
7:09	"	162	6.89	21.0	507			
7:13	Flow dropped to 0							
		Total Discharge = 186 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-43B	8:10	Plastic	*	3	EPA 300.0	*	
DUP080508	8:10	"	"	"	"	"	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-15-08
Well ID:	TVI 236	Weather:	Clear
ADWR No.	802236	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	222	Time:	7:50
Casing Diameter (in):	12"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	121.55	GPS:	600564N 3467001E Zone 12 Band R
1 Casing Volume (gals):	593	Elevation:	4572 ft. amsl
3 Casing Volumes (gals):	1780		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:18	500	13,000	7.26	22.6	511	Clear	No	Pump on at 7:52
6:23	500	15,500	7.39	21.9	532	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TVI 236	8:25	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: This well has been off for 5 days.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-14-08
Well ID:	TVI 713	Weather:	Clear
ADWR No.		Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bis):		Time:	8:00
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	126.30	GPS:	Zone 12 Band R
1 Casing Volume (gals):		Elevation:	ft. amsl
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: Water level only

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-15-08
Well ID:	TVI 875	Weather:	Clear
ADWR No.	568875	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	330	Time:	8:00
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	126.30 (TVI 713)	GPS:	600737N 3468417E Zone 12 Band R
1 Casing Volume (gals):	300	Elevation:	4752 ft. amsl
3 Casing Volumes (gals):	900		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:47	500	3500	7.23	23.4	955	Clear	No	Pump on 8:40
8:51	"	5500	7.36	22.7	932	"	"	
8:54	"	7500	7.27	22.4	925	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TVI 875	9:00	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

This well has been off for 5 days

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-23-08
Well ID:	Walker 393	Weather:	~~Clear~~ Partly Cloudy
ADWR No.	55-200393	Collected By:	~~MARK ARNESON~~ John Vilinski

WELL DATA

Well Depth (ft bls):	120	Time:	9:07
Casing Diameter (in):	5½	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	42.65	GPS:	on file Zone 12 Band R
1 Casing Volume (gals):	95	Elevation:	on file ft. amsl
3 Casing Volumes (gals):	286		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:13	10	30	7.17	21.3	738	clear	no	—
9:17	10	70	7.20	20.6	734	"	"	"
9:21	12	118	7.21	20.6	740	"	"	"
9:25	12	166	7.23	20.6	738	"	"	"
9:30	12	226	7.25	20.6	744	"	"	"
9:35	13	286	7.25	20.7	740	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Walker 393	9:38	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-30-08
Well ID:	WEED	Weather:	Sunny, warm, windy
ADWR No.	599535	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	300	Time:	—
Casing Diameter (in):	NA	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	NA	GPS:	
1 Casing Volume (gals):		Elevation:	ft amsl
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
~~13:00~~	—	—	7.56	32.6	409	recalibrate		first
13:15	—	—	7.42	32.0	407	clear	ne	—

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
WEED	13:15	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 125 ml with HNO3 Preservative, (1) 250 ml and (1) 500 ml Unfiltered

Sample taken directly from discharge pipe at the well- no purge.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-16-08
Well ID:	WEISKOPF	Weather:	clear
ADWR No.	641802	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bls):	200	Time:	8:25
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	144.22	GPS:	601147N 3468667E Zone 12 Band R
1 Casing Volume (gals):	82	Elevation:	4602 ft. amsl
3 Casing Volumes (gals):	247		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:40	10	10	6.93	22.6	1381	Clear	No	open lib at 8:39
8:43	"	40	7.05	22.0	1331	"	"	
8:47	"	80	7.09	22.3	1354	"	"	
8:52	"	130	7.08	22.2	1389	"	"	
8:57	"	180	7.10	22.3	1384	"	"	
9:02	"	230	7.07	22.2	1399	"	"	
		Total Discharge 260 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
WEISKOPF	9:05	Plastic	*	3	EPA 300.0	*	

Additional Comments: * (1) 150 ml with HNO3 Preservative, (1) 250 ml and (1) 250 ml Unfiltered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No.	8720000	Client:	Freeport Copper Queen Branch
Task No.	2.2	Date:	7-16-08
Well ID:	ZANDER	Weather:	clear
ADWR No.	205126	Collected By:	MARK ARNESON

WELL DATA

Well Depth (ft bis):	280	Time:	11:25
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	146.40	GPS:	599677N 3469003E Zone 12 Band R
1 Casing Volume (gals):	196	Elevation:	4566 ft. amsl
3 Casing Volumes (gals):	588		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
11:34	20	80	7.00	25.3	444	clear	No	Odor 8.6 11:30
11:39	"	180	7.00	23.1	433	"	"	
11:44	"	280	7.11	24.1	437	"	"	
11:49	"	380	6.94	22.8	434	"	"	
11:54	"	480	6.94	22.8	440	"	"	
11:59	"	580	6.92	22.9	441	"	"	
		Total Discharge 660 gal						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
ZANDER	12:03	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments:

FOURTH QUARTER 2008
GROUNDWATER MONITORING REPORT
TASKS 1.0, 2.2 AND 2.3 OF AQUIFER CHARACTERIZATION PLAN
MITIGATION ORDER ON CONSENT DOCKET NO. P-121-07
COCHISE COUNTY, ARIZONA

Prepared for:

FREEPORT-MCMORAN
COPPER QUEEN BRANCH
36 West Highway 92
Bisbee, Arizona 85603

Prepared by:

HYDRO GEO CHEM, INC.
51 West Wetmore Road, Suite 101
Tucson, Arizona 85705
(520) 293-1500

January 23, 2009

FOURTH QUARTER 2008
GROUNDWATER MONITORING REPORT
TASKS 1.0, 2.2 AND 2.3 OF AQUIFER CHARACTERIZATION PLAN
MITIGATION ORDER ON CONSENT DOCKET NO. P-121-07
COCHISE COUNTY, ARIZONA

Prepared for:

FREEPORT-MCMORAN
COPPER QUEEN BRANCH
36 West Highway 92
Bisbee, Arizona 85603

Approved by:

James R. Norris
Arizona Registered Geologist No. 30842

REGISTERED GEOLOGIST
CERTIFICATE NO.
30842
JAMES R.
NORRIS
Date Signed 1/23/09
ARIZONA U.S.A.
Expires 12/31/09

Prepared by:

Daniel R. Simpson
Senior Hydrogeologist

January 23, 2009

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APPENDICES

A Fourth Quarter 2008 Data Verification Report
B Analytical Reports from ACZ Laboratories, Inc.
C Hydro Geo Chem, Inc. Groundwater Sampling Forms

1. INTRODUCTION

This data report provides the results of groundwater monitoring conducted in the fourth quarter of 2008 in the vicinity of the Freeport-McMoRan Copper Queen Branch (CQB) pursuant to the Mitigation Order on Consent Docket No. P-121-07 (MO). Groundwater monitoring was conducted by CQB for Tasks 1, 2.2, and 2.3 of the Work Plan (Hydro Geo Chem, Inc. [HGC], 2008a) to characterize sulfate in the vicinity of the Concentrator Tailing Storage Area (CTSA). Pursuant to the MO, the Work Plan was submitted to Arizona Department of Environmental Quality (ADEQ) on December 17, 2007 (ADEQ, 2007). CQB initiated water sampling prior to work plan approval while ADEQ was commenting on the Work Plan and CQB was responding to their comments. Revision 1 of the Work Plan was submitted to ADEQ on July 3, 2008 and ADEQ approved the Work Plan on August 3, 2008. HGC prepared this groundwater monitoring report on behalf of CQB.

1.1 Scope of Groundwater Monitoring

The scope of the groundwater monitoring program is described in Sections 3.2, 3.3.2 and 3.3.3 of the Work Plan (HGC, 2008a). This report presents the results of groundwater monitoring conducted in the fourth quarter of 2008 for Tasks 1, 2.2, and 2.3 of the Work Plan. Groundwater monitoring for Task 1 consisted of identifying private drinking water supply wells and public water supply system wells within one mile downgradient and crossgradient of the outer edge of the sulfate plume. Groundwater monitoring for Task 2.2 consisted of water elevation measurement and collection of groundwater samples from wells in the vicinity of the

CTSA. Task 2.3 involved the installation and sampling of wells to define the extent of the sulfate plume and to further evaluate conditions in the former source area. Figure 1 presents a generalized geologic map of the study area and well locations where data were collected during this reporting period.

On December 18, 2008, a measuring point elevation survey was completed by Arizona Land Specialists, Inc. (ALS) for private wells that had a measurable water level, Naco Water Company (NWC) wells, and the newly installed Bisbee Mitigation Order (BMO) wells. A copy of the survey report completed by ALS is included as Appendix A.1.

1.1.1 Groundwater Monitoring for Task 1

Task 1 of the Work Plan consisted of a well inventory to identify and sample potential private drinking water supply wells and public water supply systems located one mile downgradient and crossgradient of the sulfate plume from the CTSA and in the footprint of the plume. Samples for drinking water supply wells are analyzed for sulfate. The results of the initial sampling of drinking water supply wells were reported in the well inventory report (HGC, 2008b). Ongoing monitoring of drinking water supply wells is conducted as described in Section 4 of the Work Plan. Table 1 lists wells sampled for the well inventory for Task 1. Section 2 presents the results of groundwater monitoring for Task 1.

1.1.2 Groundwater Monitoring for Task 2.2

The Work Plan identifies two purposes for the Task 2.2 groundwater monitoring program: regional monitoring and plume monitoring. Regional monitoring which encompasses wells that are generally more than a mile from the sulfate plume and plume monitoring which encompasses wells that are in the plume or generally within a mile of the plume. Regional monitoring was performed on a semiannual basis during the first and third quarters of 2008 to characterize regional hydrologic conditions and any seasonality in water elevations. Samples for regional monitoring were analyzed for a suite of major element constituents to characterize general water quality conditions in addition to sulfate. Regional monitoring was completed in the third quarter 2008.

Plume monitoring is conducted quarterly at wells that are proximal to the sulfate plume in order to track the plume's location in the aquifer. Samples for plume monitoring are analyzed for sulfate only. Table 1 lists wells identified in the Work Plan for plume monitoring, their availability for sampling in the fourth quarter of 2008, and their sampling status.

Pursuant to the Work Plan, HGC and CQB contacted owners of wells identified for sampling in the Work Plan in order to obtain access for sampling. As described in Table 1, not all owners responded to the request for sampling and not all wells were suitable for sampling and water level measurements. In many cases, alternate wells were identified in lieu of wells that were unsuitable for sampling.

In the fourth quarter of 2008, HGC collected groundwater samples at wells identified for groundwater monitoring in Table 1 of the Work Plan. In addition, HGC collected groundwater samples from wells belonging to La Comisión National del Aqua and Ejido Naco in Sonora, Mexico. Groundwater monitoring in Sonora, Mexico was not a Mitigation Order requirement, but was conducted to further define groundwater flow and sulfate conditions south of the Mitigation Order study area.

Groundwater sampling and analysis methods used by HGC are described in the Quality Assurance Project Plan (QAPP) contained in Appendix F of the Work Plan (HGC, 2008a). Results of groundwater monitoring for Task 2.2 are presented in Section 2.

1.1.3 Groundwater Monitoring for Task 2.3

Section 2.3 of the Work Plan proposed the installation of additional monitor wells to define the extent of the sulfate plume, to provide installations for ongoing monitoring, to characterize aquifer materials and hydraulic properties, and to determine bedrock depth. During the fourth quarter 2008 wells BMO-2008-4B, BMO-2008-8B, BMO-2008-8M, and BMO-2008-13M, were installed, developed, pump tested and water level and water quality samples collected according to Sections 4.2 and 4.3 of the QAPP. Wells installed pursuant to Task 2.3 of the Work Plan were initially sampled for a suite of major element ions. Afterwards, the wells were added to the quarterly plume monitoring list for Task 2.2. Results of groundwater monitoring for Task 2.3 are presented in Section 2.

2. GROUNDWATER MONITORING RESULTS

2.1 Results of Monitoring for Tasks 1, 2.2 and 2.3

Analytical results and groundwater elevation data for the fourth quarter of 2008 are tabulated in Table 2. Figure 2 shows the concentrations of dissolved sulfate in the wells sampled in the fourth quarter of 2008. The highest sulfate concentration measured at co-located wells was used for concentration contouring. Figure 3 shows groundwater elevations in the fourth quarter of 2008. Groundwater elevations were calculated using the depth to water measurements made under static (nonpumping) conditions for all wells shown.

2.2 Groundwater Monitoring in Naco, Sonora

During October 2008, HGC collected groundwater samples from City of Naco and Ejido, Naco wells to augment the data collected for the Work Plan sampling. Groundwater samples were collected from four Urbano Naco and four Ejido Naco wells. Figure 4 shows the dissolved sulfate concentrations for wells sampled and groundwater elevations from two Urbano Naco wells where water level measurements were collected under static conditions in the fourth quarter 2008.

2.3 Quality Assurance/Quality Control Review

Pursuant to Section 6.4 of the QAPP, a data verification report was prepared for quality assurance and quality control purposes. The data verification report for data collected by HGC during the fourth quarter of 2008 is included in Appendix A.

Analytical laboratory reports for samples collected by HGC in the fourth quarter of 2008 are provided in portable document format on the compact disc in Appendix B. Copies of groundwater sampling forms for samples collected by HGC are in Appendix C.

As determined by the analytical data verification review, all data for samples collected in the fourth quarter of 2008 by HGC are of acceptable quality for use in the aquifer characterization being conducted pursuant to the Work Plan.

3. DISCUSSION

This data report provides the results of groundwater monitoring conducted in the vicinity of the CTSA for the fourth quarter of 2008. During the fourth quarter 2008, groundwater samples were collected from 88 plume, well inventory, and Naco, Sonora wells. Depth to water measurements were made at 89 wells as presented in Table 1.

Groundwater samples and water level measurements could not be collected from all the wells identified in the Work Plan for a variety of reasons, including owner limitations on access, unsuitable well construction, inability to contact the owner, obstruction in well, or a well no longer existing. The specific reason(s) for not sampling these wells are provided in Table 1. In some cases, alternate wells were identified and sampled as described in Table 1. Overall, groundwater monitoring conducted during the fourth quarter of 2008 is deemed to have met the objectives of identifying the location of the sulfate plume from CTSA and providing potentiometric data in the vicinity of the CTSA.

3.1 Hydrogeologic Setting

Water quality samples have been collected from wells completed in three principal water-bearing units in the area: basin fill, Morita Formation, and Glance Conglomerate. Figure 1 shows that the Morita Formation and Glance Conglomerate outcrop on the east side of the study area. The Morita Formation consists of red to buff siltstone and sandstone. The Glance

Conglomerate is a polymictic conglomerate with a silty to sandy matrix. The Morita Formation and Glance Conglomerate are indurated bedrock. The basin fill unconformably overlies the bedrock units and consists of unconsolidated sand and gravel except in zones of cemented caliche. The bedrock units are believed to be transected by at least two faults; the northeast trending Black Gap fault and the northwest trending Abrigo fault (Savci Environmental Technologies, 1998). East of the Black Gap fault, the basin fill is largely unsaturated and groundwater occurs in the Morita Formation and Glance Conglomerate. West of the Black Gap fault the basin fill is saturated and comprises a key hydrostratigraphic unit overlying the Morita Formation and Glance Conglomerate hydrostratigraphic units. The results of monitoring need to be considered in the context of the hydrogeologic setting of the study area to interpret the apparent spatial distribution of sulfate and the patterns of groundwater elevation. Table 4 includes the well completion depth, screen interval, and screened lithology of wells sampled.

3.2 Sulfate Distribution

The results of groundwater monitoring show the lateral and vertical extent of the sulfate plume in the study area as defined by the 250 mg/L sulfate concentration contour. The distribution of sulfate can appear complex in plan maps because the sulfate plume is three-dimensional and plume water can be underlain or overlain by groundwater with lower sulfate concentrations. The lateral and vertical distributions of sulfate are discussed below.

3.2.1 Lateral Distribution of Sulfate

Figure 2 is a contour map showing the areal distribution of sulfate in the fourth quarter 2008. The sulfate concentration contours on Figure 2 are inferred based on the maximum sulfate concentration at locations where closely spaced wells display different concentrations.

Based on the sulfate concentration data the sulfate plume extends to the southwest from the vicinity of the former evaporation pond to the vicinity of Naco, Arizona and to the south to the vicinity of Bisbee Junction. The groundwater monitoring data indicate that the sulfate plume extends over an area of approximately 2.8 miles by 3.6 miles and is contained primarily in the basin fill and Morita Formation except near the former evaporation pond, where wells in the Glance Conglomerate have sulfate concentrations greater than 250 mg/L. West of the Black Gap fault, the sulfate plume is contained primarily within the basin fill. East of the fault, where the basin fill is largely unsaturated, the sulfate plume is within the Morita Formation and Glance Conglomerate.

3.2.2 Vertical Distribution of Sulfate

Evaluation of the vertical distribution of sulfate is based on sampling data for wells located in close proximity but completed with screened intervals at different elevations in the aquifer or in different hydrostratigraphic units. Two patterns are observed with respect to the vertical distribution of sulfate. First, some wells completed in the uppermost few tens of feet of

the basin fill aquifer have lower concentrations than wells completed at deeper portions of the basin fill. Second, the sulfate plume in certain areas is observed to be underlain by groundwater with lower concentrations of sulfate. Examples of the vertical distribution of sulfate are discussed below.

Sulfate stratification between the basin fill and Morita Formation along and north of Purdy Lane near Naco is displayed between wells HOBAN, FRANCO, COB MW-1 and BMO-2008-8B screened in basin fill and nearby wells GARNER 635, TM-19A, BMO-2008-7M and BMO-2008-8M screened in Morita Formation. Sulfate concentrations in the basin fill wells HOBAN, FRANCO, COB MW-1 and BMO-2008-8B were 692 mg/L, 680 mg/L, 750 mg/L and 1890 mg/L, respectively (Figure 5). Sulfate concentrations in Morita Formation wells GARNER 635, TM-19A, BMO-2008-7M and BMO-2008M were 36 mg/L, 66.3 mg/L, 34.5 mg/L and 197 mg/L, respectively. These data indicate that the underlying Morita Formation exhibits sulfate concentrations approximately an order of magnitude lower than concentrations in the basin fill at those locations. A similar relationship was observed in the first, second, and third quarters of 2008 (HGC, 2008c and 2008d).

However, about one mile northwest of the aforementioned wells, at co-located wells BMO-2008-6B and BMO-2008-6M on the west end of the study area, sulfate concentrations are three times higher in the Morita Formation than the basin fill. Well BMO-2008-6M screened from 350 to 440 ft bgs completed in the Morita Formation reported a sulfate concentration of 199 mg/L and BMO-2008-6B screened from 195 to 255 ft bgs completed in basin fill had a sulfate concentration of 60.3 mg/L.

Stratification of sulfate is also present at wells BF-01 and TM-02A west of the former evaporation pond. Well BF-01 is completed to a depth of 400 ft bgs and is screened across the basin fill and Morita Formation; although the water levels collected indicate that the basin fill is probably unsaturated. BF-01 had a sulfate concentration of 1490 mg/L while TM-02A, located approximately 500 feet south of BF-01 and screened from 825 to 925 ft bgs in the Morita Formation and Glance Conglomerate had a sulfate concentration of 21.9 mg/L. The sulfate concentrations in the Glance Conglomerate at TM-02A are approximately two orders of magnitude lower than those in the overlying Morita Formation at that location.

In the fourth quarter 2008, sulfate also appears to be stratified in the vicinity of co-located wells BMO-2009-10GU and BMO-2006-10GL screened at different depths in the Glance Conglomerate located south of the Abrigo fault and east of the Black Gap fault in the north central portion of the study area. BMO-2008-10GU was completed at a total depth of 449 feet below ground surface (ft bgs) and screened from 340 to 440 ft bgs while BMO-2008-10GL was completed at 810 ft bgs and screened from 700 to 800 ft bgs. Thus, the BMO-2008-10GL sample represents groundwater approximately 360 feet deeper in the Glance Conglomerate than the BMO-2008-10GU sample. Sulfate concentrations in BMO-2008-10GU and BMO-2008-10GL were 1890 mg/L and 1290 mg/L, respectively, in the fourth quarter of 2008 (Figure 2). These data indicate that sulfate concentrations were stratified with the lower concentration at greater depths in the Glance Conglomerate at this location.

3.3 Groundwater Elevation

Groundwater elevations are shown on Figures 3 and 4. In general, groundwater elevations decrease from north to south east of the Black Gap fault in the region between the Bisbee airport and Bisbee Junction, and from east to west across the central portion of the study area west of the Black Gap fault. Groundwater levels in wells in Naco, Sonora indicate groundwater elevations that decrease northward toward Greenbush Draw. Comparison of the fourth quarter 2008 water elevations with those observed in previous quarters indicates an average increase of about 0.25-foot in groundwater elevations and only minor differences in the apparent groundwater flow directions indicated by water level data.

The water level relationships are relatively complex due to the multiple hydrostratigraphic units monitored and the complicated structural geology of the area. The apparent hydraulic gradient is steeper east of the Black Gap fault, where groundwater is in bedrock units of the Morita Formation and Glance Conglomerate, than is the hydraulic gradient west of the fault where groundwater elevation measurements are primarily from wells in basin fill. The higher hydraulic gradient may be due to a lower average hydraulic conductivity in the bedrock compared to basin fill. The apparent groundwater flow direction east of the Black Gap fault is southerly to the vicinity of Bisbee Junction and then westerly. Convergent groundwater flow is suggested by the V-shaped contours pointed in the vicinity of Bisbee Junction. West of the Black Gap fault, the apparent hydraulic gradient is shallower than east of the fault and the apparent groundwater flow direction is westerly. In the vicinity of the Arizona Water Company

wellfield northwest of Naco and along Purdy Lane there are apparent groundwater depressions, most likely associated with groundwater pumping.

The relationship between water levels east and west of the Black Gap fault is uncertain due to the different apparent hydraulic gradients and groundwater flow directions and the variability of water level data east of the Black Gap fault. The variability of water levels east of the Black Gap fault is indicated by the large differences in water elevation (sometimes up to several hundred feet) between wells in relatively close proximity to one another. This variability in water elevation is particularly evident in the Bisbee Junction area and in the area of the BIMA and NOTEMAN wells east of the former evaporation pond. The variability of water elevations east of the Black Gap fault indicates that the hydraulic properties of the bedrock are heterogeneous and that certain portions of the bedrock may not be hydraulically connected. The heterogeneity in hydraulic properties in bedrock is probably due to the restriction of groundwater flow to permeable features such as permeable beds, bedding planes, or fracture systems within bedrock, which are not uniformly distributed throughout the area.

The water level elevations in co-located wells screened at different depths in basin fill and Morita Formation vary by less than three feet in the west part of the study area. In the northeast part of the study area the water level varies over 200 feet at co-located wells BMO-2008-10GU and BMO-2008-10GL, screened at different depths in the Glance Conglomerate.

Anomalous low water elevations are also observed west of the Black Gap fault at the SRC, BURKE, and BMO-2008-11G wells in the northwest portion of the study area. According

to well driller logs, SRC and BURKE are screened in a shale bedrock and BMO-2008-11G is screened in the Glance Conglomerate all at depths greater than 600 ft bgs. The water level in SRC, BURKE, and BMO-2008-11G are anomalously low compared to the levels in wells completed in basin fill and/or Morita Formation to the south. The existing data suggest that SRC, BURKE, and BMO-2008-11G are within a hydrostratigraphic unit with a poor hydraulic connection to the aquifers to the south.

Although complex, the water level data provide important information on the direction and magnitude of hydraulic gradients, which control the direction and movement of the sulfate plume. The results also display the effects of aquifer heterogeneities that need to be accounted for in the site conceptual model. This discussion of water level data is preliminary and will be verified by ongoing monitoring and augmented with data being collected by other Work Plan tasks.

4. REFERENCES

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Savci Environmental Technologies. 1998a. Groundwater Flow and Transport Report, CTSA APP Project Area, Bisbee, Arizona. June 19, 1998.

TABLES

TABLE 1
Summary of Groundwater Monitoring For Fourth Quarter 2008

Well Name	ADWR 55 Registry No.	Owner	Monitoring Purpose	Casing Depth (feet)	Q4-2008 Monitoring		Status
					Water Level Measured?	Water Quality Sample Collected?	
WELLS FOR QUARTERLY MONITORING							
AWC 03	616585	Arizona Water Company	Plume	269	YES	YES	Water quality sample collected in October 2008
AWC 05	590620	Arizona Water Company	Plume	1183	YES	YES	Water quality sample collected in October 2008
BF-01	539783	CQB	Plume	400	YES	YES	Water quality sample collected in November 2008
BIMA	577927	Bisbee Municipal Airport	Plume	465	YES	YES	Water quality sample collected in October 2008
BULLARD	602134	Bullard	Plume	300	NO	NO	Well not operational; unable to collect water levels due to obstruction
BURKE	212268	Burke	Plume	781	YES	YES	Water quality sample collected in October 2008
COB MW-1	903992	City of Bisbee	Plume	420	YES	YES	Water quality sample collected in October 2008
COB MW-2	903984	City of Bisbee	Plume	170	YES	YES	Water quality sample collected in October 2008
COB WL	593116	City of Bisbee	Plume	150	YES	YES	Water quality sample collected in October 2008
COOPER	623564	Cooper, Teresa	Plume	325	NO	YES	Water quality samples collected in October 2008; unable to collect water level due to obstruction
COOPER C	637069	Cooper, Charles	Plume	220	YES	YES	Water quality sample collected in October 2008
CROWLEY	510298	Crowley	Plume	788	NO	NO	Dry
DODSON	644927	Dodson	Plume	200	YES	YES	Water quality sample collected in October 2008
GARNER 557	558557	Garner	Plume	300	YES	NO	Well identified for water level measurements only
GARNER 635	587635	Garner	Plume	680	YES	YES	Water quality sample collected in October 2008
GGOOSE 546	628546	Galloping Goose Properties	Plume	800	NO	NO	Well not operational, unable to obtain water levels due to obstruction
GGOOSE 547	628547	Galloping Goose Properties	Plume	800	YES	YES	Water quality sample collected in October 2008
GL-03	539782	CQB	Plume	820	YES	YES	Water quality sample collected in November 2008
GREGG	630852	Gregg	Plume	ND	NO	NO	Dry
HULL 584	606854	Hull	Plume	25	NO	NO	Unable to locate well
MILLER 340	641340	Miller	Plume	200	NO	NO	Dry
MILLER 341	641341	Miller	Plume	100	NO	NO	Dry
NWC 02	562944	Naco Water Company	Plume	312	YES	YES	Water quality sample collected in October 2008
NWC 03	203321	Naco Water Company	Plume	312	YES	YES	Water quality sample collected in October 2008
NWC 04 CAP	627685	Naco Water Company	Plume	379	NO	NO	Well Capped
NWC 05	627696	Naco Water Company[1]	Plume	175	NO	NO	No data
OSBORN	643436	Osborn	Plume	150	YES	YES	Water quality sample collected in October 2008
PARRA	576415	Parra	Plume	355	NO	YES	Water quality sample collected in October 2008; unable to collect water level due to obstruction
ROGERS 803	641803	Rogers, Ernest D	Plume	140	YES	YES	Water quality sample collected in October 2008
TM-02	522573	CQB	Plume	640	NO	NO	Pump intake above water level; unable to collect water levels due to obstruction
TM-02A	522574	CQB	Plume	925	YES	YES	Water quality sample collected in October 2008
TM-03	522575	CQB	Plume	200	YES	YES	Water quality sample collected in November 2008
TM-06 MILLER	522695	Miller	Plume	200	YES	YES	Water quality sample collected in October 2008
TM-07	522576	CQB	Plume	350	NO	YES	Water quality sample collected in November 2008; unable to collect water level due to obstruction
TM-10 USBP	522696	U.S. Border Patrol	Plume	290	NO	NO	Owner declined participation
TM-11 PIONKE	522815	Pionke	Plume	160	NO	NO	Dry
TM-13 MILLER	522698	Miller	Plume	200	NO	NO	Dry
TM-16	522578	CQB	Plume	115	YES	YES	Water quality sample collected in November 2008
TM-17	522700	CQB	Plume	200	NO	NO	Dry
TM-19	522581	CQB	Plume	210	NO	NO	Dry
TM-19A	522580	CQB	Plume	700	YES	YES	Water quality sample collected in November 2008
TM-41	562555	CQB	Plume	210	NO	NO	Dry
TM-42	562554	CQB	Plume	250	YES	YES	Water quality sample collected in November 2008
TVI 875	568875	Turquoise Valley, Inc.	Plume	330	NO	YES	Water quality sample collected in October 2008, no access to well casing for water level measurements
WEED	544535	Weed	Plume	320	NO	YES	Water quality sample collected in October 2008; no access to well casing for water level measurements
WEISKOPF	641802	Weiskopf	Plume	200	YES	YES	Water quality sample collected in October 2008
MITIGATION ORDER WELLS INSTALLED IN 2008 FOR QUARTERLY MONITORING							
BMO-2008-1G	909474	CQB	Plume	310	YES	YES	Water quality sample collected in November 2008
BMO-2008-3B	909147	CQB	Plume	260	YES	YES	Water quality sample collected in November 2008
BMO-2008-4B	910096	CQB	Plume	610	YES	YES	Water quality sample collected in December 2008
BMO-2008-5B	909653	CQB	Plume	285	YES	YES	Water quality sample collected on September 30, 2008
BMO-2008-5M	909552	CQB	Plume	450	YES	YES	Water quality sample collected in October 2008
BMO-2008-6B	909146	CQB	Plume	265	YES	YES	Water quality sample collected in November 2008
BMO-2008-6M	909019	CQB	Plume	450	YES	YES	Water quality sample collected in November 2008
BMO-2008-7M	908794	CQB	Plume	670	YES	YES	Water quality sample collected in November 2008
BMO-2008-8B	910097	CQB	Plume	480	YES	YES	Water quality sample collected in December 2008
BMO-2008-8M	909711	CQB	Plume	1210	YES	YES	Water quality sample collected in December 2008
BMO-2008-9M	909255	CQB	Plume	775	YES	YES	Water quality sample collected in November 2008
BMO-2008-10GU	909272	CQB	Plume	449	YES	YES	Water quality sample collected in November 2008
BMO-2008-10GL	909435	CQB	Plume	810	YES	YES	Water quality sample collected in November 2008
BMO-2008-11G	909434	CQB	Plume	760	YES	YES	Water quality sample collected in November 2008
BMO-2008-13B	909551	CQB	Plume	474	YES	YES	Water quality sample collected in October 2008
BMO-2008-13M	909760	CQB	Plume	1030	YES	YES	Water quality sample collected in December 2008
WELLS FOR SEMIANNUAL MONITORING							
COB WL ABND	570012	City of Bisbee	Regional	148	NO	NO	Well Abandoned
CONNOR	516399	Connor	Regional	220	NO	NO	Well Abandoned
EAST	599796	East	Regional	125	YES	YES	Water quality sample collected in October 2008
GALLANT	502527	Gallant	Regional	190	YES	NO	Well identified for water level measurements only
MILLER 342	641342	Miller	Regional	200	NO	NO	Dry
NSD 02	527587	Naco Sanitary District	Regional	120	NO	NO	Regional Monitoring Only
NSD 03	527586	Naco Sanitary District	Regional	100	NO	NO	Regional Monitoring Only
NWC 01	627682	Naco Water Company[1]	Regional	215	ND	ND	No data
NWC 06	575700	Naco Water Company	Regional	410	ND	YES	Water quality sample collected in October 2008
PALMER	578819	Palmer	Regional	220	NO	YES	Water quality sample collected in October 2008; no access to well casing for water level measurements
POWER	624535	Power	Regional	100	YES	NO	Well identified for water level measurements only
TM-05 MILLER	522694	Miller	Regional	160	NO	NO	Dry
TM-08 SWAN	522817	Swan, George	Regional	817	NO	NO	Owner has declined further participation in monitoring program
TM-12 MILLER	522697	Miller	Regional	175	NO	NO	Dry
TM-14 NELSON	522816	Nelson	Regional	215	NO	YES	Dry
TM-15 MILLER	522699	Miller	Regional	325	NO	YES	Water quality sample collected in October 2008

TABLE 1
Summary of Groundwater Monitoring For Fourth Quarter 2008

Well Name	ADWR 55 Registry No.	Owner	Monitoring Purpose	Casing Depth (feet)	Q4-2008 Monitoring		Status
					Water Level Measured?	Water Quality Sample Collected?	
TM-43	564729	CQB	Regional	830	YES	NO	Well identified for water level measurements only
TM-43A	564726	CQB	Regional	215	YES	NO	Well identified for water level measurements only
TM-43B	565004	CQB	Regional	215	YES	NO	Well identified for water level measurements only
TM-45	564728	CQB	Regional	520	NO	NO	Dry
WALKER	200393	Walker	Regional	120	YES	NO	Well identified for water level measurements only
ADDITIONAL WELLS SAMPLED FOR Q4-08 MONITORING THAT WERE NOT IDENTIFIED IN THE WORK PLAN							
ANDERSON	613396	Anderson	Well Inventory	236	YES	YES	Water quality sample collected in October 2008
AWC 02	616586	Arizona Water Company	Plume	330	YES	YES	Water quality sample collected in October 2008
AWC 04	616584	Arizona Water Company	Plume	250	YES	YES	Water quality sample collected in October 2008
NOTEMAN	212483	Noteman	Well Inventory	400	YES	YES	Water quality sample collected in October 2008
BANKS 986	647986	Banks	Well Inventory	435	NO	YES	Water quality sample collected in October 2008; unable to collect water level measurements due to obstruction
BANKS 987	647987	Banks	Well Inventory	339	YES	NO	Well identified for water level measurements only
BARTON 010	085010	Barton	Plume	300	NO	NO	Dry
BARTON 919	644919	Barton	Plume	130	YES	NO	Well not operational; identified for water level measurements only
BLOMMER	633472	Blommer	Well Inventory	380	YES	YES	Water quality sample collected in October 2008
CAMPBELL	215509	Campbell	Well Inventory	350	NO	NO	Well identified for water level measurements only; unable to collect water level measurement due to obstruction
CHAMBERS	629807	Chambers	Well Inventory	245	NO	YES	Water quality samples collected in October 2008; no access to well casing for water level measurements
COB MW-3	906823	City of Bisbee	Plume	269	YES	YES	Water quality sample collected in October 2008
COLLINS[2]	565260	Collins	Well Inventory	320	YES	YES	Water quality sample collected in October 2008
DOUGLASS 791	592791	Douglass	Well Inventory	200	YES	NO	Well not operational; identified for water level measurements only
DOUGLASS 792	529792	Douglass	Well Inventory	200	YES	NO	Well not operational; identified for water level measurements only
EN-01	NA	Ejido Naco	Regional	ND	NO	NO	Well not operational
EN-02	NA	Ejido Naco	Regional	490	NO	YES	Water quality sample collected in October 2008
EN-03	NA	Ejido Naco	Regional	460	NO	YES	Water quality sample collected in October 2008
EN-05	NA	Ejido Naco	Regional	490	NO	YES	Water quality sample collected in October 2008
EN-06	NA	Ejido Naco	Regional	ND	NO	YES	Water quality sample collected in October 2008
EPPELE 641	805641	Eppele	Well Inventory	265	YES	YES	Water quality sample collected in October 2008
FRANCO	500101	Franco	Well Inventory	200	NO	YES	Water quality sample collected in October 2008; unable to collect water level measurements due to obstruction
FULTZ	212447	Fultz	Well Inventory	300	YES	YES	Water quality sample collected in October 2008
GOAR RANCH	610695	Goar	Well Inventory	250	YES	NO	Well identified for water level measurement only
HOBAN	805290	Hoban	Well Inventory	316	YES	YES	Water quality sample collected in October 2008
HOWARD	NR	Howard	Well Inventory	200	YES	YES	Water quality sample collected in October 2008
KEEFER	209744	Keefer	Well Inventory	245	YES	YES	Water quality sample collected in October 2008
MCCONNELL 265	539265	McConnell	Well Inventory	216	YES	YES	Water quality sample collected in October 2008
METZLER	35-71891	Metzler	Well Inventory	351	YES	YES	Water quality sample collected in October 2008
MINOR 317	063317	Minor	Well Inventory	155	NO	NO	New owner declined participation
MOORE	538847	Moore	Well Inventory	220	NO	YES	Water quality sample collected in October 2008; unable to collect water levels because sounder diameter too large for access port
NESS	509127	Ness	Well Inventory	812	YES	YES	Water quality sample collected in October 2008
NWC 04	551849	Naco Water Company	Well Inventory	795	NO	YES	Water quality sample collected in October 2008
PANAGAKOS	35-76413	Panagakos	Well Inventory	200	NO	YES	Water quality sample collected in October 2008; no access to well casing for water level measurement
PIONKE	613395	Pionke	Well Inventory	300	YES	YES	Water quality sample collected in October 2008
POOL	509518	Pool	Well Inventory	313	YES	YES	Water quality sample collected in October 2008
RAMIREZ	216425	Ramirez	Well Inventory	300	YES	YES	Water quality sample collected in October 2008
RAY	803772	Ray	Well Inventory	100	YES	YES	Water quality sample collected in October 2008
ROGERS E	216018	Rogers, Ernest M	Well Inventory	290	YES	YES	Water quality sample collected in October 2008
RUIZ	531770	Ruiz	Well Inventory	312	YES	YES	Water quality sample collected in October 2008
SCHWARTZ	210865	Schwartz	Well Inventory	305	YES	YES	Water quality sample collected in October 2008
SRC	211345	Specialty Restaurants Corporation, Inc.	Regional	965	YES	NO	Well identified for water level measurement only
STEPHENS	808560	Stephens	Well Inventory	NR	YES	NO	Well identified for water level measurement only
SUNBELT	201531	Sunbelt Marketing, Inc.	Plume	380	YES	NO	Well identified for water level measurement only
SWAN	NR	Swan, Alan	Well Inventory	NR	YES	YES	Water quality sample collected in October 2008
TVI 236	802236	Turquoise Valley, Inc.	Plume	222	YES	YES	Water quality sample collected in October 2008
TVI 713	567713	Turquoise Valley, Inc.	Well Inventory	200	YES	NO	Well identified for water level measurements only
UN-01	NA	OOMAPAS-Naco	Regional	ND	YES	NO	Well not operational; identified for water level measurements only
UN-02	NA	OOMAPAS-Naco	Regional	490	NO	YES	Water quality sample collected in October 2008
UN-03	NA	OOMAPAS-Naco	Regional	490	NO	YES	Water quality sample collected in October 2008
UN-04	NA	OOMAPAS-Naco	Regional	328	NO	YES	Water quality sample collected in October 2008
UN-05	NA	OOMAPAS-Naco	Regional	328	YES	YES	Water quality sample collected in October 2008
ZANDER	205126	Zander	Well Inventory	280	YES	YES	Water quality sample collected in October 2008

ADWR = Arizona Department of Water Resources
AWC = Arizona Water Company
BIMA = Bisbee Municipal Airport
COB WL = City of Bisbee Warren Lagoon
CQB = Freeport-McMoRan Copper Queen Branch
ft amsl = feet above mean sea level
NA = Not Applicable
ND = No Data
NR = No Record
NSD = Naco Sanitary District
NWC = Naco Water Company
OOMAPAS = Organismo Operador Municipal de Agua Potable, Alcantarillado y Saneamiento de Naco
SRC = Specialty Restaurants Corporation, Inc.
TVI = Turquoise Valley Inc.
35-71891 = ADWR 35 Database
[1] Naco Water Company sold well, personnel communication with NWC, 2008
[2] former owner ENGLUND

TABLE 2
Compilation of Groundwater Monitoring Results
For Inorganic Analytes and Field Parameters

Well Name	ADWR 55 Registry No.	Sample Date	Field pH (SU)	Field Temp (deg C)	Field SC (µS/cm)	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrate/Nitrite as N, dissolved	Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved	Potassium, dissolved	Sodium, dissolved	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Total Alkalinity	Residue, Filterable (TDS) @ 180ºC	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
ANDERSON	613396	03/20/08	7.25	21.1	1176	431	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANDERSON	613396	05/05/08	7.03	21.8	1231	452	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANDERSON	613396	07/14/08	7.11	21.6	1260	472	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANDERSON	613396	10/15/08	7.10	21.3	1252	475	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 02	616586	01/07/08	-	-	-	14	14	-	2.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 02	616586	03/03/08	-	-	-	16	16	-	2.41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 02	616586	05/05/08	-	-	-	13.3	15.9	-	2.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 02	616586	08/12/08	7.01	22.3	630	14.3	17.8	0.2	2.42	2.42	<0.01	66.4	9.1	2.1	20.0	181	5	<2	186	280	255	1.10	4.7	5.0	3.1
AWC 02	616586	10/23/08	7.31	23.1	464	15.9																			
AWC 03	616585	01/07/08	-	-	-	41	14	-	2.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 03	616585	03/03/08	-	-	-	38	14	-	2.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 03	616585	05/05/08	-	-	-	37.3	12.2	-	2.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 03	616585	08/12/08	7.28	22.4	469	38.8	15.5	0.2	2.28	2.28	<0.01	62.8	8.6	2.1	22.8	156	5	<2	162	290	260	1.12	4.6	4.9	3.2
AWC 03	616585	10/23/08	7.48	21.0	462	41.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 04	616584	02/04/08	-	-	-	18	40	-	2.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 04	616584	04/07/08	-	-	-	18	45	-	2.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 04	616584	06/02/08	-	-	-	14.3	48	-	2.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 04	616584	08/12/08	7.08	22.5	458	21.6	47.5	0.1	1.94	1.94	<0.01	88.7	11.6	2.6	22.8	206	<2	<2	206	380	328	1.16	6.0	6.4	3.2
AWC 04	616584	10/23/08	6.91	22.2	616	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 05	590620	02/04/08	-	-	-	13	15	-	1.80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 05	590620	04/07/08	-	-	-	14	14	-	1.94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 05	590620	06/02/08	-	-	-	14.3	15.6	-	1.86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AWC 05	590620	08/12/08	6.74	23.3	425	14.9	16.1	0.1	2.02	2.02	<0.01	50.6	6.2	2.2	35.6	164	8	<2	172	280	242	1.16	4.3	4.6	3.4
AWC 05	590620	10/23/08	7.45	21.0	422	15.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BANKS 986	647986	02/27/08	7.53	21.8	980	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BANKS 986	647986	05/12/08	7.40	22.1	1021	65.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BANKS 986	647986	07/21/08	7.43	22.9	1034	82.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BANKS 986	647986	10/13/08	7.28	21.7	980	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BF-01	539783	03/04/08	6.46	21.9	2745	1320	30.4	<0.1	0.92	0.92	<0.01	621.0	100.0	4.5	60.2	610	<2	<2	610	2850	2510	1.14	40.8	42.0	1.4
BF-01	539783	05/23/08	6.41	18.3	2698	1450	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BF-01	539783	08/05/08	6.11	22.4	3095	1330	30	<2	1.09	1.09	<0.01	624	107	4.5	61.3	579	<2	<2	579	2820	2510	1.12	40.4	42.8	2.9
BF-01	539783	11/05/08	6.33	19.9	3027	1490	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA	577927	02/06/08	6.69	22.2	1335	210	105	0.1	6.80	6.80	<0.01	224.0	48.4	12.4	65.9	510	<2	<2	510	980	1000	0.98	18.0	18.4	1.1
BIMA	577927	04/25/08[1]	6.37	23.1	1521	190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA	577927	05/13/08[1]	6.58	22.7	1489	195	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA	577927	06/23/08[1]	6.30	23.3	1572	225	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA DUP	577927	06/23/08[1]	6.30	23.3	1572	196	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA	577927	07/29/08[1]	6.44	23.0	1647	204	101	0.1	7.85	7.85	<0.01	209	46.5	12.2	63.6	456	<2	<2	456	1040	945	1.10	16.8	17.4	1.8
BIMA	577927	08/28/08[1]	M	23.0	1776	256	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA	577927	09/23/08[1]	6.29	23.0	1741	296	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BIMA	577927	10/22/08	6.41	22.3	1801	285	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	02/05/08	7.43	20.2	714	206	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	04/21/08[1]	7.06	21.9	753	201	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	05/15/08[1]	7.16	22.2	845	211	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	06/23/08[1]	6.93	21.5	903	193	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	07/29/08[1]	7.21	22.2	921	203	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	08/27/08[1]	7.12	22.1	864	189	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	09/23/08[1]	7.16	22.3	818	193	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLOMMER	633472	10/22/08	7.17	21.3	873	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BMO-2008-1G	909474	08/27/08	7.09	24.2	808	107	76.3	0.1	13.5	13.5	<0.01	124	32.2	6.4	35.7	229	9	<2	238	580	588	0.99	10.1	10.6	2.4
BMO-2008-1G	909474	11/11/08	7.00	20.8	721	143	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BMO-2008-3B	909147	07/18/08	7.35	23.9	615	106	24	0.3	3.68	3.72	0.04	64.5	12.0	2.9	53.6	151	3	<2	154	390	373	1.05	6.2	6.6	3.1
BMO-2008-3B	909147	11/04/08	7.36	21.4	599	179	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BMO-2008-3B DUP	909147	11/04/08	7.36	21.4	599	177	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BMO-2008-4B	910096	12/11/08	7.34	22.8	374	9.4	4.3	0.2	0.78	0.78	<0.01	49.2	7.1	1.4	33.4	183	<2	<2	183	240	228	1.05	4.2	4.5	3.4
BMO-2008-5B	909653	09/30/08	7.08	22.0	688	193	15	0.3	2.02	2.02	<0.01	108	17.0	2.8	40.1	155	<2	<2	155	510	478	1.07	7.7	8.6	5.5
BMO-2008-5M	909552	10/02/08	7.13	23.6	551	107	15.1	0.2	1.85	1.85	<0.01	75.8	11.4	2.6	34.1	138	<2	<2	138	390	337	1.16	5.5	6.2	6.0
BMO-2008-6B	909146	07/16/08	7.36	24.1	475	53.3	13	0.4	1.97	1.97	<0.01	59.7	10.2	3.0	26.2	151	9	<2	160	300	274	1.09	4.8	5.0	2.0
BMO-2008-6B	909146	11/04/08	7.41	21.5	398	60.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BMO-2008-6M	909019	07/10/08	NA	22.1	702	182	16	0.3	1.98	1.98	<0.01	104	17.9	3.60	32.5	144	9	<2	153	480	460	1.04	7.4	8.1	4.5
BMO-2008-6M	909019	11/04/08	7.33	21.8	621	199	16	0.3	1.98	1.98	<0.01	104	17.9	3.60	32.5	144	9	<2	153	480	460	1.04	7.4	8.1	4.5
BMO-2008-7M	908794	07/14/08	7.63	25.2	500	31.4	10.4	0.3	1.55	1.55	<0.01	32.4	11.4	2.70	60.8	188	13	<2	201	290	282	1.03	5.1	5.3	1.9
BMO-2008-7M	908794	11/06/08	7.53	22.6	380	34.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BMO-2008-8B	910097	12/05/08	6.47	20.1	2480	1890	80	0.1	2.91	2.93	0.02	529	195	14.4	46.4	630	<2	<2	630	3080	3150	0.98	54.7	44.9	-9.8
BMO-2008-8M	909711	12/09/08	7.16	23.4	852	197	13	0.3	1.78	1.78	<0.01	89	43.0	5.80	64.9	260			260	640	576	1.11	9.8	11.0	5.8
BMO-2008-9M	909255	08/08/08	7.72	25.7	415	47.3	14	0.10	1.90	1.93	0.03	28.0	17.8	3.4	64.6	193	6	<2	199	320	306	1.05	5.5	5.7	1.8
BMO-2008-9M	909255	11/05/08	7.89	21.4	444	54.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BMO-2008-10GU	909272	08/04/08	6.41	23.6	3660	2210	60	<2	0.13	0.16	<0.01	649	311	15.3	37.6	984	<2	<2	984	3810	3870	0.98	67.8	60.0	-6.1
BMO-2008-10GU	909272	11/05/08	6.15	20.2	3343	1890	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BMO-2008-10GL	909435	08/20/08	6.22	29.5	2924	1320	30.0	<2	<0.02	<0.02	<0.01	579	167	10.5	90.5	870	<2	<2	870	2970	2720	1.09	46.0	46.9	1.0
BMO-2008-10GL	909435	11/05/08	6.47	25.3	2573	1290	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BMO-2008-11G	909434	08/22/08	8.02	28.2	359	14.2	2.8	0.2	0.56	0.56	<0.01	10.7	5.1	1.7	64.2	149	14	<2	163	220	205	1.07	3.6	3.8	2.7
BMO-2008-11G	909434	11/12/08	7.96	24.2	257	13.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 2
Compilation of Groundwater Monitoring Results
For Inorganic Analytes and Field Parameters

Well Name	ADWR 55 Registry No.	Sample Date	Field pH (SU)	Field Temp (deg C)	Field SC (µS/cm)	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrate/Nitrite as N, dissolved	Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved	Potassium, dissolved	Sodium, dissolved	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Total Alkalinity	Residue, Filterable (TDS) @ 180ºC	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
BMO-2008-13B	909551	10/03/08	6.49	21.6	2180	980	23	<0.2	1.92	1.92	<0.01	420	79.8	6.8	53.0	347	<2	<2	347	2040	1780	1.15	28.3	30.1	3.1
BMO-2008-13M	909760	12/03/08	7.73	24.1	1463	494	20	0.7	0.02	0.02	<0.01	35.1	13.2	3.4	286	259	3	<2	262	970	1010	0.96	16.2	15.5	-2.2
BURKE	212268	02/07/08	7.17	23.0	411	29.5	31.8	0.3	1.83	1.83	<0.01	62.3	22.8	2.8	26.0	212	<2	<2	212	360	311	1.16	5.9	6.2	2.5
BURKE	212268	04/22/08	7.13	27.0	423	26	11	0.2	2.88	2.88	<0.01	52.1	22.0	2.3	16.9	191	<2	<2	191	260	-	-	-	-	-
BURKE	212268	08/05/08	7.06	26.8	496	21.9	10	0.2	2.81	2.85	<0.01	52.5	22.3	2.3	16.1	187	<2	<2	187	260	250	1.04	4.6	5.2	6.1
BURKE	212268	10/20/08	7.57	26.0	466	20.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CAMPBELL	215509	02/05/08	7.87	18.3	823	211	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHAMBERS	629807	03/06/08	7.73	17.8	408	7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHAMBERS	629807	05/05/08	7.15	22.1	421	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHAMBERS	629807	07/14/08	7.43	23.2	434	5.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CHAMBERS	629807	10/15/08	7.41	22.5	420	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB MW-1	903992	02/22/08	6.93	21.2	1401	720	19.8	0.3	2.33	2.33	<0.01	257.0	64.5	7.7	56.5	206	11	<2	217	1360	1270	1.07	20.2	20.8	1.5
COB MW-1	903992	05/20/08	6.88	22.0	2050	980	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB MW-1	903992	07/30/08	6.88	21.7	1780	730	19.8	0.1	2.50	2.50	<0.01	273	69.3	8.0	58.9	223	<2	<2	223	1500	1300	1.15	20.5	22.1	3.8
COB MW-1	903992	10/23/08	6.95	21.2	1690	750	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB MW-2	903984	02/22/08	7.28	20.2	417	41	19.4	0.3	6.49	6.49	<0.01	66.4	9.0	2.1	25.5	156	12	<2	168	340	298	1.14	5.2	5.2	0.0
COB MW-2	903984	05/20/08	7.32	21.2	490	40.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB MW-2	903984	07/30/08	7.34	20.8	511	37.6	19.9	<0.1	6.80	6.80	<0.01	66.3	9.0	2.1	26.6	158	<2	<2	158	330	286	1.15	4.9	5.2	3.0
COB MW-2	903984	10/23/08	7.36	20.3	498	34.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB MW-3	906823	02/28/08	7.39	21.0	416	57.8	16.2	0.2	2.0	2.0	<0.01	62.2	8.9	2.2	25.5	159	<2	<2	159	300	277	1.08	5.0	5.0	0.0
COB MW-3	906823	05/20/08	7.56	22.3	473	35.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB MW-3	906823	07/30/08	7.64	22.3	541	67.3	16.1	0.2	2.41	2.41	<0.01	66.1	9.2	2.4	26.5	149	<2	<2	149	320	288	1.11	5.0	5.2	2.0
COB MW-3	906823	10/23/08	7.43	20.8	507	76.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB WL	593116	02/22/08	6.99	20.6	919	90	106	0.3	3.91	3.91	<0.01	128	34.3	7.2	47.8	269	11	<2	280	650	603	1.08	10.8	11.5	3.1
COB WL	593116	05/20/08	7.30	21.9	1053	98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COB WL	593116	07/30/08	7.17	22.0	1098	97.1	110	0.1	4.02	4.02	<0.01	130	35.0	7.5	51.5	274	<2	<2	274	700	613	1.14	10.9	11.8	4.0
COB WL	593116	10/23/08	7.23	21.4	1075	104	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COLLINS	565260	02/12/08	6.88	21.6	1470	520	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COLLINS	565260	05/29/08	7.01	22.0	1459	520	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COLLINS	565260	07/31/08	6.86	21.6	1502	536	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COLLINS	565260	10/20/08	8.44	24.7	448	518	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COOPER	623564	02/14/08	7.02	20.8	1892	33	17.5	0.3	2.82	2.82	<0.01	47.9	13.8	2.2	25.3	154	9	<2	163	270	254	1.06	4.6	4.7	1.1
COOPER	623564	05/14/08	8.08	22.1	419	34.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COOPER	623564	07/31/08	7.81	28.4	455	33.7	16.9	0.2	2.68	2.68	<0.01	48.9	13.3	2.1	24.6	150	7.0	<2	157	260	249	1.04	4.5	4.6	1.1
COOPER	623564	10/20/08	8.44	24.7	448	31.2																			
COOPER C	637069	03/20/08	6.93	21.3	2081	990	49	<0.1	3.09	3.10	0.01	393	59.8	6.0	45.0	229	<2	<2	229	1810	1690	1.07	27.0	26.7	0.6
COOPER C	637069	05/05/08	6.78	22.4	2139	990	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COOPER C	637069	07/15/08	6.86	22.3	2162	1040	46.5	<0.1	3.24	3.24	<0.01	386	58.8	5.8	43.3	235	<2	<2	235	1860	1740	1.07	28.1	26.2	-3.5
COOPER C DUP	637069	07/15/08	6.86	22.3	2162	960	46.4	0.1	3.25	3.25	<0.01	398	61.7	6.1	46.2	234	<2	<2	234	1860	1670	1.11	26.4	27.2	1.5
COOPER C	637069	10/16/08	6.80	21.4	2078	1020																			
DODSON	644927	02/20/08	7.61	17.3	857	54	129	0.3	10.70	10.70	<0.01	111	37.5	12.3	41.2	252	14	<2	266	590	598	0.99	10.8	10.8	0.0
DODSON	644927	05/12/08	7.11	21.1	1118	34.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DODSON	644927	07/24/08	7.25	21.6	1233	49.3	160	0.2	13.1	13.1	<0.01	124	43.3	13.7	51.3	223	12	<2	235	740	646	1.15	11.2	12.4	5.1
DODSON	644927	10/13/08	7.15	20.5	1095	56.9																			
EAST	599796	02/08/08	7.45	19.9	423	10.6	31.2	0.4	6.3	6.3	<0.01	59.9	24.3	2.5	31.6	227	<2	<2	227	320	325	0.98	6.1	6.4	2.4
EAST	599796	05/14/08	7.31	20.9	595	14.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EAST	599796	07/23/08	7.34	20.8	605	11.8	33.3	0.4	6.10	6.10	<0.01	59.5	24.4	2.4	31.4	217	6	<2	223	350	326	1.07	6.0	6.4	3.2
EAST	599796	10/14/08	7.33	20.3	531	8.9	33.3	0.4	6.10	6.10	<0.01	59.5	24.4	2.4	31.4	217	6	<2	223	350	326	1.07	6.0	6.4	3.2
EN 02	NA	10/21/08	7.24	22.5	361	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EN 03	NA	10/21/08	7.39	23.9	346	8.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EN 05	NA	10/21/08	7.43	22.4	391	6.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EN 06	NA	10/21/08	7.35	22.5	349	9.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPPELE 641	805641	03/11/08	7.98	21.4	646	21.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPPELE 641	805641	05/12/08	7.21	21.7	667	24.7	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPPELE 641	805641	07/21/08	7.49	23.9	605	19.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPPELE 641	805641	10/14/08	7.56	20.4	642	21.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRANCO	500101	02/06/08	7.47	19.6	1301	670	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRANCO	500101	05/05/08	6.93	23.1	1557	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRANCO	500101	07/14/08	7.00	22.7	1586	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRANCO	500101	10/15/08	7.20	20.5	1560	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ	212447	02/27/08	6.76	21.1	1827	152	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ	212447	04/21/08[1]	6.74	22.0	1739	137	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ	212447	05/14/08[1]	6.88	22.3	1532	131	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ	212447	06/23/08[1]	6.74	22.0	1788	111	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ	212447	07/29/08[1]	6.74	22.2	1989	152	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ	212447	08/28/08[1]	M	21.6	1889	137	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ	212447	09/23/08[1]	6.82	21.9	1821	137	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FULTZ	212447	10/22/08	6.80	21.4	1940	145	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GALLANT	502527	02/11/08	7.46	20.2	604	17.9	12.7	0.2	3.0	3.04	<0.01	106	15.9	4.3	25.6	344	<2	<2	344	400	402	1.00	7.8	7.8	0.0
GALLANT	502527	07/23/08	7.26	21.2	925	20.9	56.9	0.1	19.2	19.2	<0.01	138	19.8	4.8	29.6	303	<2	<2	303	560	537	1.04	9.4	9.9	2.6
GARNER 557	558557	02/21/08	6.70	20.9	822	123	14.3	0.2	1.70	1.70	<0.01	62.2	10.2	2.5	58.1	171	13	<2	184	420	394	1.07	6.7	6.5	-1.5

TABLE 2
Compilation of Groundwater Monitoring Results
For Inorganic Analytes and Field Parameters

Well Name	ADWR 55 Registry No.	Sample Date	Field pH (SU)	Field Temp (deg C)	Field SC (µS/cm)	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrate/Nitrite as N, dissolved	Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved	Potassium, dissolved	Sodium, dissolved	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Total Alkalinity	Residue, Filterable (TDS) @ 180ºC	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
GARNER 635	587635	02/04/08	7.61	22.7	479	37.8	13.7	0.2	1.68	1.69	0.01	39.2	8.2	2.8	65.0	182	<2	<2	182	290	284	1.02	4.9	5.5	5.8
GARNER 635	587635	05/05/08	7.26	24.9	468	35.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GARNER 635	587635	07/15/08	7.63	25.6	480	37.4	13.5	0.2	1.92	1.92	<0.01	37.6	7.8	2.5	60.2	163	16	<2	179	300	281	1.07	4.0	5.2	4.0
GARNER 635	587635	10/15/08	7.65	24.1	472	36.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GGOOSE 547	628547	05/21/08	7.08	22.7	856	199	37.1	0.1	7.14	7.14	<0.01	113	32.9	5.5	25.6	194	<2	<2	194	600	561	1.07	9.6	9.6	0.0
GGOOSE 547	628547	08/15/08	7.02	24.8	915	178	35.4	0.1	8.90	8.90	<0.01	117	32.4	5.6	25.4	187	<2	<2	187	590	545	1.08	9.1	9.7	3.2
GGOOSE 547	628547	10/29/08	7.27	22.6	897	216	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GL 03	539782	03/04/08	7.43	25.7	417	20.3	20.3	<0.1	0.75	0.77	0.02	46.7	22.8	2.6	18.7	192	<2	<2	192	260	250	1.04	4.8	5.1	3.0
GL 03	539782	05/22/08	7.06	25.3	647	43.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GL 03	539782	08/04/08	7.10	26.8	673	36.1	21.4	<0.1	0.60	0.62	0.02	68.7	38.9	3.4	19.5	278	<2	<2	278	400	358	1.12	6.9	7.5	4.2
GL 03	539782	11/12/08	7.21	25.2	478	34.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOBAN	805290	02/27/08	6.93	22.1	1359	510	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOBAN	805290	05/07/08	6.88	22.3	1532	670	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOBAN	805290	07/14/08	6.88	23.1	1719	690	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOBAN	805290	10/16/08	6.98	22.4	1624	692	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOWARD	NR	03/04/08	7.06	20.4	1280	571	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOWARD	NR	05/08/08	6.95	21.0	1494	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOWARD	NR	07/14/08	7.00	21.1	1566	610	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOWARD	NR	10/15/08	7.00	20.6	1598	683	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KEEFER	209744	02/06/08	7.70	19.0	378	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KEEFER	209744	05/06/08	7.19	20.3	512	9.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KEEFER	209744	07/16/08	7.21	21.4	539	8.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KEEFER	209744	10/28/08	7.32	20.1	534	21.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MCCONNELL 265	539265	02/20/08	7.21	21.1	1435	720	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MCCONNELL 265	539265	05/06/08	6.77	21.6	1668	737	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MCCONNELL 265	539265	07/15/08	6.91	22.3	1775	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MCCONNELL 265	539265	10/15/08	6.82	21.3	1686	703	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
METZLER	35-71891	03/05/08	7.27	21.6	1055	317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
METZLER	35-71891	05/15/08	7.12	22.8	1051	329	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
METZLER	35-71891	07/31/08	7.16	22.5	1078	317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
METZLER	35-71891	10/20/08	7.24	22.2	1080	305	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
METZLER DUP	35-71891	10/20/08	7.24	22.2	1080	326	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOORE	538847	02/20/08	7.69	22.2	362	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOORE	538847	05/08/08	7.09	22.4	432	7.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOORE	538847	07/16/08	7.34	23.0	482	9.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOORE	538847	10/29/08	7.32	22.4	452	19.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NESS	509127	07/24/08	7.35	26.5	563	50.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NESS	509127	10/16/08	7.47	21.4	542	48.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NOTEMAN	212483	02/05/08	6.70	19.9	1317	310	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NOTEMAN	212483	05/13/08	6.67	23.0	1445	272	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NOTEMAN	212483	07/24/08	6.68	24.2	1539	274	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NOTEMAN	212483	10/23/08	6.57	23.2	1643	356	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NSD 02	527587	02/05/08	-	-	-	43	52.5	0.201	<1.0	-	<0.01	-	-	-	-	-	-	-	-	388	-	-	-	-	-
NSD 02	527587	07/07/08	8.02	21.0	609	44.0	42	0.0431	0.641	-	0.007	-	-	-	-	-	-	-	-	369	-	-	-	-	-
NSD 03	527586	02/05/08	-	-	-	70.7	14.1	0.186	3.2	-	<0.010	-	-	-	-	-	-	-	-	396	-	-	-	-	-
NSD 03	527586	07/07/08	7.64	21.0	570	58.9	11.6	0.041	3.20	-	0.011	-	-	-	-	-	-	-	-	372	-	-	-	-	-
NWC 02	562944	10/27/08	7.47	22.2	438	5.1	20.7	0.1	2.74	2.74	<0.01	63.6	8.3	1.1	20.2	176	<2	<2	176	280	237	1.18	4.4	4.7	3.3
NWC 03	203321	03/04/08	-	-	-	560	30	-	4.64	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NWC 03	203321	06/09/08	-	-	-	524	-	-	4.75	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NWC 03	203321	10/27/08	7.07	21.9	1374	489	30	<0.1	4.41	4.41	<0.01	222	34.1	3.5	47.2	181	<2	<2	181	1010	954	1.06	15.10	16.10	3.20
NWC 04	551849	03/04/08	-	-	-	240	41	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NWC 04	551849	06/09/08	-	-	-	231	41.9	-	6.25	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NWC 04	551849	10/27/08	7.32	25.0	856	162	41.4	0.1	6.54	6.54	<0.01	91.5	36.7	6.2	41.5	182	<2	<2	182	540	518	1.04	8.6	9.5	5.0
NWC 06	575700	03/04/08	-	-	-	7.9	13	-	1.71	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NWC 06	575700	06/09/08	-	-	-	7.2	12.9	-	1.78	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NWC 06	575700	10/27/08	7.35	23.3	414	6.4	13.4	0.2	1.86	1.86	<0.01	54.5	7.4	1.4	26.4	173	<2	<2	173	260	222	1.17	4.1	4.5	4.7
OSBORN	643436	02/25/08	7.35	22.4	508	16.4	18.2	0.3	3.76	3.76	<0.01	84.4	15.4	4.3	25.2	246	29	<2	275	370	357	1.04	6.6	6.7	0.8
OSBORN	643436	05/13/08	7.22	22.2	576	17.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OSBORN	643436	07/22/08	7.24	22.9	618	17.7	19.7	0.4	4.4	4.4	<0.01	80.3	15.0	4.2	24.7	252	29	<2	281	350	362	0.97	6.8	6.4	-3.0
OSBORN DUP	643436	07/22/08	7.24	22.9	618	17.5	19.6	0.3	4.7	4.7	<0.01	80.9	15.1	4.2	25.0	250	31	<2	281	350	364	0.96	6.8	6.4	-3.0
OSBORN	643436	10/16/08	7.39	22.4	595	15.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PALMER	578819	02/14/08	7.91	17.5	435	15.9	11.3	0.4	2.13	2.13	<0.01	31.9	27.1	5.4	50.1	235	15	< 2	251	300	308	0.97	5.8	6.1	2.5
PALMER	578819	05/13/08	7.92	22.9	508	16.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PALMER	578819	07/22/08	7.64	25.8	548	16.2	11.3	0.4	2.34	2.34	<0.01	30	25.4	5.1	47.9	226	39	<2	265	300	321	0.93	6.1	5.8	-2.5
PALMER	578819	10/16/08	7.61	17.0	527	15.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PANAGAKOS	35-76413	04/21/08	6.80	20.5	1228	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PANAGAKOS	35-76413	07/21/08	6.95	21.9	1390	444	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PANAGAKOS	35-76413	10/13/08	6.86	21.2	1386	480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PANAGAKOS DUP	35-76413	10/13/08	6.86	21.2	1386	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PARRA	576415	02/11/08	7.08	21.8	1067	360	33.4	0.1	4.17	< 0.04	<0.01	178	50.4	4.4	31.6	177	<2	<2	177	880	783	1.12	12.3	14.5	8.2
PARRA	576415	05/15/08	7.10	21.8	1200	405	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PARRA	576415	07/31/08	7.00	22.4	1248	423	33.5	<0.1	4.23	4.23	<0.01	181	49.8	4.5	32.4	213	<2	<2	213	930	871	1.07	14.4	14.7	1.0
PARRA DUP	576415	07/31/08	7.00	22.4	1248	404	33.5	<0.1	4.33	4.33	<0.01	177	48.5	4.3	30.9	212	<2	<2	212	920	845	1.09	14.0	14.3	1.1
PARRA	576415	10/20/08	7.07	22.9	1246	387	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIONKE	613395	02/06/08	7.53	19.9	910	394	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIONKE	613395	05/07/08	7.08	21.4	1100	391	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIONKE	613395	07/17/08	6.99	21.9	1209	420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIONKE	613395	10/27/08	7.03	20.8	1175	460	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 2
Compilation of Groundwater Monitoring Results
For Inorganic Analytes and Field Parameters

Well Name	ADWR 55 Registry No.	Sample Date	Field pH (SU)	Field Temp (deg C)	Field SC (µS/cm)	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrate/Nitrite as N, dissolved	Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved	Potassium, dissolved	Sodium, dissolved	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Total Alkalinity	Residue, Filterable (TDS) @ 180ºC	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
POOL	509518	02/20/08	7.95	20.9	497	134	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
POOL	509518	05/19/08	7.40	22.2	585	122	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
POOL	509518	07/31/08	7.47	22.3	599	117	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
POOL	509518	10/21/08	7.51	21.4	598	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
POWER	624535	02/12/08	7.11	18.9	428	15.5	6.1	0.1	7.00	7.00	<0.01	95	7.6	3.8	7.4	242	<2	< 2	242	310	312	0.99	5.8	5.8	0.0
POWER	624535	07/22/08	7.10	21.7	795	20.2	37.8	<0.1	24.1	24.1	<0.01	124	11.0	3.8	13.6	222	29	<2	251	550	479	1.15	8.2	7.8	-2.5
RAMIREZ	216425	02/04/08	7.47	21.7	408	7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAMIREZ	216425	05/06/08	7.19	22.7	405	8.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAMIREZ	216425	07/17/08	7.32	24.5	439	8.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAMIREZ	216425	10/27/08	7.41	22.2	412	7.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY	803772	02/15/08	7.30	19.1	1540	159	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY	803772	04/21/08[1]	6.92	21.3	1418	125	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY	803772	05/13/08[1]	7.05	20.9	1418	123	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY	803772	06/23/08[1]	6.87	21.1	1593	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY	803772	07/29/08[1]	6.98	21.8	1411	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY	803772	08/28/08[1]	M	21.1	1519	129	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY	803772	09/23/08[1]	6.90	22.2	1519	125	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RAY	803772	10/22/08	6.96	20.8	1604	145	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS 803	641803	02/07/08	7.45	18.6	601	125	13.2	0.2	4.69	4.71	0.02	94	11.7	3.0	26.6	148	<2	<2	148	410	383	1.07	6.3	6.9	4.5
ROGERS 803	641803	04/21/08[1]	7.32	21.4	552	128	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS 803	641803	05/08/08[1]	7.14	21.2	622	141	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS 803	641803	06/23/08[1]	7.06	22.9	660	129	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS 803	641803	07/29/08[1]	6.78	23.1	339	134	13.1	0.2	4.3	4.3	<0.01	92.5	12.6	3.3	28.7	149	<2	<2	149	430	393	1.09	6.4	7.0	4.5
ROGERS 803	641803	08/28/08[1]	7.18	21.6	635	128																			
ROGERS 803	641803	09/23/08[1]	7.24	21.9	599	133	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS 803	641803	10/22/08	7.36	21.3	650	144	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS E	216018	02/04/08	7.40	21.0	435	4.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS E	216018	05/07/08	7.18	22.2	415	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS E	216018	07/17/08	7.28	23.0	446	7.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ROGERS E	216018	10/27/08	7.38	21.4	434	15.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RUIZ	531770	02/05/08	7.73	18.2	445	263	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RUIZ	531770	05/15/08	7.23	25.9	965	265	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RUIZ	531770	07/30/08	6.99	22.1	999	243	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RUIZ	531770	10/20/08	7.04	22.0	995	238	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	02/08/08	7.52	21.5	506	158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	04/21/08[1]	7.23	21.7	563	122	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	05/19/08[1]	7.38	22.4	629	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	06/23/08[1]	7.02	22.1	674	129	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	07/29/08[1]	7.25	22.4	955	245	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	08/28/08[1]	M	22.3	669	131	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	09/23/08[1]	7.27	22.2	607	124	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	10/22/08[1]	7.31	22.0	653	135	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	11/19/08[1]	7.38	21.1	612	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCHWARTZ	210865	12/17/08[1]	6.78	21.6	472	144	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SRC	211345	04/23/08	7.57	25.8	380	19.0	10	0.2	3.61	3.61	<0.01	25.8	16.3	2.1	48.2	174	<2	<2	174	230	-	-	-	-	-
SRC	211345	08/05/08	7.40	27.2	452	15.4	10.4	0.2	3.74	3.74	<0.01	26.8	17.8	2.0	44.6	173	<2	<2	173	250	238	1.05	4.3	4.8	5.5
SWAN	NR	02/13/08	7.28	20.7	467	24.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWAN	NR	05/14/08	7.24	21.2	479	23.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWAN	NR	07/24/08	7.35	22.4	506	18.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWAN	NR	10/16/08	7.32	20.7	488	19.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-02A	522574	03/04/08	8.67	22.6	302	12.3	8.6	0.3	<0.02	0.02	0.02	12.6	5.8	2.2	58.0	146	9	<2	155	190	196	0.97	3.6	3.7	1.4
TM-02A	522574	05/23/08	7.75	22.9	321	14.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-02A	522574	08/15/08	7.84	26.4	369	14.4	8.2	0.2	0.3	0.3	<0.01	14.7	5.2	2.4	60.2	143	8	<2	151	190	200	0.95	3.5	3.8	4.1
TM-02A	522574	10/30/08	8.07	23.9	375	21.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-03	522575	05/20/08	7.51	22.2	778	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-03	522575	08/06/08	7.08	21.6	828	97	40.7	0.2	7.68	7.68	<0.01	94.3	36.6	3.5	27.8	221	<2	<2	221	510	467	1.09	8.1	9.0	5.3
TM-03	522575	11/12/08	7.47	20.5	590	128	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-06 MILLER	522695	02/27/08	7.44	19.6	457	13.9	7.1	0.3	0.96	0.96	<0.01	42.2	19.0	1.7	54.3	218	<2	<2	218	310	274	1.13	4.9	6.1	10.9
TM-06 MILLER	522695	05/20/08	7.50	20.7	506	32.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-06 MILLER	522695	08/04/08	7.41	20.7	529	31.3	18.0	0.7	0.89	0.89	<0.01	37.8	19.5	1.9	52.1	210	<2	<2	210	300	291	1.03	5.4	5.8	3.6
TM-06 MILLER	522695	10/29/08	7.55	20.2	531	34.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-07	522576	03/06/08	7.54	20.8	726	22.5	9	0.2	3.04	3.04	<0.01	49	15.8	2.0	22.6	133	9	<2	142	220	223	0.10	3.7	4.7	11.9
TM-07	522576	05/22/08	6.96	20.1	385	22.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-07	522576	08/06/08	7.04	22.8	519	22.2	8.9	0.2	2.52	2.52	<0.01	45.8	14.7	1.9	20.5	157	<2	<2	159	240	220	1.09	4.0	4.4	4.8
TM-07	522576	11/04/08	7.76	20.6	347	31.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-08 SWAN	522817	02/13/08	7.63	25.2	511	12.6	32.1	0.3	5.3	5.3	<0.01	43.4	21.4	4.9	35.5	204	<2	< 2	204	310	296	1.1	5.6	5.6	0.0
TM-08 SWAN	522817	05/14/08	7.44	24.4	480	12.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-08 SWAN	522817	07/23/08	7.76	28.1	522	12.6	14.8	0.3	2.86	2.86	<0.01	<0.02	<0.02	1.1	128	204	11	<2	215	310	303	1.02	5.2	5.6	3.7
TM-14 NELSON	522816	02/08/08	7.64	21.6	319	32.9	12.5	0.3	1.82	1.82	<0.01	56.1	10.0	2.8	23.6	166	<2	<2	166	250	246	1.02	4.5	4.7	2.2
TM-15 MILLER	522699	02/27/08	7.66	21.9	344	14	7.1	0.4	1.56	1.56	<0.01	32.9	18.0	2.0	32.4	181	2	<2	183	220	224	0.98	4.2	4.6	4.5
TM-15 MILLER	522699	05/23/08	7.54	22.1	371	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-15 MILLER	522699	08/05/08	7.42	23.3	413	13.7	7.0	0.3	1.99	1.99	<0.01	29.8	18.9	2.0	32.0	173	-	-	174	210	216	0.97	4.1	4.5	4.7
TM-15 MILLER	522699	10/28/08	7.63	22.6	387	18.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-15 MILLER DUP	522699	10/28/08	7.63	22.6	387	18.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-16	522578	03/05/08	7.17	20.6	1351	497	28.9	<0.1	6.80	6.90	<0.01	225	51.7	13.4	30.7	205	<2	<2	205	1030	1000	1.03	15.8	17.2	4.2
TM-16	522578	05/22/08	7.05	20.5	1304	522	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-16	522578	08/06/08	6.67	20.9	1410	466	28.1	<0.1	8.07	8.07	<0.01	215	52.7	13.3	30.0	191	<2	<2	191	1070	955	1.12	15.0	16.7	5.4
TM-16	522578	11/05/08	7.14	19.8	1162	547		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 2
Compilation of Groundwater Monitoring Results
For Inorganic Analytes and Field Parameters

Well Name	ADWR 55 Registry No.	Sample Date	Field pH (SU)	Field Temp (deg C)	Field SC (µS/cm)	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrate/Nitrite as N, dissolved	Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved	Potassium, dissolved	Sodium, dissolved	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Total Alkalinity	Residue, Filterable (TDS) @ 180ºC	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
TM-19A	522581	03/06/08	8.02	22.2	240	56.1	15.4	0.1	0.26	0.26	<0.01	37.9	11.6	3.0	57.7	119	19	<2	138	280	273	1.03	4.3	5.4	11.3
TM-19A	522581	05/22/08	7.36	24.0	501	64.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-19A	522581	08/06/08	7.32	22.6	494	55.3	15.4	0.1	0.09	0.09	<0.01	37.3	10.8	2.9	53.0	153	5	-	158	270	272	0.99	4.7	5.1	4.1
TM-19A	522581	11/18/08	7.79	24.3	365	66.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-42	562554	03/05/08	7.10	20.8	1342	482	27	0.2	6.55	6.55	<0.01	185	55.8	10.4	37.9	186	<2	<2	186	980	939	1.04	15.1	15.8	2.3
TM-42	562554	05/22/08	7.05	21.4	1270	483	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-42	562554	08/06/08	6.69	22.0	1388	467	27.3	0.2	7.20	7.20	<0.01	191	60.7	10.1	38.7	208	<2	<2	208	1010	952	1.04	15.3	16.5	3.8
TM-42	562554	11/06/08	6.90	21.0	1025	477	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TM-43	564729	03/03/08	8.57	21.0	341	2.1	7.7	0.3	0.04	0.04	<0.01	10.1	5.7	2.2	79.4	197	20	<2	217	250	246	1.02	4.6	4.5	-1.1
TM-43	564729	08/04/08	8.14	25.7	436	<5	12.0	<1	0.25	0.25	<0.01	10.4	5.8	2.0	79.7	174	12	<2	186	270	227	1.19	4.0	4.5	5.9
TM-43A	564726	03/03/08	6.17	19.9	2788	1420	31	<0.2	0.99	0.99	<0.01	570	181	4.5	42.1	713	<2	<2	713	3000	2680	1.19	45.0	45.0	0.3
TM-43A	564726	08/04/08	6.03	21.6	3149	1320	30.0	<0.2	1.31	1.31	<0.01	577	188	4.7	40.5	658	<2	<2	658	2950	2560	1.15	41.8	46.2	5.0
TM-43B	565004	03/03/08	6.79	20.6	514	0.7	5	<0.1	0.05	0.06	0.01	54.6	23.8	2.9	47.9	338	<2	<2	338	350	338	1.04	6.9	6.8	-0.7
TM-43B	565004	08/05/08	6.89	21.0	507	31.8	4.7	<0.1	0.03	0.03	<0.01	47.5	21.5	2.6	44.9	231	<2	<2	231	300	292	1.03	5.4	6.1	6.1
TM-43B DUP	565004	08/05/08	6.89	21.0	507	32.5	4.7	<0.1	0.11	0.11	<0.01	47.9	21.7	2.5	44.9	234	<2	<2	234	310	295	1.05	5.5	6.2	6.0
TVI 236	802236	03/20/08	7.48	20.0	488	31.3	26	0.1	3.90	3.93	0.03	70.5	9.3	1.9	25.6	178	<2	<2	178	310	289	1.07	5.2	5.4	1.9
TVI 236	802236	05/07/08	7.13	20.4	494	32.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TVI 236	802236	07/15/08	7.39	21.9	532	37.6	23.5	0.2	3.46	3.46	<0.01	70.4	9.3	1.8	26.3	161	11	<2	173	310	292	1.06	5.1	5.4	2.9
TVI 236	802236	10/15/08	7.45	22.3	490	36.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TVI 875	568875	02/21/08	7.28	21.1	739	244	20.1	0.2	2.99	2.99	<0.01	120	16.1	2.9	41.1	161	11	<2	172	630	565	1.12	9.3	9.2	-0.5
TVI 875	568875	05/07/08	7.09	21.2	833	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TVI 875	568875	07/15/08	7.27	22.4	925	274	20.2	0.2	3.0	3.0	<0.01	131	17.4	2.8	39.6	148	11	<2	160	640.0	598	1.07	9.7	9.7	0.0
TVI 875	568875	10/15/08	7.26	22.1	878	245	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UN 02	NA	10/14/08	7.63	22.6	356	6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UN 03	NA	10/14/08	7.59	22.1	356	6.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UN 04	NA	10/14/08	7.39	21.4	376	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UN 05	NA	10/14/08	7.44	22.8	351	6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WALKER	200393	02/13/08	7.05	20.2	650	20	4	0.2	2.26	2.26	<0.01	117	14.4	3.6	14.3	355	<2	<2	355	440	396	1.11	7.8	7.7	-0.6
WALKER	200393	07/23/08	7.25	20.7	740	45.4	37.8	0.3	7.24	7.24	<0.01	89	27.9	2.9	28.6	250	7	<2	257	450	421	1.07	7.6	8.0	2.6
WEED	544535	02/14/08	7.74	21.7	323	11.1	9	-	1.72	1.72	<0.02	35.6	14.5	2.2	30.0	162	5	<2	168	230	212	1.08	3.9	4.3	4.9
WEED	544535	05/15/08	7.22	22.7	365	12.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WEED	544535	07/30/08	7.42	32.0	407	11.5	10.1	0.3	1.92	1.92	<0.01	34.1	13.6	2.2	29.4	163	2	<2	165	230	209	1.10	3.9	4.1	2.5
WEED	544535	10/20/08	8.10	31.6	405	10.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WEISKOPF	641802	02/15/08	7.48	20.0	1072	500	33.1	0.2	4.74	4.74	<0.01	218	31.4	4.3	35.7	177	<2	<2	177	1010	950	1.06	15.3	15.2	-0.3
WEISKOPF	641802	05/07/08	7.10	21.8	1251	483	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WEISKOPF	641802	07/16/08	7.07	22.2	1399	560	26.0	0.1	4.29	4.29	<0.01	248	34.3	4.4	38.6	170	3	<2	173	1060	1040	1.0	16.3	17.0	2.1
WEISKOPF	641802	10/28/08	6.98	20.8	1401	602	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZANDER	205126	02/04/08	7.24	19.7	392	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZANDER	205126	05/06/08	7.26	21.2	404	6.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZANDER	205126	07/16/08	6.92	22.9	441	6.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZANDER	205126	10/28/08	7.40	21.2	415	15.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

All units are in milligrams per liter (mg/l) unless otherwise noted
deg C = degrees Celsius
meq/l = milliequivalent per liter
M = pH Meter Malfunction
NA = Not Applicable
NR = No Record
- = Not Analyzed
ND = No Data
SC = Specific Conductance
SU = Standard Units
TDS = Total Dissolved Solids
µS/cm = microsiemens per centimeter
[1] Verified drinking water supply well, sample collected for sulfate trend analysis for interim action evaluation

TABLE 3
Compilation of 2008 Groundwater Elevation Data

Well Name	ADWR 55 Registry No.	UTM North	UTM East	Date	Measuring Point Elevation[1] (ft amsl)	Depth To Water (feet)	Groundwater Elevation (ft amsl)
ANDERSON	613396	3468816.065	601134.729	03/20/08	4580.34	145.46	4434.88
ANDERSON	613396	3468816.065	601134.729	05/05/08	4580.34	145.84	4434.50
ANDERSON	613396	3468816.065	601134.729	07/14/08	4580.34	146.16	4434.18
ANDERSON	613396	3468816.065	601134.729	10/15/08	4580.34	146.21	4434.13
AWC 02	616586	3468549.357	598907.911	04/08/08 [2]	4547.64	116	4431.64
AWC 02	616586	3468549.357	598907.911	08/27/08	4547.64	121.12	4426.52
AWC 02	616586	3468549.357	598907.911	October 2008 [3]	4547.64	115	4432.64
AWC 03	616585	3468681.898	599090.322	04/08/08 [2]	4539.52	112	4427.52
AWC 03	616585	3468681.898	599090.322	08/27/08	4539.52	119.40	4420.12
AWC 03	616585	3468681.898	599090.322	10/23/05	4539.52	106	4433.52
AWC 04	616584	3468717.084	598949.929	04/08/08 [2]	4540.48	108	4432.48
AWC 04	616584	3468717.084	598949.929	08/18/08	4540.48	112.56	4427.92
AWC 04	616584	3468717.084	598949.929	October 2008 [3]	4540.48	111.31	4429.17
AWC 05	590620	3468541.692	599269.904	04/08/08 [2]	4542.51	284	4258.51
AWC 05	590620	3468541.692	599269.904	08/27/08	4542.51	299.65	4242.86
AWC 05	590620	3468541.692	599269.904	October 2008 [3]	4542.51	284	4258.51
BANKS 987	647987	3469206.175	606981.921	02/27/08	4648.18	208.00	4440.18
BANKS 987	647987	3469206.175	606981.921	05/12/08	4648.18	216.30	4431.88
BANKS 987	647987	3469206.175	606981.921	07/21/08	4648.18	228.95	4419.23
BANKS 987	647987	3469206.175	606981.921	10/13/08	4648.18	228.20	4419.98
BARTON 010	085010	3469047.469	606201.084	05/12/08	4688.95	227.50	4461.45
BARTON 010	085010	3469047.469	606201.084	07/23/08	4688.95	276.06	4412.89
BARTON 010	085010	3469047.469	606201.084	10/16/08	4688.95	Dry	<4372
BARTON 919	644919	3469076.689	606243.850	05/12/08	4692.36	113.71	4578.65
BARTON 919	644919	3469076.689	606243.850	07/23/08	4692.36	113.56	4578.80
BARTON 919	644919	3469076.689	606243.850	10/16/08	4692.36	113.20	4579.16
BF-01	539783	3472151.593	604169.077	03/04/08	4835.23	348.99	4486.24
BF-01	539783	3472151.593	604169.077	05/23/08	4835.23	348.80	4486.43
BF-01	539783	3472151.593	604169.077	08/05/08	4835.23	348.66	4486.57
BF-01	539783	3472151.593	604169.077	11/05/08	4835.23	348.94	4486.29
BIMA	577927	3471852.804	606001.245	05/13/08	4802.05	367.31	4434.74
BIMA	577927	3471852.804	606001.245	08/18/08	4802.05	370.24	4431.81
BIMA	577927	3471852.804	606001.245	10/23/08	4802.05	353.96	4448.09
BLOMMER	633472	3471529.090	602725.876	10/22/08	4753.69	300.78	4452.91
BMO-2008-1G	909474	3471723.644	606467.681	08/27/08	4805.10	62.05	4743.05
BMO-2008-1G	909474	3471723.644	606467.681	11/11/08	4805.10	60.95	4744.15
BMO-2008-3B	909147	3467919.582	602012.923	07/18/08	4583.97	138.05	4445.92
BMO-2008-3B	909147	3467919.582	602012.923	11/04/08	4583.97	137.95	4446.02
BMO-2008-4B	910096	3468383.430	601099.405	12/11/08	4573.17	130.77	4442.40
BMO-2008-5B	909653	3468994.715	600438.159	09/30/08	4585.10	145.10	4440.00
BMO-2008-5M	909552	3468994.282	600445.071	10/02/08	4585.02	146.65	4438.37
BMO-2008-6B	909146	3469820.644	600366.523	07/16/08	4627.44	190.13	4437.31
BMO-2008-6B	909146	3469820.644	600366.523	11/04/08	4627.44	190.23	4437.21
BMO-2008-6M	909019	3469813.885	600367.943	07/10/08	4626.90	191.63	4435.27
BMO-2008-6M	909019	3469813.885	600367.943	11/04/08	4626.90	190.25	4436.65
BMO-2008-7M	908794	3470029.283	603099.165	07/14/08	4688.33	238.31	4450.02
BMO-2008-7M	908794	3470029.283	603099.165	11/06/08	4688.33	239.69	4448.64
BMO-2008-8B	910097	3471141.719	604171.347	12/05/08	4753.25	297.94	4455.31
BMO-2008-8M	909711	3471127.902	604167.912	12/09/08	4752.45	299.79	4452.66
BMO-2008-9M	909255	3471121.675	604668.669	08/08/08	4762.61	287.17	4475.44
BMO-2008-9M	909255	3471121.675	604668.669	11/05/08	4762.61	287.65	4474.96
BMO-2008-10GU	909272	3471731.866	605267.551	08/04/08	4793.45	299.28	4494.17
BMO-2008-10GU	909272	3471731.866	605267.551	11/05/08	4793.45	295.89	4497.56
BMO-2008-10GL	909435	3471702.043	605264.072	08/20/08	4792.21	521.75	4270.46
BMO-2008-10GL	909435	3471702.043	605264.072	11/05/08	4792.21	520.50	4271.71
BMO-2008-11G	909434	3472626.482	603800.995	08/22/08	4844.67	577.76	4266.91
BMO-2008-11G	909434	3472626.482	603800.995	11/12/08	4844.67	576.80	4267.87
BMO-2008-13B	909551	3470076.358	601657.612	10/03/08	4649.21	206.42	4442.79
BMO-2008-13M	909760	3470040.455	601650.495	12/03/08	4647.15	206.00	4441.15
BURKE	212268	3473029.816	602230.087	04/22/08	4856.30	606.55	4249.75
BURKE	212268	3473029.816	602230.087	08/05/08	4856.30	605.86	4250.44
BURKE	212268	3473029.816	602230.087	10/28/08	4856.30	604.88	4251.42
CAMPBELL	215509	3469320.340	606420.836	02/05/08	4694.29	180.60	4513.69
CAMPBELL	215509	3469320.340	606420.836	05/13/08	4694.29	181.80	4512.49
CAMPBELL	215509	3469320.340	606420.836	10/16/08	4694.29	200.00	4494.29
COB MW-1	903992	3469889.889	603153.259	02/22/08	4683.26	232.47	4450.79
COB MW-1	903992	3469889.889	603153.259	05/20/08	4683.26	233.12	4450.14
COB MW-1	903992	3469889.889	603153.259	07/30/08	4683.26	233.37	4449.89
COB MW-1	903992	3469889.889	603153.259	10/23/08	4683.26	233.62	4449.64
COB MW-2	903984	3468114.836	600973.257	02/22/08	4566.21	122.85	4443.36
COB MW-2	903984	3468114.836	600973.257	05/20/08	4566.21	123.00	4443.21
COB MW-2	903984	3468114.836	600973.257	07/30/08	4566.21	123.53	4442.68
COB MW-2	903984	3468114.836	600973.257	10/23/08	4566.21	124.02	4442.19
COB MW-3	906823	3468726.000	599169.225	02/28/08	4538.63	120.84	4417.79
COB MW-3	906823	3468726.000	599169.225	05/20/08	4538.63	125.00	4413.63
COB MW-3	906823	3468726.000	599169.225	07/30/08	4538.63	118.50	4420.13
COB MW-3	906823	3468726.000	599169.225	10/23/08	4538.63	117.93	4420.70
COB WL	593116	3472502.012	606357.506	02/22/08	4832.06	56.50	4775.56
COB WL	593116	3472502.012	606357.506	05/20/08	4832.06	57.50	4774.56
COB WL	593116	3472502.012	606357.506	07/30/08	4832.06	58.64	4773.42
COB WL	593116	3472502.012	606357.506	10/23/08	4832.06	58.76	4773.30
COLLINS	565260	3471341.335	602551.286	02/12/08	4733.72	289.47	4444.25
COLLINS	565260	3471341.335	602551.286	05/29/08	4733.72	288.53	4445.19
COLLINS	565260	3471341.335	602551.286	07/31/08	4733.72	290.08	4443.64
COLLINS	565260	3471341.335	602551.286	10/20/08	4733.72	290.15	4443.57
COOPER C	637069	3468913.011	601349.987	03/04/08	4595.06	155.08	4439.98
COOPER C	637069	3468913.011	601349.987	05/05/08	4595.06	155.34	4439.72
COOPER C	637069	3468913.011	601349.987	07/15/08	4595.06	156.01	4439.05
COOPER C	637069	3468913.011	601349.987	10/16/08	4595.06	155.85	4439.21
DODSON	644927	3469063.772	605594.560	05/12/08	4686.34	81.38	4604.96
DODSON	644927	3469063.772	605594.560	07/24/08	4686.34	82.20	4604.14

TABLE 3
Compilation of 2008 Groundwater Elevation Data

Well Name	ADWR 55 Registry No.	UTM North	UTM East	Date	Measuring Point Elevation[1] (ft amsl)	Depth To Water (feet)	Groundwater Elevation (ft amsl)
DODSON	644927	3469063.772	605594.560	10/13/08	4686.34	81.82	4604.52
DOUGLASS 791	592791	3470222.677	607632.993	02/13/08	4703.27	22.11	4681.16
DOUGLASS 791	592791	3470222.677	607632.993	05/13/08	4703.27	24.60	4678.67
DOUGLASS 791	592791	3470222.677	607632.993	07/22/08	4703.27	27.00	4676.27
DOUGLASS 791	592791	3470222.677	607632.993	10/16/08	4703.27	23.60	4679.67
DOUGLASS 792	592792	3469829.115	607607.541	02/13/08	4681.73	87.76	4593.97
DOUGLASS 792	592792	3469829.115	607607.541	05/13/08	4681.73	87.21	4594.52
DOUGLASS 792	592792	3469829.115	607607.541	07/22/08	4681.73	86.90	4594.83
DOUGLASS 792	592792	3469829.115	607607.541	10/16/08	4681.73	86.45	4595.28
EAST	599796	3468712.215	607076.365	02/08/08	4626.01	50.20	4575.81
EAST	599796	3468712.215	607076.365	05/14/08	4626.01	52.45	4573.56
EAST	599796	3468712.215	607076.365	07/23/08	4626.01	52.16	4573.85
EAST	599796	3468712.215	607076.365	10/14/08	4626.01	52.19	4573.82
EPPELE 641	805641	3469229.942	607165.354	03/11/08	4642.86	29.52	4613.34
EPPELE 641	805641	3469229.942	607165.354	05/12/08	4642.86	30.64	4612.22
EPPELE 641	805641	3469229.942	607165.354	07/21/08	4642.86	25.59	4617.27
EPPELE 641	805641	3469229.942	607165.354	10/14/08	4642.86	24.53	4618.33
FULTZ	212447	3469063.892	607153.306	10/22/08	4642.92	40.59	4602.33
GALLANT	502527	3468524.363	607769.640	02/11/08	4599.58	28.32	4571.26
GALLANT	502527	3468524.363	607769.640	07/23/08	4599.58	33.05	4566.53
GALLANT	502527	3468524.363	607769.640	10/16/08	4599.58	30.70	4568.88
GARNER 557	558557	3468962.415	602659.240	02/21/08	4626.44	191.05	4435.39
GARNER 557	558557	3468962.415	602659.240	05/05/08	4626.44	191.28	4435.16
GARNER 557	558557	3468962.415	602659.240	07/15/08	4626.44	191.44	4435.00
GARNER 557	558557	3468962.415	602659.240	10/16/08	4626.44	191.83	4434.61
GARNER 635	587635	3468967.902	602665.352	02/04/08	4628.29	193.20	4435.09
GARNER 635	587635	3468967.902	602665.352	05/05/08	4628.29	195.90	4432.39
GARNER 635	587635	3468967.902	602665.352	07/15/08	4628.29	193.58	4434.71
GARNER 635	587635	3468967.902	602665.352	10/15/08	4628.29	194.35	4433.94
GGOOSE 547	628547	3469820.260	606256.657	05/21/08	4717.11	220.91	4496.20
GGOOSE 547	628547	3469820.260	606256.657	08/15/08	4717.11	238.48	4478.63
GGOOSE 547	628547	3469820.260	606256.657	10/29/08	4717.11	235.90	4481.21
GL-03	539782	3472738.941	608379.424	05/22/08	4840.37	660.15	4180.22
GL-03	539782	3472738.941	608379.424	08/04/08	4840.37	659.79	4180.58
GL-03	539782	3472738.941	608379.424	12/02/08	4840.37	658.25	4182.12
GOAR RANCH	610695	3468892.471	602454.751	02/21/08	4631.13	183.90	4447.23
GOAR RANCH	610695	3468892.471	602454.751	05/05/08	4631.13	188.11	4443.02
GOAR RANCH	610695	3468892.471	602454.751	07/16/08	4631.13	184.41	4446.72
GOAR RANCH	610695	3468892.471	602454.751	10/22/08	4631.13	184.68	4446.45
HOBAN	805290	3468880.329	601705.848	02/27/08	4597.21	163.05	4434.16
HOBAN	805290	3468880.329	601705.848	05/07/08	4597.21	163.28	4433.93
HOBAN	805290	3468880.329	601705.848	07/14/08	4597.21	163.87	4433.34
HOBAN	805290	3468880.329	601705.848	10/16/08	4597.21	163.95	4433.26
HOWARD	NR	3468768.622	601281.936	03/04/08	4589.70	150.10	4439.60
HOWARD	NR	3468768.622	601281.936	05/08/08	4589.70	150.70	4439.00
HOWARD	NR	3468768.622	601281.936	07/14/08	4589.70	150.91	4438.79
HOWARD	NR	3468768.622	601281.936	10/15/08	4589.70	151.12	4438.58
KEEFER	209744	3468119.015	599879.175	02/06/08	4572.03	134.67	4437.36
KEEFER	209744	3468119.015	599879.175	05/06/08	4572.03	135.28	4436.75
KEEFER	209744	3468119.015	599879.175	07/16/08	4572.03	136.24	4435.79
KEEFER	209744	3468119.015	599879.175	10/28/08	4572.03	135.87	4436.16
MCCONNELL 265	539265	3468840.139	601463.094	02/20/08	4600.70	156.15	4444.55
MCCONNELL 265	539265	3468840.139	601463.094	05/06/08	4600.70	156.40	4444.30
MCCONNELL 265	539265	3468840.139	601463.094	07/15/08	4600.70	157.07	4443.63
MCCONNELL 265	539265	3468840.139	601463.094	11/19/08	4600.70	157.17	4443.53
METZLER	35-71891	3471381.176	602091.308	03/05/08	4728.53	288.30	4440.23
METZLER	35-71891	3471381.176	602091.308	05/15/08	4728.53	286.53	4442.00
METZLER	35-71891	3471381.176	602091.308	07/31/08	4728.53	286.82	4441.71
METZLER	35-71891	3471381.176	602091.308	10/20/08	4728.53	287.09	4441.44
MINOR 317	633317	3468568.043	601172.150	02/12/08	4578.86	135.30	4443.56
NESS	509127	3471419.494	607866.391	07/24/08	4761.23	557.90	4203.33
NESS	509127	3471419.494	607866.391	10/16/08	4761.23	549.30	4211.93
NOTEMAN	212483	3471576.400	606053.800	05/13/08	4800.68	339.77	4460.91
NOTEMAN	212483	3471576.400	606053.800	08/27/08	4800.68	344.34	4456.34
NOTEMAN	212483	3471576.400	606053.800	11/22/08	4800.68	322.26	4478.42
NWC 02	562944	3476722.828	600241.741	10/27/08	4600.44	160.51	4439.93
NWC 03	203321	3468350.838	601153.857	11/03/08	4574.99	131.48	4443.51
NWC 04	551849	3469071.959	605829.808	12/02/08	4690.77	352.11	4338.66
OSBORN	643436	3470270.548	607031.823	05/13/08	4711.95	68.65	4643.30
OSBORN	643436	3470270.548	607031.823	08/05/08	4711.95	69.53	4642.42
OSBORN	643436	3470270.548	607031.823	10/16/08	4711.95	69.83	4642.12
PARRA	576415	3471263.549	602170.716	05/15/08	4727.21	279.78	4447.43
PARRA	576415	3471263.549	602170.716	08/18/08	4727.21	280.06	4447.15
PARRA	576415	3471263.549	602170.716	11/03/08	4727.21	280.39	4446.82
PIONKE	613395	3468960.981	601045.471	07/17/08	4592.13	149.88	4442.25
PIONKE	613395	3468960.981	601045.471	11/03/08	4592.13	150.99	4441.14
POOL	509518	3470013.823	599683.603	02/20/08	4639.09	204.22	4434.87
POOL	509518	3470013.823	599683.603	05/19/08	4639.09	204.72	4434.37
POOL	509518	3470013.823	599683.603	07/31/08	4639.09	205.56	4433.53
POOL	509518	3470013.823	599683.603	10/21/08	4639.09	205.06	4434.03
POWER	624535	3472738.941	608379.424	02/12/08	4840.37	42.30	4798.07
POWER	624535	3472738.941	608379.424	07/22/08	4840.37	42.82	4797.55
POWER	624535	3472738.941	608379.424	10/21/08	4840.37	32.66	4807.71
RAMIREZ	216425	3467584.363	599730.649	10/27/08	4596.61	159.45	4437.16
RAY	803772	3469195.147	607083.422	02/15/08	4647.91	40.85	4607.06
RAY	803772	3469195.147	607083.422	05/13/08	4647.91	43.82	4604.09
RAY	803772	3469195.147	607083.422	07/29/08	4647.91	45.25	4602.66
RAY	803772	3469195.147	607083.422	10/22/08	4647.91	44.54	4603.37
ROGERS E	216018	3467636.029	600449.648	07/17/08	4590.66	149.65	4441.01
ROGERS E	216018	3467636.029	600449.648	11/03/08	4590.66	150.15	4440.51
ROGERS 803	641803	3468417.386	600977.690	02/07/08	4579.02	129.85	4449.17

TABLE 3
Compilation of 2008 Groundwater Elevation Data

Well Name	ADWR 55 Registry No.	UTM North	UTM East	Date	Measuring Point Elevation[1] (ft amsl)	Depth To Water (feet)	Groundwater Elevation (ft amsl)
ROGERS 803	641803	3468417.386	600977.690	07/29/08	4579.02	131.86	4447.16
ROGERS 803	641803	3468417.386	600977.690	10/22/08	4579.02	132.08	4446.94
RUIZ	531770	3471424.219	602857.357	02/05/08	4735.18	293.29	4441.89
RUIZ	531770	3471424.219	602857.357	05/15/08	4735.18	293.57	4441.61
RUIZ	531770	3471424.219	602857.357	07/30/08	4735.18	293.86	4441.32
RUIZ	531770	3471424.219	602857.357	10/20/08	4735.18	294.18	4441.00
SCHWARTZ	210865	3468268.057	600811.529	02/08/08	4551.58	121.80	4429.78
SCHWARTZ	210865	3468268.057	600811.529	05/19/08	4551.58	123.49	4428.09
SCHWARTZ	210865	3468268.057	600811.529	07/29/08	4551.58	122.64	4428.94
SCHWARTZ	210865	3468268.057	600811.529	10/22/08	4551.58	123.39	4428.19
SRC	211345	3472505.400	599723.300	04/23/08	4807.37	541.10	4266.27
SRC	211345	3472505.400	599723.300	08/05/08	4807.37	543.70	4263.67
SRC	211345	3472505.400	599723.300	10/16/08	4807.37	545.15	4262.22
STEPHENS	808560	3469072.799	606981.766	05/13/08	4651.22	44.94	4606.28
STEPHENS	808560	3469072.799	606981.766	08/05/08	4651.22	46.61	4604.61
STEPHENS	808560	3469072.799	606981.766	10/16/08	4651.22	46.60	4604.62
SUNBELT	201531	3471735.149	605998.250	02/06/08	4806.52	352.10	4454.42
SUNBELT	201531	3471735.149	605998.250	05/15/08	4806.52	358.97	4447.55
SUNBELT	201531	3471735.149	605998.250	08/05/08	4806.52	Dry	<4426
SUNBELT	201531	3471735.149	605998.250	10/16/08	4806.52	347.00	4459.52
SWAN	NR	3470648.298	607378.547	02/13/08	4716.59	26.50	4690.09
SWAN	NR	3470648.298	607378.547	05/14/08	4716.59	30.69	4685.90
SWAN	NR	3470648.298	607378.547	07/24/08	4716.59	32.06	4684.53
SWAN	NR	3470648.298	607378.547	10/16/08	4716.59	27.53	4689.06
TM-02A	522574	3472008.794	604152.059	03/04/08	4808.43	346.62	4461.81
TM-02A	522574	3472008.794	604152.059	05/23/08	4808.43	346.16	4462.27
TM-02A	522574	3472008.794	604152.059	08/15/08	4808.43	353.91	4454.52
TM-02A	522574	3472008.794	604152.059	10/30/08	4808.43	349.45	4458.98
TM-03	522575	3473711.046	606366.130	03/12/08	4897.85	127.14	4770.71
TM-03	522575	3473711.046	606366.130	05/20/08	4897.85	127.40	4770.45
TM-03	522575	3473711.046	606366.130	08/06/08	4897.85	128.02	4769.83
TM-03	522575	3473711.046	606366.130	11/12/08	4897.85	128.00	4769.85
TM-06 MILLER	522695	3468376.658	606055.975	02/26/08	4707.88	158.78	4549.10
TM-06 MILLER	522695	3468376.658	606055.975	05/20/08	4707.88	158.76	4549.12
TM-06 MILLER	522695	3468376.658	606055.975	08/04/08	4707.88	158.80	4549.08
TM-06 MILLER	522695	3468376.658	606055.975	10/29/08	4707.88	158.85	4549.03
TM-14 NELSON	522816	3470111.613	599624.302	02/08/08	4643.48	211.79	4431.69
TM-14 NELSON	522816	3470111.613	599624.302	07/16/08	4643.48	Dry	<4433
TM-15 MILLER	522699	3471427.504	599617.331	02/27/08	4729.26	294.90	4434.36
TM-16	522578	3469842.199	605588.075	03/05/08	4717.71	81.00	4636.71
TM-16	522578	3469842.199	605588.075	05/22/08	4717.71	81.24	4636.47
TM-16	522578	3469842.199	605588.075	08/06/08	4717.71	81.65	4636.06
TM-16	522578	3469842.199	605588.075	11/05/08	4717.71	81.75	4635.96
TM-19A	522581	3469197.426	602458.710	03/06/08	4645.87	199.85	4446.02
TM-19A	522581	3469197.426	602458.710	05/22/08	4645.87	199.50	4446.37
TM-19A	522581	3469197.426	602458.710	08/06/08	4645.87	199.19	4446.68
TM-19A	522581	3469197.426	602458.710	11/18/08	4645.87	199.46	4446.41
TM-42	562554	3469104.903	603698.271	03/05/08	4666.67	211.04	4455.63
TM-42	562554	3469104.903	603698.271	05/22/08	4666.67	210.98	4455.69
TM-42	562554	3469104.903	603698.271	08/06/08	4666.67	211.55	4455.12
TM-42	562554	3469104.903	603698.271	11/06/08	4666.67	207.05	4459.62
TM-43	564729	3474670.811	605365.062	03/03/08	4971.44	149.05	4822.39
TM-43	564729	3474670.811	605365.062	08/04/08	4971.44	148.70	4822.74
TM-43	564729	3474670.811	605365.062	10/30/08	4971.44	148.72	4822.72
TM-43A	564726	3474661.168	605358.451	03/03/08	4969.95	133.71	4836.24
TM-43A	564726	3474661.168	605358.451	08/04/08	4969.95	133.71	4836.24
TM-43A	564726	3474661.168	605358.451	10/30/08	4969.95	133.46	4836.49
TM-43B	565004	3474379.892	605814.018	03/03/08	4922.18	64.00	4858.18
TM-43B	565004	3474379.892	605814.018	08/05/08	4922.18	65.21	4856.97
TM-43B	565004	3474379.892	605814.018	10/30/08	4922.18	62.89	4859.29
TVI 236	802236	3467978.431	600552.215	05/07/08	4561.98	123.30	4438.68
TVI 236	802236	3467978.431	600552.215	07/15/08	4561.98	121.55	4440.43
TVI 236	802236	3467978.431	600552.215	10/15/08	4561.98	122.35	4439.63
TVI 713	567713	3468412.946	600729.095	05/07/08	4567.22	127.10	4440.12
TVI 713	567713	3468412.946	600729.095	07/14/08	4567.22	126.30	4440.92
TVI 713	567713	3468412.946	600729.095	10/15/08	4567.22	130.00	4437.22
UN 01	NA	3466349.021	599993.615	10/14/08	4637.47	211.41	4426.06
UN 05	NA	3466050.570	602139.919	10/02/08	4749.51	272.00	4477.51
WALKER	200393	3468577.472	607564.689	02/13/08	4601.55	25.20	4576.35
WALKER	200393	3468577.472	607564.689	07/23/08	4601.55	42.65	4558.90
WALKER	200393	3468577.472	607564.689	10/21/08	4601.55	47.18	4554.37
WEISKOPF	641802	3468658.855	601154.951	02/15/08	4586.89	143.31	4443.58
WEISKOPF	641802	3468658.855	601154.951	05/07/08	4586.89	143.90	4442.99
WEISKOPF	641802	3468658.855	601154.951	07/16/08	4586.89	144.22	4442.67
WEISKOPF	641802	3468658.855	601154.951	10/28/08	4586.89	145.81	4441.08
ZANDER	205126	3467998.486	599678.880	02/04/08	4580.94	144.85	4436.09
ZANDER	205126	3467998.486	599678.880	05/06/08	4580.94	145.33	4435.61
ZANDER	205126	3467998.486	599678.880	07/16/08	4580.94	146.40	4434.54
ZANDER	205126	3467998.486	599678.880	10/28/08	4580.94	146.01	4434.93

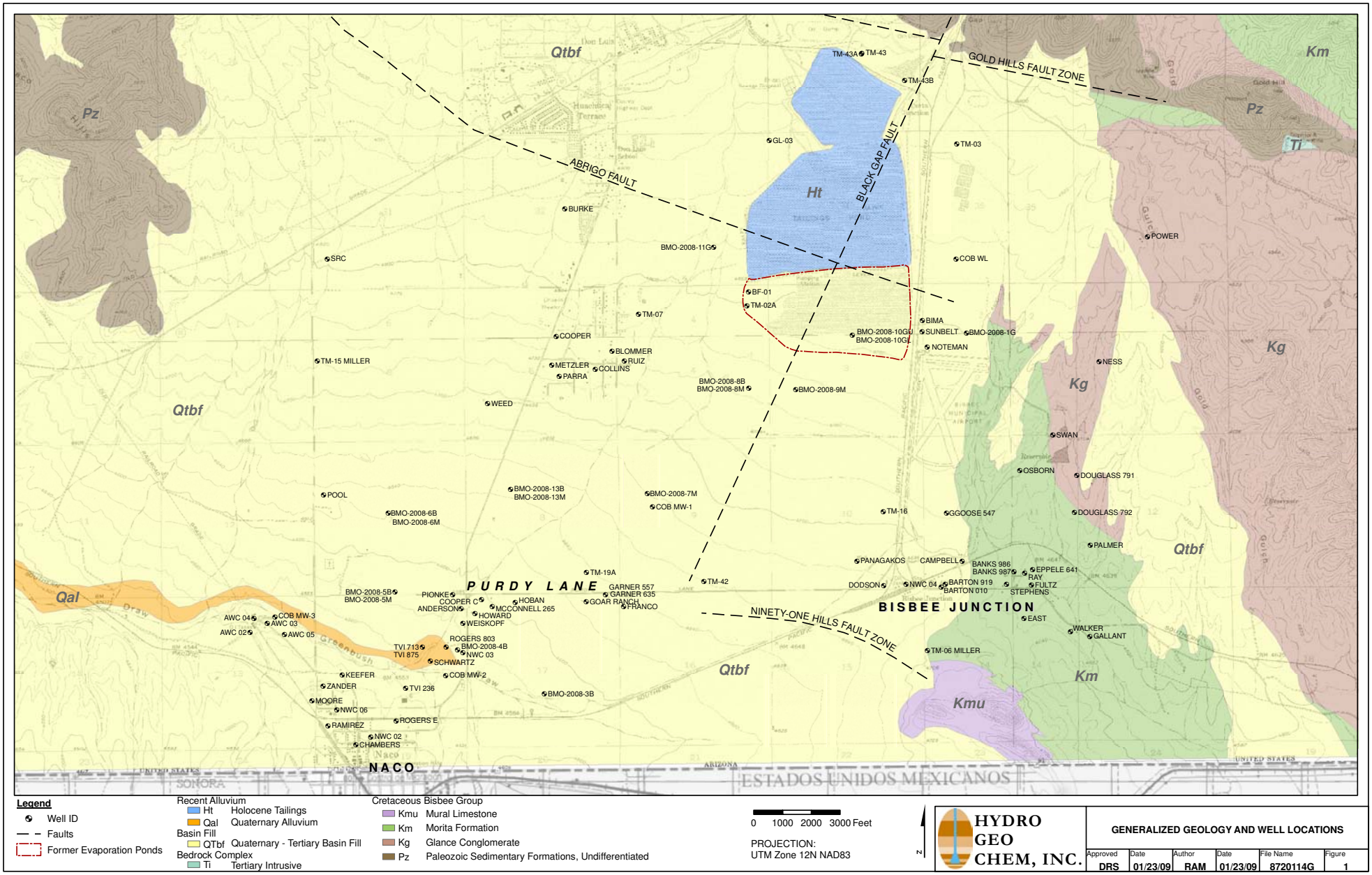
UTM = Universal Transverse Mercator Zone 12 Band R
ft amsl = feet above mean sea level
NA = Not Applicable
NR = No Record
[1] Survey Source: Hydro Geo Chem, Inc. (measuring point elevation = top of well casing)
[2] Measuring point elevation for third quarter 2008 changed to reflect well survey completed in September 2008
[3] Depth to Water measurement provided by Arizona Water Company
COLLINS = former owner ENGLUND

TABLE 4
Well Completion Depth, Screen Interval and Screened Lithology

Well Name	ADWR 55 Registry No.	Top of Casing Elevation (ft amsl)	Casing Depth (ft bgs)	Screen Interval (ft bgs)	Screened Formation Lithology	Depth to Morita Formation (ft bgs)	Depth to Glance Conglomerate (ft bgs)	Comments
ANDERSON	613396	4580.34	236	ND	QTbf	NA	NA	No Log
AWC 02	616585	4547.64	330	100-215	QTbf	NA	NA	Geologic Log
AWC 03	616585	4539.52	269	83-269	QTbf	NA	NA	Geologic Log
AWC 04	590620	4540.38	250	ND	QTbf	NA	NA	Geologic Log
AWC 05	590620	4542.51	1183	163-603 623-1163	Km / Volcanics	400	No Glance	Geologic Log
BANKS 986	647986	ND	445	ND	Km [2]	31	NA	No Log
BANKS 987	647987	4648.18	339	ND	Km [2]	ND	NA	No Log
BARTON 010	085010	4688.95	300	180-300	Km [2, 3]	ND	NA	Geologic Log
BARTON 919	644919	4692.36	130	ND	QTbf [2]	NA	NA	Geologic Log
BF-01	539783	4835.23	400	325-385	QTbf / Km / Kg	350	380	Geologic Log
BIMA	577927	4802.05	465	345-465	Km [2, 3]	ND	ND	Red Rock, Red Shale
BLOMMER	633472	4753.69	380	ND	Km [2]	245	NA	No Log
BMO-2008-1G	909474	4805.10	310	180-300	Kg	40	170	Geologic Log
BMO-2008-3B	909147	4583.97	260	150-250	QTbf	445	NA	Geologic Log
BMO-2008-4B	910096	4573.17	610	500-600	QTbf	636	NA	Geologic Log
BMO-2008-5B	909653	4585.10	285	140-280	QTbf	NA	NA	Geologic Log
BMO-2008-5M	909552	4585.02	450	340-440	Km	290	No Glance	Geologic Log
BMO-2008-6B	909146	4627.44	265	195-255	QTbf	NA	NA	Geologic Log
BMO-2008-6M	909019	4626.90	450	340-440	Km	270	NA	Geologic Log
BMO-2008-7M	908794	4688.33	670	560-660	Km	490	NA	Geologic Log
BMO-2008-8B	910097	4753.25	480	370-470	QTbf	NA	NA	Geologic Log
BMO-2008-8M	909711	4752.45	1210	1100-1200	Km	495	NA	Geologic Log
BMO-2008-9M	909255	4762.61	775	665-765	Km	130	NA	Geologic Log
BMO-2008-10GU	909272	4793.45	449	239-439	Kg	No Morita	100	Geologic Log
BMO-2008-10GL	909435	4792.21	810	700-800	Kg	No Morita	100	Geologic Log
BMO-2008-11G	909434	4844.67	760	650-750	Kg	240	490	Geologic Log
BMO-2008-13B	909551	4649.21	474	264-464	QTbf	NA	NA	Geologic Log
BMO-2008-13M	909760	4647.15	1030	920-1020	Kml	1095	NA	Geologic Log
BULLARD	602134	4730 [3]	300	215-300	QTbf	NA	NA	No Log
BURKE	212268	4856.30	781	661-781	Km	150	NA	Red shale
CAMPBELL	215509	4694.29	350	20-350	Km [2, 3]	ND	NA	No Log
CHAMBERS	629807	ND	245	ND	QTbf	NA	NA	No Log
COB MW-1	903992	4883.26	420	350-410	QTbf	NA	NA	Geologic Log
COB MW-2	903984	4566.21	170	92-152	QTbf	NA	NA	Geologic Log
COB MW-3	906823	4538.63	269	83-269	QTbf	NA	NA	Geologic Log
COB WL	593116	4832.06	150	90-150	Km [2, 3]	No Morita	36	Geologic Log
COLLINS	565260	4733.72	320	260-320	Km [2]	ND	NA	Conglomerate
COOPER	623564	ND	325	ND	QTbf	NA	NA	No Log
COOPER C	637069	4595.06	220	ND	QTbf	NA	NA	No Log
DODSON	644927	4686.34	200	ND	Km	ND	NA	No Log
DOUGLASS 791	592791	4703.27	200	0-200	Km [2, 3]	No Morita	4	Conglomerate
DOUGLASS 792	529792	4681.73	200	0-200	Km [2, 3]	No Morita	4	Conglomerate
EAST	599796	4626.01	125	85-125	Km [2]	20	NA	Geologic Log
EPPELE 641	805641	4642.86	265	ND	Km [2]	ND	NA	Geologic Log
FRANCO	500101	4620.51 [3]	200	180-200	QTbf	NA	NA	Geologic Log
FULTZ	212447	4642.92	300	200-300	Km [2, 3]	10	NA	Sand, Volcanic
GALLANT	502527	4599.58	190	40-60 80-140	Km [2, 3]	5	NA	Brown and Red Sandstone
GARNER 557	558557	4626.44	300	180-300	QTbf	NA	NA	Geologic Log
GARNER 635	587635	4628.29	680	580-660	Km	540	NA	Geologic Log
GGOOSE 546	628546	4700.51 [3]	800	ND	Km [2]	ND	ND	No Log
GGOOSE 547	628547	4717.11	800	ND	Km [2]	ND	ND	No Log
GL-03	539782	4924.31	820	780-820	Kg [3]	No Morita	175	Geologic Log
GOAR RANCH	610695	4631.13	250	ND	QTbf	NA	NA	No Log
HOBAN	805290	4597.21	316	ND	QTbf	NA	NA	No Log
HOWARD	NR	4589.7	200	ND	QTbf	NA	NA	No ADWR Record
KEEFER	209744	4572.03	245	185-245	QTbf	NA	NA	Geologic Log
MCCONNELL 265	539265	4600.7	216	174-216	QTbf	NA	NA	Geologic Log
METZLER	35-71891	4728.53	351	245-345	Km [2]	ND	NA	No Log
MINOR 317	063317	4578.86	155	ND	QTbf	NA	NA	No Log
MOORE	538847	ND	220	180-220	QTbf	NA	NA	Geologic Log
NESS	509127	4761.23	812	20-812 [5]	Km	20	NA	Conglomerate, Limestone, Shale and Sandstone
NOTEMAN	212483	4800.68	400	0-400	Km [2]	ND	ND	No Log
NSD 02	527587	4527 [5]	120	75-115	QTbf	NA	NA	Geologic Log
NSD 03	527586	4515 [5]	100	55-95	QTbf	NA	NA	Geologic Log
NWC 01	627682	ND	215	ND	QTbf	NA	NA	Geologic Log
NWC 02	562944	4600.06	312	212-312	QTbf	NA	NA	Geologic Log
NWC 03	203321	4574.99	312	252-312	QTbf	NA	NA	Geologic Log
NWC 04	551849	4690.77	795	540-580 755/795	Km	NA	NA	Geologic Log
NWC 05	627696	4687.71	175	ND	QTbf	NA	NA	Geologic Log
NWC 06	575700	4592.50	410	180-340	QTbf	NA	NA	Geologic Log
OSBORN	643436	4711.95	150	122-258	Kg	150	NA	Geologic Log
PALMER	578819	ND	220	122-258	Km [2, 3]	80	NA	Geologic Log
PANAGAKOS	35-76413	ND	200	141-200	Km [2, 3]	NA	NA	Geologic Log
PARRA	576415	4727.21	355	255-355	Km [2]	ND	NA	Gravel, Rock, Sand, Clay
PIONKE	613395	ND	300	ND	QTbf	NA	NA	No Log
POOL	509518	4639.09	313	213-300	QTbf	NA	NA	Geologic Log
POWER	624535	4840.37	100	60-99	Km [2]	ND	ND	No Log
RAMIREZ	216425	4596.61	300	250-300	QTbf	NA	NA	No Log
RAY	803772	4647.91	100	ND	Km [2]	ND	NA	No Log
ROGERS 803	641803	4579.02	140	ND	QTbf [1]	NA	NA	No Log
ROGERS E	216018	ND	290	240-285	QTbf [1]	NA	NA	Brown Rock
RUIZ	531770	4735.18	312	252-312	QTbf / Km	265	NA	Reddish Brown Sedimentary
SCHWARTZ	210865	4551.58	305	260-305	QTbf	NA	NA	Geologic Log
SRC	211345	4810.12	965	845-965	Km [2]	500	NA	Red Shale
STEPHENS	808560	4651.22	NR	ND	Km / Kg [2]	ND	ND	No ADWR Record
SUNBELT	201531	4806.52	380	300-380	Km / Kg [2]	2	320	Red Clay and Conglomerate
SWAN	NR	4716.59	150	38-110	Kg [2]	ND	ND	No ADWR Record
TM-02A	522574	4808.43	925	825-925	Kg [3]	345	640	Geologic Log
TM-03	522575	4897.85	200	150-200	Kg	NA	32	Geologic Log
TM-05 MILLER	522694	4598.06 [3]	160	120-160	QTbf [3, 4]	NA	NA	Geologic Log
TM-06 MILLER	522695	4707.88	200	150-200	Km [4, 5]	15	NA	Geologic Log
TM-07	522576	4768.93 [3]	350	259-349	Km [4, 5]	195	NA	Geologic Log
TM-08 SWAN	522817	4725.44	817	757-817	Kg [3]	No Morita	60	Geologic Log
TM-11 PIONKE	522815	4573.1 [3]	160	99-159	QTbf [3, 4]	NA	NA	Geologic Log
TM-12 MILLER	522697	4589.44 [3]	175	121-171	QTbf [3, 4]	NA	NA	Geologic Log
TM-13 MILLER	522698	4617.29 [3]	200	140-200	QTbf [3, 4]	NA	NA	Geologic Log
TM-14 NELSON	522816	4643.48	215	165-215	QTbf [3, 4]	NA	NA	Geologic Log
TM-15 MILLER	522699	4729.26	325	260-320	Km [4, 5]	220	NA	Geologic Log
TM-16	522578	4717.71	115	65-115	Km [3, 4, 5]	40	NA	Geologic Log
TM-19A	522581	4645.87	700	585-695	Km [2, 3]	535	NA	Geologic Log
TM-41	562555	4774.58	210	145-200	Km [4]	95	NA	Geologic Log
TM-42	562554	4666.67	250	180-240	Km [4]	65	NA	Geologic Log
TM-43	564729	4971.44	830	720-800	Km [4]	170	NA	Geologic Log
TM-43A	564726	4969.95	215	130-190	QTbf / Km [2]	150	NA	Geologic Log
TM-43B	565004	4922.18	215	150-190	Km [4]	80	NA	Geologic Log
TVI 236	802236	4561.98	222	ND	QTbf	NA	NA	No Log
TVI 713	567713	4567.22	200	80-144	QTbf [1]	NA	NA	Geologic Log
TVI 875	568875	ND	330	166-320	QTbf	NA	NA	Geologic Log
WALKER	200393	4601.55	120	80-100	Km [2, 3]	18	NA	Geologic Log
WEED	544535	4675 [3]	320	280-320	Km / Kg	270	317	Geologic Log
WEISKOPF	641802	4586.89	200	ND	QTbf [1]	NA	NA	No Log
ZANDER	205126	4580.94	280	220-260	QTbf	NA	NA	Geologic Log

ADWR = Arizona Department of Water Resources
ft amsl = feet above mean sea level
ft bgs = feet below ground surface
QTbf = Quaternary-Tertiary basin fill
Kml = Cretaceous Mural limestone
Km = Cretaceous Morita Formation
Kg = Cretaceous Glance Conglomerate
ND = No Data
NA = Not Applicable
NR = No Record
[1] Formation estimated based on well completion depth and lithology of nearby wells
[2] Based on Well Depth and Geology Map, Hayes and Landis (1964)
[3] Based on Well Drillers Report to ADWR (1994)
[4] Based on Geologic Log in Phelps Dodge, Aquifer Protection Permit Application, Cochise County, Arizona. (1990)
[5] Open hole

FIGURES



Legend

- Well ID
- Faults
- Former Evaporation Ponds

Recent Alluvium
- Ht Holocene Tailings
- Qal Quaternary Alluvium

Basin Fill
- QTbf Quaternary - Tertiary Basin Fill

Bedrock Complex
- Ti Tertiary Intrusive

Cretaceous Bisbee Group
- Kmu Mural Limestone
- Km Morita Formation
- Kg Glance Conglomerate

Pz Paleozoic Sedimentary Formations, Undifferentiated

0 1000 2000 3000 Feet

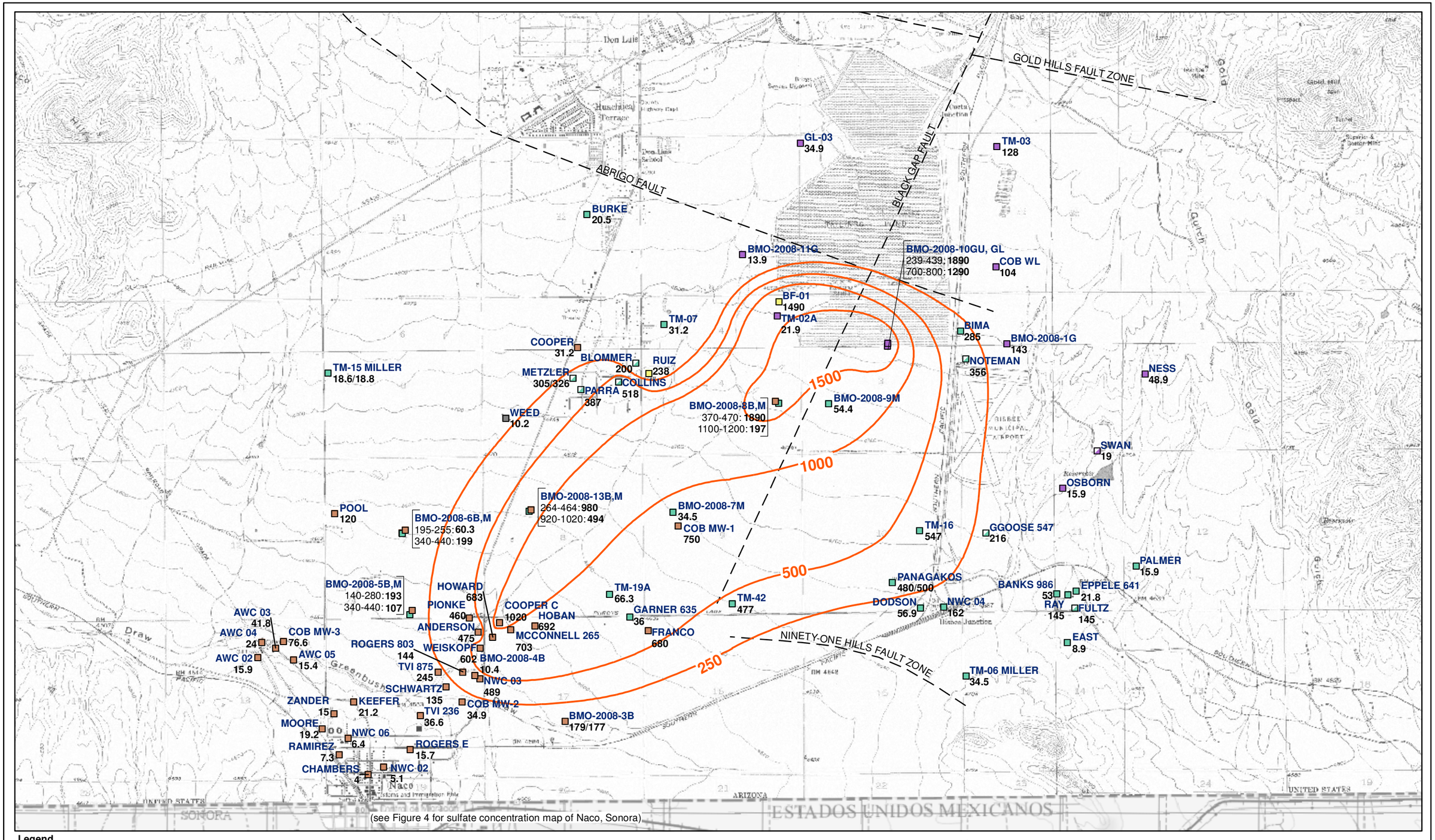
PROJECTION:
UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

GENERALIZED GEOLOGY AND WELL LOCATIONS

Approved	Date	Author	Date	File Name	Figure
DRS	01/23/09	RAM	01/23/09	8720114G	1



(see Figure 4 for sulfate concentration map of Naco, Sonora)

Legend

- TM-19A Well ID
- 66.3 Sulfate Concentration (mg/L)
- 250 Sulfate Isoline (mg/L)
- Faults (inferred)

Co-located Wells

- Well ID
- Screen (ft bgs): Sulfate Concentration (mg/L)

(Duplicate results separated by "/")

Screened Formation

- Basin Fill
- Basin Fill and Morita Formation
- Morita Formation
- Morita Formation- Estimated
- Morita Formation and Glance Conglomerate
- Glance Conglomerate
- Glance Conglomerate-Estimated

0 1000 2000 3000 Feet

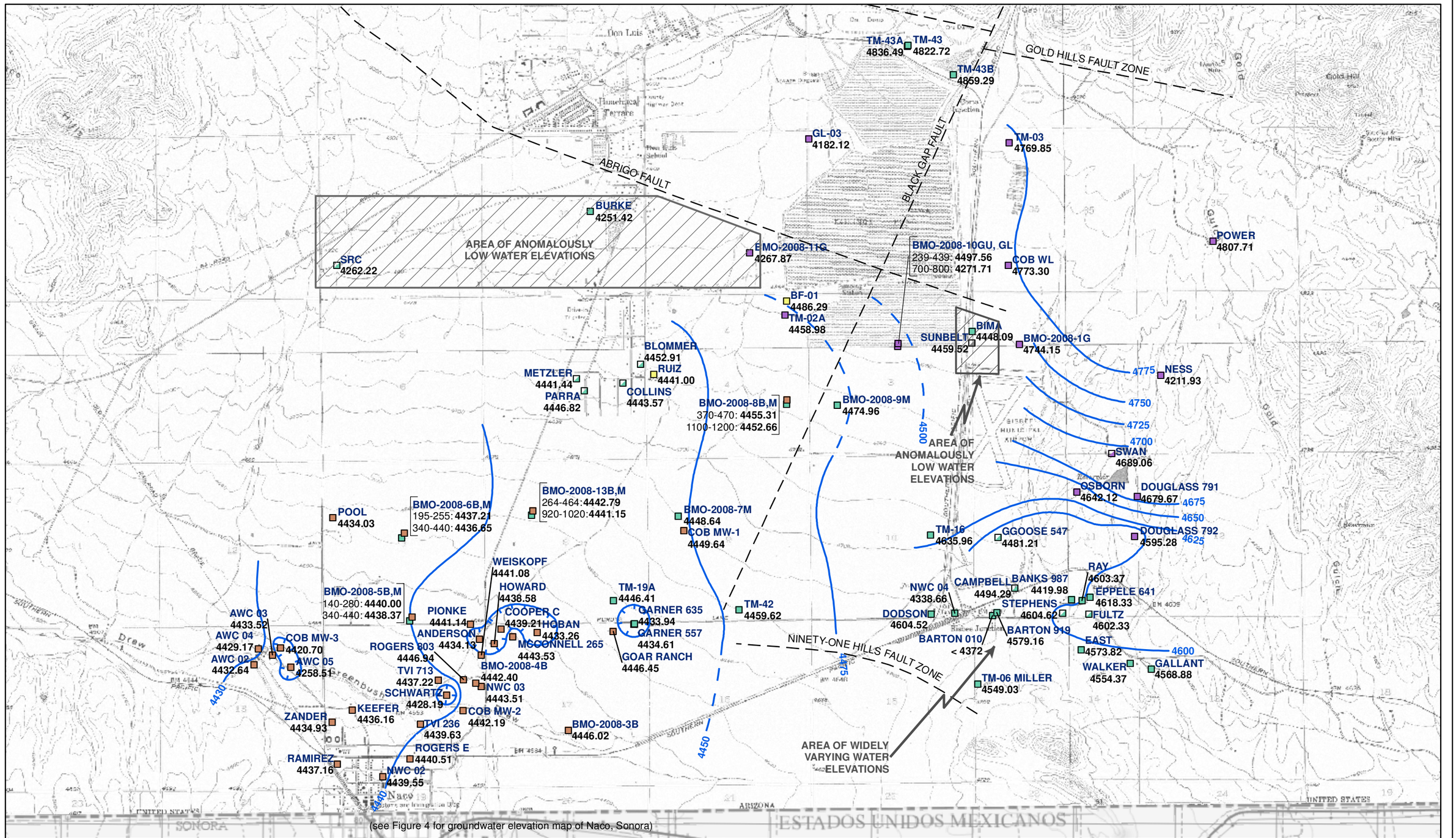
PROJECTION: UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

SULFATE CONCENTRATIONS FOR FOURTH QUARTER 2008

Approved	Date	Author	Date	File Name	Figure
DRS	01/23/09	RAM	01/23/09	8720113G	2



(see Figure 4 for groundwater elevation map of Naco, Sonora)

Legend

- TVI-713 Well ID
- 4440.92 Groundwater Elevation (ft amsl)
- Groundwater Elevation Contours (dashed where inferred)
- Groundwater Depression
- Faults (inferred)
- Co-located Wells
  - Well ID
  - Screen (ft bgs): Water Elevation (ft amsl)

Screened Formation
- Basin Fill
- Basin Fill and Morita Formation
- Morita Formation
- Morita Formation- Estimated
- Morita Formation and Glance Conglomerate
- Glance Conglomerate
- Glance Conglomerate-Estimated

0 1000 2000 3000 Feet

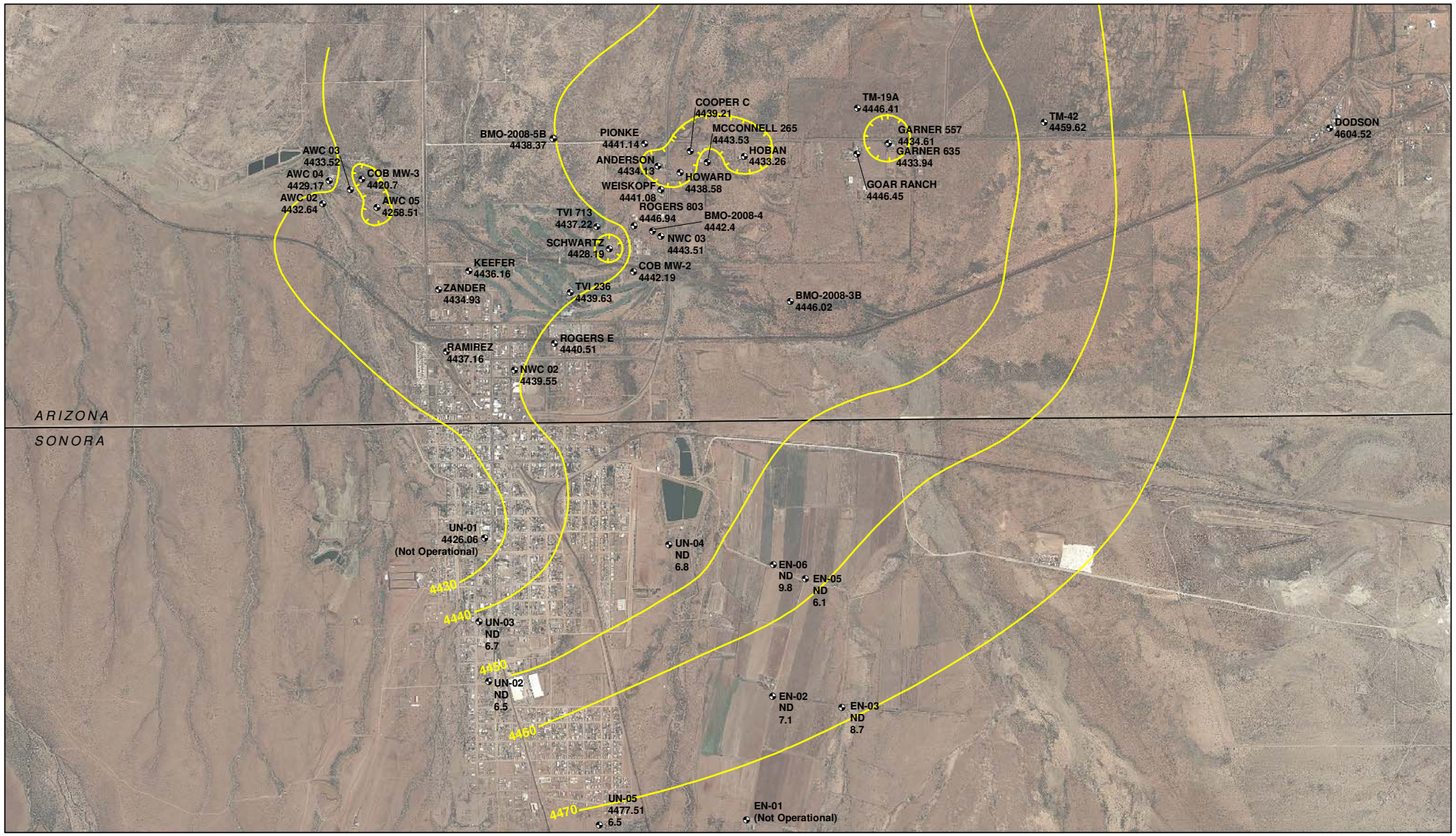
PROJECTION: UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

GROUNDWATER ELEVATIONS FOR FOURTH QUARTER 2008

Approved	Date	Author	Date	File Name	Figure
DRS	01/23/09	RAM	01/23/09	8720115G	3



Legend

- **TVI-713** Well ID
- **4440.92** Groundwater Elevation (feet above mean sea level)
- **10** Sulfate Concentration (milligrams per liter)
- Groundwater Contours

ND = No Data, no sounding tube

EN = Ejido Naco
UN = Urbano Naco

0 1000 2000 Feet

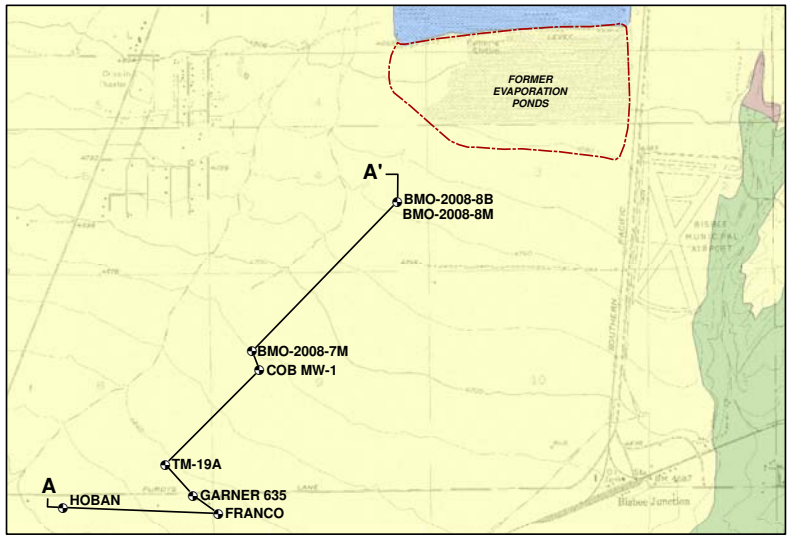
PROJECTION:
UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

SULFATE CONCENTRATIONS AND GROUNDWATER ELEVATIONS FOR NACO, ARIZONA AND NACO, SONORA OCTOBER 2008

Approved	Date	Author	Date	File Name	Figure
DRS	01/12/09	RAM	01/12/09	8720116G	4

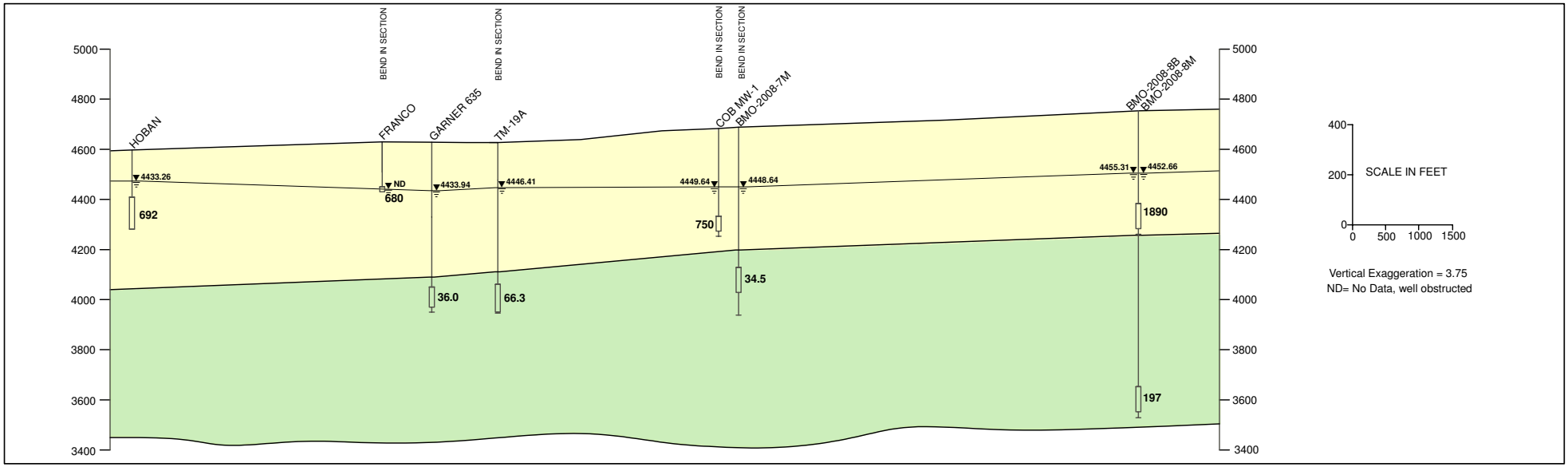


Legend

- Well Location
- Approximate Water Table
- Holocene Tailings
- Quaternary - Tertiary Basin Fill
- Cretaceous Morita Formation
- Cretaceous Glance Conglomerate

0 1000 2000 3000 Feet

HOBAN — Well ID
4433.26 — Water Elevation (feet above mean sea level)
692 — Screened Interval
Sulfate Concentration (milligrams per liter)



HYDRO GEO CHEM, INC.

CROSS SECTION A-A'
SULFATE STRATIFICATION
BETWEEN BASIN FILL AND MORITA FORMATION

Approved	Date	Author	Date	File Name	Figure
DRS	01/12/09	RAM	01/12/09	8720109G	5

APPENDIX A

FOURTH QUARTER 2008
DATA VERIFICATION REPORT

APPENDIX A

FOURTH QUARTER 2008
DATA VERIFICATION REPORT

Prepared for:

FREEPORT-MCMORAN
COPPER QUEEN BRANCH
36 West Highway 92
Bisbee, Arizona 85603

Prepared by:

HYDRO GEO CHEM, INC.
51 West Wetmore Road
Tucson, Arizona 85705
(520) 293-1500

January 23, 2009

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A.1 ACZ Project ID and Associated Wells

APPENDIX

A.1 Arizona Land Specialists, Inc. Well Survey

1. INTRODUCTION

This report summarizes the data verification review of groundwater samples collected and analyzed during the fourth quarter 2008 (Q4-2008) by Hydro Geo Chem, Inc. (HGC) pursuant to Mitigation Order on Consent Docket No. P-121-07 (MO) (ADEQ, 2007). HGC collected groundwater samples from wells identified in for Tasks 1, 2.2, and 2.3 of the Work Plan (HGC, 2008a). All analytical results for groundwater samples collected for this project during the fourth quarter of 2008 were provided to HGC by ACZ Laboratories, Inc. (ACZ) for preparation of the Fourth Quarter 2008 Groundwater Monitoring Report.

Quality assurance (QA) and quality control (QC) procedures are specified in the *Quality Assurance Project Plan for Aquifer Characterization Plan* (QAPP) (Appendix F of HGC, 2008a) for field sampling, chain-of-custody (COC) documentation, laboratory analysis, and reporting. This report reviews field sampling for samples collected by HGC. Additionally, sample handling and laboratory QA/QC data are evaluated according to the data quality indicators (DQIs) given in the QAPP.

Appendix C of the main text contains laboratory reports for Q4-2008 samples collected by HGC including COC forms, laboratory correspondence, QC summaries, data qualifiers, and any case narratives. The Q4-2008 analytical results for all 88 samples collected by HGC are contained in 17 reports having the ACZ Project numbers identified in Table A.1.

The results of the internal QA/QC tests performed by ACZ are presented with the laboratory reports included in Appendix C. Based on the results of surrogate spike recoveries, matrix spike/recovery and matrix spike duplicate tests, ACZ did not advise HGC of any modifications that should be made regarding the usability and data validation status of the laboratory test results.

2. HGC FIELD OPERATIONS

Field operations for this project consisted of the following for all monitoring wells sampled by HGC:

- Static water level measurement,
- Well purging,
- Collection of water quality field parameters (pH in standard units [SU], specific conductance [SC] in microsiemens per centimeter [µS/cm], and temperature in degrees Celsius [°C]),
- Collection of groundwater samples for water quality analysis,
- Collection of groundwater quality assurance and quality control samples, and
- Equipment decontamination.

Documentation of the field activities was evaluated for quality assurance and has been deemed to have met the documentation requirements stated in the QAPP.

2.1 Water Level Monitoring

Static water level measurements were attempted at each well that was sampled and at all wells where water level monitoring was conducted by HGC. Water levels were measured while the well pump was off however, it was not always possible to ascertain from the well owners how long the pump had been off. Before measuring the water level at each well, the battery on the water level indicator was checked and the sensitivity level was adjusted, if necessary. Each measurement was collected and verified by measuring the depth to water multiple times in order to obtain a consistent reading and accurate measurement.

2.2 Groundwater Sampling

During this monitoring period groundwater samples were collected from wells designated for sampling for Task 1 (well inventory), Task 2.2 (groundwater monitoring), and Task 2.3 (new monitoring well installation and testing) of the Work Plan. More detailed information regarding the wells sampled for water quality and water level measurements is listed in Table 1 of the main text.

2.2.1 Pre-Sampling Field Activities

On each day of sampling, the pH[1] and SC[2] probe was calibrated. In addition, the water level indicator was checked for a signal, which indicates a working meter and sufficient battery strength. On each day where sampling extended for more than half a day, a mid-day calibration check was performed on the pH and SC probe to ensure accurate measurement.

In addition to calibrating the instruments each day, measures were taken to 1) properly decontaminate field equipment, 2) ensure the appropriate storage and transport temperature of the samples, and 3) document activities related to the collection of groundwater samples as part of this project. These objectives were met by 1) replenishing or obtaining supplies of deionized water and ice daily, 2) use of the proper preservative and sample collection containers, 3) properly packing the samples on ice during field activities, 4) using deionized water to properly decontaminate field equipment prior to the start of sampling each day and after sampling at each

[1] Field pH meter was calibrated using a two point calibration and pH buffers 4 and 7
[2] Field SC meter was calibrated using a standard stock solution of 1413 µS/cm

well, and 5) obtaining the appropriate field notebook in order to document field activities related to the groundwater monitoring program.

2.2.2 Well Purging, Field Measurements, and Sample Collection

Ideally, three wetted casing volumes were purged from each well prior to sampling. However, when three casing volumes could not be purged, this information was noted on the groundwater sampling form (Appendix C) at each well for which this was the case. Purge water was discharged to the ground surface.

Field measurements were collected at varying intervals during well purging at each well where a water quality sample was collected. Field parameters were monitored until a consistent measurement was obtained.

During this monitoring period, filtered and unfiltered groundwater samples were collected for analysis from 88 plume monitor wells. Groundwater for filtered and unfiltered samples was collected using a single container to collect an initial sample for separation into bottles for filtered and unfiltered analyses. After collecting the initial sample, the unfiltered sample was collected by pouring a 500 milliliter (mL) aliquot of the initial sample into a non-preserved bottle for alkalinity analysis. Then each filtered sample was collected by filtering the remaining portion of the initial sample into a 250 mL bottle using a clean filtration apparatus and one unused, disposable 0.45-micron filter. All bottles were provided by ACZ. Bottles were

checked for the correct preservative and maintained in a clean and secure work area, until used in the field.

2.2.3 Post-Sampling Field Activities

Post sampling field activities consisted of equipment decontamination, sample storage, and sample shipping. Field equipment that comes into contact with the sample was decontaminated using a small amount of Alconox® detergent and deionized water. After washing, the equipment was rinsed thoroughly with deionized water.

After sample collection, samples from each well were placed into a plastic bag and stored on ice until they could be packed securely for shipping to ACZ. In addition, each set of samples collected from each well was individually bagged (without ice) to prevent the label from getting soaked with water and rubbing off or becoming illegible.

2.3 Well Survey

On December 18, 2008 a measuring point elevation surveys was completed for newly installed Bisbee Mitigation Order (BMO) wells BMO-2008-4B, BMO-2008-5B, BMO-2008-5M, BMO-2008-8B, BMO-2008-8M, BMO-2008-13B, and BMO-2008-13M. In addition, Naco Water Company (NWC) wells NWC02, NWC03, NWC04, and NWC06 and private wells BLOMMER, FULTZ, and RAMIREZ were surveyed. The survey was conducted by Arizona Land Specialists, Inc. (ALS). These data are shown in Table 3 and Figure 2 of the main report.

3. SAMPLE HANDLING

All samples collected by HGC were shipped to ACZ for analysis. COC documentation accompanied all samples submitted and included the sample name, collection date and time. COCs contained in laboratory reports included the date and time the samples were received by ACZ. As noted on the analytical data reports from ACZ, all of the sample bottles were received intact, properly preserved, and in good condition.

The temperature of the following shipping container (identified by its laboratory login number) exceeded 4 °C upon receipt at the laboratory.

ACZ Project ID	Sample Collection Date	Sample Relinquished Date	Sample Received Date by ACZ	Temperature Upon Receipt (°C)
L73158	11/18/08	11/19/08	11/20/08	5.5

As noted in the above table, the sample was shipped within one day of sample collection, and the time between sample collection and receipt of samples by ACZ was two days. This temperature exceedance is not considered to have a significant impact on the analytical results pertaining to the sulfate analysis for this sample.

4. LABORATORY QUALITY CONTROL

As specified in the QAPP, laboratory QC was maintained for all analyses through proper licensure, the use of approved analytical methods, QC measurements, appropriate turn-around-time for analysis (timeliness), method detection limits (MDLs), and practical quantitation limits (PQLs). Each of these controls is discussed in the following subsections.

The review of laboratory QC included a review to identify any qualified data and an assessment to determine their significance. Additionally, the laboratory QC summaries were reviewed to verify that results met QA criteria.

4.1 Licensure

ACZ is licensed with the Arizona Department of Health Services (license number AZ0102) and is accredited in accordance with the National Environmental Laboratory Accreditation Conference.

4.2 Analytical Methods

The following list identifies the approved U.S. Environmental Protection Agency (EPA) methods that meet the requirements stated in section 5.3 of the QAPP regarding target methods and target MDLs:

- EPA 300.0 (Ion-Chromatography [IC]): sulfate, chloride, fluoride
- EPA 200.7 (Inductively Coupled Plasma [ICP]): calcium, magnesium, potassium, sodium
- EPA 353.2 (Automated Cadmium Reduction [ACR]): nitrate/nitrite
- SM2320B (Titration): alkalinity
- EPA 160.1 (Gravimetric): total dissolved solids

Two of these methods, IC (EPA 300.0) and ICP (EPA 200.7), involve direct injection of the sample into the analytical instrument, which does not require the analysis of preparation blanks. The other methods listed are classical wet chemistry techniques that require the use of preparation blanks under the ACZ quality assurance plan and the QAPP.

4.3 Method Detection Limits (MDLs) and Practical Quantification Limits (PQLs)

The MDLs and PQLs of the analytical methods used by ACZ are shown in the following table. The MDLs for analyses of samples were equal to or less than the target MDLs identified in the QAPP.

Method	MDL (mg/L)	PQL (mg/L)	Target MDL[1] (mg/L)
EPA 300.0	0.5	3	10
EPA 200.7	0.2	1	0.2
EPA 200.7	0.3	2	0.3
SM2320B	2	20	2
EPA 300.0	0.5	5	1
EPA 300.0	0.1	0.5	0.1
EPA 352.2	0.02	0.1	0.02
EPA 160.1	10	20	10

mglL = milligrams per liter
[1] Target MDL from Table F.2 of QAPP

4.4 Timeliness

Holding times were derived from the EPA methods utilized and were calculated beginning from the time of sample collection. The majority of samples submitted to the laboratory were analyzed within their recommended method specific holding time except for fluoride, nitrate/nitrite, nitrite, and sulfate analyses in the following: Samples collected on October 27 and 28, 2008 (PIONKE, RAMIREZ, ROGERS E, and ZANDER) and December 3, 2008 (BMO-2008-13M) were qualified with an "H1" flag, indicating analysis was performed past the holding time.[3] One sample collected on December 5, 2008 (BMO-2008-8B) was qualified with an "HE" flag, indicating analysis was performed past the method holding time which is less than or equal to 7 days and sample was received with less than half of the holding time remaining. No data were rejected on the basis of the holding time exceedances and were accepted as usable.

4.5 Quality Control Measurements

The following QC samples were prepared and analyzed:

- Preparation blanks, calibration blanks, and calibration verification standards
- Analytical spikes and analytical spike duplicates
- Laboratory control samples
- Laboratory duplicate samples
- Field blank samples

[3] Chemist noted that initial data indicated a co-elution peak from an unknown source. The sample was reanalyzed outside the hold time and reported. Data may be qualified as estimated.

4.5.1 Preparation Blanks, Calibration Blanks, and Calibration Verification Standards

Preparation blanks were run with each group of samples submitted for alkalinity and TDS analysis. All preparation blanks were prepared from analyte-free water and treated as routine samples. Analytical results of all of the preparation blanks showed that no target analytes were detected at the indicated MDL.

Results from the analyses of the initial calibration blanks and initial calibration verification standards conducted by EPA Methods 300.0, 200.7, and 353.2 also were reviewed. The results of each initial calibration blank analyzed showed no detections of the target analyte. All analytical results for the initial calibration verification standards and laboratory fortified blanks that were analyzed showed percent recoveries that were within the acceptance criteria specified by the ACZ QA plan and the QAPP.

4.5.2 Analytical Spikes and Analytical Spike Duplicates

Analytical spike and spike duplicate samples were analyzed for the following EPA Methods: 300.0, 200.7, and 353.2. Spike recoveries for most analytes were within the range of acceptability based on the acceptance criteria set by ACZ. Instances in which analytical spike recoveries were either high, low, or unusable were qualified with an “M1”, “M2”, or “M3” flag, respectively. However, in each case the method control sample recoveries were acceptable.

4.5.3 Laboratory Control Samples

Laboratory control samples were run for each group of samples submitted for alkalinity and total dissolved solids. Recoveries for all laboratory control samples were within the acceptance criteria specified by ACZ.

4.5.4 Laboratory Duplicate Samples

Analyses of laboratory duplicate samples were also reviewed as part of this quality data verification report. Field duplicate samples are discussed in Section 5.1. The RPDs for most laboratory duplicate samples were within 20 percent, which is the tolerance range set by the laboratory. In many instances, the data were qualified with an "RA" flag indicating that the RPD was not used for data validation because the sample concentration was less than ten times the MDL, which is too low for accurate evaluation according to ACZ. In all cases where the RPD could be calculated, the results met QA criteria and demonstrate an appropriate level of precision in laboratory analysis of these samples.

4.5.5 Field Blank Samples

During the fourth quarter of 2008, eight field blank samples were collected. Four field blank samples using unfiltered deionized water (FB101308, FB102008, FB102808, and FB110408) and four equipment blanks using filtered deionized water (EQB101308, EQB102008, EQB102808, and EQB110408). Samples were collected in the field and submitted along with

other samples to evaluate the potential for contaminant introduction under field conditions. As required by Section 4.2.1.5 of the QAPP, a minimum of one field blank and one equipment blank sample was collected for every twenty samples. Analytical results from field blank and equipment blank samples showed no detections with the exception of equipment blank sample EQB110408H with sulfate detected a 0.7 mg/L, which is between the MDL and PQL. The low level detection of sulfate is not considered significant given the concentrations of this constituent in the samples.

5. DATA QUALITY INDICATORS

The QAPP provides several DQIs for assessing the overall quality of the data. These DQIs include the following:

- Precision
- Bias
- Accuracy
- Representativeness
- Comparability
- Completeness
- Sensitivity

Each of these DQIs is discussed below in relation to the Q4-2008 groundwater sampling and analysis conducted by HGC.

5.1 Precision

Precision indicates how well a measurement can be reproduced. Precision is quantified by calculating the RPD between duplicate samples. For the purposes of QA/QC, precision was quantified by calculating the RPDs between duplicates among the following groups of duplicate samples:

- Laboratory duplicate samples
- Field duplicate samples

As discussed in Sections 4.5.2 and 4.5.4, there were no exceedances of RPD QA criteria for any laboratory duplicates. During this monitoring period, a total of four field duplicate samples (DUP101308, DUP102008, DUP102808, and DUP110408) were collected by HGC for filtered analysis. The collection of four duplicate samples meets the QA/QC goal of collecting one duplicate sample for every twenty groundwater samples collected, as stated in Section 4.2.1.5 of the QAPP.

Results for the four duplicate samples collected are provided in the table below. The range of RPD values was between 1.07 and 6.66 percent, all within the 20 percent acceptance criteria for field duplicates, as stated in Section 3.3.1 of the QAPP. Overall, the DQI for precision is deemed to be met.

Well ID	Duplicate Sample ID	ACZ Project ID	Sulfate (mg/L)	Sulfate Duplicate (mg/L)	RPD (%)
PANAGAKOS	DUP101308	L72466	480	500	4.08
METZLER	DUP102008	L72665	305	326	6.66
TM-15 MILLER	DUP102808	L72779	18.6	18.8	1.07
BMO-2008-3B	DUP110408	L72918	179	177	1.12

mg/L = milligrams per liter
RPD = Relative Percent Difference

5.2 Bias

Bias is a systematic distortion of measurements causing consistent errors in one direction. Bias is managed in this data set by the consistent application of standardized sample collection and analysis procedures.

5.3 Accuracy

Accuracy is a measure of the agreement of a measurement to a known value and is measured using the recoveries from laboratory control samples. As discussed in Sections 4.5.1, 4.5.2, and 4.5.3 respectively, there were no significant exceedances of the recovery QA criteria for any of the calibration standards, analytical spikes, or laboratory control standards. Based on this information, the overall accuracy of the data is judged sufficient for the purpose of aquifer characterization.

5.4 Representativeness

All samples were taken from locations specified in the Work Plan (HGC, 2008a) using sampling procedures specified in the QAPP. Therefore, the samples are judged to provide a good representation of groundwater quality at the sampled locations. The analytical data are judged to be representative of groundwater conditions because the analyses used standard procedures and methods that met QA/QC guidelines of the QAPP.

5.5 Comparability

All samples were collected using standardized procedures (HGC, 2008a) and were analyzed by ACZ using standardized methods. Insofar as standardized sample collection and analytical methods are adhered to, the sample results should be comparable.

5.6 Completeness

All samples collected were subsequently analyzed and reported by ACZ are judged to satisfy the QA/QC criteria for this project and are deemed usable for aquifer characterization. Thus, the completeness of analytical results is 100 percent.

5.7 Sensitivity

The analytical methods used to analyze the samples meet the MDL requirements specified in Table F.2 of the QAPP. Therefore, the analytical sensitivity is considered acceptable for use in aquifer characterization.

5.8 Auxiliary Data Quality Indicators

Auxiliary DQIs are indicators that, although not mentioned in the QAPP, are useful for assessing the reliability of the laboratory analyses. These auxiliary DQIs include the laboratory measured cation-anion balance and the ratio between measured and calculated TDS. Each of these auxiliary indicators is discussed below.

5.8.1 Cation-Anion Balance

The concentration in milliequivalents per liter (meq/L) of cations and of anions in groundwater should theoretically be approximately the same. Therefore, the balance between anions and cations is one measure of the overall quality of the laboratory measurements.

The cation-anion balance can be expressed as the difference between the milliequivalents of cations and the milliequivalents of anions divided by the sum of the milliequivalents of both cations and anions. When computed in this manner, a cation-anion balance of 5 percent is considered good (Scott Habermahl, ACZ project manager, personal communication). The cation-anion balance for all samples is presented in Table 2 and was below 5 percent for all samples except for the samples listed below. Overall, the cation-anion balance for all samples does not indicate any analytical errors. Cation-anion balances outside of 5 percent may indicate the presence of other ions not included in the analysis and ion balance.

Well and Sample ID	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
BMO-2008-4B			
BMO-2008-5B	7.7	8.6	5.5
BMO-2008-5M	5.5	6.2	6.0
BMO-2008-8B	54.7	44.9	-9.8
BMO-2008-8M	9.8	11.0	5.8

meq/L = milliequivalents per liter

5.8.2 TDS Ratio

The ratio between the measured and computed concentration of TDS is also an indicator of the overall quality of the sample analyses. A TDS ratio between 0.8 and 1.2 is considered good (Scott Habermahl, ACZ project manager, personal communication). The ratios for all samples are presented in Table 2 and fall inside the acceptance criteria specified by ACZ. Overall, the low TDS ratios for all samples indicate no apparent analytical errors.

6. REFERENCES

Arizona Department of Environmental Quality. 2007. Mitigation Order on Consent, Docket No. P-121-07, In the Matter of: Phelps Dodge Corporation, Copper Queen Branch, located at 36 West Highway 92, Bisbee, Arizona, ADEQ Identification Number 100531. November 14, 2007.

Hydro Geo Chem, Inc. (HGC). 2008a. Revision 1, Work Plan to Characterize and Mitigate Sulfate with Respect to Drinking Water Supplies in the Vicinity of the Concentrator Tailing Storage Area, Cochise County, Arizona. July 3, 2008.

HGC. 2008b. Well Inventory Report, Task 1 of Aquifer Characterization Plan for Mitigation Order on Consent No. P-121-07, Cochise County, Arizona. July 28, 2008.

TABLE

TABLE A.1
ACZ PROJECT ID AND ASSOCIATED WELLS

ACZ Project ID	Wells Reported
Number of wells sampled: 88 *Number of duplicate samples collected: 4* *Number of field blank samples collected: 8*	
L72149	BMO-2008-0B
L72217	BMO-2008-0M
L72231	BMO-2008-13B
L72466	BANKS 896, DODSON, PANAGAKOS, EPPELE 641, EAST, DUP101308, EQB101308 FB101308
L72549	HOWARD, GARNER 635, FRANCO, MCCONNELL 265, CHAMBERS, TVI 236 TVI 875, ANDERSON, PALMER, NESS, SWAN, OSBORN, HOBAN, COOPER C
L72620	UN-02, UN-03, UN-04, UN-05, EN-02, EN-03, EN-05, EN-06
L72654	BLOMMER, ROGERS 803, SCHWARTZ, RAY, FULTZ, BIMA
L72665	PARRA, METZLER, RUIZ, COLLINS, COOPER, WEED, BURKE, POOL, COB MW-1 COB MW-2, COB MW-3, COB WL, NOTEMAN, AWC 02, AWC 03, AWC 04, AWC 05 DUP102008, EQB102008, FB102008
L72696	NWC 02, NWC 03, NWC 04, NWC 06
L72779	PIONKE, RAMIREZ, ROGERS E, TM-15 MILLER, DUP102808, EQB102808, TM-02A FB102808, ZANDER, KEEFER, WEISKOPF, MOORE, TM-06 MILLER, GGOOSE 547
L72918	BMO-2008-3B, BMO-2008-6B, BMO-2008-6M, BMO-2008-7M, BMO-2008-9M BMO-2008-10GU, BMO-2008-10GL, BF-01, TM-07, TM-16, TM-42, DUP110408 EQB110408, FB110408
L73030	BMO-2008-1G, BMO-2008-11G, TM-03, GL-03
L73158	TM-19A
L73393	BMO-2008-13M
L73402	BMO-2008-8B
L73444	BMO-2008-8M
L73523	BMO-2008-4B

APPENDIX A.1

ARIZONA LAND SPECIALISTS, INC. WELL SURVEY

ARIZONA LAND SPECIALISTS, INC.
FREEPORT-MCMORAN COPPER QUEEN BRANCH MONITOR WELL SURVEY

ALS POINT No.	DESCRIPTION	ELEVATION NAVD88 (FEET)	UTM NAD83 NORTHING	UTM NAD83 EASTING
6902	AMARILLAS (PID DG9433)	4895.67	3473292.330	601929.297
7019	BLOMMER *	4753.69	3,471,529.090	602725.876
7018	FULTZ *	4642.92	3469063.892	607153.306
7017	RAMIREZ *	4596.61	3467584.363	599730.649
7015	NWC 02 *	4600.44	3467474.673	600177.435
7013	NWC 03 *	4574.99	3468350.838	601153.857
7012	NWC 04 *	4690.77	3469071.959	605829.808
7014	NWC 06 *	4592.50	3467749.954	599822.821
7033	BMO-2008-4B TOC	4573.17	3468383.430	601099.405
7032	BMO-2008-4B PAD	4572.67	X	X
7029	BMO-2008-5B TOC	4585.10	3468994.715	600438.159
7028	BMO-2008-5B PAD	4584.61	X	X
7031	BMO-2008-5M TOC	4585.02	3468994.282	600445.071
7030	BMO-2008-5M PAD	4584.59	X	X
7021	BMO-2008-8B TOC	4753.25	3471141.719	604171.347
7020	BMO-2008-8B PAD	4751.95	X	X
7023	BMO-2008-8M TOC	4752.45	3471127.902	604167.912
7022	BMO-2008-8M PAD	4751.95	X	X
7025	BMO-2008-13B TOC	4649.21	3470076.358	601657.612
7024	BMO-2008-13B PAD	4648.68	X	X
7027	BMO-2008-13M TOC	4647.15	3470040.455	601650.495
7026	BMO-2008-13M PAD	4646.67	X	X

UTM = Universal Transverse Mercator Zone 12, Band R
* = Measuring Point Elevation
ST = Sounding Tube
TOC = Top of Casing
PAD = Concrete Pad



APPENDIX B

ANALYTICAL REPORTS FROM ACZ LABORATORIES, INC.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

January 14, 2009

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720002.2
ACZ Project ID: L73523

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on December 12, 2008. This project has been assigned to ACZ's project number, L73523. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L73523. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after February 14, 2009. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: BMO-2008-4B

ACZ Sample ID: ***L73523-01***
Date Sampled: *12/11/08 14:35*
Date Received: *12/12/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	49.2			mg/L	0.2	1	12/15/08 18:05	ear
Magnesium, dissolved	M200.7 ICP	7.1			mg/L	0.2	1	12/16/08 22:15	ear
Potassium, dissolved	M200.7 ICP	1.4	B		mg/L	0.3	2	12/15/08 18:05	ear
Sodium, dissolved	M200.7 ICP	33.4			mg/L	0.3	2	12/15/08 18:05	ear

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		183			mg/L	2	20	12/19/08 0:00	abm
Carbonate as CaCO3			U		mg/L	2	20	12/19/08 0:00	abm
Hydroxide as CaCO3			U		mg/L	2	20	12/19/08 0:00	abm
Total Alkalinity		183			mg/L	2	20	12/19/08 0:00	abm
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.4			%			01/14/09 0:00	calc
Sum of Anions		4.2			meq/L	0.1	0.5	01/14/09 0:00	calc
Sum of Cations		4.5			meq/L	0.1	0.5	01/14/09 0:00	calc
Chloride	M300.0 - Ion Chromatography	4.3		*	mg/L	0.5	3	12/23/08 11:37	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	01/06/09 14:38	ccp
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.78			mg/L	0.02	0.1	01/14/09 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.78		*	mg/L	0.02	0.1	12/12/08 20:21	neb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	12/12/08 20:21	neb
Residue, Filterable (TDS) @180C	SM2540C	240			mg/L	10	20	12/16/08 14:56	abm
Sulfate	375.4 - Turbidimetric	10	H	*	mg/L	1	5	01/09/09 10:42	aml
Sulfate	300.0 - Ion Chromatography	9.4			mg/L	0.5	3	01/06/09 14:38	ccp
TDS (calculated)	Calculation	228			mg/L	10	50	01/14/09 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.05						01/14/09 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	LCSWD	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	LFB	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	LFM	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	LFMD	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	LRB	Laboratory Reagent Blank
ICB	Initial Calibration Blank	MS	Matrix Spike
ICV	Initial Calibration Verification standard	MSD	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	PBS	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	PBW	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	PQV	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	SDL	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	The material was analyzed for, but was not detected above the level of the associated value.
	The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Hydro Geo Chem, Inc. ACZ Project ID: ***L73523***

Project ID: 8720002.2

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257531													
WG257531PBW1	PBW	12/19/08 15:41				15.8	mg/L		-20	20			
WG257531LCSW2	LCSW	12/19/08 15:52	WC081209-1	820.0001		786.9	mg/L	96	90	110			
WG257531PBW2	PBW	12/19/08 19:09				3	mg/L		-20	20			
WG257531LCSW5	LCSW	12/19/08 19:20	WC081209-1	820.0001		767	mg/L	93.5	90	110			
L73534-04DUP	DUP	12/19/08 21:48			2850	2838.4	mg/L				0.4	20	
WG257531PBW3	PBW	12/19/08 23:57				3	mg/L		-20	20			
WG257531LCSW8	LCSW	12/20/08 0:07	WC081209-1	820.0001		765.4	mg/L	93.3	90	110			
WG257531PBW4	PBW	12/20/08 3:27				U	mg/L		-20	20			
WG257531LCSW11	LCSW	12/20/08 3:39	WC081209-1	820.0001		769.1	mg/L	93.8	90	110			
WG257531LCSW14	LCSW	12/20/08 6:14	WC081209-1	820.0001		767.3	mg/L	93.6	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257254													
WG257254ICV	ICV	12/15/08 16:38	II081119-1	100		101.16	mg/L	101.2	95	105			
WG257254ICB	ICB	12/15/08 16:42				U	mg/L		-0.6	0.6			
WG257254LFB	LFB	12/15/08 16:54	II081212-2	67.97008		73.73	mg/L	108.5	85	115			
L73485-02AS	AS	12/15/08 17:48	II081212-2	67.97008	41.6	114.68	mg/L	107.5	85	115			
L73485-02ASD	ASD	12/15/08 17:51	II081212-2	67.97008	41.6	114.99	mg/L	108	85	115	0.27	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257562													
WG257562ICV	ICV	12/19/08 17:04	WI081031-2	19.94		20.13	mg/L	101	90	110			
WG257562ICB	ICB	12/19/08 17:22				.5	mg/L		-1.5	1.5			
WG257562ICV1	ICV	12/20/08 13:22	WI081031-2	19.94		20.16	mg/L	101.1	90	110			
WG257562ICB1	ICB	12/20/08 13:22				U	mg/L		-1.5	1.5			
WG257562ICB2	ICB	12/20/08 13:40				U	mg/L		-1.5	1.5			
WG257604													
WG257604ICV	ICV	12/19/08 17:04	WI081031-2	19.94		20.13	mg/L	101	90	110			
WG257604ICB	ICB	12/19/08 17:22				.5	mg/L		-1.5	1.5			
WG257604ICV1	ICV	12/23/08 2:34	WI081031-2	19.94		20.24	mg/L	101.5	90	110			
WG257604ICB1	ICB	12/23/08 2:52				1.14	mg/L		-1.5	1.5			
WG257604LFB	LFB	12/23/08 3:10	WI081125-2	30		31.06	mg/L	103.5	90	110			
L73404-11AS	AS	12/23/08 8:00	WI081125-2	30	.8	30.97	mg/L	100.6	90	110			
L73404-11DUP	DUP	12/23/08 8:18			.8	.87	mg/L				8.4	20	RA

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG258047													
WG258047ICV	ICV	01/06/09 10:14	WI081218-1	4		3.88	mg/L	97	90	110			
WG258047ICB	ICB	01/06/09 10:32				U	mg/L		-0.3	0.3			
WG258047ICV1	ICV	01/06/09 13:08	WI081218-1	4		3.89	mg/L	97.3	90	110			
WG258047ICB1	ICB	01/06/09 13:26				U	mg/L		-0.3	0.3			
WG258047LFB	LFB	01/06/09 14:20	WI081125-2	1.5		1.44	mg/L	96	90	110			
L73523-01DUP	DUP	01/06/09 14:56			.2	.18	mg/L				10.5	20	RA
L73547-01AS	AS	01/06/09 15:33	WI081125-2	1.5	U	1.64	mg/L	109.3	90	110			

Hydro Geo Chem, Inc. ACZ Project ID: ***L73523***

Project ID: 8720002.2

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257295													
WG257295ICV	ICV	12/16/08 20:50	II081119-1	100		96.33	mg/L	96.3	95	105			
WG257295ICB	ICB	12/16/08 20:53				U	mg/L		-0.6	0.6			
WG257295LFB	LFB	12/16/08 21:08	II081212-2	49.96908		50.8	mg/L	101.7	85	115			
L73509-02AS	AS	12/16/08 22:07	II081212-2	49.96908	27.3	78.05	mg/L	101.6	85	115			
L73509-02ASD	ASD	12/16/08 22:11	II081212-2	49.96908	27.3	79.35	mg/L	104.2	85	115	1.65	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257204													
WG257204ICV	ICV	12/12/08 20:00	WI080916-5	2.416		2.42	mg/L	100.2	90	110			
WG257204ICB	ICB	12/12/08 20:01				U	mg/L		-0.06	0.06			
WG257204LFB	LFB	12/12/08 20:06	WI080913-4	2		2.059	mg/L	103	90	110			
L73505-01AS	AS	12/12/08 20:09	WI080913-4	2	U	2.047	mg/L	102.4	90	110			
L73506-08DUP	DUP	12/12/08 20:11			.03	.027	mg/L				10.5	20	RA

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257204													
WG257204ICV	ICV	12/12/08 20:00	WI080916-5	.609		.603	mg/L	99	90	110			
WG257204ICB	ICB	12/12/08 20:01				U	mg/L		-0.03	0.03			
WG257204LFB	LFB	12/12/08 20:06	WI080913-4	1		1	mg/L	100	90	110			
L73505-01AS	AS	12/12/08 20:09	WI080913-4	1	.01	.992	mg/L	98.2	90	110			
L73506-08DUP	DUP	12/12/08 20:11			.01	U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257254													
WG257254ICV	ICV	12/15/08 16:38	II081119-1	20		20.09	mg/L	100.5	95	105			
WG257254ICB	ICB	12/15/08 16:42				U	mg/L		-0.9	0.9			
WG257254LFB	LFB	12/15/08 16:54	II081212-2	99.76186		106.16	mg/L	106.4	85	115			
L73485-02AS	AS	12/15/08 17:48	II081212-2	99.76186	9.4	116.72	mg/L	107.6	85	115			
L73485-02ASD	ASD	12/15/08 17:51	II081212-2	99.76186	9.4	117.8	mg/L	108.7	85	115	0.92	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257320													
WG257320PBW	PBW	12/16/08 14:50				U	mg/L		-20	20			
WG257320LCSW	LCSW	12/16/08 14:50	PCN31030	260		270	mg/L	103.8	80	120			
L73527-03DUP	DUP	12/16/08 15:00			5360	5368	mg/L				0.1	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L73523***

Project ID: 8720002.2

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257254													
WG257254ICV	ICV	12/15/08 16:38	II081119-1	100		100.97	mg/L	101	95	105			
WG257254ICB	ICB	12/15/08 16:42				U	mg/L		-0.9	0.9			
WG257254LFB	LFB	12/15/08 16:54	II081212-2	98.21624		104.67	mg/L	106.6	85	115			
L73485-02AS	AS	12/15/08 17:48	II081212-2	98.21624	47.5	146.88	mg/L	101.2	85	115			
L73485-02ASD	ASD	12/15/08 17:51	II081212-2	98.21624	47.5	148.37	mg/L	102.7	85	115	1.01	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG258047													
WG258047ICV	ICV	01/06/09 10:14	WI081218-1	50		49.23	mg/L	98.5	90	110			
WG258047ICB	ICB	01/06/09 10:32				U	mg/L		-1.5	1.5			
WG258047ICV1	ICV	01/06/09 13:08	WI081218-1	50		49.31	mg/L	98.6	90	110			
WG258047ICB1	ICB	01/06/09 13:26				U	mg/L		-1.5	1.5			
WG258047LFB	LFB	01/06/09 14:20	WI081125-2	30		28.81	mg/L	96	90	110			
L73523-01DUP	DUP	01/06/09 14:56			9.4	9.3	mg/L				1.1	20	
L73547-01AS	AS	01/06/09 15:33	WI081125-2	30	6.5	36.29	mg/L	99.3	90	110			

Sulfate 375.4 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG258203													
WG258203ICB	ICB	01/09/09 10:16				U	mg/L		-3	3			
WG258203ICV	ICV	01/09/09 10:16	WI081217-2	20		19.9	mg/L	99.5	90	110			
WG258203LFB	LFB	01/09/09 10:42	WI081015-3	10		9.2	mg/L	92	90	110			
L73523-01DUP	DUP	01/09/09 10:42			10	9.3	mg/L				7.3	20	
L73760-02AS	AS	01/09/09 10:42	WI081015-3	10	6	15.9	mg/L	99	90	110			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L73523***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L73523-01	WG257604	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG258047	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG257204	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG258203	Sulfate	375.4 - Turbidimetric	HC	Initial analysis within holding time. Reanalysis was past holding time, which was required due to a QC failure during the initial analysis.

Wet Chemistry

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.

Sulfate	375.4 - Turbidimetric

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720002.2

ACZ Project ID: L73523
Date Received: 12/12/2008
Received By:
Date Printed: 12/12/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Is the trip blank for Cyanide present?			X
12) Is the trip blank for VOA present?			X
13) Are samples requiring no headspace, headspace free?			X
14) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA7540	3.2	16

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc. L73523

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem, Inc
E-mail:
Address: 51 W. Wetmore Rd
Tucson, AZ 85705
Telephone: 520-293-1500 x-133

Copy of Report to:

Name: Jim Norris
Company: HGC, Inc
E-mail: jimn@hgcinc.com
Telephone: 520-293-1500 x-112

Invoice to:

Name: Dan Simpson
Company: HGC, Inc.
E-mail:
Address: 51 W. Wetmore Rd
Tucson, AZ 85705
Telephone: 520-293-1500 x-133

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 8720002.2
Reporting state for compliance testing: AZ
Sampler's Name: Travis Taylor
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB-GW							
BMO-2008-4	12/11/08:1435	GW	3	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Travis Taylor	12/11/08:1515	MJS	12.12.08 10:51

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

January 06, 2009

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720002.2
ACZ Project ID: L73444

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on December 10, 2008. This project has been assigned to ACZ's project number, L73444. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L73444. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after February 06, 2009. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: BMO-2008-8M

ACZ Sample ID: ***L73444-01***
Date Sampled: *12/09/08 14:40*
Date Received: *12/10/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	88.5		*	mg/L	0.2	1	12/12/08 19:29	ear
Magnesium, dissolved	M200.7 ICP	43.0			mg/L	0.2	1	12/12/08 19:29	ear
Potassium, dissolved	M200.7 ICP	5.8			mg/L	0.3	2	12/12/08 19:29	ear
Sodium, dissolved	M200.7 ICP	64.9			mg/L	0.3	2	12/12/08 19:29	ear

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		260			mg/L	2	20	12/19/08 0:00	abm
Carbonate as CaCO3			U		mg/L	2	20	12/19/08 0:00	abm
Hydroxide as CaCO3			U		mg/L	2	20	12/19/08 0:00	abm
Total Alkalinity		260			mg/L	2	20	12/19/08 0:00	abm
Cation-Anion Balance	Calculation								
Cation-Anion Balance		5.8			%			01/06/09 0:00	calc
Sum of Anions		9.8			meq/L	0.1	0.5	01/06/09 0:00	calc
Sum of Cations		11.0			meq/L	0.1	0.5	01/06/09 0:00	calc
Chloride	M300.0 - Ion Chromatography	13		*	mg/L	3	10	12/23/08 1:21	aml
Fluoride	SM4500F-C	0.3	B		mg/L	0.1	0.5	01/05/09 15:55	gkj
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.78			mg/L	0.02	0.1	01/06/09 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.78		*	mg/L	0.02	0.1	12/10/08 17:56	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	12/10/08 17:56	pjb
Residue, Filterable (TDS) @180C	SM2540C	640			mg/L	10	20	12/11/08 16:06	abm
Sulfate	300.0 - Ion Chromatography	197			mg/L	3	10	12/23/08 1:21	aml
TDS (calculated)	Calculation	576			mg/L	10	50	01/06/09 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.11						01/06/09 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	LCSWD	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	LFB	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	LFM	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	LFMD	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	LRB	Laboratory Reagent Blank
ICB	Initial Calibration Blank	MS	Matrix Spike
ICV	Initial Calibration Verification standard	MSD	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	PBS	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	PBW	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	PQV	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	SDL	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Hydro Geo Chem, Inc.
Project ID: 8720002.2

ACZ Project ID: ***L73444***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257465													
WG257465PBW1	PBW	12/18/08 18:35				U	mg/L		-20	20			
WG257465LCSW2	LCSW	12/18/08 18:59	WC081209-1	820.0001		753.7	mg/L	91.9	90	110			
WG257465PBW2	PBW	12/18/08 21:40				8.7	mg/L		-20	20			
WG257465LCSW5	LCSW	12/18/08 21:51	WC081209-1	820.0001		760	mg/L	92.7	90	110			
L73444-01DUP	DUP	12/19/08 0:57			260	258.4	mg/L				0.6	20	
WG257465PBW3	PBW	12/19/08 1:01				U	mg/L		-20	20			
WG257465LCSW8	LCSW	12/19/08 1:13	WC081209-1	820.0001		834.2	mg/L	101.7	90	110			
WG257465PBW4	PBW	12/19/08 4:48				3.4	mg/L		-20	20			
WG257465LCSW11	LCSW	12/19/08 4:58	WC081209-1	820.0001		796.7	mg/L	97.2	90	110			
WG257465LCSW14	LCSW	12/19/08 8:08	WC081209-1	820.0001		836.7	mg/L	102	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257175													
WG257175ICV	ICV	12/12/08 17:46	II081119-1	100		101.25	mg/L	101.3	95	105			
WG257175ICB	ICB	12/12/08 17:50				U	mg/L		-0.6	0.6			
WG257175LFB	LFB	12/12/08 18:02	II081125-2	67.97008		70.76	mg/L	104.1	85	115			
L73434-03AS	AS	12/12/08 18:56	II081125-2	339.8504	1950	2157.8	mg/L	61.1	85	115			M3
L73434-03ASD	ASD	12/12/08 18:59	II081125-2	339.8504	1950	2152.5	mg/L	59.6	85	115	0.25	20	M3

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257563													
WG257563ICV	ICV	12/19/08 17:04	WI081031-2	19.94		20.13	mg/L	101	90	110			
WG257563ICB	ICB	12/19/08 17:22				.5	mg/L		-1.5	1.5			
WG257563ICV1	ICV	12/22/08 16:36	WI081031-2	19.94		20.24	mg/L	101.5	90	110			
WG257563ICB1	ICB	12/22/08 16:54				U	mg/L		-1.5	1.5			
WG257563LFB	LFB	12/22/08 17:13	WI081125-2	30		28.5	mg/L	95	90	110			
L73284-02AS	AS	12/22/08 22:02	WI081125-2	150	269	397.7	mg/L	85.8	90	110			M2
L73284-02DUP	DUP	12/22/08 22:20			269	272.2	mg/L				1.2	20	

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG258013													
WG258013ICV	ICV	01/05/09 15:11	WC081230-1	2		1.99	mg/L	99.5	95	105			
WG258013ICB	ICB	01/05/09 15:19				U	mg/L		-0.3	0.3			
WG258013LFB1	LFB	01/05/09 15:26	WC081121-5	5		5.12	mg/L	102.4	90	110			
L73299-01AS	AS	01/05/09 15:32	WC081121-5	5	.8	5.95	mg/L	103	90	110			
L73299-02DUP	DUP	01/05/09 15:39			1.6	1.53	mg/L				4.5	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L73444***

Project ID: 8720002.2

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257175													
WG257175ICV	ICV	12/12/08 17:46	II081119-1	100		101.67	mg/L	101.7	95	105			
WG257175ICB	ICB	12/12/08 17:50				U	mg/L		-0.6	0.6			
WG257175LFB	LFB	12/12/08 18:02	II081125-2	49.96908		51.19	mg/L	102.4	85	115			
L73434-03AS	AS	12/12/08 18:56	II081125-2	249.8454	171	402.4	mg/L	92.6	85	115			
L73434-03ASD	ASD	12/12/08 18:59	II081125-2	249.8454	171	399.5	mg/L	91.5	85	115	0.72	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257065													
WG257065ICV	ICV	12/10/08 17:48	WI080916-5	2.416		2.427	mg/L	100.5	90	110			
WG257065ICB	ICB	12/10/08 17:49				U	mg/L		-0.06	0.06			
WG257065LFB	LFB	12/10/08 17:54	WI080913-4	2		2.009	mg/L	100.5	90	110			
L73444-01AS	AS	12/10/08 17:57	WI080913-4	2	1.78	3.757	mg/L	98.9	90	110			
L73460-01DUP	DUP	12/10/08 18:00			.07	.077	mg/L				9.5	20	RA

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257065													
WG257065ICV	ICV	12/10/08 17:48	WI080916-5	.609		.604	mg/L	99.2	90	110			
WG257065ICB	ICB	12/10/08 17:49				U	mg/L		-0.03	0.03			
WG257065LFB	LFB	12/10/08 17:54	WI080913-4	1		.984	mg/L	98.4	90	110			
L73444-01AS	AS	12/10/08 17:57	WI080913-4	1	U	.976	mg/L	97.6	90	110			
L73460-01DUP	DUP	12/10/08 18:00			U	U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257175													
WG257175ICV	ICV	12/12/08 17:46	II081119-1	20		19.93	mg/L	99.7	95	105			
WG257175ICB	ICB	12/12/08 17:50				U	mg/L		-0.9	0.9			
WG257175LFB	LFB	12/12/08 18:02	II081125-2	99.76186		101.39	mg/L	101.6	85	115			
L73434-03AS	AS	12/12/08 18:56	II081125-2	498.8093	26	508.2	mg/L	96.7	85	115			
L73434-03ASD	ASD	12/12/08 18:59	II081125-2	498.8093	26	508.4	mg/L	96.7	85	115	0.04	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257123													
WG257123PBW	PBW	12/11/08 16:00				16	mg/L		-20	20			
WG257123LCSW	LCSW	12/11/08 16:00	PCN31030	260		270	mg/L	103.8	80	120			
L73445-03DUP	DUP	12/11/08 16:10			2060	2076	mg/L				0.8	20	

Hydro Geo Chem, Inc.
Project ID: 8720002.2

ACZ Project ID: ***L73444***

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257175													
WG257175ICV	ICV	12/12/08 17:46	II081119-1	100		101.79	mg/L	101.8	95	105			
WG257175ICB	ICB	12/12/08 17:50				U	mg/L		-0.9	0.9			
WG257175LFB	LFB	12/12/08 18:02	II081125-2	98.21624		100.52	mg/L	102.3	85	115			
L73434-03AS	AS	12/12/08 18:56	II081125-2	491.0812	610	1035.5	mg/L	86.6	85	115			
L73434-03ASD	ASD	12/12/08 18:59	II081125-2	491.0812	610	1032.3	mg/L	86	85	115	0.31	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257563													
WG257563ICV	ICV	12/19/08 17:04	WI081031-2	50		50.64	mg/L	101.3	90	110			
WG257563ICB	ICB	12/19/08 17:22				U	mg/L		-1.5	1.5			
WG257563ICV1	ICV	12/22/08 16:36	WI081031-2	50		52.24	mg/L	104.5	90	110			
WG257563ICB1	ICB	12/22/08 16:54				U	mg/L		-1.5	1.5			
WG257563LFB	LFB	12/22/08 17:13	WI081125-2	30		30.59	mg/L	102	90	110			
L73284-02AS	AS	12/22/08 22:02	WI081125-2	150	57	192.9	mg/L	90.6	90	110			
L73284-02DUP	DUP	12/22/08 22:20			57	59.5	mg/L				4.3	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L73444***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L73444-01	WG257175	Calcium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG257563	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG257065	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: ***L73444***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720002.2

ACZ Project ID: L73444
Date Received: 12/10/2008
Received By:
Date Printed: 12/10/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?		X	
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Is the trip blank for Cyanide present?			X
12) Is the trip blank for VOA present?			X
13) Are samples requiring no headspace, headspace free?			X
14) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

The following items were not in agreement: sampleid. The sample containers have an ID of "BMO-2008-8M" and the COC is "BMO-2008-8B". The sample ID was entered per the chain of custody.

Contact (For any discrepancies, the client must be contacted)

The client was not contacted.

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA7510	1.2	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720002.2

ACZ Project ID: L73444
Date Received: 12/10/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L73444-01	BMO-2008-8B		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L73444

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem, Inc
E-mail:
Address: 51 W. Wetmore Rd
Tucson, Az 85705
Telephone: 520-293-1500 x-133

Copy of Report to:

Name: Jim Norris
Company: HGC, Inc
E-mail: jimn@hgcinc.com
Telephone: 520-293-1500 x-112

Invoice to:

Name: Dan Simpson
Company: HGC, Inc.
E-mail:
Address: 51 W. Wetmore Rd
Tucson, Az 85705
Telephone: 520-293-1500 x-133

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 872.0002.2
Reporting state for compliance testing: AZ
Sampler's Name: Travis Taylor
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB-GW							
BMO-2008-8B	12/09/08:1440	GW	3	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Travis Taylor	12/09/08:1525		12-10-08 8:41

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

January 05, 2009

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720002.2
ACZ Project ID: L73402

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on December 06, 2008. This project has been assigned to ACZ's project number, L73402. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L73402. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after February 05, 2009. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: BMO-2008-8B

ACZ Sample ID: ***L73402-01***
Date Sampled: *12/05/08 14:05*
Date Received: *12/06/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	529			mg/L	0.2	1	12/10/08 17:37	ear
Magnesium, dissolved	M200.7 ICP	195			mg/L	0.4	2	12/11/08 23:42	ear
Potassium, dissolved	M200.7 ICP	14.4			mg/L	0.3	2	12/10/08 17:37	ear
Sodium, dissolved	M200.7 ICP	46.4		*	mg/L	0.3	2	12/10/08 17:37	ear

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		630			mg/L	2	20	12/10/08 0:00	gkj
Carbonate as CaCO3			U		mg/L	2	20	12/10/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	12/10/08 0:00	gkj
Total Alkalinity		630			mg/L	2	20	12/10/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-9.8			%			01/05/09 0:00	calc
Sum of Anions		54.7			meq/L	0.1	0.5	01/05/09 0:00	calc
Sum of Cations		44.9			meq/L	0.1	0.5	01/05/09 0:00	calc
Chloride	M300.0 - Ion Chromatography	80	B	*	mg/L	30	100	12/23/08 0:45	aml
Fluoride	SM4500F-C	0.1	BH	*	mg/L	0.1	0.5	01/03/09 12:37	kah
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.91			mg/L	0.02	0.1	01/05/09 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.93			mg/L	0.02	0.1	12/06/08 13:09	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.02	B	*	mg/L	0.01	0.05	12/06/08 13:09	pjb
Residue, Filterable (TDS) @180C	SM2540C	3080			mg/L	10	20	12/09/08 11:29	abm
Sulfate	300.0 - Ion Chromatography	1890			mg/L	30	100	12/23/08 0:45	aml
TDS (calculated)	Calculation	3150			mg/L	10	50	01/05/09 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.98						01/05/09 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	LCSWD	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	LFB	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	LFM	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	LFMD	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	LRB	Laboratory Reagent Blank
ICB	Initial Calibration Blank	MS	Matrix Spike
ICV	Initial Calibration Verification standard	MSD	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	PBS	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	PBW	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	PQV	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	SDL	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Hydro Geo Chem, Inc.
Project ID: 8720002.2

ACZ Project ID: ***L73402***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG256983													
WG256983PBW1	PBW	12/09/08 18:26				8.1	mg/L		-20	20			
WG256983LCSW2	LCSW	12/09/08 18:36	WC081209-1	820.0001		796.4	mg/L	97.1	90	110			
WG256983PBW2	PBW	12/09/08 20:11				2.9	mg/L		-20	20			
WG256983LCSW5	LCSW	12/09/08 20:22	WC081209-1	820.0001		807.8	mg/L	98.5	90	110			
WG256983PBW3	PBW	12/09/08 22:17				U	mg/L		-20	20			
WG256983LCSW8	LCSW	12/09/08 22:27	WC081209-1	820.0001		804	mg/L	98	90	110			
L73404-04DUP	DUP	12/10/08 1:58			60	59.3	mg/L				1.2	20	
WG256983PBW4	PBW	12/10/08 2:04				U	mg/L		-20	20			
WG256983LCSW11	LCSW	12/10/08 2:16	WC081209-1	820.0001		825.2	mg/L	100.6	90	110			
WG256983LCSW14	LCSW	12/10/08 5:26	WC081209-1	820.0001		837.2	mg/L	102.1	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257027													
WG257027ICV	ICV	12/10/08 16:53	II081119-1	100		100.18	mg/L	100.2	95	105			
WG257027ICB	ICB	12/10/08 16:57				U	mg/L		-0.6	0.6			
WG257027LFB	LFB	12/10/08 17:10	II081125-2	67.97008		72.68	mg/L	106.9	85	115			
L73296-01AS	AS	12/10/08 17:23	II081125-2	67.97008	3.5	75.8	mg/L	106.4	85	115			
L73296-01ASD	ASD	12/10/08 17:27	II081125-2	67.97008	3.5	75.91	mg/L	106.5	85	115	0.15	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257563													
WG257563ICV	ICV	12/19/08 17:04	WI081031-2	19.94		20.13	mg/L	101	90	110			
WG257563ICB	ICB	12/19/08 17:22				.5	mg/L		-1.5	1.5			
WG257563ICV1	ICV	12/22/08 16:36	WI081031-2	19.94		20.24	mg/L	101.5	90	110			
WG257563ICB1	ICB	12/22/08 16:54				U	mg/L		-1.5	1.5			
WG257563LFB	LFB	12/22/08 17:13	WI081125-2	30		28.5	mg/L	95	90	110			
L73284-02AS	AS	12/22/08 22:02	WI081125-2	150	269	397.7	mg/L	85.8	90	110			M2
L73284-02DUP	DUP	12/22/08 22:20			269	272.2	mg/L				1.2	20	

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257959													
WG257959ICV	ICV	01/03/09 12:11	WC081230-1	2		1.95	mg/L	97.5	95	105			
WG257959ICB	ICB	01/03/09 12:18				U	mg/L		-0.3	0.3			
WG257959LFB1	LFB	01/03/09 12:24	WC081121-5	5		5.03	mg/L	100.6	90	110			
L73393-01AS	AS	01/03/09 12:31	WC081121-5	5	.7	5.42	mg/L	94.4	90	110			
L73393-01DUP	DUP	01/03/09 12:34			.7	.66	mg/L				5.9	20	RA
WG257959LFB2	LFB	01/03/09 14:44	WC081121-5	5		5.03	mg/L	100.6	90	110			

Hydro Geo Chem, Inc. ACZ Project ID: ***L73402***

Project ID: 8720002.2

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257099													
WG257099ICV	ICV	12/11/08 23:01	II081119-1	100		97.1	mg/L	97.1	95	105			
WG257099ICB	ICB	12/11/08 23:05				U	mg/L		-0.6	0.6			
WG257099LFB	LFB	12/11/08 23:20	II081125-2	49.96908		49.04	mg/L	98.1	85	115			
L73404-08AS	AS	12/11/08 23:57	II081125-2	49.96908	60	107.56	mg/L	95.2	85	115			
L73404-08ASD	ASD	12/12/08 0:00	II081125-2	49.96908	60	114.71	mg/L	109.5	85	115	6.43	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG256846													
WG256846ICV	ICV	12/06/08 13:00	WI080916-5	2.416		2.391	mg/L	99	90	110			
WG256846ICB	ICB	12/06/08 13:01				U	mg/L		-0.06	0.06			
WG256846LFB	LFB	12/06/08 13:05	WI080913-4	2		1.977	mg/L	98.9	90	110			
L73402-01DUP	DUP	12/06/08 13:10			2.93	2.941	mg/L				0.4	20	
WG256846ICV1	ICV	12/06/08 13:22	WI080916-5	2.416		2.388	mg/L	98.8	90	110			
WG256846ICB1	ICB	12/06/08 13:23				U	mg/L		-0.06	0.06			
L73400-01AS	AS	12/06/08 13:25	WI080913-4	30	16.8	46.92	mg/L	100.4	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG256846													
WG256846ICV	ICV	12/06/08 13:00	WI080916-5	.609		.609	mg/L	100	90	110			
WG256846ICB	ICB	12/06/08 13:01				U	mg/L		-0.03	0.03			
WG256846LFB	LFB	12/06/08 13:05	WI080913-4	1		.989	mg/L	98.9	90	110			
L73400-01AS	AS	12/06/08 13:08	WI080913-4	1	U	.996	mg/L	99.6	90	110			
L73402-01DUP	DUP	12/06/08 13:10			.02	.016	mg/L				22.2	20	RA
WG256846ICV1	ICV	12/06/08 13:22	WI080916-5	.609		.621	mg/L	102	90	110			
WG256846ICB1	ICB	12/06/08 13:23				U	mg/L		-0.03	0.03			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257027													
WG257027ICV	ICV	12/10/08 16:53	II081119-1	20		19.68	mg/L	98.4	95	105			
WG257027ICB	ICB	12/10/08 16:57				U	mg/L		-0.9	0.9			
WG257027LFB	LFB	12/10/08 17:10	II081125-2	99.76186		102.06	mg/L	102.3	85	115			
L73296-01AS	AS	12/10/08 17:23	II081125-2	99.76186	U	103.08	mg/L	103.3	85	115			
L73296-01ASD	ASD	12/10/08 17:27	II081125-2	99.76186	U	103.26	mg/L	103.5	85	115	0.17	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG256945													
WG256945PBW	PBW	12/09/08 11:25				U	mg/L		-20	20			
WG256945LCSW	LCSW	12/09/08 11:25	PCN31030	260		260	mg/L	100	80	120			
L73412-01DUP	DUP	12/09/08 11:35			700	712	mg/L				1.7	20	

Hydro Geo Chem, Inc.
Project ID: 8720002.2

ACZ Project ID: ***L73402***

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257027													
WG257027ICV	ICV	12/10/08 16:53	II081119-1	100		100.92	mg/L	100.9	95	105			
WG257027ICB	ICB	12/10/08 16:57				U	mg/L		-0.9	0.9			
WG257027LFB	LFB	12/10/08 17:10	II081125-2	98.21624		100.73	mg/L	102.6	85	115			
L73296-01AS	AS	12/10/08 17:23	II081125-2	98.21624	668	701.21	mg/L	33.8	85	115			M3
L73296-01ASD	ASD	12/10/08 17:27	II081125-2	98.21624	668	702.1	mg/L	34.7	85	115	0.13	20	M3

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257563													
WG257563ICV	ICV	12/19/08 17:04	WI081031-2	50		50.64	mg/L	101.3	90	110			
WG257563ICB	ICB	12/19/08 17:22				U	mg/L		-1.5	1.5			
WG257563ICV1	ICV	12/22/08 16:36	WI081031-2	50		52.24	mg/L	104.5	90	110			
WG257563ICB1	ICB	12/22/08 16:54				U	mg/L		-1.5	1.5			
WG257563LFB	LFB	12/22/08 17:13	WI081125-2	30		30.59	mg/L	102	90	110			
L73284-02AS	AS	12/22/08 22:02	WI081125-2	150	57	192.9	mg/L	90.6	90	110			
L73284-02DUP	DUP	12/22/08 22:20			57	59.5	mg/L				4.3	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L73402***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L73402-01	WG257027	Sodium, dissolved	M200.7 ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG257563	Chloride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
			M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG257959	Fluoride	SM4500F-C	H1	Sample analysis performed past holding time.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG256846	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720002.2

ACZ Project ID: L73402
Date Received: 12/6/2008
Received By:
Date Printed: 12/6/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Is the trip blank for Cyanide present?			X
12) Is the trip blank for VOA present?			X
13) Are samples requiring no headspace, headspace free?			X
14) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA7502	3.6	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720002.2

ACZ Project ID: L73402
Date Received: 12/6/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L73402-01	BMO-2008-8B		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L973402

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem, Inc.
E-mail:
Address: 51 W. Wetmore Rd
Tucson, Az 85705
Telephone: 520-293-1500 x-133

Copy of Report to:

Name: Jim Norris
Company: HGC, Inc.
E-mail: jimn@hgcinc.com
Telephone: 520-293-1500 x-112

Invoice to:

Name: Dan Simpson
Company: HGC, Inc.
E-mail:
Address: 51 W. Wetmore Rd
Tucson, Az 85705
Telephone: 520-293-1500 x-133

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 8720002.2
Reporting state for compliance testing: Az
Sampler's Name: Travis Taylor
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB-GW							
BMO-2008-8B	12/05/08:14:05	GW	3	X							
	↳ PER BOTTLE		MSS	12.6.08							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Travis Taylor	12/05/08:1515	MSS	12.6.08 11:13

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

January 05, 2009

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720002.2
ACZ Project ID: L73393

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on December 05, 2008. This project has been assigned to ACZ's project number, L73393. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L73393. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after February 05, 2009. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: BMO-2008-13M

ACZ Sample ID: ***L73393-01***
Date Sampled: *12/03/08 15:45*
Date Received: *12/05/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	35.1			mg/L	0.2	1	12/09/08 2:19	aeh
Magnesium, dissolved	M200.7 ICP	13.2			mg/L	0.2	1	12/09/08 2:19	aeh
Potassium, dissolved	M200.7 ICP	3.4			mg/L	0.3	2	12/09/08 2:19	aeh
Sodium, dissolved	M200.7 ICP	286			mg/L	0.3	2	12/09/08 2:19	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		259			mg/L	2	20	12/10/08 0:00	gkj
Carbonate as CaCO3		3	B		mg/L	2	20	12/10/08 0:00	gkj
Hydroxide as CaCO3			U		mg/L	2	20	12/10/08 0:00	gkj
Total Alkalinity		262			mg/L	2	20	12/10/08 0:00	gkj
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-2.2			%			01/05/09 0:00	calc
Sum of Anions		16.2			meq/L	0.1	0.5	01/05/09 0:00	calc
Sum of Cations		15.5			meq/L	0.1	0.5	01/05/09 0:00	calc
Chloride	M300.0 - Ion Chromatography	20	B	*	mg/L	5	30	12/23/08 0:27	aml
Fluoride	SM4500F-C	0.7	H	*	mg/L	0.1	0.5	01/03/09 12:27	kah
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	0.02	B		mg/L	0.02	0.1	01/05/09 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	0.02	HB	*	mg/L	0.02	0.1	12/05/08 19:03	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		HU	*	mg/L	0.01	0.05	12/05/08 19:03	pjb
Residue, Filterable (TDS) @180C	SM2540C	970			mg/L	10	20	12/08/08 16:23	abm
Sulfate	300.0 - Ion Chromatography	494			mg/L	5	30	12/23/08 0:27	aml
TDS (calculated)	Calculation	1010			mg/L	10	50	01/05/09 0:00	calc
TDS (ratio - measured/calculated)	Calculation	0.96						01/05/09 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	LCSWD	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	LFB	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	LFM	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	LFMD	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	LRB	Laboratory Reagent Blank
ICB	Initial Calibration Blank	MS	Matrix Spike
ICV	Initial Calibration Verification standard	MSD	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	PBS	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	PBW	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	PQV	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	SDL	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Hydro Geo Chem, Inc.
Project ID: 8720002.2

ACZ Project ID: ***L73393***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG256983													
WG256983PBW1	PBW	12/09/08 18:26				8.1	mg/L		-20	20			
WG256983LCSW2	LCSW	12/09/08 18:36	WC081209-1	820.0001		796.4	mg/L	97.1	90	110			
WG256983PBW2	PBW	12/09/08 20:11				2.9	mg/L		-20	20			
WG256983LCSW5	LCSW	12/09/08 20:22	WC081209-1	820.0001		807.8	mg/L	98.5	90	110			
WG256983PBW3	PBW	12/09/08 22:17				U	mg/L		-20	20			
WG256983LCSW8	LCSW	12/09/08 22:27	WC081209-1	820.0001		804	mg/L	98	90	110			
L73404-04DUP	DUP	12/10/08 1:58			60	59.3	mg/L				1.2	20	
WG256983PBW4	PBW	12/10/08 2:04				U	mg/L		-20	20			
WG256983LCSW11	LCSW	12/10/08 2:16	WC081209-1	820.0001		825.2	mg/L	100.6	90	110			
WG256983LCSW14	LCSW	12/10/08 5:26	WC081209-1	820.0001		837.2	mg/L	102.1	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG256907													
WG256907ICV	ICV	12/09/08 0:37	II081119-1	100		95.13	mg/L	95.1	95	105			
WG256907ICB	ICB	12/09/08 0:40				U	mg/L		-0.6	0.6			
WG256907LFB	LFB	12/09/08 0:53	II081125-2	67.97008		65.94	mg/L	97	85	115			
L73379-02AS	AS	12/09/08 1:46	II081125-2	67.97008	1.4	68.95	mg/L	99.4	85	115			
L73379-02ASD	ASD	12/09/08 1:49	II081125-2	67.97008	1.4	68.91	mg/L	99.3	85	115	0.06	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257563													
WG257563ICV	ICV	12/19/08 17:04	WI081031-2	19.94		20.13	mg/L	101	90	110			
WG257563ICB	ICB	12/19/08 17:22				.5	mg/L		-1.5	1.5			
WG257563ICV1	ICV	12/22/08 16:36	WI081031-2	19.94		20.24	mg/L	101.5	90	110			
WG257563ICB1	ICB	12/22/08 16:54				U	mg/L		-1.5	1.5			
WG257563LFB	LFB	12/22/08 17:13	WI081125-2	30		28.5	mg/L	95	90	110			
L73284-02AS	AS	12/22/08 22:02	WI081125-2	150	269	397.7	mg/L	85.8	90	110			M2
L73284-02DUP	DUP	12/22/08 22:20			269	272.2	mg/L				1.2	20	

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257959													
WG257959ICV	ICV	01/03/09 12:11	WC081230-1	2		1.95	mg/L	97.5	95	105			
WG257959ICB	ICB	01/03/09 12:18				U	mg/L		-0.3	0.3			
WG257959LFB1	LFB	01/03/09 12:24	WC081121-5	5		5.03	mg/L	100.6	90	110			
L73393-01AS	AS	01/03/09 12:31	WC081121-5	5	.7	5.42	mg/L	94.4	90	110			
L73393-01DUP	DUP	01/03/09 12:34			.7	.66	mg/L				5.9	20	RA
WG257959LFB2	LFB	01/03/09 14:44	WC081121-5	5		5.03	mg/L	100.6	90	110			

Hydro Geo Chem, Inc. ACZ Project ID: ***L73393***

Project ID: 8720002.2

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG256907													
WG256907ICV	ICV	12/09/08 0:37	II081119-1	100		96.54	mg/L	96.5	95	105			
WG256907ICB	ICB	12/09/08 0:40				U	mg/L		-0.6	0.6			
WG256907LFB	LFB	12/09/08 0:53	II081125-2	49.96908		48.84	mg/L	97.7	85	115			
L73379-02AS	AS	12/09/08 1:46	II081125-2	49.96908	1.8	51.49	mg/L	99.4	85	115			
L73379-02ASD	ASD	12/09/08 1:49	II081125-2	49.96908	1.8	51.26	mg/L	99	85	115	0.45	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG256833													
WG256833ICV	ICV	12/05/08 18:20	WI080916-5	2.416		2.347	mg/L	97.1	90	110			
WG256833ICB	ICB	12/05/08 18:21				U	mg/L		-0.06	0.06			
WG256833LFB	LFB	12/05/08 18:26	WI080913-4	2		1.958	mg/L	97.9	90	110			
L73338-01AS	AS	12/05/08 19:09	WI080913-4	10	4	13.98	mg/L	99.8	90	110			
L73373-01DUP	DUP	12/05/08 19:16			14.1	14.17	mg/L				0.5	20	

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG256833													
WG256833ICV	ICV	12/05/08 18:20	WI080916-5	.609		.606	mg/L	99.5	90	110			
WG256833ICB	ICB	12/05/08 18:21				U	mg/L		-0.03	0.03			
WG256833LFB	LFB	12/05/08 18:26	WI080913-4	1		.989	mg/L	98.9	90	110			
L73338-01AS	AS	12/05/08 18:49	WI080913-4	1	.05	1.065	mg/L	101.5	90	110			
L73373-01DUP	DUP	12/05/08 18:52			.38	.381	mg/L				0.3	20	

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG256907													
WG256907ICV	ICV	12/09/08 0:37	II081119-1	20		19.76	mg/L	98.8	95	105			
WG256907ICB	ICB	12/09/08 0:40				U	mg/L		-0.9	0.9			
WG256907LFB	LFB	12/09/08 0:53	II081125-2	99.76186		99.7	mg/L	99.9	85	115			
L73379-02AS	AS	12/09/08 1:46	II081125-2	99.76186	U	102.56	mg/L	102.8	85	115			
L73379-02ASD	ASD	12/09/08 1:49	II081125-2	99.76186	U	102.24	mg/L	102.5	85	115	0.31	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG256921													
WG256921PBW	PBW	12/08/08 16:10				U	mg/L		-20	20			
WG256921LCSW	LCSW	12/08/08 16:10	PCN31030	260		244	mg/L	93.8	80	120			
L73407-04DUP	DUP	12/08/08 16:29			1280	1288	mg/L				0.6	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L73393***

Project ID: 8720002.2

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG256907													
WG256907ICV	ICV	12/09/08 0:37	II081119-1	100		99.2	mg/L	99.2	95	105			
WG256907ICV	ICV	12/09/08 0:37	II081119-1	100		98.16	mg/L	98.2	95	105			
WG256907ICB	ICB	12/09/08 0:40				U	mg/L		-6	6			
WG256907ICB	ICB	12/09/08 0:40				U	mg/L		-0.9	0.9			
WG256907LFB	LFB	12/09/08 0:53	II081125-2	98.21624		96.6	mg/L	98.4	85	115			
WG256907LFB	LFB	12/09/08 0:53	II081125-2	98.21624		97.81	mg/L	99.6	85	115			
L73379-02AS	AS	12/09/08 1:46	II081125-2	98.21624	200	299.86	mg/L	101.7	85	115			
L73379-02ASD	ASD	12/09/08 1:49	II081125-2	98.21624	200	294.98	mg/L	96.7	85	115	1.64	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257563													
WG257563ICV	ICV	12/19/08 17:04	WI081031-2	50		50.64	mg/L	101.3	90	110			
WG257563ICB	ICB	12/19/08 17:22				U	mg/L		-1.5	1.5			
WG257563ICV1	ICV	12/22/08 16:36	WI081031-2	50		52.24	mg/L	104.5	90	110			
WG257563ICB1	ICB	12/22/08 16:54				U	mg/L		-1.5	1.5			
WG257563LFB	LFB	12/22/08 17:13	WI081125-2	30		30.59	mg/L	102	90	110			
L73284-02AS	AS	12/22/08 22:02	WI081125-2	150	57	192.9	mg/L	90.6	90	110			
L73284-02DUP	DUP	12/22/08 22:20			57	59.5	mg/L				4.3	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L73393***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L73393-01	WG257563	Chloride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
			M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG257959	Fluoride	SM4500F-C	H1	Sample analysis performed past holding time.
			SM4500F-C	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG256833	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).

Certification Qualifiers

Hydro Geo Chem, Inc. ACZ Project ID: ***L73393***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720002.2

ACZ Project ID: L73393
Date Received: 12/5/2008
Received By:
Date Printed: 12/5/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Is the trip blank for Cyanide present?			X
12) Is the trip blank for VOA present?			X
13) Are samples requiring no headspace, headspace free?			X
14) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA7498	0.6	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720002.2

ACZ Project ID: L73393
Date Received: 12/5/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L73393-01	BMO-2008-13M		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L73393

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem, Inc.
E-mail:
Address: 51 W. Wetmore Rd
Tucson, AZ 85705
Telephone: 520-293-1500 x-133

Copy of Report to:

Name: Jim Norris
Company: HGC, Inc.
E-mail: Jimn@hgcinc.com
Telephone: 520-293-1500 x-112

Invoice to:

Name: Dan Simpson
Company: HGC, Inc
E-mail:
Address: 51 W. Wetmore Rd
Tucson, AZ 85705
Telephone: 520-293-1500 x-133

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 8720002.2
Reporting state for compliance testing: AZ
Sampler's Name: Travis Taylor
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB-GW							
BMO-2008-13M	12/03/08:1545	GW	3	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Travis Taylor	12/04/08:1130	[illegible]	12-5-08 11:30

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

December 15, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720005.0
ACZ Project ID: L73159

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on November 20, 2008. This project has been assigned to ACZ's project number, L73159. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L73159. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 15, 2009. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Hydro Geo Chem, Inc.
Project ID: 8720005.0
Sample ID: SCHWARTZ

ACZ Sample ID: ***L73159-01***
Date Sampled: *11/19/08 10:35*
Date Received: *11/20/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	140		*	mg/L	1	5	12/13/08 16:21	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	LCSWD	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	LFB	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	LFM	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	LFMD	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	LRB	Laboratory Reagent Blank
ICB	Initial Calibration Blank	MS	Matrix Spike
ICV	Initial Calibration Verification standard	MSD	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	PBS	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	PBW	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	PQV	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	SDL	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	The material was analyzed for, but was not detected above the level of the associated value.
	The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Hydro Geo Chem, Inc.
Project ID: 8720005.0

ACZ Project ID: ***L73159***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG257019													
WG257019ICV	ICV	12/09/08 14:20	WI081031-2	50		50.51	mg/L	101	90	110			
WG257019ICB	ICB	12/09/08 14:38				.59	mg/L		-1.5	1.5			
WG257019ICV1	ICV	12/10/08 11:43	WI081031-2	50		50.78	mg/L	101.6	90	110			
WG257019ICB1	ICB	12/10/08 12:02				U	mg/L		-1.5	1.5			
WG257019LFB	LFB	12/10/08 12:20	WI081125-2	30		31.39	mg/L	104.6	90	110			
L73120-04AS	AS	12/10/08 17:09	WI081125-2	30	1.3	32.6	mg/L	104.3	90	110			
L73120-04DUP	DUP	12/10/08 17:27			1.3	1.47	mg/L				12.3	20	RA
WG257019ICV2	ICV	12/12/08 3:06	WI081031-2	50		51.56	mg/L	103.1	90	110			
WG257019ICB2	ICB	12/12/08 3:24				U	mg/L		-1.5	1.5			
WG257019ICV3	ICV	12/13/08 14:27	WI081031-2	50		51.05	mg/L	102.1	90	110			
WG257019ICB3	ICB	12/13/08 14:45				U	mg/L		-1.5	1.5			
WG257019ICV4	ICV	12/13/08 15:27	WI081031-2	50		50.76	mg/L	101.5	90	110			
WG257019ICB4	ICB	12/13/08 15:45				U	mg/L		-1.5	1.5			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L73159***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L73159-01	WG257019	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720005.0

ACZ Project ID: L73159
Date Received: 11/20/2008
Received By:
Date Printed: 11/20/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Is the trip blank for Cyanide present?			X
12) Is the trip blank for VOA present?			X
13) Are samples requiring no headspace, headspace free?			X
14) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA7388	5.5	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720005.0

ACZ Project ID: L73159
Date Received: 11/20/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L73159-01	SCHWARTZ									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L73159

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: DAN SIMPSON	Address: 51 W. WETMORE RD
Company: HYDRO GEO CHEM INC.	TUCSON, AZ 85705
E-mail:	Telephone: 520-293-1500 x 133

Copy of Report to:

Name: JIM NORRIS	E-mail: jimn@hgcinc.com
Company: HGC, INC.	Telephone: 520-293-1500 x 112

Invoice to:

Name: DAN SIMPSON	Address: 51 W. WETMORE RD
Company: HGC, INC.	TUCSON, AZ 85705
E-mail:	Telephone: 520-293-1500 x 133

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ✓ NO

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: SULFATE-TREND

Project/PO #: 8720005.0

Reporting state for compliance testing: AZ

Sampler's Name: Chad Munich

Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	EPA 300.0							
SCHWARTZ	11/19/08: 1035	GW	1	✓							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Chad Munich	11/19/08: 1115	WL	11-20-08 9:40

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

December 04, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720002.2
ACZ Project ID: L73158

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on November 20, 2008. This project has been assigned to ACZ's project number, L73158. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L73158. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 04, 2009. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: TM-19A

ACZ Sample ID: ***L73158-01***
Date Sampled: *11/18/08 15:45*
Date Received: *11/20/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	66.3			mg/L	0.5	3	12/01/08 6:22	ccp

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	LCSWD	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	LFB	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	LFM	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	LFMD	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	LRB	Laboratory Reagent Blank
ICB	Initial Calibration Blank	MS	Matrix Spike
ICV	Initial Calibration Verification standard	MSD	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	PBS	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	PBW	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	PQV	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	SDL	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	The material was analyzed for, but was not detected above the level of the associated value.
	The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Hydro Geo Chem, Inc.
Project ID: 8720002.2

ACZ Project ID: ***L73158***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG256474													
WG256474ICV	ICV	11/26/08 19:05	WI081031-2	50		51.23	mg/L	102.5	90	110			
WG256474ICB	ICB	11/26/08 19:23				U	mg/L		-1.5	1.5			
WG256474ICV1	ICV	11/30/08 19:48	WI081031-2	50		50.45	mg/L	100.9	90	110			
WG256474ICB1	ICB	11/30/08 20:06				U	mg/L		-1.5	1.5			
WG256474LFB1	LFB	11/30/08 20:24	WI081125-2	30		28.18	mg/L	93.9	90	110			
WG256474LFB2	LFB	12/01/08 5:10	WI081125-2	30		29	mg/L	96.7	90	110			
L73036-03AS	AS	12/01/08 5:46	WI081125-2	30	27.6	55.3	mg/L	92.3	90	110			
L73036-03DUP	DUP	12/01/08 6:04			27.6	27.2	mg/L				1.5	20	
WG256474LFB1	LFB	12/01/08 12:46	WI081125-2	30		29.82	mg/L	99.4	90	110			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L73158***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720002.2

ACZ Project ID: L73158
Date Received: 11/20/2008
Received By:
Date Printed: 11/20/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Is the trip blank for Cyanide present?			X
12) Is the trip blank for VOA present?			X
13) Are samples requiring no headspace, headspace free?			X
14) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA7388	5.5	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720002.2

ACZ Project ID: L73158
Date Received: 11/20/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L73158-01	TM-19A									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L73158

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd.
Company: Hydro Geo Chem, Inc.	Tucson, AZ 85705
E-mail:	Telephone: 520-293-1500 x 133

Copy of Report to:

Name: Jim Norris	E-mail: jimn@hgcinc.com
Company: HGC, Inc.	Telephone: 520-293-1500 x 112

Invoice to:

Name: Dan Simpson	Address: 51 W Wetmore Rd.
Company: HGC, Inc.	Tucson, AZ 85705
E-mail:	Telephone: 520-293-1500 x 133

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ✓ NO

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: 504-IC

Project/PO #: 87200002.2

Reporting state for compliance testing: AZ

Sampler's Name: Chad Munich

Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	504-IC EPA 300.0							
TM-19A	11/18/08 : 1545	GW	1	✓							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Chad Munich Chad Munich	11/19/08 : 1115	NPL	11-20-08 9:46

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

December 04, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720002.2
ACZ Project ID: L73030

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on November 13, 2008. This project has been assigned to ACZ's project number, L73030. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L73030. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 04, 2009. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: BMO-2008-01G

ACZ Sample ID: ***L73030-01***
Date Sampled: *11/11/08 13:56*
Date Received: *11/13/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	143		*	mg/L	2	8	12/01/08 15:11	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: TM-03

ACZ Sample ID: ***L73030-02***
Date Sampled: *11/12/08 08:40*
Date Received: *11/13/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	128		*	mg/L	2	8	12/01/08 15:29	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: GL-03

ACZ Sample ID: ***L73030-03***
Date Sampled: *11/12/08 10:40*
Date Received: *11/13/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	34.9		*	mg/L	0.5	3	12/01/08 16:23	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: BMO-2008-11G

ACZ Sample ID: ***L73030-04***
Date Sampled: *11/12/08 12:55*
Date Received: *11/13/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	13.9		*	mg/L	0.5	3	12/01/08 4:51	ccp

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	LCSWD	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	LFB	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	LFM	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	LFMD	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	LRB	Laboratory Reagent Blank
ICB	Initial Calibration Blank	MS	Matrix Spike
ICV	Initial Calibration Verification standard	MSD	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	PBS	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	PBW	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	PQV	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	SDL	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	The material was analyzed for, but was not detected above the level of the associated value.
	The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Hydro Geo Chem, Inc.
Project ID: 8720002.2

ACZ Project ID: ***L73030***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG256474													
WG256474ICV	ICV	11/26/08 19:05	WI081031-2	50		51.23	mg/L	102.5	90	110			
WG256474ICB	ICB	11/26/08 19:23				U	mg/L		-1.5	1.5			
WG256474ICV1	ICV	11/30/08 19:48	WI081031-2	50		50.45	mg/L	100.9	90	110			
WG256474ICB1	ICB	11/30/08 20:06				U	mg/L		-1.5	1.5			
WG256474LFB1	LFB	11/30/08 20:24	WI081125-2	30		28.18	mg/L	93.9	90	110			
L72918-09AS	AS	12/01/08 1:14	WI081125-2	30	54.4	80.69	mg/L	87.6	90	110			M2
L72918-09DUP	DUP	12/01/08 1:32			54.4	53.41	mg/L				1.8	20	
WG256474LFB2	LFB	12/01/08 5:10	WI081125-2	30		29	mg/L	96.7	90	110			
WG256474LFB1	LFB	12/01/08 12:46	WI081125-2	30		29.82	mg/L	99.4	90	110			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L73030***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L73030-01	WG256474	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L73030-02	WG256474	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L73030-03	WG256474	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L73030-04	WG256474	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720002.2

ACZ Project ID: L73030
Date Received: 11/13/2008
Received By:
Date Printed: 11/13/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Is the trip blank for Cyanide present?			X
12) Is the trip blank for VOA present?			X
13) Are samples requiring no headspace, headspace free?			X
14) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA7352	2.9	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720002.2

ACZ Project ID: L73030
Date Received: 11/13/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L73030-01	BMO-2008-016									X		
L73030-02	TM-03									X		
L73030-03	GL-03									X		
L73030-04	BMO-2008-116									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L72030

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd. Tucson, AZ 85705
Company: Hydro Geo Chem, Inc.	
E-mail:	Telephone: 520-293-1500 x 133

Copy of Report to:

Name: Jim Norris	E-mail: jimn@hgcinc.com
Company: HGC, Inc.	Telephone: 520-293-1500 x 112

Invoice to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd. Tucson, AZ 85705
Company: HGC, Inc.	
E-mail:	Telephone: 520-293-1500 x 133

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ✓ NO

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB - GW

Project/PO #: 8720002.2

Reporting state for compliance testing: AZ

Sampler's Name: Chad Munich

Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	EPA 300.0 - SO4							
BMO-2008-016	11/11/08: 1356	GW	1	✓							
TM-03	11/12/08: 0840	GW	1	✓							
GL-03	11/12/08: 1040	GW	1	✓							
BMO-2008-116	11/12/08: 1255	GW	1	✓							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Chad S Munich	11/12/08: 1400	[illegible]	11-13-08 11:10

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

December 04, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720002.2
ACZ Project ID: L72918

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on November 07, 2008. This project has been assigned to ACZ's project number, L72918. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L72918. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 04, 2009. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: BMO-2008-03B

ACZ Sample ID: ***L72918-01***
Date Sampled: *11/04/08 10:40*
Date Received: *11/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	179			mg/L	2	8	12/01/08 13:04	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: EQB 110408

ACZ Sample ID: ***L72918-02***
Date Sampled: *11/04/08 07:25*
Date Received: *11/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	0.7	B		mg/L	0.5	3	11/30/08 22:13	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: FB 110408

ACZ Sample ID: ***L72918-03***
Date Sampled: *11/04/08 07:25*
Date Received: *11/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography		U		mg/L	0.5	3	11/30/08 22:31	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: DUP 110408

ACZ Sample ID: ***L72918-04***
Date Sampled: *11/04/08 07:25*
Date Received: *11/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	177			mg/L	2	8	12/01/08 13:22	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: BMO-2008-06B

ACZ Sample ID: ***L72918-05***
Date Sampled: *11/04/08 12:50*
Date Received: *11/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	60.3			mg/L	0.5	3	11/30/08 23:07	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: BMO-2008-06M

ACZ Sample ID: ***L72918-06***
Date Sampled: *11/04/08 14:40*
Date Received: *11/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	199			mg/L	2	8	12/01/08 13:40	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: TM-07

ACZ Sample ID: ***L72918-07***
Date Sampled: *11/04/08 16:40*
Date Received: *11/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	31.2			mg/L	0.5	3	12/01/08 0:20	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: TM-16

ACZ Sample ID: ***L72918-08***
Date Sampled: *11/05/08 07:40*
Date Received: *11/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	547			mg/L	5	30	12/01/08 13:58	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: BMO-2008-09M

ACZ Sample ID: ***L72918-09***
Date Sampled: *11/05/08 11:40*
Date Received: *11/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	54.4		*	mg/L	0.5	3	12/01/08 0:56	ccp

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: BMO-2008-10GU

ACZ Sample ID: ***L72918-10***
Date Sampled: *11/05/08 13:30*
Date Received: *11/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	1890		*	mg/L	10	50	12/01/08 14:16	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: BMO-2008-10GL

ACZ Sample ID: ***L72918-11***
Date Sampled: *11/05/08 15:35*
Date Received: *11/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	1290		*	mg/L	10	50	12/01/08 2:09	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: BF-01

ACZ Sample ID: ***L72918-12***
Date Sampled: *11/05/08 16:45*
Date Received: *11/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	1490		*	mg/L	30	100	12/01/08 14:34	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: BMO-2008-07M

ACZ Sample ID: ***L72918-13***
Date Sampled: *11/06/08 08:35*
Date Received: *11/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	34.5		*	mg/L	0.5	3	12/01/08 2:45	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: TM-42

ACZ Sample ID: ***L72918-14***
Date Sampled: *11/06/08 09:55*
Date Received: *11/07/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	477		*	mg/L	3	10	12/01/08 14:53	ccp

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	LCSWD	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	LFB	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	LFM	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	LFMD	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	LRB	Laboratory Reagent Blank
ICB	Initial Calibration Blank	MS	Matrix Spike
ICV	Initial Calibration Verification standard	MSD	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	PBS	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	PBW	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	PQV	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	SDL	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	The material was analyzed for, but was not detected above the level of the associated value.
	The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Hydro Geo Chem, Inc.
Project ID: 8720002.2

ACZ Project ID: ***L72918***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG256474													
WG256474ICV	ICV	11/26/08 19:05	WI081031-2	50		51.23	mg/L	102.5	90	110			
WG256474ICB	ICB	11/26/08 19:23				U	mg/L		-1.5	1.5			
WG256474ICV1	ICV	11/30/08 19:48	WI081031-2	50		50.45	mg/L	100.9	90	110			
WG256474ICB1	ICB	11/30/08 20:06				U	mg/L		-1.5	1.5			
WG256474LFB1	LFB	11/30/08 20:24	WI081125-2	30		28.18	mg/L	93.9	90	110			
L72824-02AS	AS	11/30/08 21:01	WI081125-2	30	18.4	45.66	mg/L	90.9	90	110			
L72824-02DUP	DUP	11/30/08 21:19			18.4	18.25	mg/L				0.8	20	
L72918-09AS	AS	12/01/08 1:14	WI081125-2	30	54.4	80.69	mg/L	87.6	90	110			M2
L72918-09DUP	DUP	12/01/08 1:32			54.4	53.41	mg/L				1.8	20	
WG256474LFB2	LFB	12/01/08 5:10	WI081125-2	30		29	mg/L	96.7	90	110			
WG256474LFB1	LFB	12/01/08 12:46	WI081125-2	30		29.82	mg/L	99.4	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: ***L72918***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L72918-09	WG256474	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72918-10	WG256474	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72918-11	WG256474	Sulfate	300.0 - Ion Chromatography	DD	Sample required dilution due to matrix color or odor.
			300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72918-12	WG256474	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72918-13	WG256474	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72918-14	WG256474	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000 2.3

ACZ Project ID: L72918
Date Received: 11/7/2008
Received By:
Date Printed: 11/7/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Is the trip blank for Cyanide present?			X
12) Is the trip blank for VOA present?			X
13) Are samples requiring no headspace, headspace free?			X
14) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA7310	-0.1	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000 2.3

ACZ Project ID: L72918
Date Received: 11/7/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L72918-01	BMO-2008-03B									X		
L72918-02	EQB-11042008									X		
L72918-03	FB-11042008									X		
L72918-04	DUP-11042008									X		
L72918-05	BMO-2008-06B									X		
L72918-06	BMO-2008-06M									X		
L72918-07	TM-07									X		
L72918-08	TM-16									X		
L72918-09	BMO-2008-09M									X		
L72918-10	BMO-2008-10GU									X		
L72918-11	BMO-2008-10GL									X		
L72918-12	BF-01									X		
L72918-13	BMO-2008-07M									X		
L72918-14	TM-42									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L72918

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address:
Company: HGC	
E-mail:	Telephone:

Copy of Report to:

Name: Jim Norris	E-mail:
Company: HGC	Telephone:

Invoice to:

Name: Dan Simpson	Address:
Company: HGC	
E-mail:	Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ✓ NO

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW

Project/PO #: 8720000 2.3

Reporting state for compliance testing: AZ

Sampler's Name: Chad Munich

Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO_4							
BMO-2008-03B	11/4/2008: 1040	GW	1	X							
EQB-11042008	11/4/2008: 0725	GW	1	X							
FB-11042008	11/4/2008: 0725	GW	1	X							
DUP-11042008	11/4/2008: 0725	GW	1	X							
BMO-2008-06B	11/4/2008: 1250	GW	1	X							
BMO-2008-06M	11/4/2008: 1440	GW	1	X							
TM-07	11/4/2008: 1640	GW	1	X							
TM-16	11/5/2008: 0740	GW	1	X							
BMO-2008-09M	11/5/2008: 1140	GW	1	X							
BMO-2008-10GU	11/5/2008: 1330	GW	1	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 2

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Chad Munich	11/6/08: 1030		11.7.08 9:15

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc. L72918

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address:
Company: HGC	
E-mail:	Telephone:

Copy of Report to:

Name: Jim Norris	E-mail:
Company: HGC	Telephone:

Invoice to:

Name: Dan Simpson	Address:
Company: HGC	
E-mail:	Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ✓ NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 8720000 2.3
Reporting state for compliance testing: AZ
Sampler's Name: Chad Munich
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO_4								
BMO-2008-106L	10/15/08: 1535	GW	1	X								
BF-01	11/5/08: 1645	GW	1	X								
BMO-2008-07M	11/6/08: 0835	GW	1	X								
TM-42	11/6/08 : 0955	GW	1	X								

Matrix | SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 2 of 2

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Chad Munich Chad Munich	11/6/08 : 1030		11-7-08 9:50

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

December 01, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720002.2
ACZ Project ID: L72779

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 31, 2008. This project has been assigned to ACZ's project number, L72779. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L72779. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 01, 2009. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Case Narrative

Hydro Geo Chem, Inc.

December 01, 2008

Project ID: 8720002.2
ACZ Project ID: L72779

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 14 ground water samples from Hydro Geo Chem, Inc. on October 31, 2008. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L72779. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

Any analyses not performed within EPA recommended holding times have been qualified with an "H" flag.

Sample Analysis

These samples were analyzed for inorganic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. Some of the Sulfate data has been qualified with the N1 flag on the extended qual report. The chemist noted that the initial data indicated a co-elution peak from an unknown source. The sample was re-analyzed (outside hold time) and reported. Data may be qualified as estimated.

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: PIONKE

ACZ Sample ID: ***L72779-01***
Date Sampled: *10/27/08 10:36*
Date Received: *10/31/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	460	H	*	mg/L	5	30	11/25/08 18:05	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: RAMIREZ

ACZ Sample ID: ***L72779-02***
Date Sampled: *10/27/08 16:15*
Date Received: *10/31/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	7.3	H	*	mg/L	0.5	3	11/28/08 11:22	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: ROGERS E

ACZ Sample ID: ***L72779-03***
Date Sampled: *10/27/08 17:32*
Date Received: *10/31/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	15.7	H	*	mg/L	0.5	3	11/28/08 11:58	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: TM-15 MILLER

ACZ Sample ID: ***L72779-04***
Date Sampled: *10/28/08 08:50*
Date Received: *10/31/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	18.6			mg/L	0.5	3	11/25/08 19:36	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: DUP-102808

ACZ Sample ID: ***L72779-05***
Date Sampled: *10/28/08 08:50*
Date Received: *10/31/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	18.8			mg/L	0.5	3	11/25/08 19:54	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: EQB-102808

ACZ Sample ID: ***L72779-06***
Date Sampled: *10/28/08 09:20*
Date Received: *10/31/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography		U		mg/L	0.5	3	11/25/08 20:48	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: FB-102808

ACZ Sample ID: ***L72779-07***
Date Sampled: *10/28/08 09:10*
Date Received: *10/31/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography		U		mg/L	0.5	3	11/25/08 21:06	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: ZANDER

ACZ Sample ID: ***L72779-08***
Date Sampled: *10/28/08 10:45*
Date Received: *10/31/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	15.0	H	*	mg/L	0.5	3	11/28/08 12:34	ccp

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: KEEFER

ACZ Sample ID: ***L72779-09***
Date Sampled: *10/28/08 12:30*
Date Received: *10/31/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	21.2			mg/L	0.5	3	11/25/08 21:42	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: WEISKOPF

ACZ Sample ID: ***L72779-10***
Date Sampled: *10/28/08 13:40*
Date Received: *10/31/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	602			mg/L	5	30	11/25/08 22:37	ccp

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: MOORE

ACZ Sample ID: ***L72779-11***
Date Sampled: *10/29/08 09:10*
Date Received: *10/31/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	19.2			mg/L	0.5	3	11/25/08 22:55	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: TM-06 MILLER

ACZ Sample ID: ***L72779-12***
Date Sampled: *10/29/08 14:55*
Date Received: *10/31/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	34.5			mg/L	0.5	3	11/25/08 23:13	ccp

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: GGOOSE 547

ACZ Sample ID: ***L72779-13***
Date Sampled: *10/30/08 12:40*
Date Received: *10/31/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	216			mg/L	5	30	11/25/08 23:31	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: TM-2A

ACZ Sample ID: ***L72779-14***
Date Sampled: *10/30/08 14:45*
Date Received: *10/31/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	21.9			mg/L	0.5	3	11/25/08 23:49	ccp

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	LCSWD	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	LFB	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	LFM	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	LFMD	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	LRB	Laboratory Reagent Blank
ICB	Initial Calibration Blank	MS	Matrix Spike
ICV	Initial Calibration Verification standard	MSD	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	PBS	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	PBW	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	PQV	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	SDL	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5) EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6) Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Hydro Geo Chem, Inc.
Project ID: 8720002.2

ACZ Project ID: ***L72779***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG256365													
WG256365ICV	ICV	11/25/08 12:54	WI081031-2	50		51.41	mg/L	102.8	90	110			
WG256365ICB	ICB	11/25/08 13:12				.59	mg/L		-1.5	1.5			
WG256365ICV1	ICV	11/25/08 14:46	WI081031-2	50		50.63	mg/L	101.3	90	110			
WG256365ICB1	ICB	11/25/08 15:04				U	mg/L		-1.5	1.5			
WG256365LFB	LFB	11/25/08 15:22	WI081125-2	30		30.32	mg/L	101.1	90	110			
L72639-01AS	AS	11/25/08 15:58	WI081125-2	30	39.5	68.08	mg/L	95.3	90	110			
L72639-01DUP	DUP	11/25/08 16:16			39.5	38.9	mg/L				1.5	20	
L72779-05AS	AS	11/25/08 20:12	WI081125-2	30	18.8	49.21	mg/L	101.4	90	110			
L72779-05DUP	DUP	11/25/08 20:30			18.8	19.09	mg/L				1.5	20	
WG256365ICV2	ICV	11/26/08 19:05	WI081031-2	50		51.23	mg/L	102.5	90	110			
WG256365ICB2	ICB	11/26/08 19:23				U	mg/L		-1.5	1.5			
L72779-02AS	AS	11/28/08 11:40	WI081125-2	30	7.3	44.03	mg/L	122.4	90	110			M2
L72779-03AS	AS	11/28/08 12:16	WI081125-2	30	15.7	44.75	mg/L	96.8	90	110			
L72779-08AS	AS	11/28/08 12:52	WI081125-2	30	15	44.06	mg/L	96.9	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: ***L72779***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L72779-01	WG256365	Sulfate	300.0 - Ion Chromatography	H1	Sample analysis performed past holding time.
L72779-02	WG256365	Sulfate	300.0 - Ion Chromatography	H1	Sample analysis performed past holding time.
			300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72779-03	WG256365	Sulfate	300.0 - Ion Chromatography	H1	Sample analysis performed past holding time.
			300.0 - Ion Chromatography	N1	See Case Narrative.
L72779-08	WG256365	Sulfate	300.0 - Ion Chromatography	H1	Sample analysis performed past holding time.
			300.0 - Ion Chromatography	N1	See Case Narrative.

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720002.2

ACZ Project ID: L72779
Date Received: 10/31/2008
Received By:
Date Printed: 10/31/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Is the trip blank for Cyanide present?			X
12) Is the trip blank for VOA present?			X
13) Are samples requiring no headspace, headspace free?			X
14) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA7256	2.7	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720002.2

ACZ Project ID: L72779
Date Received: 10/31/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L72779-01	PIONKE									X		
L72779-02	RAMIREZ									X		
L72779-03	ROGERS E									X		
L72779-04	TM-15 MILLER									X		
L72779-05	DUP-102808									X		
L72779-06	EQB-102808									X		
L72779-07	FB-102808									X		
L72779-08	ZANDER									X		
L72779-09	KEEFER									X		
L72779-10	WEISKOPF									X		
L72779-11	MOORE									X		
L72779-12	TM-06 MILLER									X		
L72779-13	GGOOSE 547									X		
L72779-14	TM-2A									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L72779

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem Inc.
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd
Tucson, AZ 85705
Telephone: 520-293-1500 x 133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc.
E-mail: jimn@hgcinc.com
Telephone: 520-293-1500 x 112

Invoice to:

Name: Dan Simpson
Company: HGC Inc.
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore
Tucson, AZ 85705
Telephone: 520-293-1500 x 113

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: ~~FT~~ 872000 2.2
Reporting state for compliance testing: AZ
Sampler's Name: Chad Munich
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO4							
PIONKE	10/27/08 : 1036	GW	1	X							
RAMIREZ	10/27/08: 1615	GW	1	X							
ROGERS E	10/27/08: 1732	GW	1	X							
TM-15 MILLER	10/28/08: 0850	GW	1	X							
DUP-102808	10/28/08: 0850	GW	1	X							
EQB-102808	10/28/08: 0920	GW	1	X							
FB - 102808	10/28/08: 0910	GW	1	X							
ZANDER	10/28/08: 1045	GW	1	X							
KEEFER	10/28/08: 1230	GW	1	X							
WEISKOPF	10/28/08: 1340	GW	1	X							

Matrix | SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Chad Munich	10/28/08 : 1515	YMS	10/29/08 10:10

ACZ Laboratories, Inc. L72779

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd. Tucson, AZ 85705
Company: Hydro Geo Chem Inc.	
E-mail: dans@hgcinc.com	Telephone: 520-293-1500 x 133

Copy of Report to:

Name: Jim Norris	E-mail: jimn@hgcinc.com
Company: HGC Inc.	Telephone: 520-293-1500 x 112

Invoice to:

Name: Dan Simpson	Address: 51 W. Wetmore Rd. Tucson AZ 85705
Company: HGC Inc.	
E-mail: dans@hgcinc.com	Telephone: 520-293-1500 x 113

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ✓ / NO

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB - GW

Project/PO #: 872000 - 2.2

Reporting state for compliance testing: AZ

Sampler's Name: Chad Munich

Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO_4							
MOORE	10/29/08: 0910	GW	1	X							
TM-06 MILLER	10/29/08: 1455	GW	1	X							
GGOOSE 547	10/30/08: 1240	GW	1	X							
TM-2A	10/30/08: 1445	GW	1	X	X						

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Chad Munich	10/30/08: 1515	MS	10/31/08 10:10

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

November 13, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 87200002.2
ACZ Project ID: L72696

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 28, 2008. This project has been assigned to ACZ's project number, L72696. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L72696. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 13, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Hydro Geo Chem, Inc.
Project ID: 87200002.2
Sample ID: NWC-06

ACZ Sample ID: ***L72696-01***
Date Sampled: *10/27/08 11:28*
Date Received: *10/28/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	54.5			mg/L	0.2	1	11/04/08 11:31	ear
Magnesium, dissolved	M200.7 ICP	7.4			mg/L	0.2	1	11/04/08 11:31	ear
Potassium, dissolved	M200.7 ICP	1.4	B		mg/L	0.3	2	11/04/08 11:31	ear
Sodium, dissolved	M200.7 ICP	26.4			mg/L	0.3	2	11/05/08 14:17	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		173			mg/L	2	20	10/30/08 0:00	abm
Carbonate as CaCO3			U		mg/L	2	20	10/30/08 0:00	abm
Hydroxide as CaCO3			U		mg/L	2	20	10/30/08 0:00	abm
Total Alkalinity		174			mg/L	2	20	10/30/08 0:00	abm
Cation-Anion Balance	Calculation								
Cation-Anion Balance		4.7			%			11/12/08 0:00	calc
Sum of Anions		4.1			meq/L	0.1	0.5	11/12/08 0:00	calc
Sum of Cations		4.5			meq/L	0.1	0.5	11/12/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	13.4			mg/L	0.5	3	11/10/08 18:57	aml
Fluoride	M300.0 - Ion Chromatography	0.2	B	*	mg/L	0.1	0.5	11/10/08 18:57	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.86			mg/L	0.02	0.1	11/12/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.86		*	mg/L	0.02	0.1	10/28/08 18:49	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	10/28/08 18:49	pjb
Residue, Filterable (TDS) @180C	SM2540C	260			mg/L	10	20	10/30/08 17:04	gkj
Sulfate	300.0 - Ion Chromatography	6.4		*	mg/L	0.5	3	11/10/08 18:57	aml
TDS (calculated)	Calculation	222			mg/L	10	50	11/12/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.17						11/12/08 0:00	calc

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 87200002.2
Sample ID: NWC-02

ACZ Sample ID: ***L72696-02***
Date Sampled: *10/27/08 12:20*
Date Received: *10/28/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	63.6			mg/L	0.2	1	11/04/08 11:34	ear
Magnesium, dissolved	M200.7 ICP	8.3			mg/L	0.2	1	11/04/08 11:34	ear
Potassium, dissolved	M200.7 ICP	1.1	B		mg/L	0.3	2	11/04/08 11:34	ear
Sodium, dissolved	M200.7 ICP	20.2			mg/L	0.3	2	11/05/08 14:27	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		176			mg/L	2	20	10/30/08 0:00	abm
Carbonate as CaCO3			U		mg/L	2	20	10/30/08 0:00	abm
Hydroxide as CaCO3			U		mg/L	2	20	10/30/08 0:00	abm
Total Alkalinity		176			mg/L	2	20	10/30/08 0:00	abm
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.3			%			11/12/08 0:00	calc
Sum of Anions		4.4			meq/L	0.1	0.5	11/12/08 0:00	calc
Sum of Cations		4.7			meq/L	0.1	0.5	11/12/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	20.7			mg/L	0.5	3	11/10/08 19:15	aml
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	11/10/08 19:15	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.74			mg/L	0.02	0.1	11/12/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.74		*	mg/L	0.02	0.1	10/28/08 18:50	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	10/28/08 18:50	pjb
Residue, Filterable (TDS) @180C	SM2540C	280			mg/L	10	20	10/30/08 17:06	gkj
Sulfate	300.0 - Ion Chromatography	5.1		*	mg/L	0.5	3	11/10/08 19:15	aml
TDS (calculated)	Calculation	237			mg/L	10	50	11/12/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.18						11/12/08 0:00	calc

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 87200002.2
Sample ID: NWC-03

ACZ Sample ID: ***L72696-03***
Date Sampled: *10/27/08 12:45*
Date Received: *10/28/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	222			mg/L	0.2	1	11/04/08 11:37	ear
Magnesium, dissolved	M200.7 ICP	34.1			mg/L	0.2	1	11/04/08 11:37	ear
Potassium, dissolved	M200.7 ICP	3.5			mg/L	0.3	2	11/04/08 11:37	ear
Sodium, dissolved	M200.7 ICP	47.2			mg/L	0.3	2	11/05/08 14:31	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		181			mg/L	2	20	10/30/08 0:00	abm
Carbonate as CaCO3			U		mg/L	2	20	10/30/08 0:00	abm
Hydroxide as CaCO3			U		mg/L	2	20	10/30/08 0:00	abm
Total Alkalinity		181			mg/L	2	20	10/30/08 0:00	abm
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.2			%			11/12/08 0:00	calc
Sum of Anions		15.1			meq/L	0.1	0.5	11/12/08 0:00	calc
Sum of Cations		16.1			meq/L	0.1	0.5	11/12/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	30.3			mg/L	0.5	3	11/10/08 19:34	aml
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.1	0.5	11/10/08 19:34	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	4.41			mg/L	0.06	0.3	11/12/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	4.41		*	mg/L	0.06	0.3	10/28/08 18:58	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	10/28/08 18:52	pjb
Residue, Filterable (TDS) @180C	SM2540C	1010			mg/L	10	20	10/30/08 17:08	gkj
Sulfate	300.0 - Ion Chromatography	489			mg/L	5	30	11/11/08 16:48	aml
TDS (calculated)	Calculation	954			mg/L	10	50	11/12/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.06						11/12/08 0:00	calc

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 87200002.2
Sample ID: NWC-04

ACZ Sample ID: ***L72696-04***
Date Sampled: *10/27/08 12:50*
Date Received: *10/28/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	91.5			mg/L	0.2	1	11/04/08 11:47	ear
Magnesium, dissolved	M200.7 ICP	36.7			mg/L	0.2	1	11/04/08 11:47	ear
Potassium, dissolved	M200.7 ICP	6.2			mg/L	0.3	2	11/04/08 11:47	ear
Sodium, dissolved	M200.7 ICP	41.5			mg/L	0.3	2	11/05/08 14:34	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		182			mg/L	2	20	10/30/08 0:00	abm
Carbonate as CaCO3			U		mg/L	2	20	10/30/08 0:00	abm
Hydroxide as CaCO3			U		mg/L	2	20	10/30/08 0:00	abm
Total Alkalinity		182			mg/L	2	20	10/30/08 0:00	abm
Cation-Anion Balance	Calculation								
Cation-Anion Balance		5.0			%			11/12/08 0:00	calc
Sum of Anions		8.6			meq/L	0.1	0.5	11/12/08 0:00	calc
Sum of Cations		9.5			meq/L	0.1	0.5	11/12/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	41.4			mg/L	0.5	3	11/10/08 20:28	aml
Fluoride	M300.0 - Ion Chromatography	0.1	B	*	mg/L	0.1	0.5	11/10/08 20:28	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	6.54			mg/L	0.06	0.3	11/12/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	6.54		*	mg/L	0.06	0.3	10/28/08 19:03	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	10/28/08 18:53	pjb
Residue, Filterable (TDS) @180C	SM2540C	540			mg/L	10	20	10/30/08 17:09	gkj
Sulfate	300.0 - Ion Chromatography	162			mg/L	3	10	11/11/08 17:43	aml
TDS (calculated)	Calculation	518			mg/L	10	50	11/12/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.04						11/12/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	LCSWD	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	LFB	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	LFM	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	LFMD	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	LRB	Laboratory Reagent Blank
ICB	Initial Calibration Blank	MS	Matrix Spike
ICV	Initial Calibration Verification standard	MSD	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	PBS	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	PBW	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	PQV	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	SDL	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 87200002.2

ACZ Project ID: ***L72696***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG254837													
WG254837PBW1	PBW	10/30/08 13:26				U	mg/L		-20	20			
WG254837LCSW2	LCSW	10/30/08 13:36	WC081022-2	820.0001		782.5	mg/L	95.4	90	110			
WG254837PBW2	PBW	10/30/08 16:23				U	mg/L		-20	20			
WG254837LCSW5	LCSW	10/30/08 16:34	WC081022-2	820.0001		789.3	mg/L	96.3	90	110			
WG254837PBW3	PBW	10/30/08 19:35				U	mg/L		-20	20			
WG254837LCSW8	LCSW	10/30/08 19:46	WC081022-2	820.0001		792.6	mg/L	96.7	90	110			
L72697-01DUP	DUP	10/30/08 22:52			125	126.1	mg/L				0.9	20	
WG254837PBW4	PBW	10/30/08 22:58				U	mg/L		-20	20			
WG254837LCSW11	LCSW	10/30/08 23:09	WC081022-2	820.0001		802.3	mg/L	97.8	90	110			
WG254837LCSW14	LCSW	10/31/08 2:19	WC081022-2	820.0001		808.5	mg/L	98.6	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG254880													
WG254880ICV	ICV	11/04/08 10:34	II080818-1	100		100.17	mg/L	100.2	95	105			
WG254880ICB	ICB	11/04/08 10:37				U	mg/L		-0.6	0.6			
WG254880LFB	LFB	11/04/08 10:49	II081023-4	67.97008		72.04	mg/L	106	85	115			
L72678-05AS	AS	11/04/08 10:56	II081023-4	67.97008	U	72.44	mg/L	106.6	85	115			
L72678-05ASD	ASD	11/04/08 10:59	II081023-4	67.97008	U	73.22	mg/L	107.7	85	115	1.07	20	
L72696-03AS	AS	11/04/08 11:40	II081023-4	67.97008	222	284.53	mg/L	92	85	115			
L72696-03ASD	ASD	11/04/08 11:44	II081023-4	67.97008	222	284.6	mg/L	92.1	85	115	0.02	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG255362													
WG255362ICV	ICV	11/10/08 12:04	WI081031-2	19.94		20.06	mg/L	100.6	90	110			
WG255362ICB	ICB	11/10/08 12:22				U	mg/L		-1.5	1.5			
WG255362ICV1	ICV	11/10/08 14:26	WI081031-2	19.94		20.1	mg/L	100.8	90	110			
WG255362ICB1	ICB	11/10/08 14:44				U	mg/L		-1.5	1.5			
WG255362LFB	LFB	11/10/08 15:02	WI081007-3	30		32.96	mg/L	109.9	90	110			
L72561-01AS	AS	11/10/08 15:38	WI081007-3	30	8.3	40.8	mg/L	108.3	90	110			
L72561-01DUP	DUP	11/10/08 15:56			8.3	8.3	mg/L				0	20	
L72696-03AS	AS	11/10/08 19:52	WI081007-3	30	30.3	61.43	mg/L	103.8	90	110			
L72696-03DUP	DUP	11/10/08 20:10			30.3	30.21	mg/L				0.3	20	
WG255362ICV2	ICV	11/11/08 16:12	WI081031-2	19.94		19.91	mg/L	99.8	90	110			
WG255362ICB2	ICB	11/11/08 16:30				U	mg/L		-1.5	1.5			

Hydro Geo Chem, Inc. ACZ Project ID: ***L72696***

Project ID: 87200002.2

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG255362													
WG255362ICV	ICV	11/10/08 12:04	WI081031-2	4		4.13	mg/L	103.3	90	110			
WG255362ICB	ICB	11/10/08 12:22				U	mg/L		-0.3	0.3			
WG255362ICV1	ICV	11/10/08 14:26	WI081031-2	4		3.98	mg/L	99.5	90	110			
WG255362ICB1	ICB	11/10/08 14:44				U	mg/L		-0.3	0.3			
WG255362LFB	LFB	11/10/08 15:02	WI081007-3	1.5		1.57	mg/L	104.7	90	110			
L72561-01AS	AS	11/10/08 15:38	WI081007-3	1.5	.7	2.25	mg/L	103.3	90	110			
L72561-01DUP	DUP	11/10/08 15:56			.7	.69	mg/L				1.4	20	RA
L72696-03AS	AS	11/10/08 19:52	WI081007-3	1.5	U	1.64	mg/L	109.3	90	110			
L72696-03DUP	DUP	11/10/08 20:10			U	.1	mg/L				0	20	RA
WG255362ICV2	ICV	11/11/08 16:12	WI081031-2	4		3.76	mg/L	94	90	110			
WG255362ICB2	ICB	11/11/08 16:30				U	mg/L		-0.3	0.3			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG254880													
WG254880ICV	ICV	11/04/08 10:34	II080818-1	100		100.33	mg/L	100.3	95	105			
WG254880ICB	ICB	11/04/08 10:37				U	mg/L		-0.6	0.6			
WG254880LFB	LFB	11/04/08 10:49	II081023-4	49.96908		52.12	mg/L	104.3	85	115			
L72678-05AS	AS	11/04/08 10:56	II081023-4	49.96908	U	52.5	mg/L	105.1	85	115			
L72678-05ASD	ASD	11/04/08 10:59	II081023-4	49.96908	U	53.93	mg/L	107.9	85	115	2.69	20	
L72696-03AS	AS	11/04/08 11:40	II081023-4	49.96908	34.1	87.44	mg/L	106.7	85	115			
L72696-03ASD	ASD	11/04/08 11:44	II081023-4	49.96908	34.1	87.86	mg/L	107.6	85	115	0.48	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG254717													
WG254717ICV	ICV	10/28/08 18:28	WI080916-5	2.416		2.395	mg/L	99.1	90	110			
WG254717ICB	ICB	10/28/08 18:29				U	mg/L		-0.06	0.06			
WG254717LFB	LFB	10/28/08 18:34	WI080913-4	2		2.006	mg/L	100.3	90	110			
L72686-01AS	AS	10/28/08 18:37	WI080913-4	2	U	2.057	mg/L	102.9	90	110			
L72691-01DUP	DUP	10/28/08 18:39			.15	.15	mg/L				0	20	RA
L72701-01DUP	DUP	10/28/08 18:55			3.54	3.568	mg/L				0.8	20	
L72701-01AS	AS	10/28/08 19:05	WI080913-4	6	3.56	9.83	mg/L	104.5	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG254717													
WG254717ICV	ICV	10/28/08 18:28	WI080916-5	.609		.612	mg/L	100.5	90	110			
WG254717ICB	ICB	10/28/08 18:29				U	mg/L		-0.03	0.03			
WG254717LFB	LFB	10/28/08 18:34	WI080913-4	1		.979	mg/L	97.9	90	110			
L72686-01AS	AS	10/28/08 18:37	WI080913-4	1	U	.986	mg/L	98.6	90	110			
L72691-01DUP	DUP	10/28/08 18:39			U	U	mg/L				0	20	RA
L72701-01DUP	DUP	10/28/08 18:55				U	mg/L				0	20	RA
L72701-01AS	AS	10/28/08 18:57	WI080913-4	1		.996	mg/L	99.6	90	110			

Hydro Geo Chem, Inc. ACZ Project ID: ***L72696***

Project ID: 87200002.2

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG254880													
WG254880ICV	ICV	11/04/08 10:34	II080818-1	20		20.81	mg/L	104.1	95	105			
WG254880ICB	ICB	11/04/08 10:37				U	mg/L		-0.9	0.9			
WG254880LFB	LFB	11/04/08 10:49	II081023-4	99.76186		105.79	mg/L	106	85	115			
L72678-05AS	AS	11/04/08 10:56	II081023-4	99.76186	U	106.44	mg/L	106.7	85	115			
L72678-05ASD	ASD	11/04/08 10:59	II081023-4	99.76186	U	106.79	mg/L	107	85	115	0.33	20	
L72696-03AS	AS	11/04/08 11:40	II081023-4	99.76186	3.5	112.52	mg/L	109.3	85	115			
L72696-03ASD	ASD	11/04/08 11:44	II081023-4	99.76186	3.5	113.25	mg/L	110	85	115	0.65	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG254892													
WG254892PBW	PBW	10/30/08 16:50				U	mg/L		-20	20			
WG254892LCSW	LCSW	10/30/08 16:51	PCN29990	260		282	mg/L	108.5	80	120			
L72696-01DUP	DUP	10/30/08 17:05			260	256	mg/L				1.6	20	
L72710-02DUP	DUP	10/30/08 17:19			2100	2130	mg/L				1.4	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG255180													
WG255180ICV	ICV	11/05/08 13:48	II080818-1	100		101.47	mg/L	101.5	95	105			
WG255180ICB	ICB	11/05/08 13:52				U	mg/L		-0.9	0.9			
WG255180LFB	LFB	11/05/08 14:04	II081023-4	98.21624		101.5	mg/L	103.3	85	115			
L72696-01AS	AS	11/05/08 14:21	II081023-4	98.21624	26.4	126.71	mg/L	102.1	85	115			
L72696-01ASD	ASD	11/05/08 14:24	II081023-4	98.21624	26.4	127.18	mg/L	102.6	85	115	0.37	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG255362													
WG255362ICV	ICV	11/10/08 12:04	WI081031-2	50		50.89	mg/L	101.8	90	110			
WG255362ICB	ICB	11/10/08 12:22				U	mg/L		-1.5	1.5			
WG255362ICV1	ICV	11/10/08 14:26	WI081031-2	50		50.57	mg/L	101.1	90	110			
WG255362ICB1	ICB	11/10/08 14:44				U	mg/L		-1.5	1.5			
WG255362LFB	LFB	11/10/08 15:02	WI081007-3	30		33.05	mg/L	110.2	90	110			
L72561-01AS	AS	11/11/08 0:05	WI081007-3	300	457	797.2	mg/L	113.4	90	110			M1
L72561-01DUP	DUP	11/11/08 0:23			457	474.1	mg/L				3.7	20	
WG255362ICV2	ICV	11/11/08 16:12	WI081031-2	50		50.13	mg/L	100.3	90	110			
WG255362ICB2	ICB	11/11/08 16:30				U	mg/L		-1.5	1.5			
L72696-03AS	AS	11/11/08 17:06	WI081007-3	300	489	800.7	mg/L	103.9	90	110			
L72696-03DUP	DUP	11/11/08 17:25			489	521.9	mg/L				6.5	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L72696***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L72696-01	WG255362	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG254717	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG255362	Sulfate	300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72696-02	WG255362	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG254717	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG255362	Sulfate	300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72696-03	WG255362	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG254717	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L72696-04	WG255362	Fluoride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG254717	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
87200002.2

ACZ Project ID: L72696
Date Received: 10/28/2008
Received By:
Date Printed: 10/28/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Is the trip blank for Cyanide present?			X
12) Is the trip blank for VOA present?			X
13) Are samples requiring no headspace, headspace free?			X
14) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
CLIENT	0	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
87200002.2

ACZ Project ID: L72696
Date Received: 10/28/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L72696-01	NWC-06		Y									
L72696-02	NWC-02		Y									
L72696-03	NWC-03		Y									
L72696-04	NWC-04		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L72696

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: HGC, Dan Simpson	Address: 51 W. Wetmore Rd.
Company: Hydro Geo Chem Inc.	Tucson, AZ 85705
E-mail: dans@hgcinc.com	Telephone: 520-293-1500 x 133

Copy of Report to:

Name: Jim Norris	E-mail: jimn@hgcinc.com
Company: HGC Inc.	Telephone: 520-293-1500 x 112

Invoice to:

Name: ~~Jim Norris~~ Dan Simpson	Address: 51 W. Wetmore Rd.
Company: HGC Inc.	Tucson, AZ 85705
E-mail: ~~jimn@hgcinc.com~~ dans@hgcinc.com	Telephone: 520-293-1500 x 113

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

YES ✓ NO

PROJECT INFORMATION

Quote #: FMCQB-GW

Project/PO #: 87200082.2

Reporting state for compliance testing: AZ

Sampler's Name: John Villinski, Chad Murich

Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB-GW
NWC-06	10/27/08 : 1128	GW	3	X
NWC-02	10/27/08 : 1220	GW	3	X
NWC-03	10/27/08 : 1245	GW	3	X
NWC-04	10/27/08 : 1250	GW	3	X

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Chad S Murich	10/27/08 : 1430	[illegible]	10-28-08 10:00

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

November 20, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720002.2
ACZ Project ID: L72665

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 24, 2008. This project has been assigned to ACZ's project number, L72665. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L72665. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 20, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: PARRA

ACZ Sample ID: ***L72665-01***
Date Sampled: *10/20/08 11:20*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	387		*	mg/L	5	30	11/11/08 4:37	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: METZLER

ACZ Sample ID: ***L72665-02***
Date Sampled: *10/20/08 12:20*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	305		*	mg/L	5	30	11/11/08 5:31	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: DUP102008

ACZ Sample ID: ***L72665-03***
Date Sampled: *10/20/08 00:00*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	326		*	mg/L	5	30	11/11/08 5:49	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: EQB102008

ACZ Sample ID: ***L72665-04***
Date Sampled: *10/20/08 12:25*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography		U	*	mg/L	0.5	3	11/13/08 19:09	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: FB102008

ACZ Sample ID: ***L72665-05***
Date Sampled: *10/20/08 12:25*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography		U	*	mg/L	0.5	3	11/13/08 19:27	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: RUIZ

ACZ Sample ID: ***L72665-06***
Date Sampled: *10/20/08 12:55*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	238		*	mg/L	5	30	11/11/08 6:07	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: COLLINS

ACZ Sample ID: ***L72665-07***
Date Sampled: *10/20/08 13:30*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	518		*	mg/L	5	30	11/11/08 6:25	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: COOPER

ACZ Sample ID: ***L72665-08***
Date Sampled: *10/20/08 14:05*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	31.2		*	mg/L	0.5	3	11/13/08 19:45	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: WEED

ACZ Sample ID: ***L72665-09***
Date Sampled: *10/20/08 14:25*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	10.2		*	mg/L	0.5	3	11/13/08 20:03	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: BURKE

ACZ Sample ID: ***L72665-10***
Date Sampled: *10/20/08 15:45*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	20.5		*	mg/L	0.5	3	11/13/08 20:57	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: POOL

ACZ Sample ID: ***L72665-11***
Date Sampled: *10/21/08 14:30*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	120		*	mg/L	3	10	11/11/08 6:43	aml

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: COB MW-1

ACZ Sample ID: ***L72665-12***
Date Sampled: *10/23/08 08:10*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	750		*	mg/L	10	50	11/11/08 8:14	aml

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: COB WL

ACZ Sample ID: ***L72665-13***
Date Sampled: *10/23/08 09:00*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	104		*	mg/L	1	5	11/11/08 8:32	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: COB MW-2

ACZ Sample ID: ***L72665-14***
Date Sampled: *10/23/08 09:40*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	34.9		*	mg/L	0.5	3	11/13/08 21:15	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: COB MW-3

ACZ Sample ID: ***L72665-15***
Date Sampled: *10/23/08 10:20*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	76.6		*	mg/L	0.5	3	11/13/08 21:33	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: AWC-05

ACZ Sample ID: ***L72665-16***
Date Sampled: *10/23/08 10:35*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	15.4		*	mg/L	0.5	3	11/07/08 8:57	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: AWC-03

ACZ Sample ID: ***L72665-17***
Date Sampled: *10/23/08 10:55*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	41.8		*	mg/L	0.5	3	11/07/08 9:15	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: AWC-04

ACZ Sample ID: ***L72665-18***
Date Sampled: *10/23/08 11:10*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	24.0		*	mg/L	0.5	3	11/07/08 9:33	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: AWC-02

ACZ Sample ID: ***L72665-19***
Date Sampled: *10/23/08 11:25*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	15.9		*	mg/L	0.5	3	11/07/08 9:51	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720002.2
Sample ID: NOTEMAN

ACZ Sample ID: ***L72665-20***
Date Sampled: *10/23/08 13:40*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	356		*	mg/L	5	30	11/11/08 8:50	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	LCSWD	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	LFB	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	LFM	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	LFMD	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	LRB	Laboratory Reagent Blank
ICB	Initial Calibration Blank	MS	Matrix Spike
ICV	Initial Calibration Verification standard	MSD	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	PBS	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	PBW	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	PQV	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	SDL	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 8720002.2

ACZ Project ID: ***L72665***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG255279													
WG255279ICV	ICV	10/28/08 19:48	WI081031-2	50		50.85	mg/L	101.7	90	110			
WG255279ICB	ICB	10/28/08 20:06				U	mg/L		-1.5	1.5			
WG255279ICV1	ICV	11/07/08 1:06	WI081031-2	50		52.94	mg/L	105.9	90	110			
WG255279ICB1	ICB	11/07/08 1:24				U	mg/L		-1.5	1.5			
WG255279ICV2	ICV	11/10/08 12:04	WI081031-2	50		50.89	mg/L	101.8	90	110			
WG255279ICB2	ICB	11/10/08 12:22				U	mg/L		-1.5	1.5			
WG255279ICV3	ICV	11/11/08 3:42	WI081031-2	50		49.84	mg/L	99.7	90	110			
WG255279ICB3	ICB	11/11/08 4:01				U	mg/L		-1.5	1.5			
WG255279LFB	LFB	11/11/08 4:19	WI081007-3	30		29.87	mg/L	99.6	90	110			
L72665-01AS	AS	11/11/08 4:55	WI081007-3	300	387	649	mg/L	87.3	90	110			M2
L72665-01DUP	DUP	11/11/08 5:13			387	411	mg/L				6	20	
L72665-11AS	AS	11/11/08 7:02	WI081007-3	150	120	252.5	mg/L	88.3	90	110			M2
L72665-11DUP	DUP	11/11/08 7:56			120	124.3	mg/L				3.5	20	
WG255362													
WG255362ICV	ICV	11/10/08 12:04	WI081031-2	50		50.89	mg/L	101.8	90	110			
WG255362ICB	ICB	11/10/08 12:22				U	mg/L		-1.5	1.5			
WG255362ICV1	ICV	11/10/08 14:26	WI081031-2	50		50.57	mg/L	101.1	90	110			
WG255362ICB1	ICB	11/10/08 14:44				U	mg/L		-1.5	1.5			
WG255362ICV2	ICV	11/11/08 16:12	WI081031-2	50		50.13	mg/L	100.3	90	110			
WG255362ICB2	ICB	11/11/08 16:30				U	mg/L		-1.5	1.5			
WG255715													
WG255715ICV	ICV	11/10/08 12:04	WI081031-2	50		50.89	mg/L	101.8	90	110			
WG255715ICB	ICB	11/10/08 12:22				U	mg/L		-1.5	1.5			
WG255715ICV1	ICV	11/13/08 16:44	WI081031-2	50		50.33	mg/L	100.7	90	110			
WG255715ICB1	ICB	11/13/08 17:02				U	mg/L		-1.5	1.5			
WG255715LFB	LFB	11/13/08 17:20	WI081007-3	30		29.2	mg/L	97.3	90	110			
L72630-01AS	AS	11/13/08 18:14	WI081007-3	600	U	627	mg/L	104.5	90	110			
L72630-01DUP	DUP	11/13/08 18:32			U	13	mg/L				200	20	RA
WG255715ICV2	ICV	11/14/08 11:26	WI081031-2	50		50.42	mg/L	100.8	90	110			
WG255715ICB2	ICB	11/14/08 11:44				U	mg/L		-1.5	1.5			

Hydro Geo Chem, Inc.

ACZ Project ID: ***L72665***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L72665-01	WG255279	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72665-02	WG255279	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72665-03	WG255279	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72665-04	WG255715	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L72665-05	WG255715	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L72665-06	WG255279	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72665-07	WG255279	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72665-08	WG255715	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L72665-09	WG255715	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L72665-10	WG255715	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L72665-11	WG255279	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72665-12	WG255279	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72665-13	WG255279	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72665-14	WG255715	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L72665-15	WG255715	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L72665-16	WG255279	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72665-17	WG255279	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72665-18	WG255279	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72665-19	WG255279	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L72665-20	WG255279	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720002.2

ACZ Project ID: L72665
Date Received: 10/24/2008
Received By:
Date Printed: 10/24/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Is the trip blank for Cyanide present?			X
12) Is the trip blank for VOA present?			X
13) Are samples requiring no headspace, headspace free?			X
14) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA7221	1.7	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720002.2

ACZ Project ID: L72665
Date Received: 10/24/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L72665-01	PARRA									X		
L72665-02	METZLER									X		
L72665-03	DUP102008									X		
L72665-04	EQB102008									X		
L72665-05	FB102008									X		
L72665-06	RUIZ									X		
L72665-07	COLLINS									X		
L72665-08	COOPER									X		
L72665-09	WEED									X		
L72665-10	BURKE									X		
L72665-11	POOL									X		
L72665-12	COB MW-1									X		
L72665-13	COB WL									X		
L72665-14	COB MW-2									X		
L72665-15	COB MW-3									X		
L72665-16	AWC-05									X		
L72665-17	AWC-03									X		
L72665-18	AWC-04									X		
L72665-19	AWC-02									X		
L72665-20	NOTEMAN									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L72665

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem
E-mail: dans@hgcinc.com
Address: 50 W Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Telephone: 520-293-1500 x112

Invoice to:

Name: Dan Simpson
Company: Hydro Geo Chem
E-mail: dans@hgcinc.com
Address: 50 W Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x133

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

YES [X]
NO [ ]

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 8720002.2
Reporting state for compliance testing: AZ
Sampler's Name: John Vilinski
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Sulfate							
PARRA	10-20-08/ 11:20	GW	1	X							
METZLER	10-20-08/ 12:20	GW	1	X							
DUP102008	10-20-08	GW	1	X							
EQB102008	10-20-08/ 12:25	GW	1	X							
FB102008	10-20-08/ 12:25	GW	1	X							
RUIZ	10-20-08/ 12:55	GW	1	X							
COLLINS	10-20-08/ 13:30	GW	1	X							
COOPER	10-20-08/ 14:05	GW	1	X							
WEED	10-20-08/ 14:25	GW	1	X							
BURKE	10-20-08/ 15:45	GW	1	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 2

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10-23-08/15:30		10.24.08 10:30

ACZ Laboratories, Inc. L72065

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: HydroGeoChem
E-mail: dans@hgcinc.com
Address: 51 W Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: ~~jim@hg~~ HGC
E-mail: jim@hgcinc.com
Telephone: 520-293-1500 x112

Invoice to:

Name: Dan Simpson
Company: HGC
E-mail: dans@hgcinc.com
Address: 51 W Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x133

If sample(s) received past ~~holding~~ time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 8720002.2
Reporting state for compliance testing: AZ
Sampler's Name: John Mlinski
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Sulfate							
POOL	10-21-08/ 14:30	GW	1	X							
COB MW-1	10-23-08/ 8:10	GW	1	X							
COB WL	10-23-08/ 9:00	GW	1	X							
COB MW-2	10-23-08/ 9:40	GW	1	X							
COB MW-3	10-23-08/ 10:20	GW	1	X							
AWC-05	10-23-08/ 10:35	GW	1	X							
AWC-03	10-23-08/ 10:55	GW	1	X							
AWC-04	10-23-08/ 11:10	GW	1	X							
AWC-02	10-23-08/ 11:25	GW	1	X							
NOTEMAN	10-23-08/ 13:40	GW	1	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 2 of 2

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10-23-08/ 1530		10-24-08 10:38

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

November 05, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720005.0
ACZ Project ID: L72654

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 24, 2008. This project has been assigned to ACZ's project number, L72654. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L72654. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 05, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Hydro Geo Chem, Inc.
Project ID: 8720005.0
Sample ID: BLOMMER

ACZ Sample ID: ***L72654-01***
Date Sampled: *10/22/08 08:20*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	200			mg/L	3	10	11/02/08 3:22	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720005.0
Sample ID: ROGERS 803

ACZ Sample ID: ***L72654-02***
Date Sampled: *10/22/08 10:00*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	144			mg/L	3	10	11/02/08 3:40	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720005.0
Sample ID: SCHWARZ

ACZ Sample ID: ***L72654-03***
Date Sampled: *10/22/08 11:45*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	135			mg/L	3	10	11/02/08 4:35	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720005.0
Sample ID: RAY

ACZ Sample ID: ***L72654-04***
Date Sampled: *10/22/08 14:25*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	145			mg/L	3	10	11/02/08 4:53	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720005.0
Sample ID: FULTZ

ACZ Sample ID: ***L72654-05***
Date Sampled: *10/22/08 15:15*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	145			mg/L	3	10	11/02/08 5:11	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720005.0
Sample ID: BIMA

ACZ Sample ID: ***L72654-06***
Date Sampled: *10/22/08 16:50*
Date Received: *10/24/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	285			mg/L	3	10	11/02/08 5:29	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	LCSWD	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	LFB	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	LFM	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	LFMD	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	LRB	Laboratory Reagent Blank
ICB	Initial Calibration Blank	MS	Matrix Spike
ICV	Initial Calibration Verification standard	MSD	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	PBS	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	PBW	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	PQV	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	SDL	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	The material was analyzed for, but was not detected above the level of the associated value.
	The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 8720005.0

ACZ Project ID: ***L72654***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG254921													
WG254921ICV	ICV	10/28/08 19:48	WI081031-2	50		50.85	mg/L	101.7	90	110			
WG254921ICB	ICB	10/28/08 20:06				U	mg/L		-1.5	1.5			
WG254921ICV1	ICV	11/01/08 1:06	WI081031-2	50		52.43	mg/L	104.9	90	110			
WG254921ICB1	ICB	11/01/08 1:24				.84	mg/L		-1.5	1.5			
WG254921LFB	LFB	11/01/08 1:42	WI081007-3	30		31.91	mg/L	106.4	90	110			
L72620-01AS	AS	11/01/08 2:37	WI081007-3	30	6.5	37.65	mg/L	103.8	90	110			
L72620-01DUP	DUP	11/01/08 2:55			6.5	6.6	mg/L				1.5	20	
L72654-02AS	AS	11/02/08 3:59	WI081007-3	150	144	303.5	mg/L	106.3	90	110			
L72654-02DUP	DUP	11/02/08 4:17			144	175	mg/L				19.4	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L72654***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720005.0

ACZ Project ID: L72654
Date Received: 10/24/2008
Received By:
Date Printed: 10/24/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Is the trip blank for Cyanide present?			X
12) Is the trip blank for VOA present?			X
13) Are samples requiring no headspace, headspace free?			X
14) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
1756	3.7	16

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720005.0

ACZ Project ID: L72654
Date Received: 10/24/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L72654-01	BLOMMER									X		
L72654-02	ROGERS 803									X		
L72654-03	SCHWARZ									X		
L72654-04	RAY									X		
L72654-05	FULTZ									X		
L72654-06	BIMA									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

L72654

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: HydroGeoChem
E-mail: dans@hgcinc.com
Address: 51 W Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Telephone: 520-293-1500 x112

Invoice to:

Name: Dan Simpson
Company: HGC
E-mail: dans@hgcinc.com
Address: 51 W Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x133

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES X / NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 87200050
Reporting state for compliance testing: AZ
Sampler's Name: John Villinski
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Sulfate
BLOMMER	10-22-08/ 8:20	GW	1	X
ROGERS 803	10-22-08/ 10:00	GW	1	X
SCHWARZ	10-22-08/ 11:45	GW	1	X
RAY	10-22-08/ 14:25	GW	1	X
FULTZ	10-22-08/ 15:15	GW	1	X
BIMA	10-22-08/ 16:50	GW	1	X

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10-23-08/15:30	CO	10.24.0810:15

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

November 05, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000
ACZ Project ID: L72620

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 23, 2008. This project has been assigned to ACZ's project number, L72620. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L72620. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 05, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: UN-02

ACZ Sample ID: ***L72620-01***
Date Sampled: *10/14/08 11:35*
Date Received: *10/23/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	6.5			mg/L	0.5	3	11/01/08 2:19	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: UN-03

ACZ Sample ID: ***L72620-02***
Date Sampled: *10/14/08 11:15*
Date Received: *10/23/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	6.7			mg/L	0.5	3	11/01/08 3:13	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: UN-04

ACZ Sample ID: ***L72620-03***
Date Sampled: *10/14/08 12:25*
Date Received: *10/23/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	6.8			mg/L	0.5	3	11/01/08 3:31	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: UN-05

ACZ Sample ID: ***L72620-04***
Date Sampled: *10/14/08 11:55*
Date Received: *10/23/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	6.5			mg/L	0.5	3	11/01/08 3:49	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: EN-02

ACZ Sample ID: ***L72620-05***
Date Sampled: *10/21/08 08:25*
Date Received: *10/23/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	7.1			mg/L	0.5	3	11/01/08 4:07	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: EN-06

ACZ Sample ID: ***L72620-06***
Date Sampled: *10/21/08 09:00*
Date Received: *10/23/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	9.8			mg/L	0.5	3	11/01/08 4:25	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: EN-05

ACZ Sample ID: ***L72620-07***
Date Sampled: *10/21/08 09:15*
Date Received: *10/23/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	6.1			mg/L	0.5	3	11/01/08 5:20	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: EN-03

ACZ Sample ID: ***L72620-08***
Date Sampled: *10/21/08 09:40*
Date Received: *10/23/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	8.7			mg/L	0.5	3	11/01/08 5:38	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	LCSWD	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	LFB	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	LFM	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	LFMD	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	LRB	Laboratory Reagent Blank
ICB	Initial Calibration Blank	MS	Matrix Spike
ICV	Initial Calibration Verification standard	MSD	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	PBS	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	PBW	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	PQV	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	SDL	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	The material was analyzed for, but was not detected above the level of the associated value.
	The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 8720000

ACZ Project ID: ***L72620***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG254921													
WG254921ICV	ICV	10/28/08 19:48	WI081031-2	50		50.85	mg/L	101.7	90	110			
WG254921ICB	ICB	10/28/08 20:06				U	mg/L		-1.5	1.5			
WG254921ICV1	ICV	11/01/08 1:06	WI081031-2	50		52.43	mg/L	104.9	90	110			
WG254921ICB1	ICB	11/01/08 1:24				.84	mg/L		-1.5	1.5			
WG254921LFB	LFB	11/01/08 1:42	WI081007-3	30		31.91	mg/L	106.4	90	110			
L72620-01AS	AS	11/01/08 2:37	WI081007-3	30	6.5	37.65	mg/L	103.8	90	110			
L72620-01DUP	DUP	11/01/08 2:55			6.5	6.6	mg/L				1.5	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L72620***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L72620
Date Received: 10/23/2008
Received By:
Date Printed: 10/23/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Is the trip blank for Cyanide present?			X
12) Is the trip blank for VOA present?			X
13) Are samples requiring no headspace, headspace free?			X
14) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA7195	3.5	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

L72620

wpl 10-23-08

ACZ Laboratories, Inc. ~~L72406~~ CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Tucson AZ 85705
Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris / Rebecca Sawyer
Company: HGC FMI
E-mail: jim@hgcinc.com
Telephone: rebecca-sawyer@FMI.com

Invoice to:

Name: Jim Norris
Company: HGC
E-mail: jim@hgcinc.com
Address: 51 W. Wetmore Tucson AZ 85705
Telephone: 520-293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES X NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 8720000 22
Reporting state for compliance testing: AZ
Sampler's Name: John Villinski
Are any samples NRC licensable material? NO

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Sulfate	FMCQB-GW						
BANKS 986	10-13-08 / 13:23	GW	1	X							
DODSON	10-13-08 / 14:45	GW	1	X							
DUP 101308	10-13-08	GW	1	X							
EQB 101308	10-13-08 / 16:50	GW	1	X							
FB 101308	10-13-08 / 16:50	GW	1	X							
PANAGAKOS	10-13-08 / 16:45	GW	1	X							
~~POZO-02~~	10-14-08 / 11:35	GW	3		X	UD-02					
~~POZO-03~~	10-14-08 / 11:15	GW	3		X	UD-03					
~~POZO-04~~	10-14-08 / 12:25	GW	3		X	UD-04					
~~POZO-05~~	10-14-08 / 11:55	GW	3		X	UD-05					

10-23-08 Per client email X X X X

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

COPY

Page 1 of 2

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10/14/08 / 13:30		10.15.08 951

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc. L72620

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: HydroGeoChem
E-mail: dans@hgcinc.com
Address: 51 W Wetmore Tucson AZ 85705
Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Telephone: 520-293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Address: 51 W Wetmore Tucson AZ 85705
Telephone: 520-293-1500 x133

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 872000 2.2
Reporting state for compliance testing: AZ
Sampler's Name: John Villinski
Are any samples NRC licensable material?

LCC 10.23.08 per client email

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB-GW							
~~EJIDO NACO 02~~	10/21/08 - 8:25	GW	3	X	END-02						
~~EJIDO NACO 06~~	10/21/08 - 9:00	GW	3	X	END-06						
~~EJIDO NACO 05~~	10/21/08 - 9:15	GW	3	X	END-05						
~~EJIDO NACO 03~~	10/21/08 - 9:40	GW	3	X	END-03						

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10/21/08 - 13:30		10/22/08 9:56

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

October 28, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000
ACZ Project ID: L72549

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 17, 2008. This project has been assigned to ACZ's project number, L72549. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L72549. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after November 28, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: HOWARD

ACZ Sample ID: ***L72549-01***
Date Sampled: *10/15/08 08:05*
Date Received: *10/17/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	683			mg/L	5	30	10/20/08 20:01	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: GARNER 635

ACZ Sample ID: ***L72549-02***
Date Sampled: *10/15/08 08:45*
Date Received: *10/17/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	36.0			mg/L	0.5	3	10/19/08 20:41	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: FRANCO

ACZ Sample ID: ***L72549-03***
Date Sampled: *10/15/08 09:40*
Date Received: *10/17/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	680			mg/L	5	30	10/20/08 20:19	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: MCCONNELL 265

ACZ Sample ID: ***L72549-04***
Date Sampled: *10/15/08 10:40*
Date Received: *10/17/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	703			mg/L	5	30	10/20/08 20:37	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: CHAMBERS

ACZ Sample ID: ***L72549-05***
Date Sampled: *10/15/08 11:35*
Date Received: *10/17/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	4.0			mg/L	0.5	3	10/25/08 17:11	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: TVI236

ACZ Sample ID: ***L72549-06***
Date Sampled: *10/15/08 12:25*
Date Received: *10/17/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	36.6			mg/L	0.5	3	10/25/08 17:29	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: TVI875

ACZ Sample ID: ***L72549-07***
Date Sampled: *10/15/08 13:10*
Date Received: *10/17/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	245			mg/L	3	10	10/27/08 21:12	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: ANDERSON

ACZ Sample ID: ***L72549-08***
Date Sampled: *10/15/08 16:50*
Date Received: *10/17/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	475			mg/L	5	30	10/27/08 21:30	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: PALMER

ACZ Sample ID: ***L72549-09***
Date Sampled: *10/16/08 08:05*
Date Received: *10/17/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	15.9			mg/L	0.5	3	10/25/08 18:59	ccp

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: NESS

ACZ Sample ID: ***L72549-10***
Date Sampled: *10/16/08 08:30*
Date Received: *10/17/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	48.9			mg/L	0.5	3	10/25/08 19:17	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: SWAN

ACZ Sample ID: ***L72549-11***
Date Sampled: *10/16/08 09:15*
Date Received: *10/17/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	19.0			mg/L	0.5	3	10/25/08 20:12	ccp

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: OSBORN

ACZ Sample ID: ***L72549-12***
Date Sampled: *10/16/08 10:05*
Date Received: *10/17/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	15.9			mg/L	0.5	3	10/25/08 20:30	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: HOBAN

ACZ Sample ID: ***L72549-13***
Date Sampled: *10/16/08 13:15*
Date Received: *10/17/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	692			mg/L	5	30	10/27/08 21:49	ccp

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: COPPERC

ACZ Sample ID: ***L72549-14***
Date Sampled: *10/16/08 14:20*
Date Received: *10/17/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	1020			mg/L	30	100	10/27/08 22:07	ccp

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 8720000

ACZ Project ID: ***L72549***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG254077													
WG254077ICV	ICV	10/14/08 13:25	WI081007-1	50		50.62	mg/L	101.2	90	110			
WG254077ICB	ICB	10/14/08 13:43				U	mg/L		-1.5	1.5			
WG254077ICV1	ICV	10/19/08 16:28	WI081007-1	50		51.81	mg/L	103.6	90	110			
WG254077ICB1	ICB	10/19/08 16:46				U	mg/L		-1.5	1.5			
L72400-01DUP	DUP	10/19/08 17:59			6.8	6.84	mg/L				0.6	20	
L72400-01AS	AS	10/19/08 18:17	WI081007-3	30	6.8	39.24	mg/L	108.1	90	110			
WG254077ICV2	ICV	10/20/08 19:07	WI081007-1	50		52.48	mg/L	105	90	110			
WG254077ICB2	ICB	10/20/08 19:25				U	mg/L		-1.5	1.5			
WG254077LFB	LFB	10/20/08 19:43	WI081007-3	30		30.77	mg/L	102.6	90	110			
WG254537													
WG254537ICV	ICV	10/14/08 13:25	WI081007-1	50		50.62	mg/L	101.2	90	110			
WG254537ICB	ICB	10/14/08 13:43				U	mg/L		-1.5	1.5			
WG254537ICV1	ICV	10/25/08 12:21	WI081007-1	50		52.2	mg/L	104.4	90	110			
WG254537ICB1	ICB	10/25/08 12:39				U	mg/L		-1.5	1.5			
WG254537LFB	LFB	10/25/08 12:57	WI081007-3	30		32.19	mg/L	107.3	90	110			
L72549-06AS	AS	10/25/08 17:47	WI081007-3	30	36.6	64.76	mg/L	93.9	90	110			
L72549-06DUP	DUP	10/25/08 18:05			36.6	36.67	mg/L				0.2	20	
WG254537ICV2	ICV	10/27/08 17:59	WI081007-1	50		50.25	mg/L	100.5	90	110			
WG254537ICB2	ICB	10/27/08 18:17				U	mg/L		-1.5	1.5			
L72482-01AS	AS	10/27/08 20:18	WI081007-3	150	175	318.5	mg/L	95.7	90	110			
L72482-01DUP	DUP	10/27/08 20:36			175	173.9	mg/L				0.6	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L72549***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

Certification Qualifiers

Hydro Geo Chem, Inc. ACZ Project ID: ***L72549***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L72549
Date Received: 10/17/2008
Received By:
Date Printed: 10/17/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Is the trip blank for Cyanide present?			X
12) Is the trip blank for VOA present?			X
13) Are samples requiring no headspace, headspace free?			X
14) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
1905	2.5	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L72549
Date Received: 10/17/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L72549-01	HOWARD									X		
L72549-02	GARNER 635									X		
L72549-03	FRANCO									X		
L72549-04	MCCONNELL 265									X		
L72549-05	CHAMBERS									X		
L72549-06	TVI236									X		
L72549-07	TVI875									X		
L72549-08	ANDERSON									X		
L72549-09	PALMER									X		
L72549-10	NESS									X		
L72549-11	SWAN									X		
L72549-12	OSBORN									X		
L72549-13	HOBAN									X		
L72549-14	COPPERC									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L72549

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W Wetmore
Company: HydroGeoChem	Tucson AZ 85705
E-mail: dans@hgcinc.com	Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris/Rebecca Sawyer	E-mail: jimn@hgcinc.com
Company: HGC/FMI	~~Telephone~~: rebecca-sawyer@FMI.com

Invoice to:

Name: Jim Norris	Address: 51 W Wetmore
Company: HGC	Tucson AZ 85705
E-mail: jimn@hgcinc.com	Telephone: 520-293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: ~~8[illegible]~~ FMCQB-GW

Project/PO #: 8720000

Reporting state for compliance testing: AZ

Sampler's Name: John Villinski

Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO4							
HOWARD	10-15-08/ 8:05	GW	1	X							
GARNER 635	10-15-08/ 8:45	GW	1	X							
FRANCO	10-15-08/ 9:40	GW	1	X							
MCCONNELL 265	10-15-08/ 10:40	GW	1	X							
CHAMBERS	10-15-08/ 11:35	GW	1	X							
TVI 236	10-15-08/ 12:25	GW	1	X							
TVI 875	10-15-08/ 13:10	GW	1	X							
ANDERSON	10-15-08/ 16:50	GW	1	X							
PALMER	10-16-08/ 8:05	GW	1	X							
NESS	10-16-08/ 8:30	GW	1	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 2

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
[signature]	10-16-08/1530	[signature]	10-17-08 9:30

ACZ Laboratories, Inc. L72549

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51W Wetmore
Company: HydroGeoChem Inc	Tucson AZ 85705
E-mail: dans@hgcinc.com	Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris/Rebecca Sawyer	E-mail: jimn@hgcinc.com
Company: HGC / FMI	~~Telephone:~~ rebecca-sawyer@FMI.com

Invoice to:

Name: Jim Norris	Address: 51 W Wetmore
Company: HGC	Tucson AZ 85705
E-mail: jimn@hgcinc.com	Telephone: 520-293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW

Project/PO #: 8720000

Reporting state for compliance testing: AZ

Sampler's Name: John Villinski

Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SO4							
SWAN	10-16-08/9:15	GW	1	X							
OSBORN	10-16-08/10:05	GW	1	X							
HOBAN	10-16-08/13:15	GW	1	X							
COOPER C	10-16-08/1420	GW	1	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 2 of 2

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10-16-08/15:36	WPL	10-17-08 9:30

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

October 27, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000
ACZ Project ID: L72466

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 15, 2008. This project has been assigned to ACZ's project number, L72466. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L72466. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after November 27, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: BANKS 986

ACZ Sample ID: ***L72466-01***
Date Sampled: *10/13/08 13:23*
Date Received: *10/15/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	53		*	mg/L	1	5	10/23/08 17:51	aml

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: DODSON

ACZ Sample ID: ***L72466-02***
Date Sampled: *10/13/08 14:45*
Date Received: *10/15/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	56.9		*	mg/L	0.5	3	10/23/08 5:35	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: DUP101308

ACZ Sample ID: ***L72466-03***
Date Sampled: *10/13/08 00:00*
Date Received: *10/15/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	500		*	mg/L	10	50	10/23/08 18:27	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: EQB101308

ACZ Sample ID: ***L72466-04***
Date Sampled: *10/13/08 16:50*
Date Received: *10/15/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography		U	*	mg/L	0.5	3	10/23/08 6:11	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: FB101308

ACZ Sample ID: ***L72466-05***
Date Sampled: *10/13/08 16:50*
Date Received: *10/15/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography		U	*	mg/L	0.5	3	10/23/08 7:06	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: PANAGAKOS

ACZ Sample ID: ***L72466-06***
Date Sampled: *10/13/08 16:45*
Date Received: *10/15/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	480		*	mg/L	10	50	10/23/08 18:45	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: EPPELE 641

ACZ Sample ID: ***L72466-11***
Date Sampled: *10/14/08 09:52*
Date Received: *10/15/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	21.8		*	mg/L	0.5	3	10/23/08 19:03	aml

Arizona license number: AZ0102

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: EAST

ACZ Sample ID: ***L72466-12***
Date Sampled: *10/14/08 14:05*
Date Received: *10/15/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	8.9		*	mg/L	0.5	3	10/23/08 8:00	aml

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 8720000

ACZ Project ID: ***L72466***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG254343													
WG254343ICV	ICV	10/14/08 13:25	WI081007-1	50		50.62	mg/L	101.2	90	110			
WG254343ICB	ICB	10/14/08 13:43				U	mg/L		-1.5	1.5			
WG254343ICV1	ICV	10/22/08 23:15	WI081007-1	50		51.67	mg/L	103.3	90	110			
WG254343ICB1	ICB	10/22/08 23:33				U	mg/L		-1.5	1.5			
WG254343LFB1	LFB	10/22/08 23:51	WI081007-3	30		31.52	mg/L	105.1	90	110			
L72429-04AS	AS	10/23/08 4:41	WI081007-3	30	1.3	32.09	mg/L	102.6	90	110			
L72429-04DUP	DUP	10/23/08 4:59			1.3	U	mg/L				200	20	RA
WG254343LFB2	LFB	10/23/08 8:36	WI081007-3	30		30.88	mg/L	102.9	90	110			
WG254343ICV2	ICV	10/23/08 16:20	WI081007-1	50		50.23	mg/L	100.5	90	110			
WG254343ICB2	ICB	10/23/08 16:38				U	mg/L		-1.5	1.5			

Hydro Geo Chem, Inc.

ACZ Project ID: ***L72466***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L72466-01	WG254343	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L72466-02	WG254343	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L72466-03	WG254343	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L72466-04	WG254343	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L72466-05	WG254343	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L72466-06	WG254343	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L72466-11	WG254343	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L72466-12	WG254343	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Certification Qualifiers

Hydro Geo Chem, Inc. ACZ Project ID: ***L72466***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L72466
Date Received: 10/15/2008
Received By:
Date Printed: 10/15/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Is the trip blank for Cyanide present?			X
12) Is the trip blank for VOA present?			X
13) Are samples requiring no headspace, headspace free?			X
14) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
na7153	1.4	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L72466
Date Received: 10/15/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L72466-01	BANKS 986									X		
L72466-02	DODSON									X		
L72466-03	DUP101308									X		
L72466-04	EQB101308									X		
L72466-05	FB101308									X		
L72466-06	PANAGAKOS									X		
L72466-07	POZO-02		Y									
L72466-08	POZO-03		Y									
L72466-09	POZO-04		Y									
L72466-10	POZO-05		Y									
L72466-11	EPPELE 641									X		
L72466-12	EAST									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc.

L724106

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Tucson AZ 85705
Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris / Rebecca Sawyer
Company: HGC FMI
E-mail: jimn@hgcinc.com
Telephone: rebecca-sawyer@FMI.com

Invoice to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Address: 51 W. Wetmore Tucson AZ 85705
Telephone: 520-293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES X / NO
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 8720000 22
Reporting state for compliance testing: AZ
Sampler's Name: John Villinski
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Sulfate	FMCQB-GW
BANKS 986	10-13-08 / 13:23	GW	1	X	
DODSON	10-13-08 / 14:45	GW	1	X	
DUP 101308	10-13-08	GW	1	X	
EQB 101308	10-13-08 / 16:50	GW	1	X	
FB 101308	10-13-08 / 16:50	GW	1	X	
PANAGAKOS	10-13-08 / 16:45	GW	1	X	
X POZO-02	10-14-08 / 11:35	GW	3		X
X POZO-03	10-14-08 / 11:15	GW	3		X
X POZO-04	10-14-08 / 12:25	GW	3		X
X POZO-05	10-14-08 / 11:55	GW	3		X

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Page 1 of 2

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10-14-08 / 13:30		10-15-08 9:51

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson	Address: 51 W Wetmore
Company: HydroGeochem	Tucson AZ 85705
E-mail: danse@hgcinc.com	Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris / Rebecca Sawyer	E-mail: jimn@hgcinc.com
Company: HGC FMI	~~Telephone~~: rebecca_sawyer@FMI.com

Invoice to:

Name: Jim Norris	Address: 51 W Wetmore
Company: HGC	Tucson AZ 85705
E-mail: jimn@hgcinc.com	Telephone: 520-293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW

Project/PO #: 87200000

Reporting state for compliance testing: AZ

Sampler's Name: John Villinski

Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Sulfate							
EPPELE 641	10/14-08/ 9:52	GW	1	X							
EAST	10-14-08/ 14:05	GW	1	Y							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 2 of 2

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10/14-08/15:30		10.15.08 9:51

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

October 20, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000
ACZ Project ID: L72231

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 04, 2008. This project has been assigned to ACZ's project number, L72231. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L72231. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after November 20, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: BMO-2008-13B

ACZ Sample ID: ***L72231-01***
Date Sampled: *10/03/08 13:45*
Date Received: *10/04/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	420			mg/L	0.2	1	10/09/08 19:38	neb/aeh
Magnesium, dissolved	M200.7 ICP	79.8			mg/L	0.2	1	10/09/08 19:38	neb/aeh
Potassium, dissolved	M200.7 ICP	6.8			mg/L	0.3	2	10/09/08 19:38	neb/aeh
Sodium, dissolved	M200.7 ICP	53.0			mg/L	0.3	2	10/09/08 19:38	neb/aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		347			mg/L	2	20	10/11/08 0:00	kah
Carbonate as CaCO3			U		mg/L	2	20	10/11/08 0:00	kah
Hydroxide as CaCO3			U		mg/L	2	20	10/11/08 0:00	kah
Total Alkalinity		347			mg/L	2	20	10/11/08 0:00	kah
Cation-Anion Balance	Calculation								
Cation-Anion Balance		3.1			%			10/20/08 0:00	calc
Sum of Anions		28.3			meq/L	0.1	0.5	10/20/08 0:00	calc
Sum of Cations		30.1			meq/L	0.1	0.5	10/20/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	23		*	mg/L	1	5	10/13/08 12:22	ccp
Fluoride	M300.0 - Ion Chromatography		U	*	mg/L	0.2	1	10/13/08 12:22	ccp
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.92			mg/L	0.02	0.1	10/20/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.92			mg/L	0.02	0.1	10/04/08 15:35	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	10/04/08 15:35	pjb
Residue, Filterable (TDS) @180C	SM2540C	2040			mg/L	10	20	10/09/08 15:49	abm
Sulfate	300.0 - Ion Chromatography	980		*	mg/L	10	50	10/16/08 11:10	aml
TDS (calculated)	Calculation	1780			mg/L	10	50	10/20/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.15						10/20/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 8720000

ACZ Project ID: ***L72231***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253590													
WG253590PBW2	PBW	10/11/08 17:54				U	mg/L		-20	20			
WG253590LCSW5	LCSW	10/11/08 18:06	WC081008-2	820.0001		744.9	mg/L	90.8	90	110			
L72242-06DUP	DUP	10/11/08 19:46			49	48.8	mg/L				0.4	20	
WG253590PBW3	PBW	10/11/08 21:10				U	mg/L		-20	20			
WG253590LCSW8	LCSW	10/11/08 21:23	WC081008-2	820.0001		741.4	mg/L	90.4	90	110			
WG253590PBW4	PBW	10/11/08 22:36				U	mg/L		-20	20			
WG253590LCSW11	LCSW	10/11/08 22:48	WC081008-2	820.0001		751.6	mg/L	91.7	90	110			
WG253590LCSW14	LCSW	10/12/08 2:02	WC081008-2	820.0001		742.3	mg/L	90.5	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253487													
WG253487ICV	ICV	10/09/08 17:59	II080818-1	100		99.54	mg/L	99.5	95	105			
WG253487ICB	ICB	10/09/08 18:03				U	mg/L		-0.6	0.6			
WG253487LFB	LFB	10/09/08 18:15	II081003-2	67.97008		70.08	mg/L	103.1	85	115			
L72171-03AS	AS	10/09/08 19:12	II081003-2	67.97008	32.3	101.56	mg/L	101.9	85	115			
L72171-03ASD	ASD	10/09/08 19:15	II081003-2	67.97008	32.3	101.08	mg/L	101.2	85	115	0.47	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253606													
WG253606ICV	ICV	10/11/08 11:26	WI081007-1	19.98		20.12	mg/L	100.7	90	110			
WG253606ICB	ICB	10/11/08 11:44				U	mg/L		-1.5	1.5			
WG253606ICV1	ICV	10/13/08 3:19	WI081007-1	19.98		20.13	mg/L	100.8	90	110			
WG253606ICB1	ICB	10/13/08 3:37				U	mg/L		-1.5	1.5			
WG253606LFB	LFB	10/13/08 3:55	WI081007-3	30		29.5	mg/L	98.3	90	110			
L72132-05DUP	DUP	10/13/08 8:45			16500	16500	mg/L				0	20	
L72132-06AS	AS	10/13/08 9:21	WI081007-3	300	87	376.3	mg/L	96.4	90	110			

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253606													
WG253606ICV	ICV	10/11/08 11:26	WI081007-1	4		4.14	mg/L	103.5	90	110			
WG253606ICB	ICB	10/11/08 11:44				U	mg/L		-0.3	0.3			
WG253606ICV1	ICV	10/13/08 3:19	WI081007-1	4		4.17	mg/L	104.3	90	110			
WG253606ICB1	ICB	10/13/08 3:37				U	mg/L		-0.3	0.3			
WG253606LFB	LFB	10/13/08 3:55	WI081007-3	1.5		1.51	mg/L	100.7	90	110			
L72132-05DUP	DUP	10/13/08 8:45			4390	4393	mg/L				0.1	20	
L72132-06AS	AS	10/13/08 9:21	WI081007-3	15	3	16.5	mg/L	90	90	110			

Hydro Geo Chem, Inc. ACZ Project ID: ***L72231***

Project ID: 8720000

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253487													
WG253487ICV	ICV	10/09/08 17:59	II080818-1	100		100	mg/L	100	95	105			
WG253487ICB	ICB	10/09/08 18:03				U	mg/L		-0.6	0.6			
WG253487LFB	LFB	10/09/08 18:15	II081003-2	49.96908		50.45	mg/L	101	85	115			
L72171-03AS	AS	10/09/08 19:12	II081003-2	49.96908	10.3	62.42	mg/L	104.3	85	115			
L72171-03ASD	ASD	10/09/08 19:15	II081003-2	49.96908	10.3	62.22	mg/L	103.9	85	115	0.32	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253154													
WG253154ICV	ICV	10/04/08 15:28	WI080916-5	2.416		2.31	mg/L	95.6	90	110			
WG253154ICB	ICB	10/04/08 15:30				U	mg/L		-0.06	0.06			
WG253154LFB	LFB	10/04/08 15:34	WI080913-4	2		1.9	mg/L	95	90	110			
L72231-01DUP	DUP	10/04/08 15:36			1.92	1.928	mg/L				0.4	20	
WG253154ICV1	ICV	10/04/08 15:50	WI080916-5	2.416		2.244	mg/L	92.9	90	110			
WG253154ICB1	ICB	10/04/08 15:51				U	mg/L		-0.06	0.06			
L72231-01AS	AS	10/04/08 15:54	WI080913-4	4	1.8	6.193	mg/L	109.8	90	110			

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253154													
WG253154ICV	ICV	10/04/08 15:28	WI080916-5	.609		.6	mg/L	98.5	90	110			
WG253154ICB	ICB	10/04/08 15:30				U	mg/L		-0.03	0.03			
WG253154LFB	LFB	10/04/08 15:34	WI080913-4	1		.973	mg/L	97.3	90	110			
L72231-01DUP	DUP	10/04/08 15:36			U	U	mg/L				0	20	RA
L72231-01AS	AS	10/04/08 15:37	WI080913-4	1	U	.963	mg/L	96.3	90	110			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253487													
WG253487ICV	ICV	10/09/08 17:59	II080818-1	20		19.91	mg/L	99.6	95	105			
WG253487ICB	ICB	10/09/08 18:03				U	mg/L		-0.9	0.9			
WG253487LFB	LFB	10/09/08 18:15	II081003-2	99.76186		100.64	mg/L	100.9	85	115			
L72171-03AS	AS	10/09/08 19:12	II081003-2	99.76186	.9	104.69	mg/L	104	85	115			
L72171-03ASD	ASD	10/09/08 19:15	II081003-2	99.76186	.9	104.31	mg/L	103.7	85	115	0.36	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253479													
WG253479PBW	PBW	10/09/08 15:30				U	mg/L		-20	20			
WG253479LCSW	LCSW	10/09/08 15:31	PCN29987	260		270	mg/L	103.8	80	120			
L72295-01DUP	DUP	10/09/08 15:59			1030	1032	mg/L				0.2	20	

Hydro Geo Chem, Inc.
Project ID: 8720000

ACZ Project ID: ***L72231***

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253487													
WG253487ICV	ICV	10/09/08 17:59	II080818-1	100		100.54	mg/L	100.5	95	105			
WG253487ICB	ICB	10/09/08 18:03				U	mg/L		-0.9	0.9			
WG253487LFB	LFB	10/09/08 18:15	II081003-2	98.21624		99.86	mg/L	101.7	85	115			
L72171-03AS	AS	10/09/08 19:12	II081003-2	98.21624	6.2	108.63	mg/L	104.3	85	115			
L72171-03ASD	ASD	10/09/08 19:15	II081003-2	98.21624	6.2	107.72	mg/L	103.4	85	115	0.84	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253845													
WG253845ICV	ICV	10/14/08 13:25	WI081007-1	50		50.62	mg/L	101.2	90	110			
WG253845ICB	ICB	10/14/08 13:43				U	mg/L		-1.5	1.5			
WG253845ICV1	ICV	10/15/08 18:14	WI081007-1	50		50.45	mg/L	100.9	90	110			
WG253845ICB1	ICB	10/15/08 18:32				U	mg/L		-1.5	1.5			
WG253845LFB	LFB	10/15/08 18:50	WI081007-3	30		32.51	mg/L	108.4	90	110			
L71994-01AS	AS	10/15/08 19:26	WI081007-3	30	23	59.49	mg/L	121.6	90	110			M1
L71994-01DUP	DUP	10/15/08 19:45			23	22.85	mg/L				0.7	20	
WG253845ICV2	ICV	10/16/08 9:40	WI081007-1	50		49.95	mg/L	99.9	90	110			
WG253845ICB2	ICB	10/16/08 9:58				U	mg/L		-1.5	1.5			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L72231***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L72231-01	WG253606	Chloride	M300.0 - Ion Chromatography	DH	Sample required dilution due to high TDS and/or EC value.
		Fluoride	M300.0 - Ion Chromatography	DH	Sample required dilution due to high TDS and/or EC value.
	WG253154	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG253845	Sulfate	300.0 - Ion Chromatography	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L72231
Date Received: 10/4/2008
Received By:
Date Printed: 10/4/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Is the trip blank for Cyanide present?			X
12) Is the trip blank for VOA present?			X
13) Are samples requiring no headspace, headspace free?			X
14) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA7078	2.1	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L72231
Date Received: 10/4/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L72231-01	BMO-2008-13B		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

LT#2231

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: HGC Inc (HydroGeoChem)
E-mail: dans@hgcinc.com
Address: 51 W Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC Inc
E-mail: jimn@hgcinc.com
Telephone: 520-293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC Inc
E-mail: jimn@hgcinc.com
Address: 51 W Wetmore RD
Tucson AZ 85705
Telephone: 520-293-1500 x133

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 8720000
Reporting state for compliance testing: AZ
Sampler's Name: John Villinski
Are any samples NRC licensable material? NO

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB-GW							
BMO-2008-13B	10-3-08/13:45	GW	3	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10-3-08/14:45	MS	10-4-08 10:50

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

October 16, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000 T2.3 JEV
ACZ Project ID: L72217

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 03, 2008. This project has been assigned to ACZ's project number, L72217. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L72217. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after November 16, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Hydro Geo Chem, Inc.
Project ID: 8720000 T2.3 JEV
Sample ID: BMO-2008-5M

ACZ Sample ID: ***L72217-01***
Date Sampled: *10/02/08 13:45*
Date Received: *10/03/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	75.8			mg/L	0.2	1	10/09/08 19:25	neb/aeh
Magnesium, dissolved	M200.7 ICP	11.4			mg/L	0.2	1	10/09/08 19:25	neb/aeh
Potassium, dissolved	M200.7 ICP	2.6			mg/L	0.3	2	10/09/08 19:25	neb/aeh
Sodium, dissolved	M200.7 ICP	34.1			mg/L	0.3	2	10/09/08 19:25	neb/aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		138			mg/L	2	20	10/14/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	10/14/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	10/14/08 0:00	jlf
Total Alkalinity		138			mg/L	2	20	10/14/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		6.0			%			10/15/08 0:00	calc
Sum of Anions		5.5			meq/L	0.1	0.5	10/15/08 0:00	calc
Sum of Cations		6.2			meq/L	0.1	0.5	10/15/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	15.1			mg/L	0.5	3	10/13/08 12:04	ccp
Fluoride	M300.0 - Ion Chromatography	0.2	B		mg/L	0.1	0.5	10/13/08 12:04	ccp
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	1.85			mg/L	0.02	0.1	10/15/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1.85		*	mg/L	0.02	0.1	10/03/08 19:01	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	10/03/08 19:01	pjb
Residue, Filterable (TDS) @180C	SM2540C	390			mg/L	10	20	10/09/08 15:43	abm
Sulfate	300.0 - Ion Chromatography	107			mg/L	1	5	10/13/08 22:17	ccp
TDS (calculated)	Calculation	337			mg/L	10	50	10/15/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.16						10/15/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc. ACZ Project ID: ***L72217***

Project ID: 8720000 T2.3 JEV

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253726													
WG253726PBW1	PBW	10/14/08 14:30				17.2	mg/L		-20	20			
WG253726LCSW2	LCSW	10/14/08 14:41	WC081008-2	820.0001		751.3	mg/L	91.6	90	110			
L72272-01DUP	DUP	10/14/08 17:10			273	274	mg/L				0.4	20	
WG253726PBW2	PBW	10/14/08 17:16				U	mg/L		-20	20			
WG253726LCSW5	LCSW	10/14/08 17:28	WC081008-2	820.0001		758.6	mg/L	92.5	90	110			
WG253726PBW3	PBW	10/14/08 19:53				U	mg/L		-20	20			
WG253726LCSW8	LCSW	10/14/08 20:04	WC081008-2	820.0001		750.8	mg/L	91.6	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253487													
WG253487ICV	ICV	10/09/08 17:59	II080818-1	100		99.54	mg/L	99.5	95	105			
WG253487ICB	ICB	10/09/08 18:03				U	mg/L		-0.6	0.6			
WG253487LFB	LFB	10/09/08 18:15	II081003-2	67.97008		70.08	mg/L	103.1	85	115			
L72171-03AS	AS	10/09/08 19:12	II081003-2	67.97008	32.3	101.56	mg/L	101.9	85	115			
L72171-03ASD	ASD	10/09/08 19:15	II081003-2	67.97008	32.3	101.08	mg/L	101.2	85	115	0.47	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253606													
WG253606ICV	ICV	10/11/08 11:26	WI081007-1	19.98		20.12	mg/L	100.7	90	110			
WG253606ICB	ICB	10/11/08 11:44				U	mg/L		-1.5	1.5			
WG253606ICV1	ICV	10/13/08 3:19	WI081007-1	19.98		20.13	mg/L	100.8	90	110			
WG253606ICB1	ICB	10/13/08 3:37				U	mg/L		-1.5	1.5			
WG253606LFB	LFB	10/13/08 3:55	WI081007-3	30		29.5	mg/L	98.3	90	110			
L72132-05DUP	DUP	10/13/08 8:45			16500	16500	mg/L				0	20	
L72132-06AS	AS	10/13/08 9:21	WI081007-3	300	87	376.3	mg/L	96.4	90	110			

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253606													
WG253606ICV	ICV	10/11/08 11:26	WI081007-1	4		4.14	mg/L	103.5	90	110			
WG253606ICB	ICB	10/11/08 11:44				U	mg/L		-0.3	0.3			
WG253606ICV1	ICV	10/13/08 3:19	WI081007-1	4		4.17	mg/L	104.3	90	110			
WG253606ICB1	ICB	10/13/08 3:37				U	mg/L		-0.3	0.3			
WG253606LFB	LFB	10/13/08 3:55	WI081007-3	1.5		1.51	mg/L	100.7	90	110			
L72132-05DUP	DUP	10/13/08 8:45			4390	4393	mg/L				0.1	20	
L72132-06AS	AS	10/13/08 9:21	WI081007-3	15	3	16.5	mg/L	90	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253487													
WG253487ICV	ICV	10/09/08 17:59	II080818-1	100		100	mg/L	100	95	105			
WG253487ICB	ICB	10/09/08 18:03				U	mg/L		-0.6	0.6			
WG253487LFB	LFB	10/09/08 18:15	II081003-2	49.96908		50.45	mg/L	101	85	115			
L72171-03AS	AS	10/09/08 19:12	II081003-2	49.96908	10.3	62.42	mg/L	104.3	85	115			
L72171-03ASD	ASD	10/09/08 19:15	II081003-2	49.96908	10.3	62.22	mg/L	103.9	85	115	0.32	20	

Hydro Geo Chem, Inc. ACZ Project ID: ***L72217***

Project ID: 8720000 T2.3 JEV

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253125													
WG253125ICV	ICV	10/03/08 18:38	WI080916-5	2.416		2.401	mg/L	99.4	90	110			
WG253125ICB	ICB	10/03/08 18:39				U	mg/L		-0.06	0.06			
WG253125LFB	LFB	10/03/08 18:43	WI080913-4	2		1.958	mg/L	97.9	90	110			
L72202-01AS	AS	10/03/08 18:46	WI080913-4	2		1.901	mg/L	95.1	90	110			
L72202-02DUP	DUP	10/03/08 18:48			.04	.036	mg/L				10.5	20	RA

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253125													
WG253125ICV	ICV	10/03/08 18:38	WI080916-5	.609		.604	mg/L	99.2	90	110			
WG253125ICB	ICB	10/03/08 18:39				U	mg/L		-0.03	0.03			
WG253125LFB	LFB	10/03/08 18:43	WI080913-4	1		.986	mg/L	98.6	90	110			
L72202-01AS	AS	10/03/08 18:46	WI080913-4	1		.965	mg/L	96.5	90	110			
L72202-02DUP	DUP	10/03/08 18:48				U	mg/L				0	20	RA

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253487													
WG253487ICV	ICV	10/09/08 17:59	II080818-1	20		19.91	mg/L	99.6	95	105			
WG253487ICB	ICB	10/09/08 18:03				U	mg/L		-0.9	0.9			
WG253487LFB	LFB	10/09/08 18:15	II081003-2	99.76186		100.64	mg/L	100.9	85	115			
L72171-03AS	AS	10/09/08 19:12	II081003-2	99.76186	.9	104.69	mg/L	104	85	115			
L72171-03ASD	ASD	10/09/08 19:15	II081003-2	99.76186	.9	104.31	mg/L	103.7	85	115	0.36	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253479													
WG253479PBW	PBW	10/09/08 15:30				U	mg/L		-20	20			
WG253479LCSW	LCSW	10/09/08 15:31	PCN29987	260		270	mg/L	103.8	80	120			
L72218-01DUP	DUP	10/09/08 15:45			1430	1396	mg/L				2.4	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253487													
WG253487ICV	ICV	10/09/08 17:59	II080818-1	100		100.54	mg/L	100.5	95	105			
WG253487ICB	ICB	10/09/08 18:03				U	mg/L		-0.9	0.9			
WG253487LFB	LFB	10/09/08 18:15	II081003-2	98.21624		99.86	mg/L	101.7	85	115			
L72171-03AS	AS	10/09/08 19:12	II081003-2	98.21624	6.2	108.63	mg/L	104.3	85	115			
L72171-03ASD	ASD	10/09/08 19:15	II081003-2	98.21624	6.2	107.72	mg/L	103.4	85	115	0.84	20	

Hydro Geo Chem, Inc.
Project ID: 8720000 T2.3 JEV

ACZ Project ID: ***L72217***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253606													
WG253606ICV	ICV	10/11/08 11:26	WI081007-1	50		51.09	mg/L	102.2	90	110			
WG253606ICB	ICB	10/11/08 11:44				U	mg/L		-1.5	1.5			
WG253606ICV1	ICV	10/13/08 3:19	WI081007-1	50		50.54	mg/L	101.1	90	110			
WG253606ICB1	ICB	10/13/08 3:37				U	mg/L		-1.5	1.5			
WG253606LFB	LFB	10/13/08 3:55	WI081007-3	30		30.08	mg/L	100.3	90	110			
L72132-05DUP	DUP	10/13/08 8:45			3100	3110	mg/L				0.3	20	
L72132-06AS	AS	10/13/08 9:21	WI081007-3	300	269	539.1	mg/L	90	90	110			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L72217***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L72217-01	WG253125	Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000 T2.3 JEV

ACZ Project ID: L72217
Date Received: 10/3/2008
Received By:
Date Printed: 10/3/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Is the trip blank for Cyanide present?			X
12) Is the trip blank for VOA present?			X
13) Are samples requiring no headspace, headspace free?			X
14) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA7072	0.9	15

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000 T2.3 JEV

ACZ Project ID: L72217
Date Received: 10/3/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L72217-01	BMO-2008-5M		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L72217

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: HydroGeoChem
E-mail: dans@hgcinc.com
Address: 51 W Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Telephone: 520-293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Address: 51 W Wetmore
Tucson AZ 85705
Telephone: 520-293-1500 x112

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]
If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQD-GW
Project/PO #: 8720000 T2,3 JEV
Reporting state for compliance testing: AZ
Sampler's Name: John Villinski
Are any samples NRC licensable material? ND

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQD-GW								
BMO-2008-5M	10-2-08 / 13:45	GW	3	X								

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10-2-08/15:00		10-3-08 10:45

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

October 14, 2008

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720000
ACZ Project ID: L72149

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 01, 2008. This project has been assigned to ACZ's project number, L72149. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L72149. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after November 14, 2008. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Hydro Geo Chem, Inc.
Project ID: 8720000
Sample ID: BMO-2008-5B

ACZ Sample ID: ***L72149-01***
Date Sampled: *09/30/08 12:30*
Date Received: *10/01/08*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, dissolved	M200.7 ICP	108		*	mg/L	0.2	1	10/09/08 0:57	aeh
Magnesium, dissolved	M200.7 ICP	17.0			mg/L	0.2	1	10/09/08 0:57	aeh
Potassium, dissolved	M200.7 ICP	2.8			mg/L	0.3	2	10/09/08 0:57	aeh
Sodium, dissolved	M200.7 ICP	40.1			mg/L	0.3	2	10/09/08 0:57	aeh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		155			mg/L	2	20	10/08/08 0:00	jlf
Carbonate as CaCO3			U		mg/L	2	20	10/08/08 0:00	jlf
Hydroxide as CaCO3			U		mg/L	2	20	10/08/08 0:00	jlf
Total Alkalinity		155			mg/L	2	20	10/08/08 0:00	jlf
Cation-Anion Balance	Calculation								
Cation-Anion Balance		5.5			%			10/14/08 0:00	calc
Sum of Anions		7.7			meq/L	0.1	0.5	10/14/08 0:00	calc
Sum of Cations		8.6			meq/L	0.1	0.5	10/14/08 0:00	calc
Chloride	M300.0 - Ion Chromatography	15		*	mg/L	2	8	10/11/08 18:45	aml
Fluoride	M300.0 - Ion Chromatography	0.3	B	*	mg/L	0.3	2	10/11/08 18:45	aml
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	2.02			mg/L	0.02	0.1	10/14/08 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	2.02			mg/L	0.02	0.1	10/01/08 21:44	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction		U	*	mg/L	0.01	0.05	10/01/08 21:44	pjb
Residue, Filterable (TDS) @180C	SM2540C	510			mg/L	10	20	10/07/08 15:08	abm
Sulfate	300.0 - Ion Chromatography	193		*	mg/L	2	8	10/11/08 18:45	aml
TDS (calculated)	Calculation	478			mg/L	10	50	10/14/08 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.07						10/14/08 0:00	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	Analyte was analyzed for but not detected at the indicated MDL

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.
Project ID: 8720000

ACZ Project ID: ***L72149***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253409													
WG253409PBW2	PBW	10/08/08 21:32				U	mg/L		-20	20			
WG253409LCSW5	LCSW	10/08/08 21:45	WC080916-1	820.0001		799.7	mg/L	97.5	90	110			
L72150-03DUP	DUP	10/08/08 23:13			326	325.1	mg/L				0.3	20	
WG253409PBW3	PBW	10/09/08 0:42				U	mg/L		-20	20			
WG253409LCSW8	LCSW	10/09/08 0:55	WC080916-1	820.0001		820.4	mg/L	100	90	110			
WG253409PBW4	PBW	10/09/08 4:06				U	mg/L		-20	20			
WG253409LCSW11	LCSW	10/09/08 4:18	WC081008-2	820.0001		817.8	mg/L	99.7	90	110			

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253325													
WG253325ICV	ICV	10/08/08 23:22	II080818-1	100		99.77	mg/L	99.8	95	105			
WG253325ICB	ICB	10/08/08 23:26				U	mg/L		-0.6	0.6			
WG253325LFB	LFB	10/08/08 23:38	II081003-2	67.97008		75.16	mg/L	110.6	85	115			
L72147-02AS	AS	10/09/08 0:31	II081003-2	67.97008	172	227.97	mg/L	82.3	85	115			M2
L72147-02ASD	ASD	10/09/08 0:35	II081003-2	67.97008	172	229.15	mg/L	84.1	85	115	0.52	20	M2

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253162													
WG253162ICV	ICV	10/08/08 14:00	WI081007-1	19.98		20.19	mg/L	101.1	90	110			
WG253162ICB	ICB	10/08/08 14:19				U	mg/L		-1.5	1.5			
WG253162ICV1	ICV	10/08/08 20:02	WI081007-1	19.98		19.97	mg/L	99.9	90	110			
WG253162ICB1	ICB	10/08/08 20:20				U	mg/L		-1.5	1.5			
WG253162LFB	LFB	10/08/08 20:38	WI081007-3	30		29.12	mg/L	97.1	90	110			
L72133-01AS	AS	10/08/08 21:15	WI081007-3	300	11	277.6	mg/L	88.9	90	110			M2
L72133-01DUP	DUP	10/08/08 21:33			11	11.5	mg/L				4.4	20	RA
WG253162ICV1	ICV	10/11/08 11:26	WI081007-1	19.98		20.12	mg/L	100.7	90	110			
WG253162ICB1	ICB	10/11/08 11:44				U	mg/L		-1.5	1.5			

Hydro Geo Chem, Inc.
Project ID: 8720000

ACZ Project ID: ***L72149***

Fluoride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253162													
WG253162ICV	ICV	10/08/08 14:00	WI081007-1	4		3.97	mg/L	99.3	90	110			
WG253162ICB	ICB	10/08/08 14:19				U	mg/L		-0.3	0.3			
WG253162ICV1	ICV	10/08/08 20:02	WI081007-1	4		3.94	mg/L	98.5	90	110			
WG253162ICB1	ICB	10/08/08 20:20				U	mg/L		-0.3	0.3			
WG253162LFB	LFB	10/08/08 20:38	WI081007-3	1.5		1.39	mg/L	92.7	90	110			
L72133-01AS	AS	10/08/08 21:15	WI081007-3	15	17	32.1	mg/L	100.7	90	110			
L72133-01DUP	DUP	10/08/08 21:33			17	18.7	mg/L				9.5	20	
WG253162ICV1	ICV	10/11/08 11:26	WI081007-1	4		4.14	mg/L	103.5	90	110			
WG253162ICB1	ICB	10/11/08 11:44				U	mg/L		-0.3	0.3			
WG253407													
WG253407ICV	ICV	10/08/08 14:00	WI081007-1	4		3.97	mg/L	99.3	90	110			
WG253407ICB	ICB	10/08/08 14:19				U	mg/L		-0.3	0.3			
WG253407ICV1	ICV	10/08/08 16:07	WI081007-1	4		3.92	mg/L	98	90	110			
WG253407ICB1	ICB	10/08/08 16:25				U	mg/L		-0.3	0.3			
WG253407ICV1	ICV	10/11/08 11:26	WI081007-1	4		4.14	mg/L	103.5	90	110			
WG253407ICB1	ICB	10/11/08 11:44				U	mg/L		-0.3	0.3			
WG253407ICV1	ICV	10/11/08 12:18	WI081007-1	4		4.13	mg/L	103.3	90	110			
WG253407ICB1	ICB	10/11/08 12:36				U	mg/L		-0.3	0.3			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253325													
WG253325ICV	ICV	10/08/08 23:22	II080818-1	100		100.45	mg/L	100.5	95	105			
WG253325ICB	ICB	10/08/08 23:26				U	mg/L		-0.6	0.6			
WG253325LFB	LFB	10/08/08 23:38	II081003-2	49.96908		54.65	mg/L	109.4	85	115			
L72147-02AS	AS	10/09/08 0:31	II081003-2	49.96908	50.7	100.39	mg/L	99.4	85	115			
L72147-02ASD	ASD	10/09/08 0:35	II081003-2	49.96908	50.7	100.95	mg/L	100.6	85	115	0.56	20	

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG252969													
WG252969ICV	ICV	10/01/08 20:46	WI080916-5	2.416		2.369	mg/L	98.1	90	110			
WG252969ICB	ICB	10/01/08 20:48				U	mg/L		-0.06	0.06			
WG252969LFB1	LFB	10/01/08 20:53	WI080913-4	2		1.979	mg/L	99	90	110			
WG252969LFB2	LFB	10/01/08 21:31	WI080913-4	2		2.088	mg/L	104.4	90	110			
L72136-05AS	AS	10/01/08 21:38	WI080913-4	2	.06	2.182	mg/L	106.1	90	110			
L72136-06DUP	DUP	10/01/08 21:40			.21	.206	mg/L				1.9	20	

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG252969													
WG252969ICV	ICV	10/01/08 20:46	WI080916-5	.609		.605	mg/L	99.3	90	110			
WG252969ICB	ICB	10/01/08 20:48				U	mg/L		-0.03	0.03			
WG252969LFB1	LFB	10/01/08 20:53	WI080913-4	1		.988	mg/L	98.8	90	110			
WG252969LFB2	LFB	10/01/08 21:31	WI080913-4	1		1.023	mg/L	102.3	90	110			
L72136-05AS	AS	10/01/08 21:38	WI080913-4	1	U	1.038	mg/L	103.8	90	110			
L72136-06DUP	DUP	10/01/08 21:40			U	U	mg/L				0	20	RA

Hydro Geo Chem, Inc. ACZ Project ID: ***L72149***

Project ID: 8720000

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253325													
WG253325ICV	ICV	10/08/08 23:22	II080818-1	20		19.9	mg/L	99.5	95	105			
WG253325ICB	ICB	10/08/08 23:26				U	mg/L		-0.9	0.9			
WG253325LFB	LFB	10/08/08 23:38	II081003-2	99.76186		108.27	mg/L	108.5	85	115			
L72147-02AS	AS	10/09/08 0:31	II081003-2	99.76186	2	112.57	mg/L	110.8	85	115			
L72147-02ASD	ASD	10/09/08 0:35	II081003-2	99.76186	2	113	mg/L	111.3	85	115	0.38	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253298													
WG253298PBW	PBW	10/07/08 14:45				U	mg/L		-20	20			
WG253298LCSW	LCSW	10/07/08 14:46	PCN29986	260		276	mg/L	106.2	80	120			
L72173-02DUP	DUP	10/07/08 15:14			300	308	mg/L				2.6	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253325													
WG253325ICV	ICV	10/08/08 23:22	II080818-1	100		100.71	mg/L	100.7	95	105			
WG253325ICB	ICB	10/08/08 23:26				U	mg/L		-0.9	0.9			
WG253325LFB	LFB	10/08/08 23:38	II081003-2	98.21624		106.68	mg/L	108.6	85	115			
L72147-02AS	AS	10/09/08 0:31	II081003-2	98.21624	20.9	126.21	mg/L	107.2	85	115			
L72147-02ASD	ASD	10/09/08 0:35	II081003-2	98.21624	20.9	126.18	mg/L	107.2	85	115	0.02	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG253162													
WG253162ICV	ICV	10/08/08 14:00	WI081007-1	50		49.6	mg/L	99.2	90	110			
WG253162ICB	ICB	10/08/08 14:19				U	mg/L		-1.5	1.5			
WG253162ICV1	ICV	10/08/08 20:02	WI081007-1	50		49.04	mg/L	98.1	90	110			
WG253162ICB1	ICB	10/08/08 20:20				U	mg/L		-1.5	1.5			
WG253162LFB	LFB	10/08/08 20:38	WI081007-3	30		28.96	mg/L	96.5	90	110			
L72133-01AS	AS	10/08/08 21:15	WI081007-3	300	U	244.9	mg/L	81.6	90	110			M2
L72133-01DUP	DUP	10/08/08 21:33			U	U	mg/L				0	20	RA
WG253162ICV1	ICV	10/11/08 11:26	WI081007-1	50		51.09	mg/L	102.2	90	110			
WG253162ICB1	ICB	10/11/08 11:44				U	mg/L		-1.5	1.5			
WG253407													
WG253407ICV	ICV	10/08/08 14:00	WI081007-1	50		49.6	mg/L	99.2	90	110			
WG253407ICB	ICB	10/08/08 14:19				U	mg/L		-1.5	1.5			
WG253407ICV1	ICV	10/08/08 16:07	WI081007-1	50		49.12	mg/L	98.2	90	110			
WG253407ICB1	ICB	10/08/08 16:25				U	mg/L		-1.5	1.5			
WG253407ICV1	ICV	10/11/08 11:26	WI081007-1	50		51.09	mg/L	102.2	90	110			
WG253407ICB1	ICB	10/11/08 11:44				U	mg/L		-1.5	1.5			
WG253407ICV1	ICV	10/11/08 12:18	WI081007-1	50		50.65	mg/L	101.3	90	110			
WG253407ICB1	ICB	10/11/08 12:36				U	mg/L		-1.5	1.5			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L72149***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L72149-01	WG253325	Calcium, dissolved	M200.7 ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG253162	Chloride	M300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Fluoride	M300.0 - Ion Chromatography	D1	Sample required dilution due to matrix.
	WG252969	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG253162	Sulfate	300.0 - Ion Chromatography	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L72149
Date Received: 10/1/2008
Received By:
Date Printed: 10/1/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Is the trip blank for Cyanide present?			X
12) Is the trip blank for VOA present?			X
13) Are samples requiring no headspace, headspace free?			X
14) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA7028	1.4	16

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720000

ACZ Project ID: L72149
Date Received: 10/1/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L72149-01	BMD-2008-5B		Y									

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L7249

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: HydroGeoChem
E-mail: dans@hgcinc.com
Address: 51 W. Wetmore Rd
Tucson AZ 85705
Telephone: 520-293-1500 x133

Copy of Report to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Telephone: 520-293-1500 x112

Invoice to:

Name: Jim Norris
Company: HGC
E-mail: jimn@hgcinc.com
Address: 51 W. Wetmore Rd
Tucson AZ 85705
Telephone: 520-293-1500 x133

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: FMCQB-GW
Project/PO #: 8720000
Reporting state for compliance testing: AZ
Sampler's Name: John Vilinski
Are any samples NRC licensable material? no

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	FMCQB-GW							
BMO-2008-5B	9/30/08 - 12:30	GW	3	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE of

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	9/30/08 - 14:30	WR	10/1/08 10:10

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

January 14, 2009

Report to:
Dan Simpson
Hydro Geo Chem, Inc.
51 West Wetmore Road Suite 101
Tuscon, AZ 85705

Bill to:
Accounts Payable
Hydro Geo Chem, Inc.
P. O. Box 97220
Phoenix, AZ 85060

cc: Jim Norris

Project ID: 8720005.0
ACZ Project ID: L73594

Dan Simpson:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on December 18, 2008. This project has been assigned to ACZ's project number, L73594. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 12.0. The enclosed results relate only to the samples received under L73594. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after February 14, 2009. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 8720005.0
Sample ID: SCHWARTZ

ACZ Sample ID: ***L73594-01***
Date Sampled: *12/17/08 12:40*
Date Received: *12/18/08*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Sulfate	300.0 - Ion Chromatography	144			mg/L	2	8	01/07/09 12:11	ccp

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	LCSWD	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	LFB	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	LFM	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	LFMD	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	LRB	Laboratory Reagent Blank
ICB	Initial Calibration Blank	MS	Matrix Spike
ICV	Initial Calibration Verification standard	MSD	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	PBS	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	PBW	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	PQV	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	SDL	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
U	The material was analyzed for, but was not detected above the level of the associated value.
	The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Hydro Geo Chem, Inc.
Project ID: 8720005.0

ACZ Project ID: ***L73594***

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG258047													
WG258047ICV	ICV	01/06/09 10:14	WI081218-1	50		49.23	mg/L	98.5	90	110			
WG258047ICB	ICB	01/06/09 10:32				U	mg/L		-1.5	1.5			
WG258047ICV1	ICV	01/06/09 13:08	WI081218-1	50		49.31	mg/L	98.6	90	110			
WG258047ICB1	ICB	01/06/09 13:26				U	mg/L		-1.5	1.5			
WG258047LFB	LFB	01/06/09 14:20	WI081125-2	30		28.81	mg/L	96	90	110			
L73523-01DUP	DUP	01/06/09 14:56			9.4	9.3	mg/L				1.1	20	
L73547-01AS	AS	01/06/09 15:33	WI081125-2	30	6.5	36.29	mg/L	99.3	90	110			
L73644-03AS	AS	01/06/09 19:46	WI081125-2	30	38.5	66.74	mg/L	94.1	90	110			
L73644-02DUP	DUP	01/07/09 13:05			206	205.4	mg/L				0.3	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Hydro Geo Chem, Inc.

ACZ Project ID: ***L73594***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720005.0

ACZ Project ID: L73594
Date Received: 12/18/2008
Received By:
Date Printed: 12/18/2008

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?			X
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Is the trip blank for Cyanide present?			X
12) Is the trip blank for VOA present?			X
13) Are samples requiring no headspace, headspace free?			X
14) Do the samples that require a Foreign Soils Permit have one?			X

Exceptions: If you answered no to any of the above questions, please describe

N/A

Contact (For any discrepancies, the client must be contacted)

N/A

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/hr)
NA7566	4.6	14

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
8720005.0

ACZ Project ID: L73594
Date Received: 12/18/2008
Received By:

Sample Container Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L73594-01	SCHWARTZ									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

L73594

ACZ Laboratories, Inc.

~~L73594~~

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493 WOL 12-18-08

CHAIN of CUSTODY

Report to:

Name: Dan Simpson
Company: Hydro Geo Chem, Inc
E-mail: dans@hgcinc.com

Address: 51 W. Wetmore Rd
Tucson, AZ 85705
Telephone: 520-293-1500 x-133

Copy of Report to:

Name: Jim Norris
Company: Hydro Geo Chem, Inc

E-mail: Jimn@hgcinc.com
Telephone: 520-293-1500 x-112

Invoice to:

Name: Dan Simpson
Company: HGC, Inc
E-mail:

Address: 51 W. Wetmore Rd
Tucson, AZ 85705
Telephone: 520-293-1500 x-133

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #: 504-IC
Project/PO #: 872000 5,0
Reporting state for compliance testing: AZ
Sampler's Name: Travis Taylor
Are any samples NRC licensable material? No

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	504-IC							
SCHWARTZ	12/17/08;1240	GW	1	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other

REMARKS/ SAMPLE DISCLOSURES

PAGE 1 of 1

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Travis Taylor	12/17/08;1315	[signature]	12.18.0811:20

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

APPENDIX C

HYDRO GEO CHEM, INC. GROUNDWATER SAMPLING FORMS

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-15-08
Well ID:	ANDERSON	Weather:	Sunny
ADWR No:	613396	Collected By:	John Hinski

WELL DATA

Well Depth (ft bls):	285	Time:	14:20
Casing Diameter (in):	8"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	147.21	Pump on @ 14:25 @ 7.5 gpm	
1 Casing Volume (gals):	371	open other Y- 8 gpm @ 14:40	
3 Casing Volumes (gals):	1114		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
14:30	7.5	37.5	7.14	20.5	1092	clear	no	—
14:40	7.5	112.5	7.15	20.7	1107	"	"	
14:55	8	232.5	7.20	21.0	1171	"	"	
15:10	8	352.5	7.12	21.1	1186	"	"	
15:25	8	472.5	7.08	21.2	1211	"	"	
15:40	8	592.5	7.07	21.4	1227	"	"	
15:55	8	712.5	7.09	21.3	1239	"	"	
16:10	8	832.5	7.08	21.4	1248	"	"	
16:25	8	952.5	7.09	21.3	1251	"	"	
16:40	8	1072.5	7.10	21.3	1252	"	"	
16:								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
ANDERSON	16:50	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Almost no water usage since the night before. Should be good static WL

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-23-08
Well ID:	AWC-02	Weather:	Sunny
ADWR No:	616586	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):		Time:	
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):			
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
11:25	90	—	7.31	23.1	464	clear	no	—

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
AWC-02	11:25	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-23-08
Well ID:	AWC-03	Weather:	Sunny
ADWR No:	616585	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):		Time:	
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):			
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:50	760	—	7.48	21.0	462	clear	no	—

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
AWC-03	10:55	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: pump running

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-23-05
Well ID:	AWC-04	Weather:	Sunny
ADWR No:	616584	Collected By:	John Vilinski

WELL DATA

Well Depth (ft bls):	231	Time:	11:05
Casing Diameter (in):	10 (?)	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	111.31		pump on 11:05 @ 700 gpm
1 Casing Volume (gals):	501		
3 Casing Volumes (gals):	1505		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
11:10	700	3500	6.91	22.2	616	clear	no	e

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
AWC-04	11:10	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Pump was off overnight.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-23-08
Well ID:	AWC-05	Weather:	Sunny
ADWR No:	590620	Collected By:	John V. Mirabi

WELL DATA

Well Depth (ft bls):		Time:	
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):			
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:35	430	—	7.45	21.0	422	clear	no	—

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
AWC-05	9:35	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Pump has been running 4 hrs

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-13-08
Well ID:	Banks 986	Weather:	Sunny, warm
ADWR No:	647986	Collected By:	John Dillinski

WELL DATA

Well Depth (ft bls):	435.8	Time:	12:20
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	228.20 (987)		
1 Casing Volume (gals):	342		
3 Casing Volumes (gals):	937		

On @ 12:40 — FIELD SAMPLING DATA — 1½ min purge

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
12:42	6.7	13.3	7.12	20.9	1034	clear	no	—
12:47	6.7	46.9	7.21	21.6	1015	"	"	
12:52	6.7	80.0	7.26	21.5	1002	"	"	
12:57	6.7	113.3	7.26	21.7	993	"	"	
13:02	6.7	146.7	7.27	21.7	990	"	"	
13:07	6.7	180.0	7.28	21.8	972	"	"	
13:13	6.7	220	7.27	21.7	981	"	"	
13:20	6.7	267	7.28	21.7	980	"	"	
			Readings stable + made m3 calculation					
			did not catch till later					

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BANKS 986	13:23	Plastic	250 ml	1	EPA 300.0	None	Filter

Additional Comments: 986 is personal well - has been in use for various household functions today. WL is measured @ 987 - unused well

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	
Well ID:	BARTON 010	Weather:	
ADWR No:		Collected By:	

WELL DATA

Well Depth (ft bls):		Time:	16:25
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	>310 ft: DRY		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Jused both sounders. Blue skinny Slope Indicator hung @ 150'. Solid @ to 310' - no water. The probe came back up w/ just a bit of wet mud on the tip - no sign of any other liquid

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/16/08
Well ID:	BARTON 919	Weather:	Clear, Cool
ADWR No:	644919	Collected By:	BJT

WELL DATA

Well Depth (ft bls):	130	Time:	1250
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	113.20		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Water Level Only							

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	11/5/98
Well ID:	BF-01	Weather:	Clear
ADWR No:	55-539783	Sampler:	CTM

WELL DATA

Well Depth (ft bls):	400
Casing Diameter (in):	4
Static Water Level (ft bmp):	348.94
Casing Volume (gals):	33
3 Casing Volumes (gals):	99

Casing Capacity	
Nominal Size (inches)	Gallons per Linear Foot
2	0.16
4	0.65
5	1.02
6	1.47
8	2.61
10	4.08

Casing Volume = gallons/foot * water column (feet)

FIELD SAMPLING DATA

Time	Elapsed Time (min)	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Comments
1615							
1619	4	20	80	6.33	19.9	3027	DR Measured
1622	~	~	Well runs dry	~	~	~	~

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comments
BF-01	1645	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Well ran dry after 7 minutes, will wait ~ 20 minutes for sample based on prior sampling runs.

Extension cord, 4 prong male to 3 prong female adaptor, + t junction piping needed.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-22-08
Well ID:	BJMA	Weather:	Sunny
ADWR No:	577927	Collected By:	John Dillinsky

WELL DATA

Well Depth (ft bls):	460	Time:	13:54 / 10-23-08
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	~~353.96~~ ~~358.96~~ Measured 10/23/08	Value open @ 16:25 - 10 gpm	
1 Casing Volume (gals):	67		
3 Casing Volumes (gals):	~~300~~ 200		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
16:30	10	50	6.38	22.4	1765	clear	no	—
16:35	10	100	6.38	22.4	1776	"	"	
16:40	10	150	6.41	22.2	1777			
16:45	10	200	6.41	22.3	1801			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BJMA	16:50	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: used Avg WL of 360

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-22-08
Well ID:	BLOMMER	Weather:	Sunny
ADWR No:	633472	Collected By:	J. Ian Villinski

WELL DATA

Well Depth (ft bls):	350	Time:	7:42
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	300.28	Valve open, 7949 @ 4.5 gpm	
1 Casing Volume (gals):	74		
3 Casing Volumes (gals):	222		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
7:51	4.5	9	7.24	17.1	853	clear	no	some small black scale particles
8:01	4.5/12	84	7.30	20.1	847	cloudy	"	
8:04	12	120	7.25	20.9	872	clear	"	
8:07	12	156	7.26	20.7	868		"	
8:10	6.67	176	7.21	20.7	859	"	"	
8:16	6.67	216	7.17	21.3	873	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BLOMMER	8:20	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Mrs Blommer said water was not used yet today - Stutz

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	11/11/08
Well ID:	BMO-2008-01G	Weather:	Clear
ADWR No:	909474	Sampler:	CM

WELL DATA

Well Depth (ft bls):	310
Casing Diameter (in):	5
Static Water Level (ft bmp):	60.95
Casing Volume (gals):	250
3 Casing Volumes (gals):	760

Casing Capacity

Nominal Size (inches)	Gallons per Linear Foot
2	0.16
4	0.65
5	1.02
6	1.47
8	2.61
10	4.08

Casing Volume = gallons/foot * water column (feet)

FIELD SAMPLING DATA

Time	Elapsed Time (min)	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Comments
1206							
1208	2	7	14	6.71	20.5	751	Coloration noted. DR measured.
1218	10	7	84	7.10	20.8	791	
1228	10	7	154	7.06	20.9	705	
1238	10	7	224	7.01	20.4	724	
1248	10	7	294	7.01	20.6	722	DR measured
1258	10	7	364	7.01	20.7	710	
1308	10	7	434	7.01	21.0	716	
1318	10	7	504	7.00	21.0	718	
1328	10	7	574	7.02	20.9	717	DR measured
1338	10	7	644	7.03	20.6	714	
1348	10	7	714	7.00	20.8	721	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comments
BMO-2008-01G	1356	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: 4 prong 30 AMP male to 3 prong 20 AMP female adaptor needed.

* Gross Alpha/Beta, Ra 226, Ra 228 and Uranium Isotopes U 234, U 235 and U 238

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	11/3/08, 11/4/08
Well ID:	BMO-2008-03B	Weather:	Clear
ADWR No:	909147	Sampler:	CJM

WELL DATA

Well Depth (ft bls):	260
Casing Diameter (in):	5
Static Water Level (ft bmp):	11/3: 138.02, 11/4: 137.95
Casing Volume (gals):	120
3 Casing Volumes (gals):	360

Casing Capacity	
Nominal Size (inches)	Gallons per Linear Foot
2	0.16
4	0.65
5	1.02
6	1.47
8	2.61
10	4.08

Casing Volume = gallons/foot * water column (feet)

FIELD SAMPLING DATA

Time	Elapsed Time (min)	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Comments
0945							
0945	0	11	0	7.34	20.9	599	DR Measured
0951	6	11	66/66	7.36	21.1	594	
0957	6	11	66/132	7.37	21.2	598	
1003	6	11	66/198	7.36	21.2	596	
1012	5	11	99/297	7.29	21.0	597	DR Measured
1018	5	11	66/363	7.37	21.2	599	
1024	5	11	66/429	7.32	21.3	600	
1030	5	11	66/495	7.34	21.1	599	
1036	5	11	66/561	7.36	21.4	599	DR Measured

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comments
BMO-2008-03B	1040	Plastic	250ml	1	EPA300.0	None	
DUP-~~041108~~ 110408	1040	Plastic	250ml	1	EPA 300.0	None	

Additional Comments: Incorrect plug for 6KW generator, had to make adaptor. Pump is wired with yellow as ground, plug had to be rewired accordingly. Entrance is on Naco Highway E side, N. of RR tracks.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	12-11-08
Well ID:	BMO-2008-4B	Weather:	Sunny, cool
ADWR No:		Sampler:	Travis Taylor

WELL DATA

Well Depth (ft bls):	610
Casing Diameter (in):	5.25
Static Water Level (ft bmp):	130.77'
Casing Volume (gals):	538.9
3 Casing Volumes (gals):	1616.8

Casing Capacity	
Nominal Size (inches)	Gallons per Linear Foot
2	0.16
4	0.65
5	1.02
6	1.47
8	2.61
10	4.08

Casing Volume = gallons/foot * water column (feet)

FIELD SAMPLING DATA

Time	Elapsed Time (min)	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Comments
1130	0	62.5	11294	7.13	23.2	377	total discharge began
1200	30	62.5	13169	7.28	22.6	373	12-10-08 @ 1804
1230	60	64.3	15098	7.29	23.0	372	
1300	90	64.3	17027	7.33	23.1	375	
1330	120	64.3	18956	7.35	23.0	374	
1400	150	64.3	20885	7.37	23.1	~~375~~ 374	
1430	180	64.3	22814	7.34	22.8	374	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comments
~~BMO-2008-4~~	~~1~~	~~*~~ Plastic	~~*~~ 250 ml	~~3~~	~~FMCQB-GW~~ EPA 300.0	~~*~~ None	—
BMO-2008-4	1435	*	*	3	FMCQB-GW	*	

Additional Comments:

* 1 (250 ml) Filtered, Plastic
1 (125 ml) HNO_3, Filtered, Plastic
1 (500 ml) Raw, plastic

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.3	Date:	09/30/08
Well ID:	BMO-2008-5B	Weather:	
ADWR No:		Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	290	Time:	0727
Casing Diameter (in):	5-inch	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	145.21		
1 Casing Volume (gals):	NA		
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1220			7.08	22.0	688	-	-	-
Sample Collected after Aquifer Testing								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BMO-2008-5B	1230	Plastic	*	3	FMCQB-GW	*	--

Additional Comments: * 500 ml Raw, 125 ml Filtered HNO3 and 250 ml Filtered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.3	Date:	10/02/08
Well ID:	BMO-2008-5M	Weather:	
ADWR No:		Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	450	Time:	0715
Casing Diameter (in):	5-inch	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	146.54		
1 Casing Volume (gals):	NA		
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1340			7.13	23.6	551	-	-	-
Sample Collected after Aquifer Testing								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BMO-2008-5M	1345	Plastic	*	3	FMCQB-GW	*	--

Additional Comments: * 500 ml Raw, 125 ml Filtered HNO3 and 250 ml Filtered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720900	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	11/4/08
Well ID:	BMO-2008-06B	Weather:	Partly cloudy
ADWR No:	909146	Sampler:	CTM

WELL DATA

Well Depth (ft bls):	265
Casing Diameter (in):	5
Static Water Level (ft bmp):	190.23
Casing Volume (gals):	76
3 Casing Volumes (gals):	230

Casing Capacity	
Nominal Size (inches)	Gallons per Linear Foot
2	0.16
4	0.65
5	1.02
6	1.47
8	2.61
10	4.08

Casing Volume = gallons/foot * water column (feet)

FIELD SAMPLING DATA

Time	Elapsed Time (min)	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Comments
1148							
1151	3	6	18/18	7.09	21.2	384	DR Measured
1157	6	6	36/54	7.22	21.4	385	
1205	8	6	48/102	7.36	21.4	389	
1211	6	6	36/138	7.38	21.5	400	
1217	6	5	30/168	7.39	21.4	401	DR Measured
1223	6	5	30/198	7.41	21.4	395	
1229	6	5	30/228	7.40	21.6	395	
1238	9	5	45/273	7.42	21.3	398	DR Measured
1244	6	5	30/303	7.41	21.5	398	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comments
BMO-2008-06B	1250	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Entrance is on Naco Highway, W side, N of Purdy Lane

* Gross Alpha/Beta, Ra 226, Ra 228 and Uranium Isotopes U 234, U 235 and U 238

4 prong 30 AMP male to 3 prong 20 AMP female adaptor needed.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	872000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	11/4/08
Well ID:	BMO-2008-06M	Weather:	Scattered Clouds
ADWR No:	909019	Sampler:	CTM

WELL DATA

Well Depth (ft bls):	450
Casing Diameter (in):	5
Static Water Level (ft bmp):	190.25
Casing Volume (gals):	260
3 Casing Volumes (gals):	780

Casing Capacity	
Nominal Size (inches)	Gallons per Linear Foot
2	0.16
4	0.65
5	1.02
6	1.47
8	2.61
10	4.08

Casing Volume = gallons/foot * water column (feet)

FIELD SAMPLING DATA

Time	Elapsed Time (min)	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Comments
1307							
1311	4	12	48/48	7.33	21.6	619	DR Measured
1321	10	13	130/178	7.38	21.3	622	
1331	10	13	130/308	7.35	21.8	622	
1341	10	13	130/438	7.35	21.7	622	DR Measured
1351	10	13	130/568	7.31	21.7	619	
1401	10	13	130/698	7.40	21.6	622	DR Measured
1411	10	13	130/828	7.32	21.7	624	
1421	10	13	130/958	7.40	21.6	621	DR Measured
1433	12	13	156/1114	7.31	21.8	621	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comments
BMO-2008-06M	1440	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Entrance is on Naco Highway, W side, N of Purdy Lane

* Gross Alpha/Beta, Ra 226, Ra 228 and Uranium Isotopes U 234, U 235 and U 238

4 prong male 30 AMP to 3 prong 20 AMP female plug adapter needed.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	11/6/08
Well ID:	BMO-2008-07M	Weather:	Clear
ADWR No:	908794	Sampler:	CM

WELL DATA

Well Depth (ft bls):	670
Casing Diameter (in):	5
Static Water Level (ft bmp):	239.69
Casing Volume (gals):	440
3 Casing Volumes (gals):	1300

Casing Capacity	
Nominal Size (inches)	Gallons per Linear Foot
2	0.16
4	0.65
5	1.02
6	1.47
8	2.61
10	4.08

Casing Volume = gallons/foot * water column (feet)

FIELD SAMPLING DATA

Time	Elapsed Time (min)	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Comments
0743							
0745	2	17	34/34	8.31	17.9	297	DR Measured, Foam noted
0755	10	17	170/204	7.94	20.8	335	
0800	5	17	85/289	7.59	22.0	373	
0810	10	16	160/449	7.49	22.1	381	DR Measured
0816	6	16	96/545	7.51	22.5	381	
0820	4	16	64/609	7.52	22.5	381	
0825	5	16	80/689	7.53	22.6	380	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comments
BMO-2008-07M	0835	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: 4 prong male 30 AMP to 3 prong 20 AMP female adapter, key needed.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	12-5-08
Well ID:	BMO-2008-8B	Weather:	Partly cloudy, cool
ADWR No:		Sampler:	Travis Taylor

WELL DATA

Well Depth (ft bls):	480
Casing Diameter (in):	5.25
Static Water Level (ft bmp):	297.94
Casing Volume (gals):	204.7
3 Casing Volumes (gals):	614.2

Casing Capacity	
Nominal Size (inches)	Gallons per Linear Foot
2	0.16
4	0.65
5	1.02
6	1.47
8	2.61
10	4.08

Casing Volume = gallons/foot * water column (feet)

FIELD SAMPLING DATA

Time	Elapsed Time (min)	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Comments
1210	0	53.2	12918	6.23	20.5	2480	Total discharge began
1230	20	53.2	13982	6.36	20.6	2480	@ 12/04/08: 1355
1250	40	53.5	15046	6.39	20.9	2470	
1315	65	53.5	16384	6.41	21.3	2460	
1535	85	53.5	23874	6.47	20.4	2470	
1604	114	52.6	25426	6.49	20.5	2480	
1634	144	52.6	27004	6.50	20.1	2490	
1700	170	52.6	28372	6.47	20.1	2480	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comments
		~~Plastic~~	~~250 ml~~	~~1~~	~~EPA 300.0~~	~~None~~	
BMO-2008-8B	1405	*	*	3	*	*	

Additional Comments:

* 1 (125 ml) HNO_3, Filtered, plastic FMCQB-GW
1 (250 ml) Filtered, Plastic FMCQB-GW
1 (500 ml) Raw, plastic FMCQB-GW









HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	12-9-08
Well ID:	BMO-2008-8M	Weather:	Partly cloudy, cold, windy
ADWR No:		Sampler:	Travis Taylor

WELL DATA

Well Depth (ft bls):	1210
Casing Diameter (in):	5.25
Static Water Level (ft bmp):	299.79
Casing Volume (gals):	1023.6
3 Casing Volumes (gals):	3070.7

Casing Capacity	
Nominal Size (inches)	Gallons per Linear Foot
2	0.16
4	0.65
5	1.02
6	1.47
8	2.61
10	4.08

Casing Volume = gallons/foot * water column (feet)

FIELD SAMPLING DATA

Time	Elapsed Time (min)	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Comments
1320	0	14.6	3769	6.95	24.0	887	Total discharge began
1350	30	14.4	4155	7.09	24.3	867	12-8-08 @ 1710
1428	68	14.3	4669	7.21	22.8	859	
1600	160	13.9	5865	7.16	23.7	850	
1625	185	13.7	6243	7.14	23.9	851	
1725	245	13.9	7072	7.16	23.4	852	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comments
		~~Plastic~~	~~250 ml~~	~~1~~	~~EPA 300.0~~	~~None~~	
BMO-2008-8M	1440	*	*	3	*	*	

Additional Comments:

* 1 (250ml) ~~Filtered~~, Plastic — FMCQB-GW
1 (500ml) Raw, plastic — FMCQB-GW
1 (125ml) Filtered, plastic, HNO_3 — FMCQB-GW

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	11/5/08
Well ID:	BMO-2008-09M	Weather:	Mostly clear
ADWR No:	909 255	Sampler:	CTM

WELL DATA

Well Depth (ft bls):	775
Casing Diameter (in):	5
Static Water Level (ft bmp):	287.65
Casing Volume (gals):	500
3 Casing Volumes (gals):	1500

Casing Capacity	
Nominal Size (inches)	Gallons per Linear Foot
2	0.16
4	0.65
5	1.02
6	1.47
8	2.61
10	4.08

Casing Volume = gallons/foot * water column (feet)

FIELD SAMPLING DATA

Time	Elapsed Time (min)	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Comments
0948							
0948	0	15	0	8.67	18.4	385	DR Measured, foam noted.
1003	5	15	75	8.67	21.8	402	Foam noted.
1018	5	15	150	7.89	23.0	442	DR Measured.
1033	5	15	225	7.83	23.0	445	
1048	5	14	295	7.84	23.0	442	DR Measured
1103	5	14	365	7.92	21.6	441	
1118	5	14	436	7.89	21.4	444	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comments
BMO-2008-09M	1140	Plastic	250ml	1	EPA 300.0	None	

Additional Comments: 4 prong male 30 AMP to 3 prong female 20 AMP adaptor needed, key needed.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	11/5/08
Well ID:	BMO-2008-10 GU	Weather:	Mostly clear.
ADWR No:	909272	Sampler:	CM

WELL DATA

Well Depth (ft bls):	449
Casing Diameter (in):	5
Static Water Level (ft bmp):	295.89
Casing Volume (gals):	160
3 Casing Volumes (gals):	480

Casing Capacity	
Nominal Size (inches)	Gallons per Linear Foot
2	0.16
4	0.65
5	1.02
6	1.47
8	2.61
10	4.08

Casing Volume = gallons/foot * water column (feet)

FIELD SAMPLING DATA

Time	Elapsed Time (min)	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Comments
1240							
1242	2	6	12	6.32	18.7	3308	DR Measured
1247	5	6	30/42	6.18	20.1	3321	
1252	5	6	30/72	6.11	20.0	3319	
1302	10	6	60/132	6.12	20.4	3306	
1312	10	6	60/192	6.19	20.4	3347	
1322	10	6	60/252	6.15	20.2	3343	DR Measured

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comments
BMO-2008-10 GU	1330	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: 4 prong male 30 AMP to 3 prong female 20 AMP adapter needed.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	11/5/08
Well ID:	BMO-2008-10GL	Weather:	Scattered clouds
ADWR No:	909435	Sampler:	CTM

WELL DATA

Well Depth (ft bls):	810
Casing Diameter (in):	5
Static Water Level (ft bmp):	520.50
Casing Volume (gals):	300
3 Casing Volumes (gals):	900

Casing Capacity	
Nominal Size (inches)	Gallons per Linear Foot
2	0.16
4	0.65
5	1.02
6	1.47
8	2.61
10	4.08

Casing Volume = gallons/foot * water column (feet)

FIELD SAMPLING DATA

Time	Elapsed Time (min)	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Comments
1402							
1404	2	5	10/10	6.66	18.6	3016	DR Measured.
1414	10	5	50/60	6.53	24.0	3079	
1419	5	5	25/85	6.48	24.8	3039	
1429	10	5	50/135	6.48	25.1	3012	
1439	10	5	50/185	6.47	25.0	2948	
1449	10	4	40/225	6.48	24.6	2796	DR Measured.
1459	10	4	40/265	6.53	25.0	2663	
1509	10	4	40/305	6.51	24.7	2609	
1519	10	4	40/345	6.48	25.2	2601	
1524	5	4	20/365	6.49	25.0	2580	
1529	5	4	20/385	6.47	25.3	2573	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comments
BMO-2008-10GL	1535	Plastic	250ml	1	EPA 300.0	None	

Additional Comments: 4 prong male 30 AMP to 3 prong 20 AMP female adaptor needed.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	11/12/08
Well ID:	BMO-2008-11G	Weather:	Clear
ADWR No:	909434	Sampler:	CTM

WELL DATA

Well Depth (ft bls):	760
Casing Diameter (in):	5
Static Water Level (ft bmp):	576.80
Casing Volume (gals):	190
3 Casing Volumes (gals):	560

Casing Capacity

Nominal Size (inches)	Gallons per Linear Foot
2	0.16
4	0.65
5	1.02
6	1.47
8	2.61
10	4.08

Casing Volume = gallons/foot * water column (feet)

FIELD SAMPLING DATA

Time	Elapsed Time (min)	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Comments
1138							
1140	2	8	16	7.84	20.5	262	DR Measured
1150	10	8	96	7.91	23.7	256	
1200	10	8	176	7.95	24.4	253	
1210	10	8	256	7.97	24.5	255	
1220	10	7	326	7.95	24.7	255	DR Measured
1230	10	7	396	7.98	24.7	256	
1240	10	7	466	7.97	24.2	256	
1250	10	8	546	7.96	24.2	257	DR Measured

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comments
BMO-2008-11G	1255	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: 4 prong 30 AMP male adaptor to 3 prong 20 AMP female plug needed.

* Gross Alpha/Beta, Ra 226, Ra 228 and Uranium Isotopes U 234, U 235 and U 238

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.3	Date:	10/03/08
Well ID:	BMO-2008-13B	Weather:	
ADWR No:		Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	470	Time:	0720
Casing Diameter (in):	5-inch	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	206.95		
1 Casing Volume (gals):	NA		
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1328			6.49	21.6	2180	-	-	-
Sample Collected after Aquifer Testing								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BMO-2008-13B	1345	Plastic	*	3	FMCQB-GW	*	--

Additional Comments: * 500 ml Raw, 125 ml Filtered HNO3 and 250 ml Filtered

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	12-3-08
Well ID:	BMO-2008-13M	Weather:	Sunny, Cool
ADWR No:		Sampler:	Travis Taylor

WELL DATA

Well Depth (ft bls):	1030
Casing Diameter (in):	5.25
Static Water Level (ft bmp):	206
Casing Volume (gals):	926.63
3 Casing Volumes (gals):	2779.9

Casing Capacity	
Nominal Size (inches)	Gallons per Linear Foot
2	0.16
4	0.65
5	1.02
6	1.47
8	2.61
10	4.08

Casing Volume = gallons/foot * water column (feet)

FIELD SAMPLING DATA

Time	Elapsed Time (min)	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Comments
1200	0	3.64	901.5	7.40	24.0	1534	total Discharge began 12/2/08
1300	60	3.64	1119.9	7.61	24.5	1516	@ 1420
1400	120	3.58	1337.3	7.59	24.4	1492	
1430	150	3.58	1445	7.57	24.5	1481	
1500	180	3.38	1546	7.69	23.4	1460	
1530	210	3.48	1650	7.72	24.1	1463	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comments
		~~Plastic~~	~~250 ml~~ →	~~1~~	~~EPA 300.0~~	~~None~~	
BMO-2008-13M	1545	*	*	3	*	*	

Additional Comments:

* 1 (125ml) HNO_3, Filtered, Plastic FMCQB-GW
1 (250ml) Filtered, Plastic FMCQB-GW
1 (500ml) Raw, Plastic FMCQB-GW

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-20-08
Well ID:	BURKE	Weather:	Sunny
ADWR No:	212268	Collected By:	J. Villinski

WELL DATA

Well Depth (ft bls):	780	Time:	
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	604.88 10/28/08		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
15:45			7.57	26.0	466			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
BURKE	15:45	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: 1000' sounder - went down past 700'. w/o the sounder hitting water - not inside innercasing? Sounder got stuck, was removed on 10-22-08. Will recheck week of 10-27-08

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-15-08
Well ID:	CHAMBERS	Weather:	Sunny
ADWR No:	629807	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	245	Time:	1108
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	N/A	Valve opened @ 11:08	
1 Casing Volume (gals):		15 gpm	
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
11:09	15	15	7.45	21.3	425	clear	no	—
11:14	5	40	7.40	22.4	419	"	"	—
11:22	5	80	7.39	22.3	421	"	"	
11:30	5	120	7.41	22.5	420	"	"	—

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
CHAMBERS	11:35	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Watering the plants - 15 gpm is too strong cutback to 5 gpm, Purge until stable

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-23-08
Well ID:	COB MW-1	Weather:	Sunny
ADWR No:	903592	Collected By:	J. Villinski

WELL DATA

Well Depth (ft bls):	420	Time:	7:28
Casing Diameter (in):	8	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	233.62	730 - valve open 15 gpm	
1 Casing Volume (gals):	448		
3 Casing Volumes (gals):	1492		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
733	15	45	7.00	19.3	1559	clear	no	—
738	15	120	6.96	20.8	1613	"	"	—
742	15	180	7.00	209	1595	"	"	—
747	15	255	6.96	21.8	1664	"	"	"
752	15	330	6.93	21.3	1669	"	"	"
757	15	405	6.96	21.3	1677	"	"	"
802	12	465	6.95	21.3	1689	"	"	"
807	12	525	6.95	21.2	1690	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
COB MW-1	8:10	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Since pump is used constantly for the WWTP purge only until stable

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-23-08
Well ID:	COB-MW-2	Weather:	Sunny
ADWR No:	903984	Collected By:	John Sirlinski

WELL DATA

Well Depth (ft bls):	162	Time:	9:25
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	124.02	pump on @ 9:28 - 7.5 gpm	
1 Casing Volume (gals):	25	11 min purge	
3 Casing Volumes (gals):	76		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:29	7.5	7.5	7.23	19.6	505	clear	no	—
9:31	7.5	22.5	7.34	20.0	497	"	"	—
9:34	7.5	45	7.34	20.2	501	"	"	
9:38	7.5	75	7.36	20.3	498	"	"	—

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
COB MW-2	9:40	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-23-08
Well ID:	COB MW-3	Weather:	Sunny
ADWR No:	906823	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	300'	Time:	9:57
Casing Diameter (in):	4	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	117.93	pumped @ 10:00 – 25 gpm	
1 Casing Volume (gals):	122	15 min purge	
3 Casing Volumes (gals):	365		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:02	25	50	7.26	19.8	469	clear	no	lots of small
10:06	25	150	7.40	20.4	504	"	"	particles
10:10	25	250	7.42	20.7	507	"	"	no particles
10:13	25	325	7.42	20.8	506	"	"	"
10:16	25	400	7.43	20.8	507	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
COB MW-3	10:20	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: looks like some small metallic flakes in w/ other sand, cleared up right away

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-23-08
Well ID:	COB WL	Weather:	Sunny
ADWR No:	593116	Collected By:	John Millonski

WELL DATA

Well Depth (ft bls):	150	Time:	8:31
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	58.76	Pump on 8:34 @ 7.5 gpm	
1 Casing Volume (gals):	61		
3 Casing Volumes (gals):	183		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:36	7.5	15	6.93	18.9	1054	clear	no	—
8:40	7.5	45	7.00	20.4	1078	"	"	
8:44	7	73	6.99	20.6	1086	"	"	
8:49	2	83	7.06	20.7	1072	"	"	
~~8:52~~	2	89	7.22	21.2	1076	"	"	
8:55	2	95	7.23	21.4	1075	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
COB WL	9:00	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: At 8:47 - pumped well almost dry - surging at 7 gpm. Casing must be emptied at this point

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-20-08
Well ID:	COLLINS	Weather:	P. Cloudy
ADWR No:	565260	Collected By:	J. Villalobos

WELL DATA

Well Depth (ft bls):	320	Time:	13:11
Casing Diameter (in):	4 1/2	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	290.15	valve open 13:18 @ 12 gpm	
1 Casing Volume (gals):	25	6+ min purge	
3 Casing Volumes (gals):	76		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
13:19	12	12	6.71	21.8	1510	clear	no	
13:21	12	36	6.78	21.7	1503	"	"	
13:23	12	60	6.78	21.7	1503			
13:24	12	96	6.78	21.7	1510			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
COLLINS	13:30	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Water not used since early am

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-20-08
Well ID:	COOPER	Weather:	Mostly sunny
ADWR No:	~~637069~~ 623546	Collected By:	J. Villinski

WELL DATA

Well Depth (ft bls):	~~[illegible]~~ 325	Time:	
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	N/A	valve open 13:41 @ 8.33 gpm	
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
13:47	8.33	25	8.39	23.4	447	clear	no	—
13:50	8.33	~~3~~5	8.42	24.2	447	"	"	
13:56	8.33	125	8.45	24.5	448	"	"	
14:02	8.33	175	8.44	24.7	448			
		↳ Stable						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
COOPER	14:05	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: cannot measure WL — pump til stable
No one home. However some of the garbage in the yard has been cleaned up

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-16-08
Well ID:	COOPER C	Weather:	Sunny
ADWR No:	637069	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	220	Time:	13:27
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	155.85		valve open @ 13:34 @ 6.7 gpm
1 Casing Volume (gals):	96		43 min purge
3 Casing Volumes (gals):	289		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
13:35	6.7	6.7	6.85	21.9	2075	clear	no	—
13:41	6.7	46.7	6.84	21.6	2076	"	"	—
13:46	6.7	80	6.80	21.5	2078	"	"	
13:52	6.7	120	6.81	21.5	2082	"	"	
13:58	6.7	160	6.81	21.5	2080	"	"	
14:04	6.7	200	6.83	21.5	2077	"	"	
14:10	6.7	240	6.79	21.5	2078	"	"	
14:17	6.7	287	6.80	21.4	2078	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
COOPER C	14:20	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Some usage in the morning, Teenager at home - school break

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-13-08
Well ID:	DODSON	Weather:	Sunny / Warm
ADWR No:	644927	Collected By:	J. Villinski

NEEDS ~~SAMPLE~~ IN BLUE SOUND

WELL DATA

Well Depth (ft bls):	200'	Time:	13:55
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	81.82	pump on @ 14:01 @ 13 gpm	
1 Casing Volume (gals):	177.8	~41 min purge	
3 Casing Volumes (gals):	534		

FIELD SAMPLING DATA

pump

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
14:04	13	39	7.12	20.6	986	clear	no	—
14:09	13	104	7.18	20.8	994	"	"	some black flakes
14:14	13	169	7.19	20.5	1038	"	"	—
14:19	13	234	7.16	20.6	1058	"	"	
14:24	13	299	7.14	20.5	1075	"	"	—
14:29	13	364	7.13	20.7	1087	"	"	—
14:34	13	429	7.13	20.6	1088	"	"	—
14:39	13	494	7.14	20.6	1092	"	"	—
14:43	13	536	7.15	20.5	1095	"	"	—

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
DODSON	14:45	Plastic	250 ml	1	EPA 300.0	None	filtered

Additional Comments: No one home. Pump appears to have been off. Dodson still in process of remodel.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/16/08
Well ID:	DOUGLAS 791	Weather:	Clear, Cool
ADWR No:	592791	Collected By:	BJT

WELL DATA

Well Depth (ft bls):	200	Time:	1030
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	23.60		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Water Level Only							

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/16/08
Well ID:	DOUGLAS 792	Weather:	Clear, Cool
ADWR No:	592792	Collected By:	BJT

WELL DATA

Well Depth (ft bls):	200	Time:	1035
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	86.45		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Water Level Only							

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-14-08
Well ID:	EAST	Weather:	Sunny
ADWR No:	599796	Collected By:	John Dilinski

WELL DATA

Well Depth (ft bls):	125'	Time:	13:15
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	52.19	13:19 pump on @ 8.33 gpm	
1 Casing Volume (gals):	110	40 min purge	
3 Casing Volumes (gals):	329		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
13:20	8.3	8.3	7.32	21.0	519	clear	no	—
13:25	8.33	50	7.33	20.0	519	"	"	
13:30	8.33	92	7.34	20.2	521	"	"	
13:35	8.33	133	7.32	20.3	524	"	"	
13:40	8.33	175	7.33	20.4	525	"	"	
13:46	8.33	225	7.36	20.3	528	"	"	
13:52	8.33	275	7.34	20.3	529	"	"	
13:58	8.33	325	7.33	20.3	531			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
EAST	14:05	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Right water usage in the AM (couple showers

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-21-08
Well ID:	EJIDO NACO - 02	Weather:	Sunny
ADWR No:	—	Collected By:	J. Williams

WELL DATA

Well Depth (ft bls):	165'	Time:	8:25
Casing Diameter (in):	—	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	~ [illegible]		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:25	—	—	7.24	22.5	361	clear	no	—

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
EJIDO NACO 02	8:25	Plastic	250 ml	3	EPA 300.0	Y/~~N~~/N ~~None~~	

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-21-08
Well ID:	EJIDO NACO 03	Weather:	Sunny
ADWR No:		Collected By:	John Villinski

WELL DATA

Well Depth (ft bis):		Time:	
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):			
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:40			7.39	23.9	346			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
EJIDONACO 03	940	Plastic	250 ml	3	EPA 300.0	Y/N/N None	

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-21-08
Well ID:	EJIDO NACO 05	Weather:	Sunny
ADWR No:		Collected By:	John Jillinski

WELL DATA

Well Depth (ft bls):		Time:	N/A
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):			
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
915			7.34	22.4	391			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
EJIDONACO 05	915	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments:

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Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-21-08
Well ID:	EJIDONACO 06	Weather:	Sunny
ADWR No:		Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):		Time:	
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	~115		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:00			7.35	22.5	349	clear	no	—

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
EJIDONACO 06	9:00	Plastic	250 ml	3	EPA 300.0	Y/N/N None	

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-14-08
Well ID:	EPPELE 641	Weather:	Sunny / cool
ADWR No:	805641	Collected By:	J. Vilinski

WELL DATA

Well Depth (ft bls):	265	Time:	7:30
Casing Diameter (in):	8"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	24.53	pump on @ 7:42 (5g/35s = 8.3) = 250 mins!	
1 Casing Volume (gals):	643		
3 Casing Volumes (gals):	1930		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
744	8.3	16.7	7.14	18.3	643	clear	no	—
750	8.3	66.7	7.22	19.8	639	"	"	
802	9	176	7.25	19.5	636	"	"	
815	9	293	7.20	19.9	637	"	"	
827	10	413	7.26	19.8	635	"	"	"
839	10	533	7.24	19.9	633	"	"	
851	10	653	7.28	19.6	644	"	"	
907	10	803	7.35	19.7	671	"	"	
922	10	953	7.53	19.4	659			
932	10	1053	7.61	19.3	641			
937	—	shut valve - flow stopped						
950	N/A	71060	7.56	20.4	642			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
EPPELE 641	952	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-15-08
Well ID:	FRANCO	Weather:	Sunny
ADWR No:	500101	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	200'	Time:	
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	N/A		valve open @ 9:12
1 Casing Volume (gals):			4 gpm
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:14	4	8	7.31	20.1	1567	clear	no	—
9:20	4	32	7.25	20.1	1557	"	"	
9:28	4	52	7.21	20.0	1549	"	"	
9:30	4	72	7.21	20.2	1557	"	"	
9:35	4	92	7.20	20.5	1560	"	"	
		seems stable						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
FRANCO	9:40	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: used hose-bib on house #4. Water in use b/c well is shared by 4 houses. Will purge until field parameters are stable

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-22-08
Well ID:	FULTZ	Weather:	Sunny
ADWR No:	212447	Collected By:	John Vidinski

WELL DATA

Well Depth (ft bls):	300	Time:	14:35
Casing Diameter (in):	8	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	40.54	Too much purge volume -	
1 Casing Volume (gals):	695	purge till reading stable -	
3 Casing Volumes (gals):	2087	valve open 14:40 @ 10 gpm	

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
14:45	10	50	6.78	21.7	1937	clear	no	few blk parts
14:50	10	100	6.81	21.6	1931	"	"	—
14:55	10	150	6.80	21.5	1938	"	"	—
15:00	10	200	6.82	21.4	1943			
15:05	10	250	6.83	21.3	1941			
15:10	10	300	6.80	21.4	1940			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
FULTZ	15:15	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: They have not used this well in some time. Static WL

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/16/08
Well ID:	GALLANT	Weather:	Clear, Warn
ADWR No:	502527	Collected By:	BJT

WELL DATA

Well Depth (ft bls):	190	Time:	1345
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	30.70		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Water Level Only							

Additional Comments:

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Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-15-08
Well ID:	GARNER 635	Weather:	Sunny
ADWR No:	587635	Collected By:	John Villmski

WELL DATA

Well Depth (ft bls):	680	Time:	8:15
Casing Diameter (in):	12"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	194.35	Pump on @8:24 - 20 gpm	
1 Casing Volume (gals):	2923		
3 Casing Volumes (gals):	8770		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:25	20	20	7.72	19.8	215	clear	NO	
8:30	20	120	7.65	22.2	470	"	"	
8:35	20	220	7.66	23.2	471	"	"	
8:40	20	320	7.65	23.7	486	"	"	
8:45	20	420	7.65	24.1	472			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
GARNER 635	8:50	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments:

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Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	11/12/08
Well ID:	GL-03	Weather:	Clear
ADWR No:	539782	Sampler:	CTM

WELL DATA

Well Depth (ft bls):	825
Casing Diameter (in):	4
Static Water Level (ft bmp):	Obstruction @ ~23.5' H: 659.79 (8/4/08)
Casing Volume (gals):	108
3 Casing Volumes (gals):	320

Casing Capacity

Nominal Size (inches)	Gallons per Linear Foot
2	0.16
4	0.65
5	1.02
6	1.47
8	2.61
10	4.08

Casing Volume = gallons/foot * water column (feet)

FIELD SAMPLING DATA

Time	Elapsed Time (min)	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Comments
1002							
1005	3	9	27	7.30	21.7	475	DR Measured
1010	5	9	72	7.26	25.1	456	
1015	5	9	117	7.16	25.7	482	
1020	5	9	162	7.15	26.0	486	DR Measured
1025	5	0.5	164	7.21	25.2	478	
~~	~~~	~~~	Stopped	purge to allow recharge	~~~	~~~	~~~

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comments
GL-03	1040	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: T-junction, 4 prong 30 AMP male to 3 prong 20 AMP female extension cord needed.
Generator would not restart after ~2 minutes.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/29/08 Scattered
Well ID:	GG005E 547	Weather:	Clear → Partly Cloudy
ADWR No:	55-628547	Collected By:	CTM, JV

WELL DATA

Well Depth (ft bls):	800	Time:	1013 - 1240
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	235.90		
1 Casing Volume (gals):	(564.1)(36)(0.0408) = 830 g		
3 Casing Volumes (gals):	2500 g		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1016	19	5656	7.23	22.5	876	Yes	Yes	Discharge Rate Measured
1026	19	190/246	7.26	22.4	868	No	No	
1036	17	170/416	7.27	22.4	885	"	"	DR Measured
1051	17	255/671	7.25	22.4	895	"	"	
1106	17	926	7.28	22.5	901	"	"	DR Measured
1121	17	255/1181	7.26	22.5	901	"	"	
1136	16	240/1421	7.26	22.5	901	"	"	DR Measured
1151	16	240/1661	7.22	22.7	900	"	"	
1206	16	240/1901	7.23	22.8	900	"	"	DR Measured
1221	16	240/2141 ~~2141~~	7.26	22.8	898	"	"	
1236	16	240/2381	7.27	22.6	897	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
GG005E 547	1240	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Obstruction at ~141' can be passed. 240 V 3 phase generator w/ 10 gauge wiring (Black, Red, Yellow, Ground solid 1/8" diameter per wire 2-1/8". ~2-3 gallons/min leaking, will add to total discharge.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-22-08
Well ID:	Goar Ranch	Weather:	Sunny
ADWR No:	610695	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	250	Time:	13:05
Casing Diameter (in):	7"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	184.68		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: WL only

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-16-08
Well ID:	HOBAN	Weather:	Sunny
ADWR No:	805290	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	316	Time:	12:05
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	163.95	1215 pump on @ 12 gpm	
1 Casing Volume (gals):	229	57	
3 Casing Volumes (gals):	686		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
12:17	12	24	6.92	22.8	1582	clear	no	—
12:22	12	84	7.00	21.4	1549	"	"	—
12:27	12	144	7.01	21.9	1511	"	"	—
12:35	12	240	7.00	22.0	1623	"	"	—
12:45	12	360	6.96	22.2	1614	"	"	—
12:55	12	480	6.95	22.3	1588	"	"	—
13:02	84	564	7.06	22.4	1638	"	"	
13:10	12	660	6.98	22.4	1624	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
HOBAN	13:15	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-15-08
Well ID:	HOWARD	Weather:	Sunny
ADWR No:		Collected By:	J. Vlasaki

WELL DATA

Well Depth (ft bls):	220	Time:	720
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	151.12	pump on @ 7:28 - 10 gpm	
1 Casing Volume (gals):	103.65		
3 Casing Volumes (gals):	311		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
729	10	10	6.76	18.5	1643	clear	no	
735	10	70	7.00	20.0	1514	"	"	
740	10	120	6.94	20.7	1755	"	"	
745	10	170	6.98	20.6	1562	"	"	
750	10	220	6.94	20.6	1714	"	"	
755	10	270	7.02	20.4	1585	"	"	
800	10	320	7.00	20.6	1598	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
HOWARD	8:05	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Water is in normal domestic use, showers, dishes.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/28/08
Well ID:	KEEFER	Weather:	Clear
ADWR No:	209744	Collected By:	CTM, JV

WELL DATA

Well Depth (ft bls):	250	Time:	1115 - 1227
Casing Diameter (in):	NA	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	135.87'		
1 Casing Volume (gals):	Purge till stable		
3 Casing Volumes (gals):	" " "		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1117	10	20/120	7.25	18.5	464	None	None	Discharge Rate Measured
1122	10	50/170	7.35	19.5	459	"	"	—
1128	10 ~~10/2.5~~	50/120	7.37	20.2	473	"	"	~~DR MEASURED~~
1133	12.5	63/183	7.37	20.1	473	"	"	DR Measured
~~1138~~ 1142	12.5	~~113/53~~ 296	7.33	20.3	478	"	"	—
1147	12	60/356	7.30	20.2	513	"	"	DR Measured
1152	12	60/416	7.32	20.3	493	"	"	—
1159	12	60/476	7.29	20.3	507	"	"	—
1204	12	60/536	7.33	20.1	522	None	None	—
1209	12	60/596	7.29	20.3	518	None	None	—
1214	12	60/656	7.33	20.1	533	"	"	—
1219	12	60/716	7.29	20.3	519	"	"	DR MEASURED
1224	12	60/776	7.32	20.1	534	"	"	—

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
KEEFER	1230	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Light toilet, sink usage.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-15-08
Well ID:	MCCONNELL 265	Weather:	Sunny
ADWR No:	539265	Collected By:	John Dillinski

WELL DATA

Well Depth (ft bls):	216	Time:	
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	could not measure	take purge volume from 2-20-08	
1 Casing Volume (gals):		valve open @ 10:11 - 10 gpm	
3 Casing Volumes (gals):	~ 265 gallons		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:12	10	10	6.88	20.7	1695	clear	no	—
10:17	10	60	6.86	21.0	1691	"	"	"
10:22	10	110	6.83	21.3	1692	"	"	"
10:27	10	160	6.86	21.3	1688	"	"	"
10:32	10	210	6.84	21.3	1690	"	"	"
10:38	10	270	6.82	21.3	1686	"	"	"

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
MCCONNELL265	10:40	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: well obstructed ~ 114' - tried both sounders multiple times

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-20-08
Well ID:	METZLER	Weather:	Sunny
ADWR No:	35-71891	Collected By:	John Willinski

WELL DATA

Well Depth (ft bls):	351	Time:	11:31
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	287.09		valve open @ 11:35 @ 6.67
1 Casing Volume (gals):	95		gpm - 43 min purge
3 Casing Volumes (gals):	285		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
11:37	6.67	13.3	7.19	22.5	1078	clear	no	-
11:41	6.67	40	7.24	22.1	1072	"	"	
11:47	6.67	80	7.25	22.3	1066	"	"	
11:53	6.67	120	7.24	22.4	1076	"	"	
11:59	6.67	160	7.22	22.4	1076	"	"	
12:05	6.67	200	7.22	22.4	1079	"	"	
12:11	6.67	240	7.27	22.3	1082	"	"	
12:17	6.67	280	7.24	22.2	1081	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
METZLER	12:20	Plastic	250 ml	1	EPA 300.0	None	
DUP102008	12:20						

Additional Comments: No one home. Do not know how much water has been used today.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/29/08
Well ID:	Moore	Weather:	Clear
ADWR No:	55-538847	Collected By:	CTM, JV

WELL DATA

Well Depth (ft bls):	220	Time:	0826 - 0909
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	No sounding today will use historic level of 125'		
1 Casing Volume (gals):	(139.5		
3 Casing Volumes (gals):	420		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
0826	9	—	7.15	20.0	432	None	None	Discharge Rate Measured
0831	9	45/45	7.32	20.7	439	"	"	—
0837	9	54/99	7.30	21.7	445	"	"	—
0842	11	55/154	7.32	21.6	441	"	"	DR Measured
0847	11	55/209	7.31	21.7	447	"	"	—
0852	11	55/264	7.34	22.0	449	"	"	—
0857	11	55/319	7.33	22.0	449	"	"	—
0902	11	55/374	7.34	22.2	454	"	"	—
0907	9	45/419	7.32	22.4	452	"	"	DR Measured

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
MOORE	0910	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

26-8-30

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-16-08
Well ID:	NESS	Weather:	Sunny
ADWR No:	509127	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	549.30	Time:	11:40 (Barry Johnston)
Casing Diameter (in):	N/A	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	~~N/A~~ 549.30		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
830	N/A	N/A	7.47	21.4	542	clear	no	—

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
NESS	8:30	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Take sample directly from Bio near pressure pumps. This pump is serving 6 houses & runs all the time.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-23-08
Well ID:	NOTEMAN	Weather:	Sunny
ADWR No:	212483	Collected By:	John Villinski / Chad Munch

WELL DATA

Well Depth (ft bls):	470	Time:	—
Casing Diameter (in):	5"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	use 330 322.26	valve @ 12:59 @ 15 gpm	
1 Casing Volume (gals):	125 on 11/22/08	water was very muddy for	
3 Casing Volumes (gals):	375	~1 min	

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
13:00	15	15	6.56	22.3	1623	cloudy	no	—
13:05	15	~~7590~~ 75	6.55	23.4	1636	"	"	—
1310	15	~~16575~~ 105	6.56	23.3	1650	"	"	—
1315	9	~~21045~~ 150	6.57	23.1	1641	Cloudy	"	~~Flow rate~~
1320	8	40 / 250	←NOT	MEASURED	→	→	→	Flow rate checked
1325	8	40 / 290	6.49	23.2	1649	Cloudy	No	—
1330	8	40 / 330	6.52	23.3	1651	Cloudy	No	—
1336	8	~~40~~ 378	6.57	23.2	1643	Cloudy	No	Flow rate checked

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Noteman	1340	Plastic	250 ml	1	EPA 300.0	None	—

Additional Comments: Mr Noteman indicated that he purged the well at ~3000 gal on 10-21-08. Was "dirty" the whole time. He complained that he is not receiving bottled water. Could not get either sounder past 320' - dry at that depth. use 12-07 WL of 330'

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/27/08
Well ID:	NWC-02	Weather:	Clear, windy
ADWR No:	562944	Collected By:	John Villinski, Chad Muriel

WELL DATA

Well Depth (ft bls):		Time:	1203 (Pump On)
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	160.51		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1210	115	~~8050~~	7.39	23.0	447	None	None	
1212	115	1035	7.46	22.4	437	"	"	
1214	115	1265	7.47	22.2	438	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
NWC-02	1220	Plastic	250 ml	x3	EPA 300.0	Y/N/N ~~None~~	

Additional Comments:

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Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/27/08
Well ID:	~~M~~ NWC-03	Weather:	Clear, Windy
ADWR No:	203321	Collected By:	John Villinski, Chad Munich

WELL DATA

Well Depth (ft bls):	NA	Time:	1234
Casing Diameter (in):	NA 6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	No access *	pump on @ 1234	
1 Casing Volume (gals):	NA		
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
12:37	56	168	7.11	22.4	1380	clear	no	
12:41	56	224/392	7.05	21.9	1373	Clear	No	
1244	56	168/560	7.07	21.9	1374	Clear	No	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
NWC-03	12:45	Plastic	250 ml	~~4~~ 3	EPA 300.0	Y/N/N ~~None~~	

Additional Comments:

~~* ∇ Recorded @ NWC03 (627684)~~

~~@ 131.48 11/3/08~~

~~≈ 30' FROM NWC03 (203321) Replacement Well~~

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/27/08
Well ID:	NWC-04	Weather:	Clear, Windy
ADWR No:	551849	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	460	Time:	1321 purge begins
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	Could not be found w/ 2 sounders.		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1322	30 gpm	30	7.31	27.2	923	None	None	
1326	30	120/150	7.32	26.4	899	"	"	
1330	30	120/270	7.32	25.6	896	"	"	
1334	30	120/390	7.34	25.4	872	"	"	
1338	30	120/~~510~~ 510	7.34	25.2	857	"	"	Measured at 30 gpm
1342	30	120/630	7.34	25.2	851	"	"	
1346	30	120/750	7.32	25.0	856	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
NWC-04	1250	Plastic	250 ml	3	EPA 300.0	Y/N/N ~~None~~	

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/27/08
Well ID:	NWC-06	Weather:	~~Hazy~~, Windy, Clear
ADWR No:	575700	Collected By:	John Villinski, Chad Munich

WELL DATA

Well Depth (ft bls):		Time:	
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):			
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1141	NA	NA	7.35	23.3	414	None	None	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
NWC-06	1128	Plastic	250 ml	3	EPA 300.0	Y/N/~~None~~	

Additional Comments: Pump has been on for approximately 0.5 hours. No purge necessary.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-16-08
Well ID:	OSBORN	Weather:	Sunny
ADWR No:	643436	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	258	Time:	9:35
Casing Diameter (in):	8	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	~~N/A~~ 69.83	Value open @ 9:40 @ 12gpm	
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
9:42	~~12~~	24	7.45	16.9	595	clear	no	—
9:46	12	72	7.39	21.8	601	"	"	
9:51	12	132	7.39	22.2	601	"	"	
9:56	12	192	7.33	22.7	601	"	"	
10:00	10	232	7.39	22.4	595			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
OSBORN	10:05	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Appears as if no one is at home. No new tracks on driveway. ~~Assum~~ ~~Septic~~

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000 Pat & Janet	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-16-08
Well ID:	PALMER	Weather:	Sunny
ADWR No:	578819	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	220	Time:	
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	N/A obs.		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
805	NA	NA	7.61	17.0	527	~~Hedr~~	NO	—

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
PALMER	805	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Can Mr Palmer get $ a map of the area? w/ SO4 levels? Sample directly from water tank per owner.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-13-08
Well ID:	PANAGAKOS	Weather:	Sunny
ADWR No:	35-76413	Collected By:	J. Jillmski

WELL DATA

Well Depth (ft bls):	200'	Time:	15:15
Casing Diameter (in):	8"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	no access		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

Spigot open @ 15:15. flow rate = 6.67 gpm

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
15:17	6.67	13.3	6.84	21.3	1435	clear	no	—
15:23	6.67	53.3	6.91	20.7	1346	"	"	
15:31	6.67	106.7	6.93	20.4	1245	"	"	
15:38	6.67	153.3	6.88	21.1	1276			
15:45	7.5	206	6.85	21.2	1308			
15:51	7.5	251	6.84	21.3	1339			
15:57	7.5	296	6.81	21.2	1350			
16:03	7.5	341	6.83	21.3	1356			
16:09	7.5	386	6.85	21.2	1368			
16:15	7.5	431	6.86	21.3	1373			
16:21	7.5	476	6.85	21.5	1381			
16:29	7.5	536	6.86	21.3	1384			
16:35	7.5	596	6.86	21.2	1386			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
PANAGAKOS	16:45	Plastic	250 ml	1	EPA 300.0	None	filtered
DUP101308	16:45	"	"	"	"	"	"

Additional Comments: only on drip for quail & trees.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-28-08
Well ID:	PARRA	Weather:	Sonny
ADWR No:	576415	Collected By:	J. Villinski

WELL DATA

Well Depth (ft bls):	355	Time:	NA
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	from 1999 263' *	valve open @ 10:25 @ 7.5 gpm	
1 Casing Volume (gals):	135	55 min purge	
3 Casing Volumes (gals):	405		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:30	7.5	37.5	6.97	22.2	1240	clear	no	—
10:35	7.5	75	7.00	22.1	1246	"	"	
10:40	7.5	112.5	7.06	22.1	1248	"	"	
10:45	7.5	150	7.02	22.4	1250	"	"	
10:50	7.5	187.5	7.01	22.5	1247	"	"	
10:55	7.5	225	7.05	22.4	1248	"	"	
11:00	7.5	262.5	7.07	22.6	1247	"	"	
11:05	7.5	300	7.07	22.7	1244	"	"	
11:10	7.5	337.5	7.04	22.6	1241	"	"	
11:15	7.5	375	7.07	22.9	1246	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
PARRA	11:20	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: since well is obstructed - using old data to determine.

* ∇ @ 280.39 11/3/08

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/27/08
Well ID:	PIONKE	Weather:	Clear, windy
ADWR No:	613395	Collected By:	John Villinski, Chad Myrich

WELL DATA

Well Depth (ft bls):	330	Time:	NA
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	~~NA~~ 150.99 (11-3-08)		
1 Casing Volume (gals):	No access, purge till stable		
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
0954	17	0	6.93	21.1	1298	Clear	None	Discharge Measured
0959	17	85	7.13	20.4	1172	"	"	—
1004	17	85 / 170	7.15	20.6	1167	"	None	Discharge Measured
1009	17	85 / 255	7.08	20.2	1166	"	"	—
1014	20	100 / 355	7.15	20.3	1172	"	"	Discharge Measured
1021	20	100 / 455	7.23	20.2	1142	"	"	—
1028	4	28/483	7.03	20.8	1175	"	"	Discharge Measured

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
PIONKE	1036	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: No one is home.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-21-08
Well ID:	POOL	Weather:	Sunny / Warm
ADWR No:	509518	Collected By:	John Villing

WELL DATA

Well Depth (ft bls):	313	Time:	13:44
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	205.06	Valve open 13:50 @ 15 gpm	
1 Casing Volume (gals):	162	33 min purge	
3 Casing Volumes (gals):	487		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
13:52	15	30	7.34	22.6	595	clear	no	—
13:57	15	105	7.52	21.5	596	"	"	
14:02	15	180	7.47	21.5	596	"	"	
14:07	15	255	7.51	21.6	595	"	"	
14:12	15	330	7.51	21.5	596	"	"	
14:17	15	405	7.50	21.5	599	"	"	
14:22	15	480	7.51	21.4	598			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
POOL	14:30	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: ~~EQ~~ no one home - pump off since early morning

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-21-08
Well ID:	POWER	Weather:	Sunny
ADWR No:	624535	Collected By:	John Pillinski

WELL DATA

Well Depth (ft bis):	100	Time:	14:00
Casing Diameter (in):	7	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	32.66		
1 Casing Volume (gals):	WL only		
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Measured level in un-used well

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/27/08
Well ID:	Ramirez	Weather:	Clear, Windy
ADWR No:	55-216425	Collected By:	John Villirski, Chad Munich

WELL DATA

Well Depth (ft bls):	300'	Time:	1520 - 1613
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	159.45		
1 Casing Volume (gals):	206		
3 Casing Volumes (gals):	617		

140.55 · 36.3
~~0.0408~~
0.0408

FIELD SAMPLING DATA

49 min purge

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1520	12.5	–	7.51	22.8	419	No	No	—
1529	12.5	112.5/112.5	7.44	22.2	418	No	No	—
1539	12.5	~~112.5~~ 125/123.8	7.36	22.1	416	No	No	Discharge Measured
1548	12.5	112.5/350.5	7.45	22.4	413	No	No	—
1559	12.5	138/488.0	7.47	22.2	412	No	No	—
1608	12.5	112.5/600.5	7.41	22.2	412	No	No	Discharge Measured

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
RAMIREZ	1615	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Water has been used for 3 showers, 1 load of laundry, dishes, and toilet according to Mrs. Ramirez.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	W-22-08
Well ID:	RAY	Weather:	Sunny
ADWR No:	803772	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	100	Time:	13:24
Casing Diameter (in):	8	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	44.54	pump on 13:27 @ 8 gpm	
1 Casing Volume (gals):	148	56 min purge	
3 Casing Volumes (gals):	445		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
13:32	8	40	6.84	22.0	1759	clear	no	—
13:37	8	80	6.92	22.2	1769	"	"	—
13:42	8	120	6.96	20.9	1705	"	"	—
13:47	8	160	6.94	20.8	1736	"	"	
13:52	8	200	6.96	20.7	1684			
13:57	8	240	6.95	21.2	1706			
14:02	8	280	6.95	20.8	1640			
14:07	8	320	6.93	21.2	1653			
14:12	8	360	6.97	20.8	1644			
14:17	8	400	6.96	20.7	1622			
14:22	8	440	6.96	20.8	1604			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
RAY	14:25	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: light water usage. Was not home from 10 til 1, so WL should be static

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-22-08
Well ID:	ROGERS 803	Weather:	Sunny
ADWR No:	641 803	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	300	Time:	8:37
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	132.08	8:44 valve open @ 12 gpm	
1 Casing Volume (gals):	252		
3 Casing Volumes (gals):	758		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
8:46	12	24	7.34	19.9	648	clear	no	—
8:51	12	84	7.38	20.2	641	"	"	
8:56	12	144	7.34	20.7	643			
9:01	12	204	7.39	20.8	648			
9:06	10	254	7.37	20.9	646			
9:13	10	314	7.41	21.0	653			
9:20	10	384	7.39	21.1	651			
9:27	10	454	7.37	21.0	650			
9:34	10	524	7.38	21.3	652			
9:41	10	594	7.39	21.5	652			
9:49	10	674	7.36	21.4	654			
9:57	10	754		21.6	650			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
ROGERS 803	10:00	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Slight water usage this morning.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-27-04
Well ID:	Rogers E	Weather:	Sunny / Windy
ADWR No:	55-216018	Collected By:	Chad Monick

WELL DATA

Well Depth (ft bls):	285	Time:	1639 - 1728 purge time
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp): *	NM (OBSTRUCTION @ ~(9')		
1 Casing Volume (gals):			
3 Casing Volumes (gals):	Estimating ~580 g via Ramirez @ 160 ft		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1639	11	—	7.30	21.0	435	None	None	Measured Discharge
~~1649~~1646	11	~~77~~/77	7.39	21.7	435	None	None	—
1652	12	72 / 149	7.43	21.8	436	None	None	Measured Discharge
1658	12	72/ 221	7.43	21.6	436	None	None	—
1706	12	96/ 317	7.44	21.5	437	None	None	—
1712	12	72/ 389	7.42	21.5	437	None	None	Measured Discharge Rate
1718	12	72/ 461	7.41	21.6	436	None	None	—
1724	12	72/533	7.38	21.4	434	None	None	Discharge Rate Measured

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SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
ROGERS E	1732	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: ~~Static~~

* ▽ 150.15 11/3/08

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-20-04
Well ID:	RUIZ	Weather:	Sunny
ADWR No:	531770	Collected By:	J. Villinski

WELL DATA

Well Depth (ft bls):	312	Time:	12:33
Casing Diameter (in):	6	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	294.18	Value open @ 12:36 @	
1 Casing Volume (gals):	26.8	4 gpm - 20 min purge	
3 Casing Volumes (gals):	80.4		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
12:38	4	20	6.96	21.8	989	clear	no	—
12:43	4	40	7.02	21.7	990	"	"	
12:48	4	60	7.01	21.9	991	"	"	
12:53	4	80	7.04	22.0	995	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
RUIZ	12:55	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-22-08
Well ID:	SCHWARTZ	Weather:	Sunny
ADWR No:	210865	Collected By:	John Dittrich

WELL DATA

Well Depth (ft bls):	305	Time:	10:14
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	123.35	10:20 - valve open @ 10 gpm	
1 Casing Volume (gals):	273		
3 Casing Volumes (gals):	820		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
10:23	10	30	7.40	21.1	644	clear	none	—
10:30	10	100	7.35	21.7	645	"	"	
10:40	10	200	7.37	21.6	643	"	"	
10:50	10	300	7.34	21.7	645	"	"	
11:00	10	400	7.32	21.8	646	"	"	—
11:10	10	500	7.35	21.8	646	"	"	—
11:20	10	600	7.33	21.9	644	"	"	
11:30	10	700	7.30	22.0	652	"	"	—
11:42	10	820	7.31	22.0	653	"	"	—

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
SCHWARTZ	11:45	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Mrs Schwartz indicated only used for toilets/cleaning. No laundry, showers, or watering done.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8950000	Client:	Freeport Copper Queen Branch
Task No:	3.0	Date:	10/16/08
Well ID:	SRC	Weather:	CLEAR, Cool
ADWR No:		Collected By:	BTJ.

WELL DATA

Well Depth (ft bls):		Time:	08:15
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	545.15		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	*	3	**	*	--

Additional Comments:

~~* (1) 500 ml Raw, (1) 250 ml Filtered and (1) 250 ml Filtered with HNO3~~

~~** Leachate Character~~

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8950000	Client:	Freeport Copper Queen Branch
Task No:	3.0	Date:	10/16/08
Well ID:	Stephens	Weather:	CLEAR, Cool
ADWR No:		Collected By:	BTJ

WELL DATA

Well Depth (ft bls):		Time:	12:35
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	46.6		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	*	3	**	*	--

Additional Comments:

~~* (1) 500 ml Raw, (1) 250 ml Filtered and (1) 250 ml Filtered with HNO3~~

~~** LEACHATE CHARACTER~~

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8950000	Client:	Freeport Copper Queen Branch
Task No:	3.0	Date:	10/16/08
Well ID:	Sunbelt	Weather:	CLEAR, COOL
ADWR No:		Collected By:	BTJ

WELL DATA

Well Depth (ft bls):		Time:	12:05
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	347.0		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
		Plastic	*	3	**	*	--

Additional Comments:

~~* (1) 500 ml Raw, (1) 250 ml Filtered and (1) 250 ml Filtered with HNO3~~

~~** LEACHATE CHARACTER~~

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-16-08
Well ID:	SWAN	Weather:	Sunny
ADWR No:	—	Collected By:	John Dillinski

WELL DATA

Well Depth (ft bls):	98	Time:	~~27.53~~ 8:49
Casing Diameter (in):	8	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	27.53	valve open @ 8:53 - 10 GPM	
1 Casing Volume (gals):	47		
3 Casing Volumes (gals):	141		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
854	10	10	7.32	20.1	505	clear	no	—
858	10	50	7.31	20.4	499	"	"	
901	10	80	7.32	20.7	487			
905	10	120	7.35	20.7	487			
908	10	150	7.32	20.7	489			
913	10	200	7.32	20.7	488			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
SWAN	915	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Pump was running when I arrived. Waited until it stopped to take WL. Casing looks like 8" to me — so tha

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Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/30/08
Well ID:	TM-02A	Weather:	Scattered Clouds
ADWR No:	522574	Collected By:	C. Munich / J. Villinski

WELL DATA

Well Depth (ft bls):	925	Time:	1328
Casing Diameter (in):	4-inch	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	349.45		
1 Casing Volume (gals):	376		
3 Casing Volumes (gals):	1128		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1339	9	27	8.47	21.1	317	Yes	Yes	-
1342	9	54	8.19	22.3	374	Yes	No	-
1346	8	86	8.07	22.9	376	No	No	-
1356	8	166	7.99	23.6	377	No	No	-
1406	8	246	8.07	23.9	375	No	No	-
1411	Ran	Dry						

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-02A	1445	Plastic	250 ml	1	EPA 300.0	HNO3	

Additional Comments:

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Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	11/12/08
Well ID:	TM-03	Weather:	Clear
ADWR No:	522575	Sampler:	CTM

WELL DATA

Well Depth (ft bls):	200
Casing Diameter (in):	4
Static Water Level (ft bmp):	128.00
Casing Volume (gals):	47
3 Casing Volumes (gals):	140

Casing Capacity	
Nominal Size (inches)	Gallons per Linear Foot
2	0.16
4	0.65
5	1.02
6	1.47
8	2.61
10	4.08

Casing Volume = gallons/foot * water column (feet)

FIELD SAMPLING DATA

Time	Elapsed Time (min)	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Comments
0823							
0825	2	12.5	25	6.51	18.6	603	DR Measured
0827	2	12.5	50	7.45	20.1	600	
0829	2	12.5	75	7.50	20.5	593	
0831	2	12.5	100	7.46	20.5	592	
0833	2	12	124	7.50	20.3	592	DR Measured
0835	2	12	148	7.47	20.5	590	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comments
TM-03	0840	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: Master key, small diameter sounder, extension cord w/4 prong 30 AMP male to 3 prong 20 AMP female, t-junction needed.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	~~10/28/08~~ 10/29/08
Well ID:	TM-06 MILLER	Weather:	Clear, ~~light breeze~~
ADWR No:	55-522576	Collected By:	CTM, JV

WELL DATA

Well Depth (ft bls):	350	Time:	1420 - 1457
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	158.85		
1 Casing Volume (gals):	(191.15)(16) 0.0408 = 120 gals		
3 Casing Volumes (gals):	360		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1421	10	10/10	7.13	21.9	565	None	None	Discharge Rate Meas.
1426	10	50/60	7.49	20.5	534	"	"	—
1431	10	50/110	7.52	20.3	533	"	"	—
1437	10	60/170	7.53	20.3	533	"	"	DR Measured
1442	10	50/220	7.55	20.2	531	"	"	—
1447	10	50/270	7.56	20.2	533	"	"	—
1452	10	50/320	7.55	20.2	531	"	"	DR Measured

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-06 MILLER	1455	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	11/4/08
Well ID:	TM-07	Weather:	Windy, building storm system.
ADWR No:	55-522576	Sampler:	CTM

WELL DATA

Well Depth (ft bls):	350
Casing Diameter (in):	4
Static Water Level (ft bmp):	NA, obstruction @ 210'.
Casing Volume (gals):	NA
3 Casing Volumes (gals):	NA 147 based on '89.

Casing Capacity	
Nominal Size (inches)	Gallons per Linear Foot
2	0.16
4	0.65
5	1.02
6	1.47
8	2.61
10	4.08

Casing Volume = gallons/foot * water column (feet)

FIELD SAMPLING DATA

Time	Elapsed Time (min)	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Comments
1618							
1620	2	9	18/18	7.76	20.6	347	DR Measured.
1621	~	~	~	Well runs dry		~	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comments
TM-07	1640	Plastic	250ml	1	EPA 300.0	None	

Additional Comments: 4 prong 30 AMP male to 3 prong female extension cord, key needed. FM key needed.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/28/08
Well ID:	TM-15 MILLER	Weather:	Clear
ADWR No:	522699	Collected By:	Chad Muich, John Villinski

WELL DATA

Well Depth (ft bls):	325	Time:	0838 – 0851
Casing Diameter (in):	4"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	Could not sound, obstruction will use previous DTW of 294.90		
1 Casing Volume (gals):	20 (325-294.90)·(4²)·(0.0408)		
3 Casing Volumes (gals):	60		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
0840	~~6.7~~	14/14	7.32	20.7	385	None	None	Measured Discharge Rate
0845	7	35/49	7.65	22.3	386	"	"	
0847	7	~~35~~ 63	7.64	22.6	389	"	"	
0849	7	14/77	7.63	22.6	387	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TM-15 MILLER	0850	Plastic	250 ml	1	EPA 300.0	None	
DUP-102808	0850	"	"	1	"	"	

Additional Comments:

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Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	11/5/08
Well ID:	TM-16	Weather:	Mostly clear.
ADWR No:	55-522578	Sampler:	CM

WELL DATA

Well Depth (ft bls):	115
Casing Diameter (in):	4
Static Water Level (ft bmp):	81.75
Casing Volume (gals):	22
3 Casing Volumes (gals):	66

Casing Capacity	
Nominal Size (inches)	Gallons per Linear Foot
2	0.16
4	0.65
5	1.02
6	1.47
8	2.61
10	4.08

Casing Volume = gallons/foot * water column (feet)

FIELD SAMPLING DATA

Time	Elapsed Time (min)	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Comments
0731							
0732	1	16	16/16	7.03	18.9	1143	DR Measured.
0734	2	16	32/48	7.12	19.3	1157	
0736	2	16	32/80	7.12	19.7	1159	
0738	2	16	32/112	7.14	19.7	1162	
0740	2	16	32/144	7.14	19.8	1162	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comments
TM-16	0740	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Well, FM keys needed. T pipe junction.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	11/18/08
Well ID:	TM-19A	Weather:	Clear
ADWR No:	522580	Sampler:	CTM

WELL DATA

Well Depth (ft bls):	700
Casing Diameter (in):	4"
Static Water Level (ft bmp):	199.46
Casing Volume (gals):	330
3 Casing Volumes (gals):	980

Casing Capacity	
Nominal Size (inches)	Gallons per Linear Foot
2	0.16
4	0.65
5	1.02
6	1.47
8	2.61
10	4.08

Casing Volume = gallons/foot * water column (feet)

FIELD SAMPLING DATA

Time	Elapsed Time (min)	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Comments
1509							
1510	1	33	33	7.80	23.1	370	DR Measured
1515	6	33	198	7.80	24.0	365	
1520	11	33	363	7.80	24.1	364	
1525	16	33	528	7.79	24.2	365	
1530	21	33	693	7.80	24.3	365	
1535	26	33	858	7.80	24.3	365	
1540	31	33	1023	7.79	24.3	365	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comments
TM-19A	1545	Plastic	250 ml	1	EPA 300.0	None	Filtered

Additional Comments: 30 KW generator, extension cord for TM wells needed.
Generator end of extension cord should be hard wired in for 240 V (L1, L2 & ground).

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/30/08
Well ID:	TM-41	Weather:	Sunny
ADWR No:	562555	Collected By:	J. Villinski

WELL DATA

Well Depth (ft bls):		Time:	1149
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	Dry at 198.80, tagged bottom		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Water Level Only							

Additional Comments:

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Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	11/6/08
Well ID:	TM-42	Weather:	Clear
ADWR No:	55-562554	Sampler:	CM

WELL DATA

Well Depth (ft bls):	250
Casing Diameter (in):	5
Static Water Level (ft bmp):	207.05
Casing Volume (gals):	43
3 Casing Volumes (gals):	130

Casing Capacity	
Nominal Size (inches)	Gallons per Linear Foot
2	0.16
4	0.65
5	1.02
6	1.47
8	2.61
10	4.08

Casing Volume = gallons/foot * water column (feet)

FIELD SAMPLING DATA

Time	Elapsed Time (min)	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Comments
0926							
0927	1	6	6/6	6.88	20.3	1035	DR Measured.
0930	3	6	18/24	6.90	20.8	1056	
0934	4	6	24/48	6.86	21.2	1039	
0938	4	6	24/72	6.88	21.2	1024	
0942	4	6	24/96	6.88	21.2	1032	
0946	4	6	20/116	6.90	21.0	1025	DR Measured

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comments
TM-42	0955	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: 4 prong 30 AMP male to 3 prong female extension cord, well key needed.

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Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/30/08
Well ID:	TM-43	Weather:	Sunny
ADWR No:	564729	Collected By:	J. Villinski

WELL DATA

Well Depth (ft bls):		Time:	1110
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	148.72		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Water Level Only							

Additional Comments:

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Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/30/08
Well ID:	TM-43A	Weather:	Sunny
ADWR No:	564726	Collected By:	J. Villinski

WELL DATA

Well Depth (ft bls):		Time:	1114
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	133.46		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Water Level Only							

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/30/08
Well ID:	TM-43B	Weather:	Sunny
ADWR No:	565004	Collected By:	J. Villinski

WELL DATA

Well Depth (ft bls):		Time:	1124
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	62.89		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Water Level Only							

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-15-08
Well ID:	TVI 236	Weather:	Clear
ADWR No:	802236	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	222	Time:	12:12
Casing Diameter (in):	12"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	122.35	Pump on @ 12:14 @ 700 gpm	
1 Casing Volume (gals):	670	1/2 from each well	
3 Casing Volumes (gals):	2004	purge 6 min	

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
12:20	700	4200	7.45	22.3	490			
12:								

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TVI 236	12:25	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/15/08
Well ID:	TVI 713	Weather:	Sunny
ADWR No:	567713	Collected By:	J. Villinski

WELL DATA

Well Depth (ft bls):	200	Time:	1345
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	130.00		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
Water Level Only							

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-15-08
Well ID:	TVI 875	Weather:	Sunny
ADWR No:	568875	Collected By:	John Villinski

WELL DATA

Well Depth (ft bls):	330'	Time:	12:49
Casing Diameter (in):	12	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	~~30.00~~	pumps 550 gpm on @ 12:50	
1 Casing Volume (gals):	1203		
3 Casing Volumes (gals):	3600		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
12:55	550	3300	7.26	22.1	878	clear	no	—

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
TVI 875	13:10	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/14/08
Well ID:	UN-02 (URBANO NACO)	Weather:	Sunny
ADWR No:	NA	Collected By:	J. Villinski

WELL DATA

Well Depth (ft bls):		Time:	1345
Casing Diameter (in):		Point of Measurement:	
Static Water Level (ft bmp):			
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1125			7.63	22.6	356	Clear	No	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
UN-02	1135	Plastic	250 ml	3	FMCQB-GW		

Additional Comments: Well Pumping

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/14/08
Well ID:	UN-03 (URBANO NACO)	Weather:	Sunny
ADWR No:		Collected By:	J. Villinski

WELL DATA

Well Depth (ft bls):		Time:	1100
Casing Diameter (in):		Point of Measurement:	
Static Water Level (ft bmp):			
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1105			7.59	22.1	356			

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
UN-03	1115	Plastic	250	3	FMCQB-GW		

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/14/08
Well ID:	UN-04 (URBANO NACO)	Weather:	Sunny
ADWR No:	NA	Collected By:	J. Villinski

WELL DATA

Well Depth (ft bls):		Time:	1100
Casing Diameter (in):		Point of Measurement:	
Static Water Level (ft bmp):			
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1217			7.39	21.4	376	Clear	No	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
UN-04	1225	Plastic	250 ml	3	FMCQB-GW		

Additional Comments: Well Pumping

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/14/08
Well ID:	UN-05 (URBANO NACO)	Weather:	Sunny
ADWR No:	NA	Collected By:	J. Villinski

WELL DATA

Well Depth (ft bls):		Time:	1145
Casing Diameter (in):		Point of Measurement:	TOC
Static Water Level (ft bmp):	272.0 (10/2/08)		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1150			7.44	22.8	351	Clear	No	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
UN-05	1155	Plastic	250 ml	3	FMCQB-GW		

Additional Comments:

Well Pumping

Water Level Measurement from City of Naco

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-21-08
Well ID:	WALKER	Weather:	Sunny
ADWR No:	200393	Collected By:	J. Villinski

WELL DATA

Well Depth (ft bls):	120	Time:	16:10
Casing Diameter (in):	5 1/2	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	47.18		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
WALKER		Plastic	250 ml	1	EPA 300.0	None	

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-20-08
Well ID:	WEED	Weather:	P.Cloudy / Windy
ADWR No:	544535	Collected By:	J. Villinski

WELL DATA

Well Depth (ft bls):	300	Time:	NA
Casing Diameter (in):	NA	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	NA		
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
14:25	—	—	8.10	31.6	405	clear	no	some scale deposits

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
WEED	14:25	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: take sample from discharge pipe per owner. Not much water comes out of the pipe — careful!

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/28/08
Well ID:	WEISKOPF	Weather:	Clear, light breeze
ADWR No:	641802	Collected By:	CTM, John Villinski

WELL DATA

Well Depth (ft bls):	200	Time:	1309 - 1337
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	145.81		
1 Casing Volume (gals):	80		
3 Casing Volumes (gals):	240		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
1310	11	11/11	6.93	21.3	1398	None	None	Discharge rate measured
1315	11	55/66	6.99	20.9	1336	"	"	
1320	11	55/121	7.01	20.8	1414	"	"	
1325	11	55/176	6.99	20.9	1418	"	"	DR Measured
1330	11	55/231	7.00	21.0	1395	"	"	
1335	11	55/286	6.98	20.8	1401	"	"	

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
WEISKOPF	1340	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: Pump was running on arrival.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/28/08
Well ID:	~~Zan~~ ZANDER	Weather:	Clear
ADWR No:	205126	Collected By:	CTM, JV
	3535 Metzler		

WELL DATA

Well Depth (ft bls):	280	Time:	0951 - 1042
Casing Diameter (in):	6"	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	146.01		
1 Casing Volume (gals):	196 (133.99)·(36)·0.0408		
3 Casing Volumes (gals):	590		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment
0951	12.5	0	7.40	21.5	409	None	None	Discharge Rate Measured
0957	12.5	75/75	7.42	21.2	416	"	"	
~~1052~~ 1002	12.5	63/138	7.40	21.1	416	"	"	
1007	12.5	63/201	7.42	21.2	415	"	"	
1012	12.5	63/264	7.41	21.2	414	"	"	DR Measured
1017	12.5	63/327	7.41	21.2	413	"	"	
1022	12.5	63/390	7.41	21.2	413	"	"	
1028	12.5	75/465	7.42	21.1	411	"	"	
1033	12.5	63/528	7.42	21.0	415	"	"	
1039	12	72/600	7.40	21.2	415	"	"	DR Measured

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
ZANDER	1045	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments: I shower today.

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/13/08
Well ID:	Field and Equipment Blanks	Weather:	Sunny
ADWR No:		Collected By:	J. Villinski

WELL DATA

Well Depth (ft bls):		Time:	
Casing Diameter (in):		Point of Measurement:	
Static Water Level (ft bmp):			
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

QA/QC

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
EQB 101308	1650	Plastic	250 ml	1	EPA 300.0	None	Filtered
FB 101308	1650	Plastic	250 ml	1	EPA 300.0	None	Raw

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10-23-08
Well ID:	EQB, FB	Weather:	Sunny
ADWR No:		Collected By:	J.V

WELL DATA

Well Depth (ft bls):		Time:	
Casing Diameter (in):		Point of Measurement:	Top of Casing
Static Water Level (ft bmp):			
1 Casing Volume (gals):			
3 Casing Volumes (gals):			

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

QA/QC

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
EQB102008	12:25	Plastic	250 ml	1	EPA 300.0	None	
FB102008	12:25						

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	10/28/08
Well ID:	EQB, FB	Weather:	Clear
ADWR No:		Collected By:	Chad Munich, John Villiask

WELL DATA

Well Depth (ft bls):	NA	Time:	NA
Casing Diameter (in):	NA	Point of Measurement:	Top of Casing
Static Water Level (ft bmp):	NA		
1 Casing Volume (gals):	NA		
3 Casing Volumes (gals):	NA		

FIELD SAMPLING DATA

Time	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Color	Odor	Comment

QA/QC

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comment
EQB-102808	0920	Plastic	250 ml	1	EPA 300.0	None	
FB-102808	0910	"	"	"	"	"	

Additional Comments:

HYDRO GEO CHEM, INC.

Groundwater Sampling Form

Project No:	8720000	Client:	Freeport Copper Queen Branch
Task No:	2.2	Date:	11/3/08
Well ID:		Weather:	Clear
ADWR No:		Sampler:	CTM

WELL DATA

Well Depth (ft bls):	
Casing Diameter (in):	
Static Water Level (ft bmp):	
Casing Volume (gals):	
3 Casing Volumes (gals):	

Casing Capacity

Nominal Size (inches)	Gallons per Linear Foot
2	0.16
4	0.65
5	1.02
6	1.47
8	2.61
10	4.08

Casing Volume = gallons/foot * water column (feet)

FIELD SAMPLING DATA

Time	Elapsed Time (min)	Discharge Rate (gpm)	Total Discharge (gallons)	pH (SU)	Temp (°C)	Specific Conductance (µS/cm)	Comments

QA/QC

SAMPLE INFORMATION

Sample ID	Time	Container Type	Volume	No. of Containers	Analysis Method	Preservative	Comments
EQB ~~071408~~ 110308	0725	Plastic	250 ml	1	EPA 300.0	None	
FB - ~~071408~~ 110308	0725	Plastic	250 ml	1	EPA 300.0	None	

Additional Comments:

APPENDIX B

WELL INVENTORY SEARCH AREA RESULTS

APPENDIX B
Well Inventory Search Area Results

Abandoned, Cancelled, or Capped: 50

Well Name	ADWR 55 Registry No.	Township	Range	Section	160-acre Quarter	40-acre Quarter	10-acre Quarter	Well Type	Well Use	Water Use	Installed	Well Depth	Water Level	Last Name / Company	Address	City	State	Zip Code
CANCELLED-ABANDONED	805326	23S	24E	34	SW	SW	SE	EXEMPT	ABANDONED	NONE	10/23/54	700	151	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	506999	24S	24E	2				EXPLORATION	ABANDONED	NONE		0	0	SOUTHEASTERN AZ GOVERNMENT	PO BOX 204	BISBEE	AZ	85603
CANCELLED-ABANDONED	522577	23S	24E	33	NW	SW	NE	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	11/03/88	940	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525140	23S	24E	34	NW	NW	NW	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	10/26/89	500	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525142	23S	24E	35	SW	SW	NW	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	08/04/89	140	59	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525143	23S	24E	33	SE	NW	SW	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	09/05/89	410	304	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525145	23S	24E	34	NW	NE	NE	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	08/18/89	805	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85856
CANCELLED-ABANDONED	522569	24S	24E	9	NE	NE	NW	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	11/01/88	265	219	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525141	24S	24E	3	SW	NE	NW	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	08/10/89	165	89	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525548	24S	24E	8	SE	NE	SW	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	09/25/89	700	162	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525552	24S	24E	9	NW	NW	SW	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	10/09/89	700	190	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525553	24S	24E	9	SW	NE	NE	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	10/03/89	700	186	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525554	24S	24E	10	SW	NW	SE	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	10/22/89	440	184	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525558	24S	24E	8	SE	NE	SW	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	09/13/89	210	163	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525559	24S	24E	8	SE	NE	SW	MONITOR OR PIEZOMETER	ABANDONED	MONITORING	09/26/89	700	180	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525136	24S	24E	3	SW	NE	NW	MONITOR OR PIEZOMETER	ABANDONED	TEST	08/06/89	140	91	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525137	24S	24E	3	SW	NE	NW	MONITOR OR PIEZOMETER	ABANDONED	TEST	08/09/89	165	89	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525556	24S	24E	9	NE	NE	NW	MONITOR OR PIEZOMETER	ABANDONED	TEST	09/11/89	265	217	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	525557	24S	24E	9	NE	NE	NW	MONITOR OR PIEZOMETER	ABANDONED	TEST	09/09/89	265	223	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	539787	23S	24E	33	SE	NE	NW	MONITOR OR PIEZOMETER	MONITOR / ABANDONED	MONITORING	08/14/93	605	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED-ABANDONED	522693	24S	24E	2	NW	SW	SW	MONITOR OR PIEZOMETER	OBSERVATION / ABANDONED	MONITORING	01/17/89	175	131	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED-ABANDONED	529361	23S	24E	32	NW	SW	SE	NON-EXEMPT	ABANDONED	TEST	09/12/90	400	0	COCHISE COUNTY	PO DRAWER AJ	BISBEE	AZ	85603
CANCELLED	510918	24S	23E	24	NE	NE	NE	NON-EXEMPT	WATER PRODUCTION	INDUSTRIAL/DOMESTIC		0	0	D & R LAND COMPANY	PO BOX 305	NACO	AZ	85620
CANCELLED	525551	24S	24E	17	NE	SE	SE	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
CANCELLED	539727	24S	24E	7	NW	NW	NW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539728	24S	24E	5	NW	SW	NW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539729	24S	24E	8	SE	NE	SW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539730	24S	24E	9	SE	NW	SW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539731	24S	24E	10	SE	NW	SW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539732	24S	24E	10	NE	NW	NW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539733	24S	24E	9	NE	NW	NW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539734	24S	24E	8	NE	NE	NW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539735	24S	24E	4	SE	NW	SE	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539736	24S	24E	3	SE	NW	NW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539737	24S	24E	3	NE	SW	NE	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539738	24S	24E	3	NW	SW	NW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539739	24S	24E	3	NW	SE	NE	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539740	23S	24E	34	NE	SW	SW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539741	23S	24E	34	SW	NE	SW	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	539742	23S	24E	27	SW	SE	SE	MONITOR OR PIEZOMETER	MONITOR	MONITORING		0	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	PHOENIX	AZ	85004
CANCELLED	207236	23S	24E	32	NE	SW	SE	EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	BURKE	11 YUCCA STREET	BISBEE	AZ	85603
CANCELLED	085343	24S	24E	11	SW	SE	NE	EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	BANKS, D L	3 MULBERRY	BISBEE	AZ	85603
CANCELLED	500431	24S	24E	18	SW	NE	SW	EXEMPT	WATER PRODUCTION	DOMESTIC		240	0	DAVIES, DANIEL, R	PO BOX 757	NACO	AZ	85620
CANCELLED	500881	24S	24E	18	SW	NW	NE	EXEMPT	WATER PRODUCTION	DOMESTIC		150	0	BINIEWSKI, F J	PO BOX 803	NACO	AZ	85620
CANCELLED	544685	24S	24E	5	NE	SE	NE	EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	PATSIS, JOHN	2232 BARNETT RD	BISBEE	AZ	85603
CANCELLED	556161	24S	24E	18	NW	SW	SE	EXEMPT	WATER PRODUCTION	RECREATION / DOMESTIC		0	0	TURQUOISE VALLEY INC	P O BOX 727	NACO	AZ	85620
CANCELLED	581107	24S	24E	10	SE	SW	SE	EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	BUSK, JAMES A	233 W PURDY LANE	BISBEE	AZ	85603
CANCELLED	509394	24S	24E	9	SW	NW	SW	EXPLORATION	OBSERVATION	MONITORING		0	0	CITY OF BISBEE	118 ARIZONA ST	BISBEE	AZ	85603
CAPPED (DUPLICATE 626785)	626702	24S	24E	10	SE	SE	SE	NON-EXEMPT	CAPPED	MUNICIPAL	01/31/18	379	216	UNION PACIFIC RAILROAD	1416 DODGE ST	OMAHA	NE	68179
NWC 04 CAPPED	627685	24S	24E	10	SE	SE	SE	NON-EXEMPT	CAPPED	MUNICIPAL	12/31/26	379	216	NACO WATER COMPANY	PO BOX 307	NACO	AZ	85620

Well Type or Well Use = Exploration or Geotechnical: 4

Well Name	ADWR 55 Registry No.	Township	Range	Section	160-acre Quarter	40-acre Quarter	10-acre Quarter	Well Type	Well Use	Water Use	Installed	Well Depth	Water Level	Last Name / Company	Address	City	State	Zip Code
COCHISE COUNTY HIGHWAY DEPARTMENT	582581	24S	24E	11				GEOTECHNICAL	GEOTECHNICAL	NONE	08/16/00	82	0	COCHISE COUNTY HIGHWAY DEPARTMENT	1415 W MELODY LANE BLDG B	BISBEE	AZ	85603
COCHISE COUNTY HIGHWAY DEPARTMENT	582582	24S	24E	11				GEOTECHNICAL	GEOTECHNICAL	NONE	08/17/00	68	0	COCHISE COUNTY HIGHWAY DEPARTMENT	1415 W MELODY LANE BLDG B	BISBEE	AZ	85603
SOUTHWEST GAS CORPORATION	532135	24S	24E	18	NE	NE	NE	EXPLORATION	CATHODIC	NONE	07/25/91	228	0	SOUTHWEST GAS COMPANY	3401 E GAS RD	TUCSON	AZ	85714
SOUTHWEST GAS CORPORATION	532136	24S	24E	5	NE	NE	SW	EXPLORATION	CATHODIC	NONE	07/29/91	228	0	SOUTHWEST GAS COMPANY	3401 E GAS RD	TUCSON	AZ	85714

Well Type or Well Use = Monitor, Monitor or Piezometer: 29

Well Name	ADWR 55 Registry No.	Township	Range	Section	160-acre Quarter	40-acre Quarter	10-acre Quarter	Well Type	Well Use	Water Use	Installed	Well Depth	Water Level	Last Name / Company	Address	City	State	Zip Code
BF-01	539783	24S	24E	4	NE	NE	NE	MONITOR OR PIEZOMETER	MONITOR	MONITORING	08/15/93	400	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
BF-02	539786	24S	24E	4	NW	SE	SE	MONITOR OR PIEZOMETER	MONITOR	MONITORING	08/05/93	326	275	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
COB WARREN LAGOON (ABANDON)	570012	23S	24E	35	SW	NW	SE	MONITOR	MONITOR	MONITORING				CITY OF BISBEE	118 ARIZONA STREET	BISBEE	AZ	85603
COB WARREN LAGOON	593116	23S	24E	35	SW	NW	SE	MONITOR	MONITOR	TEST	07/22/02	150	102	CITY OF BISBEE	118 ARIZONA STREET	BISBEE	AZ	85603
COB MW-2	903984	24S	24E	18	SE	NE	NE	MONITOR	MONITOR	MONITORING	01/20/06	162	118	CITY OF BISBEE	118 ARIZONA STREET	BISBEE	AZ	85603
COB MW-3	906823	24S	23E	13	NE	NE	SW	MONITOR	MONITOR	NONE		0	0	CITY OF BISBEE	118 ARIZONA STREET	BISBEE	AZ	85603
GL-01	539785	23S	24E	34	NW	SE	NE	MONITOR OR PIEZOMETER	MONITOR	MONITORING	08/20/93	833	778	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
GL-02	539784	23S	24E	34	SE	NE	NE	MONITOR OR PIEZOMETER	MONITOR	MONITORING	08/08/93	400	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603

APPENDIX B
Well Inventory Search Area Results

Well Name	ADWR 55 Registry No.	Township	Range	Section	160-acre Quarter	40-acre Quarter	10-acre Quarter	Well Type	Well Use	Water Use	Installed	Well Depth	Water Level	Last Name / Company	Address	City	State	Zip Code
GL-03	539782	23S	24E	34	NW	NW	NW	MONITOR OR PIEZOMETER	MONITOR	MONITORING	08/11/93	825	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-02	522573	24S	24E	4	NE	NE	SW	MONITOR OR PIEZOMETER	OBSERVATION	MONITORING	12/14/88	640	287	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-02A	522574	24S	24E	4	NE	NE	SW	MONITOR OR PIEZOMETER	OBSERVATION	MONITORING	02/10/89	925	319	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-03	522575	23S	24E	35	NW	NW	NE	MONITOR OR PIEZOMETER	OBSERVATION	MONITORING	12/16/88	200	116	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-05 MILLER	522694	24S	24E	21	NE	NW	SE	MONITOR OR PIEZOMETER	MONITOR	MONITORING	01/31/89	160	131	MILLER, CHARLES	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-06 MILLER	522695	24S	24E	14	NW	SW	SW	MONITOR OR PIEZOMETER	MONITOR	MONITORING	01/24/89	200	157	MILLER, CHARLES	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-07	522576	24S	24E	4	NW	NW	SE	MONITOR OR PIEZOMETER	MONITOR	MONITORING	11/04/88	350	275	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-08 SWAN	522817	24S	24E	1	SW	SW	SW	MONITOR OR PIEZOMETER	OBSERVATION	MONITORING	01/20/89	210	153	SWAN, GEORGE	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-10 USBP	522696	24S	24E	5	NW	NE	SW	MONITOR OR PIEZOMETER	MONITOR	MONITORING	11/08/88	290	249	US BORDER PATROL	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-11 PIONKE	522815	24S	24E	18	NE	NE	NW	MONITOR OR PIEZOMETER	OBSERVATION	MONITORING	11/18/88	210	153	PIONKE, JIM	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-12 MILLER	522697	24S	24E	20	NW	NE	SE	MONITOR OR PIEZOMETER	MONITOR	MONITORING	01/21/89	175	128	MILLER, CHARLES	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-13 MILLER	522698	24S	24E	8	NW	SW	SW	MONITOR OR PIEZOMETER	OBSERVATION	MONITORING	01/05/89	210	153	MILLER, CHARLES	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-14 NELSON	522816	24S	24E	7	NW	SW	NW	MONITOR OR PIEZOMETER	MONITOR	MONITORING	01/12/89	215	178	NELSON, DENNIS	2112 TIERRA CONENTA TRAIL	NACO	AZ	85620
TM-15 MILLER	522699	24S	24E	6	NW	SW	SW	MONITOR OR PIEZOMETER	OBSERVATION	MONITORING	01/11/89	210	153	MILLER, CHARLES	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-16	522578	24S	24E	10	NE	SW	SE	MONITOR OR PIEZOMETER	MONITOR	MONITORING	12/15/88	115	75	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-17	522700	24S	24E	16	NE	SW	NE	MONITOR OR PIEZOMETER	OBSERVATION	MONITORING	01/07/89	210	153	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-19	522580	24S	24E	8	SE	SE	SW	MONITOR OR PIEZOMETER	OBSERVATION	MONITORING	11/16/88	700	158	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-19A	522581	24S	24E	8	SE	SE	SW	MONITOR OR PIEZOMETER	OBSERVATION	MONITORING	11/17/88	210	153	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-26	525144	23S	24E	34	SW	SE	NE	MONITOR OR PIEZOMETER	MONITOR	MONITORING	09/07/89	800	0	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-41	562555	23S	24E	3	SW	SW	SW	MONITOR OR PIEZOMETER	MONITOR	MONITORING	06/12/97	210	157	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603
TM-42	562554	23S	24E	10	SW	NW	SW	MONITOR OR PIEZOMETER	MONITOR	MONITORING	06/13/97	250	186	PHELPS DODGE CORPORATION	36 W HIGHWAY 92	BISBEE	AZ	85603

Exempt Well with no Well Use or Water Use (Retained for evaluation as a potential Drinking Water Supply Well: 1

Well Name	ADWR 55 Registry No.	Township	Range	Section	160-acre Quarter	40-acre Quarter	10-acre Quarter	Well Type	Well Use	Water Use	Installed	Well Depth	Water Level	Last Name / Company	Address	City	State	Zip Code
STEPHENS	808560	24S	24E	11	SE	SW	SW	EXEMPT				0	0	STEPHENS	616 BORDER ROAD	BISBEE	AZ	85603

Well Use = Water Production; Water Use = Domestic, Irrigation, Stock, Municipal, Utility (Water Co), and Industrial, or a Combination (Non-Domestic Water Uses Retained for Evaluation as a Potential Drinking Water Supply Well): 114

Well Name	ADWR 55 Registry No.	Township	Range	Section	160-acre Quarter	40-acre Quarter	10-acre Quarter	Well Type	Well Use	Water Use	Installed	Well Depth	Water Level	Last Name / Company	Address	City	State	Zip Code
ALVAREZ	650255	24S	24E	18	SE	SE	SE	EXEMPT	WATER PRODUCTION	IRRIGATION	01/01/38	160	120	ALVAREZ, M J	PO BOX 581	NACO	AZ	85620
ANDERSON	613396	24S	24E	18	NE	NE	NE	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/54	236	126	ANDERSON, DAVID	BOX 4055	BISBEE	AZ	85603
ANDERSON 776	616776	24S	24E	18	SW			NON-EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/16	0	200	ANDERSON M J	768 CAL DEL ENSALMO	GREEN VALLEY	AZ	85614
ANDERSON 775	616775	24S	24E	18	NE			NON-EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION		0	0	ANDERSON M J	768 CAL DEL ENSALMO	GREEN VALLEY	AZ	85614
ASLD	616436	24S	24E	8	SW	NW	NE	EXEMPT	WATER PRODUCTION	STOCK	07/15/20	150	110	ARIZONA STATE LAND DEPARTMENT	1616 WEST ADAMS	PHOENIX	AZ	85007
AWC 03	616585	24S	23E	13	NE	NW	SE	NON-EXEMPT	WATER PRODUCTION	DOMESTIC / MUNICIPAL / INDUSTRIAL	07/20/56	333	100	ARIZONA WATER COMPANY	PO BOX 29006	PHOENIX	AZ	85038
AWC 05	590620	24S	23E	13	NE	NW	SE	NON-EXEMPT	WATER PRODUCTION	MUNICIPAL	06/24/02	337	0	ARIZONA WATER COMPANY	PO BOX 29006	PHOENIX	AZ	85038
BANKS 986	647986	24S	24E	11	SW	SE	SE	EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION	06/23/80	445	300	BANKS D L	630 EAST MULBERRY LANE	BISBEE	AZ	85603
BANKS 987	647987	24S	24E	11	SW	SE	SE	EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION		339	300	BANKS D L	630 EAST MULBERRY LANE	BISBEE	AZ	85603
BARTON 010	085010	24S	24E	11	SW	SW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/81	300	168	BARTON	702 BORDER ROAD	BISBEE	AZ	85603
BARTON 919	644919	24S	24E	11	SW	SW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC		130	90	BARTON	702 BORDER ROAD	BISBEE	AZ	85603
BERNAL	648363	24S	24E	18	SE			EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/48	125	0	BERNAL L	PO BOX 234	NACO	AZ	85620
BIMA	577927	24S	24E	2	SW	NW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	03/03/00	465	341	BISBEE MUNICIPAL AIRPORT, LLC	2145 SOUTH ARIZONA STREET	BISBEE	AZ	85603
BLOMMER 472	633472	24S	24E	5	SW	SW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	11/01/78	350	244	BLOMMER, CONNIE	2254 SOUTH BARNETT ROAD	BISBEE	AZ	85603
BLOMMER 536	645536	24S	24E	5	NE	SW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	11/13/78	350	244	BLOMMER, CONNIE	2254 SOUTH BARNETT ROAD	BISBEE	AZ	85603
BRINDLEY	086775	24S	24E	5	NW	NW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/81	360	295	BRINDLEY	ROUTTE 1 76 DELLA ST	BISBEE	AZ	85603
BULLARD	602134	24S	24E	5	SE	SW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	09/06/74	300	80	BULLARD, BOB	PO BOX 385	NUTRIOSO	AZ	85932
BURKE	212268	23S	24E	32	NE	SW	SE	EXEMPT	WATER PRODUCTION	DOMESTIC	10/11/06	781	613	BURKE, JAMES	11 YUCCA STREET	BISBEE	AZ	85603
CAMPBELL	643481	24S	24E	11	SW	SE	NW	EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	CAMPBELL, DON	403 EAST SAGUARO LANE	BISBEE	AZ	85603
CHAMBERS	629807	24S	24E	18	SW	SE	SW	EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION	01/01/77	245	137	CHAMBERS, TERRY	PO BOX 1222	NACO	AZ	85620
CHASE	648359	24S	24E	18	SW	NW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/70	100	0	CHASE, CHARLES	6445 NORTH PLACITA PEQUE	TUCSON	AZ	85718
COB MW-1	903992	24S	24E	9	NW	SW	NE	EXEMPT	WATER PRODUCTION	INDUSTRIAL	03/02/06	420	240	CITY OF BISBEE	118 ARIZONA STREET	BISBEE	AZ	85603
COOPER	623564	24S	24E	5	NE	NE	NE	NON-EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION	12/20/79	325	254	COOPER, TERESA	PO BOX AX	BISBEE	AZ	85603
COOPER C	637069	24S	24E	17	NW	NW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	07/29/66	220	165	COOPER, CHARLES	1497 WEST PURDY LANE	BISBEE	AZ	85603
COTA	651116	24S	24E	18	SW	SE		EXEMPT	WATER PRODUCTION	DOMESTIC		160	140	COTA, BARBARA	215 1ST STREET	NACO	AZ	85620
CROWLEY	510298	23S	24E	32	NE	SE	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	04/19/85	788	0	CROWLEY	101 OCOTILLO	BISBEE	AZ	85603
DODSON	644927	24S	24E	10	SE	SW		EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION	10/01/59	200	96	DODSON, JOHN	235 PURDY LANE	BISBEE	AZ	85603
DOUGLASS 791	592791	24S	24E	12	NW	SW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	06/03/02	200	110	DOUGLASS, JAMES	1649 DRIFTWOOD CIRCLE	SIERRA VISTA	AZ	85635
DOUGLASS 792	592792	24S	24E	11	SE	NE	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	06/03/02	200	110	DOUGLASS, JAMES	1649 DRIFTWOOD CIRCLE	SIERRA VISTA	AZ	85635
EAST	599796	24S	24E	14	NE	NW	SE	EXEMPT	WATER PRODUCTION	DOMESTIC	08/05/03	125	35	EAST LEON	651 EAST BORDER ROAD	BISBEE	AZ	85603
EBERWEIN	641726	24S	24E	19	NW	NW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/76	249	104	EBERWEIN, G A	PO BOX 605	NACO	AZ	85620
ENGLUND	565260	24S	24E	5	SE	NE	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	12/16/97	320	250	ENGLUND, LEE	2331 SOUTH COLEMAN STREET	BISBEE	AZ	85603
EPPELE 641	805641	24S	24E	11	SE	SW	SE	EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION		265	30	EPPELE, GENEVA	1467 WHITE SCHOOL ROAD	CAVE JUNCTION	OR	97523
EPPELE 642	805642	24S	24E	11	SE	SW	SE	EXEMPT	WATER PRODUCTION	IRRIGATION	12/31/00	40	20	EPPELE, GENEVA	1467 WHITE SCHOOL ROAD	CAVE JUNCTION	OR	97523
EPPELE 643	805643	24S	24E	11	SE	SW	SE	EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION		165	30	EPPELE, GENEVA	1467 WHITE SCHOOL ROAD	CAVE JUNCTION	OR	97523
FRANCO	500101	24S	24E	16	NW	NW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	07/01/81	200	120	FRANCO, IRMA	3425 SOUTH FRANCO LOOP	BISBEE	AZ	85603
FULTZ	212447	24S	24E	11	SE	SW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	06/23/06	300	124	FULTZ, RICHARD	694 E BORDER RD	BISBEE	AZ	85603
GARNER 557	558557	24S	24E	17	NE	NE	NE	EXEMPT	WATER PRODUCTION	DOMESTIC	09/04/96	300	170	GARNER, TERRY	1027 WEST PURDY LANE	BISBEE	AZ	85603
GARNER 635	587635	24S	24E	17	NE	NE	NE	EXEMPT	WATER PRODUCTION	DOMESTIC	10/12/01	680	180	GARNER, TERRY	1027 WEST PURDY LANE	BISBEE	AZ	85603
GGOOSE 546	628546	24S	24E	11	SW	NW	SW	NON-EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION	02/11/63	800	143	BEAUMONT, ED (GALLOPING GOOSE PROPERTIES)	700 WEST HIGHWAY 24, SUITE A	WOODLAND PARK	CO	80863
GGOOSE 547	628547	24S	24E	11	SW	NW	SE	NON-EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION	08/18/61	800	104	BEAUMONT, ED (GALLOPING GOOSE PROPERTIES)	700 WEST HIGHWAY 24, SUITE A	WOODLAND PARK	CO	80863

APPENDIX B
Well Inventory Search Area Results

Well Name	ADWR 55 Registry No.	Township	Range	Section	160-acre Quarter	40-acre Quarter	10-acre Quarter	Well Type	Well Use	Water Use	Installed	Well Depth	Water Level	Last Name / Company	Address	City	State	Zip Code
GOAR	610694	24S	24E	17	NE			EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/50	250	175	GOAR, SHEILA	1185 WEST PURDY LANE	BISBEE	AZ	85603
GOAR 686	610686	24S	24E	17	NE			NON-EXEMPT	WATER PRODUCTION	IRRIGATION	01/01/50	250	175	GOAR, SHEILA	1185 WEST PURDY LANE	BISBEE	AZ	85603
GOAR 687	610687	24S	24E	17	NE			NON-EXEMPT	WATER PRODUCTION	IRRIGATION	01/01/50	250	175	GOAR, SHEILA	1185 WEST PURDY LANE	BISBEE	AZ	85603
GOAR 688	610688	24S	24E	17	NE			NON-EXEMPT	WATER PRODUCTION	IRRIGATION	01/01/50	250	175	GOAR, SHEILA	1185 WEST PURDY LANE	BISBEE	AZ	85603
GOAR 689	610689	24S	24E	17	NE			NON-EXEMPT	WATER PRODUCTION	IRRIGATION	01/01/50	250	175	GOAR, SHEILA	1185 WEST PURDY LANE	BISBEE	AZ	85603
GOAR 690	610690	24S	24E	17	NW			NON-EXEMPT	WATER PRODUCTION	DOMESTIC / STOCK	01/01/50	250	175	GOAR, SHEILA	1185 WEST PURDY LANE	BISBEE	AZ	85603
GOAR 691	610691	24S	24E	17	NE			NON-EXEMPT	WATER PRODUCTION	DOMESTIC / STOCK	01/01/50	250	175	GOAR, SHEILA	1185 WEST PURDY LANE	BISBEE	AZ	85603
GOAR 692	610692	24S	24E	17	NE			NON-EXEMPT	WATER PRODUCTION	DOMESTIC / STOCK	01/01/50	250	175	GOAR, SHEILA	1185 WEST PURDY LANE	BISBEE	AZ	85603
GOAR 693	610693	24S	24E	17	NE			EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/50	250	175	GOAR SHEILA	1185 WEST PURDY LANE	BISBEE	AZ	85603
GOAR RANCH	610695	24S	24E	17	NE			EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/50	250	175	GOAR, SHEILA	1113 WEST PURDY LANE	BISBEE	AZ	85603
GREGG	630852	24S	24E	11	SE	SW		EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	GREGG, DIANE	570 MULBERRY LANE	BISBEE	AZ	85603
HAUBERT	801607	24S	24E	17	NW			NON-EXEMPT	WATER PRODUCTION	DOMESTIC/STOCK/IRRIGATION	01/01/55	195	114	HAUBERT J M	RR 1 BX 315 NACO HWY	BISBEE	AZ	85603
HECK	507823	24S	24E	5	SE	NW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	05/04/84	313	208	HECK, HAROLD	BOX 325	BISBEE	AZ	85603
HOBAN	805290	24S	24E	17	NW	NE		EXEMPT	WATER PRODUCTION	DOMESTIC	03/02/64	316	130	HOBAN, BARBARA	1385 PURDY LANE	BISBEE	AZ	85603
HULL 854	606854	24S	24E	5	SW	SW	NE	NON-EXEMPT	WATER PRODUCTION	IRRIGATION	01/01/15	25	220	HULL C W	RT 1 NACO HIGHWAY	BISBEE	AZ	85603
HULL 855	606855	24S	24E	5	NW	SW	NE	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/15	400	240	HULL C W	RT 1 NACO HIGHWAY	BISBEE	AZ	85603
HUMPHREY	649153	24S	24E	18				EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/38	160	120	HUMPHREY, M	PO BOX 36	NACO	AZ	85620
IRONS	632924	24S	24E	17	NE	NW		NON-EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION	12/12/55	175	30	IRONS, LEE	PO BOX 1446	NOGALES	AZ	85621
JACKSON	506034	24S	24E	5	SE	NE	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	08/16/83	342	208	JACKSON, JOE	PO BOX 4520	BISBEE	AZ	85603
JALYN	209737	24S	24E	17	NW	NW	SE	EXEMPT	WATER PRODUCTION	DOMESTIC	11/16/05	245	150	JALYN ASSOCIATES, LLC	NACO HIGHWAY	BISBEE	AZ	85603
KEEFER	209744	24S	24E	18	SW	NW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	11/15/05	245	136	KEEFER, CRAIG	3530 SOUTH QUETEL AVENUE	NACO	AZ	85620
KENNEDY	647003	24S	24E	8	NW	SW	SE	EXEMPT	WATER PRODUCTION	STOCK		110	60	KENNEDY, DAVID	3819 EAST INDIAN SCHOOL ROAD	PHOENIX	AZ	85018
LESNICK	587749	24S	24E	11	NE	SE	NE	EXEMPT	WATER PRODUCTION	DOMESTIC	07/10/01	400	350	LESNIK, RON	PO BOX 757	BISBEE	AS	85603
LUCERO	618175	24S	24E	17	NW	SW	SW	NON-EXEMPT	WATER PRODUCTION	DOMESTIC	06/26/72	301	95	LUCERO, MARCOS	408 E MICHIGAN	TUCSON	AZ	85714
MCCONNELL 265	539265	24S	24E	17	NW	NW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	07/06/93	216	165	MCCONNELL, VIRGINIA	1463 PURDY LANE	BISBEE	AZ	85603
MENDEZ	650256	24S	24E	18	SE	SE	SE	EXEMPT	WATER PRODUCTION	IRRIGATION	01/01/38	160	120	MENDEZ, FRANCES	3757 TOWNER AVENUE	NACO	AZ	85620
MILLER 340	641340	24S	24E	7	SW	NE	SW	EXEMPT	WATER PRODUCTION	DOMESTIC/STOCK	01/01/40	200	150	MILLER, CHARLES	MILLER RANCH	NACO	AZ	85620
MILLER 341	641341	24S	24E	17	SW	NE	SW	EXEMPT	WATER PRODUCTION	STOCK	01/01/20	100	60	MILLER, CHARLES	MILLER RANCH	NACO	AZ	85620
MILLER 342	641342	24S	24E	15	SW	SW	SW	EXEMPT	WATER PRODUCTION	STOCK	01/01/57	200	160	MILLER, CHARLES	MILLER RANCH	NACO	AZ	85620
MINNERLY	650662	24S	24E	11	SE			EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	MINNERLY, H R	RT 1 614 BORDER RD	BISBEE	AZ	85603
MINOR 316	633316	24S	24E	18	NE	SE	SE	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/55	208	95	MINOR, LAWRENCE	3386 SOUTH NACO HIGHWAY	BISBEE	AZ	85603
MINOR 317	633317	24S	24E	18	SE	NE	NE	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/56	155	95	MINOR, LAWRENCE	3386 SOUTH NACO HIGHWAY	BISBEE	AZ	85603
MOORE	538847	24S	23E	13	SE	NE	NE	EXEMPT	WATER PRODUCTION	DOMESTIC	04/24/93	220	125	MOORE, PATRICK	3606 WILSON ROAD	NACO	AZ	85620
MOROYOQUI	647847	24S	24E	18				EXEMPT	WATER PRODUCTION	DOMESTIC	06/18/69	180	130	MOROYOQUI H B	PO BOX 535	TUCSON	AZ	85754
NOBLE	618611	24S	24E	17	NE	NE		NON-EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	NOBLE A J	EL RANCHO MOTELR1H92	BISBEE	AZ	85603
NOTEMAN	212483	24S	24E	2	NW	SW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	NOTEMAN, RUSS	2243 ARIZONA STREET	BISBEE	AZ	85603
NWC 01	627682	24S	24E	19	NW	NE	NW	NON-EXEMPT	WATER PRODUCTION	MUNICIPAL	09/24/51	215	140	NACO WATER COMPANY	PO BOX 85160	TUCSON	AZ	85754
NWC 02	627683	24S	24E	18	SW	SE		NON-EXEMPT	WATER PRODUCTION	MUNICIPAL	08/02/59	210	131	NACO WATER COMPANY	PO BOX 85160	TUCSON	AZ	85754
NWC 02R	562944	24S	24E	18	SW	NE	SE	NON-EXEMPT	WATER PRODUCTION	MUNICIPAL	06/11/97	312	150	NACO WATER COMPANY	PO BOX 85160	TUCSON	AZ	85754
NWC 03	627684	24S	24E	18	NE	SE	SE	NON-EXEMPT	WATER PRODUCTION	MUNICIPAL	01/01/30	179	94	NACO WATER COMPANY	PO BOX 85160	TUCSON	AZ	85754
NWC 03R	203321	24S	24E	18	NE	SE	SE	EXEMPT	WATER PRODUCTION	MUNICIPAL	05/12/04	312	140	NACO WATER COMPANY	PO BOX 85160	TUCSON	AZ	85754
NWC 04 UPRR	551849	24S	24E	10	SE	SE	SE	NON-EXEMPT	WATER PRODUCTION	UTILITY (WATER CO)	08/24/95	462	375	UNION PACIFIC RAILROAD COMPANY	1416 DODGE STREET	OMAHA	NE	68179
NWC 05	627696	24S	24E	11	SE			EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/60	175	104	NACO WATER COMPANY	PO BOX 85160	TUCSON	AZ	85754
NWC 06	575700	24S	24E	18	SW	SW	NE	NON-EXEMPT	WATER PRODUCTION	UTILITY (WATER CO)	09/15/99	410	140	NACO WATER COMPANY	PO BOX 85160	TUCSON	AZ	85754
OSBORN	643436	24S	24E	11	NE	NW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	08/05/93	258	94	OSBORN, DALE	PO BOX 5027 SWAN ROAD	BISBEE	AZ	85603
PALMER 819	578819	24S	24E	12	SW	NW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	01/10/00	220	68	PALMER, PATRICK	PO BOX CV	BISBEE	AZ	85603
PARRA	576415	24S	24E	5	SE	NW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	10/06/99	355	263	PARRA, STEVE	2356 SOUTH HOPE STREET	BISBEE	AZ	85603
PIONKE	613395	24S	24E	18	NE	NE	NE	NON-EXEMPT	WATER PRODUCTION	IRRIGATION	01/01/64	300	0	PIONKE, JIM	3330 E OAK HILL ST	SIERRA VISTA	AZ	85635
POOL	509518	24S	24E	7	NW	SW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	12/12/84	313	174	POOL, JOAN	PO BOX 4051	BISBEE	AZ	85603
RAMIREZ	216425	24S	24E	18	SW	SW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	RAMIREZ, ROBERTO	2082 WEST DOMINGUEZ, PO BOX 362	NACO	AZ	85620
RAY	803772	24S	24E	11	SE	SW		EXEMPT	WATER PRODUCTION	DOMESTIC		100	60	RAY, TERRY	648 EAST MULBERRY LANE	BISBEE	AZ	85603
RODRIGUEZ	648360	24S	24E	18	SE	SW	SE	EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	RODRIGUEZ, MANUEL	2082 WEST DOMINGUES	NACO	AZ	85620
ROGERS 596	573596	24S	24E	18	NE	SE	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	09/16/99	290	140	ROGERS, ERNEST D	1598 WEST MULEDEER ST	BISBEE	AZ	85603
ROGERS 801	641801	24S	24E	18	NE	NE	SE	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/60	142	92	ROGERS, ERNEST D	1598 WEST MULEDEER ST	BISBEE	AZ	85603
ROGERS 803	641803	24S	24E	18	SE	SE	NE	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/60	140	92	ROGERS, ERNEST D	1598 WEST MULEDEER ST	BISBEE	AZ	85603
ROGERS E	216018	24S	24E	18	NW	SW	SE	EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	ROGERS, ERNEST M	1820 WEST DOMINGUES	NACO	AZ	85620
ROLLINS	641750	24S	24E	18	SE	SE	NE	EXEMPT	WATER PRODUCTION	DOMESTIC		126	0	ROLLINS M	PO BOX 332	NACO	AZ	85620
ROSS	517526	24S	24E	6	NW	SW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	04/16/87	425	375	ROSS, RICHARD	PO BOX 305	NACO	AZ	85620
RUIZ	531770	24S	24E	4	NW	SW	SW	NON-EXEMPT	WATER PRODUCTION	DOMESTIC / IRRIGATION	05/29/91	312	254	RUIZ, DAVID	2295 SOUTH BARNETT ROAD	BISBEE	AZ	85603
SCHWARTZ	210865	24S	24E	18	NE	SE	SW	NON-EXEMPT	WATER PRODUCTION	DOMESTIC	02/07/06	305	123	SCHWARTZ, ELIZABETH	3466 SOUTH CLUBVIEW TERRACE	BISBEE	AZ	85603
SHAFER	649994	24S	24E	18	SE	SW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC	07/15/66	162	120	SHAFER E	PO BOX 545	NACO	AZ	85620
STARK-CAMPBELL	215509	24S	24E	11	SW	SE	NW	EXEMPT	WATER PRODUCTION	DOMESTIC		0	0	STARK-CAMPBELL	403 E SAGUARO LANE	BISBEE	AZ	85603
SUNBELT	201531	24S	24E	3	NE	SE	NE	EXEMPT	WATER PRODUCTION	DOMESTIC	12/04/03	380	296	SUNBELT MARKETING, INC.	2209 SOUTH ARIZONA STREET	BISBEE	AZ	85603
SUNNYSIDE	588270	24S	24E	17	NW	SW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	08/28/01	200	115	SUNNYSIDE HOLDINGS, LLC	PO 1303	HEREFORD	AZ	85615

APPENDIX B
Well Inventory Search Area Results

Well Name	ADWR 55 Registry No.	Township	Range	Section	160-acre Quarter	40-acre Quarter	10-acre Quarter	Well Type	Well Use	Water Use	Installed	Well Depth	Water Level	Last Name / Company	Address	City	State	Zip Code
TVI 236	802236	24S	24E	18	SE	NW		NON-EXEMPT	WATER PRODUCTION	IRRIGATION	02/14/34	222	100	LAWSON, PETER (TURQUOISE VALLEY INC.)	1794 WEST NEWELL, PO BOX 727	NACO	AZ	85620
TVI 713	567713	24S	24E	18	NW	SW	SW	NON-EXEMPT	WATER PRODUCTION	DOMESTIC	04/14/98	200	100	LAWSON, PETER (TURQUOISE VALLEY INC.)	1794 WEST NEWELL, PO BOX 727	NACO	AZ	85620
TVI 875	568875	24S	24E	18	NE	SW	NE	NON-EXEMPT	WATER PRODUCTION	IRRIGATION	06/14/98	330	140	LAWSON, PETER (TURQUOISE VALLEY INC.)	1794 WEST NEWELL, PO BOX 727	NACO	AZ	85620
VALENZUELA	645050	24S	24E	18				EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/47	167	115	VALENZUELA G E	PO BOX 14	NACO	AZ	85620
WEED	544535	24S	24E	5	SW	SW	SW	EXEMPT	WATER PRODUCTION	DOMESTIC / STOCK	07/09/94	320	226	WEED, PEGGY	1443 WEST HULL RANCH ROAD	BISBEE	AZ	85603
WEISKOPF	641802	24S	24E	18	NE	NE	SE	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/60	200	0	WEISKOPF	3316 NACO HIGHWAY	BISBEE	AZ	85603
WILLSON 361	648361	24S	24E	17	NW	NW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	01/01/29	160	0	WILLSON T J	BOX 425	NACO	AZ	85620
WILLSON 362	648362	24S	24E	17	NW	NW	NW	EXEMPT	WATER PRODUCTION	STOCK	01/01/47	180	0	WILLSON T J	BOX 425	NACO	AZ	85620
ZANDER	205126	24S	24E	18	SW	NW	NW	EXEMPT	WATER PRODUCTION	DOMESTIC	02/10/05	280	165	ZANDER, PAUL	3535 METZLER PLACE	NACO	AZ	85620

Well Use = Domestic; Identified During Field Verification OR Bottled Water Deliveries List: 6

Well Name	ADWR 55 Registry No.	Township	Range	Section	160-acre Quarter	40-acre Quarter	10-acre Quarter	Well Type	Well Use	Water Use	Installed	Well Depth	Water Level	Last Name / Company	Address	City	State	Zip Code
DURAZO	NR	24S	24E	18	NR	NR	NR	NR	NR	DOMESTIC	NR	0	0	DURAZO, NILTZA	2350 SUNFLOWER STREET	BISBEE	AZ	85603
HOWARD	NR	24S	24E	17	NR	NR	NR	NR	NR	DOMESTIC	NR	0	0	HOWARD, JOEL	3269 SOUTH NACO HIGHWAY	BISBEE	AZ	85603
MCCONNELL 386	590386	24S	24E	17	NW	NW	NW	NR	NR	DOMESTIC	NR	0	0	MCCONNELL, RUSSELL	P.O. Box 4513	BISBEE	AZ	85603
PANAGAKOS	76413 [1]	24S	24E	10	SW	SE	SE	NR	NR	DOMESTIC	07/57	200	131	PANAGAKOS, ALFRED	500 WEST PURDY LANE	BISBEE	AZ	85603
METZLER	71891 [1]	24S	24E	5	NW	NW	SE	NR	NR	DOMESTIC	04/17/79	351	238	METZLER, TRINY	P.O. Box 204	BISBEE	AZ	85603
SWAN	NR	24S	24E	1	NR	NR	NR	NR	NR	DOMESTIC	NR	0	0	SWAN, GEORGE	PO Box 5593	BISBEE	AZ	85603

Notes:
ADWR = Arizona Department of Water Resources
ASLD = Arizona State Land Department
AWC = Arizona Water Company
BIMA = Bisbee Municipal Airport
COB = City of Bisbee
NR = No Record
NWC = Naco Water Company
TVI = Turquoise Valley Inc.
UPRR = Union Pacific Railroad
USBP = United States Border Patrol
[1] ADWR Program 35 Database

APPENDIX C

INTERIM ACTION AND SULFATE TREND ANALYSIS REPORTS FOR DRINKING WATER SUPPLY WELLS

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APPENDICES

C.1 Interim Action Report, May 22, 2008
C.2 Results of Monthly Sulfate Monitoring and Trend Analysis, October 1, 2008
C.3 Interim Action Report, December 19, 2008
C.4 Results of Monthly Sulfate Monitoring and Trend Analysis, February 2, 2009

APPENDIX C.1

INTERIM ACTION REPORT
MAY 22, 2008

FREEPORT-McMoRan COPPER & GOLD

Copper Queen Branch/Freeport-McMoRan Corporation
36 West Highway 92
Bisbee, Arizona 85603

May 22, 2008

Robert Casey
Water Enforcement Unit
Arizona Department of Environmental Quality
1110 West Washington Street
Phoenix, Arizona 85007

RE: Interim Action Report

Dear Mr. Casey:

In accordance with Mitigation Order on Consent, Docket No. P-121-07 (MO) between Freeport-McMoRan Corporation, Copper Queen Branch (f/k/a Phelps Dodge Corporation Copper Queen Branch) (Freeport) and Arizona Department of Environmental Quality (ADEQ), if the average sulfate concentration of a drinking water supply is found to exceed 250 milligrams per liter (mg/L) sulfate, interim actions selection and implementation will begin immediately.

In addition, the MO requires an interim action report to ADEQ within 30 days of implementing an interim action. The report shall "*state the name of the owner(s)/operator(s) of the affected well, the location and type of well (public or private) affected, and the interim action selected.*"

Forty wells verified as drinking water supply wells were sampled for sulfate between February and April 2008. Thirteen private wells contained sulfate concentrations greater than the 250 mg/l limit set by the MO. Residents using ten of the thirteen wells were already receiving bottled water. As an interim action for the three wells used by residents who were not already receiving bottled water, Freeport has elected to provide bottled water to residents using private wells where sulfate concentrations exceed 250 mg/L. The attached table provides the information required on the affected wells.

Sincerely,

Michael Jaworski
Site Manager
Copper Queen Branch

Attachment

TABLE 1
Interim Action Report

Owner	ADWR Program 55 ID	UTM N	UTM E	Address	City	State	Zip Code	Well Type	Sulfate (mg/l)	Interim Action Selected
Anderson, David	613396	3468816.100	601134.726	3272 South Naco Highway	Bisbee	Arizona	85603	Private	431	Provide Bottled Water [1]
Cooper, Charles	637069	3468913.044	601349.985	1497 West Purdy Lane	Bisbee	Arizona	85603	Private	880	Provide Bottled Water [1]
Franco, Irma	500101	3468835.683	602849.900	3245 South Franco Loop	Bisbee	Arizona	85603	Private	670	Provide Bottled Water [1]
Hoban, Barbara	805290	3468880.359	601705.844	1385 Purdy Lane	Bisbee	Arizona	85603	Private	510	Provide Bottled Water [1]
Howard, Joel	NR	3468768.655	601281.932	3269 South Naco Highway	Bisbee	Arizona	85603	Private	571	Provide Bottled Water [1]
McConnell, Virginia	539265	3468840.174	601463.091	1463 Purdy Lane	Bisbee	Arizona	85603	Private	720	Provide Bottled Water [1]
Metzler, Alfonzo	35-71891	3471381.200	602091.309	2313 Sunflower Lane	Bisbee	Arizona	85603	Private	317	Provide Bottled Water [1]
Noteman, Russell	551849	3471576.420	606053.795	2247 Arizona Street	Bisbee	Arizona	85603	Private	310	Provide Bottled Water
Panagakos, Alfred	35-76413	3469320.987	605311.680	500 West Purdy Lane	Bisbee	Arizona	85603	Private	410	Provide Bottled Water
Parra, Steve	576415	3471263.571	602170.711	2356 South Hope Street	Bisbee	Arizona	85603	Private	360	Provide Bottled Water [1]
Pionke, Jim	613395	3468836.647	600936.285	1633 West Purdy Lane	Naco	Arizona	85620	Private	394	Provide Bottled Water [1]
Ruiz, David	531770	3471424.239	602857.358	2295 South Barnett Road	Bisbee	Arizona	85603	Private	263	Provide Bottled Water [1]
Weiskopf, Tom	641802	3468658.887	601154.948	3316 Naco Highway	Bisbee	Arizona	85603	Private	500	Provide Bottled Water

ADWR = Arizona Department of Water Resources
UTM = Universal Transverse Mercator, Zone 12 Band R
mg/l = milligrams per liter
NR = No Record
35-70000 = ADWR Program 35 Database
[1] Resident receiving bottled water prior to well inventory investigation

APPENDIX C.2

RESULTS OF MONTHLY SULFATE MONITORING AND TREND ANALYSIS
OCTOBER 1, 2008

FREEPORT-McMoRan
COPPER & GOLD

Copper Queen Branch/Freeport-McMoRan Corporation
36 West Highway 92
Bisbee, Arizona 85603

CERTIFIED MAIL # 7008 1830 0001 1177 9087
RETURN RECEIPT REQUESTED

December 19, 2008

Ms. Cynthia S. Campbell
Manager, Water Quality Compliance Section
Arizona Department of Environmental Quality
1110 West Washington Street
Phoenix, Arizona 85007-2935

RE: Interim Action Report

Dear Ms Campbell:

In accordance with Mitigation Order on Consent, Docket No. P-121-07 (MO) between Freeport-McMoRan Copper Queen Branch (Freeport) and Arizona Department of Environmental Quality (ADEQ), if the average sulfate concentration of a drinking water supply is found to exceed 250 milligrams per liter (mg/L) sulfate, interim actions selection and implementation will begin immediately.

In addition, the MO requires an interim action report to ADEQ within 30 days of implementing an interim action. The report shall "state the name of the owner(s)/operator(s) of the affected well, the location and type of well (public or private) affected, and the interim action selected."

Four wells verified as drinking water supply wells were sampled for sulfate and found to contain sulfate concentrations greater than or just below the 250 mg/l limit set by the MO. As an interim action Freeport has offered to provide bottled water to residents receiving water supply from the affected wells. The attached table provides the information required on the affected wells.

Freeport has directly offered to provide bottled water to the two private wells owners with sulfate above 250 mg/L and the one private well owner with a sulfate concentration just below 250 mg/L (245 mg/L). The NWC-3 well is a public water supply well with approximately eleven (11) service connections that is operated by Naco Water Company. Freeport notified Naco Water Company that it will provide water to customers served by

NWC-3. Freeport did not offer bottled water directly to the users of NWC-3 because Naco Water Company is maintaining the customer list as confidential.

Sincerely,

Rebecca A. Sawyer
Senior Environmental Engineer
Copper Queen Branch

Attachment

Cc: Stuart Brown (Bridgewater Group)
James Norris (Hydro Geo Chem)

TABLE 1
Interim Action Report
December 2008

Owner	ADWR Program 55 ID	UTM N	UTM E	Address	City	State	Zip Code	Well Type	Sulfate (mg/l)	Interim Action Selected
Collins, James	565260	3471341.335	602551.286	2331 S. Coleman Street	Bisbee	Arizona	85603	Private	518	Provide Bottled Water
Naco Water Company (Well NWC-3)	203321	3468342.963	601149.265	P.O. Box 85610	Tucson	Arizona	85754	Public Water System	489	Naco Water Company was Offered Bottled Water for the Service Connections of Well NWC-3
Seibold, Bill (BIMA)	577927	3471852.804	6006001.245	2145 South Arizona Street	Bisbee	Arizona	85603	Private	256	Provide Bottled Water
Schwartz, Elizabeth	210865	3468268.057	600811.529	3468 S. Clubview Terrace	Bisbee	Arizona	85603	Private	245	Provide Bottled Water

ADWR = Arizona Department of Water Resources
UTM = Universal Transverse Mercator, Zone 12 Band R
mg/l = milligrams per liter
BIMA = Bisbee Municipal Airport

"PRIVILEGED COMMUNICATION - PREPARED AT THE DIRECTION OF LEGAL COUNSEL - ATTORNEY WORK PRODUCT"

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nt of Environmental Quality
)gton Street
7

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X B. Nance ☐ Agent ☐ Addressee

B. Received by (Printed Name) B. Nance

C. Date of Delivery 12-22-08

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

label) 7008 1830 0001 1177 9087

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APPENDIX C. 3

INTERIM ACTION REPORT
DECEMBER 19, 2008

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Copper Queen Branch/Freeport-McMoRan Corporation
36 West Highway 92
Bisbee, Arizona 85603

October 1, 2008

Cynthia S. Campbell
Manager, Water Quality Compliance Section
Arizona Department of Environmental Quality
1110 West Washington Street
Phoenix, Arizona 85007

RE: Mitigation Order, Docket No. P-121-07
Results of Monthly Sulfate Monitoring and Trend Analysis

Dear Ms. Campbell:

In accordance with Mitigation Order on Consent, Docket No. P-121-07 Freeport-McMoRan Corporation, Copper Queen Branch (CQB) has conducted five rounds of monthly water quality sampling at six drinking water supply wells that had sulfate concentrations between 135 mg/L (milligrams per liter) and 250 mg/L in their initial samples. The enclosed letter from Hydro Geo Chem, Inc. evaluates the results of the water quality sampling and provides recommendations for ongoing monitoring based on the results of the monthly sampling. CQB plans to implement the proposed monitoring schedules in November 2008 unless we hear otherwise from Arizona Department of Environmental Quality by October 27, 2008. The monitoring recommendations for drinking water supplies will be re-evaluated for development of the Mitigation Plan.

If you have any questions or require anything additional please contact me at 520-432-6206.

Sincerely,

Rebecca A. Sawyer
Senior Environmental Engineer
Copper Queen Branch

Enclosure

HYDRO GEO CHEM, INC.

September 29, 2008

Rebecca A. Sawyer
Senior Environmental Engineer
Freeport-McMoRan Corporation
Copper Queen Branch
36 West Highway 92
Bisbee, Arizona 85603

RE: Mitigation Order, Docket No. P-121-07
Results of Monthly Sulfate Monitoring and Trend Analysis

Dear Ms. Sawyer:

This letter describes and evaluates the results of monthly water sampling and analysis of sulfate in six drinking water supply wells conducted pursuant to Section 4 of the Work Plan[1]. As outlined in Section 4 of the Work Plan *"a water supply having a discrete sulfate concentration between 135 milligrams per liter (mg/l) and 250 mg/l will be monitored monthly for four months to determine whether concentrations are increasing and to identify any trend in sulfate concentration over time. Based on the apparent trend in sulfate concentrations, a monitoring schedule will be developed for the supply. If the trend indicates increasing concentrations, an interim action will be selected and an implementation plan will be developed."*

In February 2008 water quality sampling for the well inventory[2] identified six wells (BIMA, BLOMMER, FULTZ, RAY, ROGERS 803, and SCHWARTZ) verified as drinking water supply wells that had a discrete sulfate concentration between 135 mg/l and 250 mg/l. These six wells were sampled for sulfate monthly from April to August 2008. The following table provides the results of the sampling. Analytical reports for February through June 2008 are included as Appendix D in the First and Second Quarters Groundwater Report[3]. Analytical reports for the July and August 2008 sampling will be included in the third quarter monitoring report.

DATE	BIMA	BLOMMER	FULTZ	RAY	ROGERS 803	SCHWARTZ
Feb-08	210	206	152	159	138	158
Apr-08	190	201	137	125	128	122
May-08	195	211	131	123	141	130
Jun-08	225	193	111	130	129	129
Jul-08	204	203	152	120	134	245
Aug-08	256	189	137	129	128	131

Results presented as sulfate in mg/l

[1] Hydro Geo Chem, Inc. (HGC) 2008. Revision 1, Work Plan to Characterize and Mitigate Sulfate with Respect to Drinking Water Supplies in the Vicinity of the Concentrator Tailing Storage Area, Cochise County, Arizona. July 3, 2008.
[2] HGC, 2008. Well Inventory Report, Task 1 of Aquifer Characterization Plan for Mitigation Order on Consent No. P-121-07, Cochise County, Arizona. July 3, 2008.
[3] HGC, 2008. First and Second Quarters 2008 Groundwater Monitoring Report, Task 2.2 of Aquifer Characterization Plan Mitigation Order on Consent No. P-121-07, Cochise County, Arizona. July 30, 2008.

Mann-Kendall Analysis

A Mann-Kendall statistical trend analysis was conducted to determine if concentrations of sulfate are increasing or decreasing over time in samples collected from the six drinking water supply wells. The Mann-Kendall test is a non-parametric test for identifying trends in time series data. The test compares the relative magnitudes of sample data rather than the data values themselves. One particular benefit of this test is that the data need not conform to any particular distribution. Moreover, the test can be used with a minimum of four rounds of sampling results. An Excel based macro[4] was used to process the input time series data, perform the trend analysis, and report the results (Attachment).

Mann-Kendall Trend Results

Based on guidance in Gilbert[5], a trend was considered significant if the *"confidence in trend"* metric, (1-p) x 100%, was ≥ 80% which represents a significance level of $\alpha = 0.2$. Statistically significant (86% confidence level) increasing and decreasing trends were observed in wells BIMA and BLOMMER, respectively. The four remaining wells did not have a trend that was statistically significant. The results are shown in the following table and the best fit trend lines for the sulfate time concentration plots are shown in Figure 1.

Event	Sample Date	BIMA	BLOMMER	FULTZ	RAY	ROGERS 803	SCHWARTZ
1	Feb-08	210	206	152	159	138	158
2	Apr-08	190	210	137	125	128	122
3	May-08	195	211	131	123	141	130
4	Jun-08	225	193	111	130	129	129
5	Jul-08	204	203	152	120	134	245
6	Aug-08	256	189	137	129	128	131
Mann-Kendall Statistic (S)		7	-7	-3	-5	-4	3
Probability [6] (p)		0.136	0.136	0.360	0.235	0.235	0.360
Confidence in Trend (1-p)		86%	86%	64%	77%	77%	64%
Number of Rounds (n)		6	6	6	6	6	6
Average		213.3	202.0	136.7	131.0	133.0	152.5
Standard Deviation		24.229	9.077	15.24	14.213	5.586	46.984
Coefficient of Variation (COV)		0.114	0.045	0.112	0.108	0.042	0.308
Trend ≥ 80% Confidence Level		INCREASING	DECREASING	No	No	No Trend	No Trend
Trend ≥ 90% Confidence Level		No Trend	No Trend	No	No	No Trend	No Trend
Stability Test; If No Trend Exists at 80% Confidence Level		NA	NA	CV <= 1 STABLE	CV <= 1 STABLE	CV <= 1 STABLE	CV <= 1 STABLE

Based on available data, drinking water supply wells FULTZ, RAY, ROGERS 803, and SCHWARTZ show no significant trend, suggesting that the sulfate concentrations are stable. However; even though the trend at SCHWARTZ was not significant, a positive Mann-Kendall statistic indicates that the sulfate concentration may be increasing and it is recommended that it

[4] State of Wisconsin, 2001. Department of Natural Resources, Chapter NR 700 Appendix A, Mann-Kendall Statistical Test, Form 4400-215.
[5] Gilbert, R.O. 1987. Statistical Methods for Environmental Pollution Monitoring. Van Nostrand Reinhold, New York.
[6] U.S. Environmental Protection Agency, 1998. Guidance for Data Quality Assessment, Practical Methods for Data Analysis, EPA QA/G-9, Table A-11: Probabilities for the Small Sample Mann-Kendall Test for Trend. January.

remain on a monthly monitoring schedule an additional quarter at which time another trend analysis will be conducted. Wells FULTZ, RAY, and ROGERS 803 have a negative Mann-Kendall statistic indicating that the sulfate concentration at these wells may be decreasing. BLOMMER also has a negative Mann-Kendall statistic and a statistically significant decreasing trend. Quarterly monitoring is recommended for BLOMMER, FULTZ, RAY, and ROGERS 803.

As an interim action for BIMA, having a statistically significant increasing trend and a discrete sulfate concentration > 250 mg/l in August 2008, Freeport-McMoRan Copper Queen Branch (CQB) has offered to provide bottled water. Quarterly monitoring also is recommended for this well.

Please do not hesitate to call us if you have any questions about the data analysis or the monitoring recommendations described in this letter.

Sincerely,

Daniel R. Simpson
Senior Hydrogeologist

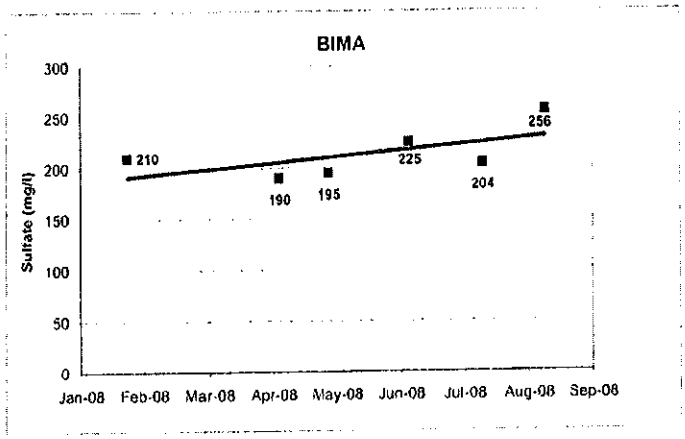
James R. Norris
Arizona Registered Geologist No. 30842

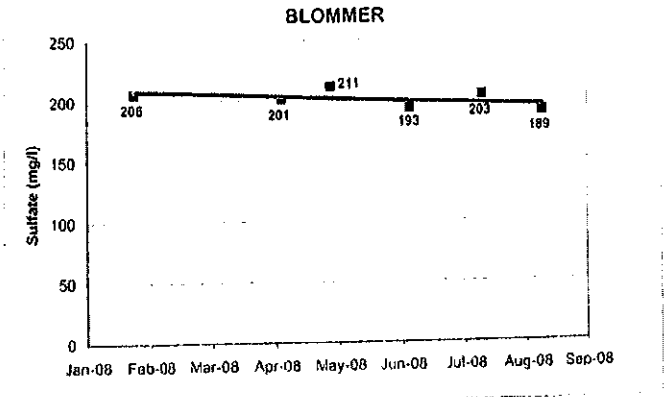
REGISTERED GEOLOGIST
CERTIFICATE NO.
30842
JAMES R.
NORRIS
9/29/08
ARIZONA U.S.A.
Expires 12/31/08

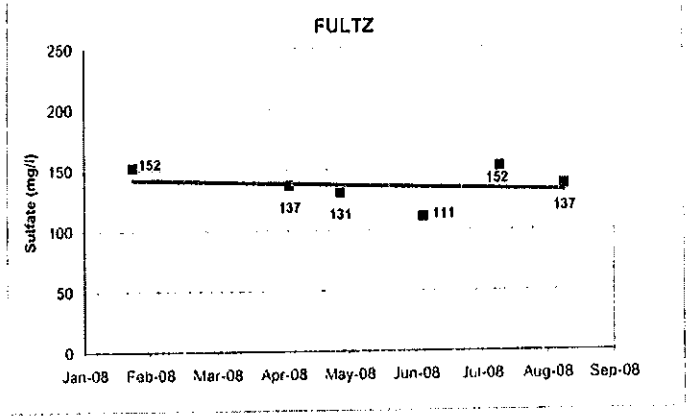
Attachment

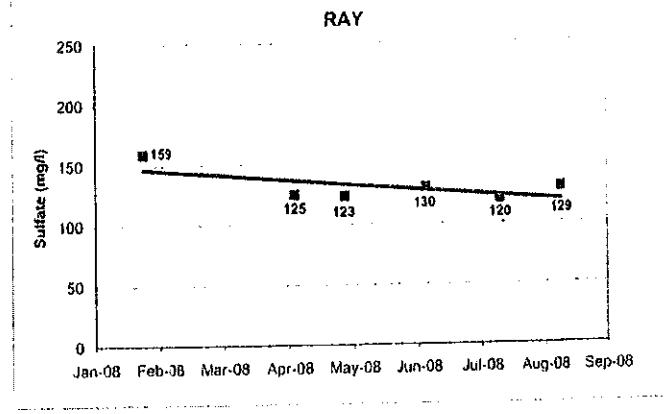
cc: Michael Jaworski, Freeport-McMoRan Copper Queen Branch
Sheila Deely, Freeport-McMoRan Copper & Gold, Inc.
Dalva Moellenberg, Gallagher & Kennedy
Stuart Brown, Bridgewater Group, Inc.

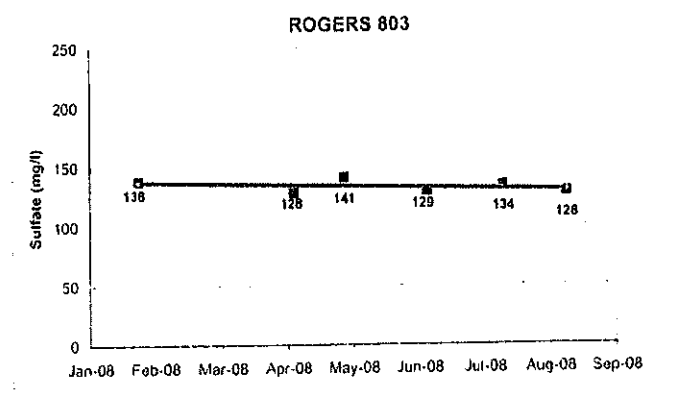
FIGURE 1. TIME SERIES GRAPHS OF SULFATE CONCENTRATION OVER TIME

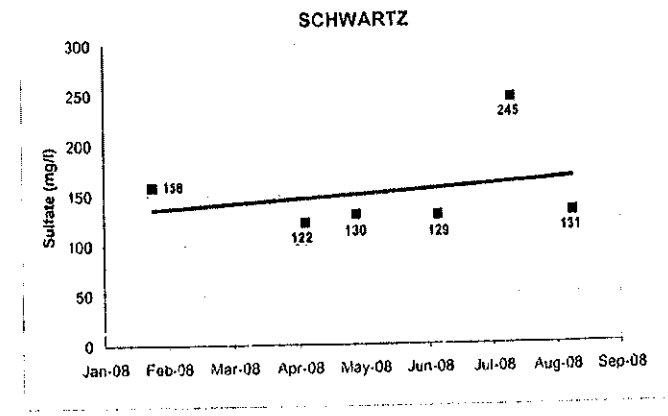












ATTACHMENT
MANN-KENDALL TREND ANALYSIS

Bisbee Mitigation Order - Sulfate Trend Analysis

Event	Sample Date	BIMA	BLOMMER	FULTZ	RAY	ROGERS 803	SCHWARTZ
1	Feb-08	210	206	152	159	138	158
2	Apr-08	190	210	137	125	128	122
3	May-08	195	211	131	123	141	130
4	Jun-08	225	193	111	130	129	129
5	Jul-08	204	203	152	120	134	245
6	Aug-08	256	189	137	129	128	131
7							
8							
9							
10							
	Mann-Kendall Statistic (S)	7	-7	-3	-5	-4	3
	Number of Rounds (n)	6	6	6	6	6	6
	Average	213.3	202.0	136.7	131.0	133.0	152.5
	Standard Deviation	24.229	9.077	15.240	14.213	5.586	46.984
	Coefficient of Variation (COV)	0.114	0.045	0.112	0.108	0.042	0.308

Error Check, If No Errors - Blank	

Trend ≥ 80% Confidence Level	INCREASING	DECREASING	No Trend	No Trend	No Trend	No Trend
Trend ≥ 90% Confidence Level	No Trend	No Trend	No Trend	No Trend	No Trend	No Trend

Stability Test; If No Trend Exists at 80% Confidence Level	NA	NA	CV <= 1 STABLE	CV <= 1 STABLE	CV <= 1 STABLE	CV <= 1 STABLE

THIS BLOCK OF CELLS IS USED TO SEARCH FOR DATA ENTRY ERRORS

DATA ERROR CHECKS	Event	BIMA	BLOMMER	FULTZ	RAY	ROGERS 803	SCHWARTZ
	1	-1	-1	-1	-1	-1	-1
	2	-1	-1	-1	-1	-1	-1
Checks for data	3	-1	-1	-1	-1	-1	-1
with values less	4	-1	-1	-1	-1	-1	-1
than zero or text	5	-1	-1	-1	-1	-1	-1
(a space is seen	6	-1	-1	-1	-1	-1	-1
as text in Excel).	7	-1	-1	-1	-1	-1	-1
	8	-1	-1	-1	-1	-1	-1
Minus one (-1)	9	-1	-1	-1	-1	-1	-1
shown if no	10	-1	-1	-1	-1	-1	-1
error.	Data Error?	no error	no error	no error	no error	no error	no error

THIS BLOCK OF CELLS USED TO FIND ERRORS IN DATES

DATE ERROR CHECKS	Date	Text in Date?	Consecutive?	Data w no date?
	Feb-08	-1	-1	-1
	Apr-08	-1	-1	-1
Checks include	May-08	-1	-1	-1
a test for	Jun-08	-1	-1	-1
consecutive	Jul-08	-1	-1	-1
dates and text.	Aug-08	-1	-1	-1
	BLANK	-1	-1	-1
Minus one (-1)	BLANK	-1	-1	-1
shown if no	BLANK	-1	-1	-1
error.	BLANK	-1	-1	-1
	Date Error?	no error	no error	no error

Mann Kendall S Values [1]		
Values of n	Smax@0.2	Smax@0.1
4	-4	-6
5	-5	-7
6	-6	-8
7	-7	-10
8	-8	-11
9	-10	-14
10	-11	-16

TEST FOR	Number of Rounds	BIMA	BLOMMER	FULTZ	RAY	ROGERS 803	SCHWARTZ
INCREASING	4						
OR	5						
DECREASING	6	1	-1	0	0	0	0
TREND @ 80%	7						
	8						
If +1, increasing	9						
If -1, decreasing	10						
If 0, neither.		Increasing	Decreasing	Neither	Neither	Neither	Neither

TEST FOR	Number of Rounds	BIMA	BLOMMER	FULTZ	RAY	ROGERS 803	SCHWARTZ
INCREASING	4						
OR	5						
DECREASING	6	0	0	0	0	0	0
TREND @ 90%	7						
	8						
If +1, increasing	9						
If -1, decreasing	10						
If 0, neither.		Neither	Neither	Neither	Neither	Neither	Neither

ATTACHMENT
MANN-KENDALL TREND ANALYSIS

Bisbee Mitigation Order - Sulfate Trend Analysis — Well: BIMA

Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Sum Rows
210	190	195	225	204	256					
	-1	-1	1	-1	1					-1
		1	1	1	1					4
			1	1	1					3
				-1	1					0
					1					1
										0
										0
										0
										0

Mann Kendall Statistic (S) = 7

Bisbee Mitigation Order - Sulfate Trend Analysis — Well: BLOMMER

Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Sum Rows
206	210	211	193	203	189					
	1	1	-1	-1	-1					-1
		1	-1	-1	-1					-2
			-1	-1	-1					-3
				1	-1					0
					-1					-1
										0
										0
										0
										0

Mann Kendall Statistic (S) = -7

Bisbee Mitigation Order - Sulfate Trend Analysis — Well: FULTZ

Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Sum Rows
152	137	131	111	152	137					
	-1	-1	-1	0	-1					-4
		-1	-1	1	0					-1
			-1	1	1					1
				1	1					2
					-1					-1
										0
										0
										0
										0

Mann Kendall Statistic (S) = -3

Bisbee Mitigation Order - Sulfate Trend Analysis — Well: RAY

Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Sum Rows
159	125	123	130	120	129					
	-1	-1	-1	-1	-1					-5
		-1	1	-1	1					0
			1	-1	1					1
				-1	-1					-2
					1					1
										0
										0
										0
										0

Mann Kendall Statistic (S) = -5

Bisbee Mitigation Order - Sulfate Trend Analysis — Well: ROGERS 803

Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Sum Rows
138	128	141	129	134	128					
	-1	1	-1	-1	-1					-3
		1	1	1	0					3
			-1	-1	-1					-3
				1	-1					0
					-1					-1
										0
										0
										0
										0

Mann Kendall Statistic (S) = -4

Bisbee Mitigation Order - Sulfate Trend Analysis — Well: SCHWARTZ

Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Sum Rows
158	122	130	129	245	131					
	-1	-1	-1	1	-1					-3
		1	1	1	1					4
			-1	1	1					1
				1	1					2
					-1					-1
										0
										0
										0
										0

Mann Kendall Statistic (S) = 3

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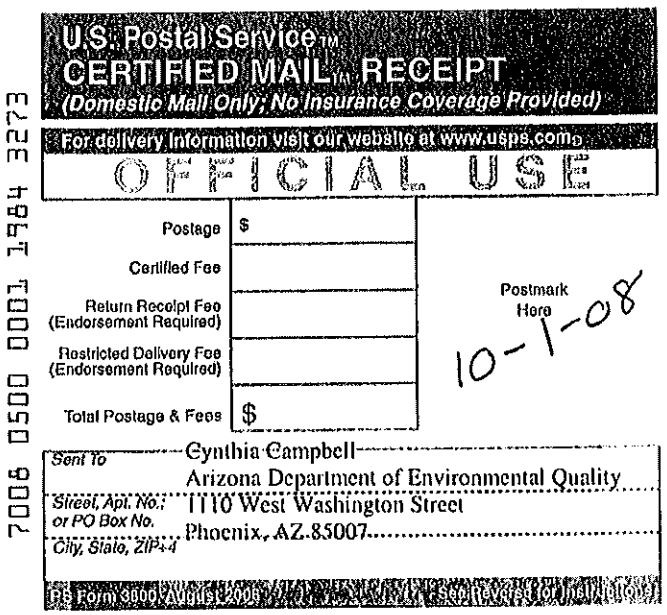

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APPENDIX C. 4

RESULTS OF MONTHLY SULFATE MONITORING AND TREND ANALYSIS
FEBRUARY 2, 2009

FREEPORT-McMoRan
COPPER & GOLD

Copper Queen Branch/Freeport-McMoRan Corporation
36 West Highway 92
Bisbee, Arizona 85603

VIA UPS EXPRESS A559 180 510 9

February 6, 2009

Ms. Cynthia S. Campbell
Manager, Water Quality Compliance Section
Arizona Department of Environmental Quality
1110 West Washington Street
Phoenix, Arizona 85007

RE: Mitigation Order, Docket No. P-121-07
Results of Monthly Sulfate Monitoring and Trend Analysis

Dear Ms. Campbell:

In accordance with Mitigation Order on Consent, Docket No. P-121-07 Freeport-McMoRan Corporation, Copper Queen Branch (CQB) has conducted monthly water quality sampling at six drinking water supply wells that had sulfate concentrations between 135 mg/L (milligrams per liter) and 250 mg/L in their initial samples. Recommendations for ongoing monitoring at five of the six wells were made in a previous letter.[1] In that letter, recommendations were made for an additional monthly sampling at the Schwartz well. The enclosed letter from Hydro Geo Chem, Inc. evaluates the results of the water quality sampling at the Schwartz well and recommends revising the sampling frequency to quarterly based on their evaluation of the prior sampling results. CQB plans to implement the proposed monitoring schedule in second quarter 2009 unless we hear otherwise from Arizona Department of Environmental Quality by February 28, 2009. The monitoring recommendations for drinking water supplies will be re-evaluated for development of the Mitigation Plan.

If you have any questions or require anything additional please contact me at 520-432-6206.

Sincerely,

Rebecca A. Sawyer
Senior Environmental Engineer
Copper Queen Branch

Enclosure

cc: J. Norris, HGC
S. Brown, Bridgewater
N. Hall, FMC
S. Deely, FMC

[1] Rebecca A, Sawyer, Freeport-McMoRan Copper & Gold, to Cynthia S. Campbell, ADEQ, 01 October 2008.

HYDRO GEO CHEM, INC.
Environmental Science & Technology

January 29, 2009

Rebecca A. Sawyer
Senior Environmental Engineer
Freeport-McMoRan Copper Queen Branch
36 West Highway 92
Bisbee, Arizona 85603

RE: Mitigation Order on Consent No. P-121-07
SCHWARTZ Well - Monthly Sulfate Monitoring and Trend Analysis

Dear Ms. Sawyer:

This letter describes and evaluates the results of monthly water sampling and analysis of sulfate in drinking water supply well SCHWARTZ conducted pursuant to Section 4 of the Work Plan[1].

In February 2008 water quality sampling for the well inventory[2] identified six wells (BIMA, BLOMMER, FULTZ, RAY, ROGERS 803, and SCHWARTZ) verified as drinking water supply wells that had a discrete sulfate concentration between 135 milligrams per liter (mg/l) and 250 mg/l. These wells were sampled monthly for sulfate and a trend analysis[3] was conducted. Based on the results of the trend analysis it was recommended that wells BIMA, BLOMMER, FULTZ, RAY, and ROGER 803 be monitored on a quarterly schedule. SCHWARTZ having a positive Mann-Kendall statistic, indicating that the sulfate concentration may be increasing, was to remain on a monthly monitoring schedule an additional quarter at which time another trend analysis would be conducted.

The following table provides the results of that sampling. Analytical reports for February through September 2008 are included as Appendix D in both the First and Second Quarters and Third Quarter Groundwater Reports[4] [5]. Analytical reports for the October through December 2008 sampling will be included in the fourth quarter monitoring report.

Feb-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08
158	122	130	129	245	131	124	135	140	144

Results presented as sulfate in mg/l

[1] Hydro Geo Chem, Inc. (HGC) 2008. Revision 1, Work Plan to Characterize and Mitigate Sulfate with Respect to Drinking Water Supplies in the Vicinity of the Concentrator Tailing Storage Area, Cochise County, Arizona. July 3, 2008.
[2] HGC, 2008. Well Inventory Report, Task 1 of Aquifer Characterization Plan for Mitigation Order on Consent No. P-121-07, Cochise County, Arizona. July 3, 2008.
[3] HGC, 2008. Results of Monthly Sulfate Monitoring and Trend Analysis. September 29, 2008.
[4] HGC, 2008. First and Second Quarters 2008 Groundwater Monitoring Report, Task 2.2 of Aquifer Characterization Plan Mitigation Order on Consent No. P-121-07, Cochise County, Arizona. July 30, 2008.
[5] HGC, 2008. Third Quarter 2008 Groundwater Monitoring Report, Task 1.0, 2.2 and 2.3 of Aquifer Characterization Plan Mitigation Order on Consent No. P-121-07, Cochise County, Arizona. October 27, 2008.

51 West Wetmore, Suite 101 Tucson, Arizona 85705-1678 520.293.1500 520.293.1550-Fax 800.727.5547 Toll Free

Mann-Kendall Analysis

A Mann-Kendall statistical trend analysis was conducted to determine if concentrations of sulfate are increasing or decreasing over time in samples collected from the SCHWARTZ drinking water supply well. The Mann-Kendall test is a non-parametric test for identifying trends in time series data. The test compares the relative magnitudes of sample data rather than the data values themselves. One particular benefit of this test is that the data need not conform to any particular distribution. Moreover, the test can be used with a minimum of four rounds of sampling results. The attached Excel based macro[6] was used to process the input time series data, perform the trend analysis, and report the results.

Mann-Kendall Trend Results

Based on guidance in Gilbert[7], a trend was considered significant if the *"confidence in trend"* metric, (1-p) x 100%, was ≥ 80% which represents a significance level of $\alpha = 0.2$. A statistically significant (81% confidence level) increasing trend was observed in the SCHWARTZ well. The results are shown in the following table.

Event	Sample Date	SCHWARTZ
1	Feb-08	158
2	Apr-08	122
3	May-08	130
4	Jun-08	129
5	Jul-08	245
6	Aug-08	131
7	Sep-08	124
8	Oct-08	135
9	Nov-08	140
10	Dec-08	144
	Mann-Kendall Statistic (S)	11
	Probability (p)	0.190
	Confidence in Trend (1-p)	81%
	Number of Rounds (n)	10
	Average	145.8
	Standard Deviation	36.417
	Coefficient of Variation (COV)	0.250

Trend ≥ 80% Confidence Level	INCREASING
Trend ≥ 90% Confidence Level	No Trend

Monthly monitoring data for drinking water supply well SCHWARTZ, although having a statistically significant increasing trend has discrete sulfate detected at concentrations <250 mg/l during the ten months of sampling, with an average sulfate concentration of 145.8 mg/l. As such, quarterly monitoring is recommended for this well.

---

[6] State of Wisconsin, 2001. Department of Natural Resources, Chapter NR 700 Appendix A, Mann-Kendall Statistical Test, Form 4400-215.
[7] Gilbert, R.O. 1987. Statistical Methods for Environmental Pollution Monitoring. Van Nostrand Reinhold, New York.

Please do not hesitate to call us if you have any questions about the data analysis or the monitoring recommendations described in this letter.

Sincerely,

Daniel R. Simpson
Senior Hydrogeologist

James R. Norris
Arizona Registered Geologist No. 30842

REGISTERED GEOLOGIST
CERTIFICATE NO.
30842
JAMES R.
NORRIS
Date Signed 12/31/09
ARIZONA U.S.A.
Expires 12/31/09

Attachment

cc: Michael Jaworski, Freeport-McMoRan Copper Queen Branch
Ned Hall, Freeport-McMoRan Sierrita Inc.
Sheila Deely, Freeport-McMoRan Copper & Gold, Inc.
Dalva Moellenberg, Gallagher & Kennedy
Stuart Brown, Bridgewater Group, Inc.

ATTACHMENT
MANN-KENDALL TREND ANALYSIS

Bisbee Mitigation Order - Sulfate Trend Analysis

Event	Sample Date	SCHWARTZ					
1	Feb-08	158					
2	Apr-08	122					
3	May-08	130					
4	Jun-08	129					
5	Jul-08	245					
6	Aug-08	131					
7	Sep-08	124					
8	Oct-08	135					
9	Nov-08	140					
10	Dec-08	144					
	Mann-Kendall Statistic (S)	11	0	0	0	0	0
	Probability (p)	0.190	0	0	0	0	0
	Confidence in Trend (1-p)	81%	0	0	0	0	0
	Number of Rounds (n)	10	0	0	0	0	0
	Average	145.8	0	0	0	0	0
	Standard Deviation	36.417	0	0	0	0	0
	Coefficient of Variation (COV)	0.250	0	0	0	0	0

Error Check, If No Errors - Blank		n<4	n<4	n<4	n<4	n<4
Trend ≥ 80% Confidence Level	INCREASING	n<4	n<4	n<4	n<4	n<4
Trend ≥ 90% Confidence Level	No Trend	n<4	n<4	n<4	n<4	n<4
Stability Test; If No Trend Exists at 80% Confidence Level	NA	n<4	n<4	n<4	n<4	n<4

THIS BLOCK OF CELLS IS USED TO SEARCH FOR DATA ENTRY ERRORS							
DATA ERROR CHECKS	Event	SCHWARTZ	0	0	0	0	0
	1	-1	-1	-1	-1	-1	-1
	2	-1	-1	-1	-1	-1	-1
Checks for data	3	-1	-1	-1	-1	-1	-1
with values less	4	-1	-1	-1	-1	-1	-1
than zero or text	5	-1	-1	-1	-1	-1	-1
(a space is seen	6	-1	-1	-1	-1	-1	-1
as text in Excel).	7	-1	-1	-1	-1	-1	-1
	8	-1	-1	-1	-1	-1	-1
Minus one (-1)	9	-1	-1	-1	-1	-1	-1
shown if no	10	-1	-1	-1	-1	-1	-1
error.	Data Error?	no error	no error	no error	no error	no error	no error

THIS BLOCK OF CELLS USED TO FIND ERRORS IN DATES				
DATE ERROR CHECKS	Date	Text in Date?	Consecutive?	Data w no date?
	Feb-08	-1	-1	-1
	Apr-08	-1	-1	-1
Checks include	May-08	-1	-1	-1
a test for	Jun-08	-1	-1	-1
consecutive	Jul-08	-1	-1	-1
dates and text.	Aug-08	-1	-1	-1
	Sep-08	-1	-1	-1
Minus one (-1)	Oct-08	-1	-1	-1
shown if no	Nov-08	-1	-1	-1
error.	Dec-08	-1	-1	-1
	Date Error?	no error	no error	no error

Mann Kendall S Values		
Values of n	Smax@0.2	Smax@0.1
4	-4	-6
5	-5	-7
6	-6	-8
7	-7	-10
8	-8	-11
9	-10	-14
10	-11	-16

TEST FOR	Number of Rounds	SCHWARTZ	0	0	0	0	0
INCREASING	4						
OR	5						
DECREASING	6						
TREND @ 80%	7						
	8						
If +1, increasing	9						
If -1, decreasing	10	1					
If 0, neither.		Increasing	Neither	Neither	Neither	Neither	Neither

TEST FOR	Number of Rounds	SCHWARTZ	0	0	0	0	0
INCREASING	4						
OR	5						
DECREASING	6						
TREND @ 90%	7						
	8						
If +1, increasing	9						
If -1, decreasing	10	0					
If 0, neither.		Neither	Neither	Neither	Neither	Neither	Neither

ATTACHMENT
MANN-KENDALL TREND ANALYSIS

Blebee Mitigation Order - Sulfate Trend Analysis									Well:	SCHWARTZ
Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	
158	122	130	129	245	131	124	135	140	144	Sum Rows
	-1	-1	-1	1	-1	-1	-1	-1	-1	-7
		1	1	1	1	1	1	1	1	8
			-1	1	1	-1	1	1	1	3
				1	1	-1	1	1	1	4
					-1	-1	-1	-1	-1	-5
						-1	1	1	1	2
							1	1	1	3
								1	1	2
									1	1
								Mann Kendall Statistic (S) =		11

APPENDIX D

ADWR IMAGED RECORDS FOR AREA WELLS

ARIZONA DEPARTMENT OF WATER RESOURCES
Information Management Unit
P.O. Box 458, Phoenix, Arizona 85001-0458
(602) 771-8527 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

ENTERED AUG 16 2007 MO

RECEIVED JUL 26 2007 INFO MGMT

This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

FILE NUMBER: D(23-23) 36 DBB
WELL REGISTRATION NUMBER: 55- 214612
PERMIT NUMBER (IF ISSUED):

SECTION 1. DRILLING AUTHORIZATION

Mail To:

Drilling Firm

NAME	DWR LICENSE NUMBER
BRADLY DRILLING	736
ADDRESS: 562 E. HWY 82	TELEPHONE NUMBER: 520-456-2355
CITY/STATE/ZIP: HUACHUCA CITY, AZ 85616	FAX

SECTION 2. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: RANDAL ACKER
MAILING ADDRESS: P O BOX 283
CITY / STATE / ZIP: NEW GLARUS, WI 53574
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-227-2540
FAX:
WELL NAME (e.g., MW-1, PZ-3, Lot 25 Well, Smith Well, etc.):

Location of Well

WELL LOCATION ADDRESS (IF ANY):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
23	23	36	SE 1/4	NW 1/4	NW 1/4

LATITUDE Degrees	Minutes	Seconds "N	LONGITUDE Degrees	Minutes	Seconds "W
°	'		°	'	

METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☐ *GPS: Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Survey-Grade

LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level

METHOD OF ELEVATION (CHECK ONE): ☐ *GPS: Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Survey-Grade

*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE): ☐ NAD-83 ☐ Other (please specify):

COUNTY: Cochise

ASSESSOR'S PARCEL ID NUMBER: BOOK 102 | MAP 59 | PARCEL 009

SECTION 3. WELL CONSTRUCTION DETAILS

Drill Method (CHECK ONE)

- ☒ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development (CHECK ONE)

- ☒ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Method of Sealing at Reduction Points (CHECK ONE)

- ☐ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☒ Other (please specify) NATIVE

Condition of Well (CHECK ONE)

- ☒ Capped
- ☐ Pump Installed

Construction Dates

DATE WELL CONSTRUCTION STARTED: 6-4-07
DATE WELL CONSTRUCTION COMPLETED: 6-8-07

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM: Bradly Drilling | SIGNATURE OF QUALIFYING PARTY | DATE: 6-15-07

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 214612

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

DEPTH OF BORING	DEPTH OF COMPLETED WELL
905 Feet Below Land Surface	905 Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
140' Feet Below Land Surface	6-8-07	3:00 PM	☐ Valve ☐ Other:

Borehole			Installed Casing														
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (X)				PERFORATION TYPE (X)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	12¼	0	20	8⅝	X				X						
20	905	8"	10	860	6.5		X			X						
			860	905	6.5		X							X		⅛

Installed Annular Material

DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)								FILTER PACK		
						BENTONITE						
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	GROUT	CHIPS	PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	20		X									
20	905						NATIVE					

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 214612

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	2	Top Soil	
2	42	Clay + Boulders	
42	400	Clay + Gravel	
400	750'	Decomposed Granite	
750	770	Clay	
770	778'	Gravel & Sand	X
778	825'	Rock	
825	905	Decomposed Granit	

ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

3550 N. Central Avenue
Phoenix, Arizona 85012

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-214612

AUTHORIZED DRILLER: BRADLY DRILLING LICENSE NO: 736

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: RANDAL ACKER P O BOX 283 NEW GLARUS, WI 53574

THE WELL(S) IS/ARE TO BE LOCATED IN THE:
NW ¼ OF THE NW ¼ OF THE SE ¼ SECTION 36 TOWNSHIP 23 SOUTH RANGE 23 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 102-59-009

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 25TH DAY OF FEBRUARY, 2008

WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue, Phoenix, Arizona 85012
Telephone (602) 771-8500
Fax (602) 771-8691

February 27, 2007

Janet Napolitano
Governor

Herbert R. Guenther
Director

RANDAL ACKER
P O BOX 283
NEW GLARUS, WI 53574

Registration No. 55-214612
File No. D(23-23) 36 DBB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well that you recently filed with this Department pursuant to A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed or otherwise provided a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card, which must be displayed on the drill rig during drilling.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the proposed well, you may not proceed with drilling until you file an amended NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the amended NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DWR form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed is a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55) within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at <http://www.water.az.gov/adwr/content/forms/default.htm#NOI>.

Sincerely,

Monica Phillips

Monica Phillips
NOI Unit
Water Management Support Section

Enclosures

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Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 771-8500 • (800) 352-8488
(602) 771-8691 fax • www.azwater.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well
(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

PAID 2-17-07 REC # 3889911

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA	B	SD
—	7C	
RECEIVED DATE	WS	
2/26/07	11	
ISSUED DATE	WQARF	CERCLA
3/21/07	—	

FILE NUMBER: D(23-23)36DBB
WELL REGISTRATION NUMBER: 55-214612

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

- [X] County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
  - [X] Field Inspection Performed
  - [ ] Site Plan Review Only
- [ ] Insufficient Information to Make a Determination

APPROVED BY COCHISE COUNTY Official Seal or Stamp
ENVIRONMENTAL HEALTH DIVISION
DATE Jan 31 2007
BY Carlos Diaz R.S.

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: Carlos Diaz R.S.
TELEPHONE NUMBER: 520-432-9462
DATE: Jan 31, 2007
COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz R.S.

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

- [X] Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) *(See instructions.)*
- [ ] Non-Exempt (Pump has a maximum capacity of more than 35 gpm and the well is located outside an AMA.) *(See instructions.)*

DESIGN PUMP CAPACITY: 20 Gallons Per Minute

Proposed Action

CHECK ONE

- [X] Drill New Well
- [ ] Deepen
- [ ] Replace
- [ ] Modify

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If Deepening, Replacing or Modifying:
ORIGINAL WELL REGISTRATION NUMBER: 55-
MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute
DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
23	23	36	SE ¼	NW ¼	NW ¼ SE

COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 102 MAP 59 PARCEL 009-04

OF ACRES

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: RANDY ACKER
MAILING ADDRESS: PO BOX 283
CITY / STATE / ZIP CODE: NEW GLARUS WI 53574
CONTACT PERSON NAME AND TITLE: ANDREW Crowell Agent
TELEPHONE NUMBER: 520 227 2540
FAX:

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: RANDY ACKER
MAILING ADDRESS: PO BOX 283
CITY / STATE / ZIP CODE: NEW GLARUS WI 53574
CONTACT PERSON NAME AND TITLE: ANDREW Crowell Agent
TELEPHONE NUMBER: 520 227 2540
FAX:

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well (e.g., Lot 35 Well, Smith Well, etc.)?		X	PLEASE STATE
3. Is the proposed well a NEW well to be located within an Active Management Area? *(See instructions)*		X	Unless the well is a replacement well and the total number of operable exempt wells on the land is not increasing, you must also file a supplemental form A.R.S. § 45-454(C) & (D).
4. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55- 214612

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: Brady Drilling
DWR LICENSE NUMBER: 736
ROC LICENSE CATEGORY: C-53
TELEPHONE NUMBER: 520 456 2355
FAX: 520 456 0217
MAILING ADDRESS: PO Box 4707
CITY / STATE / ZIP CODE: Huachuca City AZ 85616
DATE CONSTRUCTION IS TO BEGIN: FEB 2007

SECTION 6. WATER / SITE INFORMATION

Principal Use of Water (CHECK ONE)	Other Uses of Water (CHECK ALL THAT APPLY)
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☒ Domestic	☐ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other (please specify):	☐ Other (please specify):

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SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

Borehole: DEPTH FROM SURFACE FROM (feet)	Borehole: DEPTH FROM SURFACE TO (feet)	Borehole: BOREHOLE DIAMETER (inches)	Casing: DEPTH FROM SURFACE FROM (feet)	Casing: DEPTH FROM SURFACE TO (feet)	Casing: OUTER DIAMETER (inches)	Casing: MATERIAL TYPE (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	Casing: PERFORATION TYPE (T) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	20	12¼	0	20	8⅝	X*				X						Cement
20	600	8"	10	560	6		X			X						
			560	600	6		X							X		

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WATER MGMT

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: RANDAL R. ACKER

SIGNATURE OF WELL OWNER: (2-22-07) DATE: 1-12-07

SIGNATURE OF LANDOWNER, IF APPLICABLE (SEE INSTRUCTIONS): (2-22-07) DATE: 1-12-07

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 214d2

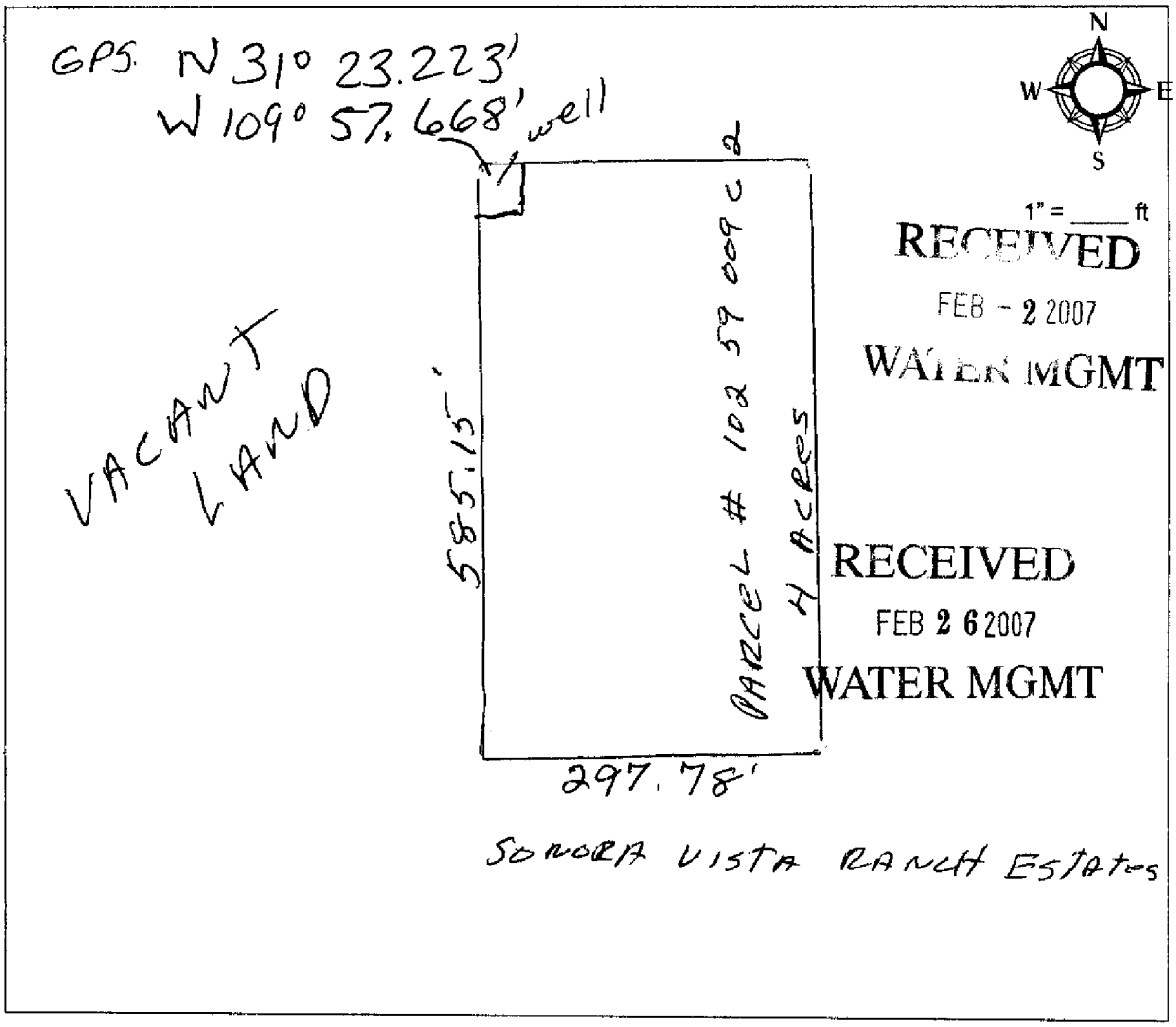
CHECK ONE: ☒ FILING MANUALLY
☐ FILING ELECTRONICALLY* *DRILLER'S E-MAIL ADDRESS:

*COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL CODE	COUNTY APPROVAL CODE
If applicant is filing this NOI electronically via the ADWR website and County approval is required, please indicate approval by providing a County Approval Code.	

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
Randy Acker	102	59	009 C2

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



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FEB 26 2007
WATER MGMT

COUNTY OR LOCAL AUTHORITY NAME AND TITLE	APPROVED BY COUNTY OR LOCAL HEALTH AUTHORITY
Carlos Diaz R.S.	ENVIRONMENTAL HEALTH DIVISION
COUNTY OR LOCAL AUTHORITY SIGNATURE	DATE Jan 31 2007
Carlos Diaz R.S.	BY Carlos Diaz R.S.
TELEPHONE NUMBER: 520-432-9442 DATE: Jan 31 2007	Official County or Local Seal or Stamp

ARIZONA DEPARTMENT OF WATER RESOURCES
Water Management Support Section – NOI Unit
3550 N Central Ave, Phoenix, AZ 85012
Telephone (602) 771-8500
Fax (602) 771-8691

JANET NAPOLITANO
Governor

HERB GUENTHER
Director

FEBRUARY 9, 2007

PLEASE RETURN ALL PAPERS

RANDAL ACKER
P O BOX 283
NEW GLARUS WI 53574

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FEB 2 6 2007
WATER MGMT

Re: Well Registry Number: 55-214612
File (Location) Number: D (23-23) 36 DBB

Dear Applicant:

The Department of Water Resources recently received your Notice of Intent (NOI) to Drill, Deepen, Replace or Modify a Well. However, our review indicates that the NOI is incomplete under the Groundwater Management Act for the following reason(s):

- **YOUR APPLICATION WAS SUBMITTED WITHOUT YOUR ORIGINAL SIGNATURE. PLEASE SIGN THE SECOND PAGE JUST BELOW SECTION 7 AND RETURN ALL COPIES. WE DO NOT ACCEPT COPIED OR FAXED SIGNATURES.**

PLEASE CALL MONICA PHILLIPS AT 602-771-8641 WITH ANY QUESTIONS.

In accordance with Arizona Revised Statutes (A.R.S.) § 45-596, Paragraph D, the Department is mailing this "statement of determination" as a request for information necessary to make the NOI complete and correct. Please provide the Department with the additional information and resubmit the corrected NOI form and any attachments (if applicable) to ADWR. The Department's substantive review time frame is suspended until all requested information is provided. If the Department does not receive the necessary information within sixty (60) days, the application may be denied. You would then have to re-initiate the NOI process and pay a new filing fee to receive a drilling authority for this location.

ATTACH THIS NOTICE WHEN RESUBMITTING THE COMPLETED NOI AND RETURN TO:

WATER MANAGEMENT SUPPORT SECTION

Printed: 2/2/2007 1:26:10 PM

21462

Store 0010
Sale Receipt #
2/2/2007
Page 1

Arizona Department of Water Resources

3550 N Central Ave
Phoenix AZ 85012

Date: 2/2/2007
Cashier: WRPAB
Type: Mail

ANDREW D. CROWELL
428 E. CAMINO DE PAMPAS
HUACHUCA CITY,AZ 85616
520-456-8956

DCS/INV#	DESCRIPTION		ATTR	SIZE	QTY	PRICE	EXT PRICE
F 72	4439-06	NOTICE OF INTENT TO DRILL WELL			1	100.00	100.00
				1 Unit(s)		Subtotal:	100.00
						RECEIPT TOTAL:	**100.00**
						Tendered:	100.00

Check #: 100.00 # 5652

RANDY ACKER
WELL OWNER

RECEIVED
FEB 26 2007
WATER MGMT

RECEIVED
FEB - 2 2007
WATER MGMT

We Appreciate Your Business!

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

JUL 1982 DEPARTMENT OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

))

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55-650255-L
FILE NO. D(24-24) 18 ddd
FILED 7-12-82 (DATE) AT (TIME)
INA
AMA

1. Name of Registrant:
MARIA JESUS ALVAREZ
104 D. ST. (Address) mailing: P.O. Box 581 NACO (City) AZ (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law: NEVER REGISTERED.
NONE (File Number) 35- (Control Number)

3. a. The well is located within the SE ¼ SE ¼ SE ¼, Section 18, of Township 24 N(S) Range 24 E(W), G & SRB & M, in the County of Cochise. — UNKNOWN.

b. If in a subdivision: Name of subdivision NACO TOWNSITES 102-57-598 NACO Lot No. 305, Address 104 D. ST. NACO, AZ 85620.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
IRRIGATION.

5. If for irrigation use, number of acres irrigated from well NONE - ~~[illegible]~~.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 160 feet
b. Diameter of casing 6 inches
c. Depth of casing 100 feet
d. Type of casing STEEL.
e. Maximum pump capacity — gallons per minute.
f. Depth to water 120 feet below land surface.
g. Date well completed (Month) (Day) 1938 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
NACO TOWNSITES, NACO LOT # 305, 104 D. ST, NACO, AZ 85620
Attach additional sheet if necessary.

9. DATE 7/8/82 SIGNATURE OF REGISTRANT Maria Jesus Alvarez

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED
JUN 9 1982
DEPT. OF
WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	X
NON-EXEMPT WELL — $10.00	

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 613396
FILE NO. D(24-24)18aaa
FILED 6-9-82 (DATE) AT 4— (TIME)
INA —
AMA —

1. Name of Registrant:
Shamrell, Richard
Box 4055 (Address) Bisbee (City) Az. (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ NE ¼ NE ¼, Section 18, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
domestic.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box X
_____
_____ (Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 236 feet
b. Diameter of casing 8 inches
c. Depth of casing 110 feet
d. Type of casing steel .
e. Maximum pump capacity 20 gallons per minute.
f. Depth to water 126 feet below land surface.
g. Date well completed _____ (Month) _____ (Day) 1954 (Year)

8. The place(s) of use of water. If same as Item 3, check this box X.
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
Attach additional sheet if necessary.

9. DATE 6/3/82 SIGNATURE OF REGISTRANT Richard Shamrell
By Wilford R. Richardson
Wilford R. Richardson, Attorney

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED MAY 18 1982 DEPT OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

FOR OFFICE USE ONLY	
REGISTRATION NO. 55-	616775
FILE NO.	D(24-24)18a
FILED (DATE)	5-18-82
AT (TIME)	9am
INA	—
AMA	—

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

1. Name of Registrant:
MARY JANE NEWELL ANDERSON
768 Calle Del Ensalmo (Address) Green Valley (City) AZ (State) 85614 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within ~~the~~ Lot 36, Block 76, Townsite of Naco, Arizona, being part ~~of~~ ~~¼~~ ~~the~~ ~~¼~~ NE ¼, Section ~~8~~ 18 ~~&xx19~~, of Township 24 S N/S, Range 24 E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Townsite of Naco, Lot No. 36 / Block 76, Address Naco, Arizona.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation and domestic.

5. If for irrigation use, number of acres irrigated from well Unknown.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)

RECEIVED AUG 5 1982 DEPT. OF WATER RESOURCES

a.	Depth of Well	N/A	feet
b.	Diameter of casing	N/A	inches
c.	Depth of casing	N/A	feet
d.	Type of casing	N/A	.
e.	Maximum pump capacity	N/A	gallons per minute.
f.	Depth to water	N/A	feet below land surface.
g.	Date well completed (Month) (Day) (Year)	N/A	.

8. The place(s) of use of water. If same as Item 3, check this box ☐.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Bisbee Country Club (sometimes known as Warren District Country Club)
Attach additional sheet if necessary.

9. DATE 5/17/82 SIGNATURE OF REGISTRANT Mary Jane Newell Anderson

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Mary Jane Newell Anderson
768 Calle Del Ensalmo
Green Valley AZ 85614

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	616775
	THRU
55	616776

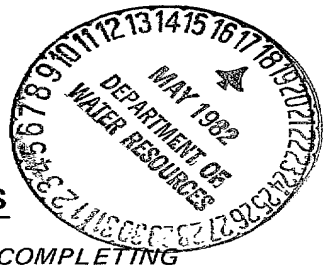
ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing Wells	10.00	20.00
					File No. D(24-24)18c and D(24-24)18a		
						WAITER PAYMENT	
						GUESTS 2	
						CHK NO 2385	
						2@ 10.00	
						55-1 20.00	
						TAX 0.00	
						TOTL 20.00	
						GEN.CHEK 20.00	

Check No. 2385
8-17-82 im

TOTAL $ 20.00

MICROFILMED

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 616776
FILE NO. D(24-24)18 c
FILED 5-18-82 (DATE) AT 9 am (TIME)
INA —
AMA —

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 ☒

1. Name of Registrant:
MARY JANE NEWELL ANDERSON
768 Calle Del Ensalmo (Address) Green Valley (City) AZ (State) 85614 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

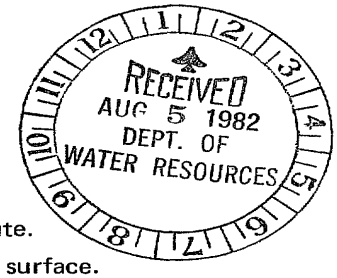
3. a. The well is located within ~~the~~ Lot 10, Block 35, Townsite of Naco, Arizona, being part of ~~¼x~~ the ¼ SW ¼, Section ~~18 &xx19~~ 18, of Township 24 S N/S, Range 24 E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Townsite of Naco, Block 35
Lot No. 10 /, Address Naco, Arizona.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic.

5. If for irrigation use, number of acres irrigated from well Approximately 5 acres

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)



7. Well data (If data not available, write N/A)
a. Depth of Well N/A feet
b. Diameter of casing N/A inches
c. Depth of casing N/A feet
d. Type of casing N/A .
e. Maximum pump capacity N/A gallons per minute.
f. Depth to water Approximately 200 feet below land surface.
g. Date well completed Jan. (Month) (Day) 1916 (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☐.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Newell Camp, Naco, Arizona
Attach additional sheet if necessary.

9. DATE 5/17/82 SIGNATURE OF REGISTRANT Mary Jane Newell Anderson

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

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4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

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2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Mary Jane Newell Anderson
768 Calle Del Ensalmo
Green Valley AZ 85614

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	616775
	THRU
55	616776

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing Wells	10.00	20.00
					File No. D(24-24)18c and D(24-24)18a		

WAITER PAYMENT
GUESTS 2
CHK NO 2385
2@ 10.00
55-I 20.00
TAX 0.00
TOTL 20.00
GEN.CHEK 20.00

~~# 1275 A 10:30~~

Check No. 2385
8-17-82 im

TOTAL $ 20.00

05-895
Miller, C. G.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	[X]
NON-EXEMPT WELL — $10.00	[ ]

11
FOR OFFICE USE ONLY
REGISTRATION NO. 55- 616436
FILE NO. 10(24-24)8 CBA
FILED 6/14/82 (DATE) AT 4:35p (TIME)
INA
AMA

1. Name of Registrant:
THE STATE OF ARIZONA - STATE LAND DEPARTMENT
1624 W. ADAMS (Address) PHOENIX (City) ARIZONA (State) 85007 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ NW ¼ SW ¼, Section 8, of Township 24S [redacted] Range 24E [redacted] G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Stockwater - Wildlife.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box [X]
NOT APPLICABLE
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 150 feet
b. Diameter of casing N/A inches
c. Depth of casing N/A feet
d. Type of casing N/A .
e. Maximum pump capacity N/A gallons per minute.
f. Depth to water 110 feet below land surface.
g. Date well completed July (Month) 15, (Day) 1920 (Year) .

8. The place(s) of use of water. If same as Item 3, check this box [X].
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE June 14, 1982 SIGNATURE OF REGISTRANT for STATE LAND COMMISSIONER

MICROFILMED

SUPERSEDED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

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INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Well #2 - Bisbee
D(24-23) 13-2

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED
APR 2 1982
DEP'T. OF
WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 616586
FILE NO. D(24-23)13 abc
FILED 4-2-82 (DATE) AT (TIME)
INA —
AMA —

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 ☒

1. Name of Registrant:
ARIZONA WATER COMPANY
2612 N. 16th St., P. O. Box 5396, Phoenix, Arizona 85010
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
None (File Number) 35- None (Control Number)

3. a. The well is located within the SW ¼ NW ¼ NE ¼, Section 13, of Township 24S N/S, Range 23E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision N/A, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic - municipal - industrial.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 333 feet
b. Diameter of casing 20 inches
c. Depth of casing 333 feet
d. Type of casing welded steel .
e. Maximum pump capacity 600 gallons per minute.
f. Depth to water 100 feet below land surface.
g. Date well completed _____ (Month) _____ (Day) 1955 (Year)

8. The place(s) of use of water. If same as Item 3, check this box ☐.
_____¼ _____¼ _____¼, Section _____ Township 23S Range 24E
_____¼ _____¼ _____¼, Section _____ Township 24S Range 24E
Township 24S, Range 23E
Attach additional sheet if necessary.

9. DATE 4-2-82 SIGNATURE OF REGISTRANT ARIZONA WATER COMPANY By: [signature]
Chief Engineer

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

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2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

ARIZONA WATER CO
2612 N 16th ST
PO BOX 5396
PHOENIX AZ 85010

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	616581
	THRU
	616694

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing Wells	10.00	1,140.00
					114 wells		
					File No's.: A(8-23)5dcd		
					A(1-7)26adb		
					A(1-8)30dcc		
					A(1-7)26aac and other various		
					D(7-5)9ccc		
					D(6-6)9bbd		
					D(6-6)21bbc		
					D(6-6)9bdd and various others		

WAITER PAYMENT
GUESTS 114
CHK NO 42039
55-I 1140.00
TAX 0.00
TOTL 1140.00
GEN.CHEK 1140.00

904 A 8:16-

Check No. 42039
8-5-82 im

TOTAL $ 1,140.00

MICROFILMED

Well #3 - Bisbee
Naco
D(24-23) 13-3

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED
APR 2 1982
DEP'T. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 616585
FILE NO. D(24-23)13 abd
FILED 4-2-82 (DATE) AT (TIME)
INA —
AMA —

1. Name of Registrant:
ARIZONA WATER COMPANY
2612 N. 16th St., P. O. Box 5396, Phoenix, Arizona 85010
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
None (File Number) 35- None (Control Number)

3. a. The well is located within the SE ¼ NW ¼ NE ¼, Section 13, of Township 24S N/S, Range 23E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision N/A, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic - municipal - industrial.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 270 feet
b. Diameter of casing 16 inches
c. Depth of casing 269 feet
d. Type of casing slotted steel .
e. Maximum pump capacity 850 gallons per minute.
f. Depth to water 108 feet below land surface.
g. Date well completed 7 (Month) 20 (Day) 1956 (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☐.
_____¼ _____¼ _____¼, Section _____ Township 23S Range 24E
_____¼ _____¼ _____¼, Section _____ Township 24S Range 24E
Township 24S, Range 23E
Attach additional sheet if necessary.

9. DATE 4-2-82 SIGNATURE OF REGISTRANT ARIZONA WATER COMPANY By: [signature]
Chief Engineer

MICROFILMED

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3. a. Fill in the Section, Township and Range in all cases if it is available.
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ARIZONA WATER CO
2612 N 16th ST
PO BOX 5396
PHOENIX AZ 85010

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	616581
	THRU
	616694

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing Wells	10.00	1,140.00
					114 wells		
					File No's.: A(8-23)5dcd	WATER PAYMENT	
					A(1-7)26adb	GUESTS 114	
					A(1-8)30dcc	CHK NO 42039	
					A(1-7)26aac and other various	55-I 1140.00	
					D(7-5)9ccc	TAX 0.00	
					D(6-6)9bbd	TOTL 1140.00	
					D(6-6)21bbc	GEN.CHEK 1140.00	
					D(6-6)9bdd and various others	# 904 A 8:16-	

Check No. 42039
8-5-82 im

TOTAL $ 1,140.00

MICROFILMED

Well #4 - Bisbee
D(24-23) 13-4

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED
APR 2 1982
DEP'T. OF
WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 616584
FILE NO. D(24-23)13 abc
FILED 4-2-82 (DATE) AT (TIME)
INA —
AMA —

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 ☒

1. Name of Registrant:
ARIZONA WATER COMPANY
2612 N. 16th St., P. O. Box 5396, Phoenix, Arizona 85010
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
None (File Number) 35- None (Control Number)

3. a. The well is located within the SW ¼ NW ¼ NE ¼, Section 13, of Township 24S N/S, Range 23E E/W, G & SRB & M, in the County of Cochise.
b. If in a subdivision: Name of subdivision N/A, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic - municipal - industrial.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 337 feet
b. Diameter of casing 16 inches
c. Depth of casing N/A feet
d. Type of casing N/A .
e. Maximum pump capacity 1,400 gallons per minute.
f. Depth to water 337 feet below land surface.
g. Date well completed _____ (Month) _____ (Day) 1959 (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☐.
_____ ¼ _____ ¼ _____ ¼, Section _____ Township 23S Range 24E
_____ ¼ _____ ¼ _____ ¼, Section _____ Township 24S Range 24E
Township 24S, Range 23E
Attach additional sheet if necessary.

9. DATE 4-2-82 SIGNATURE OF REGISTRANT ARIZONA WATER COMPANY By: _____
Chief Engineer

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

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2612 N 16th ST
PO BOX 5396
PHOENIX AZ 85010

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	616581
	THRU
	616694

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing Wells	10.00	1,140.00
					114 wells		
					File No's.: A(8-23)5dcd		
					A(1-7)26adb		
					A(1-8)30dcc		
					A(1-7)26aac and other various		
					D(7-5)9ccc		
					D(6-6)9bbd		
					D(6-6)21bbc		
					D(6-6)9bdd and various others		

~~WAITER PAYMENT~~
GUESTS 114
CHK NO 42039
55-I 1140.00
TAX 0.00
TOTL 1140.00
GEN.CHEK 1140.00

904 A 8:16-

Check No. 42039
8-5-82 im

TOTAL $ 1,140.00

Arizona Department of Water Resources
Records Management Section
500 N. 3rd Street • Phoenix, Arizona 85004
(602) 417-2405 • (800) 352-8488
www.water.az.gov

Pump Installation Completion Report

RECEIVED
APR 2 9 2003
Information Management

- Review instructions prior to completing form.
- The registered well owner should file this report with the Department within 30 days following installation of pump equipment.

FILE NUMBER
WELL REGISTRATION NUMBER
55 - 590620

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
Arizona Water Company

MAILING ADDRESS
P.O. Box 29006

CITY / STATE / ZIP CODE
Phoenix, AZ 85038-9006

CONTACT PERSON NAME AND TITLE
Michael J. Whitehead, Vice President - Engineering

TELEPHONE NUMBER
602-240-6860

FAX
602-240-6878

Location of Well

WELL LOCATION ADDRESS (IF ANY)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S.	23E.	13	NE ¼	NW ¼	SE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
102	34	5

COUNTY WHERE WELL IS LOCATED
Cochise

SECTION 2. EQUIPMENT INSTALLED

DATE PUMP INSTALLED
11/15/2002

Pump Type
CHECK ONE

- ☐ Air Lift
- ☐ Bucket
- ☐ Centrifugal
- ☐ Jet
- ☐ Piston
- ☐ Rotary
- ☐ Submersible
- ☒ Turbine
- ☐ Other (*please specify*):

Power Type
CHECK ONE

- ☐ Diesel Engine
- ☒ Electric Motor
- ☐ Gasoline Engine
- ☐ Hand
- ☐ Natural Gas
- ☐ Windmill
- ☐ Other (*please specify*):

RATED PUMP CAPACITY
600 Gallons Per Minute

HORSE POWER RATING OF MOTOR
100-HP

SECTION 3. WELL TEST

Pump Test Data

DATE WELL TESTED
See attacged pump test results

STATIC WATER LEVEL (A)
Feet Below Land Surface

PUMPING WATER LEVEL (B)
Feet Below Land Surface

DRAWDOWN [(B) – (A)]
Feet Below Land Surface

TEST PUMPING RATE
Gallons Per Minute

DURATION OF PUMP TEST (Minimum 4 Hours)
Hours

TOTAL PUMPING LIFT
Feet

FOR FLOWING WELL, MEASURED SHUT IN HEAD ☐ FT ☐ PSI

Method of Discharge Measurement

CHECK ONE

- ☐ Bailer
- ☐ Bucket – Barrel – Stopwatch
- ☐ Current
- ☐ Estimated – Air Lift
- ☐ Gauge
- ☐ Meter
- ☒ Orifice
- ☐ Volume
- ☐ Weir – Flume
- ☐ Other (*please specify*):

Method of Measuring Water Level

CHECK ONE

- ☐ Air Line
- ☒ Electric Measuring Line (Sounder)
- ☐ Steel Tape
- ☐ Other (*please specify*):

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief according to A.R.S. § 45-600(B).

SIGNATURE OF WELL OWNER: Michael J. Whitehead

DATE: 4-23-2003

Mo Weber Group Inc.
16825 South Weber Drive • Chandler, Arizona 85226-4112 • 602/961-1141 • FAX 602/961-0290 Test Eng. T-14/E-4

10" Pipe X 6" orifice
P.D. 840'

STEPS. 500, 600, 700, 800, 900, & [illegible]
750, 850, & 1100 G.P.M.

TEST PUMP RESULTS

CUSTOMER Az. Beeman Az. Water, Bisbee, Well #5 DATE 7-31-02

STATIC WATER LEVEL 120.29' STEP Test JOB NO. 02-4158

TIME	INCHES ORIFICE PRESSURE	PUMPING LEVEL	DRAW DOWN	GPM	SPECIFIC YIELD	REMARKS
13:00	12.75"	198.23	77.94	502	6.4408	Check fuel – 4" R.P.M. 875 O.P. 21 W.T. 171°
13:30	12.5"	199.82	79.53	497	6.2492	↑ Same
* 14:00	12.25"	200.95	80.66	493	6.1120	Received Fuel – 795.3 GALS. R.P.M. 875 O.P. 21 W.T. 171° *
14:30	12.25"	202.44	82.15	493	6.0012	↑ Same
II 14:45	28.5"			751		Q↑ to 1100 R.P.M.
15:00	28"	256.88	136.59	744	5.4469	R.P.M. 1100 O.P. 24 W.T. 172°
15:15	27.5"	260.56	140.27	738	5.2612	↑ Same
15:20	28.75"			755		Q↑ to 1125 R.P.M.
15:30	28.5"	269.05	148.76	751	5.0484	Clean – Clear Water R.P.M. 1125 O.P. 30 W.T. 172°
15:45	28.25"	272.1	151.81	748	4.9272	↑ Same
16:02	28"	274.5	154.21	744	4.8245	↑ Same
16:15	28"	276.69	156.4	744	4.7570	↑ Same
16:30	27.5"	278.99	158.5	738	4.6561	↑ Same
17:00	27"	282.32	162.03	731	4.5115	↑ Same
17:06	30"			771		Q↑ to 1150 R.P.M.
17:15	29.75"	295.63	175.34	767	4.3743	Clean – Clear Water R.P.M. 1150 O.P. 32 W.T. 174°
17:30	29.5"	299.28	178.99	764	4.2683	↑ Same
17:45	29.5"	301.35	181.06	764	4.2195	↑ Same
18:00	29.5"	303.33	183.04	764	4.1739	↑ Same
III 18:03	36.5"			850		Clean – Clear Water Q↑ to 1250 R.P.M.
18:15	36.5"	329.1	208.81	850	4.0706	R.P.M. 1250 O.P. 34 W.T. 172°
18:30	36.5"	332.88	212.59	850	3.9983	↑ Same / Rossum – Trace only
19:00	36"	339.2	218.91	844	3.8554	R.P.M. 1250 O.P. 34 W.T. 172°
19:30	35.5"	344.29	224.0	838	3.7410	↑ Same

WP111

Moyvebor Group Inc.
16825 South Weber Drive • Chandler, Arizona 85226-4112 • 602/961-1141 • FAX 602/961-0290

10" Pipe x 6" Orifice
P.D. 840'

Test Eng. T-14/E-4
STEPS: 500, 750, 850, & 1100 G.P.m

TEST PUMP RESULTS

CUSTOMER Az. Beeman, Az Water, Bisbee, Well #5 DATE 7-31-02

STATIC WATER LEVEL 120.29 STEP TEST JOB NO. 02-4158

TIME	INCHES ORIFICE PRESSURE	PUMPING LEVEL	DRAW DOWN	GPM	SPECIFIC YIELD	REMARKS
20:00	35"	348.86	228.57	832	3.6400	R.P.m. 1250 O.P. 34 W.T. 172°
20:30	35"	360.0	239.71	832	3.4708	
21:00	34.5"	364.43	244.14	826	3.3833	
21:10	62"			1108		Q↑ to 1550 R.P.m.
21:30	62"	493.17	372.88	1108	2.9714	Clean water with A lot of Air R.P.m. 1550 O.P. 35 W.T. 175°
22:00	62"	504.51	384.22	1108	2.8837	↑ Same / Discharge Blowing A lot of Air
22:30	62"	514.11	393.82	1108	2.8134	↑ Same
23:00	62"	514.93	394.64	1108	2.8076	↑ Same
23:30	62"	518.22	397.93	1108	2.7844	↑ Same
23:55	62"	522.57	402.28	1108	2.7543	↑ Same
00:00 24:00						Pump off
00:30 24:30						TEST Eng. off

NP111

The Weber Group Inc.
16825 South Weber Drive • Chandler, Arizona 85226-4112 • 602/961-1141 • FAX 602/961-0290

TEST PUMP RESULTS

CUSTOMER AZ. WATER Co. Recovery after STEP TEST DATE 8-1-02

JOB NO. well #5 NACO

STATIC WATER LEVEL

TIME	INCHES ORIFICE PRESSURE	PUMPING LEVEL	DRAW DOWN	GPM	SPECIFIC YIELD	REMARKS
12:04		290				
12:05		257.62				
12:06		257.3				
12:07		251.91				
12:09		248.53				
12:10		243.4				
12:15		235.0				
12:20		229.38				
12:25		227.0				
12:30		223.18				
12:35		220.75				
12:40		218.9				
12:45		217.05				
12:50		214.9				
12:55		211.9				
1:00		209.13				
1:10		207.17	(Actually 5 min new watch)			
1:20		202.63				
1:30		197.34				
1:40		195.79				
1:50		192.55				
2:00		188.71				
2:15		186.23				
2:30		183.03				

RECEIVED
AUG 0 2 2002
ARIZONA WATER COMPANY
PHOENIX - ENGINEERING

NP111

The Weber Group Inc.
16825 South Weber Drive • Chandler, Arizona 85226-4112 • 602/961-1141 • FAX 602/961-0290

TEST PUMP RESULTS

CUSTOMER AZ Water Co. Recovery After Step Test. DATE 8-1-02

JOB NO. Well #5 NACO

STATIC WATER LEVEL

TIME	INCHES ORIFICE PRESSURE	PUMPING LEVEL	DRAW DOWN	GPM	SPECIFIC YIELD	REMARKS
2:45		176.18				
3:00		175.5				
3:15		174.18				
3:30		171.78				
3:45		169.21				
4:00		167.49				
5:55		154'-8"				
6:30		152'-5"				
7:00		148'-10"				
8:05		145'-10"				
9:10		142'-7"				
10:04		140'-10"				
11:15		137'-11"				
12:53		135'-6"				
13:28		134'-7"				

16825 South Weber Drive • Chandler, Arizona 85226-4112 • 602/961-1141 • FAX 602/961-0290

TEST PUMP RESULTS

CUSTOMER ARIZONA WATER CO. DATE 8-15-02

STATIC WATER LEVEL 111.5" JOB NO. NACO well #5

TIME	INCHES ORIFICE PRESSURE	PUMPING LEVEL	DRAW DOWN	GPM	SPECIFIC YIELD	REMARKS
	Top of Bowls		503' 508 FT	800		
			517' intake			
		111.5"				RECEIVED AUG 16 2002 ARIZONA WATER COMPANY PHOENIX - ENGINEERING
11:36		160.0				
11:41		202.0		800		
11:48		212.0				
11:54		216.0				Re-adjust RPM
12:00		216.0				water clear 1100 RPM
12:05		222.0				
12:18		226.0				
12:25		226.0				
12:30		229.11"				RPM 1100 water clear
12:36		230				
12:41		231.9"				
12:46		232.6"				
12:51		236.9½"				32½" - 33½"
12:56		238.8½"				
1:01		239.8"				
1:07		240.9"				
1:12		241.10"				32" - 33"
1:17		242.8"				
1:22		243.6"				Cl2-0 Turbidity 5.7 PH-7.3
1:27		244				32" - 32½"
1:32		245				
1:37		245.9½"				

NP111

16825 South Weber Drive • Chandler, Arizona 85226-4112 • 602/961-1141 • FAX 602/961-0290

10" Pipe x 6" Orifice
P.D. 840'

TEST PUMP RESULTS TESTING T. W/S. #1

8 HRS.

CUSTOMER AZ. Beeman, AZ. Water Bisbee, Well #5 DATE 7-30-02

STATIC WATER LEVEL 113.7' Developing Well JOB NO. 02-4158

TIME	INCHES ORIFICE PRESSURE	PUMPING LEVEL	DRAW DOWN	GPM	SPECIFIC YIELD	REMARKS
						FILL 5 Mk. TANKS - 3/3 / TANK - 5" = WT. 11
						START T.W.S.
START 10:50	20.5"			637	-	Pump Oil / R.P.M. 900 O.P. 22 W.T. 173
10:55	11.5"			777		Q ↓ T. 800 R.P.M.
11:05	13"			507		Q ↑ to 900 R.P.M. / Clean but Cloudy
11:10	15"	165.71	52.01	507	9.7481	Clean - Neat water R.P.M. 925 O.P. 20 W.T. 170
11:20						Surge 3 X 5 AT 1000 R.P.M.
11:40	35"			832		Clean Clear Water Q ↑ to 1075 R.P.M.
11:45	25.5"			710		Clean but Cloudy - Light Brown Q ↓ To 1025 R.P.M.
11:50	24.5"	214.24	100.54	696	6.9226	Clean but little Cloudy / Foss Cone - Trace Small 1/8" Rossum - Trace only / 1 Packing Stone
12:05						Surge 3 X 5 AT 1100 R.P.M.
12:25	53"					Q ↑ to 1300 R.P.M. Clean but Cloudy water
12:30	48"	296.43	182.73	975	5.3357	R.P.M. 1300 O.P. 34 W.T. 172°
12:35						Foss Cone - .2 P.P.M. Fine Brown Sand Rossum - .2 P.P.M. Fine Brown Sand
12:50	44"	315.75	202.05	933	4.6176	Clean But Cloudy water R.P.M. 1300 O.P. 34 W.T. 171°
13:00						Surge 3 X 5 AT 1300 R.P.M.
13:20	74"			1209		Q ↑ to 1500 R.P.M. / Med Brown water / Clear
13:30	68"	383.13	269.43	1160	4.3053	Med Brown water / Cloudy R.P.M. 1500 O.P. 35 W.T. 172°
13:45	62"	399.7	286	1108	3.8741	Foss Cone - .3 P.P.M. Fine Brown Sand Rossum - .4 P.P.M. Fine Brown Sand
14:00	62"	411.3	297.6	1108	3.7231	Very light Brown water / Cloudy R.P.M. 1500 O.P. 35 W.T. 172°
14:10	74"			1209		Light Brown water / Cloudy Q ↑ to 1600 R.P.M. Sand Sock Not working Right
14:20						R.P.M. 1600 O.P. 35 W.T. 172° Back Pressure Valve Not Working Right
14:50						Surge 3 X 5 AT 1500 R.P.M.
15:10	74"			1209		R.P.M. 1500
15:20	64"	379.13	265.43	1125	4.2384	Very light Brown Cloudy water R.P.M. 1500 O.P. 35 W.T. 172°

Mid Weber Group Inc.
16825 South Weber Drive · Chandler, Arizona 85226-4112 · 602/961-1141 · FAX 602/961-0290

70" Pipe x 6" orifice
P.D. 840'

TEST PUMP RESULTS TEST Eng. T-14/E4

CUSTOMER AZ. Beeman, AZ. Water, Bisbee, Well #5 DATE 7-30-02

STATIC WATER LEVEL 113.7' Developing Well JOB NO. 02-4158

TIME	INCHES ORIFICE PRESSURE	PUMPING LEVEL	DRAW DOWN	GPM	SPECIFIC YIELD	REMARKS
15:30						Check Fuel Side Tanks – 3/8 Full & Tank – 5" = 3/8 Full
15:40	62"	412.27	298.57	1108	3.7110	Clean water but Cloudy Rossum – .15 P.P.m. Cone – .12 P.P.m. R.P.m. 1500 O.P. 35 W.T. 172°
15:50						Surge 3 X'S AT 1500 R.P.m.
16:13	78"			1241		Light Brown water / Cloudy Q↑ to 1600 R.P.m.
16:20	74"	415.55	301.85	1209	4.0053	Light Brown water R.P.m. 1600 O.P. 35 W.T. 175°
16:30						Rossum – .2 P.P.m. / With 2 small Packing Stone 5 20m. I off Cone – .2 P.P.m.
16:45	74"	467.73	354.03	1209	3.4149	R.P.m. 1600 O.P. 35 W.T. 175°
16:50						Surge 3 X'S AT 1600 R.P.m.
						Take out 6" orifice To 8" orifice
0" X 8" 17:15	23"			1445		Q↑ to 1700 R.P.m. / med. Brown water
17:30	22"	502.13	388.43	1413	3.6377	R.P.m. 1700 O.P. 35 W.T. 175°
17:40				1413		I off Cone – Pulling Packing Stone out Rossum – .6 P.P.m. Fine Brown Sand
17:50	22"	535.39	421.69	1413	3.3508	R.P.m. 1700 O.P. 35 W.T. 178°
17:55						Surge 3 X'S AT 1500 R.P.m.
18:15	16"			1205		med. Brown water Q↓ to 1500 R.P.m.
18:20						Q↓ to 1400 R.P.m.
18:25	10.5"	367.42	253.72	976	3.8467	Clean water but Cloudy R.P.m. 1400 O.P. 35 W.T. 172°
18:30						Rossum – .1 P.P.m. / W/ small Stone 18m.m. Fine Brown Sand
18:45	10"	379.52	265.82	953	3.5851	Clean water, Still Alittle Cloudy R.P.m. 1400 O.P. 35 W.T. 172°
18:50						Pump off
19:00						Test Eng. [illegible]
						Check Fuel Side Tanks – 3/8 Full & Tank – 4 1/2" = 3/8 [illegible]

The Weber Group Inc.
16825 South Weber Drive • Chandler, Arizona 85226-4112 • 602/961-1141 • FAX 602/961-0290 TEST Eng. T-14/E-4

10" Pipe x 6" orifice
P.D. 840

TEST PUMP RESULTS

STEPS. ~~500, 600, 700, 800, 900, & 1000 G.P.m.~~ 500, 750, 850 & 1100 G.P.m.

CUSTOMER AZ. Beeman, Az. Water, Bisbee, Well #5 DATE 7-31-02 / (16 hrs.)

STATIC WATER LEVEL 120.29' STEPTEST 6ed. JOB NO. 02-4158

TIME	INCHES ORIFICE PRESSURE	PUMPING LEVEL	DRAW DOWN	GPM	SPECIFIC YIELD	REMARKS
						Check Eng. Oil - Ok Side Tanks - 3/8 Full ¢ TANK - 4½ = 3/8 Full
07:50						TEST Eng. STARTed
I. START 08:30	13"			507		Clear - Clear Water Pump on / 825 R.P.m
08:35	14"	158.09	37.8	526	13.9153	Clear Water R.P.m. 840 O.P. 20 W.T. 171°
08:45	13"	166.32	46.03	507	11.0145	↑ Same
08:50	13"	168.7	48.41	507	10.4730	Rossum - TRACE only Conc - TRACE only
09:00	12"	169.66	49.37	487	9.8642	Clear - Clear Water R.P.m. 825 O.P. 20 W.T. 171°
09:06	12.5"			497		Q↑ A little 840 R.P.m
09:15	12.25"	173.57	53.28	493	9.2530	Clean - Clear Water R.P.m. 840 O.P. 20 W.T. 171°
09:22	13"			507		Clean - Clear Water Q↑ A little 850 R.P.m.
09:30	13"	179.0	58.71	507	8.6356	Clean - Clear Water R.P.m. 850 O.P. 20 W.T. 171°
09:45	13"	180.52	60.23	507	8.4177	↑ Same
10:00	13"	181.69	61.4	507	8.2573	↑ Same
10:15	12.5"	183.05	62.76	497	7.9190	↑ Same
10:30	12.5"	184.22	63.93	497	7.7741	Check Fuel - ¢ TANK 4¼" = Just under 3/8 Full ↑ Same
10:45	12.25"	185.0	64.71	493	7.6186	R.P.m. 850 O.P. 20 W.T. 171°
11:03	12"	185.89	65.6	487	7.4237	↑ Same
11:15	12"	186.4	66.11	487	7.3665	↑ Same
11:32	11.75"	187.5	67.21	482	7.1715	↑ Same
11:45	11.75"	188.33	68.04	482	7.0840	R.P.m. 850 O.P. 20 W.T. 171°
11:50	13.25"			512		Q↑ TO 875 R.P.m.
12:00	13"	194.45	74.16	507	6.8365	Clean - Clear Water R.P.m. 875 O.P. 21 W.T. 171°
12:20	13"	195.97	75.68	507	6.6992	↑ Same
12:30	13"	196.41	76.12	507	6.6605	↑ Same
12:45	13"	197.45	77.16	507	6.5707	Clean - Clear Water R.P.m. 875 O.P. 21 W.T. 171°

WP111

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street
Phoenix, Arizona 85004

RECEIVED
JUL - 3 2002
RECORDS MGT

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. ARIZONA BEEMAN DRILLING dba Morex Investments LLC
P.O. BOX 3370
APACHE JUNCTION, AZ 85217-3370

2. Owner Name: ARIZONA WATER Company
Address: P.O. Box 29006 Phoenix AZ 85038
City State Zip

3. Location: 24 N/S 23 E/W 13 ¼ SE ¼ NW ¼ NE
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55-590620 (Required)

5. Permit No. _____ (If Issued)

DESCRIPTION OF WELL

6. Total depth of hole 1183 ft.
7. Type of casing Steel
8. Diameter and length of casing 26 in. from 0 to 39, 16 in from -1 to 1183
9. Method of sealing at reduction points NO REDUCTION NEAT CEMENT 0-39
10. Perforated from 1163 to 623, from 603 to 163 from _____ to _____
11. Size of cuts .025 Number of cuts per foot _____
12. If screen was installed: Length 980 ft. Diam 16 in. Type Steel
13. Method of construction Reuese Circulation
(drilled, dug, driven, bored, jetted, etc)
14. Date started 05 (Month) 20 (Day) 02 (Year)
15. Date completed 06 (Month) 24 (Day) 02 (Year)
16. Depth to water _____ ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea_level elevation if available
Ground level
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55- 590620
File No. D(24-23) 13 ABD
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

COMPLETED SEP 0 6 2002

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	2	Top Soil.
2	40	Sandy Clay Dry.
40	130	Sm.-Med. Gravels w/coarse sands.
130	270	Silty Clay Little to No Sands.
270	400	Course Sands w/little Clays.
400	440	Course Fractured Rock.
440	510	Red Clay w/moderate sands.
510	590	Red Clay w/ Less sands.
590	770	Red Clay w/ Little Gravels & Sands.
770	810	Gray Silty Clay no sands.
810	1140	Red Clay w/little to med. sands.
1140	1183	Volcanics - Black w/White Quartz.

I hereby certify that this well was drilled by me (or under by supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: ARIZONA BEEMAN DRILLING dba Morex Investments L

P.O. BOX 3370
Street

APACHE JUNCTION, AZ 85217-3370 480-983-2542
City State Zip Phone No.

[signature] 7-1-02
Signature of Driller Date

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ 602-417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

RECEIVED
JAN 18 2002
GROUNDWATER MGT

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. Arizona Water Company (LANDOWNER'S NAME) PO Box 29006 (CURRENT MAILING ADDRESS) Phoenix (CITY) AZ (STATE) 85038-9006 (ZIP)

B. TELEPHONE NO. 602 240 6860 — **COUNTY ASSESSOR'S PARCEL ID INFORMATION:**

C. WELL LOCATED IN Cochise COUNTY D. 102 (BOOK) 34 (MAP) 5 (PARCEL) E. _____ (# OF ACRES) — **OFFICIAL SEAL OR STAMP**

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. SE (10AC) ¼ NW (40AC) ¼ NE (160AC) ¼ OF SECTION 13 TOWNSHIP 24S N/S RANGE 23E E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL_____; INSUFFICIENT INFORMATION TO MAKE A DETERMINATION_____; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE_____ AUTHORIZED SIGNATURE_____ TITLE_____

1. OWNER OF WELL:
Arizona Water Company
NAME
P.O. Box 29006
CURRENT **MAILING** ADDRESS
Phoenix AZ 85038-9006
CITY STATE ZIP

TELEPHONE NUMBER 602-240 -6860

2. ACTION REQUESTED:
DRILL NEW WELL X DEEPEN_____
MODIFY_____ REPLACE _____

WELL REGISTRATION NO 55-_____

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL _____ GALLONS PER MINUTE;

DISTANCE FROM THE ORIGINAL WELL: _____ FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH June YEAR 2002

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: steel
DIAMETER: 16 " DEPTH: 1,000

DOWNHOLE CASING:_____
DIAMETER:_____ " DEPTH: _____

5. DESIGN PUMP CAPACITY:
1,000 GALLONS PER MINUTE
3,258 a.f./yr.

6. LESSEE OF LAND OF WELLSITE:
NAME
CURRENT **MAILING** ADDRESS
CITY STATE ZIP

TELEPHONE: - -

7. PRINCIPAL USE OF WATER: (BE SPECIFIC)
municipal and industry

8. OTHER USES OF WATER: (BE SPECIFIC).

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55-590620
DATE FILED 1-18-02
FILE NO. D(24.23)13ABD
AMA/INA —
W/S 11 S/B 76
PROCESSED BY MB
DATE MAILED 1-23-02
MO.

9. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
SE ¼ (10AC) NW ¼ (40AC) NE ¼ (160AC) SECTION 13
TWNSHP 24S N/S RNG 23E E/W

10. TYPE OF WELL (CHECK ONE):
EXEMPT _____ NON-EXEMPT X

11. CHECK ONE:
RESIDENTIAL_____ STOCKWATER _____
OTHER municipal & industry

12. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES _____ NO X

13. DRILLING FIRM:
Arizona Beeman Drilling LLC
NAME
PO Box 3370
MAILING ADDRESS
Apache Junction AZ 85217
CITY STATE ZIP
480-982-2542
TELEPHONE NO.
360
DWR LICENSE NUMBER
A-4
ROC LICENSE CATEGORY

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

Mike Loggins, Engineer — **14.** TYPE OR PRINT NAME AND TITLE
Mike Loggins as Agent — **15.** SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE
1/16/02 — **16.** DATE

DWR 55-40 (REV 9/99)

APPLICATION GUIDELINES

In accordance with Arizona Revised Statutes ("A.R.S.") §§ 41-1008 and 1079, the Department of Water Resources (Department) provides the following information regarding the application review process for authority to drill.

NECESSARY STEPS & INSTRUCTIONS TO OBTAIN DRILLING AUTHORITY

1. Pursuant to A.R.S. § 45-596, a person may not drill, cause to be drilled, deepen or modify any well for which a permit is not required without first filing a Notice of Intent to Drill with the Department. Only a well drilling contractor licensed in the State of Arizona or a single well licensee (a person licensed to drill or modify one exempt well on his or her own property) is authorized to drill, deepen or modify a well. Drilling may not begin until the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, and which authorizes the drilling of the specific well in a specific location. To assist you in understanding the requirements for this application, copies of A.R.S. § 45-596 and Arizona Administrative Code ("A.A.C.") R12-15-810 are available at the Department bookstore (602-417-2450 x7127).
2. If replacing, deepening, or modifying an existing well, provide the registration number of the existing well in item 2. A replacement well is one located no more than 660 feet from the original well and that is not expected to annually withdraw more groundwater than historically withdrawn from the original well.
3. Information to complete items 3, 4, 5 and 13 may be available from your driller.
4. Information to complete items 9 and 12 may be available from your County Assessor's Office.
5. For item 10, in an Active Management Area, A.R.S § 45-454 only allows non-irrigation uses for "exempt" wells. If the proposed use includes the growing of 2 or more acres of plants for sale or human/animal consumption (irrigation use), the well does not qualify as an exempt well.
6. An exempt well, referred to in Item 10, means a well with a pump with a maximum capacity of not more than thirty-five gallons per minute and used for non-irrigation purposes.
7. For item 11, in an Active Management Area, A.R.S §45-454 allow up to 56 acre feet per year of pumping from a domestic (residential) or stock watering exempt well, and up to 10 acre ft per year from an exempt well used for other (usually commercial non-irrigation) purposes.
8. If any water from a proposed well on a parcel of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant must submit a well site plan of the property. The plan must be on an 8½" x 11" piece of plain paper with representation of the locations of all structures and proximity of adjacent lot lines, to scale. It must include the county assessor's parcel identification number. The plan must show the proposed well location and the location of any septic tank or sewer system that is either located on the property or within one hundred feet of the proposed well site, as well as indicating the measured shortest distance between the proposed well and existing septic tank system. **The plan must demonstrate that the well will not be drilled within one hundred feet of any septic or sewer system.**
9. The site plan must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Endorsement by the county/local authority is based solely on the best available judgement that the proposed well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. In areas where there is no local or county authority that controls installation of septic tanks or sewer systems, or if the health authority is unable to determine whether the proposed well location complies with state and local requirements, the applicant must apply for approval directly to the Department of Water Resources.
10. If an individual other than the land owner or lessee signs this notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific notice on his or her behalf, must accompany the notice.
11. Please mail **two original Notices** with **original signatures** and **two site plans** and, in accordance with A.R.S. § 45-113, a **check or money order (no cash) in the amount of $10.00** to P. O. Box 458, Phoenix Arizona, 85001-0458, or hand deliver to 500 North Third Street, Phoenix, Arizona.
12. Arizona Revised Statute § 45-596(D) provides that the Director of the Department is to determine whether or not all information required on this form has been submitted. If not, the person filing the Notice will be notified, and the drilling or modification of the well may **not** proceed.
13. This form is not applicable for non-exempt wells (those yielding more than thirty-five gallons per minute) within an Active Management Area. Contact Groundwater Management for further information regarding the appropriate notice to file with the Department.

TIME FRAME FOR REVIEW OF YOUR APPLICATION

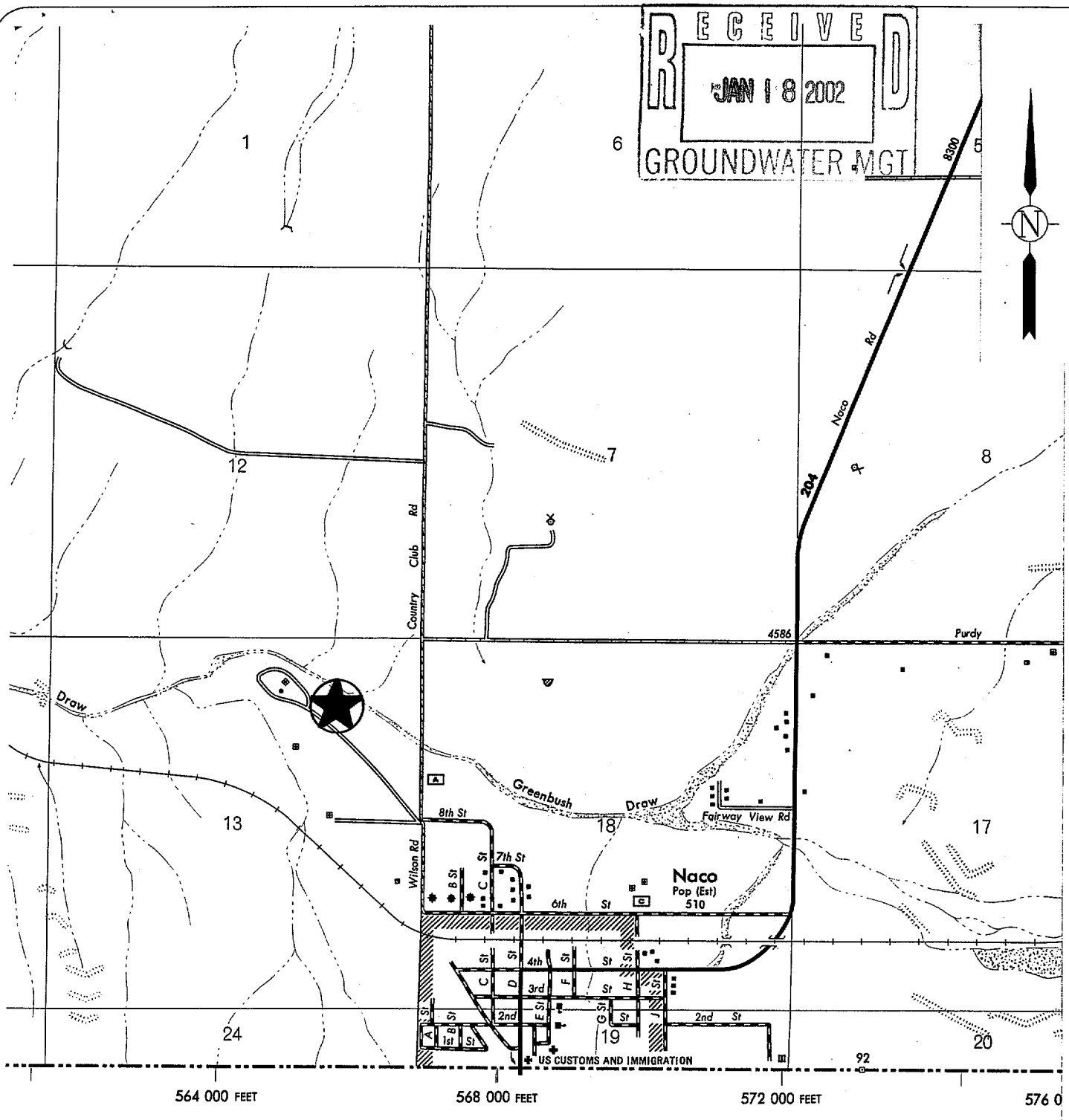
Within 15 days after receipt of your Notice of Intention the Arizona Department of Water Resources ("Department") will determine whether your application should be granted or denied, unless this time is extended for lack of a complete application. If your application is incomplete, the Department will notify you in writing and will specify what information is necessary to make the application complete. Until the missing information is received, the time frame for review of your application will be suspended. Your application will not be complete until all of the requested information is received. If you do not supply the missing information within sixty (60) days, the Department may deem your application withdrawn and close the file.

At the end of its review, the Department will send you a written notice either granting or denying your application for drilling authority. If your application is approved, the Drill Card will be mailed directly to the drilling contractor. If denied, the Department's notice will state justification for the denial and an explanation of your right to appeal.

CONSTRUCTION AND FOLLOW UP REQUIREMENTS

1. Construction and abandonment standards for wells, must be in accordance with Department Regulations. A.R.S. § 45-594 and Arizona Administrative Code R12-15-811 require the well to be constructed with a twenty foot steel surface seal casing, including a one foot steel stickup and one and one-half inches of grout seal around the casing from the surface to a depth of twenty feet, unless a variance is granted **(see A.R.S. § 45-596 (G) for procedure to follow in requesting a variance).**
2. Pursuant to § 45-596(E), the drilling, deepening or modification of the well must be completed within one year of the date of the Notice of Intent. If the well is not completed within one year, a new Notice of Intent must be filed before proceeding with further construction.
3. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use is later proposed to be converted to use for domestic purposes as defined in § 45-454, the well owner must file a Notice of Intention to Drill and comply with the requirements of § 45-596 before the well is converted and any water from that well is used for domestic purposes.
4. Within thirty days after installation of pumping equipment, the registered well owner must file a Completion Report with the Department. The person to whom a well is registered also must notify the Department of a change in ownership or a change in data relating to this well.

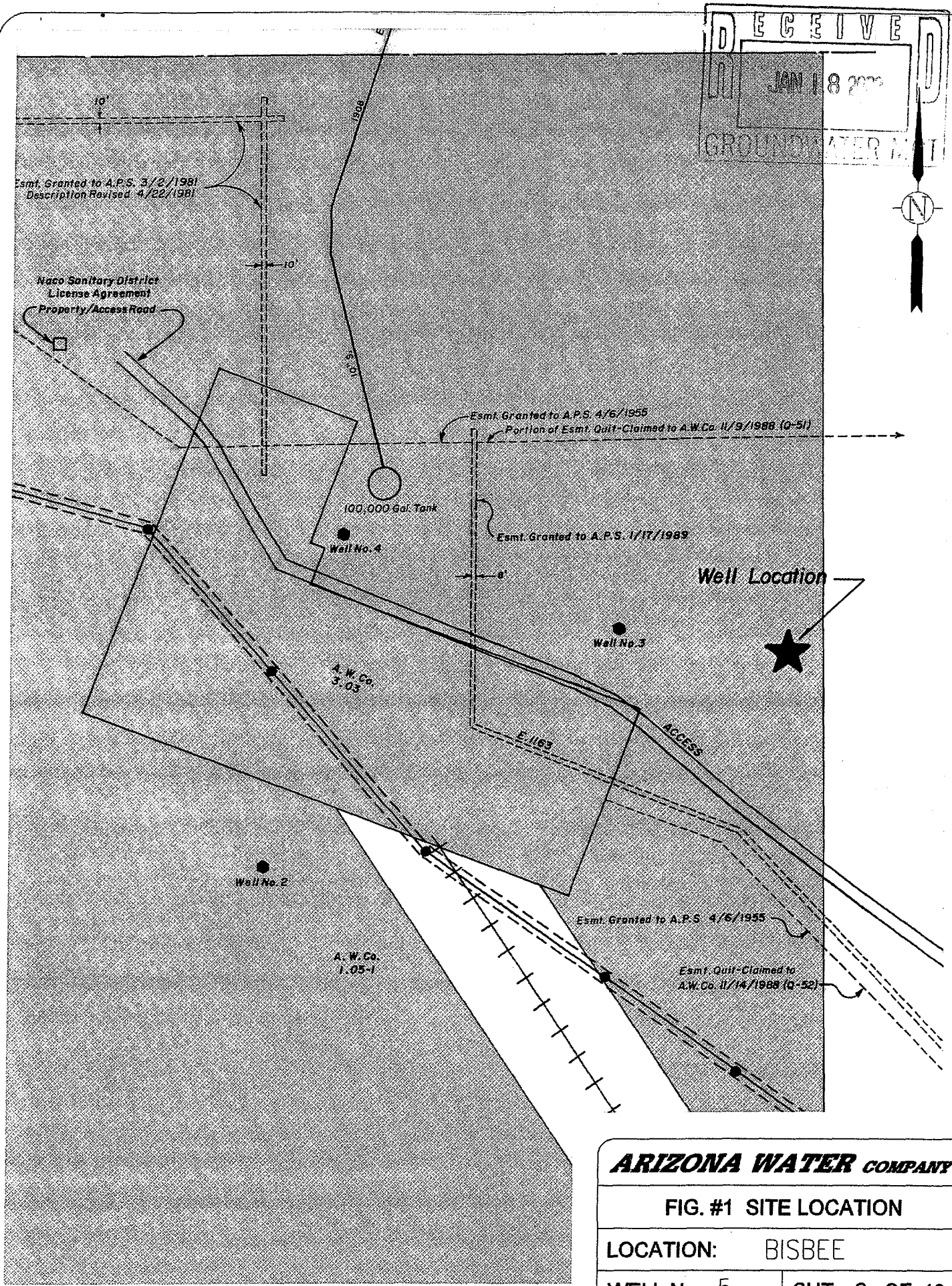
RECEIVED
JAN 18 2002
GROUNDWATER MGT



SONORA

MEXICO

ARIZONA WATER COMPANY	
FIG. #1 SITE LOCATION	
LOCATION: BISBEE	
WELL No. 5	SHT. 2 OF 19

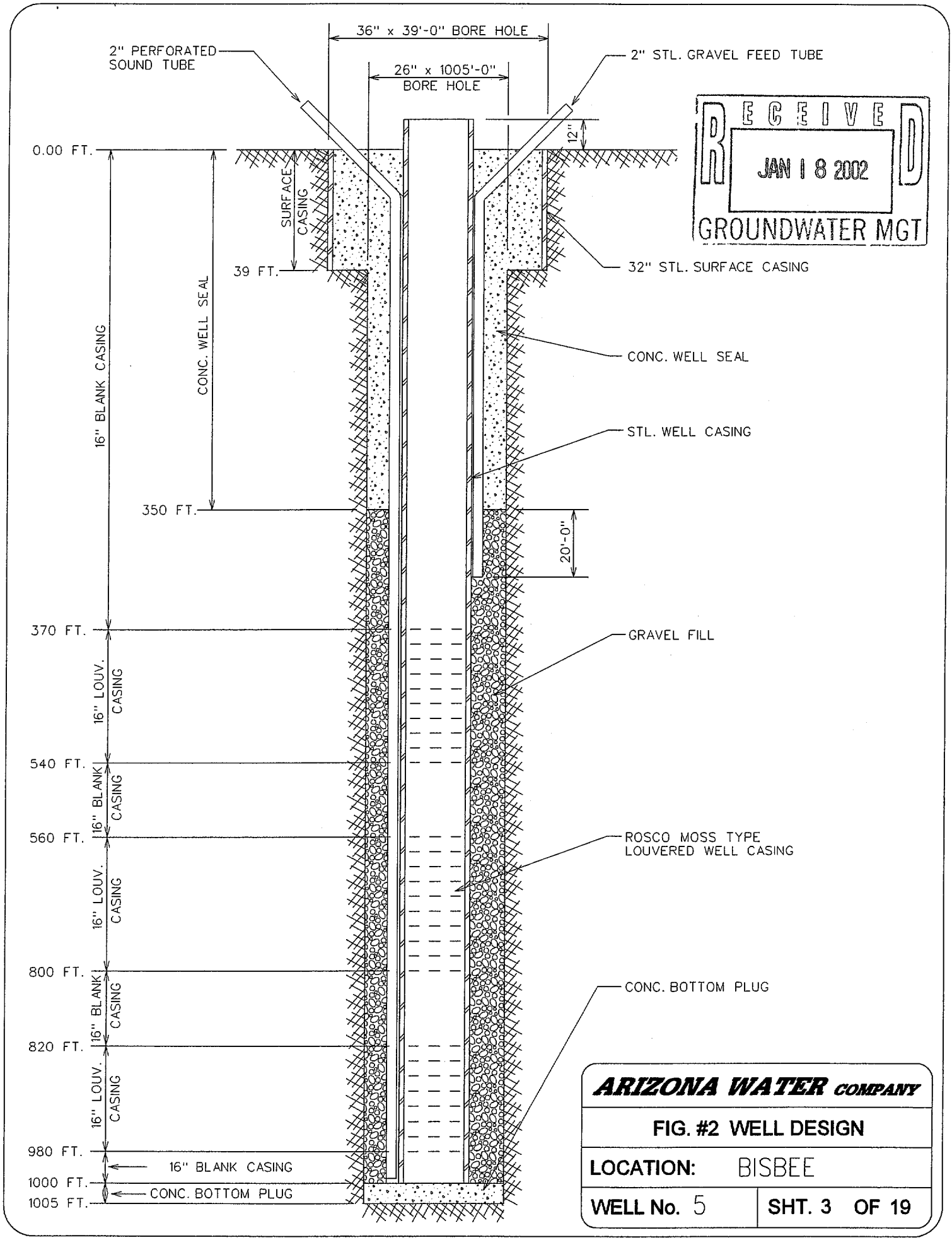


ARIZONA WATER COMPANY

FIG. #1 SITE LOCATION

LOCATION: BISBEE

WELL No. 5 | SHT. 2 OF 19



RECEIVED
JAN 18 2002
GROUNDWATER MGT

ARIZONA WATER COMPANY

FIG. #2 WELL DESIGN

LOCATION: BISBEE

WELL No. 5 | **SHT.** 3 **OF** 19

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

January 23, 2002

JANE DEE HULL
Governor

JOSEPH C. SMITH
Director

ARIZONA WATER COMPANY
PO BOX 29006
PHOENIX, AZ 85038

Registration No. 55- 590620
File No. D(24-23) 13 ABD

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Toni Bergeman

Toni Bergeman
Water Resource Technician
Groundwater Management Support Section

Enclosures

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HIGHWAY, PHOENIX, ARIZONA 85015-5351 • P.O. BOX 29006, PHOENIX, ARIZONA 85038-9006
PHONE: (602) 240-6860 • FAX: (602) 240-6878

RECEIVED
JAN 18 2002
GROUNDWATER MGT

January 10, 2002

Groundwater Management Support Section
AZ Dept. of Water Resources
P.O. Box 458
Phoenix, AZ 85001-0458

Re: Authorization to Act as Agent

Dear Dept. of Water Resources:

Authorization is hereby granted to Mike Loggins to act as Arizona Water Company's agent for the purpose of filing the attached Notice of Intention to Drill a Well.

Very truly yours,

James R. Livingston
President

tmw

E-MAIL: mail@azwater.com

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ 602-417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

RECEIVED
JAN 18 2002
GROUNDWATER MGT

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. Arizona Water Company (LANDOWNER'S NAME) PO Box 29006 (CURRENT MAILING ADDRESS) Phoenix (CITY) AZ (STATE) 85038-9006 (ZIP)

B. TELEPHONE NO. 602 240 6860 — COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN Cochise COUNTY D. 102 (BOOK) 34 (MAP) 5 (PARCEL) E. _____ (# OF ACRES) — OFFICIAL SEAL OR STAMP

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. SE (10AC) ¼ NW (40AC) ¼ NE (160AC) ¼ OF SECTION 13 TOWNSHIP 24S N/S RANGE 23E E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL_____; INSUFFICIENT INFORMATION TO MAKE A DETERMINATION_____; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE_____ AUTHORIZED SIGNATURE_____ TITLE_____

1. OWNER OF WELL:
Arizona Water Company
NAME
P.O. Box 29006
CURRENT MAILING ADDRESS
Phoenix AZ 85038-9006
CITY STATE ZIP
TELEPHONE NUMBER 602-240 -6860

6. LESSEE OF LAND OF WELLSITE:
NAME
CURRENT MAILING ADDRESS
CITY STATE ZIP
TELEPHONE: - -

9. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
SE ¼ (10AC) NW ¼ (40AC) NE ¼ (160AC) SECTION 13
TWNSHP 24S N/S RNG 23E E/W

10. TYPE OF WELL (CHECK ONE):
EXEMPT _____ NON-EXEMPT X

11. CHECK ONE:
RESIDENTIAL_____ STOCKWATER _____

ARIZONA WATER COMPANY
GENERAL ACCOUNT
3805 N. BLACK CANYON HIGHWAY
POST OFFICE BOX 29006
PHOENIX, ARIZONA 85038-9006

91-170
1221

No. 59193

DATE January 15, 2002

PAY TEN AND NO/100 DOLLARS

Security features included. Details on back.

$ $10.00

TO THE ORDER OF

ARIZONA DEPT OF WATER RESOURCES
GROUNDWATER MGT SUPPORT SECTION
PO BOX 458
PHOENIX AZ 85001-0458

ARIZONA WATER COMPANY—GENERAL ACCT.

[redacted]

NK OF AMERICA

[redacted]

5. DESIGN PUMP CAPACITY:
1,000 GALLONS PER MINUTE
3,258 a.f./yr.

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

Mike Loggins, Engineer — as Agent — 1/16/02
14. TYPE OR PRINT NAME AND TITLE — 15. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE — 16. DATE

DWR 55-40 (REV 9/99)

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-590620

AUTHORIZED DRILLER: ARIZONA BEEMAN DRILLING dba Morex Investments LLC LICENSE NO: 360

NOTICE OF INTENTION TO DRILL A NON-EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: ARIZONA WATER COMPANY PO BOX 29006 PHOENIX, AZ 85038

The well(s) is/are to be located in the:

SE ¼ of the NW ¼ of the NE ¼ Section 13 Township 24 SOUTH Range 23 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 17TH DAY OF JANUARY, 2003

ARS

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

JUN 1982 DEPARTMENT OF WATER RESOURCES



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 647986
FILE NO. D(24-24)11
FILED 6-14-82 (DATE) AT 3PM (TIME)
INA
AMA

1. Name of Registrant:
DOUGLAS L BANKS & SONJA E BANKS
3 MULBERRY LANE (Address) BISBEE (City) AZ (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
D(24-24)11cdd ~~NONE~~ (File Number) 35- — 84628 (Control Number)

3. a. The well is located within the N/A ¼ ____ ¼ ____ ¼, Section 11, of Township 24 ~~N~~/S, Range 24 E/~~W~~, G & SRB & M, in the County of COCHISE.
b. If in a subdivision: Name of subdivision BISBEE JUNCTION, Lot No. —, Address 3 MULBERRY LANE BISBEE AZ.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC + IRRIGATION.

5. If for irrigation use, number of acres irrigated from well 1.

6. Owner of land on which well is located. If same as Item 1, check this box ☐
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 445 FEET feet
b. Diameter of casing 6 INCHES inches
c. Depth of casing N/A feet
d. Type of casing N/A.
e. Maximum pump capacity 10 GALLONS gallons per minute.
f. Depth to water 300 FEET feet below land surface.
g. Date well completed July (Month) 7 (Day) 1980 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☑.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____

Attach additional sheet if necessary.

9. DATE 06-10-82 SIGNATURE OF REGISTRANT [signature] Douglas L Banks

MICROFILMED

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

JUN 1982 DEPARTMENT OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 647987
FILE NO. D(24-24) 11
FILED 6-14-82 (DATE) AT 3PM (TIME)
INA
AMA

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☒
NON-EXEMPT WELL — $10.00 ☐

1. Name of Registrant:
DOUGLAS L. & SONJA E BANKS
3 MULBERRY LANE RR#1 BISBEE AZ 85603
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
NONE (File Number) 35- — (Control Number)

3. a. The well is located within the ____¼ ____¼ ____¼, Section 11, of Township 24 N/S, Range 24 E/W, (G) & SRB & (M), in the County of COCHISE COUNTY.
b. If in a subdivision: Name of subdivision BISBEE JUNCTION, Lot No. —, Address 3 MULBERRY LANE BISBEE AZ.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC & IRRIGATION.

5. If for irrigation use, number of acres irrigated from well 1.

6. Owner of land on which well is located. If same as Item 1, check this box ☑
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 339 FEET feet
b. Diameter of casing 6" INCHES inches
c. Depth of casing N/A feet
d. Type of casing N/A .
e. Maximum pump capacity 10 gallons per minute.
f. Depth to water 300 FEET feet below land surface.
g. Date well completed N/A (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☑
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 06-10-82 SIGNATURE OF REGISTRANT L Banks Douglas L Banks

MICROFILMED

62-73

NOTICE OF INTENTION TO DRILL WELL

LAND DEPARTMENT
WATER DIVISION
STATE OF ARIZONA

By Law, no person shall drill, or cause to be drilled, any well for the development and use of Ground Water in Arizona without first filing Notice of Intention to Drill with the State Land Department. The only exceptions are for those irrigation wells within critical Ground Water areas for which Drilling Permits are required. No well shall be drilled by other than the owner without the driller being licensed with the Registrar of Contractors. The driller's license number must be included before the State Land Department will process the filing.

FILING FEE ..... $3.00 SEE REVERSE SIDE

LOCATION OF WELL

North

West — NW¼ NE¼ — East

SW¼ SE¼

X

South

Indicate Well Location by X
(Above diagram represents one 640 acre section)

1. Twp. 24 S
2. Rge. 24 E
3. Section 11
4. SW ¼ SW ¼ SW ¼
   10-acre subdivision
5. Owner of Well Site
   Loyd K. Barton

INSTRUCTIONS

Fill out both copies and mail to Water Division, State Land Department, 1624 W. Adams, Phoenix, Arizona, 85007.

Duplicate will be returned to Filer, together with Drilling Card.

55-85010

DESCRIPTION OF WELL

6. Diameter 8 in. depth 200 ft.
7. Type of casing Steel
8. Estimated depth to water 100 ft.
9. Proposed use Domestic
10. Drilling will start about 8 (Month) 80 (Year)
11. Driller Robert D. Tanner (Indiv) (Name)
    RI Box 36 McNeal Az. (Address)
    Driller's License No. T-0133 50428
12. Water will be applied to use about
    9 (Month) 80 (Year)
20. This notice filed by:
    Check one { Owner ☐ Lessee ☐ Driller ☑
    Name Robert D. Tanner
    Address RI Box 36 McNeal Az. 85617

PLACE OF USE

13. Twp. 24S
14. Rge. 24E
15. Section 11
16. SW¼ SW¼ SW¼
    Legal Description of Land to be Irrigated or place of other use.
17. Acres (if irrigation) None
18. Owner Loyd K. Barton (Name)
    702 Border Rd.
19. Bisbee, Az. 85603 (Address)

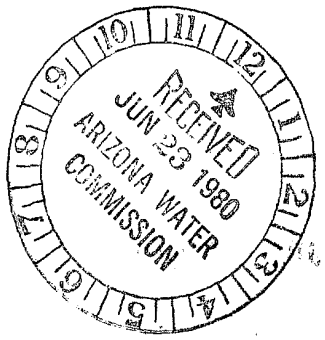
DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received 6-23-80 By Pat
Filed 7-10-80 By Pat
Duplicate Mailed JUL 10 1980 By AH
File Number D(24-24)11 ccc

I, _____ state that the driller designated on the reverse side of this form is currently licensed under the provisions of Chapter 161 Laws of 1979, Section 32-1168 Arizona Revised Statutes, as amended and that his license number is _____

_____ _____

(DATE) (SIGNATURE OF APPLICANT)



Robert Tanner
Rt. 1 Box 36
Mc Neal, Arizona 85617

STATE OF ARIZONA
ARIZONA WATER COMMISSION
WATER RIGHTS ADMINISTRATION
222 N. CENTRAL AVE — SUITE 550
PHOENIX, ARIZONA 85004

RECEIPT — FILE

KIND ENTRY	FILE REFERENCE NO.
55	85010
	THRU

№ 4772

FUND SOURCE	ACCOUNT NO. AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Notice of Intention to Drill Well (2)		3.00
							3.00
					Water Rights (GW)		
					File #D(24-24)11 ccc		
					D(22-21)35 bca		
					Ck #4767 for Loyd K. Barton and Walter G. Golding		

WATER PAYMENT
GUESTS 2
CHK NO 4767
2@ 3.00
55-I 6.00
TAX 0.00
TOTL 6.00
GEN.CHEK 6.00

109 A 10:07

7-7-80 pds

TOTAL $ 6.00

STATE OF ARIZONA

DEPARTMENT OF
WATER RESOURCES

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Loyd K. Barton (Name)
   702 Border Rd., Bisbee, AZ 85603 (Address)
2. Lessee or Operator SAME (Name)
   (Address)
3. Driller Robert D. Tanner (Name)
   R1 Box 306 McNeal, AZ 85617 (Address)
4. Location of well: SW SW SW 11 T24S R24E
5. Permit No. (if issued) None

DESCRIPTION OF WELL

6. Total depth of hole 300 ft.
7. Type of Casing Steel
8. Diameter and length of casing 6 in. from 0 to 300', _____ in from _____ to _____.
9. Method of sealing at reduction points None
10. Perforated from 180' to 300', from _____ to _____, from _____ to _____
11. Size of cuts 1/8" x 6" Number of cuts per foot 6
12. If screen was installed: Length None ft. Diam _____ in. Type _____
13. Method of construction Drilled (drilled, dug, driven, bored, jetted, etc.)
14. Date started Month 1 day 22 year 81
15. D te completed Month 3 day 14 year 81
16. Depth to water 168 ft. (If flowing well, so state.)
17. Describe point from which depth measurements were made, and give sea-level elevation if available. water was measured from ground level
18. If flowing well, state method of flow regulation Not
19. REMARKS: _____

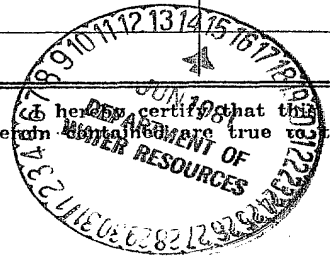
DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55-85010
Received _____ By _____
Entered 8-4-81 By [illegible]
File No. D(24-24)11 ccc

(Well log to appear on Reverse side)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	11	Red Clay + Rock
11	20	Tan Clay + Boulders
20	46	Gray Clay + Rock
46	114	Brown Clay + Rock
114	139	Tan Rock
139	144	Red Clay + Gravel
144	149	Rock
149	152	Red Clay
152	158	Tan Clay (trace of water 154')
158	171	Yellow Rock
171	194	Gray Rock
194	209	Brown Clay (water test 209' 4gal m)
209	212	Grey Rock
212	241	Brown Clay + Gravel (water 240')
241	243	Tan Rock + Clay
243	256	Red Clay + Rock
256	269	Tan Clay + Gravel
269	285	Tan Rock
285	300	Yellow Rock + Clay



I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements hereon contained are true to the best of my knowledge and belief.

Driller Robert D. Tanner
Name

R.1 Box 36 McNeal, Az.
Address

85607

222 North Central Ave., Suite 850
Phoenix, Arizona 85004

Registration No. 55-85010
Owner of
Well Site Barton

File No. D(24-24)11 ccc

COMPLETION REPORT

1. Completion Report to be filed with the Department within 30 days after installation of pump equipment.

2. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

3. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.

4. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

LOCATION OF THE WELL

SW SW SW 11 T24S R24E

Date Well Completed 3-14-81 Depth of Well 300'

1. Well Test:
Test Pumping Capacity 13 G.P.M. Date Well Tested 3-20-81
(Gal. per min.)

Method of Discharge Measurement _____
(weir, orifice, current meter, etc.)

Static Groundwater Level 168 ft. Drawdown 12 ft.
Total Pumping Lift 180 ft. Drawdown _____ lbs.
(Flowing Well)

2. Equipment Installed:

Kind of Pump Submersible
(turbine, centrifugal, etc.)

Kind of Power Elec (Elec., Nat. Gas, Etc.) H.P. Rating of Motor 2 H.P.

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

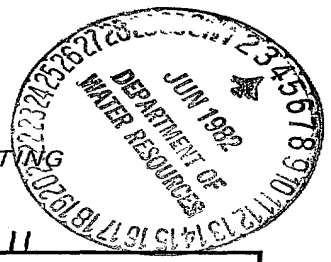
Robert R. Tanner
Signature

RI Box 36
Address

3-25, 1981
Date

McNeal Az. 85617
City / State Zip

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55-644919
FILE NO. D(24-24)11CCC
FILED 6-4-82 (DATE) AT 10:00 am (TIME)
INA —
AMA —

1. Name of Registrant:
LOYD K. OR RITA F. BARTON
702 BORDER ROAD (Address) BISBEE (City) ARIZONA (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the SE¼SW¼ SW¼ SW¼, Section 11, of Township 24S N/S, Range 24 E/W G & SRB & M, in the County of COCHISE.
b. If in a subdivision: Name of subdivision LOT 9 BISBEE JUNCTION SUBDIVISION Lot No. 9, Address 702 BORDER ROAD, BISBEE AZ 85603

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC — WATER FOR HOUSE AND YARD.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well APPROX — 130 feet
b. Diameter of casing 6 — SIX inches
c. Depth of casing UNKNOWN — BELIEVE 130 feet
d. Type of casing CAST IRON.
e. Maximum pump capacity 15 gallons per minute.
f. Depth to water 90 feet below land surface.
g. Date well completed UNKNOWN (Month) (Day) (Year).

The well was here when Property was Purchased. FROM - CRIST ESTATE I bought it from his SON.

8. The place(s) of use of water. If same as Item 3, check this box ☒
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 2 June 1982 SIGNATURE OF REGISTRANT Loyd K Barton Jr

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED
JUN 17 1982
DEPT. OF
WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 648363
FILE NO. D(24-24)18 d
FILED 6-17-82 (DATE) AT 2p (TIME)
INA ~
AMA —

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☑
NON-EXEMPT WELL — $10.00 ☐

1. Name of Registrant:
Luz Bernal
406 "D" St.- P. O. Box 234 (Address) | Naco, (City) | AZ (State) | 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) _____ 35- (Control Number) _____

3. a. The well is located within the ____ ¼ ____ ¼ SE ¼, Section 18, of Township Naco 24 N(S), Range 24 E(W), G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☐
(Address) _____ (City) _____ (State) _____ (Zip) _____

7. Well data (If data not available, write N/A)
a. Depth of Well 125 feet
b. Diameter of casing _____ inches
c. Depth of casing _____ feet
d. Type of casing _____.
e. Maximum pump capacity _____ gallons per minute.
f. Depth to water _____ feet below land surface.
g. Date well completed Before 1948 (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☐.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6-14-82 SIGNATURE OF REGISTRANT Luz Bernal

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middie initiai. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

BF-1

ARIZONA DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Name: Phelps Dodge
   Address: 2600 N. Central Ave. Phoenix AZ 85012
   (Street / City / State / Zip)
2. Driller Name: Stewart Brothers Drilling Company
   Address: PO Box 2067 Milan NM 87021
   (Street / City / State / Zip)
3. Location: 24S N/S (Township) 24E E/W (Range) 4 (Section) NE 1/4 (10-acre) NE 1/4 (40-acre) NE 1/4 (160-acre)
4. Well Registration No. 55-539783 (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 400 ft.
7. Type of casing low carbon steel
8. Diameter and length of casing 10 in. from +1 to 20, 4 in from +1 to 325.
9. Method of sealing at reduction points _____
10. Perforated from _____ to _____, from _____ to _____, from _____ to _____.
11. Size of cuts _____ Number of cuts per foot _____
12. If screen was installed: Length 60 ft. Diam 4 in. Type PVC Slotted (325-385)
13. Method of construction drilled
    (drilled, dug, driven, bored, jetted, etc)
14. Date started August (Month) 14 (Day) 1993 (Year)
15. Date completed August (Month) 15 (Day) 1993 (Year)
16. Depth to water _____ ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
    ground level
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-539783
File No. D(23-24)3bbb
Received ENTERED OCT - 6 1993 By _____
Entered _____ By _____

DWR-55-55-7/91 (Rev.)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encounterd, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	70	sand & gravel
70	120	clay & gravel
120	350	sand & gravel
350	380	Morita formation
380	400	Glance conglomerate

I hereby certify that this well was drilled by me (or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: David R. Stewart

PO Box 2067
Street

Milan **City** NM **State** 87021 **Zip**

Date 9/2/93

ONITOR/PIEZOMETER WELL

ILING FEE $10.00

ARIZONA DEPARTMENT OF WATER RESOURCES
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

MONITOR/PIEZOMETER WELL

FILING FEE $10.00

mw-8f1

NOTICE OF INTENTION TO DRILL MONITOR/PIEZOMETER WELL

60

ection § 45-596, Arizona Revised Statutes provide: Prior to drilling a monitor or piezometer well, a Notice of ntention to Drill shall be filed with the Department on a prescribed form.

1. WELL LOCATION:
   24 N/S | 24 E/W | 34
   Township | Range | Section
   10 Acre Subdivision
   NE NW 1/4 — NE NW 1/4 — NE NW 1/4
   10 ACRE — 40 ACRE — 160 ACRE

2. Position location of the well on the land:
   Latitude 31 0 22 · 45 "
   Longitude 109 0 54 · 05 "

3. County: Cochise

4. Owner of the land of wellsite:
   Phelps Dodge
   Name
   2600 N. Central Ave.
   Address
   Phoenix AZ 85004-3014
   City State Zip

5. Lessee of the land of wellsite:
   Name
   Address
   City State Zip

6. Owner of well:
   Same
   Name
   Address
   City State Zip

7. Consulting Firm: CEC/WRA
   Contact Person: Marvin Glotfelty
   Phone: (602) 248-8808

8. Purpose of well drilled pursuant to this notice
   Monitor X
   Piezometer

9. If for deepening or modifying, Well Registration Number
   55-

10. Construction will start:
    07 Month 15 Day 93 Year

11. Period well will remain in use 10 Months (Years)

12. For monitoring wells, is pump equipment to be installed?
    Yes ____ No X
    (a) If yes, design pump capacity
    (b) What use will be made of the water

13. Drilling firm:
    Forrest Pump
    Name
    800 East Maley
    Address
    Wilcox, Az. 85643
    City State Zip
    DWR License No. 307
    A-16 #85412 C-53
    ROC Category

14. Will this proposed well pump Colorado River water? Yes ____ No X
    (See condition VI on reverse)

15. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous material or petroleum storage areas and tanks?
    Yes X No ____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

File No. D (24-24)
Filed 6-29-93 By ek
Input ENTERED JUL 0 6 1993 By
DUPLICATE
Mailed 7-1-93 By ek
Registration 55- 539783
AMA/INA —
W/S 13 S/B

16. Proposed method of abandonment of well after project is completed: A.A.C. Rule 12-15-816

17. Is this well to monitor existing contamination? ____ Potential contamination ____ Please explain

RECEIVED
JUN 29 1993
OPERATIONS DIV.

GENERAL INSTRUCTIONS

1. Fill out this form in DUPLICATE and send WITH $10.00 FEE to 15 South 15th Avenue, Phoenix, AZ 85007.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. **Must be signed by land owner or lessee.**
4. Section §45-596(D), provides that the Director shall determine that all information required on form has been submitted. If not, the person filing will be notified and the drilling, deepening, or modification of the well may not proceed.

I state that Notice is filed in compliance with Section § 45-596 and is complete and correct to the best of my knowledge and belief and that I understand the conditions set forth on the reverse side of this form.

6/29/93
Date

HBamar
Signature of Land Owner or Lessee

DWR 55-44-9/91 (Rev.)

18. If construction plans have been coordinated with Arizona Department of Environmental Qualtiy, who is the agency contact? _____

If construction plans have been coordinated with Arizona Department of Water Resources, Hydrology/Water Quality Division, who is the division contact? _____

19. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air Rotary

b) Borehole diameters: 13 3/4 inches from surface feet to 20 feet.
~~8 1/2~~ inches from 20 feet to 280 feet.

c) Casing materials (PVC, steel, hollow-stem auger, etc.)

material LC Steel diameter 9 5/8 inches from 0 feet to 20 feet

material LC Steel diameter 4 1/2 inches from 0 feet to 230 feet

d) Method of sealing at reductions ~~PVC SCH80 4½"~~ ~~230~~ ~~270~~

e) Annular seal materials (cement, grout, etc.); method of placement (tremied, circulated)

material grout method tremie from 0 feet to 210 feet

material g. Bentonite method tremie from 210 feet to 220 feet

f) Filter packs (state material):

material 10/20 Colorado Silica from 220 feet to 280 feet

material _____ from _____ feet to _____ feet

g) Perforations or screen specifications:

type PVC SCH80 from 230 feet to 270 feet

type _____ from _____ feet to _____ feet

h) Method of well development (bail, air lift, surge) _____

i) Will surface or conductor casing extend above grade: Yes X No _____

20. Include detailed construction diagram showing expected water depth in feet below land surface, and details of vault, if specified.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with A.A.C. R12-15-811 and R12-15-816.

II. Drilling of the well shall be completed within one (1) year after the date of Notice.

III. A Well Driller Report, is required within 30 days of completion of drilling. A completion Report, is required to be filed with the Department within 30 days after installation of pump equipment for monitor wells.

IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the maximum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual volume of 10 acre feet total.

V. A.A.C. Rule R12-15-811.H.2, requires that: "A monitor well shall be identified as such on the vault cover or at the top of the steel casing. Identification information will include well registration number."

VI. If the proposed well is located near the Colorado River and if the proposed well may pump Colorado River Water, proof must be submitted with this notice that the applicant has the legal right to use Colorado River Water. Alternately, evidence needs to be submitted that supports the contention that Colorado River water will not be withdrawn by the well. Persons near the Colorado River may wish to contact the Colorado River Management Division, Department of Water Resources at (602) 542-1960 to determine those Townships and Ranges which will be affected by these requirements or with questions regarding the proof of right.

VII. Special construction standards required pursuant to A.A.C. Rule R12-15-821: _____

ARIZONA DEPARTMENT OF WATER RESOURCES

15 South 15th Avenue, Phoenix, Arizona 85007
Telephone (602) 542-1581
Fax (602) 542-3383

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

7/1/93

REGISTRATION# 55-539782 thru 55-539787

FILE# VARIOUS

Dear Well Owner:

Enclosed for your records is an annotated copy of the Notice of Intention to Drill a well. This is returned to you as evidence of compliance with A.R.S. §45-596. A drilling card has been mailed to your designated driller. Prior to drilling he must have it in his possession.

Since this well is being drilled as a Monitor well, or for Cathodic Protection, Grounding, Geotechnical or Piezometer purposes, our standard driller report form is also being furnished. He is required to complete it and return it to the Department within 30 days after the installation of the pumping equipment as required by A.R.S. §45-600.

A Change of Well Information form is enclosed for your future use . If you deem it necessary to change the location of the proposed well, please notify the Department on the enclosed form. A properly amended Drilling Card will then be issued and must be in possession of the driller before drilling begins. During the drilling of a new well, if it is determined that it must be abandoned, then a Well Abandonment Completion Report must be submitted per R12-15-816.F. Per A.R.S. §45-593, the person to whom a well is registered shall notify this Department of a change of ownership of the well and/or information pertaining to the physical characteristics of the well, in order to keep the well registration file current and accurate.

For additional information, you may contact the Operations Division at (602) 542-1581.

Sincerely,

Ellen Kane

Ellen Kane
Groundwater Permit Specialist

RECEIPT

№ 6892

WATER RESOURCES ASSOCIATES, INC.
4041 N CENTRAL AVE S 1050
PHOENIX AZ 85012

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007
(602) 542-1581

ENTRY CODE 55

FILE NO. VARIOUS 539782 THRU 539787

ITEM DESCRIPTION	RATE	AMOUNT
FILING FEE FOR NOI TO DRILL WELLS	$10.00	$60.00
7/1/93/ek CK#10008		$60.00

PAID JUL - 1 1993 PAID

CHECK NO. _____ FEE ACCOUNT NO. _____ TOTAL $ _____

CHIT NO. _____ RECEIVED BY _____ DATE _____

IPS 1821 – Rev. 4/91

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

RECEIVED
JUL 28 1993
OPERATIONS

CHANGE OF WELL INFORMATION

Well Registration No. 55- 539783 File No. D(24-24)3 BBB (location)

I/(We) request the following well information be changed:

Drilling Firm from : Farwest Pump
to : Stewart Brothers Drilling Company
P.O. Box 2067, Milan, NM 87021
DWR License No. 314
ROC Category A-4 #75379

Date: 07/28/93 Signature of Current Well Owner HBjamar MEO

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

ENTERED AUG - 1 1993

I, _____ (please print), state that I am (no longer) the (new) owner of the well described below:

Township _____ Range _____ Section _____; _____ ¼ _____ ¼ _____ ¼

Well Registration No.55- _____ File No. _____ (location)

PRINT Previous Owner's Name _____

Address _____

City _____ State Zip

PRINT New Owner's Name _____

Address _____

City _____ State Zip

Dated: _____ Signature of New Owner _____

NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

DWR-55-71-3/90

REISSUE

~~MONITOR~~/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

DEPARTMENT OF WATER RESOURCES
15 SOUTH 15th AVENUE
PHOENIX, ARIZONA 85007

THIS DRILLING CARD SHALL BE IN THE POSSESSION OF THE DRILLER BEFORE DRILLING OPERATIONS COMMENCE

AUTHORIZED DRILLER STEWART BROS. DRILLING CO. LICENSE NO. 314

Notice(s) of Intention to Drill/~~Deepen~~/Exploration Well(s) for MONITORING purposes has been filed with the Department by:

APPLICANT'S NAME CEC/WRA 4041 N. CENTRAL AVE S1050 PHX AZ 85012

Owner of Well PHELPS DODGE 2600 N. CENTRAL AVE PHX AZ 85004-3014
Name Address City State Zip

Well(s) to be located in: 23S 24E 3 NW NW NW
Township Range Section ¼ ¼ ¼

Number of Wells in Project: 1 Registration No. 55- 539783

This authorization to drill/~~deepen~~ the above well(s) expires at midnight on 6/30/94
XXXXXXXX

PURSUANT TO ARS §45-600, R12-15-811.H.2, THE DRILLER SHALL FILE ON THE PRESCRIBED DEPARTMENT FORM, A LOG OF THE WELL(S) WITHIN 30 DAYS OF COMPLETION OF DRILLING. A MONITOR WELL SHALL BE IDENTIFIED AS SUCH, ON THE VAULT COVER OR AT THE TOP OF THE STEEL CASING. IDENTIFICATION INFORMATION WILL INCLUDE WELL REGISTRATION NUMBER.

DWR-55-44B-9/90

Lawrence A. Ramsey
For: DEPUTY DIRECTOR

MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

DEPARTMENT OF WATER RESOURCES
15 SOUTH 15th AVENUE
PHOENIX, ARIZONA 85007

THIS DRILLING CARD SHALL BE IN THE POSSESSION OF THE DRILLER
BEFORE DRILLING OPERATIONS COMMENCE

AUTHORIZED DRILLER FARWEST PUMP LICENSE NO. 307

Notice(s) of Intention to Drill/~~Deepen~~ Exploration Well(s) for MONITORING purposes has been filed with the Department by:

APPLICANT'S NAME CEC/WRA

Owner of Well PHELPS DODGE 2600 N CENTRAL AVE PHX AZ 85004-3014
Name Address City State Zip

Well(s) to be located in: 24S 24E 3 NW NW NW
Township Range Section ¼ ¼ ¼

Number of Wells in Project: 1 Registration No. 55- 539783

This authorization to drill/~~deepen~~ the above well(s) expires at midnight on 6/30/94

PURSUANT TO ARS §45-600, R12-15-811.H.2, THE DRILLER SHALL FILE ON THE PRESCRIBED DEPARTMENT FORM, A LOG OF THE WELL(S) WITHIN 30 DAYS OF COMPLETION OF DRILLING. A MONITOR WELL SHALL BE IDENTIFIED AS SUCH, ON THE VAULT COVER OR AT THE TOP OF THE STEEL CASING. IDENTIFICATION INFORMATION WILL INCLUDE WELL REGISTRATION NUMBER.

DWR-55-44B-9/90

for DEPUTY DIRECTOR

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

BF-1

CHANGE OF WELL INFORMATION

Well Registration No. 55- 539783 File No. _____ (location)

I/We request the following well information be changed:

Please change the well location from 23S 24E Sec. 3 NW NW NW to 24S 24E Sec. 4 NE NE NE.

ENTERED OCT - 6 1993

Date: 9/27/93 Signature of Current Well Owner John Maloney - Stewart Bros. For Phelps Dodge

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, _____ (please print), state that I am (no longer) the (new) owner of the well described below:

SEP 30

_____ ¼ _____ ¼ _____ ¼: Section _____ Township _____ Range _____
10 acre 40 acre 160 acre

Well Registration No.55- _____ File No. _____ (location)

PRINT Previous Owner's Name _____ PRINT New Owner's Name _____

Address _____ Address _____

City _____ State _____ Zip _____ City _____ State _____ Zip _____

Dated: _____ Signature of New Owner _____

NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

DWR-55-71-11/90

ARIZONA DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

BF-2

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Name: Phelps Dodge
   Address: 2600 N. Central Ave. Phoenix AZ 85012
   (Street / City / State / Zip)
2. Driller Name: Stewart Brothers Drilling Company
   Address: PO Box 2067 Milan NM 87021
   (Street / City / State / Zip)
3. Location: 24S N/S (Township) 24E E/W (Range) 4 (Section) SE 1/4 (10-acre) SE 1/4 (40-acre) NW 1/4 (160-acre)
4. Well Registration No. 55- 539786 (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 326 ft.
7. Type of casing low carbon steel
8. Diameter and length of casing 10 in. from +1 to 20, 4 in from +1 to 265.
9. Method of sealing at reduction points _____
10. Perforated from _____ to _____, from _____ to _____, from _____ to _____.
11. Size of cuts _____ Number of cuts per foot _____
12. If screen was installed: Length 40 ft. Diam 4 in. Type PVC (265-305) Slotted
13. Method of construction drilled
    (drilled, dug, driven, bored, jetted, etc)
14. Date started August (Month) 3 (Day) 1993 (Year)
15. Date completed August (Month) 5 (Day) 1993 (Year)
16. Depth to water 275 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
    ground level
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-539786
File No. D(24-24)4bdd
Received _____ By _____
Entered ENTERED OCT - 1 1993 By _____

DWR-55-55-7/91 (Rev.)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encounterd, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	50	clay & gravel
50	80	sand & gravel
80	95	clay & gravel
95	150	sand & gravel
150	190	gravel
190	195	sand & gravel
195	205	sand & clay
205	250	gravel
250	326	sand & gravel

I hereby certify that this well was drilled by me (or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: David M. Stewart

PO Box 2067

Street

Milan NM 87021

City **State** **Zip**

Date 9/2/93

ONITOR/PIEZOMETER WELL

ILING FEE $10.00

MW-BF2

ARIZONA DEPARTMENT OF WATER RESOURCES
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

MONITOR/PIEZOMETER WELL

FILING FEE $10.00

NOTICE OF INTENTION TO DRILL MONITOR/PIEZOMETER WELL

ection § 45-596, Arizona Revised Statutes provide: Prior to drilling a monitor or piezometer well, a Notice of ntention to Drill shall be filed with the Department on a prescribed form.

1. WELL LOCATION:
   24 N/S 24 E/W 4
   Township | Range | Section
   10 Acre Subdivision
   SE 1/4 SE 1/4 NW 1/4
   10 ACRE 40 ACRE 160 ACRE
2. Position location of the well on the land:
   Latitude 31 0 22 · 20 "
   Longitude 109 0 54 · 40 "
3. County: Cochise
4. **Owner of the land of wellsite:**
   Phelps Dodge
   Name
   2600 N. Central Ave.
   Address
   Phoenix AZ 85004-3014
   City State Zip
5. **Lessee of the land of wellsite:**
   Name
   Address
   City State Zip
6. **Owner of well:**
   Same
   Name
   Address
   City State Zip
7. Consulting Firm: CEC/WRA
   Contact Person: Marvin Glotfelty
   Phone: (602) 248-8808
8. Purpose of well drilled pursuant to this notice
   Monitor X
   Piezometer
9. If for deepening or modifying, Well Registration Number
   55-
10. Construction will start:
    07 Month 15 Day 93 Year
11. Period well will remain in use 10 Months (Years)
12. For monitoring wells, is pump equipment to be installed?
    Yes No X
    (a) If yes, design pump capacity
    (b) What use will be made of the water
13. Drilling firm:
    Forrest Pump
    Name
    800 East Maley
    Address
    Wilcox, Az. 85643
    City State Zip
    DWR License No. 307
    4-16, #8541 2
    ROC Category
14. Will this proposed well pump Colorado River water? Yes No X
    (See condition VI on reverse)
15. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous material or petroleum storage areas and tanks?
    Yes X No

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

File No. D(24-24)4BDD
Filed 6-29-93 By ek
Input ENTERED By JUL 0 6 1993

DUPLICATE

Mailed 7-1-93 By ek
Registration 55- 539786
AMA/INA —
W/S 13 S/B

16. Proposed method of abandonment of well after project is completed: A.A.C. Rule 12-15-816
17. Is this well to monitor existing contamination? Potential contamination Please explain:

RECEIVED
JUN 29 1993
WATER MGMT DIV.

GENERAL INSTRUCTIONS

- Fill out this form in DUPLICATE and send WITH $10.00 FEE to 15 South 15th Avenue, Phoenix, AZ 85007.
- For specific instructions, limitations and conditions, see the reverse side of this form.
- **Must be signed by land owner or lessee.**
- Section §45-596(D), provides that the Director shall determine that all information required on form has been submitted. If not, the person filing will be notified and the drilling, deepening, or modification of the well may not proceed.

state that Notice is filed in compliance with Section § 45-596 and is complete and correct to the best of my knowledge and belief and that I nderstand the conditions set forth on the reverse side of this form.

6/29/93
Date

H Kumar
Signature of Land Owner or Lessee

R 55-44-9/91 (Rev.)

18. If construction plans have been coordinated with Arizona Department of Environmental Qualtiy, who is the agency contact? _____

If construction plans have been coordinated with Arizona Department of Water Resources, Hydrology/Water Quality Division, who is the division contact? _____

19. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) _____

b) Borehole diameters: ~~9 5/8~~ 13 3/4 inches from 0 feet to 20 feet.
~~8 1/2~~ 8 1/2 inches from 20 feet to 295 feet.

c) Casing materials (PVC, steel, hollow-stem auger, etc.)

material LC Steel diameter ~~9 5/8~~ inches from 0 feet to 20 feet
material LC Steel diameter 4 1/2 inches from ~~1~~0 feet to 295 feet

d) Method of sealing at reductions

e) Annular seal materials (cement, grout, etc.); method of placement (tremied, circulated)

material Grout method tremie from 0 feet to 235 feet
material ~~Grout~~ Bentonite method tremie from 235 feet to 245 feet

f) Filter packs (state material):

material 10/20 Colorado silica from 245 feet to 305 feet
material _____ from _____ feet to _____ feet

g) Perforations or screen specifications:

type PVC Sch 80 from 255 feet to 295 feet
type _____ from _____ feet to _____ feet

h) Method of well development (bail, air lift, surge) Air lift

i) Will surface or conductor casing extend above grade: Yes X No _____

20. Include detailed construction diagram showing expected water depth in feet below land surface, and details of vault, if specified.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with A.A.C. R12-15-811 and R12-15-816.

II. Drilling of the well shall be completed within one (1) year after the date of Notice.

III. A Well Driller Report, is required within 30 days of completion of drilling. A completion Report, is required to be filed with the Department within 30 days after installation of pump equipment for monitor wells.

IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the maximum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual volume of 10 acre feet total.

V. A.A.C. Rule R12-15-811.H.2, requires that: "A monitor well shall be identified as such on the vault cover or at the top of the steel casing. Identification information will include well registration number."

VI. If the proposed well is located near the Colorado River and if the proposed well may pump Colorado River Water, proof must be submitted with this notice that the applicant has the legal right to use Colorado River Water. Alternately, evidence needs to be submitted that supports the contention that Colorado River water will not be withdrawn by the well. Persons near the Colorado River may wish to contact the Colorado River Management Division, Department of Water Resources at (602) 542-1960 to determine those Townships and Ranges which will be affected by these requirements or with questions regarding the proof of right.

VII. Special construction standards required pursuant to A.A.C. Rule R12-15-821: _____

ARIZONA DEPARTMENT OF WATER RESOURCES

15 South 15th Avenue, Phoenix, Arizona 85007
Telephone (602) 542-1581
Fax (602) 542-3383

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

7/1/93

REGISTRATION# 55-539782 thru 55-539787

FILE# VARIOUS

Dear Well Owner:

Enclosed for your records is an annotated copy of the Notice of Intention to Drill a well. This is returned to you as evidence of compliance with A.R.S. §45-596. A drilling card has been mailed to your designated driller. Prior to drilling he must have it in his possession.

Since this well is being drilled as a Monitor well, or for Cathodic Protection, Grounding, Geotechnical or Piezometer purposes, our standard driller report form is also being furnished. He is required to complete it and return it to the Department within 30 days after the installation of the pumping equipment as required by A.R.S. §45-600.

A Change of Well Information form is enclosed for your future use . If you deem it necessary to change the location of the proposed well, please notify the Department on the enclosed form. A properly amended Drilling Card will then be issued and must be in possession of the driller before drilling begins. During the drilling of a new well, if it is determined that it must be abandoned, then a Well Abandonment Completion Report must be submitted per R12-15-816.F. Per A.R.S. §45-593, the person to whom a well is registered shall notify this Department of a change of ownership of the well and/or information pertaining to the physical characteristics of the well, in order to keep the well registration file current and accurate.

For additional information, you may contact the Operations Division at (602) 542-1581.

Sincerely,

Ellen Kane

Ellen Kane
Groundwater Permit Specialist

RECEIPT

№ 6892

WATER RESOURCES ASSOCIATES, INC.
4041 N CENTRAL AVE S 1050
PHOENIX AZ 85012

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007
(602) 542-1581

ENTRY CODE 55

FILE NO. VARIOUS 539782 THRU 539787

ITEM DESCRIPTION	RATE	AMOUNT
FILING FEE FOR NOI TO DRILL WELLS	$10.00	$60.00
7/1/93/ek CK#10008		$60.00

PAID

CHECK NO. _____ FEE ACCOUNT NO. _____ TOTAL $ _____

CHIT NO. _____ RECEIVED BY _____ DATE _____

IPS 1821 – Rev. 4/91

MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

DEPARTMENT OF WATER RESOURCES
15 SOUTH 15th AVENUE
PHOENIX, ARIZONA 85007

THIS DRILLING CARD SHALL BE IN THE POSSESSION OF THE DRILLER
BEFORE DRILLING OPERATIONS COMMENCE

AUTHORIZED DRILLER FARWEST PUMP LICENSE NO. 307

Notice(s) of Intention to Drill/~~Deepen~~ Exploration Well(s) for MONITORING purposes has been filed with the Department by:

APPLICANT'S NAME CEC/WRA

Owner of Well PHELPS DODGE 2600 N. CENTRAL AVE PHX AZ 85004-3014
Name Address City State Zip

Well(s) to be located in: 24S 24E 4 SE SE NW
Township Range Section ¼ ¼ ¼

Number of Wells in Project: 1 Registration No. 55- 539786

This authorization to drill/~~deepen~~ the above well(s) expires at midnight on 6/30/94

PURSUANT TO ARS §45-600, R12-15-811.H.2, THE DRILLER SHALL FILE ON THE PRESCRIBED DEPARTMENT FORM, A LOG OF THE WELL(S) WITHIN 30 DAYS OF COMPLETION OF DRILLING. A MONITOR WELL SHALL BE IDENTIFIED AS SUCH, ON THE VAULT COVER OR AT THE TOP OF THE STEEL CASING. IDENTIFICATION INFORMATION WILL INCLUDE WELL REGISTRATION NUMBER.

Bruce [illegible]
for DEPUTY DIRECTOR

DWR-55-44B-9/90

REISSUED

MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

DEPARTMENT OF WATER RESOURCES
15 SOUTH 15th AVENUE
PHOENIX, ARIZONA 85007

THIS DRILLING CARD SHALL BE IN THE POSSESSION OF THE DRILLER BEFORE DRILLING OPERATIONS COMMENCE

AUTHORIZED DRILLER STEWART BROS. DRILLING CO. LICENSE NO. 314

Notice(s) of Intention to Drill/~~Deepen~~ Exploration Well(s) for MONITORING purposes has been filed with the Department by:

APPLICANT'S NAME CEC/WRA 4041 N. CENTRAL AVE S1050 PHX AZ 85012

Owner of Well PHELPS DODGE 2600 N. CENTRAL AVE PHX AZ 85004-3014
Name Address City State Zip

Well(s) to be located in: 24S 24E 4 SE SE NW
Township Range Section ¼ ¼ ¼

Number of Wells in Project: 1 Registration No. 55- 539786

This authorization to drill/~~deepen~~ the above well(s) expires at midnight on 6/30/94

PURSUANT TO ARS §45-600, R12-15-811.H.2, THE DRILLER SHALL FILE ON THE PRESCRIBED DEPARTMENT FORM, A LOG OF THE WELL(S) WITHIN 30 DAYS OF COMPLETION OF DRILLING. A MONITOR WELL SHALL BE IDENTIFIED AS SUCH, ON THE VAULT COVER OR AT THE TOP OF THE STEEL CASING. IDENTIFICATION INFORMATION WILL INCLUDE WELL REGISTRATION NUMBER.

Lawrence A Ramsey
For: DEPUTY DIRECTOR

DWR-55-44B-9/90

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

JUL 28 1993

CHANGE OF WELL INFORMATION

Well Registration No. 55- 539786 File No. D(24-24) 4 BDD
(location)

I (We) request the following well information be changed:

Drilling Firm from : Farwest Pump
to : Stewart Brothers Drilling Company
P.O. Box 2067, Milan, NM 87021
DWR License No. 314
ROC Category A-4 #75379

Date: 07/28/93 Signature of Current Well Owner JH Bauman MFG

(DO NOT CUT THIS FORM IN HALF)

ENTERED AUG - 1 1993

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, _____, state that I am (no longer) the (new)
(please print)
owner of the well described below:

Township_____ Range_____ Section_____; _____ ¼ _____ ¼ _____ ¼

Well Registration No.55-_____ File No._____
(location)

PRINT Previous Owner's Name	PRINT New Owner's Name
Address	Address
City State Zip	City State Zip

Dated:_____ Signature of New Owner_____

NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

DWR-55-71-3/90

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Pump Installation Completion Report

RECEIVED
NOV 12 2004
Information Management

- Review instructions prior to completing form
- The registered well owner should file this report with the Department within 30 days following installation of pump equipment

** PLEASE PRINT CLEARLY **

FILE NUMBER: D(24-24) 2 CBB
WELL REGISTRATION NUMBER: 55- 577927

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: BIMA LLC

MAILING ADDRESS: PO DRAWER Q

CITY / STATE / ZIP: BISBEE, AZ 85603

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER: 520-432-7687

FAX:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	2	SW 1/4	NW 1/4	NW 1/4

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
101	41	008

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 2. EQUIPMENT INSTALLED

DATE PUMP INSTALLED: 9-20-04

Pump Type

CHECK ONE

- ☐ Air Lift
- ☐ Bucket
- ☐ Centrifugal
- ☐ Jet
- ☐ Piston
- ☐ Rotary
- ☒ Submersible
- ☐ Turbine
- ☐ Other (please specify)

Power Type

CHECK ONE

- ☐ Diesel Engine
- ☑ Electric Motor
- ☐ Gasoline Engine
- ☐ Hand
- ☐ Natural Gas
- ☐ Windmill
- ☐ Other (please specify)

RATED PUMP CAPACITY: 10 Gallons Per Minute

HORSE POWER RATING OF MOTOR: 2 hp

SECTION 3. WELL TEST

Pump Test Data

DATE WELL TESTED: 9-20-04

STATIC WATER LEVEL (A): 341 Feet Below Land Surface

PUMPING WATER LEVEL (B): 355 Feet Below Land Surface

DRAWDOWN [(B) - (A)]: 14

TEST PUMPING RATE: 10 Gallons Per Minute

DURATION OF PUMP TEST (Minimum 4 Hours): Hours

TOTAL PUMPING LIFT: 355 Feet

FOR FLOWING WELL, MEASURED SHUT IN HEAD ☐ FT ☐ PSI

Method of Discharge Measurement

CHECK ONE

- ☐ Bailer
- ☐ Bucket - Barrel - Stopwatch
- ☐ Current
- ☐ Estimated - Air Lift
- ☐ Gauge
- ☐ Meter
- ☐ Orifice
- ☐ Volume
- ☐ Weir - Flume
- ☒ Other (please specify)

Method of Measuring Water Level

CHECK ONE

- ☐ Air Line
- ☒ Electric Measuring Line (Sounder)
- ☐ Steel Tape
- ☐ Other (please specify)

ANSWERED NOV 15 2004

I HEREBY CERTIFY *that the above statements are true to the best of my knowledge and belief according to* A.R.S § 45-600(B)

SIGNATURE OF WELL OWNER: [signature] MANAGER

DATE: 11-4-04

DWR-55-56 (Rev. 10/11/01)

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

RECEIVED
SEP 22 2004
Information Management

Well Driller Report and Well Log

FILE NUMBER
D(24-24) 2 CBB
WELL REGISTRATION NUMBER
55- 577927
PERMIT NUMBER (IF ISSUED)

- Review instructions prior to completing form
- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL
BIMA LLC

MAILING ADDRESS
PO DRAWER Q

CITY / STATE / ZIP
BISBEE, AZ 85603

CONTACT PERSON NAME AND TITLE

TELEPHONE NUMBER
520-432-7687

FAX

Location of Well

WELL LOCATION ADDRESS (IF KNOWN)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24 S	24 E	2	SW 1/4	NW 1/4	NW 1/4

LATITUDE: 31 ° 22 ' 58 "N
LONGITUDE: 109 ° 53 ' 119 "W

LAND SURFACE ELEVATION AT WELL
5000 Feet Above Sea Level

METHOD OF LATITUDE / LONGITUDE (CHECK ONE)
☒ Hand-Held
☐ USGS Quad Map ☐ Conventional Survey ☒ GPS : ☐ Survey-Grade

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
101	41	008

COUNTY WHERE WELL IS LOCATED
Cochise

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME
ALLEN WELL SERVICE

DWR LICENSE NUMBER
14

TELEPHONE NUMBER
520-642-3775

FAX

ENTERED SEP 2 2 2004

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED
9-17-04

DATE WELL CONSTRUCTION COMPLETED
9-17-04

IF FLOWING WELL, METHOD OF FLOW REGULATION
☐ Valve ☐ Other

Drill Method

CHECK ONE
- ☒ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development

CHECK ONE
- ☒ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Water Level Information

STATIC WATER LEVEL
341 Feet Below Land Surface

DATE MEASURED
9-17-04

Method of Sealing at Reduction Points

CHECK ONE
- ☒ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☐ Other (please specify)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 577927

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Borehole			Installed Casing													
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (X)				PERFORATION TYPE (X)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
Existing	Well															
0	20		0	20	8 5/8	X										
20	350	8"	5'	350	6"		X									
		New														
350	465	5 3/4	345	465	4 1/2		X		an Perforated							1/8"

Installed Annular Material												
DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)								FILTER PACK		
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
+1/2"	19 1/2				X							

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
465	Feet Below Land Surface	465	Feet Below Land Surface

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 577927

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
350	465	red shale rock with some thin layers of clay	
		water @ 400'	X

Well Driller Report and Well Log

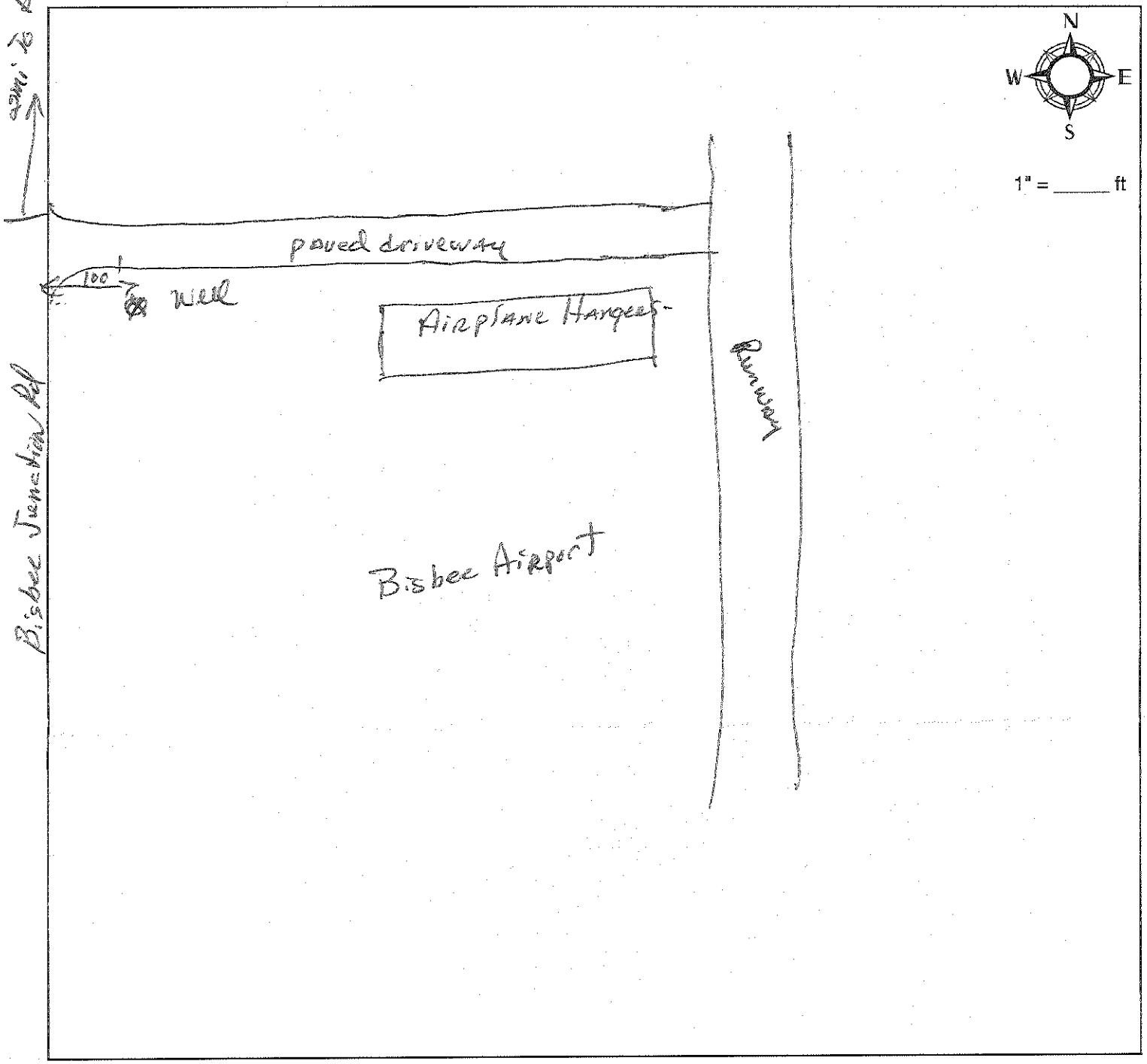
WELL REGISTRATION NUMBER
55- 577927

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
BIMA LLC	101	41	008

* Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.

Please indicate the distance between the well location and any septic tank system or sewer system.



I state that this notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
Allen Well Service	Henry Allen	9-20-04

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

May 12, 2004

Janet Napolitano
Governor

Herb Guenther
Director

BIMA LLC
PO DRAWER Q
BISBEE, AZ 85603

Registration No. 55- 577927
File No. D(24-24) 2 CBB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Deepen a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Pump Installation Completion Report is to be submitted when pump equipment is installed. The drilling card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the drilling card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended drilling card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a Pump Installation Completion Report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate Well Drillers Report and Well Log within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Sharon Ward

Sharon Ward
NOI Unit
Water Management Support Section

Enclosures

ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-577927

AUTHORIZED DRILLER: ALLEN WELL SERVICE LICENSE NO: 14

NOTICE OF INTENTION TO DEEPEN AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: BIMA LLC PO DRAWER Q BISBEE, AZ 85603

The well(s) is/are to be located in the:

NW ¼ of the NW ¼ of the SW ¼ Section 2 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1 Assessor Parcel No: 101-41-008

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 9TH DAY OF MAY, 2005

5/18/04

WATER MANAGEMENT SUPPORT SECTION

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $50 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $50.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA/INA — 8 — 76 — 58
RECEIVED DATE 3/10/04 — WS 11
ISSUED DATE 3/12/04 — WQARF — CERCLA

FILE NUMBER D24-24W2CB
WELL REGISTRATION NUMBER 55- 577927

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY ENDORSEMENT (If applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 before submission to the Department of Water Resources. You must also attach a site plan (see instructions).

CHECK ONE

☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☒ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE: April 26 2004
BY: Carlos Diaz

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ ENV. HLTH SPEC I

TELEPHONE NUMBER: 520 432-9442

DATE: April 26, 2004

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

☒ Exempt
(Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)

☐ Non-Exempt
(Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 10 Gallons Per Minute

Proposed Action

CHECK ONE

☐ Drill New Well
☒ Deepen
☐ Replace
☐ Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55- 577927

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	2	SW ¼	NW ¼	NW ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
101	41	008	9

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: BIMA, LLC

MAILING ADDRESS: P.O Drawer Q

CITY / STATE / ZIP CODE: Bisbee, Az 85603

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER: 520-432-7687

FAX:

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL:

MAILING ADDRESS:

CITY / STATE / ZIP CODE:

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER:

FAX:

RECEIVED MAY [illegible] WATER MGT

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?	X		PLEASE STATE 55-577927
3. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

GPS N 31° 22'. 581
W 109° 53'. 119

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55- 577927

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: Allen's Well Service

DWR LICENSE NUMBER	ROC LICENSE CATEGORY
14	C-53 L-53
TELEPHONE NUMBER	**FAX**
520 642 3775	520-642 3221

SECTION 6. WATER / SITE INFORMATION

***Principal Use* of Water** CHECK ONE	***Other Uses* of Water** CHECK ALL THAT APPLY
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☒ Domestic	☒ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify):*	☐ Other *(please specify):*

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

DATE CONSTRUCTION IS TO BEGIN: MAY-04

Deepening

Borehole			Casing												
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (✓)				PERFORATION TYPE (✓)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
Existing Well 0	300		+1 0	19 300	8" 6"	X*	X									Cement
300 New	400	5 3/4	295	400	4 1/2"		X									

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811.B)

RECEIVED
MAY 10 2004
WATER MGT.

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: WILLIAM SEIBOLD MANAGER

SIGNATURE OF WELL OWNER OR LANDOWNER: William Seibold

DATE: 4-19-04

...Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55-577927

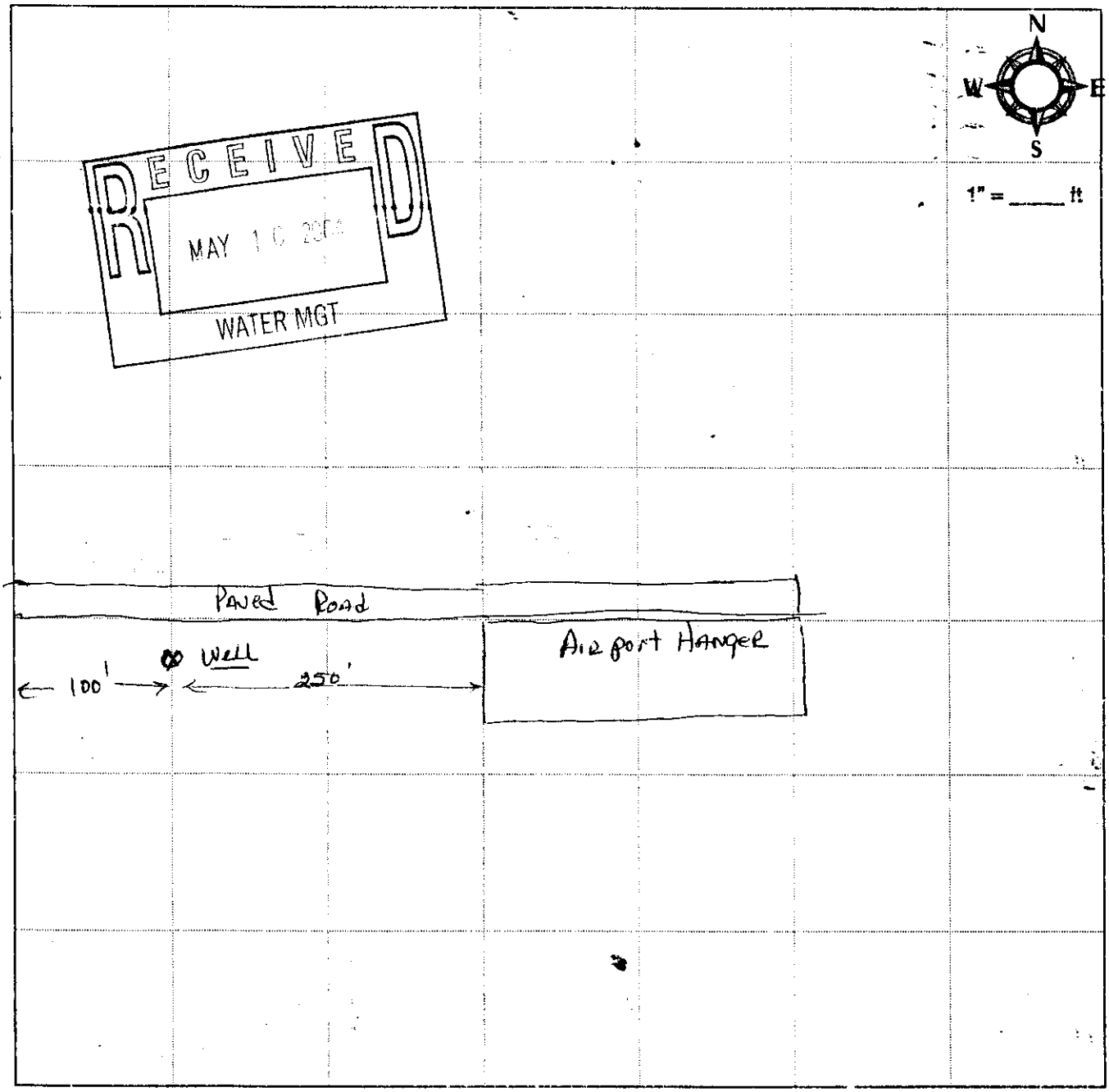
WELL SITE PLAN

NAME OF WELL OWNER
BIMA- LLC

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
101	41	008

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE
Carlos Diaz Env Hlth Spec I

COUNTY OR LOCAL AUTHORITY SIGNATURE
Carlos Diaz

TELEPHONE NUMBER
520-432-9442

DATE
April 26 2004

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY
ENVIRONMENTAL HEALTH DIVISION
DATE April 26 2004
BY Carlos Diaz

RECEIVED
MAY 1 [illegible]
WATER MGT

RECEIVED
OCT 25 1999
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ (602)417-2470

NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. BIMA, LLC (LANDOWNER'S NAME) P.O. Drawer Q (CURRENT MAILING ADDRESS) Bisbee (CITY) AZ (STATE) 85603 (ZIP)

B. TELEPHONE NO. 520-432-7687 — COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN COCHISE COUNTY — D. 101 (BOOK) 41 (MAP) 008 (PARCEL) — E. 9 (# OF ACRES)

OFFICIAL SEAL OR STAMP: COCHISE COUNTY HEALTH & SOCIAL SERVICES

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NW ¼ (10AC) NW ¼ (40AC) SW ¼ (160AC) OF SECTION 2 TOWNSHIP 24 N(S) RANGE 24 E(W)

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL X ; INSUFFICIENT INFORMATION TO MAKE DETERMINATION _____ ; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE 10-20-99 AUTHORIZED SIGNATURE Steven Herbert TITLE Envir Health Specialis

1. OWNER OF WELL:
BIMA, LLC
NAME
P.O. Drawer Q
CURRENT MAILING ADDRESS
Bisbee AZ 85603
CITY STATE ZIP

TELEPHONE NUMBER 520-432-7687

2. ACTION REQUESTED:
DRILL NEW WELL X DEEPEN _____
MODIFY _____ REPLACE _____

WELL REGISTRATION NO 55-_____

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL _____ GALLONS PER MINUTE;

DISTANCE FROM THE ORIGINAL WELL: _____ FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH NOV YEAR 99

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: STEEL
DIAMETER: 7 " DEPTH: 20 '

DOWNHOLE CASING: PVC
DIAMETER: 5 " DEPTH: 300 '

5. DESIGN PUMP CAPACITY:
10 GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
N/A
NAME
_____
CURRENT MAILING ADDRESS
_____
CITY STATE ZIP

TELEPHONE: _____

7. PRINCIPAL USE OF WATER: (BE SPECIFIC)
FLUSH TOILETS, WASHING HANDS

8. OTHER USES OF WATER: (BE SPECIFIC).
N/A

9. IF USE INCLUDES IRRIGATION, STATE TO NEAREST TENTH, THE NUMBER OF ACRES TO BE IRRIGATED: N/A

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55-572927
DATE FILED 10-25-99
FILE NO. D(24-24)2 CBB
AMA/INA _____
W/S 11 S/B 16
PROCESSED BY _____
DATE MAILED 11-9-99
M.D.

10. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NW ¼ (10AC) NW ¼ (40AC) SW ¼ (160AC) SECTION 2
TWNSHP 24 N(S) RNG 24 E/W

11. TYPE OF WELL (CHECK ONE):
EXEMPT X NON-EXEMPT _____

12. CHECK ONE:
RESIDENTIAL X COMMERCIAL _____

13. IS THE PROPOSED WELLSITE WITHIN 10(FEET OF A SEPTIC TANK SYSTEM, SEWEI DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGI AREAS AND TANKS?
YES _____ NO X

14. DRILLING FIRM:
BJ DRILLING CO, INC.
NAME
P.O. BOX 815
MAILING ADDRESS
BENSON, AZ 85602-0815
CITY STATE ZIP
(520) 586-3282
TELEPHONE NO.
25
DWR LICENSE NUMBER
A-4
ROC LICENSE CATEGORY

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAN THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM. BIMA, LLC

William Stroud, Manager — 15. TYPE OR PRINT NAME AND TITLE

William Stroud MANAGER — 16. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE

10-14-99 — 17. DATE

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street
Phoenix, Arizona 85004

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

RECEIVED
MAY 22 2000
RECORDS MGT

1. JS & K DRILLING, INC.
2235 N. RANCH TRAIL
HUACHUCA CITY, AZ 85616-8283

2. Owner Name: BIMA, LLC
Address: BISBEE (City) AZ (State) 85603 (Zip)

3. Location: 24 N/S 24 E/W 2 (Township / Range / Section) ¼ NW (10-acre) ¼ NW (40-acre) ¼ SW (160-acre)

4. Well Registration No. 55-577927 (Required)

5. Permit No. _____ (If Issued)

DESCRIPTION OF WELL

6. Total depth of hole 360 ft.
7. Type of casing PVC
8. Diameter and length of casing 8 in. from 0 to 20, 6 in from 10 to 255
9. Method of sealing at reduction points —
10. Perforated from 215 to 255, from — to _____ from _____ to _____
11. Size of cuts 3/8 HOLE Number of cuts per foot 3
12. If screen was installed: Length — ft. Diam _____ in. Type _____
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started MAR (Month) 1 (Day) 06 (Year)
15. Date completed MAR (Month) 3 (Day) 06 (Year)
16. Depth to water 260 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea_level elevation if availabl
STATIC
18. If flowing well, state method of flow regulation: —
19. Remarks: —

ANSWERED MAY 23 2000

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55- 577927
File No. D(24-24) 2 CBB
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	7	SANDY TOP SOIL
7	27	CLAY (RED)
27	57	DECOMPOSED GRANITE & CLAY (RED)
57	335	RED ROCK
335	360	CEMENTED CONGLOMERATE

I hereby certify that this well was drilled by me (or under by supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: JS & K DRILLING, INC.

2235 N. RANCH TRAIL
Street

HUACHUCA CITY, AZ 85616-8283 456-2355
City State Zip Phone No.

Signature of Driller 3/3/00
Date

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

MAIL TO: P. O. BOX 458 - PHOENIX ARIZONA 85001-0458
Phone (602) 417-2470

RECEIVED
DEC 14 1999
RECORDS MGT

COMPLETION REPORT

(Pump Installation Report)

A. Per A.R.S. § 45-600.B, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.

B. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operations. For a flowing well the shut-in pressure should be measured in feet above the land surface or in pounds per square inch at the land surface.

C. The static groundwater level should be measured in feet from the land surface immediately prior to the capacity test.

D. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well be measuring the natural flow at the land surface.

E. Items 1 and 2 are available from the Notice of Intent to Drill.

F. Items 3 and 4 may be available from the driller.

D(24-24)2CBB

1. REGISTRATION NO: 55- 573927 **FILE NO:** 9C(6-17) 17DCD

2. LOCATION OF THE WELL:

16S N/S	17E E/W	17	¼	¼	¼
Township	Range	Section	10-acre	40-acre	160-acre

3. EQUIPMENT INSTALLED:

Kind of pump Submersible (Turbine, Submersible, Centrifugal, etc.) Kind of power ELEC. (Electric, natural gas, gasoline, etc.)

H.P. Rating of Motor 5 Pumping Capacity 25 Date Pump Installed 11-30-99

4. WELL TEST:

Test pumping capacity 25 (Gallons per minute) Date Well Tested 11-30-99

Method of Discharge Measurement BUCKET (Weir, orifice, current meter, etc.)

Static Groundwater Level 320 ft. Drawdown 14 ft.

Total Pumping Lift 334 ft. Drawdown _____ lbs (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

D Durham	11750 S. Agua Verde	Vail	Az	85641
Print Well Owner's Name	Address	City	State	Zip

D Durham	5207629510	11/30/99
Signature of Well Owner	Phone Number	Date

DWR 55-56 (Rev 1/99)

ANSWERED DEC 15 1999

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

REISSUE

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-577927

AUTHORIZED DRILLER: JS & K DRILLING, INC. LICENSE NO: 565

NOTICE OF INTENTION TO DRILL A EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: BIMA, LLC PO DRAWER Q BISBEE, AZ 85603

The well(s) is/are to be located in the:

NW ¼ of the NW ¼ of the SW ¼ Section 2 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 24TH DAY OF OCTOBER, 2000

AMS

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

COPY

REISSUE

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-577927

AUTHORIZED DRILLER: JS & K DRILLING, INC. LICENSE NO: 565

NOTICE OF INTENTION TO DRILL A EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: BIMA, LLC PO DRAWER Q BISBEE, AZ 85603

The well(s) is/are to be located in the:

COPY

NW ¼ of the NW ¼ of the SW ¼ Section 2 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 24TH DAY OF OCTOBER, 2000

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

********** -COMM.JOURNAL- ********** DATE FEB-23-2000 ***** TIME 13:20 *** P.01

MODE = MEMORY TRANSMISSION START=FEB-23 13:19 END=FEB-23 13:20

FILE NO.= 043

NO.	COM	ABBR/INTWK	STATION NAME/ TELEPHONE NO.	PAGES	PRG.NO.	PROGRAM NAME
001	OK	#	9152045611 69	001/001		

-AZ DEPT OF WATER RESOURCE- - ***** - 602 417 2422- **********

Post-it® Fax Note 7671 | Date 3/23 | # pages ▶ 1

To John | From Rita

Co./Dept. JS & K Drilling | Co. ADWR

Phone # | Phone # 602/417-2470

Fax # 520/456-1169 | Fax #

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

COPY

REISSUE

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-577927

AUTHORIZED DRILLER: JS & K DRILLING, INC. LICENSE NO: 565

NOTICE OF INTENTION TO DRILL A EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: BIMA, LLC PO DRAWER Q BISBEE, AZ 85603

The well(s) is/are to be located in the:

COPY

NW ¼ of the NW ¼ of the SW ¼ Section 2 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 24TH DAY OF OCTOBER, 2000

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

Run Date: 02/23/2000

WELL REGISTRY REPORT - WELLS55

Location D 24 0 24 0 2 C B B **WR** 577927 **AMA** NOT WITHIN ANY AMA OR INA

Name BIMA, LLC
PO DRAWER Q

BISBEE AZ 85603

File Type NEW WELLS (INTENTS OR APPLICATIONS)
Application/Issue Date 10/25/1999

Owner OWNER
Driller Nbr 6
Driller Name JIM WILLIAMS WELL DRILLING
Driller Phone 520-772-8881
County COCHISE
GPM

Well Type EXEMPT
SubBasin NO SUBBASIN
Watershed SAN PEDRO RIVER
Water Uses DOMESTIC
Well Uses WATER PRODUCTION
Discharge Method BUCKET - BARREL - STOPWATCH
Power ELECTRIC MOTOR 1 - 5 HP

Well Depth	0.00	**Case Diam**	0.00	**Tested Cap**	25.00
Pump Cap.	25.00	**Case Depth**	0.00	**CRT**	X
Draw Down	14.00	**Water Level**	0.00	**Log**	
		Acres Irrig	0.00	**Finish**	NO CASING CODE LISTED

Comments

Places Of Use

1 D 24 0 24 0 2 C B B

Current Action

2/9/00	869	CHANGE OF DRILLER PACKET ISSUED

Action History

2/7/00	865	CHANGE OF DRILLER RECEIVED
12/14/99	805	COMPLETION REPORT RECEIVED
11/16/99	550	DRILLING AUTHORITY ISSUED
10/25/99	150	NOI RECEIVED FOR A NEW PRODUCTION WELL
10/20/99	210	COUNTY HEALTH AUTHORITY ENDORSED

John J S & K Drilling
Fax: 520/456-1169

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
FOR INFORMATION: CALL MONICA ORTIZ AT (602)417-2470

RECEIVED
FEB - 7 2000
GROUNDWATER MGT

3. REQUEST TO CHANGE WELL DRILLER **$10.00 FEE REQUIRED FOR EACH WELL**

This request must be received by this Department and the Drill Authorization issued to the new drilling firm prior to the start of drilling or the completion of the well listed below.

Well Registration No. 55- 577927	**File No.** D(24-24)2CBB
BJ DRILLING CO. INC.	JS&K DRILLING, INC.
Original Well Driller	**New Well Driller**
P.O. BOX 815	501 SOUTH PATTON
Mailing Address	**Mailing Address**
BENSON AZ 85602-0815	HUACHUCA CITY, AZ 85616
City State Zip	**City State Zip**
520-586-3282	520-456-2355
Telephone Number	**Telephone Number**
25	LIC# 565 ROC CLASS C-53
ADWR License Number	**ADWR License Number ROC License Category**
BIMA, LLC	MNGR 2-3-00
Typed or Printed Name of Well Owner	**Signature of Well Owner Date**

The fee charged for a change of well ownership and/or reissue of a drill card is authorized by R12-15-151, effective June 30, 1994.

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-577927

AUTHORIZED DRILLER: B-J DRILLING COMPANY, INC. LICENSE NO: 25

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: BIMA, LLC PO DRAWER Q BISBEE, AZ 85603

The well(s) is/are to be located in the:

NW 1/4 of the NW 1/4 of the SW 1/4 Section 2 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 24TH DAY OF OCTOBER, 2000.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ (602)417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

RECEIVED
OCT 25 1999
GROUNDWATER MGT

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. BIMA, LLC (LANDOWNER'S NAME) P.O. DRAWER Q (CURRENT MAILING ADDRESS) BISBEE (CITY) AZ (STATE) 85603 (ZIP)

B. TELEPHONE NO. 520-432-7687 COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN COCHISE COUNTY D. 101 (BOOK) 41 (MAP) 008 (PARCEL) E. 9 (# OF ACRES)

OFFICIAL SEAL OR STAMP: COCHISE COUNTY HEALTH & SOCIAL SERVICES

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NW ¼ (10AC) NW ¼ (40AC) SW ¼ (160AC) OF SECTION 2 TOWNSHIP 24 N(S) RANGE 24 E(W)

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL ✓; INSUFFICIENT INFORMATION TO MAKE DETERMINATION _____; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE 10-20-99 AUTHORIZED SIGNATURE Steven Hubert TITLE Envir. Health Specialist

1. OWNER OF WELL:
BIMA, LLC
NAME
P.O. DRAWER Q
CURRENT MAILING ADDRESS
BISBEE AZ 85603
CITY STATE ZIP
TELEPHONE NUMBER 520-432-7687

2. ACTION REQUESTED:
DRILL NEW WELL X DEEPEN _____
MODIFY _____ REPLACE _____
WELL REGISTRATION NO 55-_____

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL _____ GALLONS PER MINUTE;
DISTANCE FROM THE ORIGINAL WELL: _____ FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH NOV YEAR 99

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: STEEL
DIAMETER: 7 " DEPTH: 20 '
DOWNHOLE CASING: PVC
DIAMETER: 5 " DEPTH: 300 '

5. DESIGN PUMP CAPACITY:
10 GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
N/A
NAME
CURRENT MAILING ADDRESS
CITY STATE ZIP
TELEPHONE: _____

7. PRINCIPAL USE OF WATER: (BE SPECIFIC)
WASHING HANDS, FLUSHING TOILETS

8. OTHER USES OF WATER: (BE SPECIFIC).
N/A

9. IF USE INCLUDES IRRIGATION, STATE TO NEAREST TENTH, THE NUMBER OF ACRES TO BE IRRIGATED: N/A

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55-577927
DATE FILED 10-25-99
FILE NO. D(24-24)2 CBB
AMA/INA _____
W/S 11 S/B 76
PROCESSED BY _____
DATE MAILED 11-9-99
mo

10. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NW ¼ (10AC) NW ¼ (40AC) SW ¼ (160AC) SECTION 2
TWNSHP 24 N(S) RNG 24 E(W)

11. TYPE OF WELL (CHECK ONE):
EXEMPT X NON-EXEMPT _____

12. CHECK ONE:
RESIDENTIAL X COMMERCIAL _____

13. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES _____ NO X

14. DRILLING FIRM:
BJ DRILLING CO, INC.
NAME
P.O. BOX 815
MAILING ADDRESS
BENSON, AZ 85602-0815
CITY STATE ZIP
(520) 586-3282
TELEPHONE NO.
25
DWR LICENSE NUMBER
A-4
ROC LICENSE CATEGORY

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

WILLIAM SEIBOLD, MANAGER — WILLIAM SEIBOLD, MANAGER — 10-16-99
15. TYPE OR PRINT NAME AND TITLE — 16. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE — 17. DATE

DWR 55-40 (REV 1/99)

APPLICATION GUIDELINES

In accordance with Arizona Revise Statutes ("A.R.S.") §§ 41-1008 and 1079, the Department of Water Resources (Department) provides the following information regarding the application review process for authority to drill.

NECESSARY STEPS & INSTRUCTIONS TO OBTAIN DRILLING AUTHORITY

1. Pursuant to A.R.S. § 45-596, a person may not drill, cause to be drilled, deepen or modify any well for which a permit is not required without first filing a Notice of Intent to Drill with the Department. Only a well drilling contractor licensed in the State of Arizona or a single well licensee (a person licensed to drill or modify one exempt well on his or her own property) is authorized to drill, deepen or modify a well. Drilling may not begin until the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, and which authorizes the drilling of the specific well in a specific location. To assist you in understanding the requirements for this application, copies of A.R.S. § 45-596 and Arizona Administrative Code ("A.A.C.") R12-15-810 are available at the Department bookstore (602-417-2450 x7127).
2. If replacing, deepening or modifying an existing well, provide the registration number of the existing well in item 2. A replacement well is one located no more than 660 feet from the original well and that is not expected to annually withdraw more groundwater than historically withdrawn from the original well.
3. Information to complete items 3, 4, 5 and 14 may be available from your driller.
4. Information to complete items 10 and 13 may be available from your County Assessor's Office.
5. An exempt well, referred to in Item 11, means a well with a pump with a maximum capacity of not more than thirty-five gallons per minute used primarily for domestic purposes, including the noncommercial irrigation of less than two acres of land.
6. If any water from a proposed well on a parcel of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant must submit a well site plan of the property. The plan must be on an 8½" x 11" piece of plain paper with representation of the locations of all structures and proximity of adjacent lot lines, to scale. It must include the county assessor's parcel identification number. The plan must show the proposed well location and the location of any septic tank or sewer system that is either located on the property or within one hundred feet of the proposed well site, as well as indicating the measured shortest distance between the proposed well and existing septic tank system. **The plan must demonstrate that the well will not be drilled within one hundred feet of any septic or sewer system.**
7. The site plan must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Endorsement by the county/local authority is based solely on the best available judgement that the proposed well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. In areas where there is no local or county authority that controls installation of septic tanks or sewer systems, or if the health authority is unable to determine whether the proposed well location complies with state and local requirements, the applicant must apply for approval directly to the Department of Water Resources.
8. If an individual other than the land owner or lessee signs this notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific notice on his or her behalf, must accompany the notice.
9. Please mail **two original Notices** with **original signatures** and **two site plans** and, in accordance with A.R.S. § 45-113, a **check or money order (no cash) in the amount of $10.00** to P. O. Box 458, Phoenix Arizona, 85001-0458, or hand deliver to 500 North Third Street, Phoenix, Arizona.
10. Arizona Revised Statute § 45-596(D) provides that the Director of the Department is to determine whether or not all information required on this form has been submitted. If not, the person filing the Notice will be notified, and the drilling or modification of the well may **not** proceed.
11. This form is not applicable for non-exempt wells (those yielding more than thirty-five gallons per minute) within an Active Management Area. Contact Groundwater Management for further information regarding the appropriate notice to file with the Department.

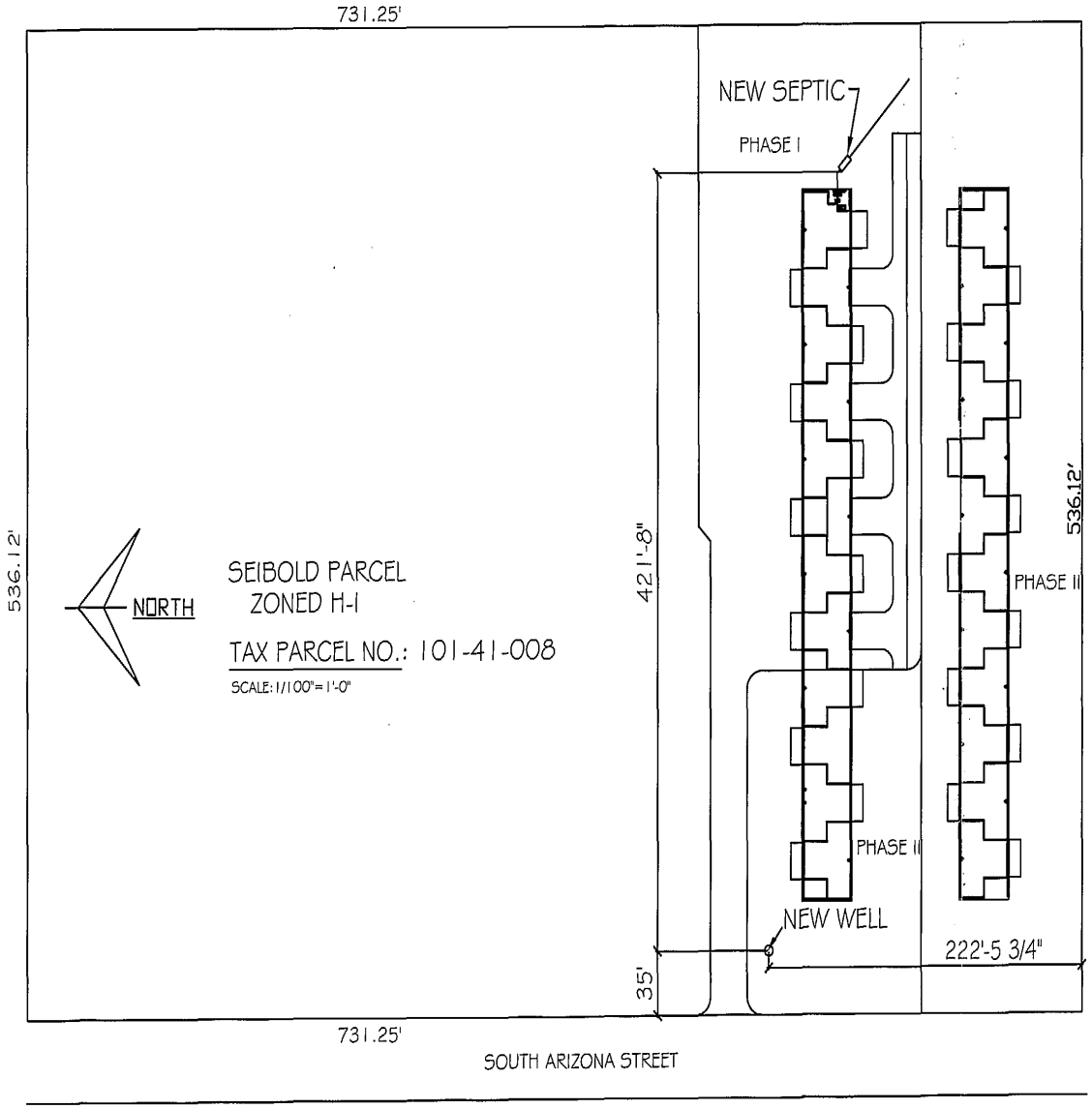
TIME FRAME FOR REVIEW OF YOUR APPLICATION

Within 15 days after receipt of your Notice of Intention, the Arizona Department of Water Resources ("Department") will determine whether your application should be granted or denied, unless this time is extended for lack of a complete application. If your application is incomplete, the Department will notify you in writing and will specify what information is necessary to make the application complete. Until the missing information is received, the time frame for review of your application will be suspended. Your application will not be complete until all of the requested information is received. If you do not supply the missing information within sixty (60) days, the Department may deem your application withdrawn and close the file.

At the end of its review, the Department will send you written notice either granting or denying your application for drilling authority. If your application is approved, the Drill Card will be mailed directly to the drilling company. If denied, the Department's notice will state justification for the denial and an explanation of your right to appeal.

CONSTRUCTION AND FOLLOW UP REQUIREMENTS

1. Construction and abandonment standards for wells, including abandonment, must be in accordance with Department Regulations. A.R.S. § 45-594 and Arizona Administrative Code R12-15-811 require the well to be constructed with a twenty foot steel surface seal casing, including a one foot steel stickup and one and one-half inches of grout seal, unless a variance is granted **(see A.R.S. § 45-596 (G) for procedure to follow in requesting a variance).**
2. Pursuant to § 45-596(E), the drilling, deepening or modification of the well must be completed within one year of the date of the Notice of Intent. If the well is not completed within one year, a new Notice of Intent must be filed before proceeding with further construction.
3. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use is later proposed to be converted to use for domestic purposes as defined in § 45-454, the well owner must file a Notice of Intention to Drill and comply with the requirements of § 45-596 before the well is converted and any water from that well is used for domestic purposes.
4. Within thirty days after installation of pumping equipment, the registered well owner must file a Completion Report with the Department. The person to whom a well is registered also must notify the Department of a change in ownership or a change in data relating to this well.



RECEIVED
OCT 25 1999
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

November 16, 1999

JANE DEE HULL
Governor

RITA P. PEARSON
Director

BIMA, LLC
PO DRAWER Q
BISBEE, AZ 85603

Registration No. 55-577927
File No.D(24-24) 2 CBB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Sylvia Valdez
Water Resource Technician
Groundwater Management Support Section

Records Management Section
500 N. 3rd Street • Phoenix, Arizona 85004
(602) 417-2405 • (800) 352-8488
www.water.az.gov

Pump Installation Completion Report

RECEIVED
FEB – 9 2004
Information Management

- Review instructions prior to completing form in black or blue ink.
- The registered well owner should file this report with the Department within 30 days following installation of pump equipment.

FILE NUMBER: D(24-24)13 ACB
WELL REGISTRATION NUMBER: 55 - 594938

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Cynthia Binyon

MAILING ADDRESS: PO Box 743

CITY / STATE / ZIP CODE: Bisbee AZ 85603

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER: (520) 432-1508

FAX: N/A

Location of Well

WELL LOCATION ADDRESS (IF ANY): 1188 E. Border Rd. Bisbee AZ

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24 S	24 E	13	NW¼	SW¼	NE¼

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
101	46	15D

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 2. EQUIPMENT INSTALLED

DATE PUMP INSTALLED: 2/5/04

Pump Type (CHECK ONE)

- ☐ Air Lift
- ☐ Bucket
- ☐ Centrifugal
- ☐ Jet
- ☐ Piston
- ☐ Rotary
- ☑ Submersible
- ☐ Turbine
- ☐ Other (*please specify*):

Power Type (CHECK ONE)

- ☐ Diesel Engine
- ☑ Electric Motor
- ☐ Gasoline Engine
- ☐ Hand
- ☐ Natural Gas
- ☐ Windmill
- ☐ Other (*please specify*):

RATED PUMP CAPACITY: 5 Gallons Per Minute

HORSE POWER RATING OF MOTOR: 3/4

SECTION 3. WELL TEST

Pump Test Data

DATE WELL TESTED: 2/5/04

STATIC WATER LEVEL (A): 73 Feet Below Land Surface

PUMPING WATER LEVEL (B): 225 Feet Below Land Surface

DRAWDOWN [(B) – (A)]: 200 Feet Below Land Surface

TEST PUMPING RATE: 8 Gallons Per Minute

DURATION OF PUMP TEST (Minimum 4 Hours): 4 Hours

TOTAL PUMPING LIFT: 160 Feet

FOR FLOWING WELL, MEASURED SHUT IN HEAD: ☐ FT ☐ PSI

Method of Discharge Measurement (CHECK ONE)

- ☐ Bailer
- ☐ Bucket – Barrel – Stopwatch
- ☐ Current
- ☐ Estimated – Air Lift
- ☐ Gauge
- ☐ Meter
- ☐ Orifice
- ☑ Volume
- ☐ Weir – Flume
- ☐ Other (*please specify*):

Method of Measuring Water Level (CHECK ONE)

- ☐ Air Line
- ☑ Electric Measuring Line (Sounder)
- ☐ Steel Tape
- ☐ Other (*please specify*):

ENTERED FEB 0 9 2004

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief according to A.R.S. § 45-600(B).

SIGNATURE OF WELL OWNER: C Binyon

DATE: 2/5/04

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

RECEIVED
DEC 19 2002
RECORDS MGT

Well Driller Report and Well Log

FILE NUMBER: D(24-24) 13 ACB
WELL REGISTRATION NUMBER: 55- 594938
PERMIT NUMBER (IF ISSUED)

- Review instructions prior to completing form
- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: CYNTHIA BINYON
MAILING ADDRESS: PO BOX 743
CITY / STATE / ZIP: BISBEE, AZ 85603
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-457-3492
FAX:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN): —

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24 S	24 E	13	NW 1/4	SW 1/4	NE 1/4

LATITUDE			LONGITUDE		
31 °	20 ·	,789 "N	109 °	51 ·	,526 "W

LAND SURFACE ELEVATION AT WELL: 4465 Feet Above Sea Level
METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☒ Hand-Held
☐ USGS Quad Map ☐ Conventional Survey ☒ GPS : ☐ Survey-Grade
COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 101 MAP 46 PARCEL 15D
COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME: JS & K DRILLING, INC.
DWR LICENSE NUMBER: 565
TELEPHONE NUMBER: 520-456-2355
FAX:

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED: 12-2-02
DATE WELL CONSTRUCTION COMPLETED: 12-5-02
IF FLOWING WELL, METHOD OF FLOW REGULATION: ☐ Valve ☐ Other

Drill Method

CHECK ONE
- ☒ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development

CHECK ONE
- ☒ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Method of Sealing at Reduction Points

CHECK ONE
- ☐ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☒ Other (please specify) NATIVE

Water Level Information

STATIC WATER LEVEL: ? Feet Below Land Surface
DATE MEASURED: 12-5-02

DWR-55-55-10/01 (Rev.)

COMPLETED DEC 2 4 2002

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 594938

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (Attach additional page if needed)

Borehole			Installed Casing														
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (X)				PERFORATION TYPE (X)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	19	12¼"	0	19	8 5/8	X				X						
19	200	7⅞"	10	200	6¼		X			X						
200	260	6"	30	220	4¾		X			X				·		
			220	260	4¾		X							X		1/8"

Installed Annular Material

DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)								FILTER PACK		
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	19			X								
10	19								NATIVE			
30	200								"			

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
260	Feet Below Land Surface	260	Feet Below Land Surface

DWR-55-55B-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 594938

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	3	Top Soil	
3	60	Rocky Clay	
60	150	Rock Layers	
150	260	Red Sandy Limestone	

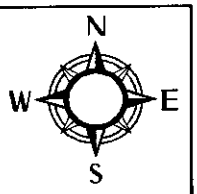
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 594938

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
CYNTHIA BINYON	101	46	15D

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



1" = _____ ft

SEE ATTACHED

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
J S & K Drilling, Inc		12-9-02

DWR-55-55 (Rev. 10/11/01)

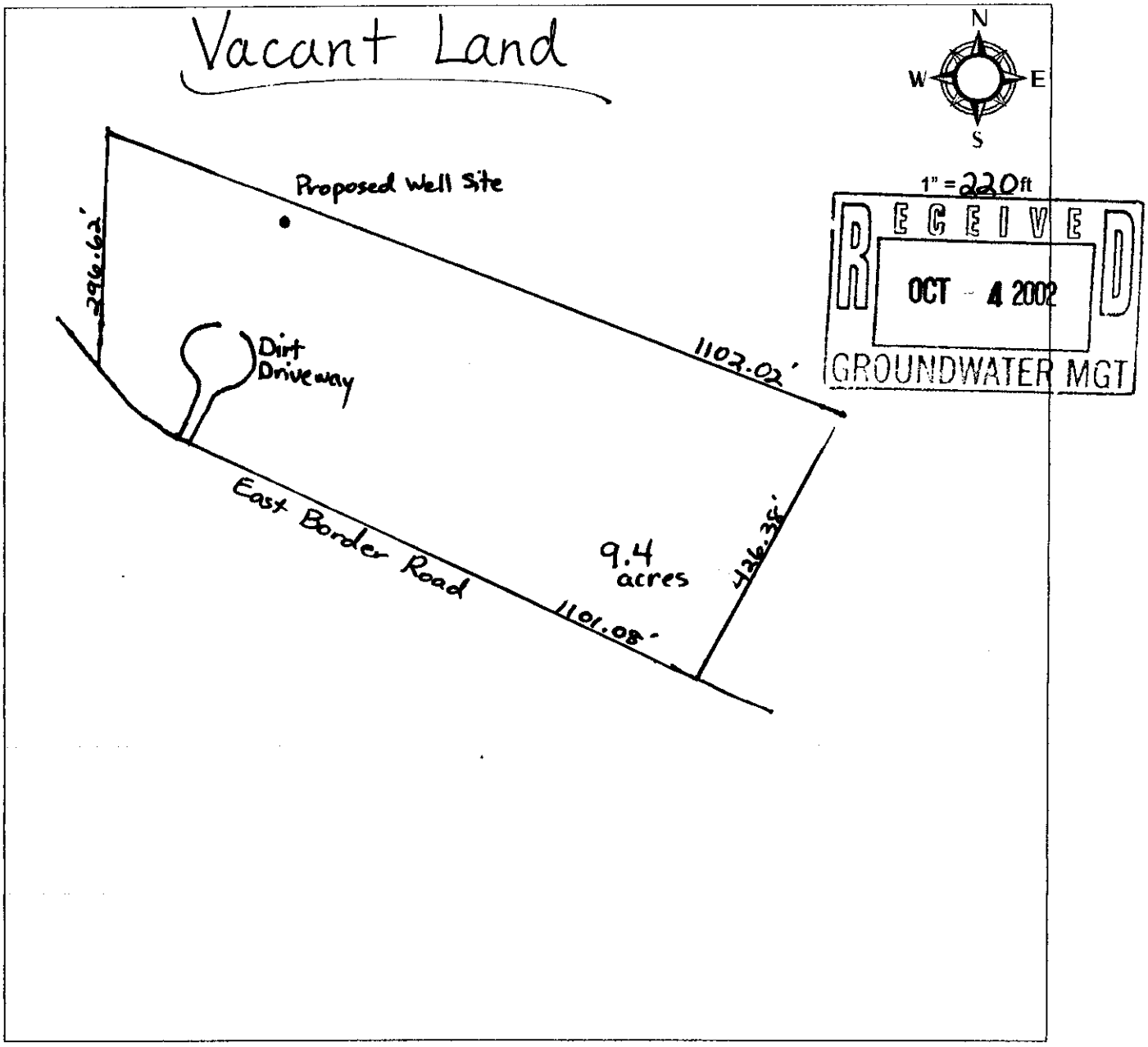
Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 -

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
Cynthia Binyon	101	46	15 D

- If this well will be a domestic well on 20 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE		*Official County or Local Seal or Stamp*
COUNTY OR LOCAL AUTHORITY SIGNATURE		
TELEPHONE NUMBER	DATE	

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-594938

AUTHORIZED DRILLER: JS & K DRILLING, INC. LICENSE NO: 565

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: CYNTHIA BINYON PO BOX 743 BISBEE, AZ 85603

The well(s) is/are to be located in the:

NW ¼ of the SW ¼ of the NE ¼ Section 13 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 3RD DAY OF OCTOBER, 2003

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

$10 FEE

Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

RECEIVED OCT 4 2002 GROUNDWATER MGT

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

- Review instructions prior to completing form
- You must include with your Notice:
  - $10 check or money order for the processing fee
- Authority for fee: A.R.S. § 45-113(B); A.A.C. R12-15-151(B)(4)(a)

AMA / INA	B 35	SB
RECEIVED DATE 10-4-02	WS 13	
ISSUED DATE 10-8-02	WQARF	CERCLA

FILE NUMBER: D (24-24) 13 ACB
WELL REGISTRATION NUMBER: 55 - 594938

** PLEASE PRINT CLEARLY **

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY ENDORSEMENT (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 20 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 before submission to the Department of Water Resources. You must also attach a site plan (see instructions).

CHECK ONE

☐ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
  ☐ Field Inspection Performed
  ☐ Site Plan Review Only
☐ Insufficient Information to Make a Determination

Official County or Local Seal or Stamp

COUNTY OR LOCAL AUTHORITY NAME AND TITLE

TELEPHONE NUMBER | DATE | COUNTY OR LOCAL AUTHORITY SIGNATURE

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

☒ Exempt
(Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) *(See instructions.)*

☐ Non-Exempt
(Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) *(See instructions.)*

DESIGN PUMP CAPACITY: 10 Gallons Per Minute

Proposed Action

CHECK ONE

☑ Drill New Well
☐ Deepen
☐ Replace
☐ Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 -

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	13	NE ¼	SW ¼	NW ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
101	46	15 D	9.4

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
		¼	¼	¼	¼

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Cynthia Binyon
MAILING ADDRESS: PO Box 743
CITY / STATE / ZIP CODE: Bisbee Az 85603
CONTACT PERSON NAME AND TITLE
TELEPHONE NUMBER: 520-457-3492 | FAX

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL
MAILING ADDRESS
CITY / STATE / ZIP CODE
CONTACT PERSON NAME AND TITLE
TELEPHONE NUMBER | FAX

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		✓	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		✓	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		✓	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 -

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: JS+K Drilling

DWR LICENSE NUMBER: 565

ROC LICENSE CATEGORY: C-53

TELEPHONE NUMBER: (520) 456-2355

FAX:

RECEIVED
OCT 4 2002

SECTION 6. WATER / SITE INFORMATION

Principal Use **of Water** CHECK ONE	***Other Uses*** **of Water** CHECK ALL THAT APPLY
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☑ Domestic	☑ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify):*	☐ Other *(please specify):*

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

DATE CONSTRUCTION IS TO BEGIN: Oct. 02

Borehole			Casing													
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (X)				PERFORATION TYPE (X)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	19	12¼	0	19	8 5/8	X*				X						Cement
19	150	7⅞	10	110	6¼		X			X						
			110	150	6¼		X							X		

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: Cynthia Binyon, owner

SIGNATURE OF WELL OWNER OR LANDOWNER: C Binyon

DATE: 10/1/02

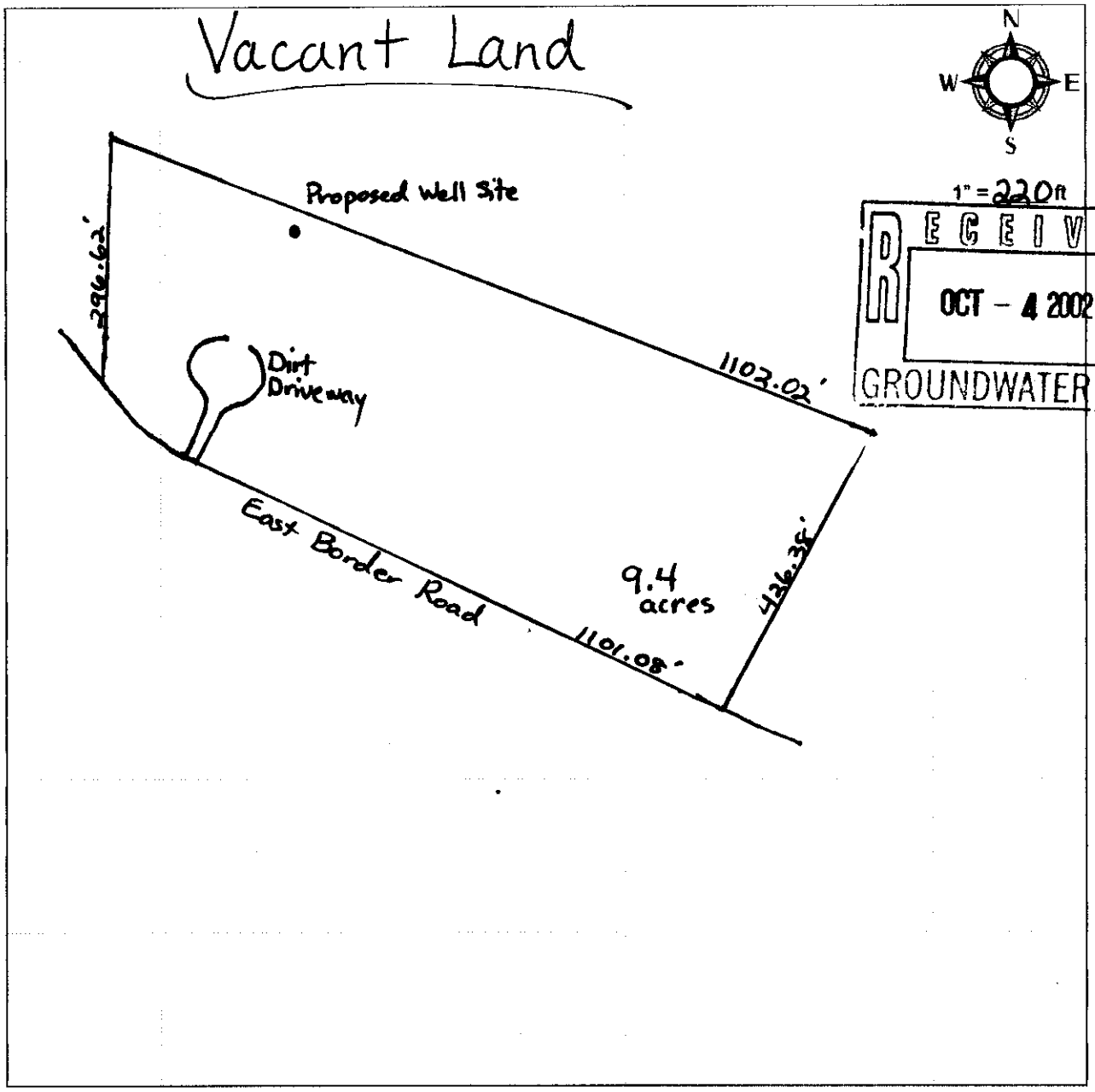
Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 -

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
Cynthia Binyon	101	46	15 D

- If this well will be a domestic well on 20 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE		*Official County or Local Seal or Stamp*
COUNTY OR LOCAL AUTHORITY SIGNATURE		
TELEPHONE NUMBER	DATE	

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

October 08, 2002

JANE DEE HULL
Governor
JOSEPH C. SMITH
Director

CYNTHIA BINYON
PO BOX 743
BISBEE, AZ 85603

Registration No. 55- 594938
File No. D(24-24) 13 ACB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Pump Installation Completion Report is to be submitted when pump equipment is installed. The drilling card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the drilling card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended drilling card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a Pump Installation Completion Report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate Well Drillers Report and Well Log within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Toni Bergeman

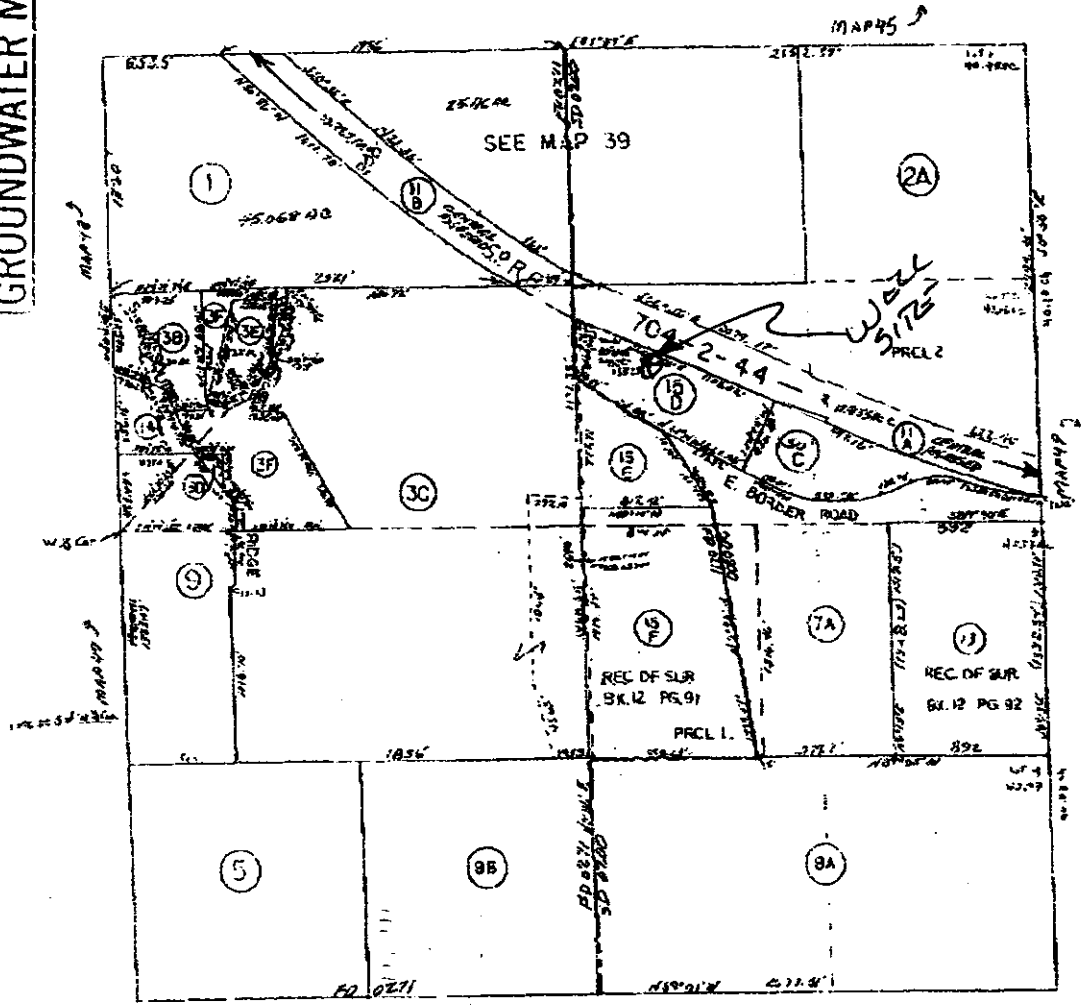
Toni Bergeman
Water Resource Technician
Groundwater Management Support Section

Enclosures

TWP 24 RGE 24
SEC 13

BOOK 101
MAP 46

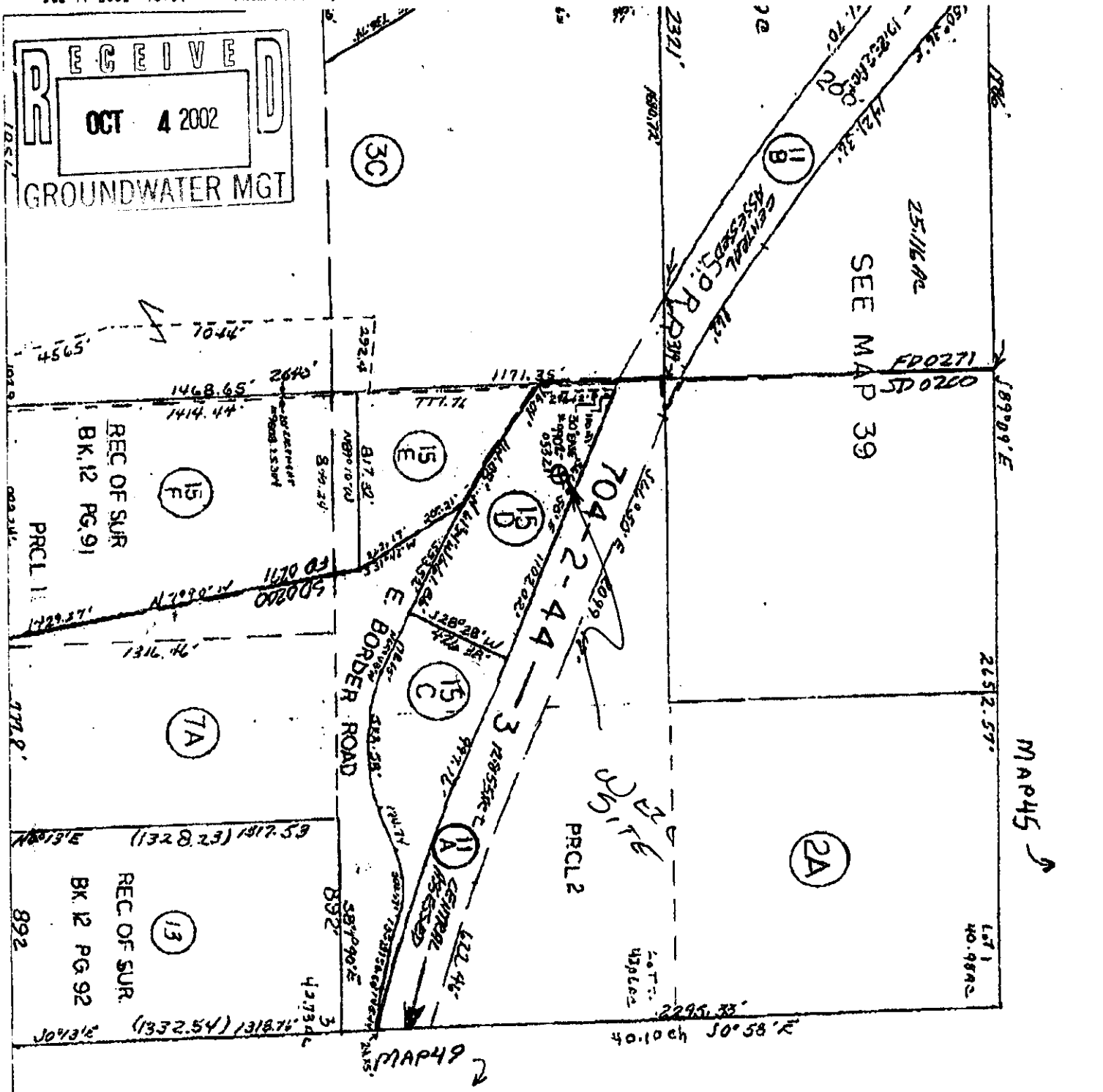
RECEIVED
OCT 4 2002
GROUNDWATER MGT



SCALE 1"=600'

COCHISE

RECEIVED
OCT 4 2002
GROUNDWATER MGT



Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

RECEIVED
OCT 4 2002
GROUNDWATER MGT

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

- Review instructions prior to completing form
- You must include with your Notice:
  - $10 check or money order for the processing fee
- Authority for fee: A.R.S. §45-113(B), A.A.C. R12-15-1518(A)(6)

AMA / INA		B	SB
RECEIVED	DATE	WS	
ISSUED	DATE	WQARF	CERCLA

FILE NUMBER
WELL REGISTRATION NUMBER 55 -

** PLEASE PRINT CLEARLY **

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY ENDORSEMENT (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 20 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 before submission to the Department of Water Resources. You must also attach a site plan (see instructions).

CHECK ONE

☐ County or Local Health Authority Recommends Approval

Official County or Local Seal or Stamp

ORIGINAL DOCUMENT PRINTED ON CHEMICAL REACTIVE PAPER WITH MICROPRINTED BORDER - SEE REVERSE SIDE FOR COMPLETE SECURITY FEATURES

2948

J.S. & K. DRILLING, INC.
2235 N. RANCH TRAIL
HUACHUCA CITY, AZ 85616
(520) 456-2355

STOCKMEN'S BANK
Sierra Vista Branch
Sierra Vista, Arizona

91-504/1221

DATE
Sep 1, 2002

AMOUNT
******$10.00

PAY TO THE ORDER OF ADWR

Memo: Binyon
Ten and 00/100 Dollars

THIS DOCUMENT CONTAINS HEAT SENSITIVE INK TOUCH OR PRESS HERE - RED IMAGE DISAPPEARS WITH HEAT.

SAFEGUARD SECURITY

10 Gallons Per Minute | Feet | Cochise

SECTION 3. OWNER INFORMATION

Well Owner		Landowner (if different from Well Owner)	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Cynthia Binyon		FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: —	
MAILING ADDRESS: PO Box 743		MAILING ADDRESS:	
CITY / STATE / ZIP CODE: Bisbee Az 85603		CITY / STATE / ZIP CODE:	
CONTACT PERSON NAME AND TITLE:		CONTACT PERSON NAME AND TITLE:	
TELEPHONE NUMBER: 520-457-3492	FAX:	TELEPHONE NUMBER:	FAX:

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		✓	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		✓	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		✓	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED
MAR 2 1982
DEP'T. OF
WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 633472
FILE NO. D(24-24)5CC
FILED 3-2-82 (DATE) AT 2:00pm (TIME)
INA —
AMA —

1. Name of Registrant:
BLOMMER F.V.
2839 AGATE DR SANTA CLARA CALIF 95051
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
D24024005ACCGS1 (File Number) 35- 68852 (Control Number)

3. a. The well is located within the SW ¼ SW ¼ ____ ¼, Section 05, of Township 24.0S N/S, Range 24.0E E/W, G & SRB & M, in the County of COCHISE.

b. If in a subdivision: Name of subdivision SUNSET ACRES, Lot No. 143/44, Address ____.

4. The principal use(s) of water (Examples: irrigation - stockwater (domestic) - municipal - industrial)
DOMESTIC (I AM ALERGIC TO CLORINATED WATER.

5. If for irrigation use, number of acres irrigated from well N/A.

6. Owner of land on which well is located. If same as Item 1, check this box ☑
____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 350 feet
b. Diameter of casing 07 inches
c. Depth of casing 350 feet
d. Type of casing PERFORATED OR SLOTTED CASING
e. Maximum pump capacity 35 gallons per minute.
f. Depth to water 244 feet below land surface.
g. Date well completed NOVEMBER (Month) ____ (Day) 1978 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☑.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE Jan 16, 1982 SIGNATURE OF REGISTRANT F.V. Blommer

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

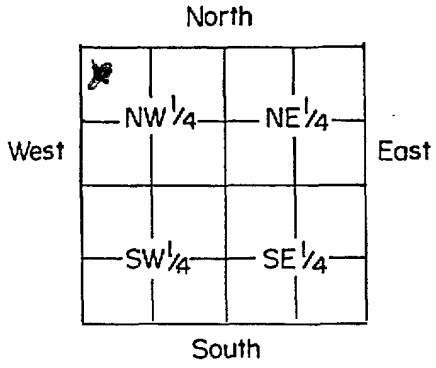
9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

EXEMPT WELL
FILING FEE: $3.00

DEPARTMENT OF WATER RESOURCES
NOTICE OF INTENTION TO DRILL OR DEEPEN AN EXEMPT WELL

EXEMPT WELL

Section 45-596, Arizona Revised Statutes, provides: A person may not drill or cause to be drilled any well or deepen or replace an existing well without first filing a Notice of Intention to Drill with the Department on a form prescribed and furnished by the Department. The well shall be completed within one year after the date of Notice. An exempt well means a well having a pump with a maximum design capacity of not more than 35 gallons per minute which is used to withdraw ground water. An exempt well may include the non-commercial irrigation of not more than 1 acre of land.



- Indicate Well Location by X
(Above diagram represents one 640 acre section)

WELL/LAND LOCATION:
1. Township 24S
2. Range 24E
3. Section 5
4. NW ¼ NW ¼ NW ¼
10 acre sub-division
5. County Cochise

6. Owner of Well:
Lou Brindley
Name
RT 1, 76 Della ST
Address
Bisbee AZ 85603
City State Zip

7. Owner of Land:
432-3359
Name
Address
City State Zip

DESCRIPTION OF WELL:
8. Diameter 6
Depth 300
9. Type of Casing PVC
10. Principle use of Water
Domestic
11. Other uses Intended
(If for non-commercial irrigation, state approximate area being cultivated.)
12. Construction will start about:
1 81
Month Year

PLACE OF USE:
13. Township 24
14. Range 24
15. Section 5
16. Legal description of land water is to be used on:
17. Design Pump Capacity
10 GPM
18. Action Requested:
Drill X
Deepen
Replace
19. This notice filed by:
Owner
Lessee
Driller X

Lee's Well Drilling
Name
P. O. Bx-4558
Huachuca City, AZ. 85616
Address
T-80
City State Zip
20. Drillers Name:
Lee's Well Drilling
Name
P. O. Bx-4558
Huachuca City, AZ. 85616
Address
City State Zip
48979 T-80
Department License Number

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
FILE NO. D(24-24)5 bbb
FILED 1-14-81 BY jp
INPUT 1-16-81 BY Pat
DUPLICATE MAILED 1-23-81 BY pd
REGISTRATION NO 55-86775
AMA NON EXPANSION AREA —

1. Fill out this form in duplicate and mail to P.O. Box 2600, Phoenix, Arizona, 85002, or deliver to 222 N. Central Ave., Suite 550, Phoenix, Arizona, 85004.
2. If the Exempt Well is in fact a replacement (or deepening) well, state the registration number of the existing well.
3. Construction standards for new and replacement wells and the deepening and abandonment of existing wells, shall be in accordance with Department Rules and Regulations.

I, Leo D. Drew, state that the construction will be under the direct and personal supervision of the well driller designated on this form and that the designated driller hol a contractors license pursuant to ARS 45-595.

Jan 6, 81
Date

Leo D. Drew
Signature of Person Filing

Lee's Well Drilling
[illegible] 90 North
[illegible]nca City AZ 85616

STATE OF ARIZONA
ARIZONA WATER COMMISSION
WATER RIGHTS ADMINISTRATION
222 N. CENTRAL AVE — SUITE 550
PHOENIX, ARIZONA 85004

RECEIPT — FILE

KIND ENTRY	FILE REFERENCE NO.
55	86773
	THRU

№ 7356

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Notice of Intention to Drill an Exempt Well (3 Wells)		3.00
					Water Rights (GW)		3.00
					File #D(17-12)16ccc Ashton 86774		
					File #D(16-12)34aaa Lundquist 86773		
					File #D(17-12)35bbb Brindley 86775		
					Paid Check #1375		

WATER PAYMENT
GUESTS 1
CHK NO 1375
3@ 3.00
55-I 9.00
TAX 0.00
TOTL 9.00
GEN.CHEK 9.00
1753 A 15:26

1-15-81 ps TOTAL $ 9.00

STATE OF ARIZONA

DEPARTMENT OF
WATER RESOURCES

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. **Owner** Lou Brindley
Name
Rt 1 76 Della St Bisbee AZ 85603
Address

2. **Lessee or Operator**
Name
Address

3. **Driller** Lee's Well Drilling
Name
P O Box 4558 Huachuca City AZ 85616
Address

4. **Location of well:** T24S R24E Sec5 NW NW NW

5. **Permit No.** (if issued)

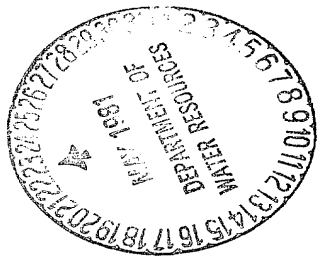
DESCRIPTION OF WELL

6. **Total depth of hole** 360 ft.
7. **Type of Casing** PVC
8. **Diameter and length of casing** 6" in. from 0 to 360, in from to .
9. **Method of sealing at reduction points** Cement
10. **Perforated from** 340 to 360, from to , from to
11. **Size of cuts** 1/8" **Number of cuts per foot** one
12. **If screen was installed:** Length ft. Diam in. Type
13. **Method of construction** drilled
drilled, dug, driven, bored, jetted, etc.
14. **Date started** 4 (Month) 30 (day) 81 (year)
15. **Date completed** 4 (Month) 30 (day) 81 (year)
16. **Depth to water** 295 ft. (If flowing well, so state.)
17. **Describe point from which depth measurements were made, and give sea-level elevation if available.** Ground Level
18. **If flowing well, state method of flow regulation**
19. **REMARKS:**

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55-86775
Received By
Entered 5-28-81 By Pat
File No. D(24-24)5bbb

(Well log to appear on Reverse side)

MAY 1981
DEPARTMENT OF WATER RESOURCES



LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	2	Top
2	295	Rock & clay
295	360	Cemented clay

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

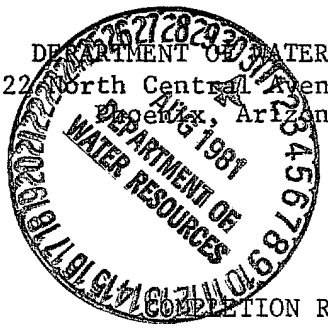
Driller [signature]
Name

Box 4558 Huachuca City
Address

Date May 10, 81

2-73

DEPARTMENT OF WATER RESOURCES
222 North Central Avenue - Suite 850
Phoenix, Arizona 85004



Registration No. 55-86775
Owner of
Well Site Lou Brindley
File No. D(24-24)5bbb

COMPLETION REPORT

1. A Completion Report is to be filed with the Department within 30 days after installation of pump equipment.

2. The tested pumping capacity of the well in gallons per minute for a nonflowing well should be determined by measuring the discharge of the pump after continuous operation for at least four hours and for a flowing well by measuring the natural flow at the land surface.

3. Drawdown of the water level for a nonflowing well should be measured in feet after not less than four hours of continuous operation and while still in operation and for a flowing well the shutin pressure should be measured in feet above the land or in pounds per square inch at the land surface.

4. The static groundwater level should be measured in feet from the surface immediately prior to the well capacity test.

LOCATION OF THE WELL:

T24S R24E Sec5 NW NW NW

Date Well Completed 3/15/81 Depth of Well 330

1. Well Test:
Test Pumping Capacity 6 GPM (Gallons per minute) Date Well Tested 3/20/81

Method of Discharge Measurement 5 gal Container (Weir, orifice, current meter, et cetera)

Static Groundwater Level 110' ft Drawdown 210' ft

Total Pumping Lift 320 ft Drawdown (Flowing well) lbs

2. Equipment Installed:

Kind of Pump Submersible (Turbine, Centrifugal, et cetera)

Kind of Power Elec. (Electric, Natural, Gas, et cetera) Horse Power Rating of Motor 1 hp

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

L L Lohse
Signature

Box 4111
Address

Jun 25, 1981
Date

Nuevo C.t. AZ 85616
City State Zip

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 602134
FILE NO. D(24-24)5 dcb
FILED 1-22-82 (DATE) AT 8 (TIME)
INA —
AMA

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 ☐

1. Name of Registrant: Ben W. Duree
   Ben W. Duree
   El Rancho Notso Grande
   Route 1, Naco Highway
   Bisbee, Arizona 85603
   (Address) R.R. 1 Naco Hwy (City) Bisbee (State) AZ (Zip) 85603

2. File and/or Control Number under previous groundwater law:
   D24024005 DC BASI (File Number) 35- 29403 (Control Number)

3. a. The well is located within the NW ¼ SW ¼ SE ¼, Section 05, of Township 24-09 N/S, Range 24.0E E/W, G & SRB & M, in the County of Cochise.
   b. If in a subdivision: Name of subdivision N/A, Lot No. —, Address —.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial) Domestic.

5. If for irrigation use, number of acres irrigated from well N/A.

6. Owner of land on which well is located. If same as Item 1, check this box ☑
   (Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
   a. Depth of Well 300 feet
   b. Diameter of casing 06 inches
   c. Depth of casing 300 feet
   d. Type of casing Perforated or Slotted Casing
   e. Maximum pump capacity 25 gallons per minute.
   f. Depth to water 80 feet below land surface.
   g. Date well completed 9 (Month) 6 (Day) 74 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☑.
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   Attach additional sheet if necessary.

9. DATE 1-21-82 SIGNATURE OF REGISTRANT Ben W. Duree

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470 Fax (602) 417-2422

RECEIVED
NOV 21 2000
RECORDS MGT

REQUEST FORM TO CHANGE WELL INFORMATION
OWNERSHIP * DRILLER * VARIANCE

Please complete the appropriate section of this request form and return to the above address with applicable fee. NOTE: A.R.S. §45-593.C requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. **CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)**

NOTE: If the location of the proposed well changes after drilling authority has been issued, **attach a $10.00 reissue fee for each well.**

WELL REGISTRATION NO. 55- 602134 **FILE NO:** D (24-24) 5 ~~DEB~~ DCB

If known, I/We request the following well information be changed: CHANGE OF OWNERSHIP

Date_____ **Signature of Current Well Owner**_____

2. **STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)**

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, BOB BULLARD, state that I am the **Previous/New Owner** of the well described below:

NW ¼ (10 Acre) SW ¼ (40 Acre) SE ¼ (160 Acre) of Section 05 Township 24-0S N/S Range 24 0E E/W

Well Registration No. 55- 602134 File No: D (24-24) 5 ~~DEB~~ DCB (if known)

BEN W. DUREE	BOB BULLARD
PRINT Previous Owner's Name	**PRINT** New Owner's Name
5-A CAMPBELL STREET	931 W. GEOFFREY STREET
Mailing Address	Mailing Address
BISBEE AZ 85603	BISBEE AZ 85603
City State Zip	City State Zip
520-432-7370	520-432-2090
Telephone Number	Telephone Number

Signature of Previous/New Well Owner Bob Bullard **Date** 11/17/00

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470 Fax (602) 417-2422

REQUEST TO CHANGE WELL DRILLER — $10.00 FEE REQUIRED FOR EACH WELL

This request must be received by this Department and the Drill Card issued to the new drilling firm prior to the drilling or completion of any well.

Well Registration No. 55-_____ File No._____

Original Well Driller	**New Well Driller**
Mailing Address	**Mailing Address**
Telephone Number	**Telephone Number**
ADWR License Number	**ADWR License Number**
R.O.C. License Category	**R.O.C. License Category**
Typed or Printed Name of Well Owner	**Signature of Well Owner** **Date**

The fee charge for well ownership and reissue of drill card is authorized by R12-15-151, effective June 30, 1994.

4. REISSUE OF DRILLING AUTHORITY FOR VARIANCE REQUEST: ($10.00 EACH WELL)

NOTE: If extraordinary or unusual conditions exist, after the initial drilling authority has been issued, the well owner or well driller may request a variance from the provisions of R12-15-811.

WELL REGISTRATION NO. 55-_____ FILE NO:_____

I/WE REQUEST THE FOLLOWING WELL DRILLING AUTHORITY BE REISSUED PER THE ATTACHED VARIANCE REQUEST:

Signature of Well Owner/Well Driller_____ Date_____

ARIZONA DEPARTMENT OF WATER RESOURCES
Information Management Unit
P.O. Box 458, Phoenix, Arizona 85001-0458
(602) 771-8527 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

RECEIVED
OCT 23 2006
INFORMATION MANAGEMENT

This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

FILE NUMBER: D(23-24) 32 ACD
WELL REGISTRATION NUMBER: 55- 212268
PERMIT NUMBER (IF ISSUED):

SECTION 1. DRILLING AUTHORIZATION

Mail To:

Drilling Firm

NAME	DWR LICENSE NUMBER
TANNER WELL SERVICE	133
ADDRESS	TELEPHONE NUMBER
7914 NORTH FRONTIER ROAD	520-378 1606
CITY/STATE/ZIP	FAX
MCNEAL, AZ 85617-9718	520 - 803 - 7400

SECTION 2. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: JAMES E BURKE
MAILING ADDRESS: PO BOX 4623
CITY / STATE / ZIP: BISBEE, AZ 85603
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-236-3319
FAX:
WELL NAME (e.g., MW-1, PZ-3, Lot 25 Well, Smith Well, etc.):

Location of Well

WELL LOCATION ADDRESS (IF ANY): 11 YUCCA ST. BISBEE

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
23 S	24 E	32	NE 1/4	SW 1/4	SE 1/4

LATITUDE			LONGITUDE		
31 ° Degrees	23 . Minutes	24 3 "N Seconds	109 ° Degrees	55 . Minutes	48 9 "W Seconds

METHOD OF LATITUDE / LONGITUDE (CHECK ONE): [X] *GPS: Hand-Held [ ] USGS Quad Map [ ] Conventional Survey [ ] *GPS: Survey-Grade

LAND SURFACE ELEVATION AT WELL: 4753 Feet Above Sea Level

METHOD OF ELEVATION (CHECK ONE): [X] *GPS: Hand-Held [ ] USGS Quad Map [ ] Conventional Survey [ ] *GPS: Survey-Grade

*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE): [X] NAD-83 [ ] Other (please specify):

COUNTY	ASSESSOR'S PARCEL ID NUMBER BOOK	MAP	PARCEL
COCHISE	102	30	114T

SECTION 3. WELL CONSTRUCTION DETAILS

Drill Method (CHECK ONE)
- [X] Air Rotary
- [ ] Bored or Augered
- [ ] Cable Tool
- [ ] Dual Rotary
- [ ] Mud Rotary
- [ ] Reverse Circulation
- [ ] Driven
- [ ] Jetted
- [ ] Air Percussion / Odex Tubing
- [ ] Other (please specify)

Method of Well Development (CHECK ONE)
- [X] Airlift
- [ ] Bail
- [ ] Surge Back
- [ ] Surge Pump
- [ ] Other (please specify)

Method of Sealing at Reduction Points (CHECK ONE)
- [X] None
- [ ] Packed
- [ ] Swedged
- [ ] Welded
- [ ] Other (please specify)

Condition of Well (CHECK ONE)
- [X] Capped
- [ ] Pump Installed

Construction Dates
DATE WELL CONSTRUCTION STARTED: 10-2-06
DATE WELL CONSTRUCTION COMPLETED: 10-11-06

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
TANNER WELL SERVICE	Matthew L Tanner	10-20-06

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 212268

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
781	Feet Below Land Surface	781	Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
613 Feet Below Land Surface	10-11-06	10:51 AM	☐ Valve ☐ Other:

Borehole			Installed Casing															
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (X)				PERFORATION TYPE (X)							
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	12"	+1	20	8 5/8"	X				X						
20	781	10"	0	661	6 5/8		X			X						
			661	781	6 5/8		X							X		7 8 x 6"

Installed Annular Material

DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)								FILTER PACK		
						BENTONITE						
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	GROUT	CHIPS	PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	20			X								

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 212268

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	2	TOPSOIL	
2	40	CALACHEE & ROCK	
40	150	BROWN CLAY & ROCK	
150	630	RED SHALE - HARD	
630	781	RED SHALE w/ THIN LAYERS OF GREY SHALE	X

Well Driller Report and Well Log

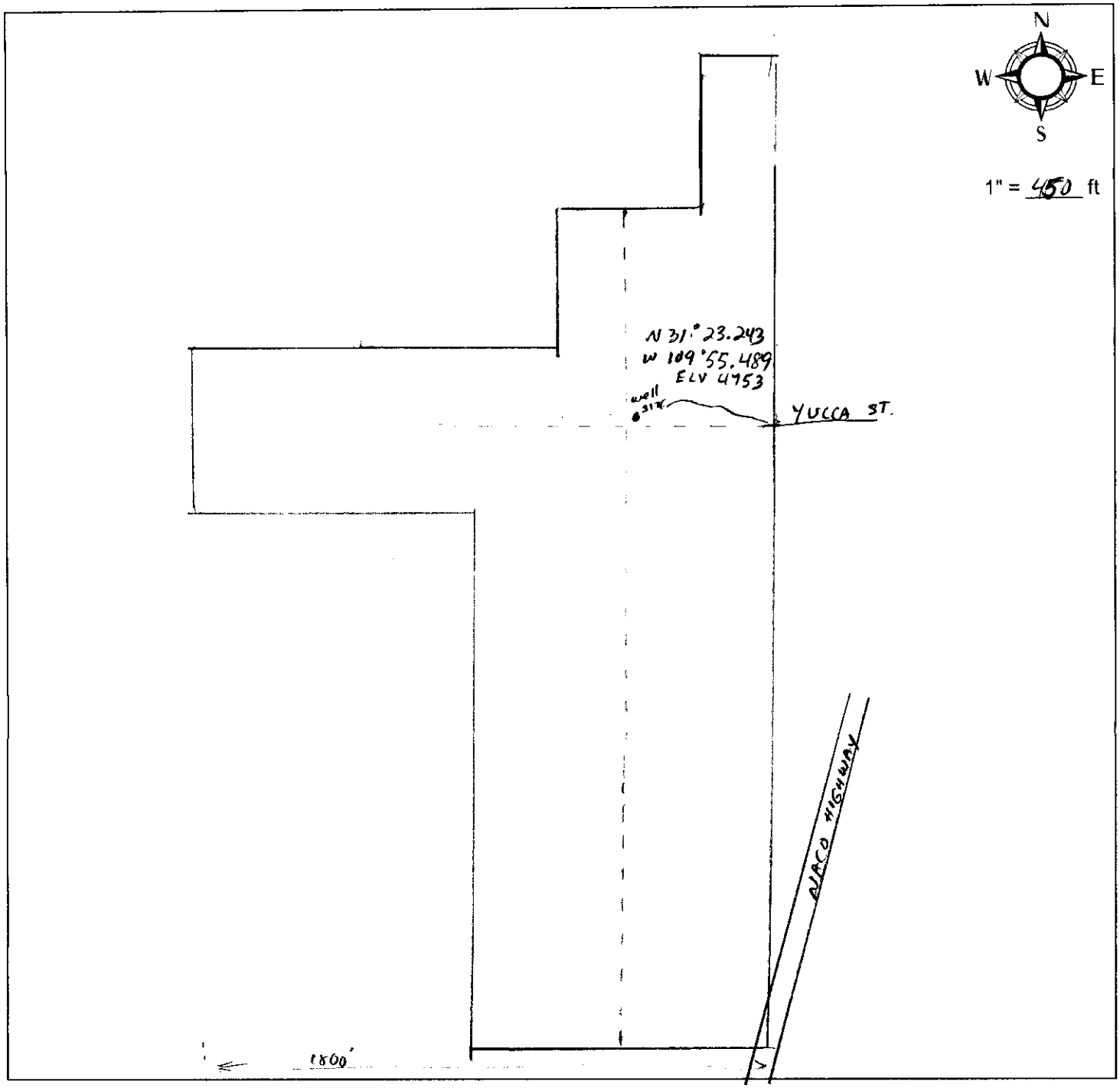
WELL REGISTRATION NUMBER
55- 212268

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
JAMES E BURKE	102	30	114T

Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.

Please indicate the distance between the well location and any septic tank system or sewer system.



ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

3550 N. Central Avenue
Phoenix, Arizona 85012

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-212268

AUTHORIZED DRILLER: TANNER WELL SERVICE LICENSE NO: 133

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: JAMES E BURKE PO BOX 4623 BISBEE, AZ 85603

THE WELL(S) IS/ARE TO BE LOCATED IN THE:
SE ¼ OF THE SW ¼ OF THE NE ¼ SECTION 32 TOWNSHIP 23 SOUTH RANGE 24 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 102-30-114T

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 14TH DAY OF MAY, 2007

WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue, Phoenix, Arizona 85012
Telephone (602) 771-8500
Fax (602) 771-8691

May 15, 2006

Janet Napolitano
Governor

Herbert R. Guenther
Director

JAMES E BURKE
PO BOX 4623
BISBEE, AZ 85603

Registration No. 55-212268
File No. D(23-24) 32 ACD

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well that you recently filed with this Department pursuant to A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed or otherwise provided a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card, which must be displayed on the drill rig during drilling.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the proposed well, you may not proceed with drilling until you file an amended NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the amended NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DWR form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed is a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55) within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at <http://www.water.az.gov/adwr/content/forms/default.htm#NOI>.

Sincerely,

Danita Haywood
NOI Unit
Water Management Support Section

Enclosures

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 771-8500 • (800) 352-8488
(602) 771-8691 fax • www.azwater.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA	B	SB
		74
RECEIVED DATE	WS	
5.15.06	11	
ISSUED DATE	WQARF	CERCLA
5.15.06	—	

FILE NUMBER: D(23-24)32ACD
WELL REGISTRATION NUMBER: 55212268

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

☐ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☐ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

Official County or Local Seal or Stamp

COUNTY OR LOCAL AUTHORITY NAME AND TITLE

TELEPHONE NUMBER | DATE | COUNTY OR LOCAL AUTHORITY SIGNATURE

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

☒ Exempt
(Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.)
(See instructions.)

☐ Non-Exempt
(Pump has a maximum capacity of more than 35 gpm and the well is located outside an AMA.)
(See instructions.)

DESIGN PUMP CAPACITY: 20 Gallons Per Minute

Proposed Action

CHECK ONE

☒ Drill New Well
☐ Deepen
☐ Replace
☐ Modify

If Deepening, Replacing or Modifying:
ORIGINAL WELL REGISTRATION NUMBER: 55 -
MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute
DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY): 11 Yucca St., Bisbee AZ 85603

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
23 S	24 E	32	NE ¼	SW ¼	SE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
102	30	114T	34.25

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: Cochise County

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: James E. Burke + Marian Weaver
MAILING ADDRESS: PO Box 4623
CITY / STATE / ZIP CODE: Bisbee, AZ 85603
CONTACT PERSON NAME AND TITLE: Jim Burke
TELEPHONE NUMBER: (520) 236-3319 | FAX:

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL:
MAILING ADDRESS:
CITY / STATE / ZIP CODE:
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER | FAX:

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well (e.g., Lot 35 Well, Smith Well, etc.)?		X	PLEASE STATE
3. Is the proposed well a NEW well to be located within an Active Management Area? *(See instructions)*		X	Unless the well is a replacement well and the total number of operable exempt wells on the land is not increasing, you must also file a supplemental form A.R.S. § 45-454(B) & (D).
4. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

RECEIVED
MAY 15
GROUNDWATER MGT

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55- 212268

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: Tanner Well Service LLC

DWR LICENSE NUMBER: 133

ROC LICENSE CATEGORY: C-53

TELEPHONE NUMBER: 520-378-1606

FAX: 520-803-7400

MAILING ADDRESS: 7914 N. FRONTIER RD.

CITY / STATE / ZIP CODE: McNeal, Az. 85617

DATE CONSTRUCTION IS TO BEGIN: AUGUST 2006

SECTION 6. WATER / SITE INFORMATION

***Principal Use* of Water** (CHECK ONE)	***Other Uses* of Water** (CHECK ALL THAT APPLY)
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☒ Domestic	☒ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify)*:	☐ Other *(please specify)*:

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach a separate sheet if needed)

Borehole			Casing													
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (T)				PERFORATION TYPE (T)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	20	12	+1	20	8 5/8	X*				X						Cement
20	340	8	0	280	6 5/8		X			X						
			280	340	6 5/8		X							X		

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: James E. Burke

SIGNATURE OF WELL OWNER: [signature] DATE: 3/7/06

SIGNATURE OF LANDOWNER, IF APPLICABLE (SEE INSTRUCTIONS) DATE:

RECEIVED
MAY 15 2006
GROUNDWATER MGT

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 771-8500 • (800) 352-8488
(602) 771-8691 fax • www.azwater.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well
(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- Review instructions prior to completing form in Black or Blue Ink
- You must provide well use *Action*
- Check or money order in the amount of the appropriate fee(s) for a well located within an AMA or INA, the fee is $150.00; for a well not located within an AMA or INA, the fee is $150.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA: NA	S SB
GROUPT DATE	WS
SUBDIV DATE	1/4 1/4 1/4 PDTA

FILE NUMBER

WELL REGISTRATION NUMBER
55 21 22108

RECEIVED
MAY 5 2006
WATER MGT

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

[ ] County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- [ ] Field Inspection Performed
- [ ] Site Plan Review Only

[ ] Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE

Official County or Local Health Authority Seal and Signature

THE NATURE CONSERVANCY
AMERICAN ELK

The Nature Conservancy

James E. Burke
Marian Weaver
P.O. Box 4623
Bisbee, AZ 85603

2704

DATE 3/7/06

91-170/1221 AZ
8423

PAY TO THE ORDER OF A.D.W.R $100-

One Hundred dollars even DOLLARS

Security features are included. Details on back.

Bank of America

ACH R/T 122101706

FOR Well drilling fee

[redacted] MP

Printed on Recycled Paper. The Nature Conservancy ©Janet Hass

SIGNATURE

e Az 85603

160 ACRE	40 ACRE	10 ACRE
NE ¼	SW ¼	SE ¼

ER

PARCEL
114T

OF ACRES
34.25

ENT FROM LOCATION OF WELL)

160 ACRE	40 ACRE	10 ACRE
¼	¼	¼

SECTION 3. OWNERSHIP INFORMATION

Well Owner

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL
James E. Burke + Marian Weaver

MAILING ADDRESS
Po Box 4623

CITY, STATE, ZIP CODE
Bisbee, AZ 85603

CONTACT PERSON NAME AND TITLE
Jim Burke

TELEPHONE NUMBER
(520) 236-3319

FAX

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL

MAILING ADDRESS

CITY, STATE, ZIP CODE

CONTACT PERSON NAME AND TITLE

TELEPHONE NUMBER

FAX

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also submit a notice (A.A.C. R12-15-818)
2. Is there another well name or identification number associated with this well (e.g. 1st DA Well, Death Valley Well, etc.)?		X	PLEASE LIST
3. Is the proposed well a replacement well? (see instructions)		X	Unless the well is a replacement well and the sole purpose of operable exempt wells on the land is not increasing, you must also file a Supplemental Form (A.R.S. § 45-604(D) & (E))
4. Is the proposed well to be located in an Active Management Area (AMA)? (see instructions)		X	If a proposed well is in an Active Management Area, you must also file a Supplemental Form (A.R.S. § 45-604(D))

MP 6/ 40 (Revised 10/05) (Page 1 of 3)

ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

3550 N. Central Avenue
Phoenix, Arizona 85012

REISSUE

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-215509

AUTHORIZED DRILLER: ABC PUMP AND WELL DRILLING LICENSE NO: 691

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: DON CAMPBELL 403 E SAGUARO LN BISBEE, AZ 85603

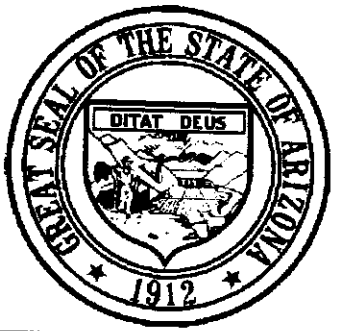
THE WELL(S) IS/ARE TO BE LOCATED IN THE:
NW ¼ OF THE SE ¼ OF THE SW ¼ SECTION 11 TOWNSHIP 24 SOUTH RANGE 24 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 101-43-005

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 16TH DAY OF APRIL, 2008

WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING



Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Request to Change Well Information

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

FILE NUMBER: D(24-24)11 CDB
WELL REGISTRATION NUMBER: 55- 215509

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: DON CAMPBELL
MAILING ADDRESS: 403 E. SAGUARO LN.
CITY / STATE / ZIP CODE: BISBEE, AZ. 85603
CONTACT PERSON NAME AND TITLE: OWNER SAME AS ABOVE
TELEPHONE NUMBER: 520 432 3672
FAX:

Location of Well

WELL LOCATION ADDRESS (IF ANY): 403 E. SAGUARO LN. BISBEE AZ 85603

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	11	SW ¼	SE ¼	NW ¼

LATITUDE			LONGITUDE		
° Degrees	' Minutes	"N Seconds	° Degrees	' Minutes	"W Seconds

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
101	43	005

COUNTY WHERE WELL IS LOCATED: Cochise

Type of Request (CHECK ONE)

☒ Change of Well Drilling Contractor *(Fill out Section 2)*
☐ Change of Well Ownership *(Fill out Section 3)*
☐ Change of Well Information (location, use, etc.) *(Fill out Section 4)*

SECTION 2. REQUEST TO CHANGE WELL DRILLING CONTRACTOR ($10 Fee Required)

- If drilling or abandoning a well, the Department must receive this request and issue authorization to the new drilling firm prior to the commencement of well drilling or abandonment.

$10 FEE

Current Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: A-DRILLING CO.
DWR LICENSE NUMBER: 726
TELEPHONE NUMBER: DISCONNECTED
FAX: N/A

New Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: ABC PUMP & WELL DRILLING
DWR LICENSE NUMBER: # 691
ROC LICENSE CATEGORY: 176890 K-53
TELEPHONE NUMBER: 520 586 2113
FAX:

SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP ($10 Fee Required)

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

$10 FEE

Previous Well Owner		New Well Owner	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	
MAILING ADDRESS		MAILING ADDRESS	
CITY / STATE / ZIP CODE		CITY / STATE / ZIP CODE	
CONTACT PERSON NAME AND TITLE		CONTACT PERSON NAME AND TITLE	
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

RECEIVED
MAY 29 2007
WATER MGMT

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required)

NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN:

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: DON CAMPBELL
SIGNATURE OF WELL OWNER: Don Campbell
DATE: 5.28.07

CHECK DEPOSIT REQUEST

ARIZONA DEPARTMENT OF WATER RESOURCES

NOTICE OF INTENT

Well No(s). (IF KNOWN):
55-215509

Date Submitted:	5/29/2007	**Check No.:**	157
Submitted by:	DYLAN'S DRILLING	**Check Amount:**	$ 10.00
Applicant:	DON CAMPBELL	**Name on Check:** (IF DIFFERENT THAN APPLICANT)	DYLAN'S DRILLING
Received By:	Monica Phillips	**Prior Amount Paid:**	$ NA (FEES ALREADY RECEIVED FOR THIS NOI)

Code	Type of Application	Quantity	Fee (PER WELL UNLESS OTHERWISE NOTED)	Current Payment	Fees Owed
4439-06	**Exempt** Wells **Outside AMAs** to be used for **Domestic** Purposes Only.		$100.00	$	$
	Exempt Wells Inside AMAs and **ALL Exempt** Wells **Not** to be Used for **Domestic** Purposes.		$150.00	$	$
	Non-exempt Wells **Outside AMAs**.		$150.00	$	$
	Mineral Exploration or **Geotechnical**.		$150.00/per land section	$	$
	Cathodic Protection, Heat Pump, Grounding, Monitor, Piezometer, Air Sparging Soil Vapor Extraction, Non-recharge **Vadose Zone** or **Injection** Wells.		$150.00	$	$
4439-11	**Late Registration** of an **Exempt** Well (not used for Irrigation inside an AMA).		$10.00	$	$
	Late Registration of a **Non-exempt** well **outside an AMA**.		$20.00	$	$
4439-08	Request to **Change** Well Information (Change of Well **Driller**).	1	$10.00	$ 10.00	$ NA
4439-12	Request to **Change** Well Information (Change of **Ownership**).		$10.00*	$	$
	*CHANGING TO MORE THAN 1 WELL WHERE NAMES TO BE CHANGED ARE ALL THE SAME, ONE $10.00 FEE TOTAL FOR THOSE WELLS, OTHERWISE, CHANGE OF OWNERSHIP IS $10.00/WELL.				
	Well Driller Licensing NOTE: (IF KNOWN) PLEASE NOTE DRILLER'S ADWR LICENSE NUMBER IN THE WELL NUMBER BOX ON TOP RIGHT, AND NAME ANF FIRM IN COMMENTS.				
4420-01	**Full-Time** Well Driller's License.		$50.00	$	$
4420-02	Well Driller's License **Renewal**.		$10.00	$	$
4420-03	Well Driller's License **Reactivation** (MUST BE WITHIN 1 YEAR OF LICENSE EXPIRATION DATE).		$20.00	$	$

Comments:

Total Paid*:	$ 10.00	**Debt Owed:**	$0

*IF FEES HAVE BEEN PAID PREVIUOSLY FOR THIS NOI, INCLUDE THAT AMOUNT.

ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

3550 N. Central Avenue
Phoenix, Arizona 85012

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-215509

AUTHORIZED DRILLER: 'A' DRILLING CO LICENSE NO: 726

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: DON CAMPBELL 403 E SAGUARO LN BISBEE, AZ 85603

THE WELL(S) IS/ARE TO BE LOCATED IN THE:
NW ¼ OF THE SE ¼ OF THE SW ¼ SECTION 11 TOWNSHIP 24 SOUTH RANGE 24 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 101-43-005

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 16TH DAY OF APRIL, 2008

WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue, Phoenix, Arizona 85012
Telephone (602) 771-8500
Fax (602) 771-8691

April 20, 2007

Janet Napolitano
Governor

Herbert R. Guenther
Director

DON CAMPBELL
403 E SAGUARO LN
BISBEE, AZ 85603

Registration No. 55-215509
File No. D(24-24) 11 CDB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well that you recently filed with this Department pursuant to A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed or otherwise provided a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card, which must be displayed on the drill rig during drilling.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the proposed well, you may not proceed with drilling until you file an amended NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the amended NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DWR form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed is a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55) within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at <http://www.water.az.gov/adwr/content/forms/default.htm#NOI>.

Sincerely,

Monica Phillips

Monica Phillips
NOI Unit
Water Management Support Section

Enclosures

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 771-8500 • (800) 352-8488
(602) 771-8691 fax • www.azwater.gov

Notice of Intent to
Drill, Deepen, Replace or Modify a Well
(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA		B	35	BB
RECEIVED	DATE 4/17/07	WS	13	
ISSUED	DATE 4/20/07	WQARF	CERCLA	

FILE NUMBER D(24-24)11CDB
WELL REGISTRATION NUMBER 55-215509

SECTION 1: COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable) *

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

- [X] County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
  - [X] Field Inspection Performed
  - [ ] Site Plan Review Only
- [ ] Insufficient Information to Make a Determination

Official County or Local Seal or Stamp

APPROVED COCHISE COUNTY
ENVIRONMENTAL HEALTH DIVISION
DATE April 12, 2007
BY Carlos Diaz R.S.

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ R.S.

TELEPHONE NUMBER: 520-432-9452

DATE: April 12, 2007

COUNTY OR LOCAL AUTHORITY SIGNATURE: COCHISE Carlos Diaz R.S.

SECTION 2: REGISTRY INFORMATION

Well Type

CHECK ONE

- [X] Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (See instructions.)
- [ ] Non-Exempt (Pump has a maximum capacity of more than 35 gpm and the well is located outside an AMA.) (See instructions.)

DESIGN PUMP CAPACITY: 35 Gallons Per Minute

Proposed Action

CHECK ONE

- [X] Drill New Well
- [ ] Deepen
- [ ] Replace
- [ ] Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55-643481

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY): 403 E. SAGUARO LN, BISBEE AZ 85603

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	11	SW ¼	SE ¼	NW ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
101	43	005	2.8

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: COCHISE

SECTION 3: OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: DON CAMPBELL

MAILING ADDRESS: 403 E. SAGUARO LN.

CITY / STATE / ZIP CODE: BISBEE AZ 85603

CONTACT PERSON NAME AND TITLE: OWNER

TELEPHONE NUMBER: 520-432-3672

FAX:

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: SAME

MAILING ADDRESS: RECEIVED

CITY / STATE / ZIP CODE: APR 17 2007

CONTACT PERSON NAME AND TITLE: WATER MGMT

TELEPHONE NUMBER:

FAX:

SECTION 4:

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well (e.g., Lot 35 Well, Smith Well, etc.)?		X	PLEASE STATE
3. Is the proposed well a NEW well to be located within an Active Management Area? *(See instructions)*		X	Unless the well is a replacement well and the total number of operable exempt wells on the land is not increasing, you must also file a supplemental form A.R.S. § 45-454(C) & (D).
4. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 215509

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: A-DRILLING

DWR LICENSE NUMBER: DWR-726

ROC LICENSE CATEGORY: C53

TELEPHONE NUMBER: 520-249-4116

FAX:

MAILING ADDRESS: 238 W. Purdy LN.

CITY / STATE / ZIP CODE: BISBEE AZ 85603

DATE CONSTRUCTION IS TO BEGIN:

SECTION 6. WATER / SITE INFORMATION

Principal Use of Water (CHECK ONE)	*Other Uses* of Water (CHECK ALL THAT APPLY)
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☒ Domestic	☐ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify):*	☐ Other *(please specify):*

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

Borehole: DEPTH FROM SURFACE FROM (feet)	Borehole: DEPTH FROM SURFACE TO (feet)	Borehole: BOREHOLE DIAMETER (inches)	Casing: DEPTH FROM SURFACE FROM (feet)	Casing: DEPTH FROM SURFACE TO (feet)	Casing: OUTER DIAMETER (inches)	Casing: MATERIAL TYPE (T) STEEL	Casing: MATERIAL TYPE (T) PVC	Casing: MATERIAL TYPE (T) ABS	Casing: MATERIAL TYPE (T) IF OTHER TYPE, DESCRIBE	Casing: PERFORATION TYPE (T) BLANK OR NONE	Casing: PERFORATION TYPE (T) WIRE WRAP	Casing: PERFORATION TYPE (T) SHUTTER SCREEN	Casing: PERFORATION TYPE (T) MILLS KNIFE	Casing: PERFORATION TYPE (T) SLOTTED	Casing: PERFORATION TYPE (T) IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	20'	10"														
			0	20	7"	X*				X						Cement
0	350'	6"	20	350	6"		X							X		

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APR 17 2007
WATER MGMT

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: DON CAMPBELL OWNER

SIGNATURE OF WELL OWNER: D. Campbell — DATE: 4/11/07

SIGNATURE OF LANDOWNER, IF APPLICABLE (SEE INSTRUCTIONS): D. Campbell — DATE: 4/11/07

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 215509

CHECK ONE: ☒ FILING MANUALLY
☐ FILING ELECTRONICALLY* *DRILLER'S E-MAIL ADDRESS: _____

COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL CODE

If applicant is filing this NOI electronically via the ADWR website and County approval is required, please indicate approval by providing a County Approval Code.

COUNTY APPROVAL CODE

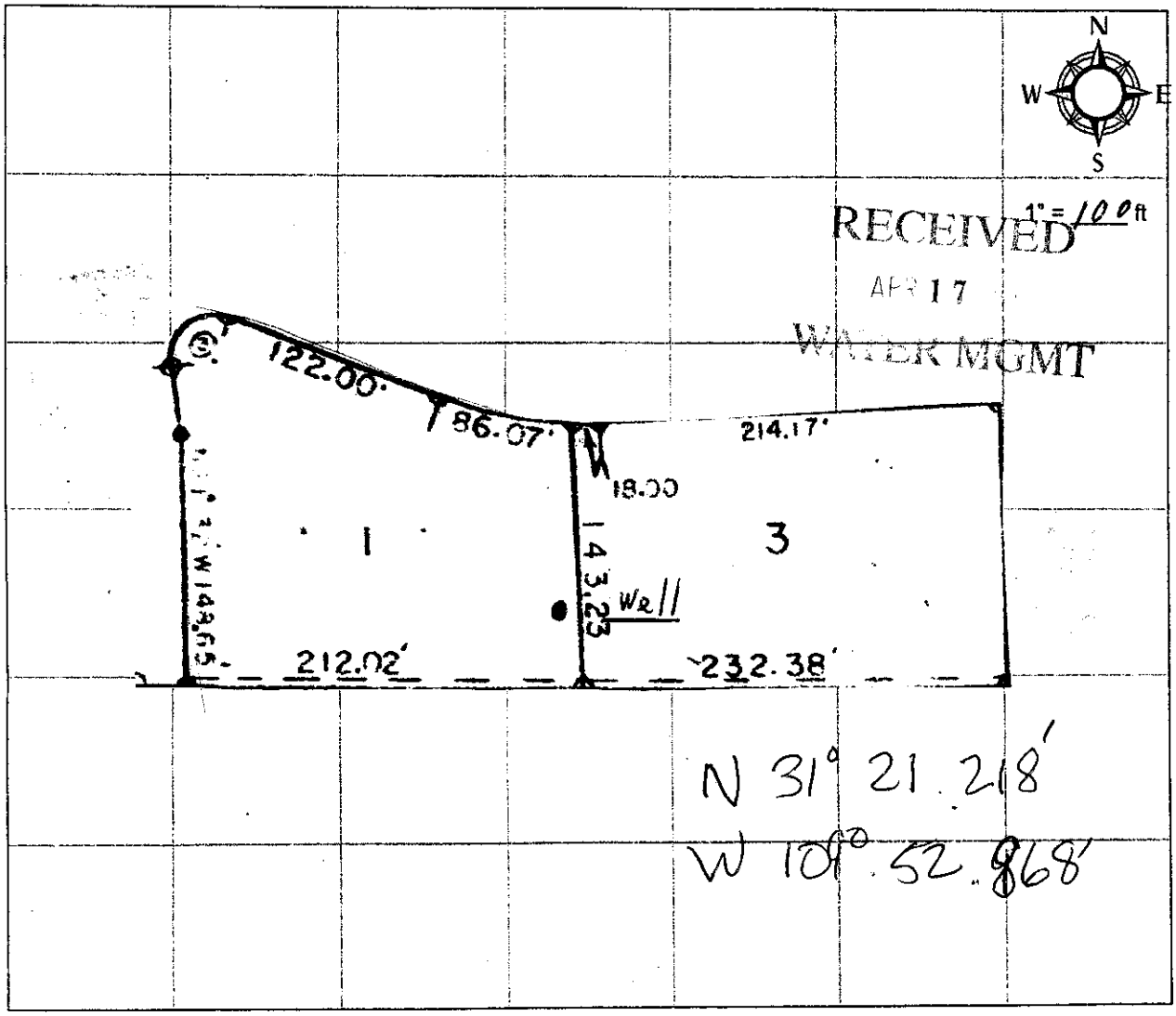
WELL SITE PLAN

NAME OF WELL OWNER
DON CAMPBELL

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
101	43	005

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



RECEIVED
APR 17
WATER MGMT

COUNTY OR LOCAL AUTHORITY NAME AND TITLE
CARLOS DIAZ R.S.

COUNTY OR LOCAL AUTHORITY SIGNATURE
Carlos Diaz R.S.

TELEPHONE NUMBER 520-432-9442 DATE

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION

DATE April 12 2007

BY Carlos Diaz R.S.

Printed: 04/17/2007 9:34:48 AM

215509

Store 0010
Sale Receipt #
04/17/2007
Page 1

Arizona Department of Water Resources

3550 N Central Ave
Phoenix AZ 85012

Date: 04/17/2007
Cashier: WRRAT
Type: Mail

DON CAMPBELL
225 E. THORPE
LAS CRUCES,NM 88005

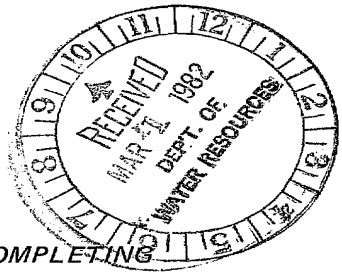
DCS/INV#	DESCRIPTION		ATTR	SIZE	QTY	PRICE	EXT PRICE
F 72	4439-06	NOTICE OF INTENT TO DRILL WELL			1	100.00	100.00
				1 Unit(s)		Subtotal:	100.00
						RECEIPT TOTAL:	**100.00**
						Tendered:	100.00

Check #: 100.00 # 2921

DON CAMPBELL
WELL OWNER

We Appreciate Your Business!

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY	
REGISTRATION NO. 55-	629867
FILE NO.	D(24-24)18cdc
FILED (DATE)	MAR 01 1982
AT (TIME)	9:30 am
INA	
AMA	

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

1. Name of Registrant:
FRANCIS G. SLOAN and NANCY M. SLOAN, his wife,
P.O. Box 215, 221 D Street, Naco, Arizona 85620
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
D24024018CDCGS2 (File Number) 35- 43827 (Control Number)

3. a. The well is located within the SW ¼ SE ¼ SW ¼, Section 18, of Township 24.0 /S, Range 24.0 E/, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic - irrigation of small orchard and garden.

5. If for irrigation use, number of acres irrigated from well 4 lots.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 245 feet
b. Diameter of casing 06 inches
c. Depth of casing 245 feet
d. Type of casing Perforated or slotted steel casing.
e. Maximum pump capacity 26-28 gallons per minute.
f. Depth to water 137 feet below land surface.
g. Date well completed _____ (Month) _____ (Day) 1977 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
Attach additional sheet if necessary.

9. DATE 2/6/82 SIGNATURE OF REGISTRANT Francis G Sloan
Nancy M Sloan

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

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INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

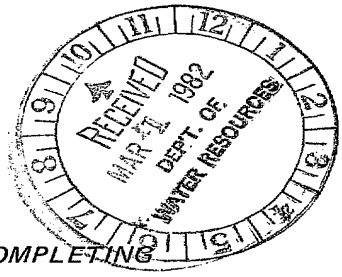
6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



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FOR OFFICE USE ONLY	
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EXEMPT WELL (NO CHARGE)	☒
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Domestic - irrigation of small orchard and garden.

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e. Maximum pump capacity 26-28 gallons per minute.
f. Depth to water 137 feet below land surface.
g. Date well completed _____ (Month) _____ (Day) 1977 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
Attach additional sheet if necessary.

9. DATE 2/6/82 SIGNATURE OF REGISTRANT Francis G Sloan
Nancy M Sloan

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

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5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

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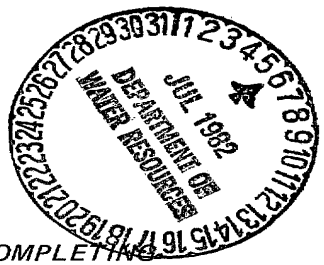
DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

11
FOR OFFICE USE ONLY
REGISTRATION NO. 55- 648359-L
FILE NO. D(24-24)18Cbb
FILED 7-6-82 (DATE) AT 3P (TIME)
INA —
AMA /

1. Name of Registrant:
Charles H. Chase and Muriel W. Chase
6445 N. Placita Pequena (Address) Tucson (City) AZ (State) 85718 (Zip)

2. File and/or Control Number under previous groundwater law: Previous owner does not possess this information.
(File Number) 35- (Control Number)

3. a. The well is located within the NW¼ NW¼ SW¼, Section 18, of Township 24 N(S), Range 24 E(W), G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Naco Townsite, Lot No. Lots 2,3,4,5 and 6 (Naco lots are 25' in width), Address Block 68 102-57.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
The only use of this well would be for a garden, if and when we ever build anything on this property.

5. If for irrigation use, number of acres irrigated from well 1/4 acre or less.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 100 feet, more or less. feet
b. Diameter of casing 4 inches
c. Depth of casing 90 to 100 feet feet
d. Type of casing N/A .
e. Maximum pump capacity 15 gallons per minute.
f. Depth to water N/A feet below land surface.
g. Date well completed 1970, approx. (Month) (Day) (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 7/5/82 SIGNATURE OF REGISTRANT Charles H. Chase
Muriel W. Chase

MICROFILMED

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ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

RECEIVED
OCT - 4 2002
RECORDS MGT

Well Driller Report and Well Log

FILE NUMBER: D(23-24) 35 CBD
WELL REGISTRATION NUMBER: 55- 593116
PERMIT NUMBER (IF ISSUED)

- Review instructions prior to completing form
- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: CITY OF BISBEE
MAILING ADDRESS: 118 ARIZONA ST
CITY / STATE / ZIP: BISBEE, AZ 85603
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-432-6000
FAX:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN): N/A.

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
23 S	24 E	35	SW 1/4	NW 1/4	SE 1/4

LATITUDE			LONGITUDE		
31 °	22 ·	56 "N	109 °	52 ·	51 "W

LAND SURFACE ELEVATION AT WELL: 4836.59 Feet Above Sea Level
METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☐ Hand-Held
☐ USGS Quad Map ☐ Conventional Survey ☒ GPS : ☒ Survey-Grade
COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 0 MAP 0 PARCEL
COUNTY WHERE WELL IS LOCATED: Cochise Co.

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME: YELLOW JACKET DRILLING
DWR LICENSE NUMBER: 78
TELEPHONE NUMBER: 602-453-3252
FAX: 602.453.3258

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED: 7.16.02
DATE WELL CONSTRUCTION COMPLETED: 7.22.02
IF FLOWING WELL, METHOD OF FLOW REGULATION: ☐ Valve ☐ Other

Drill Method

CHECK ONE
- ☒ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development

CHECK ONE
- ☐ Airlift
- ☒ Bail
- ☒ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Method of Sealing at Reduction Points

CHECK ONE
- ☐ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☐ Other (please specify)

Water Level Information

STATIC WATER LEVEL: 101.50 Feet Below Land Surface
DATE MEASURED: 7.22.02

Well Driller Report and Well Log [redacted]

WELL REGISTRATION NUMBER
55- 593116

SECTION 4. WELL CONSTRUCTION D[redacted]GN (AS BUILT) (attach additional page if needed)

Borehole			Installed Casing														
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (X)				PERFORATION TYPE (X)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	30'	12	+3	18	8	X				X						
30'	150	8.5	+2.5	90	4		X			X						
			90	150	4		X							X		.020

Installed Annular Material													
DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)								FILTER PACK		
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	80'			X								
80'	85'							X				
85'	150'									X		8/12

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
150	Feet Below Land Surface	150	Feet Below Land Surface

DWR-55-55B-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 593116

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	36'	S.G.C.	
36'	150'	limestone.	
		T.D. = 150'	

Well Driller Report and Well Log

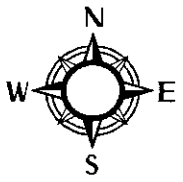
WELL REGISTRATION NUMBER
55- 593116

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
CITY OF BISBEE	0	0	

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.

See attached Site map.



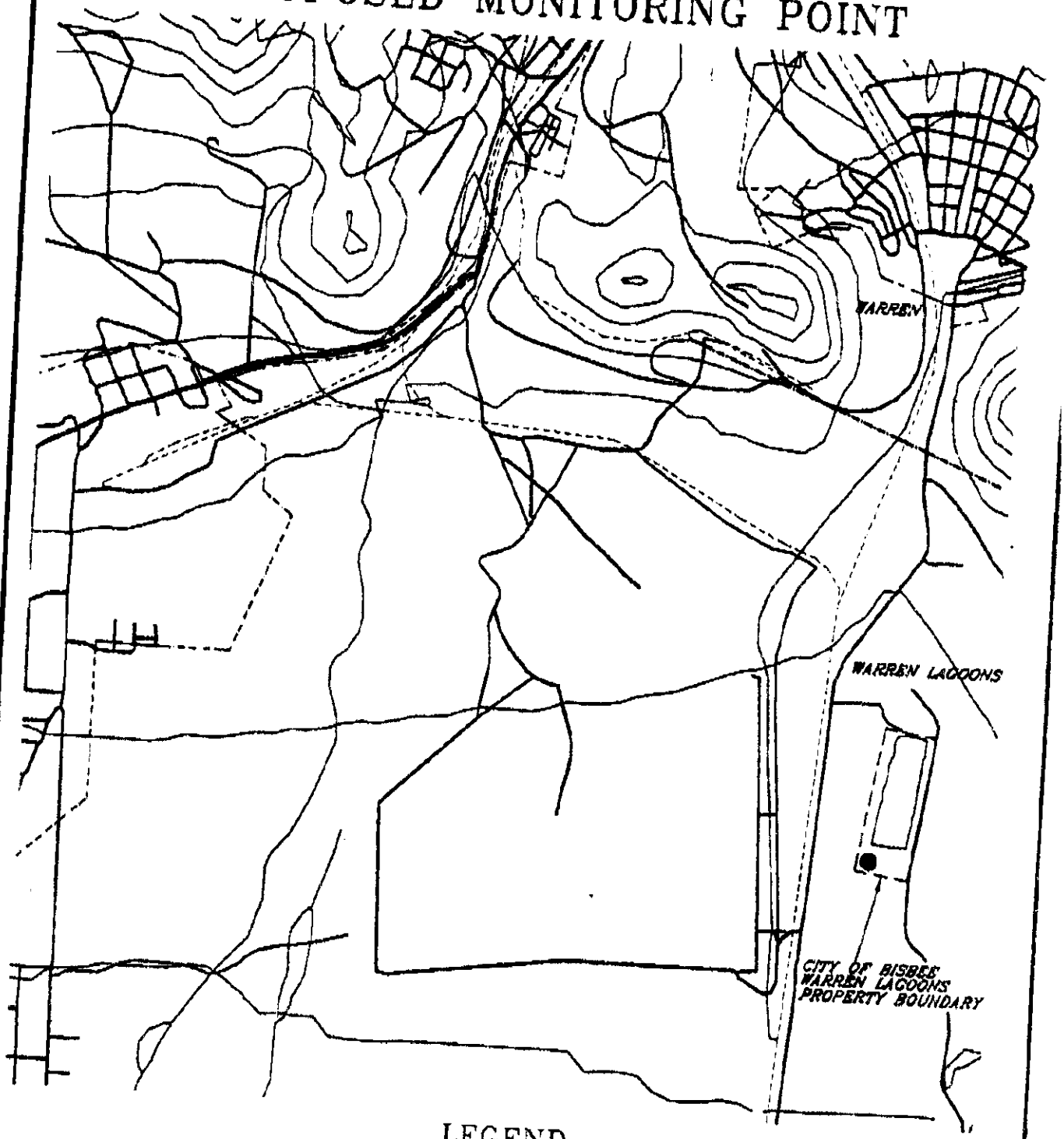
1" = _____ ft

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
Yellow Jacket Drilling.		8.17.02

DWR-55-55 (Rev. 10/11/01)

CITY OF BISBEE
PROPOSED MONITORING POINT



LEGEND

● MONITORING WELL LOCATION

Figure 1

SUNRISE ENGINEERING INC.
3660 E. UNIVERSITY DRIVE, SUITE 2 MESA, ARIZONA 85205

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

VARIANCE GRANTED

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-593116

AUTHORIZED DRILLER: YELLOW JACKET DRILLING LICENSE NO: 78

NOTICE OF INTENTION TO DRILL A MONITOR WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: CITY OF BISBEE 118 ARIZONA ST BISBEE, AZ 85603

The well(s) is/are to be located in the:

SE ¼ of the NW ¼ of the SW ¼ Section 35 Township 23 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 17TH DAY OF JUNE, 2003

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

$10 FEE

Notice of Intent to Drill, Deepen, or Modify a *Monitor / Piezometer / Environmental* Well

- Review instructions prior to completing form
- You must include with your Notice:
  - $10 check or money order for the processing fee
  - Well construction diagram, labeling all specifications listed in Section 6.
- Authority for fee: A.R.S. § 45-113(B), A.A.C. R12-15-151(B)(4)(a)

** PLEASE PRINT CLEARLY **

AMA / INA	B	SB
–	35	
RECEIVED DATE	WS	
6/17/02	13	
ISSUED DATE	WQARF	CERCLA
7/2/02		

FILE NUMBER
D(23-24)35CBD
WELL REGISTRATION NUMBER
55 - 593116

SECTION 1. REGISTRY INFORMATION

Well Type (CHECK ONE)
- [X] Monitor
- [ ] Piezometer
- [ ] Vadose Zone
- [ ] Air Sparging
- [ ] Soil Vapor Extraction
- [ ] Other (*please specify*):

Proposed Action (CHECK ONE)
- [X] Drill New Well
- [ ] Deepen
- [ ] Modify

If Deepening or Modifying:
WELL REGISTRATION NUMBER: 55 -

Location of Well
WELL LOCATION ADDRESS (IF ANY): NA

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
23S	24E	35	SW ¼	NW ¼	SE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL

COUNTY WHERE WELL IS LOCATED: Cochise County

SECTION 2. OWNER INFORMATION

Well Owner
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: City of Bisbee
MAILING ADDRESS: 118 Arizona Street
CITY / STATE / ZIP CODE: Bisbee, AZ 85603
CONTACT PERSON NAME AND TITLE: Mr. Russ McConnell
TELEPHONE NUMBER: (520) 432-6000
FAX: (520) 432-6069

Landowner (if different from Well Owner)
FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: City of Bisbee
VARIANCE GRANTED
MAILING ADDRESS: 118 Arizona Street
CITY / STATE / ZIP CODE: Bisbee, AZ 85603
CONTACT PERSON NAME AND TITLE: Russ McConnell
TELEPHONE NUMBER: (520) 432-6000
FAX: (520) 432-6069

SECTION 3. DRILLING AUTHORIZATION

Drilling Firm
NAME: Yellow Jacket Environmental Drilling
DWR LICENSE NUMBER: 78
ROC LICENSE CATEGORY: A-4
TELEPHONE NUMBER: (602) 453-3252
FAX: (602) 453-3258

Consultant (if applicable)
SPECIAL REQUIREMENTS
CONSULTING FIRM: URS Corp.
CONTACT PERSON NAME: Dana Strength
TELEPHONE NUMBER: 520-529-1141
FAX: 520-529-2449
E-MAIL ADDRESS: dana_strength@urscorp.com

SECTION 4.

Questions	Yes	No	Explanation:
1. Are all annular spaces between the casing(s) and the borehole for the placement of grout at least 2 inches?	X		2-inch annular spaces are special standards required for wells located in and near groundwater contamination sites (such as CERCLA, WQARF, DOD, LUST).
2. Is the screened or perforated interval of casing greater than 100 feet in length?		X	100-foot maximum screen intervals are a special standard for wells located in and near groundwater contamination sites (such as CERCLA, WQARF, DOD, LUST).
3. Are you requesting a variance to use thermoplastic casing in lieu of steel casing in the surface seal?	X		The wells must be constructed in a vault as defined in A.A.C. R12-15-801(27).
4. Is there another well name or identification number associated with this well?		X	IF YES, PLEASE STATE
5. Have construction plans been coordinated with the Arizona Department of Environmental Quality?	X		IF YES, PLEASE STATE AGENCY CONTACT & PHONE NUMBER: Jim DuBois, (520) 628-6741
6. For monitor wells, is dedicated pump equipment to be installed?	X		IF YES, PLEASE STATE DESIGN PUMP CAPACITY ____ Gallons per Minute
7. Will the well registration number be stamped on the vault cover or on the upper part of the casing?	X		IF NO, WHERE WILL THE REGISTRATION NUMBER BE PLACED?

Notice of Intent to Drill, Deepen, or Modify a *Monitor / Piezometer / Environmental* Well

WELL REGISTRATION NUMBER
55 -

SECTION 5. WELL CONSTRUCTION DETAILS

Drill Method (CHECK ONE)
- ☐ Air Rotary
- ☒ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (*please specify*):

Method of Well Development (CHECK ONE)
- ☐ Airlift
- ☐ Bail
- ☐ Surge Block
- ☒ Surge Pump
- ☐ Other (*please specify*):

Grout Emplacement Method (CHECK ONE)
- ☒ Gravity
- ☐ Pressure Grout
- ☐ Tremie
- ☐ Other (*please specify*):

Method of Sealing at Reduction Points (CHECK ONE)
- ☒ None
- ☐ Welded
- ☐ Swedged
- ☐ Packed
- ☐ Other (*please specify*):

Surface or Conductor Casing (CHECK ONE)
- ☒ Flush Mount in a vault
- ☐ Extend 1' above grade

SECTION 6. PROPOSED WELL CONSTRUCTION PLAN (attach additional page if needed)

DATE CONSTRUCTION TO BEGIN

Attach a well construction diagram labeling all specifications below.

VARIANCE GRANTED

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	202	8"

Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (X) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (X) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	140	4		✓			✓						
140	200	4		✓							✓		0.02

SPECIAL REQUIREMENTS

Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (X) NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
0	20		✓									
20	120				✓							
120	125							✓				
125	127									✓		± 30
127	200									✓		± 8-12

IF THIS WELL HAS NESTED CASINGS, SPECIFY NUMBER OF CASING STRINGS

EXPECTED DEPTH TO WATER: 150 Feet Below Ground Surface

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: DANA STRENGTH, GEOLOGIST

SIGNATURE OF WELL OWNER OR LANDOWNER

DATE

WELL BORING:

Total Depth ..... 200'
Casing Diameter ..... 8"
Drilling Method ..... Hollow-Stem Auger or Stratex, if needed

WELL CONSTRUCTION:

Casing length ..... 202'
Material ..... Schedule 80 PVC
Diameter ..... 4"

Surface Seal ..... 0 to 20'
Seal Material ..... Lean Concrete

Backfill ..... 20'-120'
Backfill Material ..... Portland Grout

Seal Interval ..... 120'-125'
Seal Material ..... Bentonite Pellets

Transition Interval ..... 125'-127'
Transition Material ..... #30 Tacna Sand

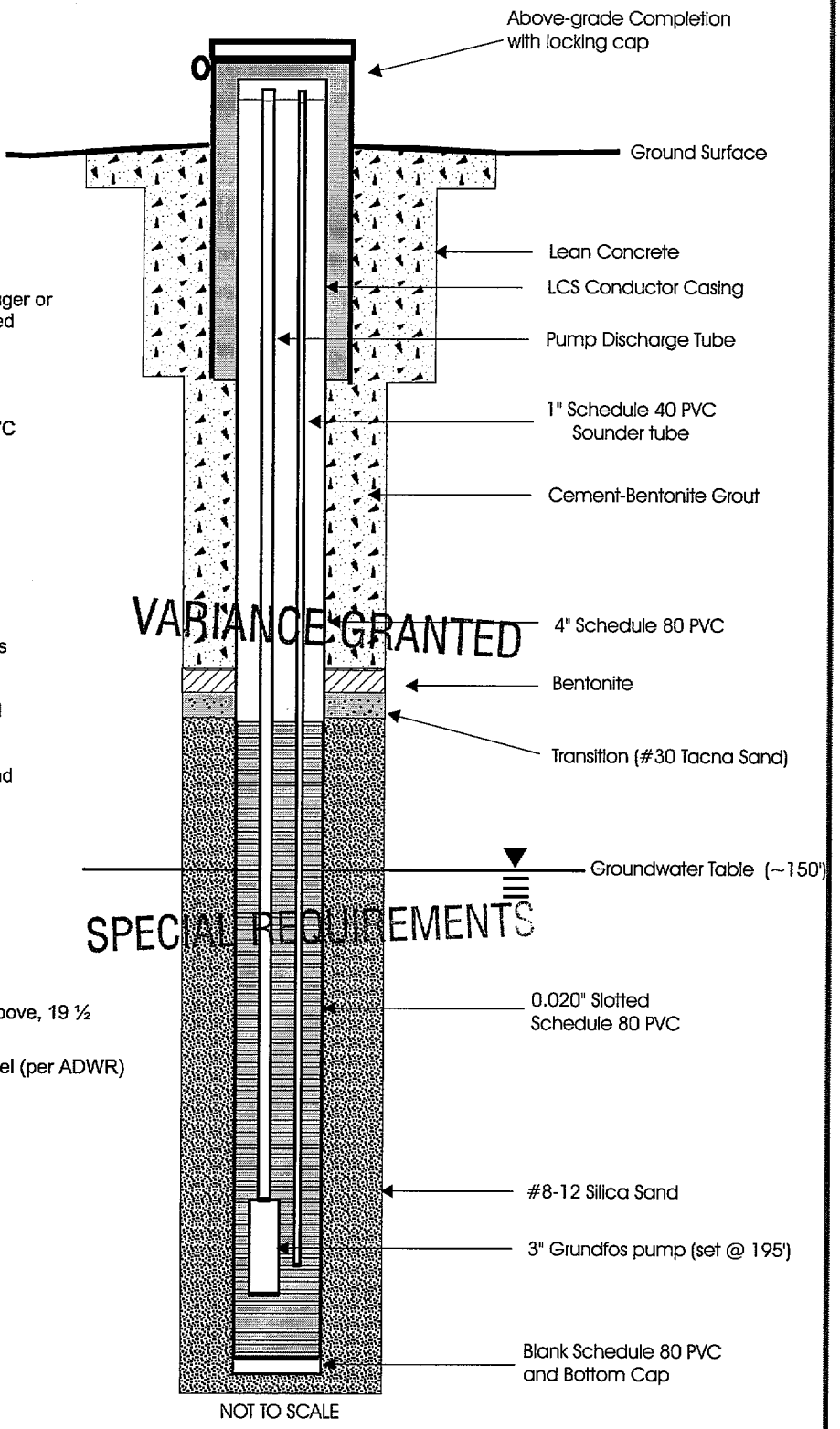
Gravel Pack Interval ..... 127'-200'
Gravel Pack Material ..... #8-12 Silica Sand

Depth to Top of Perforation Zone ... 140'

Screened Interval ..... 140'-200'
Perforated Type ..... Slotted
Perforation Size ..... 0.020"

SURFACE CONSTRUCTION:

Surface Completion..... Above Grade
Protective Casing ..... 12" x 22' (2 ½ above, 19 ½ below)
Surface Protection ..... Low Carbon Steel (per ADWR)



PROPOSED MONITOR WELL SCHEMATIC

Warren Lagoons Wastewater Leach Field

City of Bisbee

URS

Project://City of Bisbee\Monitor Well Install\Proposed well schematic.cdr 6/02

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

July 02, 2002

JANE DEE HULL
Governor
JOSEPH C. SMITH
Director

CITY OF BISBEE
118 ARIZONA ST
BISBEE, AZ 85603

Registration No. 55- 593116
File No. D(23-24) 35 CBD

Dear Well Owner:

Enclosed for your records is an annotated copy of the Notice of Intention to Drill a well. This is returned to you as evidence of compliance with A.R.S. §45-596. A drilling card has been mailed to your designated driller. Prior to drilling he must have it in his possession.

Since this well is being drilled as a Monitor well, or for Cathodic Protection, Grounding, Geotechnical or Piezometer purposes, our standard driller report form is also being furnished to the driller. He is required to complete it and return it to the Department within 30 days after the completion of the well. A Completion Report form is being furnished for monitor wells where pump installation is authorized. This must be completed within thirty days of installation as required by A.R.S. §45-600.

A Change of Well Information form is enclosed for your future use . If you deem it necessary to change the location of the proposed well, please notify the Department on the enclosed form. A properly amended drilling card will then be issued and must be in possession of the driller before drilling begins. During the drilling of a new well, if it is determined that it must be abandoned, then a Well Abandonment Completion Report must be submitted per R12-15-816.F.

Per A.R.S. §45-593, the person to whom a well is registered shall notify this Department of a change of ownership of the well and/or information pertaining to the physical characteristics of the well, in order to keep the well registration file current and accurate.

Sincerely,

Toni Bergeman

Toni Bergeman
Water Resource Technician
Groundwater Management Support Section

Enclosures

ARIZONA DEPARTMENT OF WATER RESOURCES
Hydrology Division
500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2448
Fax (602) 417-2425

JANE DEE HULL
Governor

JOSEPH C. SMITH
Director

Effective Date: March 12, 2002

To: Well Owners and Licensed Well Drillers

Re: Variance to substitute the use of qualified thermoplastic casing for steel casing required by rule A.A.C. R12-15-811(B)(1) in the upper 20 feet of a well's surface seal.

The Arizona Department of Water Resources (ADWR) has received your NOI form(s) that indicate that you are applying for a variance to substitute the use of qualified thermoplastic casing for steel casing in the upper 20 feet of the well(s) surface seal.

ADWR approves the request for the following variance:

- Thermoplastic inner casing (riser) with a watertight cap may be used in lieu of steel [A.A.C. R12-15-811(B)(1)].

The following *special requirements* are conditions for this variance (A.A.C. R12-15-821):

- This variance only applies for the construction of qualified exploration wells, monitor wells, piezometer wells or vadose zone wells, as defined in A.A.C. R12-15-801.
- The thermoplastic casing shall be installed only in an oversized borehole without driving, and the well shall be completed below land surface in a vault.
- The PVC inner casings (risers) shall comply with ASTM Standard Guide D5092, Section 6.5.
- The wells shall be constructed per the "Variance Granted" Notice of Intention to Drill.
- The wells shall be abandoned (decommissioned) per A.A.C. R12-15-816.

As a reminder, pursuant to A.A.C. R12-15-811(H)(2), monitor wells shall be identified as such on the vault cover or at the top of the steel casing. Identification information shall include the well registration number.

Any questions should be directed to me at 602-417-2400, x7330.

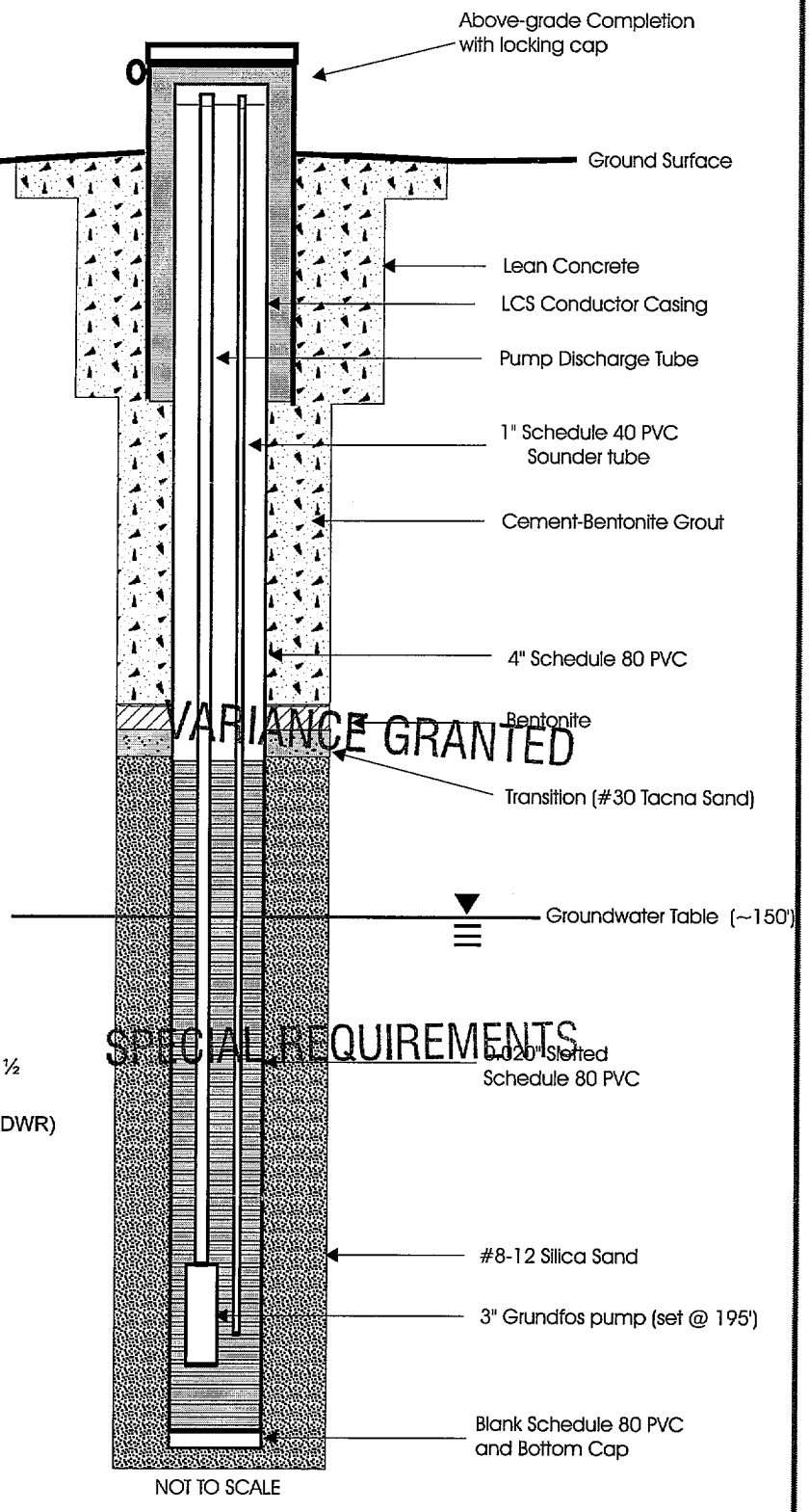
Sincerely,

Frank Corkhill

Supervisor, Technical Support Section

cc: Owner
File

RECEIVED
JUN 17 2002
GROUNDWATER MGT



VARIANCE GRANTED
SPECIAL REQUIREMENTS

WELL BORING:

Total Depth	200'
Casing Diameter	8"
Drilling Method	Hollow-Stem Auger or Stratex, if needed

WELL CONSTRUCTION:

Casing length	202'
Material	Schedule 80 PVC
Diameter	4"
Surface Seal	0 to 20'
Seal Material	Lean Concrete
Backfill	20'-120'
Backfill Material	Portland Grout
Seal Interval	120'-125'
Seal Material	Bentonite Pellets
Transition Interval	125'-127'
Transition Material	#30 Tacna Sand
Gravel Pack Interval	127'-200'
Gravel Pack Material	#8-12 Silica Sand
Depth to Top of Perforation Zone	140'
Screened Interval	140'-200'
Perforated Type	Slotted
Perforation Size	0.020"

SURFACE CONSTRUCTION:

Surface Completion	Above Grade
Protective Casing	12" x 22' (2 ½ above, 19 ½ below)
Surface Protection	Low Carbon Steel (per ADWR)

PROPOSED MONITOR WELL SCHEMATIC

Warren Lagoons Wastewater Leach Field

City of Bisbee

URS

Project://City of Bisbee\Monitor Well Install\Proposed well schematic.cdr 6/02

$10 FEE

Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Notice of Intent to Drill, Deepen, or Modify a *Monitor / Piezometer / Environmental* Well

RECEIVED JUN 17 2002

- Review instructions prior to completing form
- You must include with your Notice:
  - $10 check or money order for the processing fee
  - Well construction diagram, labeling all specifications listed in Section 6.
- Authority for fee: A.R.S. § 45-113(B), A.A.C. R12-15-151(B)(4)(a)

** PLEASE PRINT CLEARLY **

AMA / INA		B 35 SB
RECEIVED	DATE	WS 13
ISSUED	DATE	WQARF CERCLA

FILE NUMBER

WELL REGISTRATION NUMBER
55 -

SECTION 1. REGISTRY INFORMATION

Well Type (CHECK ONE)
- [X] Monitor
- [ ] Piezometer
- [ ] Vadose Zone
- [ ] Air Sparging
- [ ] Soil Vapor Extraction
- [ ] Other (*please specify*):

Proposed Action (CHECK ONE)
- [X] Drill New Well
- [ ] Deepen
- [ ] Modify

If Deepening or Modifying:
WELL REGISTRATION NUMBER
55 -

Location of Well
WELL LOCATION ADDRESS (IF ANY): NA

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
23 S	24 E	35	SW ¼	NW ¼	SE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL

COUNTY WHERE WELL IS LOCATED: Cochise County

SECTION 2. OWNER INFORMATION

Well Owner
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: City Of Bisbee
MAILING ADDRESS: 118 Arizona Street
CITY / STATE / ZIP CODE: Bisbee, AZ 85603
CONTACT PERSON NAME AND TITLE: Mr. Russ McConnell
TELEPHONE NUMBER: (520) 432-6000 FAX: (520) 432-6069

Landowner (if different from Well Owner)
FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: City Of Bisbee
MAILING ADDRESS: 118 Arizona Street
CITY / STATE / ZIP CODE: Bisbee, AZ 85603
CONTACT PERSON NAME AND TITLE: Russ McConnell
TELEPHONE NUMBER: (520) 432-6000 FAX: (520) 432-6069

SECTION 3. DRILLING AUTHORIZATION

Drilling Firm
NAME: Yellow Jacket Environmental Drilling
DWR LICENSE NUMBER: 78 ROC LICENSE CATEGORY: A-4
TELEPHONE NUMBER: (602) 453-3252 FAX: (602) 453-3258

Consultant (if applicable)
CONSULTING FIRM: URS Corp.
CONTACT PERSON NAME: Dana Strength
TELEPHONE NUMBER: 520-529-1141 FAX: 520-529-2449
E-MAIL ADDRESS: dana_strength@urscorp.com

SECTION 4.

Questions	Yes	No	Explanation:
1. Are all annular spaces between the casing(s) and the borehole for the placement of grout at least 2 inches?	X		2-inch annular spaces are special standards required for wells located in and near groundwater contamination sites (such as CERCLA, WQARF, DOD, LUST).
2. Is the screened or perforated interval of casing greater than 100 feet in length?		X	100-foot maximum screen intervals are a special standard for wells located in and near groundwater contamination sites (such as CERCLA, WQARF, DOD, LUST).
3. Are you requesting a variance to use thermoplastic casing in lieu of steel casing in the surface seal?		X	The wells must be constructed in a vault as defined in A.A.C. R12-15-801(27).
4. Is there another well name or identification number associated with this well?		X	IF YES, PLEASE STATE
5. Have construction plans been coordinated with the Arizona Department of Environmental Quality?	X		IF YES, PLEASE STATE AGENCY CONTACT & PHONE NUMBER: Jim DuBois, (520) 628-6741
6. For monitor wells, is dedicated pump equipment to be installed?	X		IF YES, PLEASE STATE DESIGN PUMP CAPACITY Gallons per Minute
7. Will the well registration number be stamped on the vault cover or on the upper part of the casing?	X		IF NO, WHERE WILL THE REGISTRATION NUMBER BE PLACED?

...tice of Intent to Drill, Deepen, or Modify a *Monitor / Piezometer / Environmental* Well

WELL REGISTRATION NUMBER: 55 -

SECTION 5. WELL CONSTRUCTION DETAILS

Drill Method
CHECK ONE
- ☐ Air Rotary
- ☒ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (*please specify*):

Method of Well Development
CHECK ONE
- ☐ Airlift
- ☐ Bail
- ☐ Surge Block
- ☒ Surge Pump
- ☐ Other (*please specify*):

Grout Emplacement Method
CHECK ONE
- ☒ Gravity
- ☐ Pressure Grout
- ☐ Tremie
- ☐ Other (*please specify*):

Method of Sealing at Reduction Points
CHECK ONE
- ☒ None
- ☐ Welded
- ☐ Swedged
- ☐ Packed
- ☐ Other (*please specify*):

Surface or Conductor Casing
CHECK ONE
- ☒ Flush Mount in a vault
- ☒ Extend 1' above grade (2½ ft. Above)

RECEIVED
JUN 17 2002

SECTION 6. PROPOSED WELL CONSTRUCTION PLAN (attach additional page if needed)

DATE CONSTRUCTION TO BEGIN

Attach a well construction diagram labeling all specifications below.

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	202	8"

Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (X) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (X) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	140	4		✓			✓						
140	200	4		✓							✓		0.02

Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (X) NONE	LEAN CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
0	20		✓									
20	120				✓							
120	125							✓				
125	127									✓		# 30
127	200									✓		# 8-12

IF THIS WELL HAS NESTED CASINGS, SPECIFY NUMBER OF CASING STRINGS

EXPECTED DEPTH TO WATER: 150 Feet Below Ground Surface

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: DANA STRENGTH, GEOLOGIST

SIGNATURE OF WELL OWNER OR LANDOWNER

DATE: 6-13-02

$10 FEE

Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

RECEIVED JUN 17 2002 GROUNDWATER MGT

Notice of Intent to Drill, Deepen, or Modify a *Monitor / Piezometer / Environmental* Well

- Review instructions prior to completing form
- You must include with your Notice:
  - $10 check or money order for the processing fee
  - Well construction diagram, labeling all specifications listed in Section 6.
- Authority for fee: A.R.S. § 45-113(B), A.A.C. R12-15-151(B)(4)(a)

** PLEASE PRINT CLEARLY **

AMA / INA	B	SB
RECEIVED DATE	WS	
ISSUED DATE	WQARF	CERCLA

FILE NUMBER

WELL REGISTRATION NUMBER
55 -

SECTION 1. REGISTRY INFORMATION

Well Type
CHECK ONE
- [x] Monitor
- [ ] Piezometer
- [ ] Vadose Zone
- [ ] Air Sparging
- [ ] Soil Vapor Extraction
- [ ] Other (*please specify*):

Proposed Action
CHECK ONE
- [x] Drill New Well
- [ ] Deepen
- [ ] Modify

If Deepening or Modifying:
WELL REGISTRATION NUMBER
55 -

Location of Well
WELL LOCATION ADDRESS (IF ANY)
NA

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
23 S	24 E	35	SW ¼	NW ¼	SE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER
BOOK | MAP | PARCEL

COUNTY WHERE WELL IS LOCATED
Cochise County

SECTION 2. OWNER INFORMATION

UNITED STATES POSTAL SERVICE®
POSTAL MONEY ORDER
15-800 / 000

SERIAL NUMBER	YEAR, MONTH, DAY	POST OFFICE	U.S. DOLLARS AND CENTS
03708877893	2002-06-13	857182	$$$10 00¢

AMOUNT: TEN DOLLARS & 00¢**********

NEGOTIABLE ONLY IN THE U.S. AND POSSESSIONS

TO ADWR
ADDRESS P.O. Box 458
Phoenix, AZ 85001
U.D. NO. OR ED FOR NOI

FROM D. Strength / URS Corp
CLERK 009
ADDRESS 1790 E. River Rd, E-300
Tucson, AZ 85719

[redacted]

...Well Owner)
...MENT AGENCY, OR INDIVIDUAL
...E
...Street
...85603
...NER
FAX (520) 432-6069

...78	...A-4	CONTACT PERSON NAME Dana Strength	
TELEPHONE NUMBER (602) 453-3252	FAX (602) 453-3258	TELEPHONE NUMBER 520-529-1141	FAX 520-529-2449

E-MAIL ADDRESS
dana_strength@urscorp.com

SECTION 4.

Questions	Yes	No	Explanation:
1. Are all annular spaces between the casing(s) and the borehole for the placement of grout at least 2 inches?	X		2-inch annular spaces are special standards required for wells located in and near groundwater contamination sites (such as CERCLA, WQARF, DOD, LUST).
2. Is the screened or perforated interval of casing greater than 100 feet in length?		X	100-foot maximum screen intervals are a special standard for wells located in and near groundwater contamination sites (such as CERCLA, WQARF, DOD, LUST).
3. Are you requesting a variance to use thermoplastic casing in lieu of steel casing in the surface seal?		X	The wells must be constructed in a vault as defined in A.A.C. R12-15-801(27).
4. Is there another well name or identification number associated with this well?		X	IF YES, PLEASE STATE
5. Have construction plans been coordinated with the Arizona Department of Environmental Quality?	X		IF YES, PLEASE STATE AGENCY CONTACT & PHONE NUMBER Jim DuBois, (520) 628-6741
6. For monitor wells, is dedicated pump equipment to be installed?	X		IF YES, PLEASE STATE DESIGN PUMP CAPACITY Gallons per Minute
7. Will the well registration number be stamped on the vault cover or on the upper part of the casing?	X		IF NO, WHERE WILL THE REGISTRATION NUMBER BE PLACED?

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

June 19, 2002

City of Bisbee
118 Arizona Street
Bisbee, AZ 85603

Assigned Referenced Number: 55-593116

Dear Applicant:

The Department of Water Resources recently received your Notice of Intent to **Drill, Deepen, Replace, or Modify A Well**. However, our review indicates that the filing(s) is incomplete under the Groundwater Management Act for the following reason(s):

An original signature is required

PLEASE CALL TONI BERGEMAN AT 602-417-2400 EXT. 7148 WITH ANY QUESTIONS.

In accordance with A.R.S § 45-596; Paragraph D, this application is being returned as a "statement of determination", requesting information necessary to make it correct and complete. If the necessary information is not received by the Department within sixty (60) days, the application may be denied. You would then have to re-initiate the N.O.I. process to receive a drilling authority for this location. If you have any questions, please contact the Groundwater Management Support Section at (602) 417-2470. **ATTACH THIS CHECK LIST WHEN RESUBMITTING THE COMPLETED NOTICE OF INTENT AND RETURN TO BOX 458, PHOENIX, ARIZONA 85004-3003. YOU MAY ALSO CONTACT YOUR DRILLER OR COUNTY ASSESSORS OFFICE FOR ASSISTANCE PERTAINING TO THE NECESSARY INFORMATION THAT IS REQUIRED TO COMPLETE YOUR APPLICATION.**

City of Bisbee

VARIANCE CHECKLIST - HYDROLOGY

DATE RECEIVED 6-17-02
DATE TO HYDRO 6-27-02
DATE TO GMSS 7-1-02

POTENTIAL REG. Nº 55-593116

55-_____ THRU 55-_____

FRONT OF N.O.I COMPLETE/CORRECT: YES ✓ NO _____

VARIANCE (?) LETTER RECEIVED	YES _____	NO ✓
WELL DIAGRAM (?) RECEIVED	YES ✓	NO _____
SITE PLAN (?) RECEIVED	YES _____	NO _____

TYPE AND NUMBER OF WELLS:

1	MONITOR	_____	CATHODIC PROTECTION
_____	PIEZOMETER	_____	GROUNDING
_____	GEOTECHNICAL	_____	HEAT PUMP
_____	MINERAL EXPLORATION		
_____	WATER PRODUCTION	____	OTHER _____

DESCRIBE TYPE OF WELL

VARIANCE:

✓	REQUIRED	✓	GRANTED
_____	NOT REQUIRED	_____	NOT GRANTED
		_____	LETTER ISSUED

ATTENTION!!! NOTICE OF INTENT TEAM:

_____ HARD COPY OF LETTER TO FOLLOW
_____ CALL FOR PICKUP

COMMENTS: OK-bah (generic ~~[illegible]~~ variance)

YB

ENTERED
FEB 25 2008

Arizona Department of Water Resources
Information Management Unit
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 771-8627 • (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

MO

RECEIVED
FEB 20 2008
INFO MGMT

THIS REPORT MUST BE FILED WITHIN **30 DAYS** OF COMPLETING THE WELL.

PLEASE PRINT CLEARLY USING BLACK OR BLUE INK

FILE NUMBER: D(24-23)13 AAC
WELL REGISTRATION NUMBER: 55 - 906823
PERMIT NUMBER (IF ISSUED):

SECTION 1. DRILLING AUTHORIZATION

Drilling Firm

Mail To:

NAME	DWR LICENSE NUMBER
YELLOW JACKET DRILLING SERVICES L L C	78
ADDRESS	**TELEPHONE NUMBER**
P.O. BOX 801	602-453-3252
CITY / STATE / ZIP	**FAX**
GILBERT, AZ, 85299-0801	602.453.3258

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: City of Bisbee

MAILING ADDRESS: 118 Arizona Street

CITY / STATE / ZIP: Bisbee, AZ, 85603

CONTACT PERSON NAME AND TITLE: Russ McConnel

TELEPHONE NUMBER: 520 432-6000

FAX:

WELL NAME (e.g., MW-1, PZ-3, lot 25 Well, Smith Well, etc.): Sentinel Well

Location of Well

WELL LOCATION ADDRESS (IF ANY):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S.	23E	13	NE 1/4	NE 1/4	SW 1/4

LATITUDE			LONGITUDE		
31 °	20 '	55.7 "N	109 °	57 '	27.0 "W

METHOD OF LATITUDE/LONGITUDE (CHECK ONE)
☒ GPS: Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Survey-Grade

LAND SURFACE ELEVATION AT WELL: 4596 Feet Above Sea Level

METHOD OF ELEVATION (CHECK ONE)
☒ *GPS: Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Survey-Grade

*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE)
☒ NAD-83 ☐ Other (please specify)

COUNTY: Cochise

ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
102	34	005A

SECTION 3. WELL CONSTRUCTION DETAILS

Drilling Method

CHECK ONE
☒ Air Rotary
☐ Bored or Augered
☐ Cable Tool
☐ Dual Rotary
☐ Mud Rotary
☐ Reverse Circulation
☐ Driven
☐ Jetted
☐ Air Percussion / Odex Tubing
☐ Other (please specify)

Method of Well Development

CHECK ONE
☐ Airlift
☒ Bail
☒ Surge Block
☐ Surge Pump
☐ Other (please specify)

Condition of Well

CHECK ONE
☐ Capped
☒ Pump Installed

Method of Sealing at Reduction Points

CHECK ONE
☐ None
☐ Packed
☐ Swedged
☐ Welded
☒ Other (please specify) No reduction Point.

Construction Dates

DATE WELL CONSTRUCTION STARTED: 4.17.07

DATE WELL CONSTRUCTION COMPLETED: 4.20.07

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

SIGNATURE OF QUALIFYING PARTY: R. L. Blane

DATE: 5.14.07

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 906823

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILD) (attach additional page if needed)

Depth

DEPTH OF BORING	DEPTH OF COMPLETED WELL
272 Feet Below Land Surface	269 Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
106 Feet Below Land Surface	4.19.07		☐ Valve ☐ Other:

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	40	9 5/8
40	272	8 5/8

Installed Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER (inches)	MATERIAL TYPE (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE (inches)
0	83	4.5	X				X						
83	269	4.5	X								X		.050

Installed Annular Material

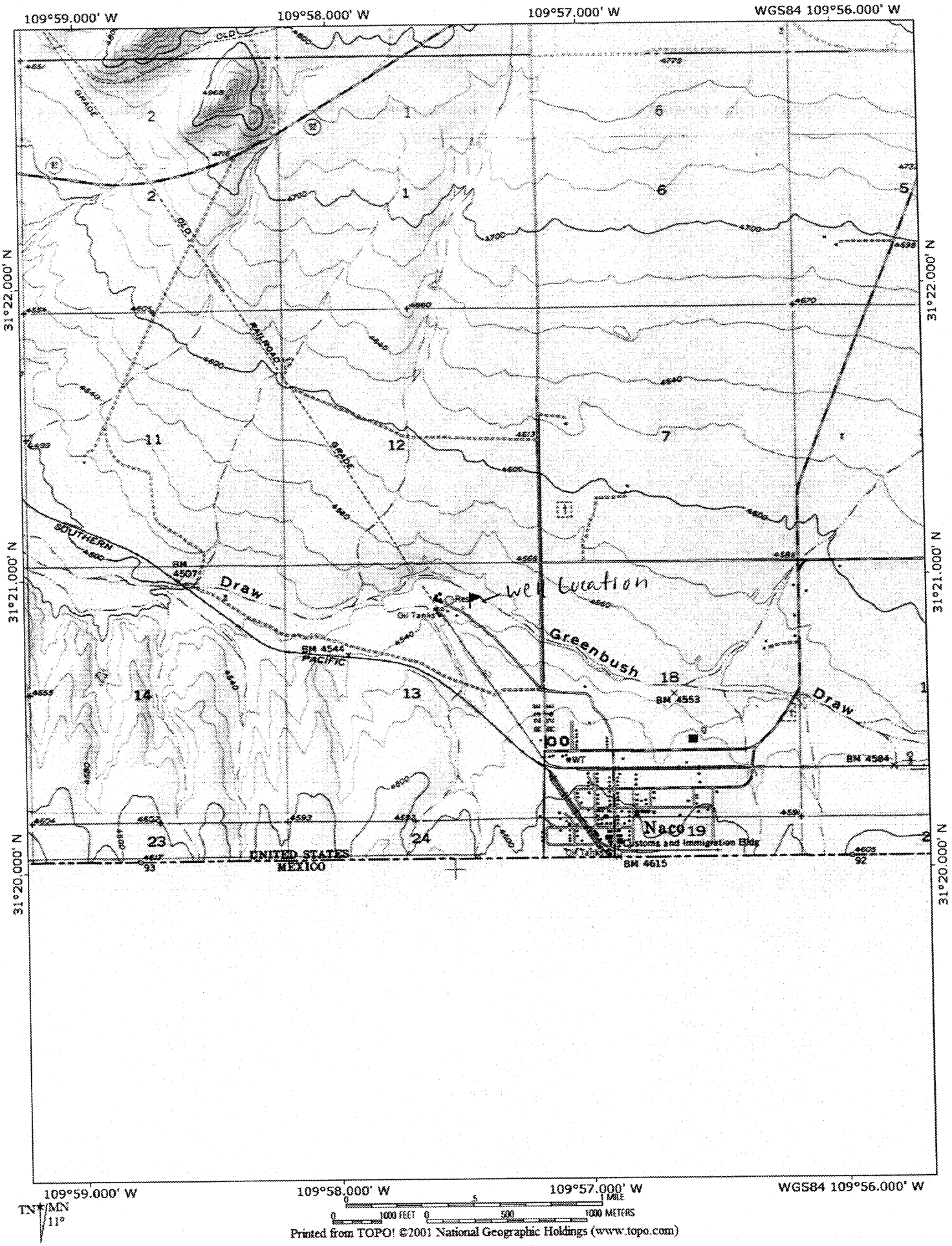
DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (T) NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
0	20				X							
20	71					X						
71	78						X					
78	269									X		8 x 12

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 906823

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	Description Describe material, grain size, color, etc.	Check (T) every interval where water was encountered (if known)
0	80	Silty clay	
80	272	Sand w/ gravel · very dense.	
		J.D = 272' BGS.	
		J/ = 106' BGS.	



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ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue Suite 200
Phoenix, Arizona 85012

DH

DRILLING CARD

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILLING OPERATIONS

WELL REGISTRATION NO: **55-906823**

AUTHORIZED DRILLER: **YELLOW JACKET DRILLING SERVICES L L C** LICENSE NO: **78**

NOTICE OF INTENT TO **DRILL A MONITOR WELL** HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: **City of Bisbee**

ADDRESS: **118 Arizona Street, Bisbee, AZ, 85603**

THE WELL(S) IS/ARE TO BE LOCATED IN THE:

SW 1/4 of the **NE** 1/4 of the **NE** 1/4 Section **13** Township **24 S** Range **23 E**

NO. OF WELLS IN THIS PROJECT: **1** ASSESSOR'S PARCEL NO: **102-34-005A**

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE DAY OF **4/14/2008**

THE DRILLER MUST FILE A WELL DRILLER REPORT AND WELL LOG WITHIN 30 DAYS OF COMPLETION OF DRILLING

This drilling or abandonment authority was granted based upon the certifications made by the above-named Driller in the notice of intent to drill or abandon. Those certifications, along with any variances granted, are listed below. By drilling or abandoning the well pursuant to this authorization, the above-named driller acknowledges the accuracy of the driller certifications. If the certifications are in error, this authorization is invalid and driller must contact the Department of Water Resource's NOI Section in writing at the address above to correct.

Variance(s) Granted To Driller: **None**

Certification(s) Made By Driller:

- ☑ By checking this box, I certify that I have all necessary Registrar of Contractor (ROC) licenses in all necessary license categories for this drilling or abandonment project and that those licenses are current.
- ☑ If the landowner and the well owner are not the same, by checking this box, I certify that I have obtained written approval from the landowner in order to conduct this drilling or abandonment project. A copy of the written approval shall be submitted to ADWR with the Well Driller Report and Well Log or Well Abandonment Completion Report within 30 days of completion of drilling or abandonment.
- ☑ By checking this box, I certify that this NOI application is not an application to replace, deepen, or modify an existing well.
- ☑ By checking this box, I certify that I have been authorized by the above-named well owner to submit this Notice of Intent on the well owner's behalf.
- ☑ By checking this box, I certify that the information above is complete and correct, and that the well shall be drilled or abandoned in compliance with all pertinent statutes and rules, including any special standards that may be required to protect the aquifer or other water sources.

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue Suite 200, Phoenix, Arizona 85012
Telephone (602) 771-8500
Fax (602) 771-8691

Monday, April 16, 2007

Janet Napolitano
Governor

Herbert R. Guenther
Director

City of Bisbee
118 Arizona Street
Bisbee, AZ, 85603

Registration No. 55- 906823
File No. D(24-23)13 AAC

Dear Applicant:

Enclosed is a copy of the Notice of Intent to Drill a Monitor/Piezometer/Environmental Well ("NOI") which you recently filed with this Department pursuant to A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed (or otherwise provided) a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card which he must keep in his posssession at the well site during drilling. Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling.

If it is necessary to change the location of the proposed well, you may not proceed with drilling until you file a new NOI with the Department and the Department issues an amended drilling card to the driller. If you change drillers, you must notify the Department of the new driller's identity. A new driller may not begin drilling until he receives a new drilling card from the Department. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report filed as required by A.A.C. R12-15-816(F).

A.R.S. § 45-600 requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR Form 55-55) with the Department within 30 days after completion of drilling. That form was mailed to your driller with the drilling card.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at
http://www.azwater.gov/dwr/Content/Find_by_Category/Permits_Forms_Applications/default.htm.

ARIZONA DEPARTMENT OF WATER RESOURCES

Electronic Filing - NOI Report

3550 N. Central Avenue Suite 200
Phoenix, Arizona 85012

NOI Type: Notice of Intent to Drill, Deepen, Modify a Monitor/Piezometer/Environmental Well
Well Type: MONITOR
Date Received at ADWR Website: 4/16/2007 2:09:18 PM

Fee Paid: $150.00 Order Number: VUJE0F6AF380

Well Registration Number: 55 - 906823
Number of Wells/Holes: 1 Drilling Authority Expires On: 4/14/2008

Driller's ADWR License Number: 78

Authorized Driller: YELLOW JACKET DRILLING SERVICES L L C
ROC License Number Entered By Driller: 131584
Qualifying Party License Categories: A-4

Well Owner Name: City of Bisbee
Well Owner Address: 118 Arizona Street
Well Owner City, State - Zip: Bisbee, AZ - 85603
Well Owner Phone: 520 432-6000

Book: 102 Map: 34 Parcel: 005A

Is the Land Owner the same as the Well Owner?: No

Land Owner Name: Arizona Water Company
Land Owner Address: 1345 South Naco Highway
Land Owner City, State - Zip: Bisbee, AZ - 85603
Land Owner Phone: 520 0

Well Location: **SW** 1/4 of the **NE** 1/4 of the **NE** 1/4 Section **13** Township **24 S** Range **23 E**

AMA: NOT WITHIN ANY AMA OR INA
County: COCHISE
Contamination Site: NOT IN ANY WQARF SITE

Primary Water Use: NONE
Secondary Water Use(s): N/A

Is any portion of the land, on which the well is to be located, within 100 feet of a designated municipal provider's operating water distribution system as shown on the municipal provider's most recent digitized service area map filed by the municipal provider with the director of ADWR. N/A

Proximity to a designated municipal provider's operating water distribution system exemption type:
N/A

Will you be installing a dedicated pump ?: N/A

Will the installed pump have a pumping capacity of greater than 35 GPM, or will the well will be used to withdraw greater than 10 Acre Feet per year?: N/A

Is this NOI an application to replace, deepen, or modify an existing well? No

Variance(s) Granted To Driller: **None**

Certification(s) Made By Driller:

- ☑ By checking this box, I certify that I have all necessary Registrar of Contractor (ROC) licenses in all necessary license categories for this drilling or abandonment project and that those licenses are current.
- ☑ If the landowner and the well owner are not the same, by checking this box, I certify that I have obtained written approval from the landowner in order to conduct this drilling or abandonment project. A copy of the written approval shall be submitted to ADWR with the Well Driller Report and Well Log or Well Abandonment Completion Report within 30 days of completion of drilling or abandonment.
- ☑ By checking this box, I certify that this NOI application is not an application to replace, deepen, or modify an existing well.
- ☑ By checking this box, I certify that I have been authorized by the above-named well owner to submit this Notice of Intent on the well owner's behalf.
- ☑ By checking this box, I certify that the information above is complete and correct, and that the well shall be drilled or abandoned in compliance with all pertinent statutes and rules, including any special standards that may be required to protect the aquifer or other water sources.

From: "ADWR" <wrnoi@azwater.gov>
To: <melissa@yjdrilling.com>
Date: Mon, Apr 16, 2007 2:10 PM
Subject: ADWR Well NOI Confirmation re: Well Registration Number 906823

****
* Confirmation for Order: VUJE0F6AF380
****

Thank you for your order, Richard LeBlanc.

Should you have any questions concerning your
order, please contact us by email at
wrnoi@azwater.gov or by phone at (602) 771-8500
and be sure to mention your order number:
VUJE0F6AF380.

Thanks again for shopping with Arizona Department of Water Resources!

Best regards,
Arizona Department of Water Resources Management.
Phone: (602) 771-8500
Email: wrnoi@azwater.gov

Order ID: VUJE0F6AF380
Date: 4/16/2007
Status: Approved

Arizona Department of Water Resources
3550 N. Central Avenue Suite 200
Phoenix, AZ 85012 United States
Phone: (602) 771-8500 Fax: (602) 771-8691

Bill To: YELLOW JACKET DRILLING SERVICES L L C-Richard LeBlanc
P.O. BOX 801
GILBERT, AZ. 85299-0801
Email: melissa@yjdrilling.com

000600 - All Except Domestic Outside AMA/INA
qty 1 - price ea. - amount $150.00

Subtotal:	$150.00
Tax Total	$0.00
Shipping	$0.00
Handling	$0.00

Total:	$150.00

Transaction Detail

This report provides information on a specific transaction.

VUJE0F6AF380

Request Data

Transaction ID:	**VUJE0F6AF380**	Merchant:	**adwr02**
User Name:	**adwr02**	Timestamp:	**2007-04-16 14:10:09**
Trans Type:	**Sale**	Duration:	**0**
Tender Type:	**Visa**	Client IP Address:	**216.113.188.202**
Account Number:	[redacted]	Client Version:	**300**
Expiration:	**1108**	Amount:	**$150.00**
Comment 1:	**906823**	Comment 2:	
Bill First Name:	**Richard**	Bill Last Name:	**LeBlanc**
Bill Addr. (AVS Street):	**P.O. BOX 801**	Bill City:	**GILBERT**
Bill State:	**AZ**	Bill Zip (AVS Zip):	**852990801**
Bill Country:	**US**	Bill Email:	**melissa@yjdrilling.com**
Ship First Name:		Ship Last Name:	
Ship Address:		Ship City:	
Ship State:		Ship Zip Code:	
Ship Country:			
Recurring:			

Results

Result Code:	**0**	Response Message:	**Approved**
Auth. Code:	**00264C**		
Orig Trans ID:		AVS Street Match:	**N**
Orig Amount:	**$0.00**	AVS Zip Match:	**N**
International AVS Indicator:	**N**	CSC Match:	**Y**
Batch ID:	**358**		

Level 2 Information

Purchase Order #:	**VUJE0F6AF380**	Customer Code:	
Tax Amount:	**$0.00**	Shipping/Freight Amount:	**$0.00**
Duty Amount:	**$0.00**		

View Transaction Status

Arizona Department of Water Resources
Information Management Unit
P.O. Box 458, Phoenix, AZ 85001-0458
(602) 771-8627 • (800) 352-8488
www.azwater.gov

Pump Installation Completion Report

RECEIVED
APR - 6 2006
Information Management

- Review instructions prior to completing form in black or blue ink.
- The registered well owner should file this report with the Department within 30 days following installation of pump equipment.

FILE NUMBER

WELL REGISTRATION NUMBER
55 - 903984

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
City of Bisbee

MAILING ADDRESS
118 Arizona Street

CITY / STATE / ZIP CODE
Bisbee, Arizona 85603

CONTACT PERSON NAME AND TITLE
Russ McConnell Public Works Director

TELEPHONE NUMBER
520-432-6262

FAX
520-432-6069

Location of Well

WELL LOCATION ADDRESS (IF ANY)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	18	SE ¼	NE ¼	NE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
102	55	2

COUNTY WHERE WELL IS LOCATED
Cochise

SECTION 2. EQUIPMENT INSTALLED

DATE PUMP INSTALLED
3-2-06

Pump Type

CHECK ONE

- ☐ Air Lift
- ☐ Bucket
- ☐ Centrifugal
- ☐ Jet
- ☐ Piston
- ☐ Rotary
- ☑ Submersible
- ☐ Turbine
- ☐ Other (*please specify*):

RATED PUMP CAPACITY
9 Gallons Per Minute

Pitless Adaptor

CHECK ONE *(SEE INSTRUCTIONS FOR DEFINITION)*

Was a pitless adaptor installed?
- ☐ Yes
- ☑ No

IF YES, DEPTH BELOW GROUND LEVEL THE DEVICE WAS INSTALLED
Feet

Power Type

CHECK ONE

- ☐ Diesel Engine
- ☑ Electric Motor
- ☐ Gasoline Engine
- ☐ Hand
- ☐ Natural Gas
- ☐ Windmill
- ☐ Other (*please specify*):

HORSE POWER RATING OF MOTOR
½

SECTION 3. PUMP TEST

Pump Test Data

DATE WELL TESTED

STATIC WATER LEVEL (A)
Feet Below Land Surface

PUMPING WATER LEVEL (B)
Feet Below Land Surface

DRAWDOWN [(B) – (A)]
Feet Below Land Surface

TEST PUMPING RATE
Gallons Per Minute

DURATION OF PUMP TEST (Minimum 4 Hours)
Hours

TOTAL PUMPING LIFT
Feet

FOR FLOWING WELL, MEASURED SHUT IN HEAD
☐ FT
☐ PSI

Method of Discharge Measurement

CHECK ONE

- ☐ Bailer
- ☐ Bucket – Barrel – Stopwatch
- ☐ Current
- ☐ Estimated – Air Lift
- ☐ Gauge
- ☐ Meter
- ☐ Orifice
- ☐ Volume
- ☐ Weir – Flume
- ☐ Other (*please specify*):

COMPLETED APR 21 2006

Method of Measuring Water Level

CHECK ONE

- ☐ Air Line
- ☐ Electric Measuring Line (Sounder)
- ☐ Steel Tape
- ☐ Other (*please specify*):

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief according to A.R.S. § 45-600(B).

SIGNATURE OF WELL OWNER

DATE
3.20.06

Arizona Department of Water Resources
Records Management Section
3550 N. Central Avenue • Phoenix, Arizona 85012
(800) 352-8488 • (602) 771-8627
www.water.az.gov

Well Driller Report and Well Log

- Review instructions prior to completing form in black or blue ink.
- The registered well owner shoud file this report with the Department within 30 days following installation of pump equipment.

** PLEASE PRINT CLEARLY **

RECEIVED
APR - 6
Information Management

FILE NUMBER
D(24-24)18 DAA
WELL REGISTRATION NUMBER
55 - 903984
PERMIT NUMBER (IF ISSUED)

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
City of Bisbee

MAILING ADDRESS
118 Arizona Street

CITY / STATE / ZIP
Bisbee, AZ, 85603

CONTACT PERSON NAME AND TITLE
Ross McConnell, Public Works Director

TELEPHONE NUMBER
520 432-6262

FAX
520 432 6069

Location of Well

WELL LOCATION ADDRESS (IF ANY)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	18	SE 1/4	NE 1/4	NE 1/4
LATITUDE			LONGITUDE		
31 °	20 °	35.3 "N	109 °	56 '	18.9 "N

LAND SURFACE ELEVATION AT WELL
4560 Feet Above Sea Level

METHOD OF LATITUDE/LONGITUDE (CHECK ONE)
☐ USGS Quad Map ☐ Conventional Survey ☑ GPS ☐ Hand-Held ☐ Survey-Grade

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
102	55	002

COUNTY WHERE WELL IS LOCATED
Cochise

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME
YELLOW JACKET DRILLING

DWR LICENSE NUMBER
78

TELEPHONE NUMBER
602-453-3252

FAX
602 4533252

ANSWERED APR 12 2006

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED
1-18-06

DATE WELL CONSTRUCTION COMPLETED
1-20-06

IF FLOWING WELL, METHOD OF FLOW REGULATION
☐ Valve ☐ Other

Drilling Firm

CHECK ONE
- ☐ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☑ Air Percussion / Odex Tubing
- ☑ Other (please specify) ARCH

Method of Well Development

CHECK ONE
- ☐ Airlift
- ☑ Bail
- ☑ Surge Block
- ☐ Surg Pump
- ☑ Other (please specify) Pump

Water Level Information

STATIC WATER LEVEL
118 Feet Below Land Surface

DATE MEASURED
1-18-06

Method of Sealing at Reduction Points

CHECK ONE
- ☐ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☑ Other (please specify)
No reduction points

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 903984

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILD) (attach additional page if needed)

Borehole			Installed Casing			MATERIAL TYPE (T)				PERFORATION TYPE (T)						
DEPTH FROM (feet)	(feet)	BOREHOLE DIAMETER (inches)	DEPTH FROM (feet)	(feet)	OUTER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE (inches)
0	170	10"	0	92	4.5		✓			✓						
			92	152	4.5		✓							✓		0.32
			152	162	4.5		✓			✓						

Installed Annular Material												
DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (T)								FILTER PACK		
(feet)	(feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	20				✓							
30	82					✓						
82	87						✓					
87	170									✓		8-12

DEPTH OF BORIG		DEPTH OF COMPLETED WELL	
170	Feet Below Land Surface Level	162	Feet Below Land Surface Level

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 903984

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE (feet)	(feet)	Description Describe material, grain size, color, etc.	Check (T) every interval where water was encounter (if known)
0	10	Clay & gravel	
10	20	Clay, gravel some sand	
20	35	Sand & gravel	
35	45	Clay gravel some sand	
45	150	clay w/ some gravel	
150	170	gravel	
		TD 170'	
		T - 118	

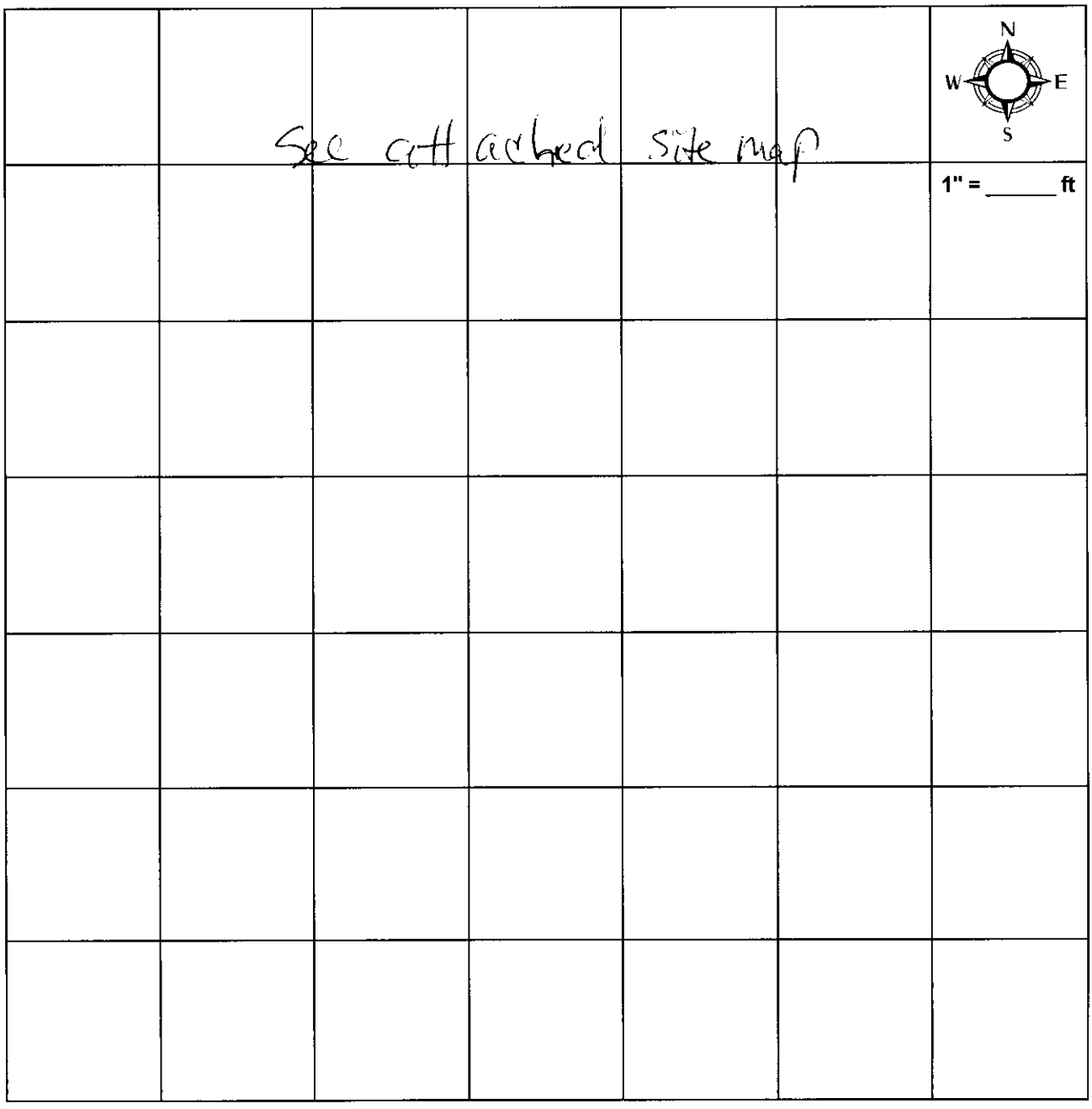
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 903984

SECTION 6. WELL SITE PLAN

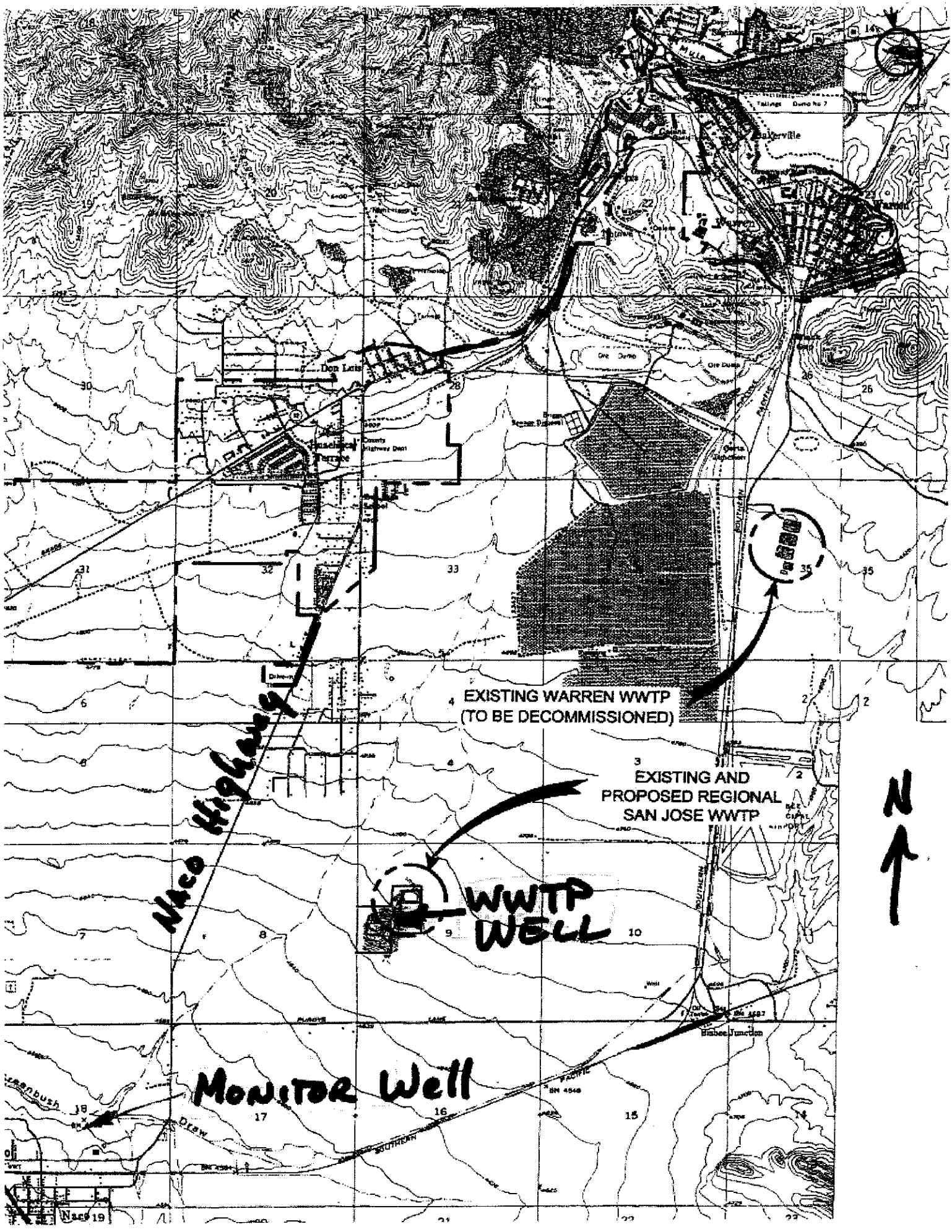
NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)		
	BOOK	MAP	PARCEL
City of Bisbee	102	55	002

- Please draw the following: (1) the boundaries of property on wich the well was located; (2) the well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and beleif.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY
YELLOW JACKET DRILLING	


EXISTING WARREN WWTP
(TO BE DECOMMISSIONED)
EXISTING AND
PROPOSED REGIONAL
SAN JOSE WWTP
WWTP
WELL
MONITOR WELL
Naco Highway
N

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue
Phoenix, Arizona 85012

DRILLING CARD
VARIANCE GRANTED

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILLING OPERATIONS

WELL REGISTRATION NO: **55-903984**

AUTHORIZED DRILLER: **YELLOW JACKET DRILLING** LICENSE NO: **78**

NOTICE OF INTENT TO **DRILL A MONITOR WELL** HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: **City of Bisbee**

ADDRESS: **118 Arizona Street, Bisbee, AZ, 85603**

THE WELL(S) IS/ARE TO BE LOCATED IN THE:

NE 1/4 of the **NE** 1/4 of the **SE** 1/4 Section **18** Township **24S** Range **24 E**

NO. OF WELLS IN THIS PROJECT: **1** ASSESSOR'S PARCEL NO: **102-55-002**

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE DAY OF **1/10/2007**

THE DRILLER MUST FILE A WELL DRILLER REPORT AND WELL LOG WITHIN 30 DAYS OF COMPLETION OF DRILLING

This drilling or abandonment authority was granted based upon the certifications made by the above-named Driller in the notice of intent to drill or abandon. Those certifications, along with any variances granted, are listed below. By drilling or abandoning the well pursuant to this authorization, the above-named driller acknowledges the accuracy of the driller certifications. If the certifications are in error, this authorization is invalid and driller must contact the Department of Water Resource's NOI Section in writing at the address above to correct.

Variance(s) Granted To Driller:

- Thermoplastic Casing Surface Seal Variance in upper 20' of well.
- Well Screen > 10' Variance – Monitor well's screen may be screened greater than 10 feet above the highest seasonal static water level.

Certification(s) Made By Driller:

- ☑ By checking this box, I certify that I have all necessary Registrar of Contractor (ROC) licenses in all necessary license categories for this drilling or abandonment project and that those licenses are current.
- ☑ If the landowner and the well owner are not the same, by checking this box, I certify that I have obtained written approval from the landowner in order to conduct this drilling or abandonment project. A copy of the written approval shall be submitted to ADWR with the Well Driller Report and Well Log or Well Abandonment Completion Report within 30 days of completion of drilling or abandonment.
- ☑ By checking this box, I certify that I have read the applicable substantive policy statement regarding each variance that I am requesting, and that I shall comply with all of the requirements set forth therein.
- ☑ By checking this box, I certify that this NOI application is not an application to replace, deepen, or modify an existing well.
- ☑ By checking this box, I certify that I have been authorized by the above-named well owner to submit this Notice of Intent on the well owner's behalf.

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue • Phoenix, Arizona 85012
Telephone (602) 771-8500 • Fax (602) 771-8486

Wednesday, January 11, 2006

Janet Napolitano
Governor

Herbert R. Guenther
Director

City of Bisbee
118 Arizona Street
Bisbee, AZ, 85603

Registration No. 55- 903984
File No. D(24-24)18 DAA

Dear Applicant:

Enclosed is a copy of the Notice of Intent to Drill a Monitor/Piezometer/Environmental Well ("NOI") which you recently filed with this Department pursuant to A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed (or otherwise provided) a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card which he must keep in his posssession at the well site during drilling. Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling.

If it is necessary to change the location of the proposed well, you may not proceed with drilling until you file a new NOI with the Department and the Department issues an amended drilling card to the driller. If you change drillers, you must notify the Department of the new driller's identity. A new driller may not begin drilling until he receives a new drilling card from the Department. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report filed as required by A.A.C. R12-15-816(F).

A.R.S. § 45-600 requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR Form 55-55) with the Department within 30 days after completion of drilling. That form was mailed to your driller with the drilling card.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at
http://www.azwater.gov/dwr/Content/Find_by_Category/Permits_Forms_Applications/default.htm.

ARIZONA DEPARTMENT OF WATER RESOURCES

Electronic Filing - NOI Report

3550 N. Central Avenue
Phoenix, Arizona 85012

NOI Type: Notice of Intent to Drill, Deepen, Modify a Monitor/Piezometer/Environmetal Well
Well Type: MONITOR
Date Received at ADWR Website: 1/11/2006 10:57:20 AM

Fee Paid: $150.00 Order Number: VKYE0F2F7593

Well Registration Number: 55 - 903984
Number of Wells/Holes: 1 Drilling Authority Expires On: 1/10/2007

Driller's ADWR License Number: 78

Authorized Driller: YELLOW JACKET DRILLING
ROC License Number Entered By Driller: 131584
Qualifying Party License Categories: A-4

Well Owner Name: City of Bisbee
Well Owner Address: 118 Arizona Street
Well Owner City, State - Zip: Bisbee, AZ - 85603
Well Owner Phone: 520 432-6262

Book: 102 Map: 55 Parcel: 002

Is the Land Owner the same as the Well Owner?: No

Land Owner Name: Turquoise Valley Land Company
Land Owner Address: P.O. Box 727
Land Owner City, State - Zip: Naco, AZ - 85620
Land Owner Phone: 520 432-3091

Well Location: **NE** 1/4 of the **NE** 1/4 of the **SE** 1/4 Section **18** Township **24 S** Range **24 E**

AMA: NOT WITHIN ANY AMA OR INA
County: COCHISE
Contamination Site: NOT IN ANY WQARF SITE

Primary Water Use: MONITORING
Secondary Water Use(s): N/A

Is any portion of the land, on which the well is to be located, within 100 feet of a designated municipal provider's operating water distribution system as shown on the municipal provider's most recent digitized service area map filed by the municipal provider with the director of ADWR. N/A

Proximity to a designated municipal provider's operating water distribution system exemption type:
N/A

Will you be installing a dedicated pump ?: N/A

Will the installed pump have a pumping capacity of greater than 35 GPM, or will the well will be used to withdraw greater than 10 Acre Feet per year?: N/A

Is this NOI an application to replace, deepen, or modify an existing well? No

Variance(s) Granted To Driller:

- Thermoplastic Casing Surface Seal Variance in upper 20' of well.
- Well Screen > 10' Variance – Monitor well's screen may be screened greater than 10 feet above the highest seasonal static water level.

Certification(s) Made By Driller:

☑ By checking this box, I certify that I have all necessary Registrar of Contractor (ROC) licenses in all necessary license categories for this drilling or abandonment project and that those licenses are current.

☑ If the landowner and the well owner are not the same, by checking this box, I certify that I have obtained written approval from the landowner in order to conduct this drilling or abandonment project. A copy of the written approval shall be submitted to ADWR with the Well Driller Report and Well Log or Well Abandonment Completion Report within 30 days of completion of drilling or abandonment.

☑ By checking this box, I certify that I have read the applicable substantive policy statement regarding each variance that I am requesting, and that I shall comply with all of the requirements set forth therein.

☑ By checking this box, I certify that this NOI application is not an application to replace, deepen, or modify an existing well.

☑ By checking this box, I certify that I have been authorized by the above-named well owner to submit this Notice of Intent on the well owner's behalf.

☑ By checking this box, I certify that the information above is complete and correct, and that the well shall be drilled or abandoned in compliance with all pertinent statutes and rules, including any special standards that may be required to protect the aquifer or other water sources.

From: "ADWR" <wrnoi@azwater.gov>
To: <richard@yjdrilling.com>
Date: Wed, Jan 11, 2006 10:58 AM
Subject: ADWR Well NOI Confirmation re: Well Registration Number 903984

****
* Confirmation for Order: VKYE0F2F7593
****

Thank you for your order, Richard LeBlanc.

Should you have any questions concerning your
order, please contact us by email at
wrnoi@azwater.gov or by phone at (602) 771-8500
and be sure to mention your order number:
VKYE0F2F7593.

Thanks again for shopping with Arizona Department of Water Resources!

Best regards,
Arizona Department of Water Resources Management.
Phone: (602) 771-8500
Email: wrnoi@azwater.gov

Order ID: VKYE0F2F7593
Date: 1/11/2006
Status: Approved

Arizona Department of Water Resources
3550 N. Central Avenue
Phoenix, AZ 85012 United States
Phone: (602) 771-8500 Fax: (602) 771-8486

Bill To: YELLOW JACKET DRILLING-Richard LeBlanc
P.O. BOX 801
GILBERT, AZ. 85299-0801
Email: richard@yjdrilling.com

000600 - All Except Domestic Outside AMA/INA
qty 1 - price ea. - amount $150.00

Subtotal:	$150.00
Tax Total	$0.00
Shipping	$0.00
Handling	$0.00

Total:	$150.00

Transaction Detail

This report provides information on a specific transaction.

VKYE0F2F7593

Request Data

Transaction ID:	**VKYE0F2F7593**	Merchant:	**adwr02**
User Name:	**adwr02**	Timestamp:	**2006-01-11 09:58:04**
Trans Type:	**Sale**	Duration:	**0**
Tender Type:	**Visa**	Client IP Address:	**216.168.254.142**
Account Number:	[redacted]	Client Version:	**300**
Expiration:	**0108**	Amount:	**$150.00**
Comment 1:	**903984**	Comment 2:	
Bill First Name:	**Richard**	Bill Last Name:	**LeBlanc**
Bill Addr. (AVS Street):	**P.O. BOX 801**	Bill City:	**GILBERT**
Bill State:	**AZ**	Bill Zip (AVS Zip):	**852990801**
Bill Country:	**US**	Bill Email:	**richard@yjdrilling.com**
Ship First Name:		Ship Last Name:	
Ship Address:		Ship City:	
Ship State:		Ship Zip Code:	
Ship Country:			
Recurring:			

Results

Result Code:	**0**	Response Message:	**Approved**
Auth. Code:	**041307**		
Orig Trans ID:		AVS Street Match:	**Y**
Orig Amount:	**$0.00**	AVS Zip Match:	**Y**
International AVS Indicator:	**N**	CSC Match:	**Y**
Batch ID:	**9**		

Level 2 Information

Purchase Order #:	**VKYE0F2F7593**	Customer Code:	
Tax Amount:	**$0.00**	Shipping/Freight Amount:	**$0.00**
Duty Amount:	**$0.00**		

View Transaction Status

Arizona Department of Water Resources
Information Management Unit
P.O. Box 458, Phoenix, AZ 85001-0458
(602) 771-8627 • (800) 352-8488
www.azwater.gov

Pump Installation Completion Report

- Review instructions prior to completing form in black or blue ink.
- The registered well owner should file this report with the Department within 30 days following installation of pump equipment.

RECEIVED
APR - 6 2006
Information Management

FILE NUMBER

WELL REGISTRATION NUMBER
55 - 903992

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
City of Bisbee

MAILING ADDRESS
118 Arizona Street

CITY / STATE / ZIP CODE
Bisbee, AZ 85603

CONTACT PERSON NAME AND TITLE
Ross McConnell, Public Works Director

TELEPHONE NUMBER
520 · 432 6262

FAX
520 4326069

Location of Well

WELL LOCATION ADDRESS (IF ANY)
940 W. Purdy Lane Bisbee

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	9	NW ¼	SW ¼	NE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
102	36	015F

COUNTY WHERE WELL IS LOCATED
Cochise

SECTION 2. EQUIPMENT INSTALLED

DATE PUMP INSTALLED
3-14-06

Pump Type

CHECK ONE

- ☐ Air Lift
- ☐ Bucket
- ☐ Centrifugal
- ☐ Jet
- ☐ Piston
- ☐ Rotary
- ☑ Submersible
- ☐ Turbine
- ☐ Other (*please specify*):

RATED PUMP CAPACITY
11.5 Gallons Per Minute

Pitless Adaptor

CHECK ONE *(SEE INSTRUCTIONS FOR DEFINITION)*

Was a pitless adaptor installed? ☑ Yes ☐ No

IF YES, DEPTH BELOW GROUND LEVEL THE DEVICE WAS INSTALLED
Feet

Power Type

CHECK ONE

- ☐ Diesel Engine
- ☑ Electric Motor
- ☐ Gasoline Engine
- ☐ Hand
- ☐ Natural Gas
- ☐ Windmill
- ☐ Other (*please specify*):

HORSE POWER RATING OF MOTOR
1

SECTION 3. PUMP TEST

Pump Test Data

DATE WELL TESTED

STATIC WATER LEVEL (A)
Feet Below Land Surface

PUMPING WATER LEVEL (B)
Feet Below Land Surface

DRAWDOWN [(B) – (A)]
Feet Below Land Surface

TEST PUMPING RATE
Gallons Per Minute

DURATION OF PUMP TEST (Minimum 4 Hours)
Hours

TOTAL PUMPING LIFT
Feet

FOR FLOWING WELL, MEASURED SHUT IN HEAD ☐ FT ☐ PSI

Method of Discharge Measurement

CHECK ONE

- ☐ Bailer
- ☐ Bucket – Barrel – Stopwatch
- ☐ Current
- ☐ Estimated – Air Lift
- ☐ Gauge
- ☐ Meter
- ☐ Orifice
- ☐ Volume
- ☐ Weir – Flume
- ☐ Other (*please specify*):

Method of Measuring Water Level

CHECK ONE

- ☐ Air Line
- ☐ Electric Measuring Line (Sounder)
- ☐ Steel Tape
- ☐ Other (*please specify*):

RECEIVED APR 2 – 2006

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief according to A.R.S. § 45-600(B).

SIGNATURE OF WELL OWNER

DATE
3.20.06

Arizona Department of Water Resources
Records Management Section
3550 N. Central Avenue • Phoenix, Arizona 85012
(800) 352-8488 • (602) 771-8627
www.water.az.gov

Well Driller Report and Well Log

- Review instructions prior to completing form in black or blue ink.
- The registered well owner shoud file this report with the Department within 30 days following installation of pump equipment.

** PLEASE PRINT CLEARLY **

APR - 6
Information Management

FILE NUMBER
D(24-24)9 BCA
WELL REGISTRATION NUMBER
55 - 903992
PERMIT NUMBER (IF ISSUED)

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
City of Bisbee

MAILING ADDRESS
118 Arizona Street

CITY / STATE / ZIP
Bisbee, AZ, 85603

CONTACT PERSON NAME AND TITLE
Russ McConnell, Public Works Director

TELEPHONE NUMBER
520 432-6262

FAX
520-432-6069

Location of Well

WELL LOCATION ADDRESS (IF ANY)
940 W. Purdy Lane, Bisbee, AZ

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24 S	24 E	9	NW 1/4	SW 1/4	NE 1/4

LATITUDE			LONGITUDE		
31 °	21 '	31.9 " N	109 °	54 '	55.6 " N

LAND SURFACE ELEVATION AT WELL
4763 Feet Above Sea Level

METHOD OF LATITUDE/LONGITUDE (CHECK ONE) ☐ Hand-Held
☐ USGS Quad Map ☐ Conventional Survey ☑ GPS ☐ Survey-Grade

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
102	36	015F

COUNTY WHERE WELL IS LOCATED
Cochise

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME
YELLOW JACKET DRILLING

DWR LICENSE NUMBER
78

TELEPHONE NUMBER
602-453-3252

FAX
602 453 3258

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED
1-24-06

DATE WELL CONSTRUCTION COMPLETED
3-2-06

IF FLOWING WELL, METHOD OF FLOW REGULATION
☐ Valve ☐ Other

Drilling Firm

CHECK ONE
- ☐ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☑ Other (please specify) ARCH

Method of Well Development

CHECK ONE
- ☐ Airlift
- ☑ Bail
- ☑ Surge Block
- ☐ Surg Pump
- ☑ Other (please specify) Pump

Water Level Information

STATIC WATER LEVEL
240 Feet Below Land Surface

DATE MEASURED
3-1-06

Method of Sealing at Reduction Points

CHECK ONE
- ☐ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☑ Other (please specify)
  No reduction points

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 903992

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILD) (attach additional page if needed)

Borehole			Installed Casing														
DEPTH FROM			DEPTH FROM			MATERIAL TYPE (T)				PERFORATION TYPE (T)						
(feet)	(feet)	BOREHOLE DIAMETER (inches)	(feet)	(feet)	OUTER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE (inches)
0	20	11 3/4	0	20		✓				✓						
20	430	9 5/8	0	350			✓			✓						
			350	410			✓							✓		0.032
			410	420			✓			✓						

Installed Annular Material													
DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (T)								FILTER PACK		
						BENTONITE						
(feet)	(feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	GROUT	CHIPS	PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	20				✓							
20	100					✓						
100	330									✓		8-12
330	340							✓				
340	430									✓		8-12

DEPTH OF BORIG		DEPTH OF COMPLETED WELL	
430	Feet Below Land Surface Level	420	Feet Below Land Surface Level

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 903992

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE (feet)	(feet)	Description Describe material, grain size, color, etc.	Check (T) every interval where water was encounter (if known)
0	20	Silty clay & caliche	
20	60	Clay & gravel	
60	65	gravel	
65	80	Clay w/ some gravel	
80	90	Clay	
90	95	gravel	
95	100	hard clay some gravel	
100	145	gravel	
145	150	clay	
150	170	Clay & gravel	
170	175	Clay	
175	180	gravel	
180	195	Clay & gravel	
195	200	gravel	
200	215	Clay & gravel	
215	240	Clay & gravel	
240	250	gravel	
250	255	Clay & gravel	
255	430	gravel	
		TD 430	
		▽ 240	

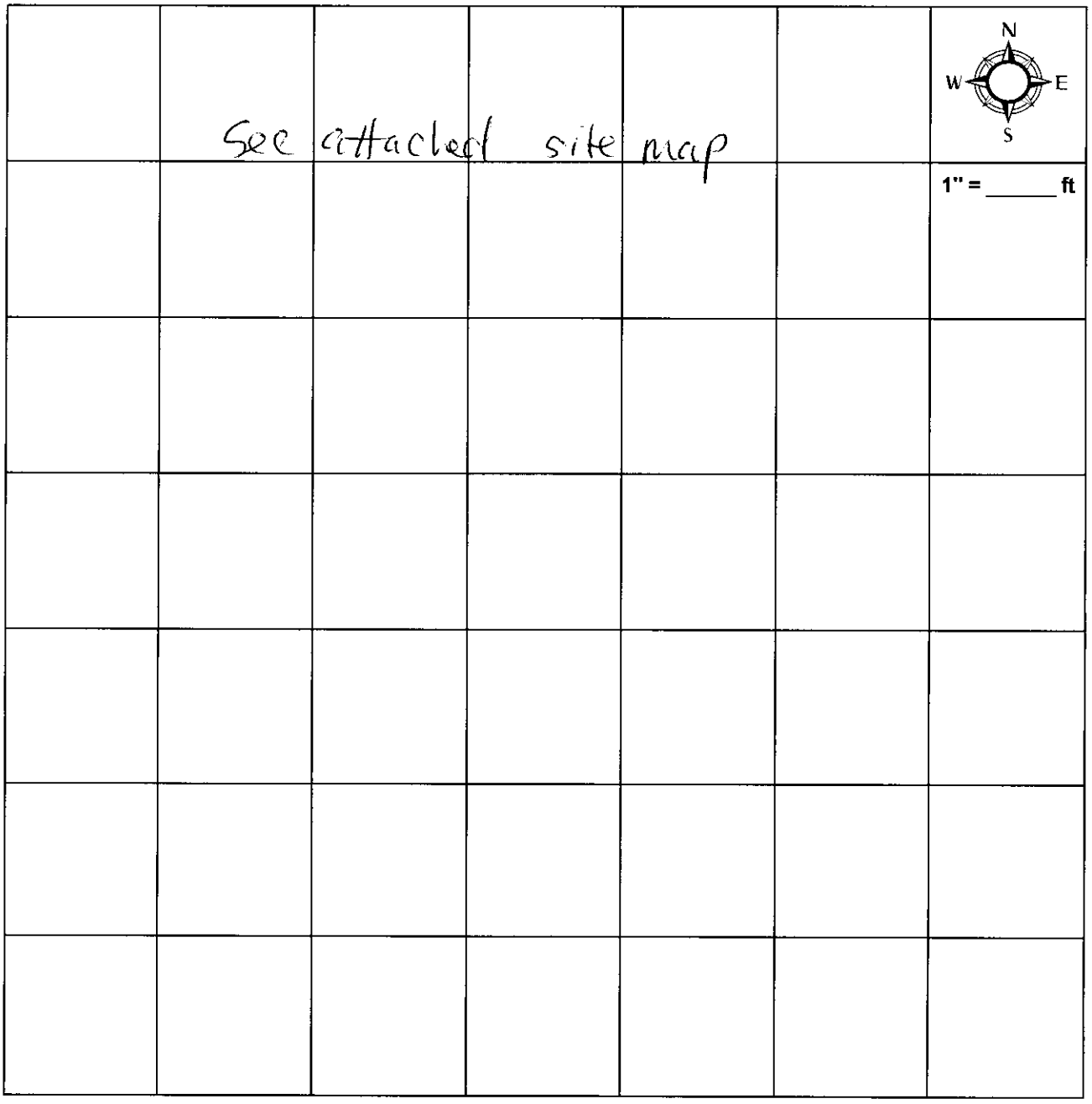
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 903992

SECTION 6. WELL SITE PLAN

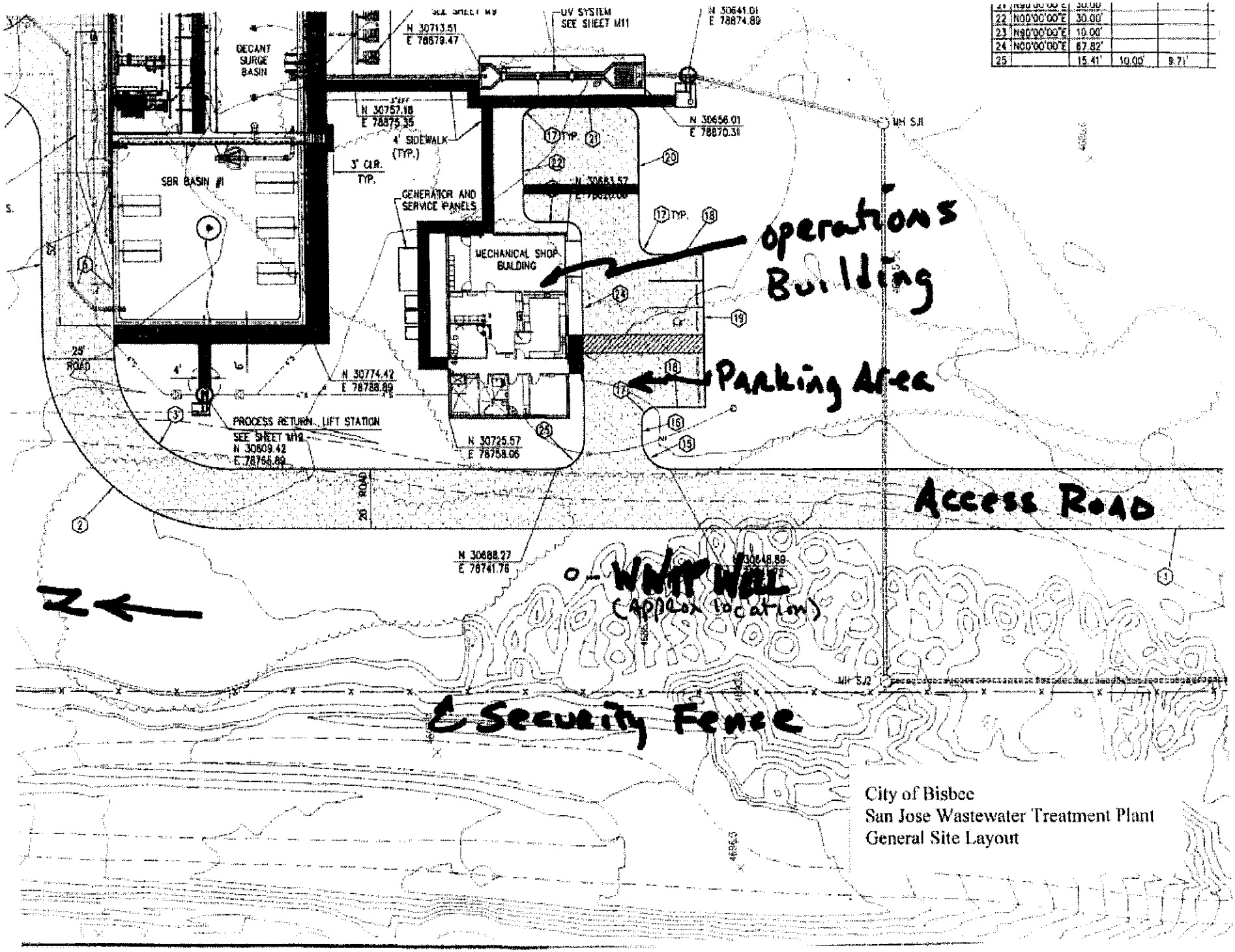
NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)		
	BOOK	MAP	PARCEL
City of Bisbee	102	36	015F

- Please draw the following: (1) the boundaries of property on wich the well was located; (2) the well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and beleif.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY
YELLOW JACKET DRILLING	



21	N90°00'00"E	30.00'		
22	N00°00'00"E	30.00'		
23	N90°00'00"E	10.00'		
24	N00°00'00"E	67.82'		
25		15.41'	10.00'	9.71'

City of Bisbee
San Jose Wastewater Treatment Plant
General Site Layout

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue
Phoenix, Arizona 85012

DRILLING CARD

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILLING OPERATIONS

WELL REGISTRATION NO: **55-903992**

AUTHORIZED DRILLER: **YELLOW JACKET DRILLING** LICENSE NO: **78**

NOTICE OF INTENT TO **DRILL AN EXEMPT WELL** HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: **City of Bisbee**

ADDRESS: **118 Arizona Street, Bisbee, AZ, 85603**

THE WELL(S) IS/ARE TO BE LOCATED IN THE:

NE 1/4 of the **SW** 1/4 of the **NW** 1/4 Section **09** Township **24 S** Range **24 E**

NO. OF WELLS IN THIS PROJECT: **1** ASSESSOR'S PARCEL NO: **102-36-015F**

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE DAY OF **1/11/2007**

THE DRILLER MUST FILE A WELL DRILLER REPORT AND WELL LOG WITHIN 30 DAYS OF COMPLETION OF DRILLING

This drilling or abandonment authority was granted based upon the certifications made by the above-named Driller in the notice of intent to drill or abandon. Those certifications, along with any variances granted, are listed below. By drilling or abandoning the well pursuant to this authorization, the above-named driller acknowledges the accuracy of the driller certifications. If the certifications are in error, this authorization is invalid and driller must contact the Department of Water Resource's NOI Section in writing at the address above to correct.

Variance(s) Granted To Driller: **None**

Certification(s) Made By Driller:

- ☑ By checking this box, I certify that I have all necessary Registrar of Contractor (ROC) licenses in all necessary license categories for this drilling or abandonment project and that those licenses are current.
- ☑ By checking this box, I certify that the proposed well site is not within 100 feet of any septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks.
- ☑ By checking this box, I certify that this NOI application is not an application to replace, deepen, or modify an existing well.
- ☑ By checking this box, I certify that I have been authorized by the above-named well owner to submit this Notice of Intent on the well owner's behalf.
- ☑ By checking this box, I certify that the information above is complete and correct, and that the well shall be drilled or abandoned in compliance with all pertinent statutes and rules, including any special standards that may be required to protect the aquifer or other water sources.

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue • Phoenix, Arizona 85012
Telephone (602) 771-8500 • Fax (602) 771-8486

Thursday, January 12, 2006

City of Bisbee
118 Arizona Street
Bisbee, AZ, 85603

Janet Napolitano
Governor

Herbert R. Guenther
Director

Registration No. 55-903992
File No. D(24-24)9 BCA
Dear Applicant:

Enclosed is a copy of the Notice of Intent to Drill a Well ("NOI") which you recently filed with this Department pursuant to A.R.S. §45-596. This is to inform you that the Department has approved the NOI and has mailed (or otherwise provided) a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card which he must keep in his possession at well site during drilling.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the well, you may not proceed with drilling until you file a new NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the new NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DWR form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed is a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55) within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at
http://www.azwater.gov/dwr/Content/Find_by_Category/Permits_Forms_Applications/default.htm.

ARIZONA DEPARTMENT OF WATER RESOURCES

Electronic Filing - NOI Report

3550 N. Central Avenue
Phoenix, Arizona 85012

NOI Type: Notice of Intent to Drill, Deepen, Replace or Modify a Well
Well Type: EXEMPT
Date Received at ADWR Website: 1/12/2006 7:47:24 AM

Fee Paid: $150.00 Order Number: VKVE0F37B182

Well Registration Number: 55 - 903992
Number of Wells/Holes: 1 Drilling Authority Expires On: 1/11/2007

Driller's ADWR License Number: 78

Authorized Driller: YELLOW JACKET DRILLING
ROC License Number Entered By Driller: 131584
Qualifying Party License Categories: A-4

Well Owner Name: City of Bisbee
Well Owner Address: 118 Arizona Street
Well Owner City, State - Zip: Bisbee, AZ - 85603
Well Owner Phone: 520 432-6262

Book: 102 Map: 36 Parcel: 015F

Is the Land Owner the same as the Well Owner?: Yes

Well Location: **NE** 1/4 of the **SW** 1/4 of the **NW** 1/4 Section **9** Township **24 S** Range **24 E**

AMA: NOT WITHIN ANY AMA OR INA
County: COCHISE
Contamination Site: NOT IN ANY WQARF SITE

Design Pumping Capacity: <= 35 GPM

Primary Water Use: INDUSTRIAL
Secondary Water Use(s): N/A

Is the proposed water use for domestic purposes on <= 5 acres?: N/A

Is any portion of the land, on which the well is to be located, within 100 feet of a designated municipal provider's operating water distribution system as shown on the municipal provider's most recent digitized service area map filed by the municipal provider with the director of ADWR. N/A

Proximity to a designated municipal provider's operating water distribution system exemption type:
N/A

Will the installed pump have a pumping capacity of greater than 35 GPM, or will the well will be used to withdraw greater than 10 Acre Feet per year?: N/A

Is this NOI an application to replace, deepen, or modify an existing well? No

Variance(s) Granted To Driller: **None**

Certification(s) Made By Driller:

- ☑ By checking this box, I certify that I have all necessary Registrar of Contractor (ROC) licenses in all necessary license categories for this drilling or abandonment project and that those licenses are current.
- ☑ By checking this box, I certify that the proposed well site is not within 100 feet of any septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks.
- ☑ By checking this box, I certify that this NOI application is not an application to replace, deepen, or modify an existing well.
- ☑ By checking this box, I certify that I have been authorized by the above-named well owner to submit this Notice of Intent on the well owner's behalf.
- ☑ By checking this box, I certify that the information above is complete and correct, and that the well shall be drilled or abandoned in compliance with all pertinent statutes and rules, including any special standards that may be required to protect the aquifer or other water sources.

From: "ADWR" <wrnoi@azwater.gov>
To: <richard@yjdrilling.com>
Date: Thu, Jan 12, 2006 7:53 AM
Subject: ADWR Well NOI Confirmation re: Well Registration Number 903992

****
* Confirmation for Order: VKVE0F37B182
****

Thank you for your order, Richard LeBlanc.

Should you have any questions concerning your order, please contact us by email at wrnoi@azwater.gov or by phone at (602) 771-8500 and be sure to mention your order number: VKVE0F37B182.

Thanks again for shopping with Arizona Department of Water Resources!

Best regards,
Arizona Department of Water Resources Management.
Phone: (602) 771-8500
Email: wrnoi@azwater.gov

Order ID: VKVE0F37B182
Date: 1/12/2006
Status: Approved

Arizona Department of Water Resources
3550 N. Central Avenue
Phoenix, AZ 85012 United States
Phone: (602) 771-8500 Fax: (602) 771-8486

Bill To: YELLOW JACKET DRILLING-Richard LeBlanc
P.O. BOX 801
GILBERT, AZ. 85299-0801
Email: richard@yjdrilling.com

000600 - All Except Domestic Outside AMA/INA
qty 1 - price ea. - amount $150.00

Subtotal:	$150.00
Tax Total	$0.00
Shipping	$0.00
Handling	$0.00

Total:	$150.00

Transaction Detai

This report provides information on a specific transaction.

VKVE0F37B182

Request Data

Transaction ID:	**VKVE0F37B182**	Merchant:	**adwr02**
User Name:	**adwr02**	Timestamp:	**2006-01-12 06:52:20**
Trans Type:	**Sale**	Duration:	**0**
Tender Type:	**Visa**	Client IP Address:	**216.168.254.142**
Account Number:	[redacted]	Client Version:	**300**
Expiration:	**0108**	Amount:	**$150.00**
Comment 1:	**903992**	Comment 2:	
Bill First Name:	**Richard**	Bill Last Name:	**LeBlanc**
Bill Addr. (AVS Street):	**P.O. BOX 801**	Bill City:	**GILBERT**
Bill State:	**AZ**	Bill Zip (AVS Zip):	**852990801**
Bill Country:	**US**	Bill Email:	**richard@yjdrilling.com**
Ship First Name:		Ship Last Name:	
Ship Address:		Ship City:	
Ship State:		Ship Zip Code:	
Ship Country:			
Recurring:			

Results

Result Code:	**0**	Response Message:	**Approved**
Auth. Code:	**065895**		
Orig Trans ID:		AVS Street Match:	**Y**
Orig Amount:	**$0.00**	AVS Zip Match:	**Y**
International AVS Indicator:	**N**	CSC Match:	**Y**
Batch ID:	**10**		

Level 2 Information

Purchase Order #:	**VKVE0F37B182**	Customer Code:	
Tax Amount:	**$0.00**	Shipping/Freight Amount:	**$0.00**
Duty Amount:	**$0.00**		

View Transaction Status

D(23-24)25 CCC

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

RECEIVED
DEC 28 1998
RECORDS MGT

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. FARMERS PUMP COMPANY
800 EAST MALEY
WILLCOX, AZ 85643-1312

2. Owner Name: CITY OF BISBEE
Address: 118 ARIZONA ST. BISBEE, AZ. 85603
City State Zip

3. Location: 23 S N/S 24 E E/W 25 ¼ SW ¼ SW ¼ SW
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55--570012 (Required)

5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 148 ft.
7. Type of casing P.V.C.
8. Diameter and length of casing 8 STEEL from 22 to +2, 6 in from 148 to +1
9. Method of sealing at reduction points _____
10. Perforated from 148 to 108, from _____ to _____ from _____ to _____
11. Size of cuts _____ Number of cuts per foot _____
12. If screen was installed: Length 40 ft. Diam 6 in. Type 0.06 SLOT
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started 8 28 1998
Month Day Year
15. Date completed 8 31 1998
Month Day Year
16. Depth to water 118' ft. (If flowing well, so state)

17. Describe point from which depth measurements were made, and give sea-level elevation if available
GROUND LEVEL AT THE WELL SITE
18. If flowing well, state method of flow regulation: _____

19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-570012
File No. D(23-24) 25 CCC
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)
ANSWERED DEC 28 1998

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	21	CLAY AND ROCKS
21	115	SMALL ROCKS, CLAY & BOLDERS
115	148	CONGLOMERATE MED. HARD

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: FARMERS PUMP COMPANY

800 EAST MALEY
Street

WILLCOX, AZ 85643-1312
City State Zip Phone No.

Signature of Driller 9/11/98
Date

ARIZONA DEPARTMENT OF WATER RESOURCES D(23-24)25CCC
500 North Third Street
Phoenix, Arizona 85004

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

RECEIVED
SEP 25 1998
RECORDS MGT

1. FARMERS PUMP COMPANY
800 EAST MALEY
WILLCOX, AZ 85643-1312

2. Owner Name: CITY OF BISBEE
Address: 118 ARIZONA ST. BISBEE AZ 85603
City State Zip

3. Location: 23 N/S 24 E/W 25 ¼ SW ¼ SW ¼ SW
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55--570012 (Required)

5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 148' ft.
7. Type of casing P.V.C. P.V.C
8. Diameter and length of casing 8 STEEL in. from 22 to +2, 6 in from 148 to +1
9. Method of sealing at reduction points _____
10. Perforated from 148 to 108, from _____ to _____ from _____ to _____
11. Size of cuts _____ Number of cuts per foot _____
12. If screen was installed: Length 40' ft. Diam 6 in. Type 0.06 SLOT
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started 8 28 1998
Month Day Year
15. Date completed 8 31 1998
Month Day Year
16. Depth to water 118' ft. (If flowing well, so state)

17. Describe point from which depth measurements were made, and give sea-level elevation if available
GROUND LEVEL AT THE WELL SITE
18. If flowing well, state method of flow regulation: _____

19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-570012
File No. D(23-24) 25 CCC
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

ANSWERED SEP 2 - 1998

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	21	CLAY & ROCKS
21	115	SMALL ROCKS, CLAY & BOLDERS
115	148	~~RCCK~~ CONGLOMERATE HARD

RECEIVED
SEP 25 1998
RECORDS MGT

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: FARMERS PUMP COMPANY

800 EAST MALEY
Street

WILLCOX, AZ 85643-1312
City State Zip Phone No.

Signature of Driller Date

ANSWERED SEP 2 [illegible] 1998

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

MAIL TO: P.O. BOX 458, PHOENIX, ARIZONA 85001-0458
PHONE (602) 417-2470

RECEIVED JUL 29 1998 GROUNDWATER MGT

NOTICE OF INTENTION TO DRILL MONITOR/PIEZOMETER WELL

PLEASE READ GENERAL INSTRUCTIONS AND CONDITIONS ON REVERSE SIDE OF THIS FORM BEFORE COMPLETING.

Section §45-596, Arizona Revised Statutes provide: Prior to drilling a monitor or piezometer well, a Notice of Intention to Drill shall be filed with the Department.

1. Well/land Location:

23 N(S) 24 (E)/W 25
Township Range Section

SW ¼ SW ¼ SW ¼
10 Acre 40 Acre 160 Acre

2. Position location of the well on the land:

Latitude 31 o 23 ' 10 "

Longitude 109 o 52 ' 53 "

3. County: Cochise

4. Owner of the well:

City of Bisbee Name

118 Az ST Mailing Address

Bisbee Az 85603
City State Zip

Telephone No. 520-432-6010

5. Lessee of the land of wellsite:

N/A
Name

Mailing Address

City State Zip

Telephone No.

6. Owner of the Land of Wellsite:

City of Bisbee
Name

118 Az ST
Mailing Address

Bisbee Az 85603
City State Zip

Telephone No. 432-6018

7. Consulting firm:

SunRise Eng. Name

Brandon Squire
Contact Person

Telephone No.

8. Purpose of well drilled pursuant to this notice:

Monitor Coliform

Piezometer

9. If for deepening or modifying, list well registration number:

55- N/A

FOR DEPARTMENT USE ONLY

File No. D(23-24)25ccc Filed ___

By ___

Input ___ By ___

DUPLICATE

Mailed 8-21-98 By SO

Registration 55-590012

AMA/INA

W/S 13 S/B —

SO

10. Will this proposed well be associated with a permit: Yes ___ No X

If yes, Permit No. ___

11. Construction will start:

8 25 98
Month Day Year

12. Period well will remain in use:

NOT KNOWN
Depends on AOS Months/Years

13. For monitoring wells, is pump equipment to be installed? HAND

Yes ___ No X

(a) If yes, design pump capacity:

N/A

(b) What use will be made of the water:

Monitoring

14. Drilling Firm:

Farmers Pump Company Name

Mailing Address

800 E. Maley

City State Zip

Willcox Az 85643

Telephone No.

520-384-2245 DWR License Number

307 ROC License Category

C53 L53

15. Proposed method of abandonment of well after project is completed: As per State Law

, pursuant to R12-15-816.

16. Is this well to monitor existing contamination? ___ Potential contamination X. Please explain: Coliform

___ **I state that this Notice is filed in compliance with Rule A.A.C. R12-15-809 and R12-15-816(F), and is complete and correct to the best of my knowledge and belief and that I understand the conditions set forth on the reverse side of this form.**

Charles Mark Mansfield WW Supt 7/24/98

Signature [ ] Land Owner [ ] Lessee of Wellsite, Title — Date — Typed or Printed Name and Title

DWR-55-44a (Rev 4/98)

17. If construction plans have been coordinated with Arizona Department of Environmental Quality, who is the agency contact? DON Bell ADEQ

If construction plans have been coordinated with Arizona Department of Water Resources, who is the agency contact? _____

18. **WELL CONSTRUCTION PLAN:**

a) Drilling method (mud rotary, hollow-stem auger, etc.) MUD Rotary

b) Borehole diameters: ~~10~~ 12" inches from 0 feet to 150 feet.
_____ inches from _____ feet to _____ feet.

c) Casing materials (PVC, steel, hollow-stem auger, etc.)
material PVC diameter 6" inches from 0 feet to 150 feet. material
STEEL diameter 8" inches from +1 feet to 20' feet.

d) Method of sealing at reductions NA

e) Annular seal materials (cement, grout, etc.); method of placement (tremied, circulated):
material GROUT/CEMENT method _____ from 0 feet to 20 feet.
material _____ method _____ from _____ feet to _____ feet.

f) Filter packs (state material):
material N/A from _____ feet to _____ feet.
material _____ from _____ feet to _____ feet.

g) Perforations or screen specifications:
Type PREFORMATTED 0.04" Slot from 110 feet to 150 feet
Type _____ from _____ feet to _____ feet

h) Method of well development (bail, air lift, surge) Surge

i) Will surface or conductor casing extend above grade?: Yes X No _____

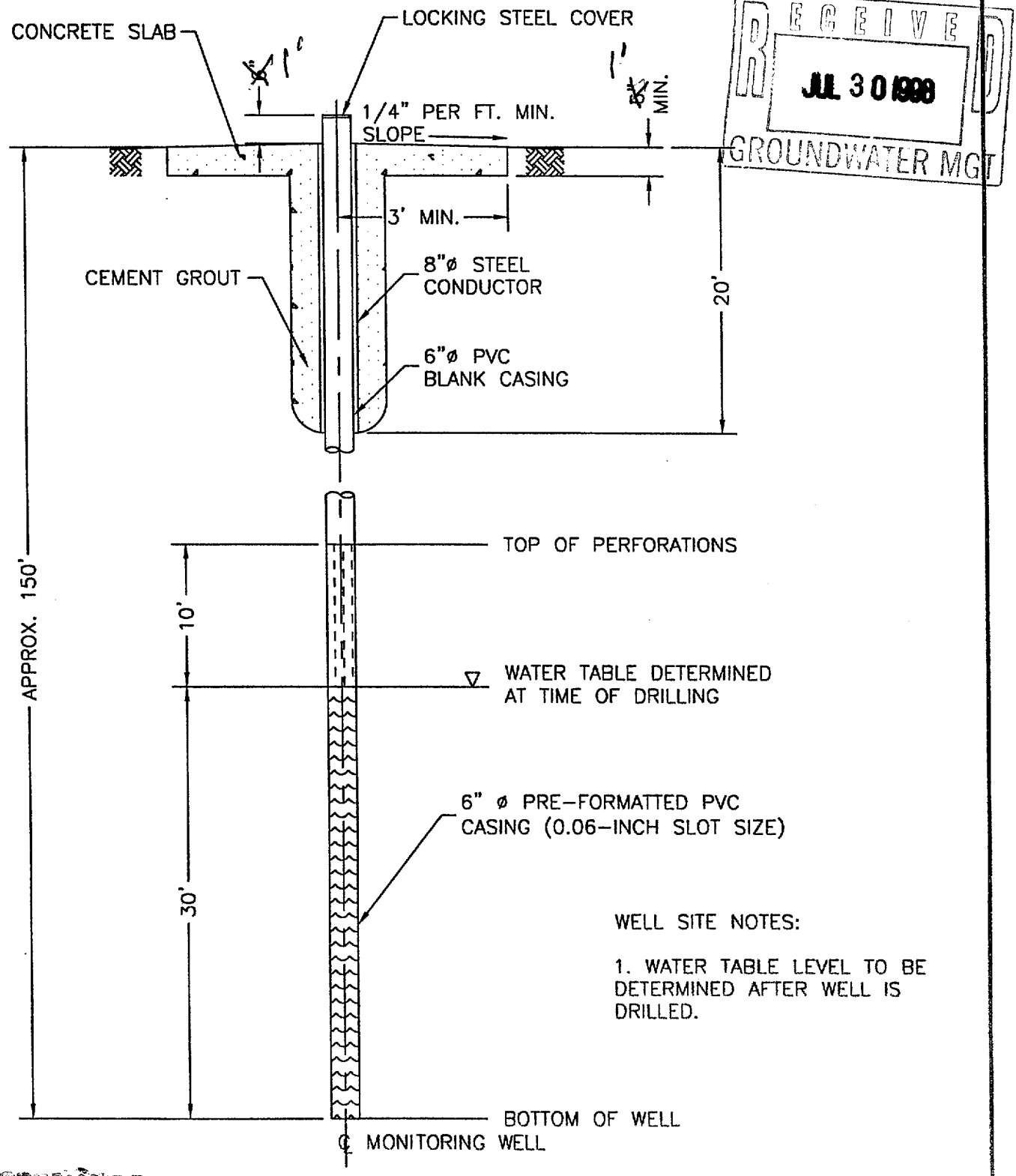
19. **Include detailed construction diagram showing expected water depth in feet below land surface, and details of vault, if specified.**

GENERAL INSTRUCTIONS

1. **Please submit two original notices, with original signatures, and a check or money order (no cash) in the amount of $10.00, to P.O. Box 458, Phoenix, Arizona 85001-0458 or hand deliver to 500 North 3rd Street, Phoenix, Arizona .**

CONDITIONS

1. **If an individual other than the land owner or lessee, signs this notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific Notice on their behalf, shall accompany the Notice of Intention to Drill a Monitor/Piezometer Well form.**
2. **Construction and abandonment standards for all wells shall be in accordance with A.A.C. R12-15-811 and R12-15-816.**
3. **Drilling of the well shall be completed within one year after the date of Notice.**
4. **A Well Driller Report is required within thirty days of completion of drilling. A Completion Report, is required to be filed with the Department within thirty days after installation of pump equipment for monitor wells.**
5. **Pump equipment <u>may not</u> be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the maximum amount required for monitor purposes, <u>but in no case may exceed 35 gallons per minute and an annual volume of 10 acre feet total</u>.**
6. **A.A.C. Rule R12-15-811.H.2, requires that: "A monitor well shall be identified as such on the vault cover or at the top of the steel casing. Identification information will include well registration number."**
7. **Special construction standards required pursuant to A.A.C. Rule R12-15-821:** _____



RECEIVED
JUL 30 1998
GROUNDWATER MGT

WELL SITE NOTES:

1. WATER TABLE LEVEL TO BE DETERMINED AFTER WELL IS DRILLED.

SPECIAL REQUIREMENTS
GRANTED

CITY OF BISBEE
MONITORING WELL

SUNRISE ENGINEERING INC.
3660 E. UNIVERSITY DRIVE, SUITE 2 MESA, ARIZONA 85205

FIGURE 1

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

JANE DEE HULL
Governor

RITA P. PEARSON
Director

August 21, 1998

CITY OF BISBEE
118 ARIZONA ST
BISBEE, AZ 85603

RE: Registration No. 55-570012
File No. D(23-24) 25 CCC

Dear Well Owner:

Enclosed for your records is an annotated copy of the Notice of Intention to Drill a well. This is returned to you as evidence of compliance with A.R.S. §45-596. A drilling card has been mailed to your designated driller. Prior to drilling he must have it in his possession.

Since this well is being drilled as a Monitor well, or for Cathodic Protection, Grounding, Geotechnical or Piezometer purposes, our standard driller report form is also being furnished to the driller. He is required to complete it and return it to the Department within 30 days after the completion of the well. A Completion Report form is being furnished for monitor wells where pump installation is authorized. This must be completed within thirty days of installation as required by A.R.S. §45-600.

A Change of Well Information form is enclosed for your future use . If you deem it necessary to change the location of the proposed well, please notify the Department on the enclosed form. A properly amended Drilling Card will then be issued and must be in possession of the driller before drilling begins. During the drilling of a new well, if it is determined that it must be abandoned, then a Well Abandonment Completion Report must be submitted per R12-15-816.F.

Per A.R.S. §45-593, the person to whom a well is registered shall notify this Department of a change of ownership of the well and/or information pertaining to the physical characteristics of the well, in order to keep the well registration file current and accurate.

Sincerely,

Sylvia Valdez
Water Resource Technician
Groundwater Management Support Section

VARIANCE CHECKLIST
HYDROLOGY

DATE RECEIVED: 7/29/98 POTENTIAL REG. NO. 55- 590012
DATE TO HYDRO: 8/3/98
DATE TO GWMSS: 8-20-98 55-_____ THRU 55-_____

FRONT OF N.O.I. COMPLETE/CORRECT: (YES) NO

REQUEST FOR VARIANCE RECEIVED: YES (NO)

DIAGRAM/SITE PLAN RECEIVED: (YES) NO

TYPE AND NUMBER OF WELLS:

- \ MONITOR
- ____ PIEZOMETER
- ____ GEOTECHNICAL
- ____ MINERAL EXPLORATION
- ____ WATER PRODUCTION
- ____ CATHODIC PROTECTION
- ____ GROUNDING
- ____ HEAT PUMP
- ____ OTHER _____ (DESCRIBE TYPE OF WELL)

VARIANCE: (PLEASE CHECK APPROPRIATE BLOCKS)

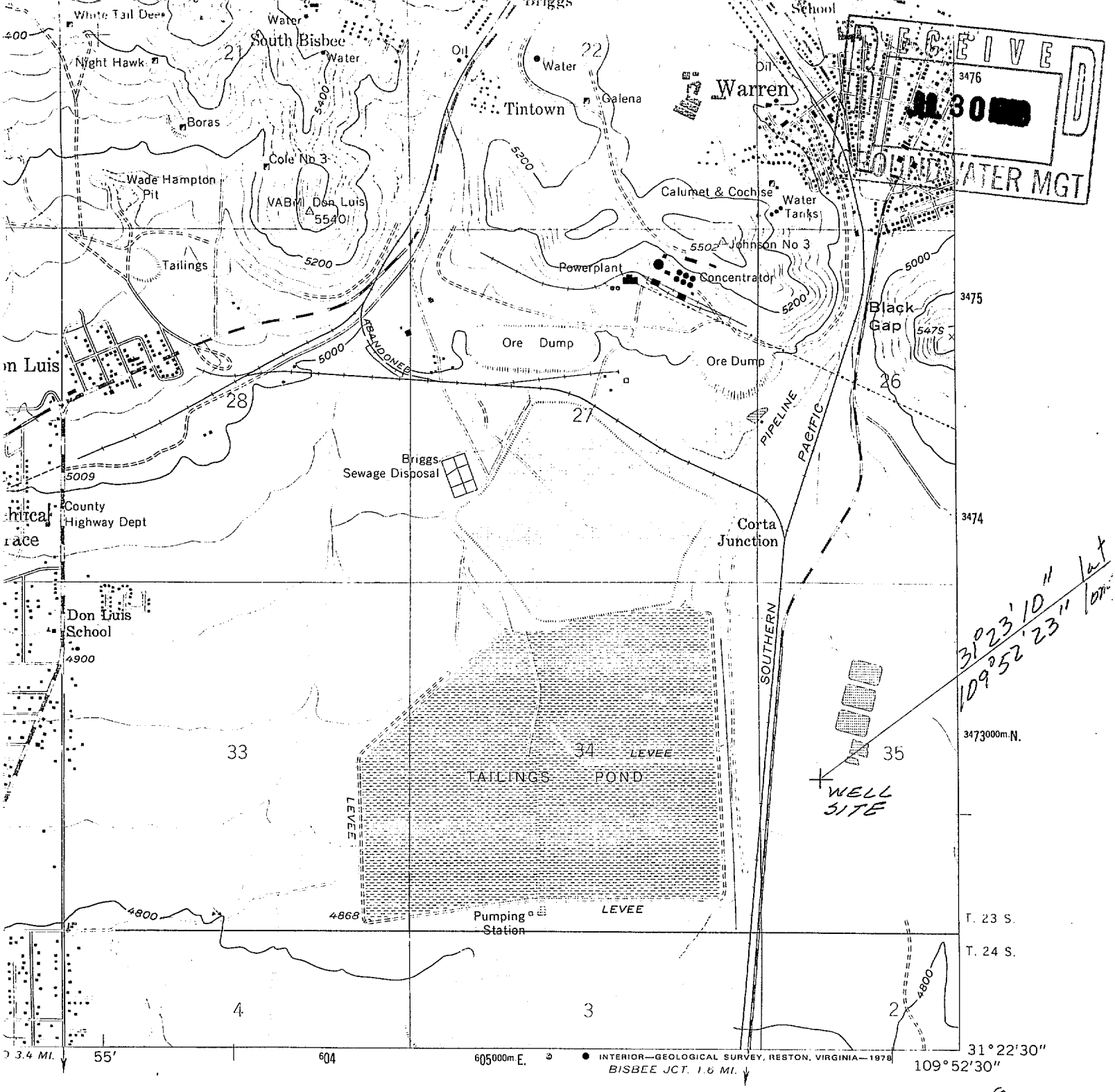
- ____ REQUIRED
- ✓ NOT REQUIRED
- ____ GRANTED
- ____ NOT GRANTED
- ____ LETTER ISSUED

ATTENTION NOTICE OF INTENT TEAM:

- ____ HARD COPY OF LETTER TO FOLLOW
- ____ CALL FOR PICKUP

COMMENTS:
Requires $10.- Fee.

GWMSS REVIEWER: BV HYDRO REVIEWER: [illegible]



RECEIVED
3476
30
OIL AND WATER MGT

1 MILE

ROAD CLASSIFICATION

Heavy-duty ——— Light-duty ———

Medium-duty ——— Unimproved dirt - - - - - -

U. S. Route State Route

ARIZONA

QUADRANGLE LOCATION

(BISBEE SE)
4046 IV SE

BISBEE, ARIZ.

NW/4 BISBEE 15' QUADRANGLE
N3122.5—W10952.5/7.5

1958
PHOTOREVISED 1978
AMS 4046 IV NW—SERIES V898

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-570012

AUTHORIZED DRILLER: FARMERS PUMP COMPANY **LICENSE NO: 307**

NOTICE OF INTENTION TO DRILL MONITOR WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

CONSULTANT:

WELL OWNER: **CITY OF BISBEE** **118 ARIZONA ST** **BISBEE, AZ 85603**

The well(s) is/are to be located in the:

SW 1/4 of the SW 1/4 of the SW 1/4 Section 25 Township 23 SOUTH Range 24 EAST

No. of Wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 28TH DAY OF JULY, 1999.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

REPORT

WATER SUPPLY POTENTIAL
PHELPS DODGE COPPER QUEEN MINE

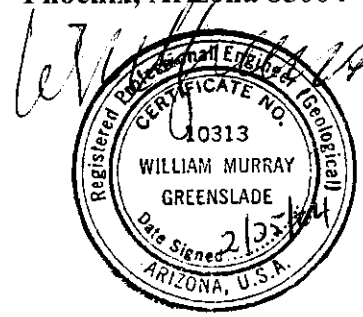
Southwest Ground-water Consultants, Inc.

REPORT

WATER SUPPLY POTENTIAL
PHELPS DODGE COPPER QUEEN MINE

For

Ryley, Carlock & Applewhite
One North Central Avenue, Suite 1200
Phoenix, Arizona 85004-4417



Submitted by

Southwest Ground-water Consultants, Inc.
3900 East Camelback Road, Suite 200
Phoenix, Arizona 85018-2636
602-955-5547

February 25, 2004

1.0 INTRODUCTION

This report presents the results of our preliminary analysis of the water supply potential of Phelps Dodge Corporation's Copper Queen Mine (CQM) in the Warren Mining District near Bisbee, Arizona. The scope of work consisted of the following tasks:

Task 1 – Compilation and Review of Available Data
Task 2 – Characterization of Ground Water and Surface Water Conditions
Task 3 – Assessment of the Amount and Quality of Ground Water Available from the CQM and the Hydrogeologic Relationship between the CQM and the Upper San Pedro River

The study relied on existing data including published reports by federal and state agencies, data from Phelps Dodge and from Southwest Ground-water Consultants, Inc. files. No field studies were conducted.

2.0 CONCLUSIONS

This section summarizes the study conclusions. Subsequent sections discuss the basis for these conclusions.

2.1 WATER SUPPLY FROM COPPER QUEEN MINE

The 80-year history of pumping from the underground workings provides the best indication of the long-term yield of the limestone aquifer within the CQM area. Historic pumpage records show that ground water production declined even though the workings were being deepened and expanded indicating that while the mine and surrounding limestone rock mass were being dewatered, groundwater was moving across the various faults bounding the mine area but at an insufficient rate to maintain a constant pumping rate. In 1976 the mine workings were all open and the monthly average pumpage for the year was 3,270 gpm, of which approximately 695 gpm was recirculated leach water. Excluding an event such as the 1978 hurricane and associated flooding, long-term ground-water production from the CQM appears to be approximately 2,500 gpm (4,000 ac-ft/yr).

If pumpage from the mine is resumed, almost all the water will initially come from storage in the mine workings. However, as the water level in the limestone rock mass declines, ground water will move across the faults bounding the CQM in response to the head difference created by pumping. Over time, pumped water will be a combination of stored water within the mine area and ground water from the surrounding area.

The amount of water available overtime is dependent on the specific yield (S_y) of the limestone rock mass and the number of shafts that are pumped. The estimated 25-year pumping rates, in gpm, are given in the following table. Water production under columns labeled Campbell and Denn assume that both of these shafts are pumped simultaneously, while the columns labeled Denn assume only the Denn shaft is being pumped.

Pumping Period (yrs)	**Pumpage (gpm) Campbell and Denn ($S_y = 0.02$)**	**Pumpage (gpm) Denn ($S_y = 0.02$)**	**Pumpage (gpm) Campbell and Denn ($S_y = 0.05$)**	**Pumpage (gpm) Denn ($S_y = 0.05$)**
1-4	8,000	6,500	8,000	8,000
5-10	7,000	5,000	8,000	7,000
11-15	5,500	4,000	8,000	6,000
16-20	3,500	3,000	8,000	5,000
21-25	3,500	2,500	8,000	4,500

This analysis indicates that there is a benefit of distributing the pumping over the mine area to reduce the concentration of drawdown at one shaft. It also shows the effect of assumptions about specific yield on the rate of decline in pumpage over time.

2.2 WATER QUALITY FROM THE COPPER QUEEN MINE

Water quality varies within the Warren Mining District. The water sampled from the Junction shaft (1990) and C&C shaft (1996) of the CQM is a mix of water from throughout the underground workings. This water is somewhat acidic, with an average pH of 6.1. Total dissolved solids (TDS) and sulfate are approximately 8,000 mg/l and 5,500 mg/l, respectively, in the Junction Shaft. TDS are approximately 1,080 mg/l to 1,500 mg/l in the C&C Shaft (sulfate data are not available). Water quality is reported to be poorer in the western part of the district but better to the east and south.

Over time, pumping from any of the existing shafts will likely draw water from throughout the underground workings and water quality can be expected to be a blend of ground water from the District. For purposes of this study, it is assumed that the average water quality will approximate the quality of water sampled from the CQM's Junction Shaft.

2.3 IMPACTS ON OTHER WATER USES

A total of 5 non-Phelps Dodge-owned water supply wells are located within the potential area of influence of pumpage from the CQM. Of these only one well (Paulovich) may tap the limestone aquifer, the other wells appear to produce from perched aquifers overlying the limestone aquifer. The Paulovich well was drilled in 1982 while the mine was still being dewatered, indicating that its production would not likely be impacted by future pumpage.

Perennial reaches of the San Pedro River start south of Hereford, Arizona approximately 12 miles west of the CQM. Base flow in the San Pedro River is reportedly maintained by tributary ground-water discharge from the regional basin-fill aquifer and Holocene alluvium (Pool, 1999). Water pumped from CQM area is from Paleozoic limestones that are bounded by low permeability faults. Pumpage from the CQM will have no direct effect on water levels in the regional aquifer or the Holocene alluvium that reportedly supplies base flow to the San Pedro River.

Given the fact that ground-water levels are generally higher in the CQM area than adjacent to the San Pedro River it could be argued that water "captured" within the area of mine dewatering is tributary ground-water that would ultimately flow into the regional aquifer. Under this scenario ground-water would have to fully recharge the dewatered mine area and overcome the existing ground-water divide in the Warren area, before it would theoretically move from the CQM area through the Naco-Bisbee Basin to the regional aquifer in the Sierra Vista subwatershed of the Upper Verde River and then discharge to the San Pedro River near Hereford. Also, given the geology of the Warren Mining District and CQM any water movement would be impeded by low permeability faults separating the limestone aquifer beneath the CQM from the basin-fill aquifer in the Naco-Bisbee Basin. In addition, the potential area of "capture" of approximately 22 square miles is less than 1.5 percent of the total area of the Sierra Vista subwatershed.

Based on the foregoing, pumpage of 2,500 gpm (4,000 ac-ft/yr) from the CQM will have no measurable effect on base flow in the San Pedro River.

3.0 HYDROGEOLOGY

3.1 STUDY AREA

The study area included the Warren Mining District and the Sierra Vista subwatershed of the Upper San Pedro River. Location of the study area is shown on Figure 1.

The study area is within the Mexican Highland section of the Basin and Range physiographic province. It is characterized by valleys containing basin-fill materials separated by elongated fault block bounded mountain ranges. The Warren Mining District contains the Phelps Dodge Copper Queen Mine. The district and mine are located on the southwestern flank of the Mule Mountains near Bisbee, Arizona.

Copper ore bodies within the Warren Mining District were discovered in 1877 and were mined more or less continuously until the early 1980's. From the start of mining until the mid-1970's a portion of the ore production was from underground mines in the Paleozoic limestones that underlie the District (Bryant, 1966). Open pit mining started in 1917 with the excavation of the Sacramento pit. Mining in this pit ceased in 1930. In 1952 open pit mining was reinstated with the opening of the Lavender pit and expansion of the Sacramento pit. These pits produced ore from the igneous granitic rocks that were intruded into the older limestones. Open pit mining ceased in 1974. All active mining stopped in 1984; however, leaching of stockpiles continues to the present.

3.2 GEOLOGY

3.2.1 Warren Mining District

The Mule Mountains are comprised of a complexly faulted series of Precambrian to Cretaceous age sedimentary rocks intruded by Jurassic-age granite and quartz porphyry rocks. In the Bisbee area, these rocks are host to significant copper, gold and silver mineralization of the Warren Mining District (Ransome, 1904).

The Dividend Fault which trends east-west generally separates Paleozoic limestones on the south from Precambrian metamorphic rocks and Cretaceous limestones, conglomerates and intrusives to the north. This fault has a normal displacement of up to 5,000 feet (Bryant, 1966). A sub-parallel fault, the Bisbee West Fault, located approximately two miles south of the Dividend Fault appears to be the southern limit of significant mineralization. The Quarry Fault on the west and the Black Gap Fault on the east

approximately define the east-west extent of major mineralization. In addition, the ore bodies are cut by numerous northeast-southwest trending faults. Major geologic units and structures are shown on Figure 2. Cross-sections are shown on Figure 3.

3.2.1 Upper San Pedro River Basin

The Sierra Vista subwatershed of the Upper San Pedro River Basin extends from the international boundary with Mexico to near Fairbank, Arizona. The basin is an elongated down-dropped trough that trends north-northeast. It is bounded by mountain blocks comprised of granite, schist, gneiss, volcanics and consolidated sedimentary rocks ranging in age from Precambrian to Tertiary (Barnes, 1997). The basin is filled with unconsolidated to semi-consolidated sediments. The Tertiary Pantano Formation unconformably overlies the bedrock (which includes the Paleozoic limestone host rocks of the Warren Mining District). The Pantano formation is a poorly to moderately indurated conglomerate. Overlying the Pantano formation are basin-fill deposits of Tertiary and Quaternary age.

Basin-fill deposits are divided into lower and upper units. The lower unit consists of lenticular, strongly to weakly cemented gravel, sandstone, siltstone and clay. This unit reaches a thickness of up to 1,000 feet in the center of the basin. The upper basin-fill is composed of weakly cemented beds of gravel, sandstone, siltstone and clay with a maximum thickness of about 800 feet. The upper basin-fill trends to well-bedded silt, sandy-silt and clay in the center of the basin, grading to clayey-silty gravel near the mountain fronts. Along the San Pedro River and major tributaries flood-plain alluvium (Holocene age) is deposited on the upper basin-fill sediments (Barnes, 1997). The basin-fill is the regional aquifer in the Upper San Pedro River valley.

Within the Sierra Vista subwatershed, the area closest to the Warren Mining District is the Naco-Bisbee Basin, located south of the District between Bisbee and the U. S.-Mexico International border. This basin is drained by Greenbush Draw and underlain by basin-fill deposits overlying sandstone, siltstone, conglomerate and limestone, in decending order, of the Morita Formation and Glance Conglomerate of Cretaceous age and the Martin, Abrigo and Escabrosa formations of Cambrian to Mississippian age (S.E.T., 1998). Major hydrogeologic features within the Sierra Vista subwatershed of the Upper San Pedro River Basin are shown on Figure 4.

3.3 CLIMATOLOGY

Precipitation at Bisbee averages 17.66 inches per year, with about 46% falling in July and August. The driest months of the year are March and April, with average monthly precipitation of 0.32 inches. Potential evapotranspiration in the study area is estimated to range from 59 to 67 inches per year (Yitayew, 1990).

3.4 SURFACE WATER

Streamflow in the much of the study area is ephemeral. The exception is some reaches of the San Pedro River from just south of Hereford to north of Charleston where the river is considered intermittent or perennial. The portion of the river that is perennial varies from year to year depending on climatic conditions. Reaches south of Charleston with perennial flow in 2003 are shown on Figure 4.

The San Pedro River originates about 30 miles south of the U.S.-Mexico International border and enters the United States near Palominas (Figure 1). Total area of the Sierra Vista subwatershed of the San Pedro River is about 1,600 square miles, of which 650 square miles are within Mexico.

Average annual streamflow at the USGS stream gage at Palominas is 30.4 cfs (1950-1996) and at Charleston is 56.4 cubic feet per second (cfs) over the period of record (1904-1996). Maximum streamflow occurs in July and August as a result of summer thunderstorm activity. Base flow at Charleston has been estimated for winter (November 15 - December 15) and summer (June) periods. Exclusive of years with high runoff, the average winter baseflow is 10.9 cfs and the summer baseflow is 2.9 cfs (Pool, 1999).

3.5 GROUND WATER

Ground water occurs throughout the study area. Rainfall in the Mule Mountains, Huachuca Mountains and Tombstone Hills is the principal source of recharge to the study area. Except where altered by pumping, the ground-water surface generally follows the topographic surface. Ground water occurrence and availability in the Warren Mining District and the adjacent Sierra Vista subwatershed of the Upper San Pedro River Basin are discussed in the following subsections.

3.5.1 Warren Mining District

Ground water was encountered in the limestone host rocks (Martin, Abrigo and Escabrosa formations of Cambrian to Mississippian age) of the underground mines in the early 1900s. By 1907 pumps were installed to dewater the mine workings. Figure 5 shows average annual water production (gpm) from the Copper Queen mine underground workings from 1907 to 1987.

The principal purpose of the pumping was to maintain dry working conditions; however, the water also met the mines' water supply needs. Water was collected and removed from the mines in a complex underground system of pipes, ditches and pumps that were interconnected across many mine levels and shafts. The mine dewatering and water control system is shown schematically on Figure 6.

3.5.1.1 – Historic Pumpage

Historic pumpage from the underground workings is shown on Figure 5. Pumpage can be divided into three periods as mine development progressed. These are identified on Figure 5 as I, II and III and are discussed below.

Period I - 1906 to 1935 was characterized by relatively shallow (<1,500 feet below ground surface (bgs)) mining in the western portion of the district. As water was encountered in new workings, water flow increased until the new area was dewatered, and then declined until another water area was encountered. As the mines expanded the total flow rate expanded slowly.

Period II - The Junction Shaft was sunk in 1933 and completed to a total depth of 2,710 feet in 1934. Between 1934 and 1935 approximately 8.7 miles of workings were developed below the 2200 level. As the mine expanded to the east, across the Campbell fault, water flow increased rapidly. In 1941, the 2700-12 Cross-Cut encountered high water flows, flooding the mine to 123 feet above the 2566 level. From 1942 to 1961 the mines were deepened and expanded to the east. In 1960, the Black Gap fault was penetrated and high water pressures were encountered. The workings were sealed to prevent flooding. The Campbell Shaft was sunk to its final depth (3,333 ft) in 1961 (Phelps Dodge, 1997). In spite of the deepening and expansion of the underground workings during this period, water pumpage decreased steadily once the initial flooding was overcome.

Period III – Leaching of the Sacramento and Lavender open pit mines started in 1976 and continued through the mid-1980s. During this period water pumped from the 1800 level included water that was being recirculated from leaching of the open pits to the

underground workings. In 1984 average monthly pumping rate was about 3,815 gpm. Of this amount 695 gpm was acid water recirculated from the pit leaching operation (SGC, 1997). In 1978, the Bisbee area was inundated with rainfall from a nearby hurricane. The mine workings were flooded as water ran into the open pits and from there to the underground workings.

In 1985, pumps were removed from the 3100 level of the Campbell and 2700 level of the Junction shafts. In 1986, pumpage ceased at the 2200 level of the Junction shaft and in 1987 all pumpage stopped. By the end of 2003, the water level had risen over 1,000 feet to within 865 feet of the Junction Shaft collar. Water level rise over time is shown on Figure 7.

3.5.1.2 – Aquifer Parameters

The majority of the mine workings are in limestone (Abrigo, Martin and Escabrosa formations). There are no known formal well tests to estimate aquifer parameters in these formations in the Warren Mining District. However, the long pumping history from the underground mines provides means of estimating of the ability of these rocks to yield water.

Estimates of the mass rock transmissivity were made by applying two separate techniques. One technique involved the calculation of specific capacity (gallons per minute per foot of drawdown) of the mine workings. The total drawdown in the water table due to mine dewatering was estimated by subtracting the elevation (1,728 ft msl) of the lowest mine level (3100 level) from the static pre-mining water level, estimated to be 4,335 feet (Dames & Moore, 1990), or 2,607 feet. Dividing the 1984 average monthly pumping rate, less acid water recirculation, (3,815 gpm - 695 gpm - see Section 3.5.1.2) of 3,120 gpm by 2,607 feet gives a specific capacity of 1.2 gpm/ft. Multiplying this number by 1,500 (an empirical factor for converting specific capacity to transmissivity) yields an estimated transmissivity of 1,763 gpd/ft.

A second technique used the Theis water level recovery method applied to the water level recovery in the Junction Shaft to estimate transmissivity. This method yielded an estimated range in transmissivity of between 1,430 and 10,970 gpd/ft.

While these calculations are based on the mathematics of well hydraulics and can only be considered "guesstimates" of the transmissivity of the limestones, they do indicate that the ability of the limestones to yield water is relatively low. Individual wells, given their relatively small diameter and limited ability to intersect multiple fractures, (as compared to miles of underground workings intersected in the shafts), would likely produce at relatively low rates.

3.5.1.3 – Ground-Water Movement

Ground-water movement in the Warren Mining District is controlled by the orientation of fractures and faults. Most faults appear to act as aquitards, or partial barriers to ground-water flow. Figure 2 shows water levels in monitor wells and shafts in 1996 and indicates the direction of ground-water flow. In the area of the mine workings the water table is depressed due to past mine dewatering. The water table is essentially flat in the area of the ore bodies, a reflection of the "permeability" created by the mine workings.

Steep gradients occur to the west and east of the central mine area near the relatively impermeable Quarry and Black Gap faults. The Dividend fault also acts as an aquitard, with an 800-foot difference in water level across the fault. The Bisbee West Fault in the area south of Warren appears to have little effect on water movement, as indicated by similarity of water levels on both sides of the fault. However, no water level data are available to the east or west along this fault. The sub-parallel Abrigo Fault further to the southwest appears to act as an aquitard as evidenced by the 329 foot difference in water level between TM-2 and GL-1 in 1996.

The water table in the area of the mine workings has been rising since pumps were turned off in 1987. Plots of water levels in the Junction Shaft and in selected monitor wells (CP Wells) are shown on Figures 7 and 8. Locations of shafts and monitor wells are shown on Figure 2. The plots indicate that wells located outside the faults bounding the ore bodies (CP-2, CP-4, CP-5, CP-6, CP-8 and CP-19) are not exhibiting a significant rise in water levels, while water levels inside the faults have risen over 1,400 feet since 1984. This data substantiates the conclusion that these faults act as aquitards. This conclusion is further supported by reports of miners encountering large water inflows when crossing major faults, such as flooding of the 2700 level when encountering the Campbell fault (SGC, 1997). The water level in Well CP-5 shows more rise than the others listed above, possibly due to its proximity to the Black Gap Fault.

3.5.1.4 – Water Use

According to the ADWR well registry, there are five wells located within the general area of the CQM that were identified as water production wells and are not owned by Phelps Dodge (ADWR, 2004). Data on these wells are given in Table 1.

Table 1, Water Supply Wells Not Owned by Phelps Dodge in CQM Area

Owner	Legal Location	Date Drilled	Elevation of Bottom of Well (ft msl)	Static Water Level (ft msl)	Difference (ft)
Gonzalez	D(23-24)19aaa	2000	5395	4650	+745
Girardi	D(23-24)23cbd	NA	NA	<4200[1]	NA
City of Bisbee	D(23-24)25	NA CNX	NA	>4600[1]	NA
Castanedo	D(23-24)25ccd	1989	4862	>4600[1]	>262
Paulovich	D(23-24)29bcb	1982	4568	4500	(68)

1. Estimated from Figure 2.

The Gonzalez and Castaneda wells are not deep enough to reach the regional water table; they appear to draw water from a perched water table. Only the Girardi and Paulovich wells are potentially within the area of influence of mine dewatering. Little is known of the Girardi well, or even if it exists. If it does exist it probably does not reach the limestone aquifer, as the well would have to be over 1,000 feet in depth. The Paulovich well was drilled in 1982 before mine dewatering ceased and would not likely be impacted by future pumping rates similar to past dewatering pumpage.

3.5.2 Naco-Bisbee Basin of the Upper San Pedro River Valley

As noted in Section 2.3.1, the portion of the Upper San Pedro River Valley that is closest to the Warren Mining District and the CQM is the Naco-Bisbee Basin. Any potential connection between the development of ground water in the mine area and flow in the San Pedro River would be controlled by hydrogeologic conditions in the Naco-Bisbee Basin. These conditions are described below.

Like the San Pedro River Valley, the basin-fill constitutes the principal water-bearing unit in the Naco-Bisbee Basin. In the Naco-Bisbee Basin the upper basin-fill is the primary source of water for wells. The underlying Morita Formation and Glance Conglomerate yields some water to wells but discharge rates are low, generally between 5 and 35 gpm (Litton, 1987). The saturated thickness of the basin-fill unit ranges from zero under the South Tailings Impoundment (shown near the center of the map on Figure 2) to over 500 feet near the intersection of the Naco-Bisbee Highway and Purdy Lane (S.E.T., 1998).

3.5.2.1 – Aquifer Parameters

Average hydraulic conductivity of the basin-fill in the Naco-Bisbee Basin is estimated to range from 75 to 600 gallons per day per square foot (gpd/ft^2) with an average of about

245 gpd/ft^2. The Morita Formation and Glance Conglomerate are estimated to have average hydraulic conductivities of 12 and 7 gpd/ft^2, respectively (S.E.T., 1998).

Ground water in the Naco-Bisbee Basin is generally under water table (unconfined) conditions. Average specific yield is estimated to be 0.2 for the basin-fill and about 0.08 for the Morita Formation and Glance Conglomerate (S.E.T., 1998).

3.5.2.2 – Ground-Water Movement

The direction of ground-water movement is to the southwest and thence to the west, as shown on Figures 2 and 4. The average gradient in 1996 in the area north of Naco was about 0.001 ft/ft (S.E.T., 1998). The gradient increases west of Naco before decreasing toward the Upper San Pedro River.

3.5.2.3 – Water use

The area immediately south of the CQM South Tailing Impoundment was used for agricultural irrigation and evaporation (via ponds) of water pumped from the underground workings from 1905 until 1987. During this time, a ground-water mound was created beneath the evaporation/irrigation area, extending about four miles to the southwest. Maximum rise in the ground-water mound was about 240 feet. Since the cessation of mine dewatering in 1987 water levels have been declining and in 2003 have fallen by over 200 feet in the center of the mound (Phelps Dodge, 2004).

There are nine public water supply wells within the Naco-Bisbee Basin. Table 2 presents available pertinent data on these wells.

Table 2, Naco-Bisbee Basin Public Water Supply Wells

Owner	Legal Location	Total Depth (ft)	Static Water Level (ft)	Reported Yield (gpm)
Naco Water Co.#1	D(24-24)19bab	215	140	NA
Naco Water Co.#2	D(24-24)18cac	210	133	NA
Naco Water Co.#3	D(24-24)18add	179	96	NA
Naco Water Co.#4	D(24-24)10ddd	379	216	NA
Naco Water Co.#5	D(24-24)11cad	175	104	NA
Arizona Water Co. #2	D(24-23)13abc2	NA	83	U
Arizona Water Co. #2	D(24-23)13acb	NA	92	U
Arizona Water Co.#3	D(24-23)13abd	270	95	800
Arizona Water Co.#4	D(24-23)13abc	337	90	1200

NA - Not Available
U - Unused

Naco Water Company wells #4 and #5 are located near Bisbee Junction. Water levels in these wells have fallen in recent years, reportedly in response to the cessation of irrigation formerly applied by Phelps Dodge to the Warren Ranch lands (SGC, 1997). The remaining public water supply wells are located in the Naco area, where water levels are reported to be relatively stable (Litton, 1987). All of these wells are south of the ground-water divide near the Abrigo Fault and are unaffected by mine dewatering.

3.6 GROUND-WATER QUALITY

Ground-water quality within the study area is variable due, in part, to mineralization of the limestone and granites in the Warren District and to past mining activities. Water quality in the areas of interest is described below.

3.6.1 Copper Queen Mine Area

When the mine was in operation waters of different quality were separated and used in different mine processes, depending on the sensitivity of each process (use) to water of a certain quality. The flow of water within the mine is shown diagrammatically on Figure 6. Three categories of water (as defined by the miners): acid water, dirty water and clean water were collected and separately pumped to the surface. The classification these waters and average 1981 pumpage are given in Table 3.

Table 3, Mine Water Classification and 1981 Pumpage

Classification	1981 Pumpage	pH	Comments
Acid water	835 gpm	2.3	Part of pumpage is recirculation of leach water
Dirty water	2,120 gpm	5.1-5.2	Neutralized with lime underground to pH 7
Clear water	1,730 gpm	6-7	From eastern portion of the Campbell mine

Since the cessation of active mining, ground-water within the CQM area has been sampled primarily for compliance with Aquifer Protection Permit requirements. Data are available for 1989-1990 and for 1997. Available water quality data are summarized on Tables 4 and 5.

Ground-water from the mine workings is a calcium-sulfate type, high in TDS and sulfate. TDS in two samples from the Junction Shaft collected in 1988 and 1990 were 8,685 and 7,770 milligrams per liter (mg/l), with sulfates of 5,900 mg/l and 5,300 mg/l, respectively. The pH of water from the Junction shaft was reported to be 6.1 to 6.4.

Water quality in monitor wells located in fractured sedimentary rocks outside the ore bodies (CP-1, CP-4, CP-5, CP-6, and CP-11) is generally a calcium-bicarbonate type, with TDS ranging from 338 to 380 mg/l. Sulfate in these wells ranged from 17 to 35 mg/l.

Table 4, Copper Queen Mine Water Quality 1989-1990

Well No.	Sample Date	Lab Date Rcvd	Water Level	FIELD DATA pH pH units	FIELD DATA Conductivity u mhos/cm	FIELD DATA Temp °C	Calcium (mg/l)	Magnesium (mg/l)	Sodium (mg/l)	Potassium (mg/l)	Carbonate (mg/l)	Bicarbonate (mg/l)
CP-01	11/02/89	11/13/89					118	38	9	3.2	-2.6	403
CP-02	11/07/89	11/13/89					24	23	17	6.7	-2.6	- 2.6
CP-04	11/07/89	11/13/89					89	15	22	0.7	-2.6	336
CP-05	11/07/89	11/13/89					80	12	13	1.2	-2.6	280
CP-06	11/07/89	11/13/89					109	9.4	4	1.2	-2.6	268
CP-08	12/28/89	01/05/90					500	38	34	4.3	-2.6	214
CP-11	12/19/89	01/05/90					60	30	28	1.9	-2.6	357
JS-01	05/06/88	05/17/88					583	964	43	21	-2.6	293
JS-01	01/03/90	01/11/90					550	1,100	47	35	-2.6	308
TM-09	03/14/89	03/30/89		7.01	387	25.2	47	19	17	2.8	-2.6	252
TM-18	11/02/89	11/13/89					72	14	14	2.5	-2.6	240
TM-22	12/15/89	01/05/90					60	38	15	5.6	-2.6	276

Well No.	Sample Date	Lab Date Rcvd	Chloride (mg/l)	Sulfate (mg/l)	Nitrate (mg/l)	Total Cations (meq/100ml)	Total Anions (meq/100ml)	Balance	Nitrate-N (mg/l)	Flouride (mg/l)	Lab pH pH units	TDS (mg/l)
CP-01	11/02/89	11/13/89	21.6	80	28.8	9.49	8.88	3.31%	6.5	0.09	7.4	500
CP-02	11/07/89	11/13/89	23	4,000	0.9	4.00	83.89	-90.89%	0.2	-0.05	3	6,460
CP-04	11/07/89	11/13/89	10.6	26	14.6	6.65	6.35	2.33%	3.3	0.25	7.4	365
CP-05	11/07/89	11/13/89	9.6	23	10.6	5.58	5.34	2.17%	2.4	0.41	7.5	305
CP-06	11/07/89	11/13/89	9.2	78	8.4	6.42	6.28	1.11%	1.9	0.28	7.2	390
CP-08	12/28/89	01/05/90	88.5	1,080					19.2	0.19	7.4	2,095
CP-11	12/19/89	01/05/90	328	38					3.3	0.2	7.7	385
JS-01	05/06/88	05/17/88	29.7	5,900	0.9	110.83	128.48	- 7.38%	0.2	0.43	5.9	8,685
JS-01	01/03/90	01/11/90	52.8	5,300					-0.1	1.8	6.8	7,770
TM-09	11/01/89	11/13/89	11	19	8.0	4.99	4.80	1.95%	1.8	0.45	7.7	265
TM-18	11/02/89	11/13/89	10.3	50	6.6	5.42	5.37	0.42%	1.5	0.31	7.8	285
TM-22	12/15/89	01/05/90	15.2	86					-0.1	0.51	8	385

Table 4, Copper Queen Mine Water Quality 1989-1990 (Cont)

Well No.	Sample Date	Lab Date Rcvd	Water Level	FIELD DATA pH pH units	FIELD DATA Conductivity u mhos/cm	FIELD DATA Temp °C	Calcium (mg/l)	Magnesium (mg/l)	Sodium (mg/l)	Potassium (mg/l)	Carbonate (mg/l)	Bicarbonate (mg/l)
CP-01	11/02/89	11/13/89					118	38	9	3.2	-2.6	403
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CP-05	11/07/89	11/13/89					80	12	13	1.2	-2.6	280
CP-06	11/07/89	11/13/89					109	9.4	4	1.2	-2.6	268
CP-08	12/28/89	01/05/90					500	38	34	4.3	-2.6	214
CP-11	12/19/89	01/05/90					60	30	28	1.9	-2.6	357
JS-01	05/06/88	05/17/88					583	964	43	21	-2.6	293
JS-01	01/03/90	01/11/90					550	1,100	47	35	-2.6	308
TM-09	03/14/89	03/30/89		7.01	387	25.2	47	19	17	2.8	-2.6	252
TM-18	11/02/89	11/13/89					72	14	14	2.5	-2.6	240
TM-22	12/15/89	01/05/90					60	38	15	5.6	-2.6	276

Well No.	Sample Date	Lab Date Rcvd	Chloride (mg/l)	Sulfate (mg/l)	Nitrate (mg/l)	Total Cations (meq/100ml)	Total Anions (meq/100ml)	Balance	Nitrate-N (mg/l)	Flouride (mg/l)	Lab pH pH units	TDS (mg/l)
CP-01	11/02/89	11/13/89	21.6	80	28.8	9.49	8.88	3.31%	6.5	0.09	7.4	500
CP-02	11/07/89	11/13/89	23	4,000	0.9	4.00	83.89	-90.89%	0.2	-0.05	3	6,460
CP-04	11/07/89	11/13/89	10.6	26	14.6	6.65	6.35	2.33%	3.3	0.25	7.4	365
CP-05	11/07/89	11/13/89	9.6	23	10.6	5.58	5.34	2.17%	2.4	0.41	7.5	305
CP-06	11/07/89	11/13/89	9.2	78	8.4	6.42	6.28	1.11%	1.9	0.28	7.2	390
CP-08	12/28/89	01/05/90	88.5	1,080					19.2	0.19	7.4	2,095
CP-11	12/19/89	01/05/90	328	38					3.3	0.2	7.7	385
JS-01	05/06/88	05/17/88	29.7	5,900	0.9	110.83	128.48	- 7.38%	0.2	0.43	5.9	8,685
JS-01	01/03/90	01/11/90	52.8	5,300					-0.1	1.8	6.8	7,770
TM-09	11/01/89	11/13/89	11	19	8.0	4.99	4.80	1.95%	1.8	0.45	7.7	265
TM-18	11/02/89	11/13/89	10.3	50	6.6	5.42	5.37	0.42%	1.5	0.31	7.8	285
TM-22	12/15/89	01/05/90	15.2	86					-0.1	0.51	8	385

Table 5, Copper Queen Mine Water Quality 1997

Parameter	Unit	Well no.																
		CP-01	CP-02	CP-03	CP-04	CP-05	CP-06	CP-08	CP-11	CP-13	CP-14	CP-15	CP-16	CP-17	CP-19	MG-1	MG-7	MG-8
		4/21/97	1/28/97	11/18/92	1/28/97	1/28/97	1/29/97	1/29/97	1/29/97	1/29/97	4/21/97	1/29/97	1/29/97	1/29/97	1/28/97	11/20/97	11/20/97	11/20/97
Lab		TL	TL	BC	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL	TL
Calcium	(mg/l)	120	26.2	26	83.1	76	92.9	548	73.9	522	54	76.7	89.1	57.2	93.7	670	92	420
Magnesium	(mg/l)	28	19.4	34	15	11.1	9.1	47.4	26.3	45.9	5	9.2	8.6	6.3	13.1	250	27	43
Sodium	(mg/l)	7.4	16.1	13.6	22.6	13.1	-5	27.9	25.5	35.3	23	25.2	30.7	24.6	21.7	20	49	64
Potassium	(mg/l)	-5	12	0.2	-5	-5	-5	6	-5	-5	-5	-5	-5	-5	-5	6.7	-0.005	5.5
Total cation	(meq/L)	-	-	593	-	-	-	-	-	-	-	-	-	-	-	55.074	9.226	27.495
Alkalinity CO_3	(mg/l)	-1	-	-2.6	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
Alkalinity HCO_3	(mg/l)	340	-	-2.6	284	230	256	204	318	144	200	224	150	206	320	654	190	192
Chlorine	(mg/l)	15	31.8	4.3	8.9	6.9	4.8	93.5	12.6	43.3	4.8	8.9	19.7	8.1	9.8	-	-	-
Sulfate	(mg/l)	74	4960	13800	29.4	27.6	35	1230	-5	1270	12	57.6	148	14.6	17.1	2130	204	1090
Nitrite	(mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-0.1	-0.1	-0.1
Nitrate as N	(mg/l)	1	-1	-0.1	-1	-1	-1.0 (2)	13.4	1.7	6.2	2	1.2	4	-1	1.7 (2)	1.7	2.2	-1
Fluorine	(mg/l)	-0.5	-0.5 (2)	-0.05	2.9 (2)	2.1 (2)	-0.5	0.5	-0.5	-0.5	1.1	1.1	-0.5	0.9	0.5	0.7	0.2	0.2
Total anion	(meq/L)	-	-	267	-	-	-	-	-	-	-	-	-	-	-	57.585	8.215	26.544
pH		6.9	2.89	2.8	6.95	7.05	7.1	6.93	7.3	6.7	7.4	7.26	7.4	7.2	6.9	5.9	7.05	6.7
TDS @ 180 C	(mg/l)	460	4210	21000	348	284	338	2350	388	2250	240	337	446	262	380	3800	490	1600
Specific Cond.	(µmhos/cm)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3400	820	2100
Water type		$Ca\ HCO_3$	$Fe\ SO_4$	$Fe\ SO_4$	$Ca\ HCO_3$	$Ca\ HCO_3$	$Ca\ HCO_3$	$Ca\ SO_4$	$Ca\ HCO_3$	$Ca\ SO_4$	$Ca\ HCO_3$	$Ca\ HCO_3$	$Ca\ HCO_3$ - SO_4	$Ca\ HCO_3$	$Ca\ HCO_3$	$Ca\ SO_4$	$Ca\ HCO_3$ - SO_4	$Ca\ SO_4$
Arsenic	(µg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-5	-5	-5
Antimony	(µg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-5	-5	-5
Aluminum	(µg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-2000	2400	-2000
Beryllium	(µg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-100	-100	-100
Cobalt	(µg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-100	-100	-100
Barium	(µg/L)	-1000	-1000	-100	-1000	-1000	-1000	-1000	-1000	-1000	-1000	-1000	-1000	-1000	-1000	-1000	-1	-1
Cadmium	(µg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.014	-30	-30
Copper	(µg/L)	-20	35800	39000	50	160	-20	110	60	50	-20	-20	-20	40	-20	-	-	-
Iron	(µg/L)	-300	345000	5920000	-300	-300	-300	-300	-300	-300	-300	-300	-300	-300	-300	760	2600	830
Lead	(µg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24	22	47
Manganese	(µg/L)	0.47	900	52000	-20	-20	-20	170	-20	-20	0.02	-20	-20	-20	-20	-5	410	1200
Mercury	(µg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-1	-1	-1
Nickel	(µg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	330	-100	-100
Molybdenum	(µg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-100	-100	-100
Selenium	(µg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-5	-5
Thallium	(µg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-2	-2	-2
Silver	(µg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	(µg/L)	0.05	440	-	100	70	1250	1030	-40	70	ND	-40	-40	-40	-40	-	-	-
Chromium	(µg/L)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-30	-30	-30
Phenol	(mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Am-N	(mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ortho-PO4	(mg/l)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acidity as H ion	(mg/l)	-	-	220	-	-	-	-	-	-	-	-	-	-	-	-	-	-

BC = BC Laboratories; TL = Turner Laboratories; "1" Sample did not balance; "2" Sample received past the end of the holding times, and qualified by the laboratory.

3.6.3 Naco-Bisbee Basin

Native ground-water quality in the Naco-Bisbee Basin is a calcium-bicarbonate type. In areas not impacted by infiltration from mine irrigation, wastewater treatment or septic tank facilities, the TDS of the ground water ranges from 230 to 360 mg/l (Litton, 1987).

Shallow ground water in the area beneath and to the southwest of the former Phelps Dodge Warren Ranch irrigation field has elevated TDS and sulfate. Elevated levels of these constituents appear to be confined to the upper 80 feet of the basin-fill aquifer. Below 430 feet below ground surface (bgs), TDS and sulfate are near background levels (SGC, 1997). Nitrate exceeding the MCL has been detected in several monitoring wells. The source of nitrates is reported to be old feedlots associated with a railroad stockyard (Mansfield, 1997).

Arizona Water Company and Naco Water Company wells are either outside the area of poor quality water or are screened in deeper aquifers (SGC, 1997).

The hydrogeology and water quality of the Naco-Bisbee Basin area suggests that groundwater in this basin area has not been otherwise impacted to date by long-term pumping by the mining operations in the Warren Mining District.

4.0 WATER SUPPLY POTENTIAL

This section of the report discusses the potential availability and quality of ground water from the CQM and its potential impact on flow in the San Pedro River.

4.1 WATER AVAILABILITY FROM THE COPPER QUEEN MINE

As discussed in Section 3.5.1.3, ground water in the Warren Mining District is largely confined to the Paleozoic limestones that are the host rocks to the underground mines, including the CQM. The area of the limestone aquifer is generally bounded by the Quarry and Black Gap Faults on the west and east, and by the Dividend and Abrigo Faults on the north and south, respectively.

Ground water in storage within the CQM area includes water in the underground workings and in the limestone rock mass. Estimates of the storage volume of underground workings using digitized mine maps indicates a volume of about 6.2 billion gallons (WMC, 2000). The amount of available water stored in the limestone rock mass is dependent on the assumed specific yield. Published specific yields for limestone range from 0.5 to 5 percent (Walton, 1970). The range is bounded by the degree of solutioning and fracturing of the rock mass. The limestones in the Bisbee area are moderately to intensely fractured. Additionally, significant areas of the rock mass have been mined and backfilled ("gobbed") with waste rock (SGC, 1997). WMC (2000) calculated an average porosity (rock mass and underground workings) of 6 percent. Specific yield is generally less than porosity. For purposes of estimating the amount of ground water in storage specific yield values of 2 and 5 percent were assumed.

At a specific yield of 2 percent, the available water in storage in the CQM (bounded by the Quarry, Black Gap, Dividend and Bisbee West faults), excluding the mine workings, is 74 billion gallons. A specific yield of 5 percent gives a water volume of 180 billion gallons. Adding the mine workings gives a range of 80 to 186 billion gallons of water in storage in the CQM. The average withdrawal rate required to remove all the available water stored in the limestone and in the underground workings in 25 years is calculated to be between 6,000 and 14,000 gpm.

The 80-year history of pumping from the underground workings provides the best indication of the long-term yield of the limestone aquifer within the CQM area. Figure 4, shows that water production increased from 1907 until 1942 as the mines were expanded and deepened. After 1942, water production declined even though the workings were being deepened and expanded until 1961. This indicates that ground water was moving across the various faults bounding the mine area but not at a sufficient rate to maintain a constant pumping rate. As the rock mass was dewatered, the pumping rate decreased. In

1976, the mine workings were all open and the monthly average pumpage for the year was 3,270 gpm, of which approximately 695 gpm was recirculated leach water, as reported in the Monthly Manager's Reports for the period (SGC, 1997). Excluding an event such as the 1978 hurricane and associated flooding, long-term ground-water production from the CQM appears to be approximately 2,500 gpm (4,000 ac-ft/yr).

Initially, almost all the pumped water will come from storage. However, as the water level in the limestone rock mass declines, ground water will move across the faults bounding the CQM in response to the head difference created by pumping. Over time, pumped water will be a combination of stored water within the mine area and ground water from the surrounding area.

To estimate the change in pumping rate over time as the underground workings and rock mass are dewatered, a simplified 2-dimensional model was constructed using MODFLOW. The area modeled is bounded by the Quarry and Black Gap Faults on the west and east and by the Dividend and Bisbee West Faults on the north and south, respectively. The Bisbee West Fault on the south, rather than the more distant Abrigo Fault, was selected to provide a degree of conservatism to the model results. Two specific yield assumptions were run: 2 percent and 5 percent. A transmissivity of 6,000 gpd/ft was assumed for the limestone rock mass, including the underground workings.

The model simulated pumping from one (Denn) and two (Denn and Campbell) of the existing shafts. Pumping was initiated at 8,000 gpm; the rate was then reduced, if necessary, to maintain the drawdown at approximately 2,300 feet (the difference between the estimated pre-mining water elevation and the elevation (1,960 ft msl) of the 3100 level in the Campbell Shaft) over a 25-year period. The model was calibrated by maintaining a steady state inflow of 2,500 gpm at 2,300 feet of drawdown. Results are summarized in Table 6.

Table 6, Estimated 25-Year Pumpage from Shafts, in GPM

Pumping Period (yrs)	Campbell and Denn (S_y 0.02)	Denn (S_y 0.02)	Campbell and Denn (S_y 0.05)	Denn (S_y 0.05)
1-4	8,000	6,500	8,000	8,000
5-10	7,000	5,000	8,000	7,000
11-15	5,500	4,000	8,000	6,000
16-20	3,500	3,000	8,000	5,000
21-25	3,500	2,500	8,000	4,500

This analysis indicates that there is a benefit of distributing the pumping over the mine area to reduce the concentration of drawdown at one shaft. It also shows the effect of assumptions about specific yield on the rate of decline in pumpage over time.

4.2 WATER QUALITY IN THE COPPER QUEEN MINE AREA

As noted in Section 3.6.1, water quality varies within the CQM area. Water from the Junction shaft (1990) and C&C shaft (1996) is a mix of water from throughout the underground workings. This water is somewhat acidic, with an average pH of 6.1. TDS and sulfate are approximately 8,000 mg/l and 5,500 mg/l in the Junction Shaft. TDS are approximately 1,080 mg/l to 1,500 mg/l in the C&C Shaft (sulfate data are not available). Water quality is reported to be poorer in the western part of the district but better on the east and south (see Section 3.6.1).

Over time, pumping from any of the existing shafts will likely draw water from throughout the underground mine workings and water quality can be expected to be a blend of ground water from the District. For purposes of this study it is assumed that the average water quality will approximate the quality of water sampled from the CQM's Junction Shaft.

4.3 IMPACTS OF CQM WATER WITHDRAWALS ON OTHER WATER USES

The Copper Queen Mine is located on the edge of the San Pedro River Valley, as shown on Figure 3. Theoretical impacts of pumping ground water from the CQM include the lowering of water levels in nearby water supply wells and the reduction in tributary ground-water availability to the aquifers potentially supporting perennial flow in the San Pedro River. These theoretical impacts are discussed in more detail below.

4.3.1 – Water Supply Wells

After 80 years of mine dewatering, the lowering of water levels in the CQM area is confined to an area of about 11 square miles, as shown on Figure 2. Faults bounding the principal limestone aquifer are generally barriers to ground-water movement and the area of influence (drawdown) due to pumpage from the CQM.

A maximum of five registered, non-Phelps Dodge water supply wells are located within the potential area of influence of pumpage from the CQM (see Section 3.5.1.4). Of these, only one well (Paulovich) may tap the limestone aquifer, the other wells appear to produce from perched aquifers overlying the limestone aquifer. The Paulovich well was drilled in 1982 while the mine was still being dewatered, indicating that its production would not likely be impacted by future pumpage.

4.3.2 Upper San Pedro River Flow

Perennial reaches of the San Pedro River start south of Hereford, Arizona approximately 12 miles west of the CQM (Figure 3). Base flow in the San Pedro River is maintained by ground-water discharge from the regional basin-fill aquifer and Holocene alluvium (Pool, 1999). As discussed above, (and in Section 3.6.1) water pumped from CQM area is from Paleozoic limestones that are bounded by low permeability faults. Furthermore, area hydrogeologic data suggest that long-term pumping from the CQM area has not impacted basin-fill aquifers in the Naco-Bisbee Basin area of the Upper San Pedro Basin.

Water level drawdown due to pumpage at the CQM is limited to the area north of the Abrigo fault, as shown on Figure 2. Thus, pumpage from the CQM will have no direct effect on water levels in the regional aquifer or Holocene alluvium supplying base flow to the San Pedro River.

Given the fact that ground-water levels are generally higher in the CQM area than adjacent to the San Pedro River it could be argued that water "captured" within the area of mine dewatering is water that would ultimately flow into the regional aquifer. Under this scenario, water would theoretically move from the CQM area through the Naco-Bisbee Basin to the regional aquifer in the Sierra Vista subwatershed of the Upper Verde River and then discharge to the San Pedro River near Hereford. Given the geology of the Warren Mining District and the CQM area, any water movement into the Naco-Bisbee Basin would be impeded by low permeability faults separating the limestone aquifer beneath the CQM from the basin-fill aquifer in the Naco-Bisbee Basin. In addition, the potential area of "capture" of approximately 22 mi^2 is less than 1.5 percent of the total area of the Sierra Vista subwatershed.

Based on the foregoing, pumpage of 2,500 gpm (4,000 ac-ft/yr) from the CQM will have no measurable effect on base flow in the San Pedro River.

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ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001- 0458
FOR INFORMATION: CALL MONICA ORTIZ AT (602)417-2470

MAY - 6 2005

REQUEST FORM TO CHANGE WELL INFORMATION
OWNERSHIP * DRILLER

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-045. In accordance with A.R.S. § 45-113, please submit the applicable fee. NOTE: A.R.S. §45-593 (C) requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty

Pioneer Title Agency, Inc.
P.O. BOX 1900
Sierra Vista, AZ 85636

NATIONAL BANK OF ARIZONA
1160 E. Fry Blvd.
Sierra Vista, Arizona 85635
91-532/1221

NO. 681319

FILE NUMBER	DATE	AMOUNT
00911065 - 006 DB	05/03/05	$10.00

PAY TEN DOLLARS and no/100

TO THE ORDER OF ARIZONA DEPARTMENT OF WATER
P.O. BOX 458
PHOENIX, AZ 85001

ANSWERED MAY 0 8 2005

ESCROW ACCOUNT

[redacted]

2. **STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)**

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, LEE R. ENGLUND AND ROSE T. ENGLUND, state that I am the **Previous/New Owner** of the well described below:

____¼ ____¼ ____¼ of Section____ Township____N/S Range____E/W
10 Acre 40 Acre 160 Acre

Assessor's tax parcel number of the parcel on which the well is located: Book____ Map____ Parcel____.

Well Registration No. 55-565260

File No. D124-24 (if known)

LEO DAY
PRINT Previous Owner's Name

LEE R. ENGLUND AND ROSE T. ENGLUND
PRINT New Owner's Name

P10 BOX 4174
Mailing Address

616 N. 56TH AVE W.
Mailing Address

BISBEE AZ 85603
City State Zip

DULUTH, MN 55807-1325
City State Zip

Telephone Number

Telephone Number

Signature of Previous/New Well Owner Lee R Englund Date 4/28/05
Rose T. Englund 4/29/05

DWR 55-71a (Rev 1/99)

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001- 0458
FOR INFORMATION: CALL MONICA ORTIZ AT (602)417-2470

MAY - 6 2005

REQUEST FORM TO CHANGE WELL INFORMATION
OWNERSHIP * DRILLER

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-045. In accordance with A.R.S. § 45-113, please submit the applicable fee. NOTE: A.R.S. §45-593 (C) requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. **CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)**

NOTE: If the location of the proposed well changes after drilling authority has been issued, **attach a $10.00 reissue fee for each** of the drilling authorities to be changed. D(24-24)5 DAB

WELL REGISTRATION NO. 55- 565260 **FILE NO:** D124-24

I/We request the following well information be changed: _____

_____

Date _____ Signature of Current Well Owner _____

***Note: This information is on your copy of the Notice of Intent to Drill.**

2. **STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)**

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, LEE R. ENGLUND AND ROSE T. ENGLUND, state that I am the **Previous/New Owner** of the well described below:

_____¼ _____¼ _____¼ of Section _____ Township _____ N/S Range _____ E/W
10 Acre 40 Acre 160 Acre

Assessor's tax parcel number of the parcel on which the well is located: Book _____ Map _____ Parcel _____.

Well Registration No. 55- 565260 File No. D124-24 (if known)

LEO DAY
PRINT Previous Owner's Name

PO# BOX 4174
Mailing Address

BISBEE AZ 85603
City State Zip

Telephone Number

LEE R. ENGLUND AND ROSE T. ENGLUND
PRINT New Owner's Name

616 N. 56TH AVE W.
Mailing Address

DULUTH, MN 55807-1325
City State Zip

Telephone Number

Signature of Previous/New Well Owner Lee R Englund Date 4/28/05
Rose T. Englund 4/29/05

DWR 55-71a (Rev 1/99)

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

RECEIVED
FEB 29 2000
RECORDS MGT

1. JS & K DRILLING INC
501 PATTON STREET
HUACHUCA CITY, AZ 85616

2. Owner Name: LEO DAY
Address: BISBEE (City) AZ (State) 85603 (Zip)

3. Location: 24 N/S 24 E/W 5 (Section) ¼ NW (10-acre) ¼ NE (40-acre) ¼ SE (160-acre)
(Township) (Range)

4. Well Registration No. 55- 565260 (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 320 ft.
7. Type of casing PVC
8. Diameter and length of casing 6 in. from 0 to 20, 4½ in from 0 to 320
9. Method of sealing at reduction points —
10. Perforated from 260 to 320, from — to _____ from _____ to _____
11. Size of cuts ⅛ Number of cuts per foot 2
12. If screen was installed: Length — ft. Diam _____ in. Type _____
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started DEC (Month) 12 (Day) 97 (Year)
15. Date completed DEC (Month) 16 (Day) 97 (Year)
16. Depth to water 250 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
STATIC
18. If flowing well, state method of flow regulation: —
19. Remarks: —

DWR-55-55-7/95 (Rev.)

ANSWERED MAR 2 2000

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-565260
File No. D(24-24)5 DAB
Received _____ By _____
Entered _____ By _____

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	3	CLEACHIE & GRAVEL
3	40	GRAVEL & CLAY
40	320	CONGLOMERATE

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: [signature]

501 PATTON ST
Street

H.C. AR 85616 856-2353
City State Zip Phone No.

[signature] Dec 20, 97
Signature of Driller Date

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street - Phoenix, Arizona 85004-3903
Phone (602) 417-2470

RECEIVED
OCT 16 1997
GROUNDWATER MGT

NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL
PLEASE READ SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS ON REVERSE SIDE OF THIS FORM BEFORE COMPLETING

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES.

LEO DAY | Box 4174 | BISBEE | AZ | 85603-4174
Land Owner's Name | Current Mailing Address | City | State | Zip

Telephone No. 432-9127

COUNTY ASSESSOR'S PARCEL ID INFORMATION:

Well Located In COCHISE County

102 | 39 | 150E | 1.02
BOOK | MAP | PARCEL | # of Acres

Well/Land Location (must be completed as requested):

NW ¼ NE ¼ SE ¼ of Section 5 Township 24 N/S Range 24 E/W
10AC 40AC 160AC

OFFICIAL SEAL OR STAMP

C.C.H.S.
1415 W. Melody Lane, Bldg. A
Bisbee, Arizona 85603-3090

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

Check one:
Recommend Approval ✓; Insufficient Information to Make Determination ___; Variance Required ___ (Explanation attached)

DATE 10-10-97 AUTHORIZED SIGNATURE Donald Maier TITLE DIR. Environmental Health

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH ADWR

1. Section §45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section §45-596(d) provides that the Department has 15 days after the receipt of a complete and correct notice of intention to record the notice and mail duplicate to owner. Drill card will be mailed directly to drilling firm as stated in item #14.
3. Please mail two original notices with original signatures, a site plan in DUPLICATE, and a check or money order (no cash) in the amount of $10.00 to P.O. Box 458, Phoenix, Arizona 85001-0458 or hand deliver to 500 North Third Street, Phoenix, Arizona 85004-3903. USE BLACK OR BLUE INK.
4. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
5. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. Owner of well:
LEO DAY
Name
4174 PO Box
Current Mailing Address
BISBEE AZ 85603
City State Zip
Telephone No. 432-9127

2. Action requested: Drill New Well X; Deepen ___ Modify ___ Replace ___.
For a replacement well provide: Maximum capacity of the original well ___ gallons per minute; distance from the original well ___ feet.
Well Registration No.55-___

3. Construction will start about:
Month Dec Year 97

4. Description of proposed well:
Diameter 4½ inches
Depth 250 feet
Type of Casing PVC

5. Design pump capacity:
10 gallons per minute

6. Lessee of land of wellsite:
Name
Current Mailing Address
City State Zip
Telephone No.

7. Principal Use of Water; (be specific):
DOMESTIC

8. Other uses of Water; (be specific):

9. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated;

FOR DEPARTMENT USE ONLY
File No. D(24-24)5AAB
Filed 10-16-97 By
Input NOV 12 By 1997
DUPLICATE MAILED
Date 10-31-97
Registration 55-565260
AMA/INA
W/S S/B

10. Place of Use (Legal Description of Land):
NW ¼ NE ¼ SE ¼ Section 5
10 AC 40AC 160AC
Township 24 N/S Range 24 E/W

11. Type of Well (Check One):
Exempt X Non-Exempt ___

12. Check One:
Residential X Commercial ___

13. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous materials or petroleum storage areas and tanks? Yes ___ No X

14. Drilling Firm:
J S & K DRILLING, INC.
Name
501 PATTON ST.
Mailing Address
HUACHUCA CITY AZ 85616
City State Zip
456-2355
Telephone No.
565
DWR License Number
C-53
ROC License Category

I State that this Notice is filed in compliance with A.R.S. §§45-595 and 45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations and conditions set forth on the reverse side of this form.

Leo E Day | LEO DAY | Oct 1,97
Typed or Printed Name and Title | Signature [ ] Land Owner [ ] Lessee of Wellsite, Title | Date

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Pursuant to Section §45-596, Arizona Revised Statutes, provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department.

2. If any water from a proposed well on a parcel of land of twenty or fewer acres will be used for domestic purposes, as defined in §45-454, the applicant shall submit a site plan to scale of the property with the county assessor's parcel identification number. The site plan:

   a. Will be on a 8½"x11" piece of plain paper with representation of the locations of all structures, septic tank or sewer systems and proximity of adjacent lot lines to scale.

   b. Must show the proposed well location and the location of any septic or sewer system that is either located on the property or within one hundred feet of the proposed well site.

   c. Shall demonstrate to the Director's satisfaction that the well will not be drilled within one hundred feet of any septic or sewer system.

   d. Must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Before approval, the health authority shall review the plan and determine whether the proposed well location complies with applicable state and local laws regarding the placement of wells. If so, the health authority shall endorse the site plan and the proposed well placement.

3. Endorsement by the county/local authority is based on the best available judgement that this well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. Information brought to light at a future date may render this determination invalid.

4. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use and is later proposed to be converted to use for domestic purposes, as defined in section §45-454, the well owner shall file a notice of intention to drill and comply with the requirements prescribed pursuant to this section before the well is converted and any water from that well used for domestic purposes.

5. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

6. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an Irrigation Non-Expansion Area or Active Management Area to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

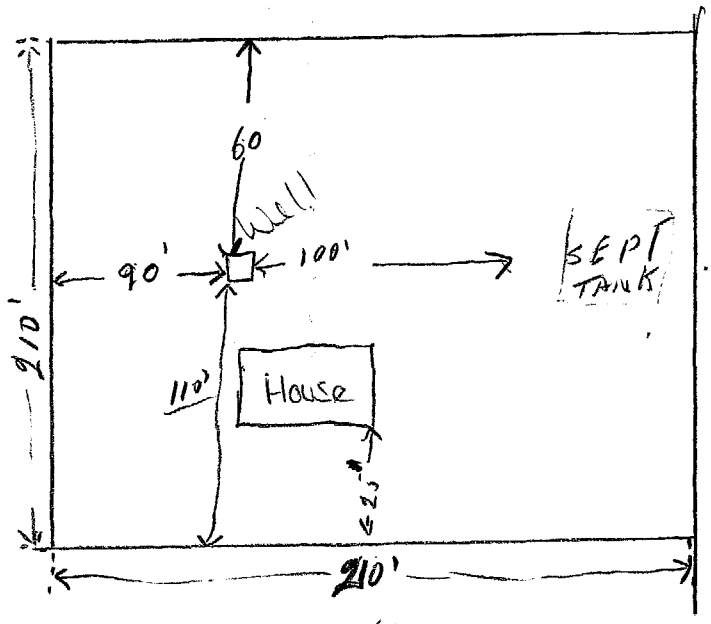
7. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of the notice (§45-596.E.).

8. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this notice.

9. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

10. If an individual other than the land owner or lessee signs this Notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific Notice on their behalf, shall accompany the Notice.

RECEIVED
OCT 16 1997
GROUNDWATER MGT



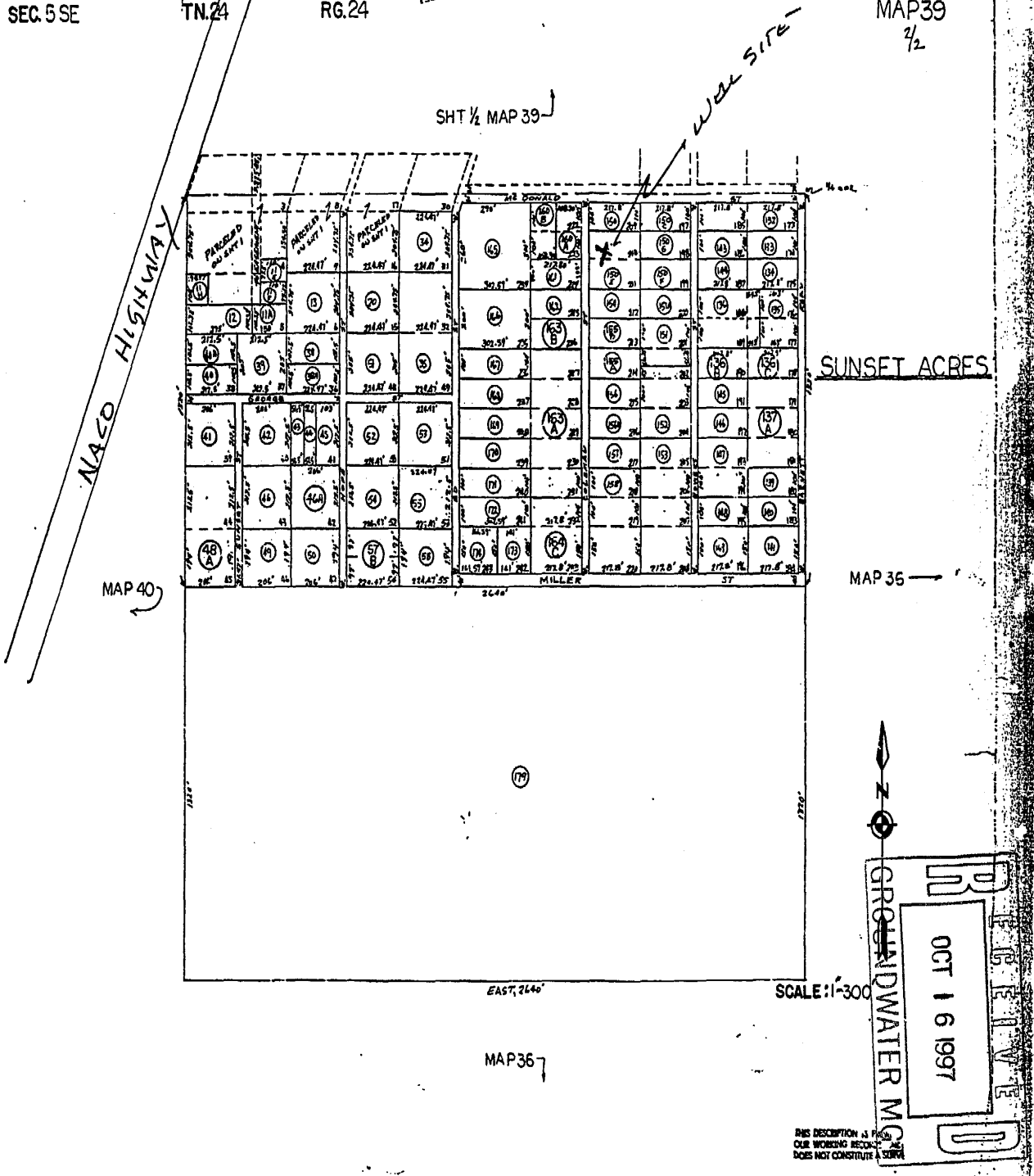
LEO DAY
2331 COLEMAN AZ
PHONE 432-9127

Small well
$3500.00

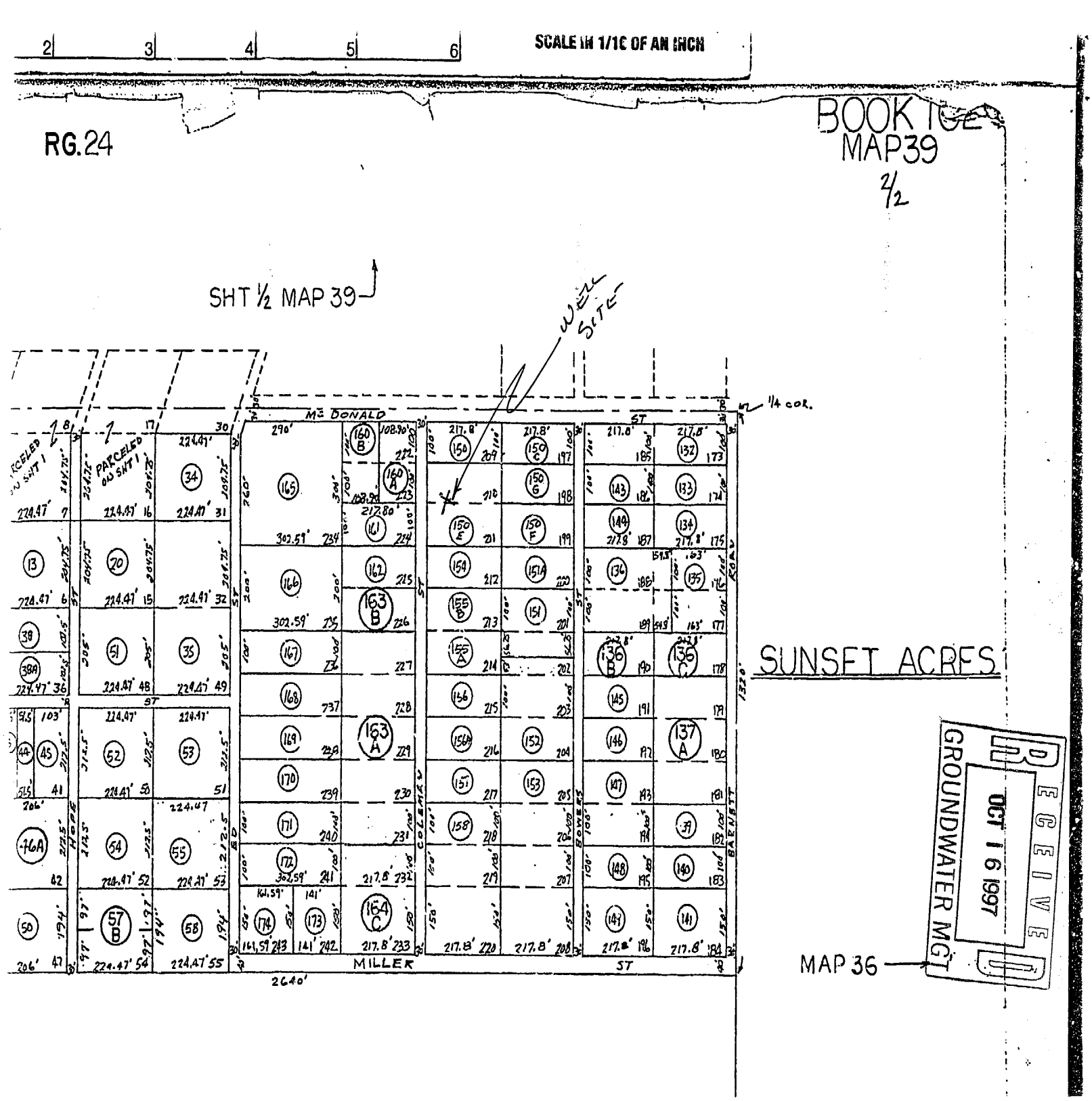
1-800-345-7334

SEC. 5 SE TN. 24 RG. 24

BOOK 102
MAP 39
2/2



COUNTY ASSESSOR'S MAP


SCALE IN 1/10 OF AN INCH
RG.24
BOOK 102
MAP39
2/2
SHT ½ MAP 39
WELL SITE
McDONALD ST
1/4 COR.
SUNSET ACRES
MILLER ST
2640'
MAP 36
RECEIVED
OCT 16 1997
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

JANE DEE HULL
Governor

RITA P. PEARSON
Director

November 4, 1997

LEO DAY
P O BOX 4174
BISBEE, AZ 85603

Registration No. 55-565260
File No. D(24-24)5 DAB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill/deepen/modify/replace a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Toni Bergeman

Toni M Bergeman
Water Resource Technician
Groundwater Management Support Section

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-565260

AUTHORIZED DRILLER: JS & K DRILLING INC **LICENSE NO:** 565

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: LEO DAY P O BOX 4174 BISBEE, AZ 85603

The well(s) is/are to be located in the:

NW 1/4 of the NE 1/4 of the SE 1/4 Section 5 Township 24 SOUTH Range 24 EAST

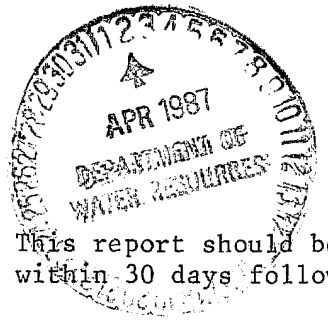
No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 15TH DAY OF OCTOBER, 1998.

FOR: CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

TB



STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner _____
Name
_____
Mailing Address

2. Driller _____
Name
_____
Mailing Address

3. Location of well: _____

4. Permit No. _____
(if issued)

DESCRIPTION OF WELL

5. Total depth of hole 220 ft.
6. Type of casing Steel
7. Diameter and length of casing 8 in. from 0 to 20, — in from _____ to _____.
8. Method of sealing at reduction points Grout
9. Perforated from — to —, from _____ to _____, from _____ to _____.
10. Size of cuts 1/8 Number of cuts per foot one
11. If screen was installed: Length — ft Diam _____ in. Type _____
12. Method of construction _____
(drilled, dug, driven, bored, jetted, etc.)
13. Date started 1 (Month) 20 (Day) 87 (Year)
14. Date completed 1 (Month) 20 (Day) 87 (Year)
15. Depth to water None ft. (If flowing well, so state.)
16. Describe point from which depth measurements were made, and give sea-level elevation if available L. F.
17. If flowing well, state method of flow regulation: _____
18. Remarks: Sealed off w/ 1½ yds Cement down approx 80' depth back to surface.

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55-516399
Received _____ By _____
Entered ENTERED APR 08 1987 By _____
File No. D(23-24)31 cad

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	2	Top
2	32'	Sandy clay
32'	220'	Granite

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Lees Well Drilling
Name

Box 4558 H.C. Ariz
Address

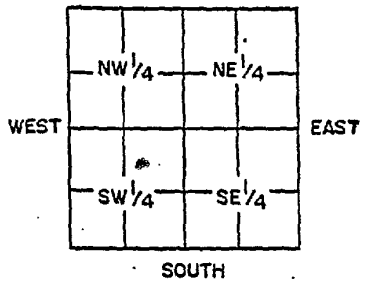
85616
City State Zip

Date 4-21-87

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL OR DEEPEN A WELL
OUTSIDE OF AN ACTIVE MANAGEMENT AREA

Section 45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management, a person may not drill or cause to be drilled any well or deepen an existing well without first filing a Notice of Intention to Drill with the Department.



INDICATE WELL LOCATION BY X
(Above diagram represents one 640 acre section.)

WELL/LAND LOCATION:

1. Township 23-S N/S
2. Range 24-E E/W
3. Section 31
4. SE ¼, NE ¼, SW ¼
   10 acre subdivision
5. County Cochise
6. Owner of well:
   Richard Ross
   Name
   1104 Hiway 92
   Mailing address
   Bisbee Ariz 85603
   City State Zip
   Telephone 432-5969
7. Owner of land:
   Name
   Same
   Mailing Address
   City State Zip

DESCRIPTION OF WELL:

8. Diameter 6 inches
   Depth 500 feet
9. Type of casing PVC & Steel
10. Design pump capacity:
    300 gallons per minute
11. Estimate of total annual pumping: — acre feet
12. Principal use of water:
    Domestic
    (Be Specific)
13. Other uses intended:
    Lawn & Trees
    (Be Specific)
14. If for irrigation, state the number of acres to be irrigated:
    — acres
15. Construction will start about:
    12 86
    Month Year

RECEIVED DEC 18 1986 WATER RESOURCES

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
FILE NO. D(23-24)31 cad
FILED 12-18-86 BY S.V.
INPUT ENTERED JAN 08 1987 BY
DUPLICATE MAILED 1-7-87 BY S.V.
REGISTRATION NO. 55-516399
INA
W/S 11 S/B

PLACE OF USE:

16. Township 23-S N/S
17. Range 24-E E/W
18. Section 31
19. Legal description of land
    SE NE SW
    Type well:
    — Exempt
    X Non-Exempt
    Action Requested:
    Drill X Deepen — Replace —
    55- —
22. This notice filed by:
    Owner X
    Lessee —
    Name
    Same
    Address
    City State Zip
    Telephone
23. Drilling Firm:
    Lee's Well Drilling
    Name
    Box 4555
    Address
    H.C. Ariz 85611
    City State Zip
    49979 T 80
    DWR License Number

24. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials: Yes — No X

GENERAL INSTRUCTIONS

1. Fill out this form in duplicate and send to 99 East Virginia, Suite 100, Phoenix, Az. 85004.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen or replace a well outside of an Active Management Area.
4. If the well is a replacement or deepening of an existing well, state the registration number of the existing well in Item 21.
5. Construction standards for new and replacement wells and the deepening and abandonment of existing wells shall be in accordance with Department Rules and Regulations.

I state that this Notice is filed in compliance with ARS §45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well set forth on the reverse side of this form.

DATE 12-16-86 Signature of Person Filing Richard Ross

DWR-55-41-8/86 (Revised)

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Upon receipt of the return of this annotated Notice, the owner is authorized to proceed in drilling or deepening the well as set forth on this Notice.

2. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

3. Only one exempt well may be drilled or used to serve the same use at the same location.

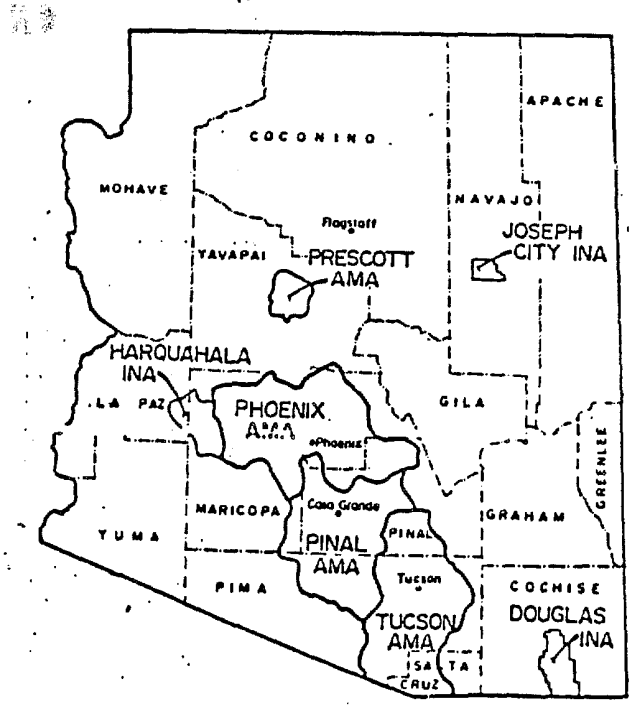
4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 2 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to ARS §45-434 or §45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of ARS §45-437.

5. The drilling or deepening of this well shall be completed within one (1) year of the date of this Notice.

6. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

7. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of the annotated copy of this Notice.

8. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.



RICHARD ROSS
1104 Highway 92
Bisbee, Az. 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55-5	16398
	THRU
55-5	16399

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEE FOR NOTICE OF INTENT TO DRILL	10.00	20.00
					2 NON-EXEMPT WELLS OUTSIDE OF AMA		
					REG. NO. 55-516398 D(23-24)31 cab		
					55-516399 D(23-24)31 cad		
					CHECK NO. 0916 1-7-87 sv		

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
JAN 1987
PAID

TOTAL $ 20.00

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division
15 South 15th Avenue
Phoenix, Arizona 85007

CHANGE OF WELL INFORMATION

1989

Well Reg. No.

File (location) No.

I/We request the following well information be changed:

Date: _____, 19____ _____
Signature of current Well Owner

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, DAVID and TRUDY CONNOR, state that I am ~~(no longer)~~ the (new)
(please print)
owner of the well described below:

Township 23 Range 24 Section 31; ____¼ ____¼ ____¼

Well Registration No. 55-516399 File (location) No. D 23 24 31 CAD

RICHARD ROSS
Previous Owner

1104 HWY 92
Address

BISBEE AZ 85603
City State Zip

DATED: 11-28-89

DAVID AND TRUDY CONNOR
PRINT New Owner's Name

Trudy Connor
Signature of New Owner

5561 E. FINISTERRA DR.
Address

TUCSON AZ 85715
City State Zip

NOTE: A.R.S. §45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER, PRIOR TO DRILLING THE WELL, IN ADDITION TO AMENDING INFORMATION PREVIOUSLY FILED.

* * * * *

ENTERED DEC 14 1989

DWR-55-71-7/88

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004





REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 623564
FILE NO. D(24-24)5 aaa
FILED 3-22-82 (DATE) AT 1115A (TIME)
INA -
AMA -

1. Name of Registrant:
William G. Gianetto - Joan Gianetto
P.O. Box 4517 (Address) Bisbee (City) Arizona (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
240240005AAAGS1 (File Number) 35- 822973 (Control Number)

3. a. The well is located within the NE ¼ NE ¼ NE ¼, Section 05, of Township 24 S N/S, Range 24 E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Sunset Acres, Lot No. 14, Address Cochise County, Az.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation - domestic.

5. If for irrigation use, number of acres irrigated from well 4 acres.

6. Owner of land on which well is located. If same as Item 1, check this box ☒

(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 325 feet
b. Diameter of casing 6 inches
c. Depth of casing 325 feet
d. Type of casing P.V.C. Plastic.
e. Maximum pump capacity 30 gallons per minute.
f. Depth to water 254 feet below land surface.
g. Date well completed 12 (Month) 20 (Day) 1979 (Year)

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 3/18/82 SIGNATURE OF REGISTRANT William G. Gianetto

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

ARIZONA DEPARTMENT OF WATER RESOURCES

mailed 6/10/98

GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470 Fax (602) 417-2422

RECEIVED
JUN 16 1998
RECORDS MGT

REQUEST FORM TO CHANGE WELL INFORMATION
OWNERSHIP * DRILLER * VARIANCE

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, ARizona 85001-0458 or hand deliver to the above address with applicable fee. NOTE: A.R.S. §45-593.C requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. **CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)**

NOTE: If the location of the proposed well changes after drilling authority has been issued, **attach a $10.00 reissue fee for each well.**

WELL REGISTRATION NO. 55-_____ **FILE NO:**_____

If known, I/We request the following well information be changed:_____

_____

_____

Date_____ **Signature of Current Well Owner**_____

2. **STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)**

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, SANDRA JEAN, state that I am the **Previous/New Owner** of the well described below:

_____¼ _____¼ _____¼ of Section 5 Township 24 S. Range 24 E.
10 Acre 40 Acre 160 Acre

Well Registration No. 55- 623564 File No. _____ (if known)

ANSWERED

W. G. GRANETTO	DON OR THERESA LAEDING
PRINT Previous Owner's Name	**PRINT** New Owner's Name
(CORRECT SPELLING) GIANETTO	P.O. BOX 4006
Mailing Address	Mailing Address
P.O. BOX 4083	BISBEE AZ 85603
City BISBEE AZ State 85603 Zip	City State Zip
(520)432-3952	(520)432-5432
Telephone Number	Telephone Number

Signature of Previous/New Well Owner Sandra Jean **Date** 6-10-98
daughter of W.G. Gianetto (deceased)

DWR 55-71 (Rev 4/96)

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470 Fax (602) 417-2422

3. REQUEST TO CHANGE WELL DRILLER $10.00 FEE REQUIRED FOR EACH WELL

This request must be received by this Department and the Drill Card issued to the new drilling firm prior to the drilling or completion of any well.

Well Registration No. 55-_____ File No._____

Original Well Driller	**New Well Driller**
Mailing Address	**Mailing Address**
Telephone Number	**Telephone Number**
ADWR License Number	**ADWR License Number**
R.O.C. License Category	**R.O.C. License Category**
Typed or Printed Name of Well Owner	**Signature of Well Owner** **Date**

The fee charge for well ownership and reissue of drill card is authorized by R12-15-151, effective June 30, 1994.

4. REISSUE OF DRILLING AUTHORITY FOR VARIANCE REQUEST: ($10.00 EACH WELL)

NOTE: If extraordinary or unusual conditions exist, after the initial drilling authority has been issued, the well owner or well driller may request a variance from the provisions of R12-15-811.

WELL REGISTRATION NO. 55-_____ FILE NO:_____

I/WE REQUEST THE FOLLOWING WELL DRILLING AUTHORITY BE REISSUED PER THE ATTACHED VARIANCE REQUEST:

_____

Signature of Well Owner/Well Driller_____ Date_____

WILLIAM G GIANETTO
P O BOX 4517
BISBEE AZ 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	623564
55	THRU

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	10.00	10.00
					Existing Wells		
					File No. D(24-24)5aaa		

WAITER PAYMENT
GUESTS 1
CHK NO 948
55-I 10.00
TAX 0.00
TOTL 10.00
GEN.CHEK 10.00

4632 A 14:05

Check # 948

TOTAL $ 10.00

11/23/82/ek

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001- 0458
FOR INFORMATION: CALL MONICA ORTIZ AT (602)417-2470

RECEIVED
JUL 10 2001
RECORDS MGT

REQUEST FORM TO CHANGE WELL INFORMATION OWNERSHIP * DRILLER

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-045. In accordance with A.R.S. § 45-113, please submit the applicable fee. NOTE: A.R.S. §45-593 (C) requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. **CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)**

NOTE: If the location of the proposed well changes after drilling authority has been issued, **attach a $10.00 reissue fee for each** of the drilling authorities to be changed.

RECEIVED
JUL 26 2001
RECORDS MGT

WELL REGISTRATION NO. 55- 637069 **FILE NO:** _____

I/We request the following well information be changed: _____

_____

Date _____ Signature of Current Well Owner _____

***Note: This information is on your copy of the Notice of Intent to Drill.**

2. **STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)**

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, LEONARD HUTSON, state that I am the **Previous/New Owner** of the well described below:

n2 ¼ nw ¼ nw ¼ of Section 17 Township 24 N(S) Range 24 (E)W
10 Acre 40 Acre 160 Acre

Assessor's tax parcel number of the parcel on which the well is located: Book 102-[illegible] Map 53 Parcel 009-7

Well Registration No. 55- 637069 File No. _____ (if known)

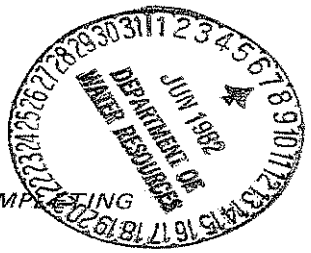
CAROLYN B. OLMSTEAD	LEONARD W. HUTSON
PRINT Previous Owner's Name	**PRINT** New Owner's Name
107 HAZZARD STREET	1497 W. PURDY LANE
Mailing Address	Mailing Address
BISBEE, AZ 85603	BISBEE, AZ 85603
City State Zip	City State Zip
Telephone Number	Telephone Number

Signature of Previous/New Well Owner _____ **Date** 07/03/01

DWR 55-71a (Rev 1/99)

ANSWERED AUG - 6 2001

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55-637069
FILE NO. D(24-24)17bbb
FILED 6-7-82 (DATE) AT 11 (TIME)
INA
AMA

1. Name of Registrant:
BAKER L. OLMSTEAD SR.
BOX 600 R.T. I PURDY LANE (Address) BISBEE (City) ARIZONA (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the NE¼NW¼ NW¼ NW¼, Section 17 24-24 SAC of Township 24-SOUTH N/S, Range 24-EAST E/W, G & SRB & M, in the County of COCHISE.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC.

5. If for irrigation use, number of acres irrigated from well 1.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 220 feet
b. Diameter of casing 6 in inches
c. Depth of casing 220 feet
d. Type of casing STEEL.
e. Maximum pump capacity 35 gpm gallons per minute.
f. Depth to water 166 ft feet below land surface.
g. Date well completed 7 (Month) - 29 (Day) - 66 (Year)

8. The place(s) of use of water. If same as Item 3, check this box ☒.
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
Attach additional sheet if necessary.

9. DATE 6-3-82 SIGNATURE OF REGISTRANT Baker L. Olmstead Sr.

MICROFILMED

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
PO Box 458
Phoenix, Arizona 85001-0458
Telephone (602) 417-2405
Fax (602) 417-2421

RECEIVED
JUL 26 2001
RECORDS MGT

July 18, 2001

Your Change of Ownership request cannot be processed due to one or more of the following reasons:

O A $10.00 fee is required.

O Returned for same name change: only one $10.00 fee is required.

X **All originals are being returned.**

O We are currently showing this Well canceled due to no drill log.

O Please provide me with a name, mailing address and information on new owners.

O Previous Owners Name does not correspond with our records. Please provide me with other previous owners names.

X Further information is necessary please provide legal land description and registration number (n²nwnw 17-24S-24E 637069). If assistance is needed please contact records mgmt section. ***(Please provide me with a Township, Range, Section and quarter/quarter/quarter.)***

O ADWR does not regulate shared wells. A copy of the form will be filed in folder and a refund will be processed.

If we cannot complete the request, a refund check will be sent to you.

PLEASE RETURN ALL COPIES WITH REQUESTED INFORMATION

ANSWERED AUG - 6 2001

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001- 0458
FOR INFORMATION: CALL MONICA ORTIZ AT (602)417-2470

RECEIVED
JUL 10 2001
RECORDS MGT

REQUEST FORM TO CHANGE WELL INFORMATION
OWNERSHIP * DRILLER

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-045. In accordance with A.R.S. § 45-113, please submit the applicable fee. NOTE: A.R.S. §45-593 (C) requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty

FOR SECURITY PURPOSES, THE FACE OF THIS DOCUMENT CONTAINS A COLORED BACKGROUND AND MICROPRINTING IN THE BORDER

Pioneer Title Agency, Inc.
P.O. BOX 1900
Sierra Vista, AZ 85636

BANK OF AMERICA, ARIZONA
Commercial Banking Unit #9155
Phoenix, Arizona 85003
91-170/1221

NO. 007171

FILE NUMBER	DATE	AMOUNT
00908601-906:DB	07/09/01	$10.00

PAY TEN DOLLARS and no/100

TO THE ORDER OF ARIZONA DEPARTMENT OF WATER RESOURCES
P.O. BOX 458
PHOENIX, AZ 85001-0458

ESCROW ACCOUNT

THE REVERSE SIDE OF THIS DOCUMENT INCLUDES AN ARTIFICIAL WATERMARK - HOLD AT ANGLE TO VIEW

2. **STATEMENT OF CHANGE OF WELL OWNERSHIP**

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, LEONARD HUTSON, state that I am the **Previous/New Owner** of the well described below:

____ ¼ ____ ¼ ____ ¼ of Section ____ Township ____ N/S Range ____ E/W
10 Acre 40 Acre 160 Acre

Assessor's tax parcel number of the parcel on which the well is located: Book 102 Map 53 Parcel 009-7

Well Registration No. 55-____ File No. ____ (if known)

RECEIVED
JUL 26 2001
RECORDS MGT

CAROLYN B. OLMSTEAD	LEONARD W. HUTSON
PRINT Previous Owner's Name	**PRINT** New Owner's Name
107 HAZZARD STREET	1497 W. PURDY LANE
Mailing Address	Mailing Address
BISBEE, AZ 85603	BISBEE, AZ 85603
City State Zip	City State Zip
Telephone Number	Telephone Number

Signature of Previous/New Well Owner ____ **Date** 07/23/01

DWR 55-71a (Rev 1/99)

ANSWERED AUG - 6 2001

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED
JUL 16 1982
DEPT OF
WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

12

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 651116L
FILE NO. D(24-24)18 cdd
FILED 7-16-82 (DATE) AT 11a (TIME)
INA —
AMA —

1. Name of Registrant:
Barbara Ann Cota
215 1st Street Naco Az 85620
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
Don't Know (File Number) 35- (Control Number)

3. a. The well is located within the ____ ¼ SE ¼ SW ¼, Section 18, of Township 24 N/S, Range 24 E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Naco, Lot No. 517 519 521 523 BLK 7, Address 215 1st St Naco Az. 85620.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic.

5. If for irrigation use, number of acres irrigated from well ____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒

(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 160 feet
b. Diameter of casing 4" inches
c. Depth of casing 150 feet
d. Type of casing N/A .
e. Maximum pump capacity 30 gallons per minute.
f. Depth to water 140 feet below land surface.
g. Date well completed (Month) NA (Day) (Year). Well is at least 20 years old - Do not have this information

8. The place(s) of use of water. If same as Item 3, check this box ☒
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 7-14-82 SIGNATURE OF REGISTRANT Barbara Ann Cota

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

STATE OF ARIZONA MAY 1985 DEPARTMENT OF WATER RESOURCES

DEPARTMENT OF
WATER RESOURCES

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Jack Yates
Name
101 Ocotillo Bisbee AZ 85603
Address

2. Lessee or Operator ✓
Name
Address

3. Driller J. R. SHARP GENERAL CONTRACTORS BOX 4520 322 NACO HWY. BISBEE, ARIZ. 85603 432-4597
Name
Address

4. Location of well: SW SE NE S32 T23S R24E

5. Permit No. _____
(if issued)

DESCRIPTION OF WELL

6. Total depth of hole 788 ft.
7. Type of Casing P.E. steel
8. Diameter and length of casing 6 in. from 0 to 22, open ~~in~~ from 22 to 788.
9. Method of sealing at reduction points _____
10. Perforated from 0 to _____, from _____ to _____, from _____ to _____
11. Size of cuts None Number of cuts per foot _____
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction _____
(drilled), dug, driven, bored, jetted, etc.
14. Date started 4-11-85 (Month-day-year)
15. Date completed 4-19-85 (Month-day-year)
16. Depth to water dry ft. (If flowing well, so state.)
17. Describe point from which depth measurements were made, and give sea-level elevation if available.: Top of casing
18. If flowing well, state method of flow regulation _____
19. REMARKS: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55-510298
Received _____ By _____
Entered 5-16-85 By _____
File No. D(23-24)32adc

(Well log to appear on Reverse side)

DWR-55-6-5/83

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	22	Soil with caliche layers.
22	782	Red conglomerate grading from soft to very hard at depth.

I hereby certify that this well was drilled by me (or under my supervison), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller J. R. Sharp
Name

J. R. SHARP GENERAL CONTRACTORS
BOX 4520 322 NACO HWY.
BISBEE, ARIZ. 85603 432-4597

J. R. SHARP GENERAL CONTRACTORS
BOX 4520 322 NACO HWY.
BISBEE, ARIZ. 85603 432-4597

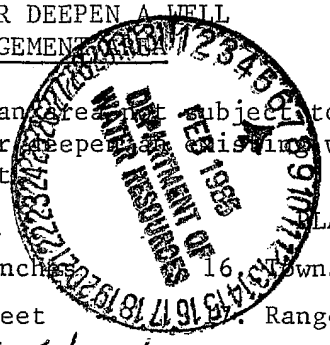
Address

City State Zip

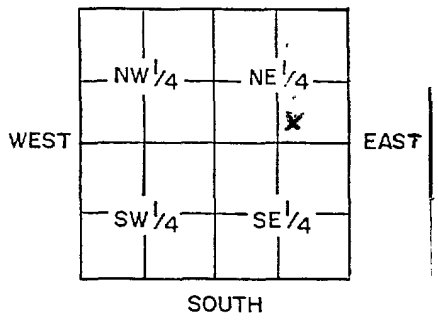
Date 4-24-85

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL OR DEEPEN A WELL
OUTSIDE OF AN ACTIVE MANAGEMENT AREA



Section 45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management, a person may not drill or cause to be drilled any well or deepen an existing well without first filing a Notice of Intention to Drill with the Department.



INDICATE WELL LOCATION BY X
(Above diagram represents one 640 acre section)

WELL/LAND LOCATION:

1. Township 23S
2. Range 24E
3. Section 32
4. SW ¼, SE ¼, NE ¼
   10 acre subdivision
5. County Cochise
6. Owner of well:
   Jack Yates
   Name
   101 Ocotillo
   Address
   Bisbee, AZ 85603
   City State Zip
   Telephone 432-3648
7. Owner of land:
   Same.
   Name
   Address
   City State Zip

DESCRIPTION OF WELL:

8. Diameter 6 inches
   Depth 500 feet
9. Type of casing P.E. Steel
10. Design pump capacity:
    35 gallons per minute
11. Estimate of total annual pumping: 1 acre feet
12. Principal use of water:
    Domestic
    (Be Specific)
13. Other uses intended:
    Lawn & Garden
    (Be Specific)
14. If for irrigation, state the number of acres to be irrigated:
    _____ acres
15. Construction will start about:
    May 1985
    Month Year

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

FILE NO. D(23-24)32 ADC
FILED 2-7-85 BY SB
INPUT 2-19-85 BY SO
DUPLICATE MAILED 2-15-85 BY SB
REGISTRATION NO. 55-510298
INA —
W/S 11 S/B _____

PLACE OF USE:

16. Township 23S
    Range 24E
18. Section 32
19. Legal description of land SW SE NE
20. Type well:
    ✓ Exempt
    ___ Non-Exempt
21. Action Requested:
    Drill ___ Deepen ✓ Replace ___
    55- _____
22. This notice filed by:
    Owner ✓
    Lessee ___
    See #6
    Name
    Address
    City State Zip
    Telephone _____
23. Driller's Name:
    J.R. Sharp Gen. Contrs.
    Name
    P.O. Box 4520
    Address
    Bisbee, AZ 85603
    City State Zip
    155 27262
    DWR License Number

GENERAL INSTRUCTIONS

1. Fill out this form in duplicate and send to 99 East Virginia, Suite 100, Phoenix, Az. 85004.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen or replace a well outside of an Active Management Area
4. If the well is a replacement or deepening of an existing well, state the registration number of the existing well in Item 21.
5. Construction standards for new and replacement wells and the deepening and abandonment of existing wells shall be in accordance with Department Rules and Regulations.

I state that this Notice is filed in compliance with ARS §45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well set forth on the reverse side of this form.

DATE 2-5-85 Signature of Person Filing Jack Yates

DWR-55-41-10/83

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Upon receipt of the return of this annotated Notice, the owner is authorized to proceed in drilling or deepening the well as set forth on this Notice.

2. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

3. Only one exempt well may be drilled or used to serve the same use at the same location.

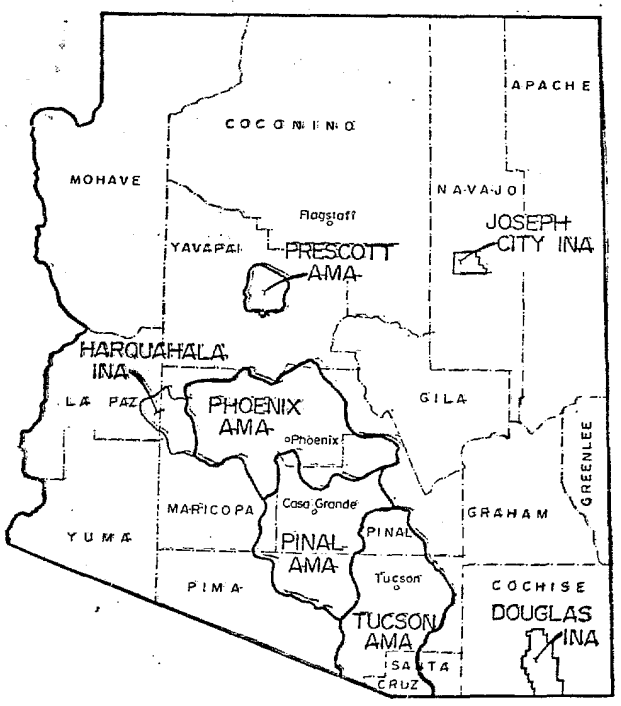
4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 2 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to ARS §45-434 or §45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of ARS §45-437.

5. The drilling or deepening of this well shall be completed within one (1) year of the date of this Notice.

6. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

7. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of the annotated copy of this Notice.

8. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.



STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

J R SHARP GENERAL CONTRACTORS
BOX 4520
BISBEE AZ 85603

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	510298
	THRU

YATES

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEE FOR NOTICE OF INTENTION TO		10.00
					DRILL A WELL	WATER	PAYMENT
						GUESTS	1
						CHK NO	10156
					FILE#D(23-24)32adc REG#55-510298	55-I	10.00
						TAX	0.00
						TOTL	10.00
						GEN.CHEK	10.00
						# 6666 A	14:19

CHECK#10156
2-15-85 jb

TOTAL $ 10.00

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001- 0458
FOR INFORMATION: CALL MONICA ORTIZ AT 602-417-2470

RECEIVED
JUL 27 2004
Information Management

REQUEST FORM TO CHANGE WELL INFORMATION
OWNERSHIP * DRILLER

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-045. In accordance with A.R.S. § 45-113, please submit the applicable fee. NOTE: A.R.S. §45-593 (C) requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

D(24-24)10DC

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)

NOTE: If the location of the proposed well changes after drilling authority has been issued, attach a $10.00 reissue fee for each of the drilling authorities to be changed.

WELL REGISTRATION NO. 55-_____ FILE NO:_____

I/We request the following well information be changed: _____

ANSWERED JUL 27 2004

_____

Date_____ Signature of Current Well Owner_____

*Note: This information is on your copy of the Notice of Intent to Drill.

2. STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, John S. Dodson, state that I am the Previous/(New Owner) of the well described below:

_____¼ _____¼ _____¼ of Section 10 Township 24 (N)S Range 24 (E)W
10 Acre 40 Acre 160 Acre

Assessor's tax parcel number of the parcel on which the well is located: Book_____ Map_____ Parcel_____.

Well Registration No. 55-644927 File No._____(if known)

JOSEPH & BEVERLY JACKSON
PRINT Previous Owner's Name

1254 W. SUNRISE STREET
Mailing Address

BISBEE AZ 85603
City State Zip

Telephone Number

JOHN & JENNIFER DODSON
PRINT New Owner's Name

253 PURDY LANE
Mailing Address

BISBEE AZ 85603
City State Zip

Telephone Number

Signature of Previous/New Well Owner _____ Date 7/21/04

DWR 55-71a (Rev 1/99)

Pioneer Title Agency, Inc.

ARIZONA DEPARTMENT OF WATER RESOURCES
P.O. BOX 458
PHOENIX, AZ 85001

Escrow No. 00910546-DB
Date: July 23, 2004
Re: JACKSON/DODSON
253 PURDY LANE
BISBEE, AZ 85603

In connection with the above escrow, we enclose the following papers indicated with a ☑

- ☑ Check For Transfer Fee
- ☑ Statement of Change of Well Ownership

Thank you for the opportunity to serve you in this transaction.

Very truly yours,
Pioneer Title Agency, Inc.

Candace Morales

Candace Morales
Escrow Secretary

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001- 0458
FOR INFORMATION: CALL MONICA ORTIZ AT 602-417-2470

RECEIVED
JUL 27 2004
Information Management

REQUEST FORM TO CHANGE WELL INFORMATION
OWNERSHIP * DRILLER

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D(24-24)10DC

Pioneer Title Agency, Inc.
P.O. BOX 1900
Sierra Vista, AZ 85636

NATIONAL BANK OF ARIZONA
1160 E. Fry Blvd.
Sierra Vista, Arizona 85635
91-532/1221

NO. 668120

FILE NUMBER	DATE	AMOUNT
00910546 - 006 DB	07/23/04	$10.00

PAY TEN DOLLARS and no/100

TO THE ORDER OF ARIZONA DEPARTMENT OF WATER RESOURCES
P.O. BOX 458
PHOENIX, AZ 85001

ESCROW ACCOUNT

[redacted]

[redacted]

Details on back. Security Features Included

2. STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, John S. Dodson, state that I am the Previous/(New Owner) of the well described below:

____¼ ____¼ ____¼ of Section 10 Township 24 N(S) Range 24 (E)W
10 Acre 40 Acre 160 Acre

Assessor's tax parcel number of the parcel on which the well is located: Book____ Map____ Parcel____.

Well Registration No. 55-644927 File No.____(if known)

JOSEPH & BEVERLY JACKSON
PRINT Previous Owner's Name

1254 W. SUNRISE STREET
Mailing Address

BISBEE AZ 85603
City State Zip

Telephone Number

JOHN & JENNIFER DODSON
PRINT New Owner's Name

253 PURDY LANE
Mailing Address

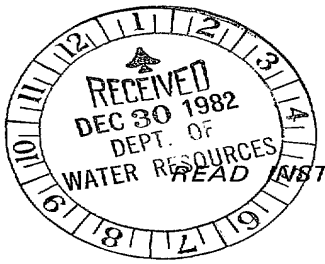
BISBEE AZ 85603
City State Zip

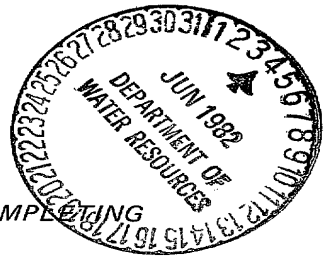
Telephone Number

Signature of Previous/New Well Owner John S Dodson Date 7/21/04

DWR 55-71a (Rev 1/99)

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004





REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55-644927
FILE NO. DC 24.2410 dc
FILED 6-4-82 (DATE) AT 315P (TIME)
INA —
AMA —

1. Name of Registrant:
Dan A. Thomas & Ruth M. Thomas

Rt 1 310 Purdy Lane (Address) | Bisbee, Az. (City) | Az. (State) | 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
005975 6/10/80 (File Number) 35- (Control Number) N/A

3. a. The well is located within the ____ ¼ SW ¼ SE ¼, Section ~~Tax Assessor~~ 10, of Township ~~N/A~~ 24 South N/S, Range 24 East E/W, G & SRB & M, in the County of Cochise.
In SW SE of Sec 10 & in Nw NE of Sec 15 by M&B from notice of valuation Cochise County

b. If in a subdivision: Name of subdivision N/A, Lot No. ____, Address ____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic & Yard Irrigation.

5. If for irrigation use, number of acres irrigated from well ¼ Ac.

6. Owner of land on which well is located. If same as Item 1, check this box ☒

(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well Two Hundred feet
b. Diameter of casing Six Inch inches
c. Depth of casing Two Hundred feet
d. Type of casing Steel .
e. Maximum pump capacity 15 (Fifteen) gallons per minute.
f. Depth to water 96 (ninety Six feet) feet below land surface.
g. Date well completed Oct (Month) N/a (Day) 1959 (Year) best of my knowledge.

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE June 2, 1982 SIGNATURE OF REGISTRANT Dan A. Thomas
Ruth M. Thomas

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

SEP - 4 2003

FILE NUMBER: D(24-24) 12 BCB
WELL REGISTRATION NUMBER: 55- 592791
PERMIT NUMBER (IF ISSUED):

- Review instructions prior to completing form
- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: JAMES P DOUGLASS
MAILING ADDRESS: 1649 DRIFTWOOD CIR
CITY / STATE / ZIP: SIERRA VISTA, AZ 85635
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-940-0694
FAX:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24 S	24 E	12	1/4	1/4	1/4

LATITUDE: ° . "N
LONGITUDE: ° . "W
LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level
METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☐ Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ GPS : ☐ Survey-Grade
COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 104 | MAP 39 | PARCEL 004E
COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME: DRIVER DRILLING COMPANY
DWR LICENSE NUMBER: 177
TELEPHONE NUMBER: 520-459-3496
FAX:

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED: 9-20-02
DATE WELL CONSTRUCTION COMPLETED: 9-21-02
IF FLOWING WELL, METHOD OF FLOW REGULATION: ☐ Valve ☐ Other

Drill Method

CHECK ONE
- [X] Air Rotary
- [ ] Bored or Augered
- [ ] Cable Tool
- [ ] Dual Rotary
- [ ] Mud Rotary
- [ ] Reverse Circulation
- [ ] Driven
- [ ] Jetted
- [ ] Air Percussion / Odex Tubing
- [ ] Other (please specify)

Method of Well Development

CHECK ONE
- [X] Airlift
- [ ] Bail
- [ ] Surge Back
- [ ] Surge Pump
- [ ] Other (please specify)

Method of Sealing at Reduction Points

CHECK ONE
- [X] None
- [ ] Packed
- [ ] Swedged
- [ ] Welded
- [ ] Other (please specify)

Water Level Information

STATIC WATER LEVEL: 110 Feet Below Land Surface
DATE MEASURED: 9-21-02

ANSWERED SEP 8 2003

DWR-55-55-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 592791

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Borehole			Installed Casing															
DEPTH FROM SURFACE		BOREHOLE DIAMETER (inches)	DEPTH FROM SURFACE		OUTER DIAMETER (inches)	MATERIAL TYPE (X)				PERFORATION TYPE (X)						SLOT SIZE IF ANY (inches)
FROM (feet)	TO (feet)		FROM (feet)	TO (feet)		STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	
0	20	12 1/4	0	20	8.5	X				X						
0	200	8"	+1	200	5.5		X							X		

Installed Annular Material												
DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)								FILTER PACK		
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	20		X									

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
200	Feet Below Land Surface	200	Feet Below Land Surface

DWR-55-55B-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 592791

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	4	overburden	
4	200	clay conglomerate	X

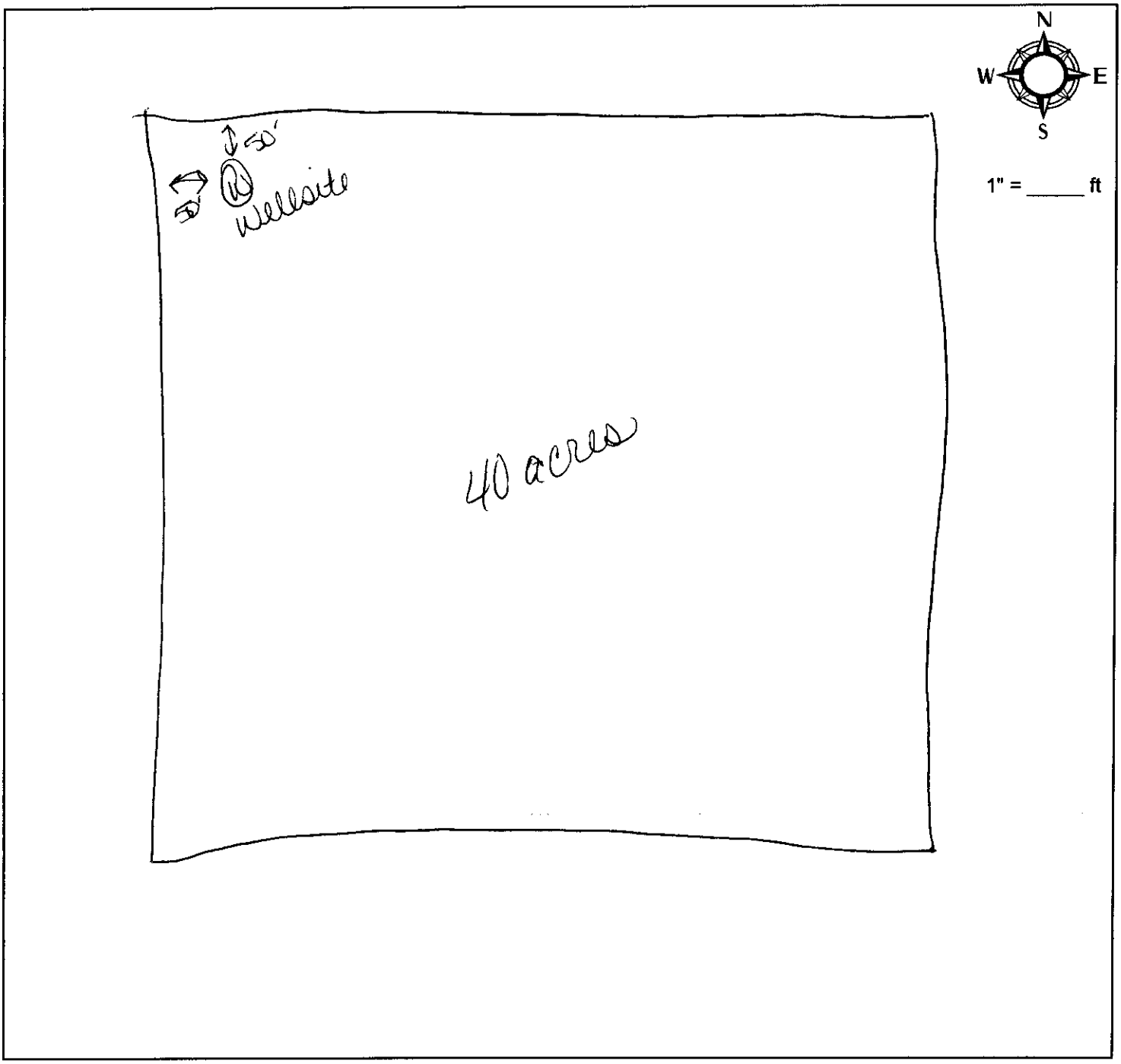
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 592791

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER BOOK	MAP	PARCEL
JAMES P DOUGLASS	104	39	004E

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
Drews Drilling Inc.		9-24-03

DWR-55-55 (Rev. 10/11/01)

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-592791

AUTHORIZED DRILLER: DRIVER DRILLING COMPANY LICENSE NO: 177

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: JAMES P DOUGLASS 1649 DRIFTWOOD CIR SIERRA VISTA, AZ 85635

The well(s) is/are to be located in the:

NW ¼ of the SW ¼ of the NW ¼ Section 12 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 30TH DAY OF MAY, 2003

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

RECEIVED
MAY 3 1 2002
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ 602-417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. James Douglass (LANDOWNER'S NAME) 1649 Driftwood (CURRENT MAILING ADDRESS) S.V. (CITY) Az (STATE) 85635 (ZIP)

B. TELEPHONE NO. 520-940-0694 COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN Cochise COUNTY D. 101 (BOOK) - 39 (MAP) - 004E (PARCEL) E. 40 (# OF ACRES) OFFICIAL SEAL OR STAMP

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NW¼ (10AC) SW¼ (40AC) NW¼ (160AC) OF SECTION 12 TOWNSHIP 24 N/S RANGE 24 E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL _____; INSUFFICIENT INFORMATION TO MAKE A DETERMINATION _____; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE _____ AUTHORIZED SIGNATURE _____ TITLE _____

1. OWNER OF WELL:
James Douglass
NAME
1649 Driftwood
CURRENT MAILING ADDRESS
Sierra Vista, Az, 85635
CITY STATE ZIP

TELEPHONE NUMBER 520 940 0694

2. ACTION REQUESTED:
DRILL NEW WELL X DEEPEN _____
MODIFY _____ REPLACE _____

WELL REGISTRATION NO 55-_____

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL _____ GALLONS PER MINUTE;

DISTANCE FROM THE ORIGINAL WELL: _____ FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH April (June/JPD) YEAR 02

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: Steel
DIAMETER: 6 " DEPTH: 20 '

DOWNHOLE CASING: PVC
DIAMETER: 4 " DEPTH: 200 '

5. DESIGN PUMP CAPACITY:
20± GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
N/A
NAME
CURRENT MAILING ADDRESS
CITY STATE ZIP

TELEPHONE: _____ - _____

7. PRINCIPAL USE OF WATER: (BE SPECIFIC)
Domestic

8. OTHER USES OF WATER: (BE SPECIFIC).
None

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55-592791
DATE FILED 5-31-02
FILE NO. D(24-24)12 BCB
AMA/INA _____
W/S 13 S/B _____
PROCESSED BY MO
DATE MAILED 6-3-02

9. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NW¼ (10AC) SW¼ (40AC) NW¼ (160AC) SECTION 12
TWNSHP 24 N/S RNG 24 E/W

10. TYPE OF WELL (CHECK ONE):
EXEMPT X NON-EXEMPT _____

11. CHECK ONE:
RESIDENTIAL X STOCKWATER _____
OTHER _____

12. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES _____ NO X

13. DRILLING FIRM:
Driver Drilling
NAME
Box 4345
MAILING ADDRESS
Huachuca City Az 85616
CITY STATE ZIP
520 4593466
TELEPHONE NO.
177
DWR LICENSE NUMBER
L53 / C53
ROC LICENSE CATEGORY

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

James P. Douglass — 14. TYPE OR PRINT NAME AND TITLE
James P. Douglass — 15. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE
3-20-02 — 16. DATE

DWR 55-40 (REV 9/99)

APPLICATION GUIDELINES

In accordance with Arizona Revised Statutes ("A.R.S.") §§ 41-1008 and 1079, the Department of Water Resources (Department) provides the following information regarding the application review process for authority to drill.

NECESSARY STEPS & INSTRUCTIONS TO OBTAIN DRILLING AUTHORITY

1. Pursuant to A.R.S. § 45-596, a person may not drill, cause to be drilled, deepen or modify any well for which a permit is not required without first filing a Notice of Intent to Drill with the Department. Only a well drilling contractor licensed in the State of Arizona or a single well licensee (a person licensed to drill or modify one exempt well on his or her own property) is authorized to drill, deepen or modify a well. Drilling may not begin until the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, and which authorizes the drilling of the specific well in a specific location. To assist you in understanding the requirements for this application, copies of A.R.S. § 45-596 and Arizona Administrative Code ("A.A.C.") R12-15-810 are available at the Department bookstore (602-417-2450 x7127).
2. If replacing, deepening, or modifying an existing well, provide the registration number of the existing well in item 2. A replacement well is one located no more than 660 feet from the original well and that is not expected to annually withdraw more groundwater than historically withdrawn from the original well.
3. Information to complete items 3, 4, 5 and 13 may be available from your driller.
4. Information to complete items 9 and 12 may be available from your County Assessor's Office.
5. For item 10, in an Active Management Area, A.R.S § 45-454 only allows non-irrigation uses for "exempt" wells. If the proposed use includes the growing of 2 or more acres of plants for sale or human/animal consumption (irrigation use), the well does not qualify as an exempt well.
6. An exempt well, referred to in Item 10, means a well with a pump with a maximum capacity of not more than thirty-five gallons per minute and used for non-irrigation purposes.
7. For item 11, in an Active Management Area, A.R.S §45-454 allow up to 56 acre feet per year of pumping from a domestic (residential) or stock watering exempt well, and up to 10 acre ft per year from an exempt well used for other (usually commercial non-irrigation) purposes.
8. If any water from a proposed well on a parcel of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant must submit a well site plan of the property. The plan must be on an 8½" x 11" piece of plain paper with representation of the locations of all structures and proximity of adjacent lot lines, to scale. It must include the county assessor's parcel identification number. The plan must show the proposed well location and the location of any septic tank or sewer system that is either located on the property or within one hundred feet of the proposed well site, as well as indicating the measured shortest distance between the proposed well and existing septic tank system. **The plan must demonstrate that the well will not be drilled within one hundred feet of any septic or sewer system.**
9. The site plan must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Endorsement by the county/local authority is based solely on the best available judgement that the proposed well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. In areas where there is no local or county authority that controls installation of septic tanks or sewer systems, or if the health authority is unable to determine whether the proposed well location complies with state and local requirements, the applicant must apply for approval directly to the Department of Water Resources.
10. If an individual other than the land owner or lessee signs this notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific notice on his or her behalf, must accompany the notice.
11. Please mail **two original Notices** with **original signatures** and **two site plans** and, in accordance with A.R.S. § 45-113, a **check or money order (no cash) in the amount of $10.00** to P. O. Box 458, Phoenix Arizona, 85001-0458, or hand deliver to 500 North Third Street, Phoenix, Arizona.
12. Arizona Revised Statute § 45-596(D) provides that the Director of the Department is to determine whether or not all information required on this form has been submitted. If not, the person filing the Notice will be notified, and the drilling or modification of the well may **not** proceed.
13. This form is not applicable for non-exempt wells (those yielding more than thirty-five gallons per minute) within an Active Management Area. Contact Groundwater Management for further information regarding the appropriate notice to file with the Department.

TIME FRAME FOR REVIEW OF YOUR APPLICATION

Within 15 days after receipt of your Notice of Intention the Arizona Department of Water Resources ("Department") will determine whether your application should be granted or denied, unless this time is extended for lack of a complete application. If your application is incomplete, the Department will notify you in writing and will specify what information is necessary to make the application complete. Until the missing information is received, the time frame for review of your application will be suspended. Your application will not be complete until all of the requested information is received. If you do not supply the missing information within sixty (60) days, the Department may deem your application withdrawn and close the file.

At the end of its review, the Department will send you a written notice either granting or denying your application for drilling authority. If your application is approved, the Drill Card will be mailed directly to the drilling contractor. If denied, the Department's notice will state justification for the denial and an explanation of your right to appeal.

CONSTRUCTION AND FOLLOW UP REQUIREMENTS

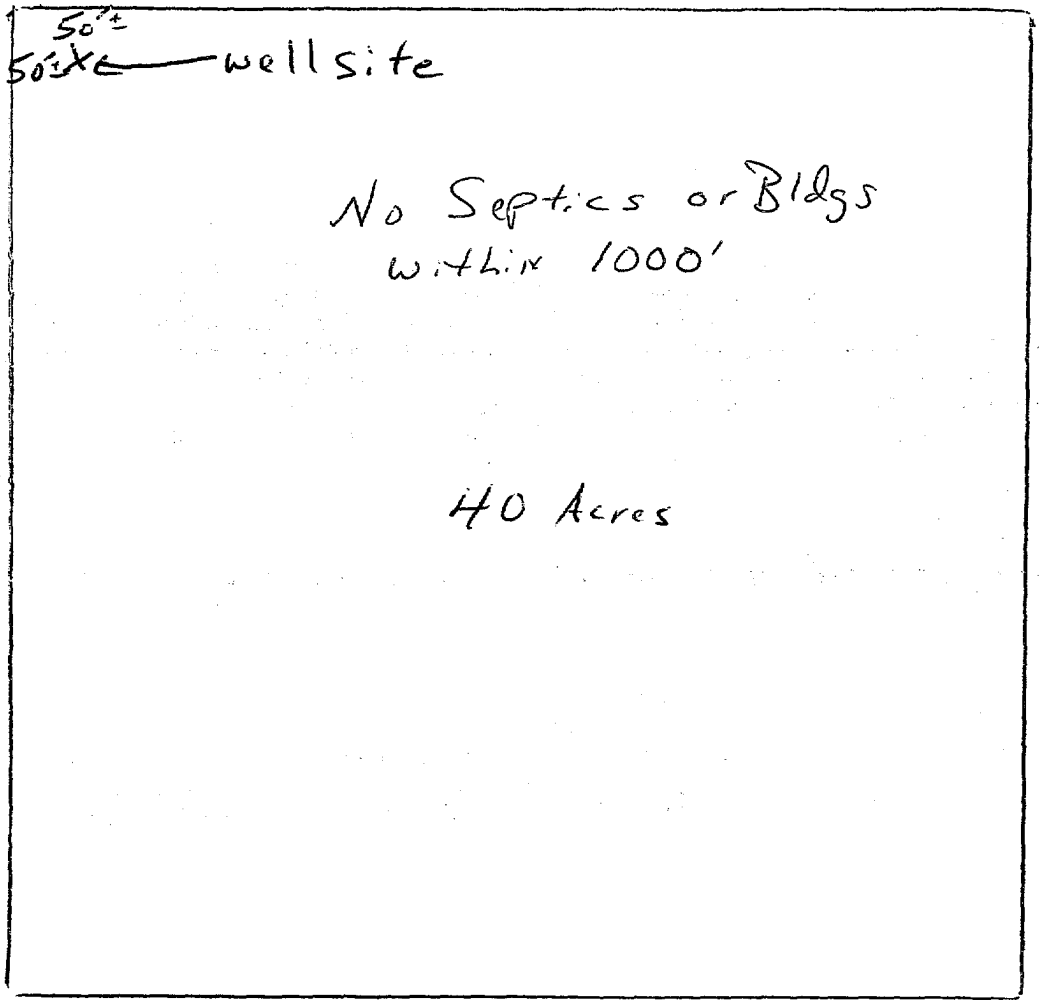
1. Construction and abandonment standards for wells, must be in accordance with Department Regulations. A.R.S. § 45-594 and Arizona Administrative Code R12-15-811 require the well to be constructed with a twenty foot steel surface seal casing, including a one foot steel stickup and one and one-half inches of grout seal around the casing from the surface to a depth of twenty feet, unless a variance is granted **(see A.R.S. § 45-596 (G) for procedure to follow in requesting a variance).**
2. Pursuant to § 45-596(E), the drilling, deepening or modification of the well must be completed within one year of the date of the Notice of Intent. If the well is not completed within one year, a new Notice of Intent must be filed before proceeding with further construction.
3. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use is later proposed to be converted to use for domestic purposes as defined in § 45-454, the well owner must file a Notice of Intention to Drill and comply with the requirements of § 45-596 before the well is converted and any water from that well is used for domestic purposes.
4. Within thirty days after installation of pumping equipment, the registered well owner must file a Completion Report with the Department. The person to whom a well is registered also must notify the Department of a change in ownership or a change in data relating to this well.

RECEIVED
MAY 31 2002
GROUNDWATER MGT

Douglass

101-39-0040E

NW SW NW Sec 12 T24S R24E
10 40 160



ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

June 03, 2002

JANE DEE HULL
Governor

JOSEPH C. SMITH
Director

JAMES P DOUGLASS
1649 DRIFTWOOD CIR
SIERRA VISTA, AZ 85635

Registration No. 55- 592791
File No. D(24-24) 12 BCB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Pump Installation Completion Report is to be submitted when pump equipment is installed. The drilling card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the drilling card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended drilling card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a Pump Installation Completion Report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate Well Drillers Report and Well Log within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Monica Ortiz
Water Resource Technician
Groundwater Management Support Section

Enclosures

RECEIVED
MAY 3 1 2002
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ 602-417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. James Douglass (LANDOWNER'S NAME) 1649 Driftwood (CURRENT MAILING ADDRESS) S.V. (CITY) Az (STATE) 85635 (ZIP)

B. TELEPHONE NO. 520-940-0694 COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN Cochise COUNTY D. 101 (BOOK) - 39 (MAP) - 004E (PARCEL) E. 40 (# OF ACRES)

OFFICIAL SEAL OR STAMP

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NW¼ (10AC) SW¼ (40AC) NW¼ (160AC) OF SECTION 12 TOWNSHIP 24 N/S RANGE 24 E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL _____; INSUFFICIENT INFORMATION TO MAKE A DETERMINATION _____; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE _____ AUTHORIZED SIGNATURE _____ TITLE _____

1. OWNER OF WELL:
James Douglass
NAME
1649 Driftwood
CURRENT MAILING ADDRESS
Sierra Vista, Az, 85635
CITY STATE ZIP
TELEPHONE NUMBER 520 940 0694

6. LESSEE OF LAND OF WELLSITE:
N/A
NAME
CURRENT MAILING ADDRESS
CITY STATE ZIP

9. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NW¼ (10AC) SW¼ (40AC) NW¼ (160AC) SECTION 12
TWNSHP 24 N/S RNG 24 E/W

10. TYPE OF WELL (CHECK ONE):
EXEMPT X NON-EXEMPT _____

11. CHECK ONE:
RESIDENTIAL X STOCKWATER _____
OTHER _____

12. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE TANKS?
YES _____ NO X

JAMES P. DOUGLASS
JENNIFER S. DOUGLASS
1649 DRIFTWOOD CIR. 520-459-1841
SIERRA VISTA, AZ 85635

91-2/1221 178
27764035
485

DATE 5-28-02

PAY TO THE ORDER OF Az. Dept. of Water Resources $ 20.00

Twenty and No/100 DOLLARS

Security Features Included. Details on Back.

BANK ONE
Bank One, NA
Phoenix, Arizona 85073
www.bankone.com
Preferred One

MEMO

MP

DRILLING FIRM: River Drilling
ADDRESS Box 4345
MAILING ADDRESS Tucson City Az 85616
CITY STATE ZIP
TELEPHONE NO. 520 4593466
DWR LICENSE NUMBER 177
ROC LICENSE CATEGORY L53 / C53

CASING: PVC
DIAMETER: 4 " DEPTH: 200 '

13. DESIGN PUMP CAPACITY:
20± GALLONS PER MINUTE

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

14. TYPE OR PRINT NAME AND TITLE: James P Douglass
15. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE: James P Douglass
16. DATE: 3-20-02

DWR 55-40 (REV 9/99)

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

SEP - 4 2003

FILE NUMBER: D(24-24) 11 DAB
WELL REGISTRATION NUMBER: 55- 592792
PERMIT NUMBER (IF ISSUED):

- Review instructions prior to completing form
- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: JAMES P DOUGLASS
MAILING ADDRESS: 1649 DRIFTWOOD CIR
CITY / STATE / ZIP: SIERRA VISTA, AZ 85635
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-940-0694
FAX:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24 S	24 E	11	NW 1/4	NE 1/4	SE 1/4

LATITUDE: ° . "N
LONGITUDE: ° . "W
LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level
METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☐ Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ GPS : ☐ Survey-Grade
COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 101 | MAP 39 | PARCEL 004C
COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME: DRIVER DRILLING COMPANY
DWR LICENSE NUMBER: 177
TELEPHONE NUMBER: 520-459-3496
FAX:

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED: 9-18-02
DATE WELL CONSTRUCTION COMPLETED: 9-19-03
IF FLOWING WELL, METHOD OF FLOW REGULATION: ☐ Valve ☐ Other

Drill Method

CHECK ONE
- [X] Air Rotary
- [ ] Bored or Augered
- [ ] Cable Tool
- [ ] Dual Rotary
- [ ] Mud Rotary
- [ ] Reverse Circulation
- [ ] Driven
- [ ] Jetted
- [ ] Air Percussion / Odex Tubing
- [ ] Other (please specify)

Method of Well Development

CHECK ONE
- [X] Airlift
- [ ] Bail
- [ ] Surge Back
- [ ] Surge Pump
- [ ] Other (please specify)

Method of Sealing at Reduction Points

CHECK ONE
- [X] None
- [ ] Packed
- [ ] Swedged
- [ ] Welded
- [ ] Other (please specify)

Water Level Information

STATIC WATER LEVEL: 110 Feet Below Land Surface
DATE MEASURED: 9-19-02

ANSWERED SEP 8 2003

DWR-55-55-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 592792

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Borehole			Installed Casing														
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (X)				PERFORATION TYPE (X)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	12¼	+1	20	8.5	X				X						
20	200	8"	0	200	5.5		X							X		

Installed Annular Material												
DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)								FILTER PACK		
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	20		X									

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
200	Feet Below Land Surface	200	Feet Below Land Surface

DWR-55-55B-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 592792

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	4	overburden	
4	200	clay conglomerate	X

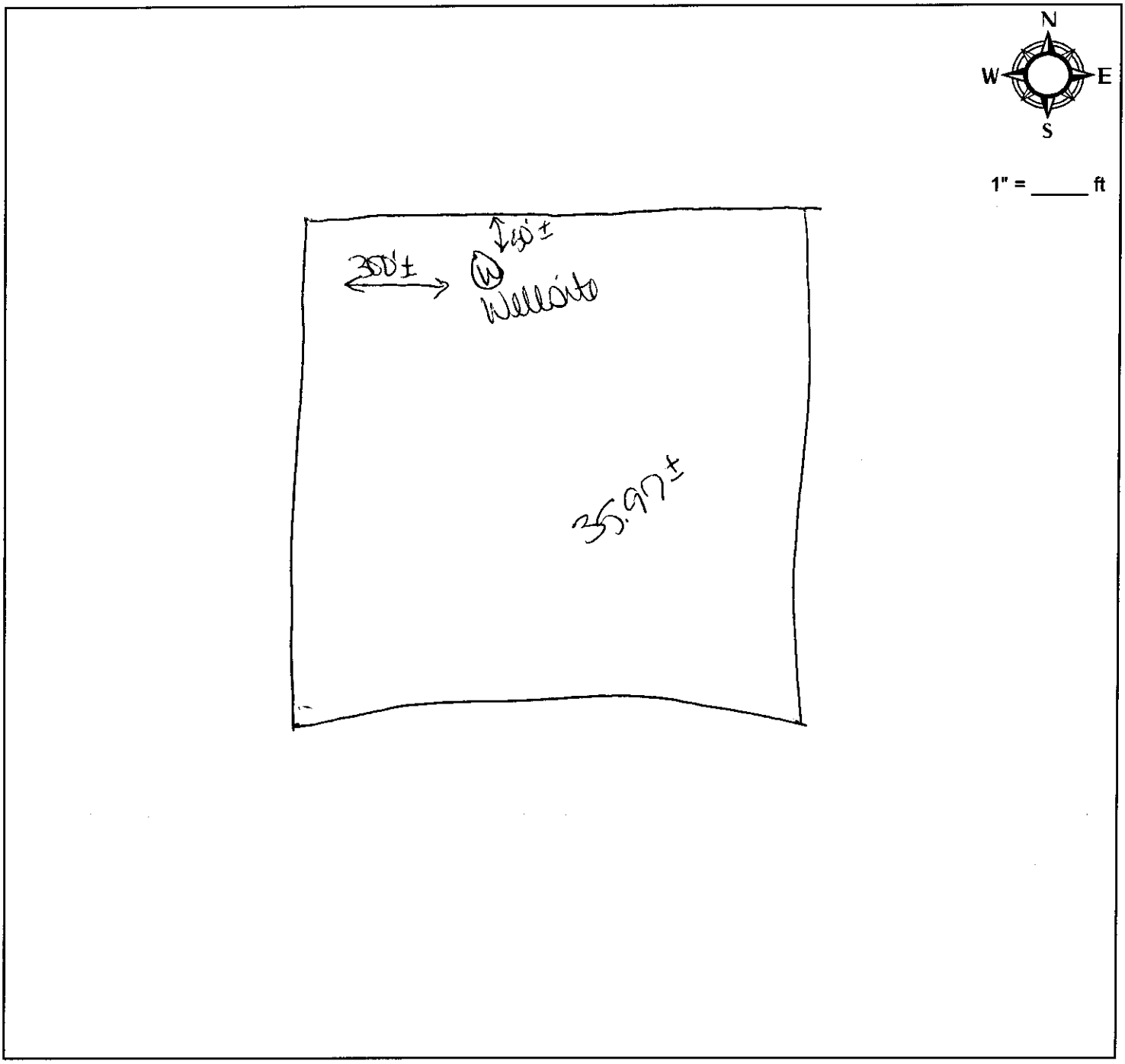
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 592792

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
JAMES P DOUGLASS	101	39	004C

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
Driver Drilling Inc.		9-23-03

DWR-55-55 (Rev. 10/11/01)

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-592792

AUTHORIZED DRILLER: DRIVER DRILLING COMPANY LICENSE NO: 177

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: JAMES P DOUGLASS 1649 DRIFTWOOD CIR SIERRA VISTA, AZ 85635

The well(s) is/are to be located in the:

NW ¼ of the NE ¼ of the SE ¼ Section 11 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 30TH DAY OF MAY, 2003

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

RECEIVED
MAY 3 1 2002
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ 602-417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. J + J Douglass 1649 Driftwood Sierra Vista Az 85635
LANDOWNER'S NAME | CURRENT MAILING ADDRESS | CITY | STATE | ZIP

B. TELEPHONE NO. 520 - 940 - 0694 COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN Cochise COUNTY D. 101 - 39 - 004C E. 36 ± OFFICIAL SEAL OR STAMP
BOOK | MAP | PARCEL | # OF ACRES

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NW ¼ NE ¼ SE ¼ OF SECTION 11 TOWNSHIP 24 N/S RANGE 24 E/W
10AC | 40AC | 160AC | COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL _____; INSUFFICIENT INFORMATION TO MAKE A DETERMINATION _____; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE _____ AUTHORIZED SIGNATURE _____ TITLE _____

1. OWNER OF WELL:
J + J Douglass
NAME
1649 Driftwood
CURRENT MAILING ADDRESS
Sv Az 85635
CITY | STATE | ZIP
TELEPHONE NUMBER 520-940-0694

2. ACTION REQUESTED:
DRILL NEW WELL ✓ DEEPEN _____
MODIFY _____ REPLACE _____

WELL REGISTRATION NO 55- _____

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL _____ GALLONS PER MINUTE;

DISTANCE FROM THE ORIGINAL WELL: _____ FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH June YEAR 02

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: Steel
DIAMETER: 6 " DEPTH: 20 '
DOWNHOLE CASING: PVC
DIAMETER: 4 " DEPTH: 200 ' ±

5. DESIGN PUMP CAPACITY:
20 ± GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
NAME
CURRENT MAILING ADDRESS
CITY | STATE | ZIP
TELEPHONE: - -

7. PRINCIPAL USE OF WATER: (BE SPECIFIC)
Domestic

8. OTHER USES OF WATER: (BE SPECIFIC).
None

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55- 592792
DATE FILED 5-31-02
FILE NO. D(24-24)11DAB
AMA/INA _____
W/S 13 S/B _____
PROCESSED BY MO
DATE MAILED 6-3-02

9. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NW ¼ NE ¼ SE ¼ SECTION 11
10AC 40AC 160AC
TWNSHP 24 N/S RNG 24 E/W

10. TYPE OF WELL (CHECK ONE):
EXEMPT ✓ NON-EXEMPT _____

11. CHECK ONE:
RESIDENTIAL ✓ STOCKWATER _____
OTHER _____

12. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES _____ NO ✓

13. DRILLING FIRM:
Driver Drilling
NAME
Box 4345
MAILING ADDRESS
Huachuca City Az 85616
CITY | STATE | ZIP
520 459 3466
TELEPHONE NO.
177
DWR LICENSE NUMBER
L-53 / C-53
ROC LICENSE CATEGORY

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

James P. Douglass Owner James P Douglass 5-28-02
14. TYPE OR PRINT NAME AND TITLE | 15. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE | 16. DATE

DWR 55-40 (REV 9/99)

APPLICATION GUIDELINES

In accordance with Arizona Revised Statutes ("A.R.S.") §§ 41-1008 and 1079, the Department of Water Resources (Department) provides the following information regarding the application review process for authority to drill.

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8. If any water from a proposed well on a parcel of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant must submit a well site plan of the property. The plan must be on an 8½" x 11" piece of plain paper with representation of the locations of all structures and proximity of adjacent lot lines, to scale. It must include the county assessor's parcel identification number. The plan must show the proposed well location and the location of any septic tank or sewer system that is either located on the property or within one hundred feet of the proposed well site, as well as indicating the measured shortest distance between the proposed well and existing septic tank system. **The plan must demonstrate that the well will not be drilled within one hundred feet of any septic or sewer system.**
9. The site plan must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Endorsement by the county/local authority is based solely on the best available judgement that the proposed well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. In areas where there is no local or county authority that controls installation of septic tanks or sewer systems, or if the health authority is unable to determine whether the proposed well location complies with state and local requirements, the applicant must apply for approval directly to the Department of Water Resources.
10. If an individual other than the land owner or lessee signs this notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific notice on his or her behalf, must accompany the notice.
11. Please mail **two original Notices** with **original signatures** and **two site plans** and, in accordance with A.R.S. § 45-113, a **check or money order (no cash) in the amount of $10.00** to P. O. Box 458, Phoenix Arizona, 85001-0458, or hand deliver to 500 North Third Street, Phoenix, Arizona.
12. Arizona Revised Statute § 45-596(D) provides that the Director of the Department is to determine whether or not all information required on this form has been submitted. If not, the person filing the Notice will be notified, and the drilling or modification of the well may **not** proceed.
13. This form is not applicable for non-exempt wells (those yielding more than thirty-five gallons per minute) within an Active Management Area. Contact Groundwater Management for further information regarding the appropriate notice to file with the Department.

TIME FRAME FOR REVIEW OF YOUR APPLICATION

Within 15 days after receipt of your Notice of Intention the Arizona Department of Water Resources ("Department") will determine whether your application should be granted or denied, unless this time is extended for lack of a complete application. If your application is incomplete, the Department will notify you in writing and will specify what information is necessary to make the application complete. Until the missing information is received, the time frame for review of your application will be suspended. Your application will not be complete until all of the requested information is received. If you do not supply the missing information within sixty (60) days, the Department may deem your application withdrawn and close the file.

At the end of its review, the Department will send you a written notice either granting or denying your application for drilling authority. If your application is approved, the Drill Card will be mailed directly to the drilling contractor. If denied, the Department's notice will state justification for the denial and an explanation of your right to appeal.

CONSTRUCTION AND FOLLOW UP REQUIREMENTS

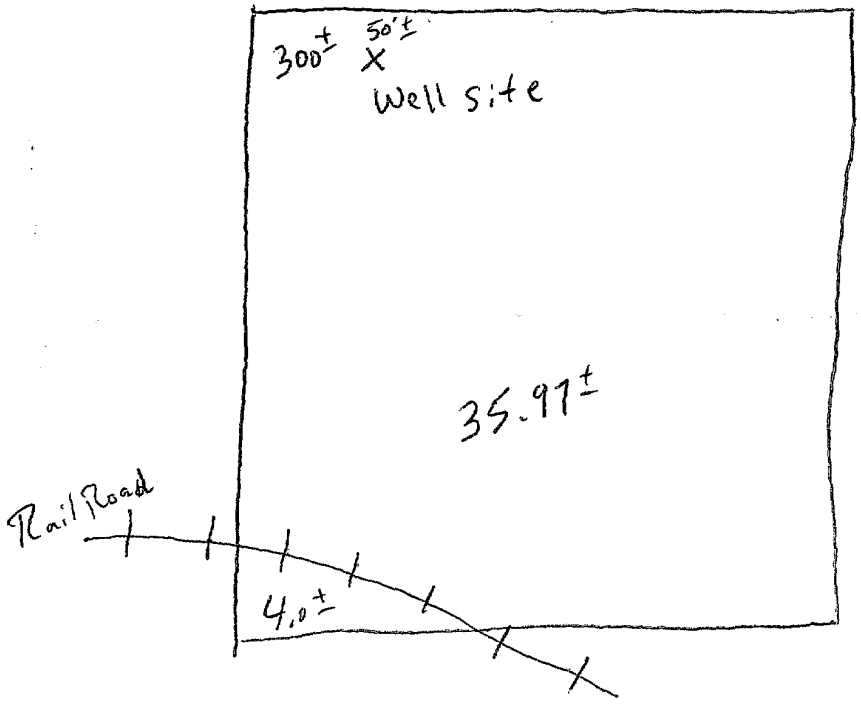
1. Construction and abandonment standards for wells, must be in accordance with Department Regulations. A.R.S. § 45-594 and Arizona Administrative Code R12-15-811 require the well to be constructed with a twenty foot steel surface seal casing, including a one foot steel stickup and one and one-half inches of grout seal around the casing from the surface to a depth of twenty feet, unless a variance is granted **(see A.R.S. § 45-596 (G) for procedure to follow in requesting a variance).**
2. Pursuant to § 45-596(E), the drilling, deepening or modification of the well must be completed within one year of the date of the Notice of Intent. If the well is not completed within one year, a new Notice of Intent must be filed before proceeding with further construction.
3. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use is later proposed to be converted to use for domestic purposes as defined in § 45-454, the well owner must file a Notice of Intention to Drill and comply with the requirements of § 45-596 before the well is converted and any water from that well is used for domestic purposes.
4. Within thirty days after installation of pumping equipment, the registered well owner must file a Completion Report with the Department. The person to whom a well is registered also must notify the Department of a change in ownership or a change in data relating to this well.

RECEIVED
MAY 31 2002
GROUNDWATER MGT

Douglass
101-39-004C

No Known Septics or Bldgs within 700'

NW NE SE Sec 11 T24S R24E
10 40 160



ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

June 03, 2002

JANE DEE HULL
Governor

JOSEPH C. SMITH
Director

JAMES P DOUGLASS
1649 DRIFTWOOD CIR
SIERRA VISTA, AZ 85635

Registration No. 55- 592792
File No. D(24-24) 11 DAB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Pump Installation Completion Report is to be submitted when pump equipment is installed. The drilling card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the drilling card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended drilling card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a Pump Installation Completion Report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate Well Drillers Report and Well Log within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Monica Ortiz
Water Resource Technician
Groundwater Management Support Section

Enclosures

RECEIVED
MAY 3 1 2002
GROUNDWATER

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ 602-417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. James Douglass (LANDOWNER'S NAME) 1649 Driftwood (CURRENT MAILING ADDRESS) S.V. (CITY) Az (STATE) 85635 (ZIP)

B. TELEPHONE NO. 520. 940. 0694 — COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN Cochise COUNTY D. 101 - 39 - 004E (BOOK - MAP - PARCEL) E. 40 (# OF ACRES) — OFFICIAL SEAL OR STAMP

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NW¼ (10AC) SW¼ (40AC) NW¼ (160AC) OF SECTION 12 TOWNSHIP 24 N/S RANGE 24 E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL _____; INSUFFICIENT INFORMATION TO MAKE A DETERMINATION _____; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE _____ AUTHORIZED SIGNATURE _____ TITLE _____

1. OWNER OF WELL:
NAME James Douglass
CURRENT MAILING ADDRESS 1649 Driftwood
CITY Sierra Vista STATE Az ZIP 85635
TELEPHONE NUMBER 520 940 0694

6. LESSEE OF LAND OF WELLSITE:
NAME N/A
CURRENT MAILING ADDRESS
CITY STATE ZIP

9. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NW¼ (10AC) SW¼ (40AC) NW¼ (160AC) SECTION 12
TWNSHP 24 N/S RNG 24 E/W

10. TYPE OF WELL (CHECK ONE):
EXEMPT X NON-EXEMPT _____

JAMES P. DOUGLASS
JENNIFER S. DOUGLASS
1649 DRIFTWOOD CIR. 520-459-1841
SIERRA VISTA, AZ 85635

91-2/1221 178 — 485
27764035

DATE 5-28-02

PAY TO THE ORDER OF Az. Dept. of Water Resources $ 20.00

Twenty and No/100 DOLLARS

Security Features Included. Details on Back.

BANK ONE. Preferred One.
Bank One, NA
Phoenix, Arizona 85073
www.bankone.com

MEMO

MP

[redacted]

I. CHECK ONE:
RESIDENTIAL X STOCKWATER _____
OTHER _____

J. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE TANKS AND TANKS?
YES _____ NO X

DRILLING FIRM: Driver Drilling
ADDRESS Box 4345
DRILLING ADDRESS Huachuca City Az 85616
CITY STATE ZIP
TELEPHONE NO. 520 4593466
DWR LICENSE NUMBER 177
ROC LICENSE CATEGORY L53 / C53

CASING: PVC
DIAMETER: 4 " DEPTH: 200 '

5. DESIGN PUMP CAPACITY:
20 ± GALLONS PER MINUTE

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

14. TYPE OR PRINT NAME AND TITLE: James P Douglass
15. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE: James P Douglass
16. DATE: 3-20-02

DWR 55-40 (REV 9/99)

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

RECEIVED
NOV 12 2003
Information Management

- Review instructions prior to completing form
- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

FILE NUMBER: D(24-24) 14 ABD
WELL REGISTRATION NUMBER: 55- 599796
PERMIT NUMBER (IF ISSUED):

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: LEON & MARY EAST
MAILING ADDRESS: 651 E BORDER RD
CITY / STATE / ZIP: BISBEE, AZ 85603
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-432-5992
FAX:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN): 651 E. Border Rd.

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	14	NE 1/4	NW 1/4	SE 1/4

LATITUDE: ° . "N
LONGITUDE: ° . "W
LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level
METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☐ Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ GPS : ☐ Survey-Grade
COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 101 MAP 48 PARCEL 007
COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME: JS & K DRILLING, INC.
DWR LICENSE NUMBER: 565
TELEPHONE NUMBER: 520-456-2355
FAX:

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED: Oct 23
DATE WELL CONSTRUCTION COMPLETED: Oct 24
IF FLOWING WELL, METHOD OF FLOW REGULATION: ☐ Valve ☐ Other

Drill Method

CHECK ONE
- ☑ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development

CHECK ONE
- ☑ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Method of Sealing at Reduction Points

CHECK ONE
- ☐ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☒ Other (please specify)

NATIVE

Water Level Information

STATIC WATER LEVEL: 35 Feet Below Land Surface
DATE MEASURED: Oct 30, 03

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 599796

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Borehole			Installed Casing														
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (X)				PERFORATION TYPE (X)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	19	12"	0	19	8 5/8	X				X						
19	125	7 7/8"	5	85	6 5/8		X			X						
			85	125	6 5/8		X							X		1/8

Installed Annular Material												
DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)								FILTER PACK		
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	19			X								
5	19								NATIVE			

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
125	Feet Below Land Surface	125	Feet Below Land Surface

DWR-55-55B-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 599796

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	5	Top Soil	
5	20	Sand & Gravel	
20	25	Rock (Limestone)	
25	40	Boulders, Sand & Gravel	
40	45	Clay	
45	50	Sand & Gravel	
50	55	Rock (Limestone)	
55	65	Gravel, Sand & Boulders	
65	80	Limestone	
80	125	Boulders, Sand & Gravel	X

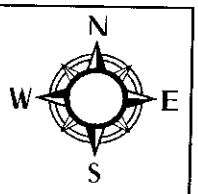
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 599796

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
LEON & MARY EAST	101	48	007

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



1" = _____ ft

SEE ATTACHED

I state that this notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
J S & IC Drilling, Inc.		Nov. 7, 03

DWR-55-55 (Rev. 10/11/01)

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 599796

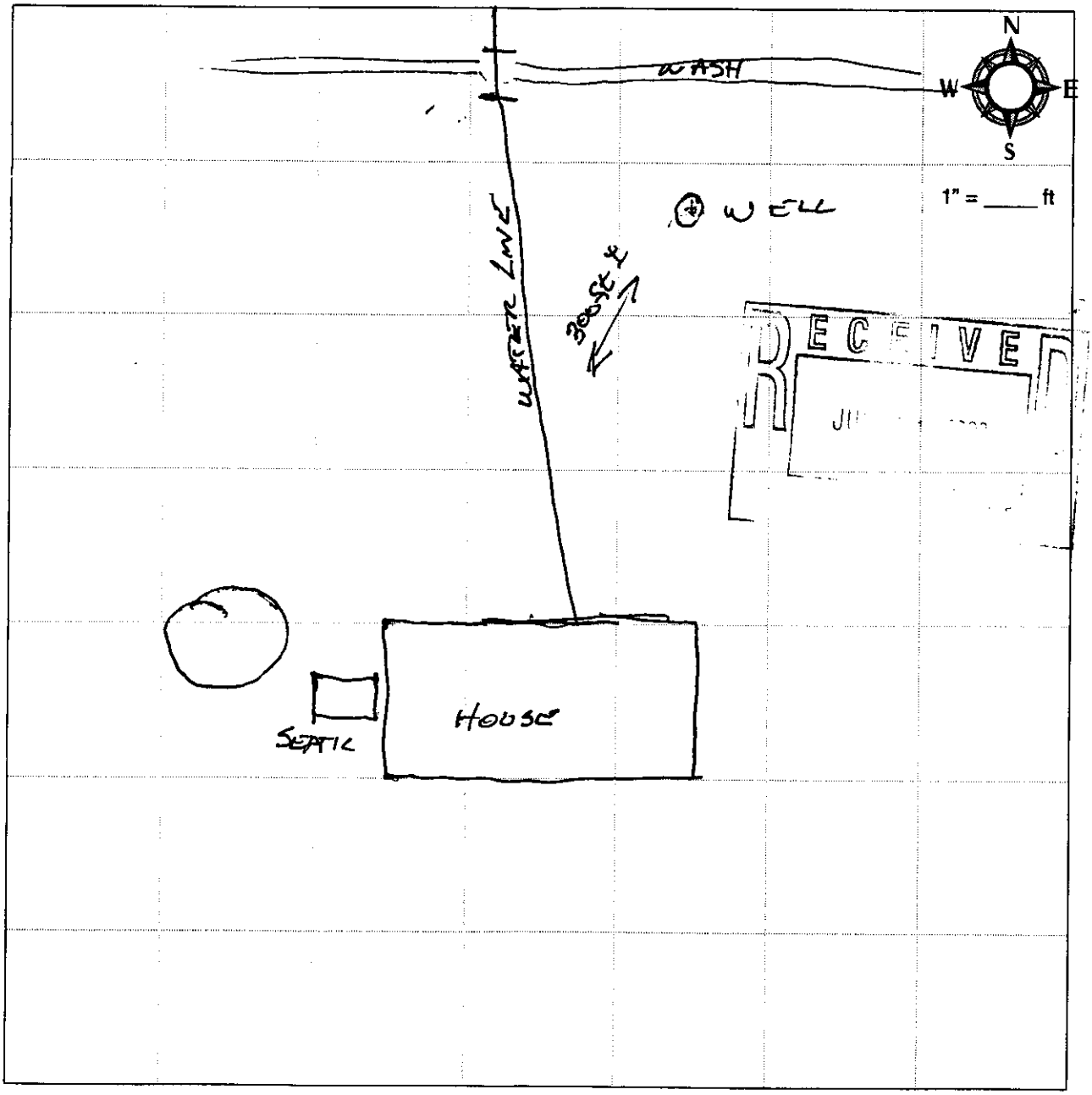
WELL SITE PLAN

NAME OF WELL OWNER
LEON & MARY EAST

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
101	48	007

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE
Cochise County

COUNTY OR LOCAL AUTHORITY SIGNATURE
Carla Vaz

TELEPHONE NUMBER
520-432-9440

DATE
July 30, 2003

Official County or Local Seal or Stamp
APPROVED BY THE COCHISE COUNTY
ENVIRONMENTAL HEALTH DIVISION
DATE July 30 2003
BY Carla Vaz

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-599796

AUTHORIZED DRILLER: JS & K DRILLING, INC. LICENSE NO: 565

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: LEON & MARY EAST 651 E BORDER RD BISBEE, AZ 85603

The well(s) is/are to be located in the:

SE ¼ of the NW ¼ of the NE ¼ Section 14 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 30TH DAY OF JULY, 2004

Shannon L Key

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $50 FEE

RECEIVED JUL 31 2003 GROUNDWATER MG

AMA / INA	B	SB
		35
RECEIVED DATE	WS	
7-31-03	13	
ISSUED DATE	WQARF	CERCLA
8-5-03		

FILE NUMBER D(24-24)14ABD
WELL REGISTRATION NUMBER 55-599796

- ❖ Review instructions prior to completing form in black or blue ink.
- ❖ You must include with your Notice
- • Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $50.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- ❖ Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY ENDORSEMENT (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 before submission to the Department of Water Resources. You must also attach a site plan (see instructions).

CHECK ONE

☐ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☐ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE July 30, 2003
BY C. D. Diaz

COUNTY OR LOCAL AUTHORITY NAME AND TITLE

TELEPHONE NUMBER | DATE | COUNTY OR LOCAL AUTHORITY SIGNATURE

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

☒ Exempt
(Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)

☐ Non-Exempt
(Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 15 Gallons Per Minute

Proposed Action

CHECK ONE

☒ Drill New Well
☐ Deepen
☐ Replace
☐ Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 -

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY): 651 E. BORDER Rd. Bisbee

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	14	NE ¼	NW ¼	SE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER: 101-48-007-0

BOOK	MAP	PARCEL	# OF ACRES
101	48	007	5

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Leon + Mary East
MAILING ADDRESS: 651 E. BORDER Rd.
CITY / STATE / ZIP CODE: Bisbee, Az. 85603
CONTACT PERSON NAME AND TITLE: Leon East Owner
TELEPHONE NUMBER: 520-432-5992 FAX: N/A

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL
MAILING ADDRESS
CITY / STATE / ZIP CODE
CONTACT PERSON NAME AND TITLE
TELEPHONE NUMBER | FAX

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 599796

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

JS+K

NAME: ~~BRADLY DRILLING~~

DWR LICENSE NUMBER: 565

ROC LICENSE CATEGORY: C-53

TELEPHONE NUMBER: 520 456-2355

FAX: 520 456-1169

MAILING ADDRESS: 403 NUACNOCA BLVD

CITY / STATE / ZIP CODE: NUACHUCA AZ 85616

RECEIVED
JUL 31 2003
GROUNDWATER MGT

SECTION 6. WATER / SITE INFORMATION

Principal Use of Water (CHECK ONE)	*Other Uses* of Water (CHECK ALL THAT APPLY)
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☒ Domestic	☒ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify):*	☐ Other *(please specify):*

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

DATE CONSTRUCTION IS TO BEGIN: Sept, 03

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	19	12 1/4
19	200	7 7/8

Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T): STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T): BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	19	8 5/8	X*				X						Cement
10	160	6 1/4		X			X						
160	200	6 1/4		X							X		

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: Leon A. East - Mary Ellen East Owners

SIGNATURE OF WELL OWNER OR LANDOWNER: Leon A. East Mary Ellen East

DATE: 7/18/03

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION

DATE: July 30 2003

BY: Ellen Diaz

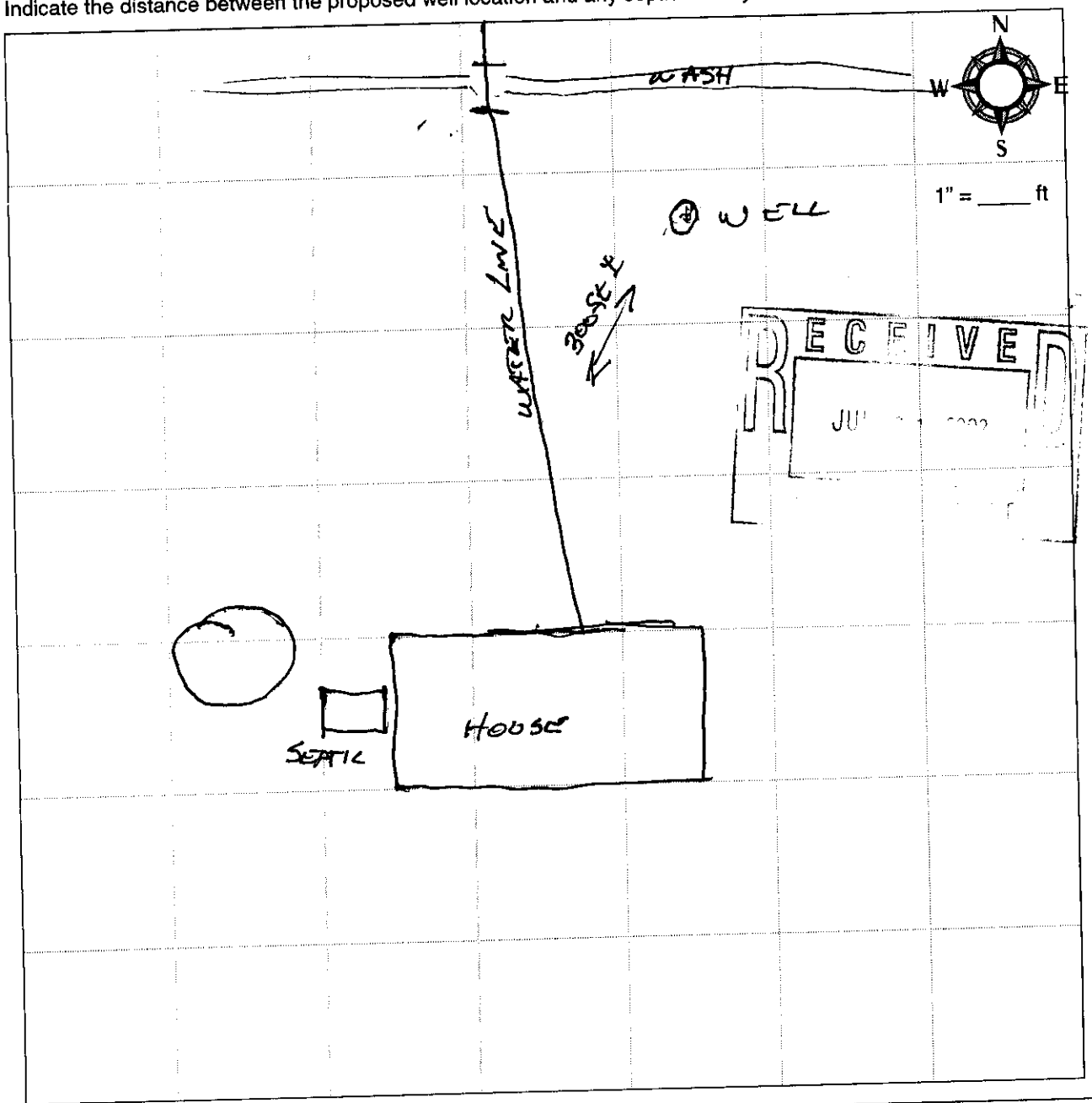
Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 599796

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
LEON & MARY EAST	101	48	007

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE	Official County or Local Seal or Stamp
Cochise County	APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
COUNTY OR LOCAL AUTHORITY SIGNATURE	DATE July 30 2003
TELEPHONE NUMBER 520-432-9440 / DATE July 30, 2003	BY

☐ 55Update

Review Sheet for Notices of Intention (NOI) to Drill or Abandon Wells (Updated 07/24/2003)

Well Owner Name Leon & Mary East **Date** 8-4-03
Well Location D(24-24)14 ABD **Well Registration Number:** 55-599796

☒ **Permission has been granted to drill, deepen, replace, modify or abandon** the well indicated on the attached NOI.

☐ **Permission has been granted to drill or abandon** the well indicated on the attached NOI. However, special well construction or abandonment requirements may apply since the proposed well is located near or within the boundary of a groundwater contamination site. See attached special requirements or visit the ADWR "WQARF" homepage on the ADWR website at http://www.water.az.gov/ for further information on "Special well drilling requirements for wells located within areas of groundwater contamination". Please be aware that groundwater produced from the proposed well may not meet applicable federal, state, county or local water quality standards.

The checked special well drilling requirements apply to the indicated well (see attachments):

_____ **Standard Special Requirements (applies to contamination areas not covered by site-specific requirements)**
_____ **Pinal Creek Special Requirements**
_____ **Yuma Marine Corps Air Station Special Requirements**
_____ **Well Abandonment Handbook (see Standard Method or Alternatives 2 or 3)**

☐ **Permission has not been granted to drill or abandon** the well indicated on the attached NOI for the following reasons(s):

☐ Insufficient filing fee submitted*. Your check for $_____ is being returned to you. You must resubmit this review sheet, the attached NOI form (with any changes indicated below) and a check for the appropriate fee, which is $_____.

*NOI filing fees were increased on May 7, 2003. The appropriate filing fee for a well located within an AMA or INA is $150. For a well not located within an AMA or INA, the fee is $50 if the well will be used solely for domestic purposes and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise the fee is $150.

☐ County or local health official endorsement and approval is required but was not provided.

☐ Insufficient information to determine if well meets 100-foot setback requirement. Well owner must sign and return the attached certification form if well meets 100-foot minimum set-back requirement.

☐ Incomplete or incorrect well location information.

☐ Incomplete or incorrect well owner information.

☐ Land owner permission to drill letter is required.

☐ Proposed well is located within 100 feet of a septic system, sewer disposal area, landfill, hazardous waste materials or petroleum storage area or tank.

☐ Well driller information incomplete.

☐ Well driller is not currently licensed with ADWR and/or the Registrar of Contractors.

☐ Well construction information is incomplete, you must include design pump capacity (if applicable), well depth, well diameter and type of casing (if applicable).

☐ Well abandonment information is incomplete, you must include information on proposed well abandonment design (see ADWR Well Abandonment Handbook)

☐ Well owner or landowner information and/or signature incomplete or incorrect.

☐ Variance request has not been granted. Explanation:_____

☐ Other_____

If permission to drill or abandon the specified well has not been granted, please correct all indicated errors and/or deficiencies and resubmit the corrected NOI form, this review sheet, and any attachments (if applicable) to ADWR. Unless stated above, no additional fees are required to resubmit this NOI. Be sure to submit all necessary information with your corrected NOI. The original NOI file will not be reviewed when ADWR reviews your corrected NOI. You must resubmit all the required information within 60 days, or you will need to file a new NOI with a new fee. Note: If you do not have the necessary information or need help, please contact your driller/consultant.

Mail resubmittals to: ADWR NOI-Resubmittals
PO Box 458
Phoenix Arizona 85001-0458

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $50 FEE

RECEIVED
JUL 31 2003
GROUNDWATER MG

AMA / INA	B	SB
		35
RECEIVED DATE	WS	
	13	
ISSUED DATE	WQARF	CERCLA

FILE NUMBER
WELL REGISTRATION NUMBER
55 -

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice of Intent the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $50.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY ENDORSEMENT (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 before submission to the Department of Water Resources. You must also attach a site plan (see instructions).

CHECK ONE

☐ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☐ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE July 30, 2003
BY Carlos Diaz

COUNTY OR LOCAL AUTHORITY NAME AND TITLE

TELEPHONE NUMBER | DATE

COUNTY OR LOCAL AUTHORITY SIGNATURE

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

☒ Exempt
(Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)

☐ Non-Exempt
(Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY
15 Gallons Per Minute

Proposed Action

CHECK ONE

☒ Drill New Well
☐ Deepen
☐ Replace
☐ Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER
55 -

MAXIMUM CAPACITY OF ORIGINAL WELL
Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL
Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY)
651 E. BORDER Rd. Bisbee

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	14	NE ¼	NW ¼	SE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER 101-48-007-0

BOOK	MAP	PARCEL	# OF ACRES
101	48	007	5

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED
Cochise

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
Leon + Mary East

MAILING ADDRESS
651 E. BORDER Rd.

CITY / STATE / ZIP CODE
Bisbee, Az. 85603

CONTACT PERSON NAME AND TITLE
Leon East Owner

TELEPHONE NUMBER
520-432-5992

FAX
N/A

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL

MAILING ADDRESS

CITY / STATE / ZIP CODE

CONTACT PERSON NAME AND TITLE

TELEPHONE NUMBER | FAX

riance (A.A.C. R12-15-818).

n Active Management Area, you must m 55-40A.

LEON A. EAST
MARY ELLEN EAST
651 E. BORDER RD. 520-432-5992
BISBEE, AZ 85603-6529

91-532/1221
27

DATE 7/23/03 2452

PAY TO THE ORDER OF A.D.W.R. $ 50.00

Fifty and No/100 DOLLARS

Contains Security Features. Details on Back.

NATIONAL BANK OF ARIZONA
101 NACO HIGHWAY
BISBEE, AZ 85603

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

August 05, 2003

Janet Napolitano
Governor

Herb Guenther
Director

LEON & MARY EAST
651 E BORDER RD
BISBEE, AZ 85603

Registration No. 55- 599796
File No. D(24-24) 14 ABD

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Pump Installation Completion Report is to be submitted when pump equipment is installed. The drilling card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the drilling card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended drilling card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a Pump Installation Completion Report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate Well Drillers Report and Well Log within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Monica Ortiz
NOI Unit
Water Management Support Section

Enclosures

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☐

11

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 64,726
FILE NO. D (24-24) 19 b bc
FILED 5-11-82 (DATE) AT 11A (TIME)
INA
AMA

1. Name of Registrant:
GERALD A. EBERWEIN
PO BOX 605 NACO AZ 85620-605
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
D(24-24)19BBCGS1 (File Number) 35- 39632 (Control Number)

3. a. The well is located within the ~~SE~~ ¼ NW ¼ NW ¼, Section 19, of Township 24.0 S ~~E~~, Range 24.0 E/~~W~~, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision NACO TOWNSITE, Lot No. 4, Address 420 FIRST ST ABANDON PART OF A SC

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 249 feet
b. Diameter of casing 06 inches
c. Depth of casing 249 feet
d. Type of casing PERFORATED STEEL.
e. Maximum pump capacity 30 gallons per minute.
f. Depth to water 104 feet below land surface.
g. Date well completed ___ (Month) ___ (Day) 76 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☐.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 5/8/82 SIGNATURE OF REGISTRANT [signature]

#1

DEPARTMENT OF WATER RESOURCES
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING

PRINT OR TYPE - FILE IN DUPLICATE

13

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL - $10.00	☐

For Office Use Only
REGISTRATION NO. 55 805641-L
FILE NO. D(24-24)11dcd
FILED 11.15.89 at ✓
(Date) (Time)
INA ✓
AMA ✓

LATE FEE $10.00 ☒

1. Name of Registrant:
David L. Eppele
8 Mulberry Lane | Bisbee | Arizona | 85603
Address | City | State | * Zip

2. File and/or Control Number under previous groundwater law: _____ 35 (see attachment #1)
File No. Control No.

3. * a. The well is located within the SE ¼ SW ¼ SE ¼, Section 0011 of Township 024 N/S, Range 024 E/W, G&SRB&M, in the County of Cochise.
* see: attachemnt #2
b. If in a subdivision: Name of subdivision n/a
Lot No. _____ Address _____

4. The principal uses(s) of water: (Examples: irrigation, stockwater, domestic, municipal industrial 1. Domentic 2. Irrigation

5. If for irrigation use, number of acres irrigated from well 1.9.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
Name | Address | City | State | Zip

7. Well data (If data not available, write N/A)
a. Depth of Well 265 feet
b. Diameter of casing n/a inches
c. Depth of casing n/a feet
d. Type of casing n/a.
e. Maximum pump capacity 6 gallons per minute.
f. Depth to water 30 feet below land surface.
g. Date well completed Unknown.
(Month) (Day) (Year)

NOV 15 1989

8. The place(s) of use of water. If same as Item 3, check this box ☐
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____

9. DATE 11/15/89 SIGNATURE OF REGISTRANT David L. Eppele

DEC - 5 1989

ENTERED DEC 07 1989

DWR-55-76-9/85

DAVID L. EPPELE
GENEVA M. EPPELE
8 MULBERRY LANE
BISBEE, AZ. 85603
432-7040

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 S. 15TH AVENUE
PHOENIX, ARIZONA 85007

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	805641-L
	THRU
55	805643-L

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEE FOR REGISTRATION OF 3 EXISTING	10.00	30.00
					WELLS ALL OUTSIDE THE A.M.A.'s		
					55-805641-L D (24-24)11dcd		
					55-805642-L D (24-24)11dcd		
					55-805643-L D (24-24)11dcd		
					12/6/89 P. Rocko Check# 1852		

TOTAL $ 30.00

PAID

#2

DEPARTMENT OF WATER RESOURCES
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING

PRINT OR TYPE - FILE IN DUPLICATE

13

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL - $10.00	☐

LATE FEE $10.00 ☒

For Office Use Only
REGISTRATION NO. 55 805642-L
FILE NO. D(24-24)11 dcd
FILED 11.15.89 (Date) at / (Time)
INA /
AMA /

1. Name of Registrant:
David L. Eppele
8 Mulberry Lane | Bisbee | Arizona | 85603
Address | City | State | Zip *see attached #1)

2. File and/or Control Number under previous groundwater law: 35 (File No.) 0011 (Control No.)

3. *a. The well is located within the SE ¼ SW ¼ SE ¼, Section 11 of Township 024 N/S, Range 024 E/W, G&SRB&M, in the County of Cochise.
*see: attachment #2
b. If in a subdivision: Name of subdivision n/a
Lot No. _____ Address _____

4. The principal uses(s) of water: (Examples: irrigation, stockwater, domestic, municipal industrial irrigation

5. If for irrigation use, number of acres irrigated from well 1.9.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
Name | Address | City | State | Zip

7. Well data (If data not available, write N/A)
a. Depth of Well 40 feet
b. Diameter of casing n/a inches
c. Depth of casing n/a feet
d. Type of casing n/a.
e. Maximum pump capacity 5 gallons per minute.
f. Depth to water 20 feet below land surface.
g. Date well completed Unknown (early 1900's) (Month) (Day) (Year).

NOV 15 1989

8. The place(s) of use of water. If same as Item 3, check this box ☒
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____

9. DATE 11/15/89 SIGNATURE OF REGISTRANT David L. Eppele

DWR-55-76-9/85

ENTERED DEC 07 1989

DAVID L. EPPELE
GENEVA M. EPPELE
8 MULBERRY LANE
BISBEE, AZ. 85603
432-7040

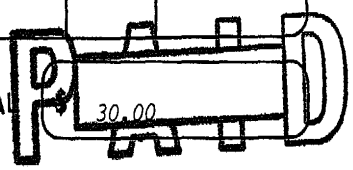
STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 S. 15TH AVENUE
PHOENIX, ARIZONA 85007

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	805641-L
	THRU
55	805643-L

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEE FOR REGISTRATION OF 3 EXISTING	10.00	30.00
					WELLS ALL OUTSIDE THE A.M.A.'s		
					55-805641-L D (24-24)11dcd		
					55-805642-L D (24-24)11dcd		
					55-805643-L D (24-24)11dcd		
					12/6/89 P. Rocko Check# 1852		

TOTAL 30.00



#3

DEPARTMENT OF WATER RESOURCES
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING

PRINT OR TYPE - FILE IN DUPLICATE

13

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☒
NON-EXEMPT WELL - $10.00 ☐

LATE FEE $10.00 ☒

For Office Use Only
REGISTRATION NO. 55 805643-L
FILE NO. D(24-24) 11dcd
FILED 11.15.89 (Date) at — (Time)
INA —
AMA —

1. Name of Registrant:
David L. Eppele
8 Mulberry Lane | Bisbee | Arizona | 85603 (*see attached #1)
Address | City | State | Zip

2. File and/or Control Number under previous groundwater law: ____ (File No.) 35 (Control No.)

3.* a. The well is located within the SE ¼ SW ¼ SE ¼, Section 0011 of Township 024 N/S, Range 024 E/W, G&SRB&M, in the County of Cochise.
* see attachment #2
b. If in a subdivision: Name of subdivision n/a
Lot No. _____ Address _____

4. The principal uses(s) of water: (Examples: irrigation, stockwater, domestic, municipal industrial 1. Domestic 2. Irrigation

5. If for irrigation use, number of acres irrigated from well 1.9.

6. Owner of land on which well is located. If same as Item 1, check this box ☐
Name | Address | City | State | Zip

7. Well data (If data not available, write N/A)
a. Depth of Well 165 feet
b. Diameter of casing n/a inches
c. Depth of casing n/a feet
d. Type of casing n/a.
e. Maximum pump capacity 6-9 pm gallons per minute.
f. Depth to water 30 feet below land surface.
g. Date well completed n/a (Month) (Day) (Year).

NOV 15 1989

8. The place(s) of use of water. If same as Item 3, check this box ☒
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____

9. DATE 11/15/89 SIGNATURE OF REGISTRANT David L. Eppele

- 5 1989

DWR-55-76-9/85

ENTERED DEC 07 1989

DAVID L. EPPELE
GENEVA M. EPPELE
8 MULBERRY LANE
BISBEE, AZ. 85603
432-7040

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 S. 15TH AVENUE
PHOENIX, ARIZONA 85007

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	805641-L
	THRU
55	805643-L

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEE FOR REGISTRATION OF 3 EXISTING	10.00	30.00
					WELLS ALL OUTSIDE THE A.M.A.'s		
					55-805641-L D (24-24)11dcd		
					55-805642-L D (24-24)11dcd		
					55-805643-L D (24-24)11dcd		
					12/6/89 P. Rocko Check# 1852		

TOTAL $ 30.00

PAID

2-72

OF ARIZONA

DEPARTMENT OF
WATER RESOURCES

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Jesus Frances
Name
P.O. Box 395, Naco, Az 85620
Address

2. Lessee or Operator _____
Name
_____
Address

3. Driller Lee's Well Drilling
P. O. Bx-4558
Name Huachuca City, AZ. 85616
_____
Address

4. Location of well: T-24S R 24E Sec 16 aw nw nw

5. Permit No. _____
(if issued)

DESCRIPTION OF WELL

6. Total depth of hole 200 ft.
7. Type of Casing PVC
8. Diameter and length of casing 6 in. from 0 to 200, _____ in from _____ to _____.
9. Method of sealing at reduction points Cement
10. Perforated from 180 to 200, from _____ to _____, from _____ to _____
11. Size of cuts 3/8" Number of cuts per foot one
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction Drilled
drilled, dug, driven, bored, jetted, etc.
14. Date started 7 (Month) 1 (day) 81 (year)
15. Date completed 7 (Month) 1 (day) 81 (year)
16. Depth to water 160' ft. (If flowing well, so state.)
17. Describe point from which depth measurements were made, and give sea-level elevation if available. Ground level
18. If flowing well, state method of flow regulation _____
19. REMARKS: _____

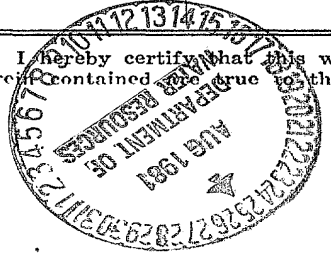
DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55-500101
Received _____ By _____
Entered 9-15-81 By [illegible]
File No. D(24-24)16 bbb

(Well log to appear on Reverse side)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	10	clay
10	200	Sandy clay & gravel



I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Lee's Well Drilling
P. O. Box-4550
Huachuca City, AZ 85616

Address

Date

DEPARTMENT OF WATER RESOURCES
99 East Virginia
Phoenix, Arizona 85004

Registration No. 55-500101
Owner of
Well Site JESUS FRANCO

File No. D(24-24) 16 bbb

COMPLETION REPORT



1. Completion Report to be filed with the Department within 30 days after installation of pump equipment.

2. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

3. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.

4. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

LOCATION OF THE WELL

T-24s-R24E-S-16 NW-NW-NW .

Date Well Completed 7-81 Depth of Well 200'

1. Well Test:
Test Pumping Capacity 25 (Gal. per min.) Date Well Tested 7/8/81

Method of Discharge Measurement 5 gal Container (weir, orifice, current meter, etc.)

Static Groundwater Level 120' ft. Drawdown 10' ft.

Total Pumping Lift 180' ft. Drawdown _____ lbs. (Flowing Well)

2. Equipment Installed:

Kind of Pump Submersible (turbine, centrifugal, etc.)

Kind of Power Elec. (Elec., Nat. Gas, Etc.) H.P. Rating of Motor 3

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TRIPLE L PUMP CO.
Signature Box 414 • Huachuca City, Az. 85616
Phone 456-9377
Address

8/10, 1982
Date

City State Zip

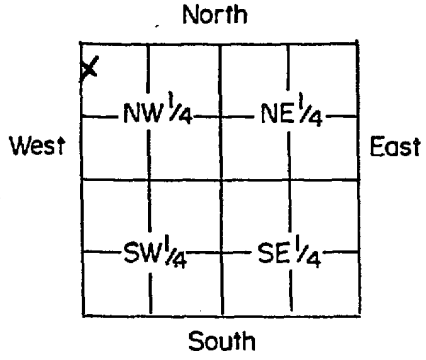
8-17-82

EXEMPT WELL
FILING FEE: $3.00

DEPARTMENT OF WATER RESOURCES
NOTICE OF INTENTION TO DRILL OR DEEPEN
AN EXEMPT WELL

EXEMPT WELL

Section 45-596, Arizona Revised Statutes, provides: A person may not drill or cause to be drilled any well or deepen or replace an existing well without first filing a Notice of Intention to Drill with the Department on a form prescribed and furnished by the Department. The well shall be completed within one year after the date of Notice. An exempt well means a well having a pump with a maximum design capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An exempt well may include the non-commercial irrigation of not more than 1 acre of land.



- Indicate Well Location by X
(Above diagram represents one 640 acre section)

WELL/LAND LOCATION:
1. Township 24S
2. Range 24E
3. Section 16
4. NW ¼ NW ¼ NW ¼ 10 acre sub-division
5. County Cochise

6. Owner of Well:
Name Jesus Franco
Address P.O. Bx - 295
City Naco State Az Zip 85620

7. Owner of Land:
Name
Address
City State Zip

DESCRIPTION OF WELL:
8. Diameter 6" Depth 250'
9. Type of Casing PVC
10. Principle use of Water Domestic
11. Other uses Intended
(If for non-commercial irrigation, state approximate area being cultivated.)
12. Construction will start about: 6 Month 81 Year

PLACE OF USE:
13. Township 24S
14. Range 24E
15. Section 16
16. Legal description of land water is to be used on:
17. Design Pump Capacity 10
18. Action Requested:
Drill ✓
Deepen
Replace
19. This notice filed by:
Owner
Lessee
Driller ✓

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
FILE NO. D(24-24)16 b b b
FILED 6-8-81 BY gc
INPUT 6-11-81 BY Pat
DUPLICATE MAILED 6-12-81 BY g
REGISTRATION NO 55-500101
AMA NON EXPANSION AREA =

Name Lee's Well Drilling
Address P. O. Bx-4558 Huachuca City, AZ. 85616
City State Zip

20. Drillers Name:
Name Lee's Well Drilling
Address P. O. Bx-4558 Huachuca City, AZ. 85616
City State Zip
T-80 ✓ 48979
Department License Number

1. Fill out this form in duplicate and mail to P.O. Box 2600, Phoenix, Arizona, 85002, or deliver to 222 N. Central Ave., Suite 550, Phoenix, Arizona, 85004.
2. If the Exempt Well is in fact a replacement (or deepening) well, state the registration number of the existing well.
3. Construction standards for new and replacement wells and the deepening and abandonment of existing wells, shall be in accordance with Department Rules and Regulations.

I, _____, state that the construction will be under the direct and personal supervision of the well driller designated on this form and that the designated driller holds a contractors license pursuant to ARS 45-595.

June 3 - 1981
Date

Carol Drew - Lees Well Drlg.
Signature of Person Filing

Lee's Well Drilling
P. O. Box 4558
Huachuca City, Arizona 85616

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT — FILE

KIND ENTRY	FILE REFERENCE NO.
55	500101
	THRU

For: Jesus Franco

№ 9289

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing fee for Notice of Intention to Drill		3.00
					or Deepen an Exempt Well		
					Water Rights (GW)		
					File #D(24-24)16 bbb		
					Registration #55-500101		
					Check #1776		

6/9/81 jc

TOTAL $ 3.00

ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

3550 N. Central Avenue
Phoenix, Arizona 85012

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-218386

AUTHORIZED DRILLER: BRADLY DRILLING LICENSE NO: 736

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: KENNETH FLEMING PO BOX 957 BISBEE, AZ 85603

THE WELL(S) IS/ARE TO BE LOCATED IN THE:
NW ¼ OF THE SE ¼ OF THE SE ¼ SECTION 10 TOWNSHIP 24 SOUTH RANGE 24 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 102-43-002H

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 22ND DAY OF SEPTEMBER, 2009

Darlene Sumpter Kiny
WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

NOTICE! The Authorization to drill this well **DOES NOT constitute or guarantee an approval to use the well** for the purpose of withdrawing groundwater **for transportation to an Active Management Area (AMA)** pursuant to A.R.S. § 45-552, 45-553, 45-554 or 45-555(A) **without official prior approval from the Department.**

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue, Phoenix, Arizona 85012
Telephone (602) 771-8500
Fax (602) 771-8691

September 25, 2008

Janet Napolitano
Governor

Herbert R. Guenther
Director

KENNETH FLEMING
PO BOX 957
BISBEE, AZ 85603

Registration No. 55-218386
File No. D(24-24) 10 DDB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well that you recently filed with this Department pursuant to A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed or otherwise provided a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card, which must be displayed on the drill rig during drilling. **PLEASE NOTE:** The Authorization to drill this well **DOES NOT constitute or guarantee an approval to use the well for the purpose of withdrawing groundwater for transportation to an Active Management Area (AMA)** pursuant to A.R.S. § 45-552, 45-553, 45-554 or 45-555(A). Groundwater **may not** be withdrawn from this well for these transportation purposes **without official prior approval from the Department.** Please contact the office in the AMA where the groundwater is to be transported to determine what additional forms are needed and for more information on this process.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the proposed well, you may not proceed with drilling until you file an amended NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the amended NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DWR form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed is a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55) within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at <http://www.water.az.gov/adwr/content/forms/default.htm#NOI>.

Sincerely,

Denae Schoonover
NOI Unit
Water Management Support Section

Enclosures

Printed on recycled paper. Each ton of recycled paper saves 7,000 gallons of water.

RECEIVED

SEP 23 2008

WATER MGMT

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 771-8500 • (800) 352-8488
(602) 771-8691 fax • www.azwater.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well
(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA	B 76 SB
RECEIVED DATE 9-23-08	WS 11
ISSUED DATE 9-25-08	WQARF CERCLA

FILE NUMBER D24-24/10DDB

WELL REGISTRATION NUMBER 55 - 218386

SECTION 1: COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☒ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: Carlos Diaz R.S.

TELEPHONE NUMBER: 520-432-9447

DATE: Sept 18, 2008

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE Sept 18 2008
BY Carlos Diaz R.S.

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz R.S.

Rev Long-25-08 D.F.

SECTION 2: REGISTRY INFORMATION

Well Type

CHECK ONE

☒ Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) *(See instructions.)*

☐ Non-Exempt (Pump has a maximum capacity of more than 35 gpm and the well is located outside an AMA.) *(See instructions.)*

DESIGN PUMP CAPACITY: ~~34~~ Gallons Per Minute

Proposed Action

CHECK ONE

☒ Drill New Well
☐ Deepen
☐ Replace
☐ Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 -

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY): 150 W. Purdy Lane Bisbee AZ

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	10	S/E ¼	S/E ¼	N/W ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
102	43	002H	1

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3: OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Kenneth Fleming

MAILING ADDRESS: P.O. Box 957

CITY / STATE / ZIP CODE: Bisbee AZ 85603

CONTACT PERSON NAME AND TITLE: Kenneth Fleming (owner)

TELEPHONE NUMBER: 520 432 3727 Shop #

FAX:

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: Kenneth Fleming

MAILING ADDRESS: P.O. Box 957

CITY / STATE / ZIP CODE: Bisbee AZ 85603

CONTACT PERSON NAME AND TITLE: Kenneth Fleming (owner)

TELEPHONE NUMBER: 520 432 3727

FAX:

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		NONE KNOWN X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well (e.g., Lot 35 Well, Smith Well, etc.)?		X	PLEASE STATE
3. Is the proposed well a NEW well to be located within an Active Management Area? *(See instructions)*		X	Unless the well is a replacement well and the total number of operable exempt wells on the land is not increasing, you must also file a supplemental form A.R.S. § 45-454(C) & (D).
4. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

RECEIVED

SEP 23 2008

WATER MGMT

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER: 55- 218386

SECTION 5: DRILLING AUTHORIZATION

Drilling Firm

NAME: Bradley Drilling INC.

DWR LICENSE NUMBER: 736

ROC LICENSE CATEGORY: C 53 #184176

TELEPHONE NUMBER: 520-456-2355

FAX: 520-456-0247

MAILING ADDRESS: 562 E. Hiway 82

CITY / STATE / ZIP CODE: Huachuca City - AZ 85616

DATE CONSTRUCTION IS TO BEGIN:

SECTION 6: WATER/SITE INFORMATION

Principal Use of Water (CHECK ONE)	*Other Uses* of Water (CHECK ALL THAT APPLY)
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☒ Domestic	☐ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify):*	☐ Other *(please specify):*

SECTION 7: PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

Borehole: DEPTH FROM SURFACE FROM (feet)	Borehole: DEPTH FROM SURFACE TO (feet)	Borehole: BOREHOLE DIAMETER (inches)	Casing: DEPTH FROM SURFACE FROM (feet)	Casing: DEPTH FROM SURFACE TO (feet)	Casing: OUTER DIAMETER (inches)	Casing: MATERIAL TYPE (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	Casing: PERFORATION TYPE (T) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
GL 0"	20	14"	20	400'	8"	X*	X							X		Cement
					DLT											

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: Kenneth Fleming

SIGNATURE OF WELL OWNER: K Fleming — DATE: 9 18 08

SIGNATURE OF LANDOWNER, IF APPLICABLE (SEE INSTRUCTIONS): K Fleming — DATE: 9 18 08

RECEIVED
SEP 23 2008
WATER MGMT

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 218386

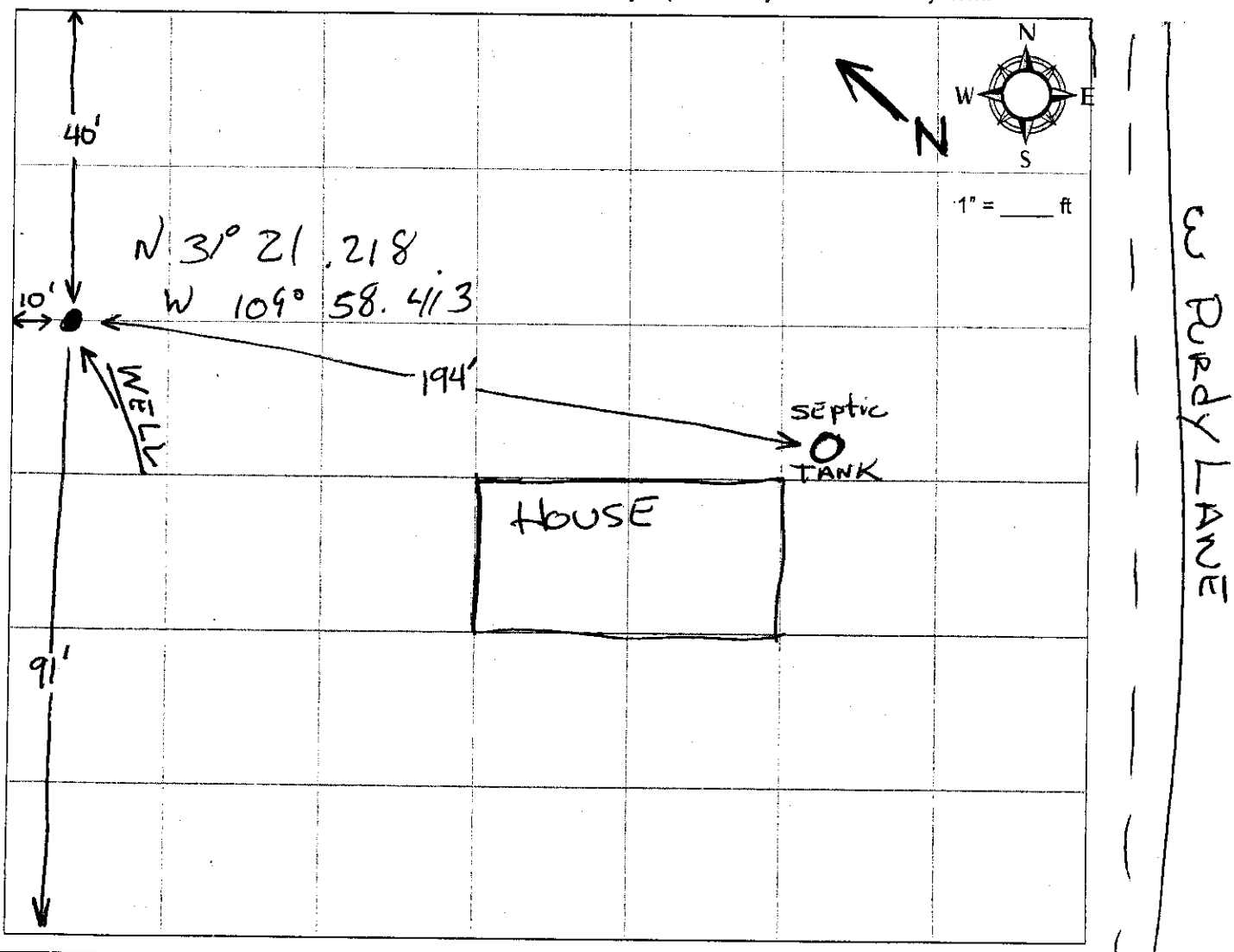
CHECK ONE: ☐ FILING MANUALLY
☐ FILING ELECTRONICALLY* *DRILLER'S E-MAIL ADDRESS:

COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL CODE	COUNTY APPROVAL CODE
If applicant is filing this NOI electronically via the ADWR website and County approval is required, please indicate approval by providing a County Approval Code.	

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE	APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
Carlos Diaz R.S.	DATE Sept 18, 2008
COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz R.S.	BY Carlos Diaz R.S.
TELEPHONE NUMBER: 520-432-9442	DATE: Sept 18, 2008

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 North Central Avenue, Phoenix, Arizona 85012
Telephone 602 771-8646
Fax 602 771-8691

Janet Napolitano
Governor

Herbert R. Guenther
Director

September 25, 2008

KENNETH FLEMING
PO BOX 957
BISBEE, AZ 85603

Re: NOI to Drill 55-218386

Dear Mr. Fleming:

Enclosed is a refund check in the amount of fifty dollars ($50.00). The Department is refunding a portion of the NOI filing fees because of an overpayment on your part. The appropriate filing fee for a well located within an AMA or INA is $150. For a well not located within an AMA or INA, the filing fee is $100 if the well will be used solely for domestic purposes and will have a pump with a maximum capacity of not more than 35 gallons per minute.

If you have any questions about the refund, please contact me at 602-771-8646.

Sincerely,

Denae Tak

Denae Tak
NOI Unit

Enclosures

Printed on recycled paper. Each ton of recycled paper saves 7,000 gallons of water.

Printed: 9/23/2008 8:50:29 AM

218386

Store 0010
Sale Receipt #
9/23/2008
Page 1

Arizona Department of Water Resources

3550 N Central Ave
Phoenix AZ 85012

RECEIVED
SEP 23 2008
WATER MGMT
Date: 9/23/2008

KENNETH L FLEMING

Cashier: Assoc4

Type: Mail

BISBEE,AZ 85603

DCS/INV#	INDEX	FEE TYPE	DESCRIPTION	QTY	PRICE	EXT PRICE
F 72	15245	4439-06	NOTICE OF INTENT TO DRILL WELL	1	150.00	150.00
				1 Unit(s)	Subtotal:	150.00
					RECEIPT TOTAL:	**150.00**
					Tendered:	150.00

Check #: 150.00 # 1879

102-43-002H CHOSHISE

We Appreciate Your Business!

ARIZONA DEPARTMENT OF WATER RESOURCES
Information Management Unit
P.O. Box 458, Phoenix, Arizona 85001-0458
(602) 771-8527 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

RECEIVED
JUN 28 2006
Information Management

This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

FILE NUMBER: D(24-24) 11 DCC
WELL REGISTRATION NUMBER: 55- 212447
PERMIT NUMBER (IF ISSUED):

SECTION 1. DRILLING AUTHORIZATION

Mail To:

Drilling Firm

NAME	DWR LICENSE NUMBER
ALLEN S WELL SERVICE L.L.C	14
ADDRESS	TELEPHONE NUMBER
5509 W. GLEESON ROAD	520-642-3775
CITY/STATE/ZIP	FAX
ELFRIDA, AZ 85610-9050	

SECTION 2. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: RICHARD & JULIE FULTZ
MAILING ADDRESS: 694 E BORDER RD
CITY / STATE / ZIP: BISBEE, AZ 85603
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-432-4463
FAX:
WELL NAME (e.g., MW-1, PZ-3, Lot 25 Well, Smith Well, etc.):

Location of Well

WELL LOCATION ADDRESS (IF ANY):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	11	SE 1/4	SW 1/4	SW 1/4

LATITUDE			LONGITUDE		
31 ° Degrees	21 . Minutes	02 "N Seconds	109 ° Degrees	52 . Minutes	24 "W Seconds

METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☒ *GPS: Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Survey-Grade

LAND SURFACE ELEVATION AT WELL: 4686 Feet Above Sea Level

METHOD OF ELEVATION (CHECK ONE): ☒ *GPS: Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Survey-Grade

*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE): ☐ NAD-83 ☐ Other (please specify):

COMPLETED JUL 20 2006

COUNTY	ASSESSOR'S PARCEL ID NUMBER BOOK	MAP	PARCEL
Cochise	101	44	010

SECTION 3. WELL CONSTRUCTION DETAILS

Drill Method — CHECK ONE
- ☒ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development — CHECK ONE
- ☒ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Method of Sealing at Reduction Points — CHECK ONE
- ☒ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☐ Other (please specify)

Condition of Well — CHECK ONE
- ☒ Capped
- ☐ Pump Installed

Construction Dates

DATE WELL CONSTRUCTION STARTED: 6-22-06
DATE WELL CONSTRUCTION COMPLETED: 6-23-06

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
Allens Well Service		6-23-06

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 212447

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

DEPTH OF BORING	DEPTH OF COMPLETED WELL
300 Feet Below Land Surface	300 Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
124 Feet Below Land Surface	6-23-06 ~~10-00~~	10:00	☐ Valve ☐ Other:

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	12 1/4
20	300	8"

Installed Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (X) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (X) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
+1	20	8 5/8	X										
0	300	5" ID		X									
	280	300									X		
	240	260									X		
	200	280									X		

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (X) NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
0	20			X					NONE			

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 212447

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	10	(Red) Clay	
10	90	red Clay & rock	
90	130	Gray - rock	
130	140	Sand	*
140	200	Red Volcanic rock	
200	310	brown - hard Clay	
310	320	brown sand	*
320	360	Volcanic rock	

Well Driller Report and Well Log

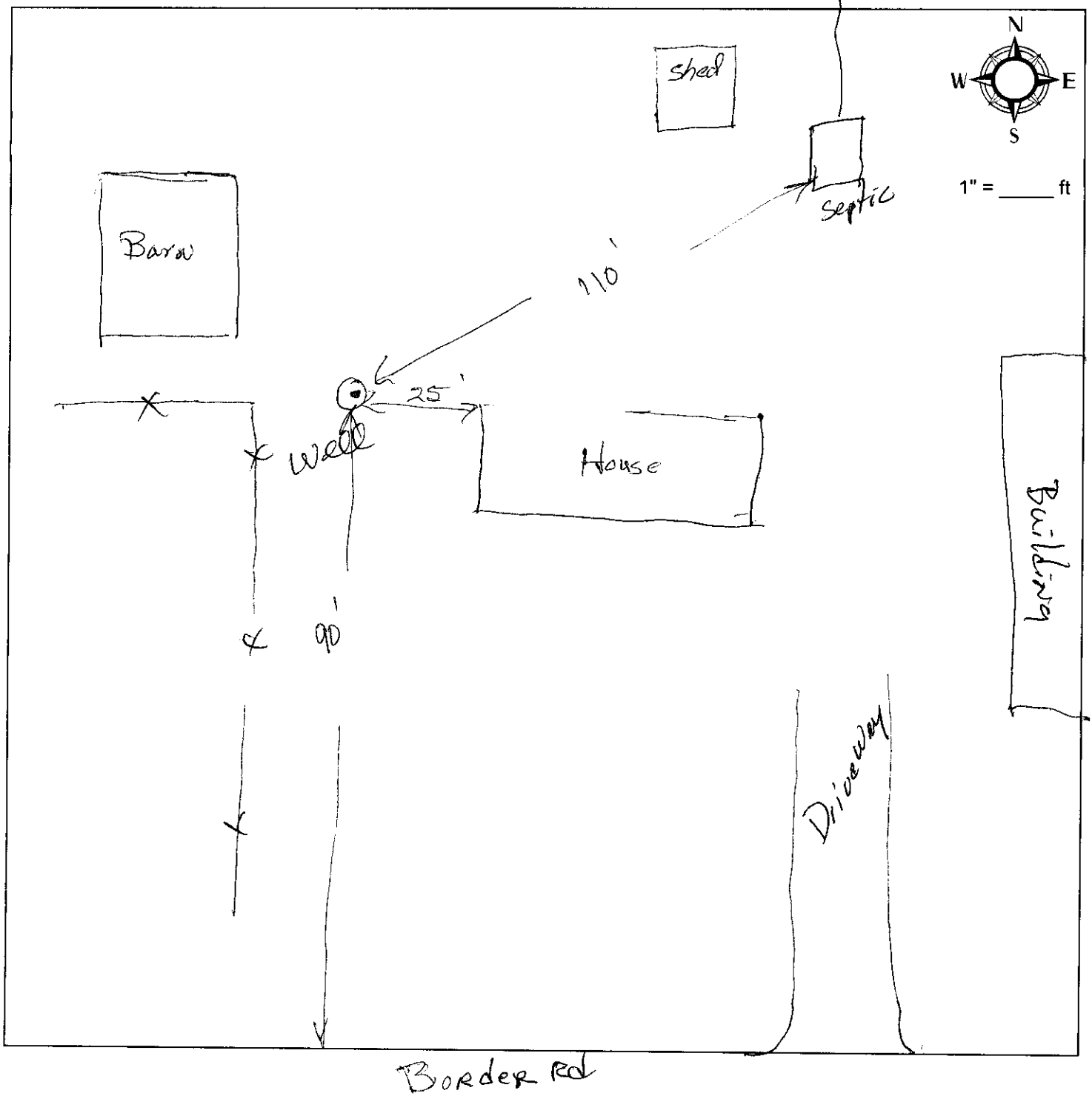
WELL REGISTRATION NUMBER
55- 212447

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
RICHARD & JULIE FULTZ	101	44	010

Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.

Please indicate the distance between the well location and any septic tank system or sewer system.



ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

3550 N. Central Avenue
Phoenix, Arizona 85012

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-212447

AUTHORIZED DRILLER: ALLEN S WELL SERVICE L.L.C LICENSE NO: 14

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: RICHARD & JULIE FULTZ 694 E BORDER RD BISBEE, AZ 85603

THE WELL(S) IS/ARE TO BE LOCATED IN THE:
SW ¼ OF THE SW ¼ OF THE SE ¼ SECTION 11 TOWNSHIP 24 SOUTH RANGE 24 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 101-44-010

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 22ND DAY OF MAY, 2007

WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue, Phoenix, Arizona 85012
Telephone (602) 771-8500
Fax (602) 771-8691

May 24, 2006

Janet Napolitano
Governor

Herbert R. Guenther
Director

RICHARD & JULIE FULTZ
694 E BORDER RD
BISBEE, AZ 85603 - 6324

Registration No. 55- 212447
File No. D(24-24) 11 DCC

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well that you recently filed with this Department pursuant to A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed or otherwise provided a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card, which must be displayed on the drill rig during drilling.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the proposed well, you may not proceed with drilling until you file an amended NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the amended NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DWR form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed is a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55) within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at <http://www.water.az.gov/adwr/content/forms/default.htm#NOI>.

Sincerely,

Tiffany Hancock

Tiffany Hancock
NOI Unit
Water Management Support Section

Enclosures

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or ~~$50~~ 100 FEE

AMA / INA	B 35 SB
RECEIVED DATE 5/23/06	WS 13
ISSUED DATE 5/24/06	WQARF CERCLA

FILE NUMBER D(24-24)11DCC
WELL REGISTRATION NUMBER 55 - 212447

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $50.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY ENDORSEMENT (If applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 before submission to the Department of Water Resources. You must also attach a site plan (see instructions).

CHECK ONE

- [X] County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
  - [X] Field Inspection Performed
  - [ ] Site Plan Review Only
- [ ] Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: Carlos Diaz R.S.

TELEPHONE NUMBER: 520-432-9442 | DATE: May 19, 2006

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE May 19, 2006
BY Carlos Diaz R.S.

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz R.S.

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

- [X] Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)
- [ ] Non-Exempt (Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 25 Gallons Per Minute

Proposed Action

CHECK ONE

- [X] Drill New Well
- [ ] Deepen
- [ ] Replace
- [ ] Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 -

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	11	SE ¼	SW ¼	SW ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
101	44	010-6	5.06

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Richard & Julie FuLTZ

MAILING ADDRESS: 694 E Border Rd

CITY / STATE / ZIP CODE: Bisbee Az. 85603-6324

CONTACT PERSON NAME AND TITLE: Same

TELEPHONE NUMBER: 520 432 4463 | FAX:

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL:

MAILING ADDRESS:

CITY / STATE / ZIP CODE: MAY 23 2006

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER: | FAX:

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Existing old well has caved in

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55-212447

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: ALLENS Well Service

DWR LICENSE NUMBER: 14

ROC LICENSE CATEGORY: C-53 L-53

TELEPHONE NUMBER: 520 642 3775

FAX: 520 642 3221

MAILING ADDRESS: 5509 W. Gleeson Rd

CITY / STATE / ZIP CODE: Elfrida Az. 85610

MAY 23 2006

SECTION 6. WATER / SITE INFORMATION

Principal Use of Water (CHECK ONE)	*Other Uses* of Water (CHECK ALL THAT APPLY)
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☑ Domestic	☐ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify):*	☐ Other *(please specify):*

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

DATE CONSTRUCTION IS TO BEGIN: June 06

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	12 1/4
20	200	8

Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
+1	20	8 5/8	X*										Cement
0	200	6		X									

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: RICHARD & JULIE FULTZ

SIGNATURE OF WELL OWNER OR LANDOWNER: Richard Fultz, Julie Fultz

DATE: 4-28-06

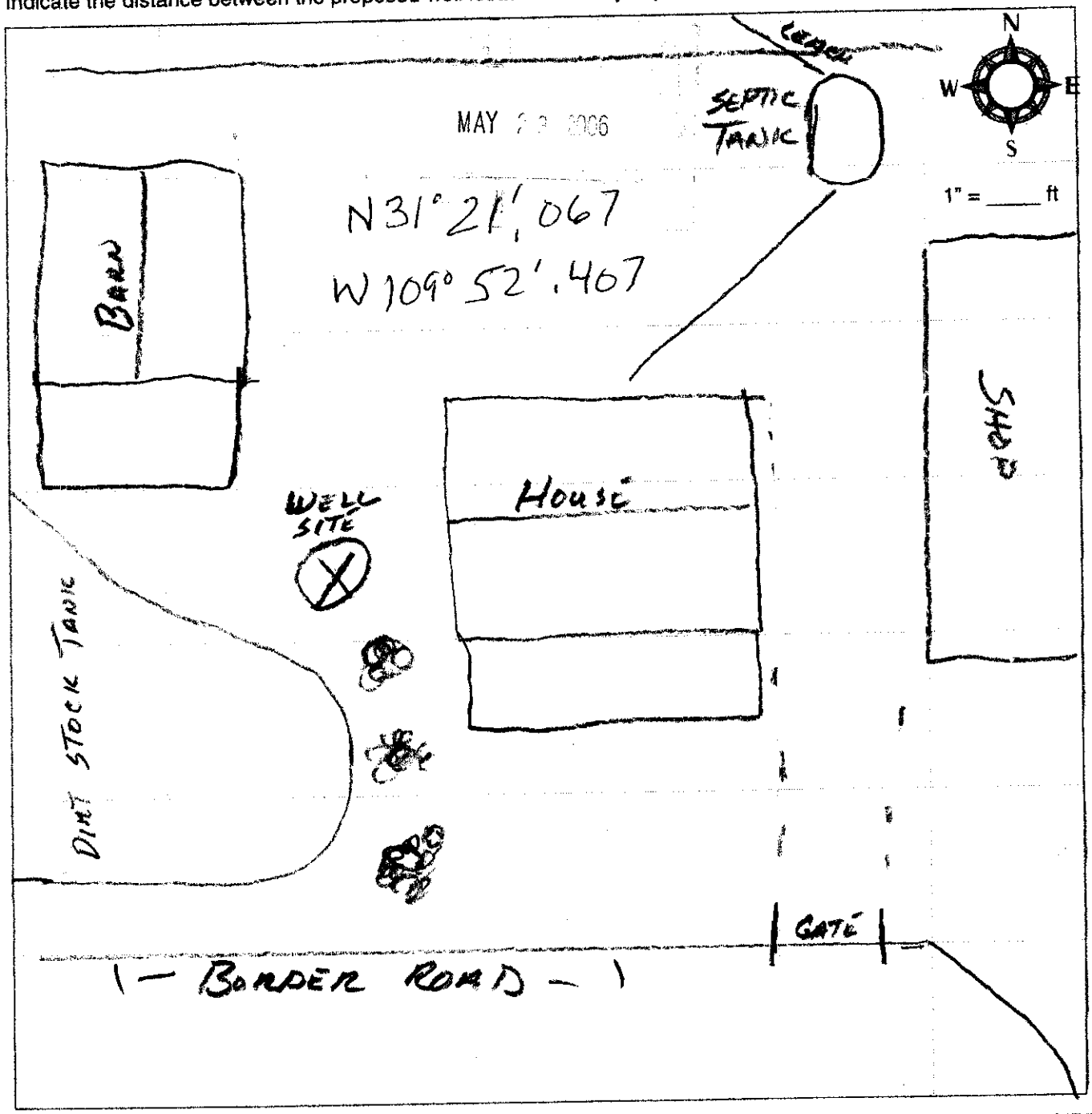
Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55- 212447

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
Richard & Julie Fultz			

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ RS

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz RS

TELEPHONE NUMBER: ~~520~~ 520 432 9442

DATE: May 19 2006

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION

DATE May 19 2006

BY Carlos Diaz RS

Official County or Local Seal or Stamp

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or ~~$50~~ 100 FEE

AMA / INA	B	SB
RECEIVED DATE	WS	
ISSUED DATE	WQARF	CERCLA

FILE NUMBER

WELL REGISTRATION NUMBER

55 - 212447

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $50.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY ENDORSEMENT (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 before submission to the Department of Water Resources. You must also attach a site plan (see instructions).

CHECK ONE

- [X] County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
  - [X] Field Inspection Performed
  - [ ] Site Plan Review Only
- [ ] Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE

RECEIVED MAY 23 2006

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE May 19, 2006
BY [signature]

COUNTY OF COCHISE ARIZONA

THORITY SIGNATURE
[signature]

148

RICHARD C. FULTZ
694 BORDER RD 520-432-4463
BISBEE, AZ 85603

Date 4-28-06

91-532/1221
27

Pay to the Order of ADWR $ 100.00/100 s

One Hundred Dollars & NO/100 s Dollars

National Bank OF ARIZONA
1-800-487-8168
www.nbarizona.com

For [redacted]

[redacted] MP

HORSE PLAY™ WHO

©Clarke American

ANY)

CTION	160 ACRE	40 ACRE	10 ACRE
1	SE ¼	SW ¼	SW ¼

ID NUMBER

PARCEL	# OF ACRES
010-6	5.06

F DIFFERENT FROM LOCATION OF WELL)

CTION	160 ACRE	40 ACRE	10 ACRE
	¼	¼	¼

DESIGNY UMP CAPACITY	DISTANCE & DIRECTION FROM ORIGINAL WELL	COUNTY WHERE WELL IS LOCATED
25 Gallons Per Minute	Feet	Cochise

SECTION 3. OWNER INFORMATION

Well Owner		Landowner (if different from Well Owner)	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Richard & Julie FuLTZ		FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL	
MAILING ADDRESS: 694 E Border Rd		MAILING ADDRESS	
CITY / STATE / ZIP CODE: Bisbee Az. 85603-6324		CITY / STATE / ZIP CODE	
CONTACT PERSON NAME AND TITLE: Same		CONTACT PERSON NAME AND TITLE	
TELEPHONE NUMBER: 520 432 4463	FAX	TELEPHONE NUMBER	FAX

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Existing old well has caved in

D24-24)13BB

Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

RECEIVED
MAR - 2 2006
INFORMATION MANAGEMENT

Request to Change Well Information

- Review instructions prior to completing form in back or blue ink.
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

** PLEASE PRINT CLEARLY **

FILE NUMBER

WELL REGISTRATION NUMBER
55-502527

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL

MAILING ADDRESS

CITY / STATE / ZIP CODE

CONTACT PERSON NAME AND TITLE

TELEPHONE NUMBER | FAX

Location of Well

WELL LOCATION ADDRESS (IF ANY)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	13	¼	¼	¼

LATITUDE			LONGITUDE		
° Degrees	' Minutes	" N Seconds	° Degrees	' Minutes	" W Seconds

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
		101-46-003B

COUNTY WHERE WELL IS LOCATED
COCHISE

Type of Request (CHECK ONE)

☐ Change of Well Drilling Contractor *(Fill out Section 2)*
☐ Change of Well Ownership *(Fill out Section 3)*
☐ Change of Well Information *(location, use, etc.) (Fill out Section 4)*

SECTION 2. REQUEST TO CHANGE WELL DRILLING CONTRACTOR ($10 Fee Required)

- If drilling or abandoning a well, the Department must receive this request and issue authorization to the new drilling form prior to the commencement of well drilling or abandonment.

$10 FEE

Current Well Drilling Contractor		New Well Drilling Contractor	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	
DWR LICENSE NUMBER		DWR LICENSE NUMBER	ROC LICENSE CATEGORY
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP ($10 Fee Required)

$10 FEE

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

Previous Well Owner		New Well Owner	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	
AVA BRADY		KURT GALLANT	
MAILING ADDRESS		MAILING ADDRESS	
1909 1/2 MUSCATINE AVE		429 LABAREE DRIVE	
CITY / STATE / ZIP CODE		CITY / STATE / ZIP CODE	
IOWA CITY, IA 55240		MILPITAS, CA 95035	
CONTACT PERSON NAME AND TITLE		CONTACT PERSON NAME AND TITLE	
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required)

NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE	SIGNATURE OF WELL OWNER
AVA BRADY	Ava Brady

D24-24)13BC

Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

RECEIVED
MAR - 2 2006
INFORMATION MANAGEMENT

Request to Change Well Information

- Review instructions prior to completing form in back or blue ink.
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), ~~A.R.S. § 45-113(B)~~

FILE NUMBER

WELL REGISTRATION NUMBER
55-502527

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner	Location of Well
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	WELL LOCATION ADDRESS (IF ANY)
MAILING ADDRESS	TOWNSHIP (N/S): 24S; RANGE (E/W): 24E; SECTION: 13; 160 ACRE: ¼; 40 ACRE: ¼; 10 ACRE: ¼

Pioneer Title Agency, Inc.
P.O. BOX 1900
Sierra Vista, AZ 85636

NATIONAL BANK OF ARIZONA
1160 E. Fry Blvd.
Sierra Vista, Arizona 85635
91-532/1221

NO. 697906

FILE NUMBER	DATE	AMOUNT
00911249 - 006 DB	02/24/06	$10.00

PAY TEN DOLLARS and no/100

TO THE ORDER OF ARIZONA DEPARTMENT OF WATER RESOURCES
P.O. BOX 458
PHOENIX, AZ 85001

[redacted]

Details on back.
Security Features Included.

SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP ($10 Fee Required)

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

Previous Well Owner	New Well Owner
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: AVA BRADY	FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: KURT GALLANT
MAILING ADDRESS: 1909 1/2 MUSCATINE AVE	MAILING ADDRESS: 429 LABAREE DRIVE
CITY / STATE / ZIP CODE: IOWA CITY, IA 55240	CITY / STATE / ZIP CODE: MILPITAS, CA 95035
CONTACT PERSON NAME AND TITLE	CONTACT PERSON NAME AND TITLE
TELEPHONE NUMBER / FAX	TELEPHONE NUMBER / FAX

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required)

NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE	SIGNATURE OF WELL OWNER
AVA BRADY	Ava Brady

DWR 55-71A (REVISED 03/20/03) Page 1 of 1

STATE OF ARIZONA

DEPARTMENT OF
WATER RESOURCES

RECEIVED
MAY 18 1982
DEPT OF
WATER RESOURCES

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Ted Goodnough
Name
505 Border Rd Bisbee AZ
Address

2. Lessee or Operator
Name
Address

3. Driller Tanner Drilling & Welding
Name
Box 504 Miami, Ariz 85539
Address

4. Location of well: T24S R24E Sec 13 SW1/4 NW1/4 NW1/4

5. Permit No. (if issued)

DESCRIPTION OF WELL

6. Total depth of hole 190 ft.
7. Type of Casing Plastic
8. Diameter and length of casing 6 steel in. from 0 to 20, 6 plastic in from 20' to 190'.
9. Method of sealing at reduction points
10. Perforated from 40' to 60', from 80' to 140', from to
11. Size of cuts 1/8"x6" Number of cuts per foot 4
12. If screen was installed: Length ft. Diam in. Type
13. Method of construction drilled
drilled, dug, driven, bored, jetted, etc.
14. Date started 4 (Month) - 18 (day) - 82 (year)
15. Date completed 4 (Month) - 26 (day) - 82 (year)
16. Depth to water 25 ft. (If flowing well, so state.)
17. Describe point from which depth measurements were made, and give sea-level elevation if available.
ground level
18. If flowing well, state method of flow regulation
19. REMARKS:

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55-502527
Received By
Entered 5-19-82 By
File No. D(24-24)13bbc

(Well log to appear on Reverse side)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	1	top soil
1	5	boulders
5	15	lime stone
15	30	brown sandstone
30	35	red sandstone
35	40	brown sandstone
40	50	sandstone (water)
50	85	purple clay
85	95	sandstone (water)
95	105	brown clay
105	130	brown sandstone
130	140	sandstone (water)
140	195	brown clay

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

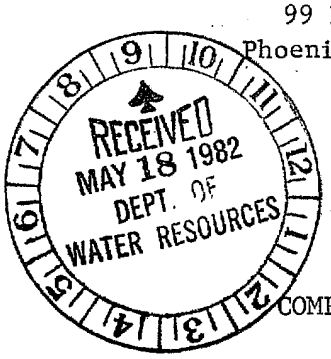
Driller Jackson James
Name

Box 504 Miami, Az 85539
Address

Date 5-17-82

2-73

DEPARTMENT OF WATER RESOURCES
99 East Virginia
Phoenix, Arizona 85004



Registration No. 55-502527
Owner of
Well Site Ted Goodnough

File No. D(24-24)13bbc

COMPLETION REPORT

1. Completion Report to be filed with the Department within 30 days after installation of pump equipment.

2. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

3. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.

4. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

LOCATION OF THE WELL

T24S R24E Sec 13 SW¼ NW¼ NW¼

Date Well Completed 4-26-82 Depth of Well 190 ft

1. Well Test:
Test Pumping Capacity 20 GPM. (Gal. per min.) Date Well Tested 4-27-82
Method of Discharge Measurement orfice (weir, orifice, current meter, etc.)

Static Groundwater Level 25 ft. Drawdown 0 ft.
Total Pumping Lift 25 ft. Drawdown lbs. (Flowing Well)

2. Equipment Installed:

Kind of Pump Submersible (turbine, centrifugal, etc.)

Kind of Power elec. (Elec., Nat. Gas, Etc.) H.P. Rating of Motor 1HP

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Signature

Box 504
Address

5-17, 19 82
Date

Miami Ariz 85539
City State Zip

5-19-82

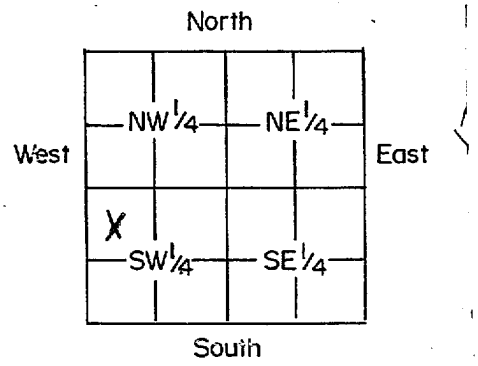
EXEMPT WELL

FILING FEE: $3.00

DEPARTMENT OF WATER RESOURCES
NOTICE OF INTENTION TO DRILL OR DEEPEN AN EXEMPT WELL

EXEMPT WELL

Section 45-596, Arizona Revised Statutes, provides: A person may not drill or cause to be drilled any well or deepen or replace an existing well without first filing a Notice of Intention to Drill with the Department on a form prescribed and furnished by the Department. The well shall be completed within one year after the date of Notice. An exempt well means a well having a pump with a maximum design capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An exempt well may include the non-commercial irrigation of not more than 1 acre of land.



-Indicate Well Location by X
(Above diagram represents one 640 acre section)

WELL/LAND LOCATION:

1. Township 24S
2. Range 24E
3. Section 13
4. SW ¼ NW ¼ NW ¼ — 10 acre sub-division
5. County Cochise
6. Owner of Well:
   Jed Goodnough — Name
   505 Border Rd. — Address
   Bisbee, Ariz 85603 — City, State, Zip
7. Owner of Land:
   Jed Goodnough — Name
   505 Border Rd. — Address
   Bisbee, Ariz — City, State, Zip

DESCRIPTION OF WELL:

8. Diameter 6"
   Depth 200'
9. Type of Casing Plastic
10. Principal use of Water. domestic
11. Other uses Intended

(If for non-commercial irrigation, state approximate area being cultivated.)

12. Construction will start about: 4 (Month) 82 (Year)

13

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
FILE NO. D(24-24)13 bbc
FILED 4-8-82 BY EK
INPUT 4-9-82 BY
DUPLICATE MAILED 4-8-82 BY EK
REGISTRATION NO 55-502527
AMA NON EXPANSION AREA —

PLACE OF USE:

13. Township 24S
14. Range 24E
15. Section 13
16. Legal description of land water is to be used on:
    T24S R24E Sec 13
    SW¼ NW¼ NW¼
17. Design Pump Capacity 35 GPM.
18. Action Requested:
    Drill ✓
    Deepen
    Replace
19. This notice filed by:
    Owner
    Lessee
    Driller ✓

Janner Drilling & Welding — Name
Box 504 — Address
Miami, Ariz 85539 — City, State, Zip

20. Drillers Name:
    Janner Drilling & Welding — Name
    Box 504 — Address
    Miami, Ariz 85539 — City, State, Zip
    253 — Department License Number

1. Fill out this form in duplicate and mail to P.O. Box 2600, Phoenix, Arizona, 85002, or deliver to 99 East Virginia, Suite 100, Phoenix, Arizona 85004.
2. If the Exempt Well is in fact a replacement (or deepening) well, state the registration number of the existing well. _____
3. Construction standards for new and replacement wells and the deepening and abandonment of existing wells, shall be in accordance with Department Rules and Regulations.

I, Jackson Janner, state that the construction will be under the direct and personal supervision of the well driller designated on this form and that the designated driller holds a contractors license pursuant to ARS 45-595.

4-4-82 — Date

Jackson Janner — Signature of Person Filing

XXXXXXXXXXXX
Tanner Drilling & Welding
Box 504
Miami AZ 85539

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	502527
	THRU

For: Ted Goodnough

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing fee for Notice of Intention to		3.00
					Drill an Exempt Well		
					D(24-24)13bbc		
					Registration #55-502527		
					Check # 122100011 022804803		

WAITER PAYMENT
GUESTS 1
CHK NO 4803
55-I 3.00
TAX 0.00
TOTL 3.00
GEN.CHEK 3.00

6315 A 10:03

4/8/82/ek

TOTAL $ 3.00

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

RECEIVED
OCT 18 1996
RECORDS MGT

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. TANNER WELL SERVICE
7914 N. FRONTIER RD
MCNEAL, AZ 85617

2. Owner Name: TERRY GARNER
Address: 1027 W. PURDY LANE BISBEE AZ. 85603
Street City State Zip

3. Location: 24 ~~N~~/S 24 E/~~W~~ 17 ¼ NW ¼ NW ¼ NW ¼
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55- 558557 (Required)

5. Permit No. N/A (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 300 ft.
7. Type of casing 22' STEEL — 279' PVC
8. Diameter and length of casing 6 in. from 0 to 300', in from to
9. Method of sealing at reduction points N/A
10. Perforated from 180' to 220', from 240' to 300' from to
11. Size of cuts ⅛" x 6" Number of cuts per foot 3
12. If screen was installed: Length N/A ft. Diam in. Type
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started 7-24-96
Month Day Year
15. Date completed 9-4-96
Month Day Year
16. Depth to water 170' ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
FROM GROUND LEVEL
18. If flowing well, state method of flow regulation: N/A
19. Remarks: GRAVEL PACKED 20' - 300'

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-558557
File No. D(24-24)17BBB
Received By
Entered ENTERED OCT 21 By 1996

DWR-55-55-7/95 (Rev.)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	2	TOP SOIL
2	63	BROWN CLAY
63	80	BROWN CLAY + ROCK
80	183	SAND + GRAVEL (HIT WATER 180' - ROSE TO 170')
183	220	BROWN CLAY + ROCK
220	225	SAND + GRAVEL
225	300	CONGLOMERATE - GRAVEL + ROCK

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: ROBERT D. TANNER

7914 N. FRONTIER RD.
Street

McNEAL, AZ. 85617 520-642-3654
City State Zip Phone No.

Robert D. Tanner 9-5-96
Signature of Driller Date

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470 Fax: (602) 417-2422

RECEIVED
JUL 29 1997
RECORDS MGT

COMPLETION REPORT
(Pump Installation Report)

1. Per A.R.S. § 45-600, The completion report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation. For a flowing well the shut-in presssure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

REGISTRATION NO: 55- 558557 FILE NO: D(24-24) 17bbb

LOCATION OF THE WELL:

24S	24E	17	¼ NW	¼ NW	¼ NW
Township	Range	Section	10-acre	40-acre	160-acre

EQUIPMENT INSTALLED:

Kind of Pump Submersible (Turbine, Submersible, Centrifugal, etc.) Kind of Power Electric (Electric, Natural Gas, Gasoline, etc.)

H.P. Rating of Motor 1 1/2 Pumping Capacity 16 GPM Date Pump Installed 9/8/96

WELL TEST:

Test Pumping Capacity 16 (Gallons per minute) Date Well Tested 9-8-96

Method of Discharge Measurement Measured Container (Weir, orifice, current meter, bucket, etc.)

Static Groundwater Level 171 ft. Drawdown 14 ft.

Total Pumping Lift 260 ft. Drawdown _____ lbs. (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Terry Garner	1027 W. Purdy Ln.	Bisbee	Az.	85603
Print Well Owner's Name	Address	City	State	Zip

Terry Garner	520-432-4210	7-25-97
Signature of Well Owner	Phone Number	Date

DWR 55-56 (Rev 10/95)

ENTERED AUG 22 1997

Should they have Rec. a Summons?

Run Date: 09/18/2002

AZ DEPARTMENT OF WATER RESOURCES

WELL REGISTRY REPORT - WELLS55

Location A 10.0 21.0 5 A A D

Well Reg.No 55 - 558587

AMA NOT WITHIN ANY AMA OR INA

Name LOVERIDGE, ROSE,
6645 HWY 260

SHOW LOW AZ 85904

File Type NEW WELLS (INTENTS OR APPLICATIONS)
Application/Issue Date 06/27/1996

Owner OWNER
Driller Nbr 453
Driller Name H. E. BEEMAN WELL DRILLING dba Wyatt Drilling, Inc.
Driller Phone 928-537-1031
County NAVAJO
Intended Capacity GPM 25.00

Well Type EXEMPT
SubBasin LITTLE COLORADO RIVER PLATEAU
Watershed LITTLE COLORADO RIVER
Water Uses DOMESTIC
Well Uses WATER PRODUCTION
Discharge Method NONE
Power NO POWER CODE LISTED

Well Depth	340.00	**Case Diam**	8.00	**Tested Cap**	0.00
Pump Cap.	0.00	**Case Depth**	340.00	**CRT**	
Draw Down	0.00	**Water Level**	280.00	**Log**	X
		Acres Irrig	0.00	**Finish**	STEEL - PERFORATED OR SLOTTED CASING

Comments |ICO:|IPQ:|PQ#:

Current Action

Action History

6/15/1997	750	WELL LOG RECEIVED
6/15/1997	755	WELL CONSTRUCTION COMPLETED

New address
P.O. Box 1833
Show Low, AZ
85901
928-537-3469

SEP 19 2002

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division, 15 South 15th Avenue
Phoenix, Arizona 85007 (602) 542-1581
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

Section § 45-596, A.R.S., provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department.

IF PARCEL IS 20 ACRES OR LESS, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BELOW, BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES.

Terry Garner (Land Owner's Name) 1027 w Purdy Ln (Address) Bisbee (City) AZ (State) 85603 (Zip)

Telephone 432-4210

County: Cochise

COUNTY ASSESSOR'S PARCEL ID INFORMATION:

102 (BOOK) 54 (MAP) 0029 (PARCEL) 4 (No. of Acres of Parcel)

Well/Land Location:

X NW 1/4 (10AC) NW 1/4 (40ac) NW 1/4 (160ac) 1/4 of Section 17 Township 24 N/S Range 24 E/W

OFFICIAL RECEIVED C.H.S.S. 1415 W. Melody Lane Bldg. A Bisbee, Arizona 85603

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

Check one:

Recommend Approval X ; Insufficient information to make determination _____ ; Variance required _____ (Explanation attached)

DATE 6-21-96 AUTHORIZED SIGNATURE Steven Kerbs

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH

1. Section § 45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section § 45-596(D), provides that the Department has **15 days after** the receipt of a **complete and correct** notice of intention to record the notice and mail the duplicate to the owner.
3. Fill out this form and site plan in **DUPLICATE** and send **WITH $10.00 FEE** to 15 South 15th Ave., Phoenix, AZ 85007. **USE BLACK OR BLUE INK.**
4. For specific instructions, limitations and conditions, see the reverse side of this form.
5. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
6. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. **Owner of well:**
Terry Garner (Name)
1027 w Purdy Ln (Mailing Address)
Bisbee AZ 85603 (City State Zip)
Telephone: 432 4210

2. **Action requested:** Drill New Well X ; Deepen _____ Modify _____ Replace _____
For a replacement well provide: Maximum capacity of the original well _____ gallons per minute; distance from the original well _____ feet.
Well Registration No. 55- _____

3. **Construction will start about:**
Month June Year 1996

4. **DESCRIPTION OF PROPOSED WELL:**
Diameter 6 inches
Depth 300 feet
Type of Casing PVC

5. **Design Pump Capacity:**
20 gallons per minute

6. **Lessee of Land of wellsite:**
none (Name)
_____ (Mailing Address)
_____ (City State Zip)
Telephone: _____

7. **Principal use of water:**(be specific)
Domestic

8. **Other uses of water:**(be specific)
none

9. If use includes **irrigation**, state to nearest tenth, the number of acres to be irrigated: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD BBB
File No. D (24-24) 17 N
Filed 6/24/96 By M
Input _____ By _____
DUPLICATE MAILED
Date 6/27/96 By M
Registration 55- 55-558557
AMA/INA _____
W/S 13 S/B _____
ENTERED JUL 1 1996

10. **PLACE OF USE** (Legal Description of Land):
Township 24 N/S Range 24 E/W
Section 17 1/4 NW 1/4 NW 1/4 NW

11. **Type of well:** Exempt X Non-Exempt _____
Residential X Commercial _____

12. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks? YES _____ NO X

13. **DRILLING FIRM:**
Tanner Well Service (Firm Name)
7914 N. Frontier Rd. (Mailing Address)
McNeal, AZ 85617 (City State Zip)
133
DWR License C-53
ROC License Classification

RECEIVED JUN 24 1996 GROUNDWATER MGT

Terry Garner
Typed or Printed Name of Owner or Lessee

Terry Garner
Signature [ ] Land Owner [ ] Lessee of Wellsite

June 18 - 1996
DATE

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. If any water from a proposed well on a parcel of land of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant shall submit a site plan to scale of the property with the county assessor's parcel identification number. The site plan:

   a. Will be on a 8½"x11" piece of plain paper with representation of the locations of all structures, septic tank or sewer systems and proximity of adjacent lot lines to scale.
   b. Must show the proposed well location and the location of any septic or sewer system that is either located on the property or within one hundred feet of the proposed well site.
   c. Shall demonstrate to the director's satisfaction that the well will not be drilled within one hundred feet of any septic or sewer system.
   d. Must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Before approval, the health authority shall review the plan and determine whether the proposed well location complies with applicable state and local laws regarding the placement of wells. If so, the health authority shall endorse the site plan and the proposed well placement.

2. Endorsement by the county/local authority is based solely on the best available judgement that this well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. Information brought to light at a future date may render this determination invalid.

3. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use and is later proposed to be converted to use for domestic purposes, as defined in § 45-454, the well owner shall file a notice of intention to drill and comply with the requirements prescribed pursuant to this section before the well is converted and any water from that well used for domestic purposes.

4. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

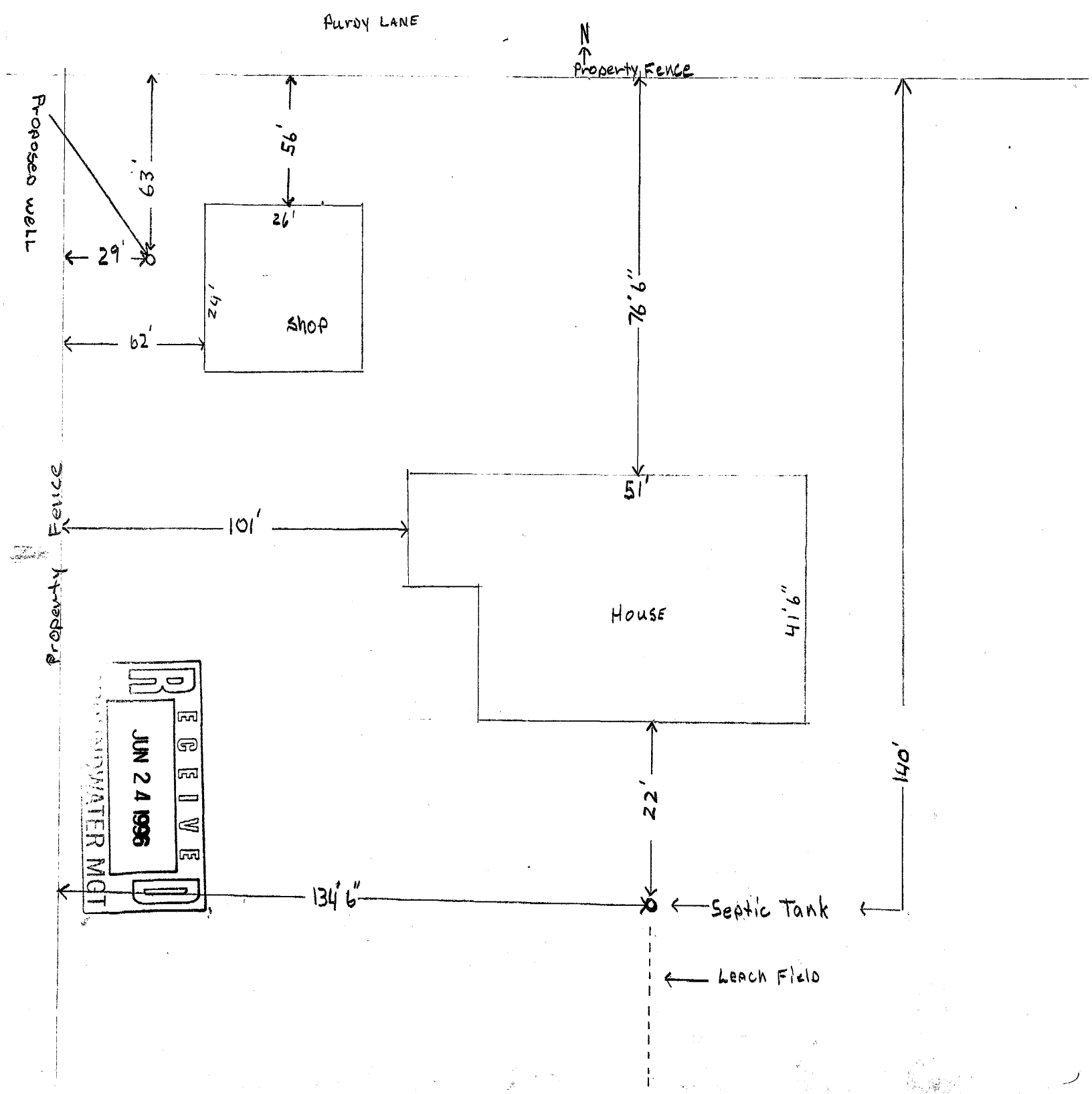
5. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an Irrigation Non-Expansion Area or Active Management Area to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

6. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of the notice (§ 45-596.E.).

7. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this notice.

8. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

9. If an individual other than the land owner or lessee signs this Notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific Notice on their behalf, shall accompany the Notice.


PURDY LANE
N
Property Fence
Proposed well
63'
56'
26'
29'
24'
62'
Shop
76'6"
51'
101'
Property Fence
House
41'6"
22'
140'
134'6"
Septic Tank
Leach Field
RECEIVED
JUN 24 1996
WATER MGT

32837

1957 1053 #

IN NENE BY M&B Beg 308 W of NE Cor of
NE 4 W 205' S 850' E 205' N 850'
to Beg Sec 17 24 24 4

(1) (24-24) 17 AAA

RECEIVED
JUN 24 1996

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

June 27, 1996

Terry Garver
1027 W. Purdy Circle
Bisbee, AZ 85603

Registration No. 55-558557
File No. D(24-24)17BBB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill, deepen or modify a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593(C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Dorothy Boggs

Dorothy Boggs
Groundwater Permit Specialist

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-558557

AUTHORIZED DRILLER: TANNER WELL SERVICE LICENSE NO: 133

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: TERRY GARVER

The well(s) is/are to be located in the:

NW 1/4 of the NW 1/4 of the NW 1/4 Section 17 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 23RD DAY OF JUNE, 1997.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street
Phoenix, Arizona 85004

RECEIVED
OCT 18 2001
RECORDS MGT

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. ARIZONA BEEMAN DRILLING dba Morex Investments LLC
P.O. BOX 3370
APACHE JUNCTION, AZ 85217-3370

2. Owner Name: Terry S. Garner
Address: 1027 W. Purdy Lane Bisbee, AZ 85603
City State Zip

3. Location: 24 N/S 24 E/W 17 ¼ NE ¼ NE ¼ NE
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55-587635 (Required)

5. Permit No. _____ (If Issued)

DESCRIPTION OF WELL

6. Total depth of hole 680 ft.
7. Type of casing PVC
8. Diameter and length of casing 12 in. from 0 to 20, 5 in from 0 to 660
9. Method of sealing at reduction points No Reduction Neat Cement 0-20'
10. Perforated from 580 to 660, from _____ to _____ from _____ to _____
11. Size of cuts .040 Number of cuts per foot 48
12. If screen was installed: Length 80 ft. Diam 5 in. Type PVC
13. Method of construction Mud Rotary Drilled
(drilled, dug, driven, bored, jetted, etc)
14. Date started 09 16 01
Month Day Year
15. Date completed 10 12 01
Month Day Year
16. Depth to water 180 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea level elevation if availat
Ground Level
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55- 587635
File No. D(24-24) 17 AAA
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

COMPLETED OCT 2 1 2001

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470 Fax: (602) 417-2422

RECEIVED
NOV 15 2001
RECORDS MGT

COMPLETION REPORT
(Pump Installation Report)

1. Per A.R.S. § 45-600, The completion report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.

2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation. For a flowing well the shut-in presssure should be measured in feet above the land or in pounds per square inch at the land surface.

3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

REGISTRATION NO: 55- 587635 FILE NO: D(24-24)17AA4

LOCATION OF THE WELL:

24	24	17	¼ NE	¼ NE	¼ NE
Township	Range	Section	10-acre	40-acre	160-acre

EQUIPMENT INSTALLED:

Kind of Pump Submersible (Turbine, Submersible, Centrifugal, etc.) Kind of Power Electric (Electric, Natural Gas, Gasoline, etc.)

H.P. Rating of Motor 2 Pumping Capacity 20 Date Pump Installed 10-11-01

WELL TEST:

Test Pumping Capacity 20 (Gallons per minute) Date Well Tested 10-11-01

Method of Discharge Measurement Bucket (Weir, orifice, current meter, bucket, etc.)

Static Groundwater Level 182 ft. Drawdown 230 ft.

Total Pumping Lift 300 ft. Drawdown _____ lbs. (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Terry S. Garner	1027 W Dundy Ln	Bisbee	AZ	85603
Print Well Owner's Name	Address	City	State	Zip

Terry Garner	520-432-4210	11-8-01
Signature of Well Owner	Phone Number	Date

DWR 55-56 (Rev 10/95)

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001- 0458
FOR INFORMATION: CALL MONICA ORTIZ AT 602-417-2470

REQUEST FORM TO CHANGE WELL INFORMATION
OWNERSHIP * DRILLER

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-045. In accordance with A.R.S. § 45-113, please submit the applicable fee. NOTE: A.R.S. §45-593 (C) requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)

NOTE: If the location of the proposed well changes after drilling authority has been issued, **attach a $10.00 reissue fee for each** of the drilling authorities to be changed.

WELL REGISTRATION NO. 55-_____ **FILE NO:**_____

I/We request the following well information be changed: _____

_____

Date_____ Signature of Current Well Owner_____

***Note: This information is on your copy of the Notice of Intent to Drill.**

2. STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I,_____, state that I am the **Previous/New Owner** of the well described below:

_____¼ _____¼ _____¼ of Section_____ Township_____N/S Range_____E/W
10 Acre 40 Acre 160 Acre

Assessor's tax parcel number of the parcel on which the well is located: Book_____ Map_____ Parcel_____

Well Registration No. 55-_____ File No._____(if known

_____	_____
PRINT Previous Owner's Name	**PRINT** New Owner's Name
_____	_____
Mailing Address	Mailing Address
_____	_____
City State Zip	City State Zip
_____	_____
Telephone Number	Telephone Number

Signature of Previous/New Well Owner Date

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

REISSUE

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-587635

AUTHORIZED DRILLER: ARIZONA BEEMAN DRILLING dba Morex Investments LLC LICENSE NO: 360

NOTICE OF INTENTION TO DRILL A EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: TERRY S GARNER 1027 W PURDY LN BISBEE, AZ 85603

The well(s) is/are to be located in the:

NE ¼ of the NE ¼ of the NE ¼ Section 17 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 26TH DAY OF JUNE, 2002

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR INFORMATION, CALL OUR WATER RESOURCE TECHNICIAN AT (602) 417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

RECEIVED
JUN 27 2001
GROUNDWATER MG

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES

A Terry S Garner 1027 W. Purdy Ln Bisbee AZ 85603
LAND OWNER S NAME | CURRENT MAILING ADDRESS | CITY | STATE | ZIP

B TELEPHONE NO 520 432 4210 COUNTY ASSESSOR'S PARCEL ID INFORMATION

C WELL LOCATED IN COCHISE COUNTY D 102 54 002 E 4
BOOK MAP PARCEL # OF ACRES

OFFICIAL SEAL OR STAMP

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED)

F NE ¼ NE ¼ NE ¼ OF SECTION 17 TOWNSHIP 24 N(S) RANGE 24 E(W)
10AC 40AC 160AC

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE
G RECOMMEND APPROVAL ✓ INSUFFICIENT INFORMATION TO MAKE DETERMINATION _____ VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE 6/22/01 AUTHORIZED SIGNATURE _____ TITLE _____

Heather Swaller 7/5/01

GENERAL INSTRUCTIONS BELOW - PLEASE READ SPECIFIC INSTRUCTION ON BACK

1 Section§45-596(D) provides that the director shall determine that all mformation required on this form has been submitted If not the person filing will be notified and the drilling or modification of the well may **not** proceed.
2. Section§ 45-596(D) provides that the department has 15 days after the receipt of a complete and correct notice of intention to record the notice and mail duplicate to owner Drill card will be mailed directly to drilling firm as stated in item #14
3 Please mail **two** original notices with original signatures and a site plan in **duplicate and,** in accordance with A R.S §45-113 a check or money order (no cash) in the **amount of $10 00** to P O Box 458 Phoenix Arizona. 85001 0458 or hand deliver to 500 North Third Street Phoenix Arizona
4 If the well is a replacement deepening or modification of an existing well provide the registration number of the existing well in item 2
5 Construction standards for wells including abandonment shall be in accordance with department rules

1 OWNER OF WELL
Terry S Garner
NAME
1027 W Purdy Ln.
CURRENT MAILING ADDRESS
Bisbee AZ 85603
CITY STATE ZIP

TELEPHONE NUMBER 520 432-4210

2 ACTION REQUESTED
DRILL NEW WELL X DEEPEN _____

MODIFY _____ REPLACE _____

WELL REGISTRATION NO 55 _____

FOR A REPLACEMENT WELL PROVIDE MAX. CAPACITY OF THE ORIGINAL WELL _____ GALLONS PER MINUTE
DISTANCE FROM THE ORIGINAL WELL _____ FEET

3 CONSTRUCTION WILL START ABOUT
MONTH JULY YEAR 2001

4 TYPE OF CASING FOR PROPOSED WELL
SURFACE CASING STEEL
DIAMETER 12 75 " DEPTH 19 '
DOWNHOLE CASING PVC
DIAMETER 5 " DEPTH 710

5 DESIGN PUMP CAPACITY
15 GALLONS PER MINUTE

6 LESSEE OF LAND OF WELLSITE
_____
NAME
_____
CURRENT MAILING ADDRESS
_____
CITY STATE ZIP

TELEPHONE _____

7 PRINCIPLE USE OF WATER (BE SPECIFIC)
DOMESTIC

8 OTHER USES OF WATER. (BE SPECIFIC)
_____

9 IF USE INCLUDES IRRIGATION STATE TO NEAREST TENTH. THE NUMBER OF ACRES TO BE IRRIGATED _____

* FOR DEPARTMENT USE ONLY
REGISTRATION NO 55-587635
DATE FILED 6/27/01
FILE NO D(24-24)17AAA
AMA/INA _____
W/S II S/B 76
PROCESSED BY MD
DATE MAILED 7/5/01
MD

10 PLACE OF USE (LEGAL DESCRIPTION OF LAND)
NE ¼ NE ¼ NE ¼ SECTION 17
10AC 40AC 160AC
TWNSHP 24 N(S) RNG 24 E(W)

11 TYPE OF WELL (CHECK ONE)
EXEMPT X NON-EXEMPT _____
12 CHECK ONE
RESIDENTIAL X COMMERCIAL _____

13 IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM SEWER DISPOSAL AREA LANDFILL HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES _____ NO X

14 DRILLING FIRM
STEWART Bros
NAME
PO Box 2067
MAILING ADDRESS
MILAN NM 87021
CITY STATE ZIP
(505) 287-7666
TELEPHONE NO
314
DWR LICENSE NUMBER C-53
ROC LICENSE CATEGORY

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S §§45-595 & 45 596 AND IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO 55-587635

AUTHORIZED DRILLER STEWART BROTHERS DRILLING COMPANY LICENSE NO 314

NOTICE OF INTENTION TO DRILL A EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY

WELL OWNER TERRY S GARNER 1027 W PURDY LN BISBEE, AZ 85603

The well(s) is/are to be located in the

NE ¼ of the NE ¼ of the NE ¼ Section 17 Township 24 SOUTH Range 24 EAST

No of wells in this project 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 26TH DAY OF JUNE, 2002

ARS

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

July 05, 2001

JANE DEE HULL
Governor
JOSEPH C SMITH
Director

TERRY S GARNER
1027 W PURDY LN
BISBEE, AZ 85603

Registration No 55-587635
File No D(24-24) 17 AAA

Dear Well Owner

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596 The enclosed Completion Report is to be submitted when pump equipment is installed The Drilling Card and Well Drilling Report form have been sent to your driller He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling If you change drillers, you must supply this Department with the new driller's identity Please ensure that the driller you select is licensed to drill the type of well you require All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling You should insist, and ensure, that both of these are done

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816 F

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate We have enclosed a Change of Well Information Form should it be needed in the future

Sincerely,

Toni Bergeman

Toni Bergeman
Water Resource Technician
Groundwater Management Support Section

Enclosures

D124-2411 CBC

Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Request to Change Well Information

- Review instructions prior to completing form
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

** PLEASE PRINT CLEARLY **

JUL 20 2005

FILE NUMBER
WELL REGISTRATION NUMBER
55- 628546-L

SECTION 1 REGISTRY INFORMATION

Well Owner	Location of Well
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Galloping Goose Properties, LLC	WELL LOCATION ADDRESS (IF ANY)
MAILING ADDRESS: [illegible]	TOWNSHIP (N/S) / RANGE (E/W) / SECTION / 160 ACRE / 40 ACRE / 10 ACRE

Pioneer Title Agency, Inc.
P.O. BOX 1900
Sierra Vista, AZ 85636

BANK ONE, ARIZONA, N.A.
TITLE SERVICING (769)
PHOENIX, ARIZONA
91-2/1221

NO. 360619

FILE NUMBER	DATE	AMOUNT
00515747 - 001 FMM	07/05/05	$10.00

PAY TEN DOLLARS and no/100

TO THE ORDER OF
AZ DEPT OF WATER RESOURCES
P.O. BOX 458
PHOENIX, AZ 85001

ES[redacted]

ANSWERED JUL 2 2 2005

[redacted]

Security Features Included. Details on back.

SECTION 3 STATEMENT OF CHANGE OF WELL OWNERSHIP ($10 Fee Required) — $10 FEE

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

Previous Well Owner	New Well Owner
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: B.P.O. ELKS NO. 671	FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Galloping Goose Properties LLC
MAILING ADDRESS: DRAWER BX	MAILING ADDRESS: PO 9015
CITY / STATE / ZIP CODE: BISBEE, AZ 85603	CITY / STATE / ZIP CODE: WOODLAND PARK
CONTACT PERSON NAME AND TITLE:	CONTACT PERSON NAME AND TITLE: ED BEAUMONT MGR.
TELEPHONE NUMBER: / FAX:	TELEPHONE NUMBER: (719) 687-9215 / FAX: (719) 687-9317

SECTION 4 CHANGE OF WELL INFORMATION (No Fee Required) — NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN

HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: EDWARD A. BEAUMONT, MGR.

SIGNATURE OF WELL OWNER: [signature] MGR

DATE: 7/1/05

D194-2411 CBC

Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Request to Change Well Information

- Review instructions prior to completing form
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

** PLEASE PRINT CLEARLY **

JUL 20 2005

WELL REGISTRATION NUMBER
55- 628546-L

SECTION 1: REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Galloping Goose Properties, LLC

MAILING ADDRESS: P.O. Box 9015

CITY / STATE / ZIP CODE: Woodland Park, CO 80866

CONTACT PERSON NAME AND TITLE: Ed Beaumont

TELEPHONE NUMBER: 719-687-9215 FAX: 719-687-9317

Location of Well

WELL LOCATION ADDRESS (IF ANY):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	11	SW ¼	NW ¼	SW ¼

LATITUDE: ° ' "N LONGITUDE: ° ' "W

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
101	43	001A-6

COUNTY WHERE WELL IS LOCATED: COCHISE

Type of Request (check one box)

☐ Change of Well Drilling Contractor *(Fill out Section 2)*
☒ Change of Well Ownership *(Fill out Section 3)*
☐ Change of Well Information (location, use, etc.) *(Fill out Section 4)*

SECTION 2: REQUEST TO CHANGE WELL DRILLING CONTRACTOR (Fee Required) — $10 FEE

- If drilling or abandoning a well, the Department must receive this request and issue authorization to the new drilling firm prior to the commencement of well drilling or abandonment.

Current Well Drilling Contractor		New Well Drilling Contractor	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	
DWR LICENSE NUMBER		DWR LICENSE NUMBER	ROC LICENSE CATEGORY
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

SECTION 3: REQUEST TO CHANGE OF WELL OWNERSHIP (Fee Required) — $10 FEE

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

Previous Well Owner	New Well Owner
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: B.P.O. ELKS NO. 671	FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Galloping Goose Properties LLC
MAILING ADDRESS: DRAWER BX	MAILING ADDRESS: PO 9015
CITY / STATE / ZIP CODE: BISBEE, AZ 85603	CITY / STATE / ZIP CODE: WOODLAND PARK
CONTACT PERSON NAME AND TITLE:	CONTACT PERSON NAME AND TITLE: ED BEAUMONT MGR.
TELEPHONE NUMBER:	TELEPHONE NUMBER: (719) 687-9215 FAX: (719) 687-9317

SECTION 4: CHANGE OF WELL INFORMATION (No Fee Required) — NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN:

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: EDWARD A. BEAUMONT, MGR.

SIGNATURE OF WELL OWNER: Edward A Beaumont MGR DATE: 7/1/05

A portion of the Southwest quarter of Section 11, Township 24 South, Range 24 East of the Gila and Salt River Base and Meridian, Cochise County, Arizona, described as follows:

BEGINNING at the Northwest corner of said Southwest quarter of Section 11;
thence along the North line of said Southwest quarter, South 89° 52' 30" East 1,186.69 feet (Record), South 89° 31' 02" East 1,194.02 feet (Measured) to the most Northwesterly corner of DILLARD SUBDIVISION, according to Filed Map No. 536, records of Cochise County, Arizona;
thence along a West boundary line of said DILLARD SUBDIVISION South 01° 23' East 1,320.27 feet (Record), South 01° 03' 00" East 1,322.00 feet (Measured) to a corner of said DILLARD SUBDIVISION;
thence along a boundary line of said DILLARD SUBDIVISION South 89° 55' West (Record), North 89° 45' 00" West (Measured) 227.58 feet to a corner of said DILLARD SUBDIVISION;
thence along the most Westerly boundary line of said DILLARD SUBDIVISION South 01° 23' East 153.60 feet (Record) South 01°03' 00" East 157.45 feet (Measured) to the North line of a County Road;
thence Westerly along said North line of a County Road (Record), Westerly along a curve concave to the South having a radius of 408.96 feet and a central angle of 50° 54' 32", a distance of 363.37 feet to a point;
thence South 77° 16' 14" West 685.28 feet (Measured) to the intersection of said County Road with the West line of said Southwest quarter of Section 11;
thence North along said West line of the Southwest quarter of Section 11, 1,587.20 feet (Record), 1,561.94 feet (Measured) to the POINT OF BEGINNING;

EXCEPT any portion lying within the following described parcel:

COMMENCING at an LS 11281 yellow cap monument for the West quarter corner of said Section;
thence South 89° 31' 02" East (South 89° 52' 30" East, record) 731.32 feet along the mid-section line to the POINT OF BEGINNING;
thence South 89° 31' 02" East (South 89° 52' 30" East, record) 462.70 feet along said mid-section line;
thence South 1° 03' 00" East 1322.00 feet (South 1° 23' 00" East 1320.27 feet, record) along the line of Dillard Subdivision recorded as Map No. 74, records of Cochise County, Arizona;
thence North 89° 45' 00" West (South 89° 55' West, record) 227.58 feet along the line of said subdivision;
thence South 1° 03' 00" East (South 1° 23' 00" East, record) 157.45 feet along the line of said subdivision, and its extension, to the non-tangent point of a curve;
thence 363.37 feet along a County Road on a curve to the left having a delta angle of 50° 54' 32" and radius of 408.96 feet;
thence South 77° 16' 14" West, 171.76 feet along the line of said County Road;
thence North 9° 45' 49" East 1463.73 feet to the POINT OF BEGINNING.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED
JUL 16 1982
DEPT. OF
WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

Well No. 1

REGISTRATION FEE (CHECK ONE)

EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

11

FOR OFFICE USE ONLY

REGISTRATION NO. 55- 628546-L
FILE NO. D(24-24)11cbc
FILED JUL 16 1982 (DATE) AT 9:30 am (TIME)
INA
AMA

1. Name of Registrant:
B. P. O. Elks No. 671
Drawer BX (Address) Bisbee (City) AZ (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the SW ¼ NW ¼ SW ¼, Section 11, of Township 24 ☒S, Range 24 E/☒, G & SRB & M, in the County of Cochise.

   b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: (irrigation) stockwater (domestic) municipal - industrial)
_____.

5. If for irrigation use, number of acres irrigated from well 20.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
   a. Depth of Well 800 feet
   b. Diameter of casing 6 inches
   c. Depth of casing ≤ 430 feet
   d. Type of casing P.E. Steel .
   e. Maximum pump capacity 100 gallons per minute.
   f. Depth to water 143 feet below land surface.
   g. Date well completed Feb. (Month) 11 (Day) '63 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   Attach additional sheet if necessary.

9. DATE 7-14-82 SIGNATURE OF REGISTRANT G. L. Brady Trustee

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

B.P.O. ELKS #671
DRAWER BX
BISBEE AZ 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	628546
THRU	
55	628547

(2)

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	10.00	20.00
					Existing Wells		
					File No. D(24-24)11 cbc		
					D(24-24)11 cbd		

WAITER PAYMENT
GUESTS 2
CHK NO 4294
55-I 20.00
TAX 0.00
TOTL 20.00
GEN.CHEK 20.00

4850 H 16:05

11/29/82 jc

Check # 4294

TOTAL $ 20.00

MICROFILMED

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUL 16 1982 DEPT WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

Well No. 2

REGISTRATION FEE (CHECK ONE)

EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL – $10.00 ☒

11

FOR OFFICE USE ONLY

REGISTRATION NO. 55- 628547-L
FILE NO. D(24-24)11cbd
FILED JUL 16 1982 (DATE) AT 9:30 am (TIME)
INA
AMA

1. Name of Registrant:
B.P.O. Elks No. 671
Drawer BX Bisbee, AZ 85603
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the SE ¼ NW ¼ SW ¼, Section 11, of Township 24 ~~N~~/S, Range 24 E/~~W~~, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: (irrigation) stockwater (domestic) municipal - industrial)
_____.

5. If for irrigation use, number of acres irrigated from well 20.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 800 feet
b. Diameter of casing 6" to 600', 5" 600-800 inches
c. Depth of casing 800 feet
d. Type of casing P.E. Steel .
e. Maximum pump capacity 100 gallons per minute.
f. Depth to water 104 feet below land surface.
g. Date well completed 8 - 18 - '61 (Month) (Day) (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 7-14-82 SIGNATURE OF REGISTRANT G. L. Brady Trustee

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

B.P.O. ELKS #671
DRAWER BX
BISBEE AZ 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	628546
	THRU
55	628547

(2)

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	10.00	20.00
					Existing Wells		
					File No. D(24-24)11 cbc		
					D(24-24)11 cbd		

WAITER PAYMENT
GUESTS 2
CHK NO 4294
55-I 20.00
TAX 0.00
TOTL 20.00
GEN.CHEK 20.00

4950 H 16:05

11/29/82 jc

Check # 4294

TOTAL $ 20.00

MICROFILMED

ARIZONA DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

GL-1

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Name: Phelps Dodge
   Address: 2600 N. Central Ave., Phoenix, AZ 85012
   (Street / City / State / Zip)
2. Driller Name: Stewart Brothers Drilling Company
   Address: PO Box 2067 Milan NM 87021
   (Street / City / State / Zip)
3. Location: 23S N/S (Township) 24E E/W (Range) 34 (Section) NE 1/4 (10-acre) SE 1/4 (40-acre) NW 1/4 (160-acre)
4. Well Registration No. 55- 539785 (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 833 ft.
7. Type of casing low carbon steel
8. Diameter and length of casing 10 in. from +1 to 60, 4 in from +1 to 468.
9. Method of sealing at reduction points _____
10. Perforated from _____ to _____, from _____ to _____, from _____ to _____.
11. Size of cuts _____ Number of cuts per foot _____
12. If screen was installed: Length 40 ft. Diam 4 in. Type stainless(768-808)
13. Method of construction drilled
    (drilled, dug, driven, bored, jetted, etc)
14. Date started August (Month) 16 (Day) 1993 (Year)
15. Date completed August (Month) 20 (Day) 1993 (Year)
16. Depth to water 778 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
    ground level
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-539785
File No. D(23-24)34bda
Received _____ By _____
Entered ENTERED OCT - 1 1993 By _____

DWR-55-55-7/91 (Rev.)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encounterd, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	58	mine tailings, silt, sand
58	230	basin fill, sandy gravel
230	833	Glance conglomerate, dark reddish brown schist, quartz and chert fragments

I hereby certify that this well was drilled by me (or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: David P. Stewart

PO Box 2067

Street

Milan NM 87021

City **State** **Zip**

Date 9/2/93

ONITOR/PIEZOMETER WELL

ILING FEE $10.00

MW-G1

ARIZONA DEPARTMENT OF WATER RESOURCES
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

MONITOR/PIEZOMETER WELL

FILING FEE $10.00

NOTICE OF INTENTION TO DRILL MONITOR/PIEZOMETER WELL

102

Section § 45-596, Arizona Revised Statutes provide: Prior to drilling a monitor or piezometer well, a Notice of Intention to Drill shall be filed with the Department on a prescribed form.

1. WELL LOCATION:
   23 N/S | 24 E/W | 34
   Township | Range | Section
   10 Acre Subdivision
   NE 1/4 (10 ACRE) SE 1/4 (40 ACRE) NW 1/4 (160 ACRE)

2. Position location of the well on the land:
   Latitude 31 0 23 · 20"
   Longitude 109 0 53 · 40"

3. County: Cochise

4. **Owner of the land of wellsite:**
   Phelps Dodge
   Name
   2600 N. Central Ave.
   Address
   Phoenix AZ 85004-3014
   City State Zip

5. **Lessee of the land of wellsite:**
   Name
   Address
   City State Zip

6. **Owner of well:**
   Same
   Name
   Address
   City State Zip

7. Consulting Firm: CEC/WRA
   Contact Person: Marvin Glotfelty
   Phone: (602) 248-8808

8. Purpose of well drilled pursuant to this notice
   Monitor X
   Piezometer

9. If for deepening or modifying, Well Registration Number
   55-

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. D(23-24)34BDA
Filed 6-29-93 By ek
Input ENTERED By JUL 0 6 1993

DUPLICATE
Mailed 7-1-93 By ek
Registration 55- 539785
AMA/INA —
W/S 11 S/B

10. Construction will start:
    07 (Month) 15 (Day) 93 (Year)

11. Period well will remain in use 10 Months (Years)

12. For monitoring wells, is pump equipment to be installed?
    Yes ____ No X
    (a) If yes, design pump capacity
    (b) What use will be made of the water

13. Drilling firm:
    Forrest Pump
    Name
    800 East Maley
    Address
    Wilcox, Az. 85643
    City State Zip
    DWR License No. 307
    A-16 # 85412
    ROC Category

14. Will this proposed well pump Colorado River water? Yes ____ No X
    (See condition VI on reverse)

15. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous material or petroleum storage areas and tanks?
    Yes X No ____

16. Proposed method of abandonment of well after project is completed: A.A.C. Rule 12-15-816

17. Is this well to monitor existing contamination? ____ Potential contamination ____ Please explain:

RECEIVED JUN 29 1993 DWR

GENERAL INSTRUCTIONS

1. Fill out this form in DUPLICATE and send WITH $10.00 FEE to 15 South 15th Avenue, Phoenix, AZ 85007.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. **Must be signed by land owner or lessee.**
4. Section §45-596(D), provides that the Director shall determine that all information required on form has been submitted. If not, the person filing will be notified and the drilling, deepening, or modification of the well may not proceed.

I state that Notice is filed in compliance with Section § 45-596 and is complete and correct to the best of my knowledge and belief and that I understand the conditions set forth on the reverse side of this form.

6/24/93
Date

HBamar
Signature of Land Owner or Lessee

DWR 55-44-9/91 (Rev.)

18. If construction plans have been coordinated with Arizona Department of Environmental Qualtiy, who is the agency contact? _____

If construction plans have been coordinated with Arizona Department of Water Resources, Hydrology/Water Quality Division, who is the division contact? _____

19. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air Rotary

b) Borehole diameters: 13 3/4 inches from 0 feet to 20 feet.
~~8 1/2~~ 9 7/8 inches from 20 feet to 1500 feet.

c) Casing materials (PVC, steel, hollow-stem auger, etc.)

material LC Steel diameter 9 5/8 inches from 0 feet to 20 feet
material LC Steel diameter 4 1/2 inches from 0 feet to 1450 feet

d) Method of sealing at reductions

e) Annular seal materials (cement, grout, etc.); method of placement (tremied, circulated) 1430

material ~~grout 10-20 Colorado Silica~~ method tremie from ~~1440~~ 0 feet to ~~1500~~ feet
material Bentonite method tremie from 1430 feet to 1440 feet

f) Filter packs (state material):

material 10-20 Colorado Silica from 1440 feet to 1500 feet
material _____ from _____ feet to _____ feet

g) Perforations or screen specifications:

type stainless Steel Wire wrap from 1450 feet to 1490 feet
type _____ from _____ feet to _____ feet

h) Method of well development (bail, air lift, surge) Air Lift

i) Will surface or conductor casing extend above grade: Yes X No _____

20. Include detailed construction diagram showing expected water depth in feet below land surface, and details of vault, if specified.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with A.A.C. R12-15-811 and R12-15-816.

II. Drilling of the well shall be completed within one (1) year after the date of Notice.

III. A Well Driller Report, is required within 30 days of completion of drilling. A completion Report, is required to be filed with the Department within 30 days after installation of pump equipment for monitor wells.

IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the maximum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual volume of 10 acre feet total.

V. A.A.C. Rule R12-15-811.H.2, requires that: "A monitor well shall be identified as such on the vault cover or at the top of the steel casing. Identification information will include well registration number."

VI. If the proposed well is located near the Colorado River and if the proposed well may pump Colorado River Water, proof must be submitted with this notice that the applicant has the legal right to use Colorado River Water. Alternately, evidence needs to be submitted that supports the contention that Colorado River water will not be withdrawn by the well. Persons near the Colorado River may wish to contact the Colorado River Management Division, Department of Water Resources at (602) 542-1960 to determine those Townships and Ranges which will be affected by these requirements or with questions regarding the proof of right.

VII. Special construction standards required pursuant to A.A.C. Rule R12-15-821: _____

ARIZONA DEPARTMENT OF WATER RESOURCES

15 South 15th Avenue, Phoenix, Arizona 85007
Telephone (602) 542-1581
Fax (602) 542-3383

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

7/1/93

REGISTRATION# 55-539782 thru 55-539787

FILE# VARIOUS

Dear Well Owner:

Enclosed for your records is an annotated copy of the Notice of Intention to Drill a well. This is returned to you as evidence of compliance with A.R.S. §45-596. A drilling card has been mailed to your designated driller. Prior to drilling he must have it in his possession.

Since this well is being drilled as a Monitor well, or for Cathodic Protection, Grounding, Geotechnical or Piezometer purposes, our standard driller report form is also being furnished. He is required to complete it and return it to the Department within 30 days after the installation of the pumping equipment as required by A.R.S. §45-600.

A Change of Well Information form is enclosed for your future use . If you deem it necessary to change the location of the proposed well, please notify the Department on the enclosed form. A properly amended Drilling Card will then be issued and must be in possession of the driller before drilling begins. During the drilling of a new well, if it is determined that it must be abandoned, then a Well Abandonment Completion Report must be submitted per R12-15-816.F. Per A.R.S. §45-593, the person to whom a well is registered shall notify this Department of a change of ownership of the well and/or information pertaining to the physical characteristics of the well, in order to keep the well registration file current and accurate.

For additional information, you may contact the Operations Division at (602) 542-1581.

Sincerely,

Ellen Kane

Ellen Kane
Groundwater Permit Specialist

RECEIPT

№ 6892

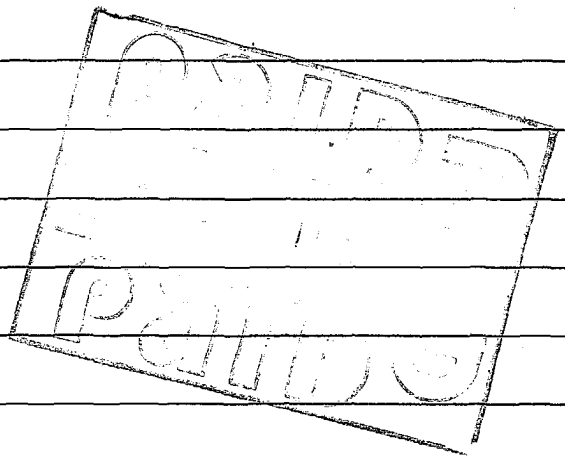
WATER RESOURCES ASSOCIATES, INC.
4041 N CENTRAL AVE S 1050
PHOENIX AZ 85012

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007
(602) 542-1581

ENTRY CODE 55

FILE NO. VARIOUS 539782 THRU 539787

ITEM DESCRIPTION	RATE	AMOUNT
FILING FEE FOR NOI TO DRILL WELLS	$10.00	$60.00
7/1/93/ek CK#10008		$60.00



CHECK NO. _____ FEE ACCOUNT NO. _____ TOTAL $ _____

CHIT NO. _____ RECEIVED BY _____ DATE _____

IPS 1821 – Rev. 4/91

MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

DEPARTMENT OF WATER RESOURCES
15 SOUTH 15th AVENUE
PHOENIX, ARIZONA 85007

THIS DRILLING CARD SHALL BE IN THE POSSESSION OF THE DRILLER
BEFORE DRILLING OPERATIONS COMMENCE

AUTHORIZED DRILLER FARWEST PUMP LICENSE NO. 307

Notice(s) of Intention to Drill/~~Deepen~~/Exploration Well(s) for MONITORING purposes has been filed with the Department by:

APPLICANT'S NAME CEC/WRA

Owner of Well PHELPS DODGE 2600 N. CENTRAL AVE PHX AZ 85004-3014
Name Address City State Zip

Well(s) to be located in: 23S 24E 34 NE SE NW
Township Range Section ¼ ¼ ¼

Number of Wells in Project: 1 Registration No. 55- 539785

This authorization to drill/~~deepen~~ the above well(s) expires at midnight on 6/30/94

PURSUANT TO ARS §45-600, R12-15-811.H.2, THE DRILLER SHALL FILE ON THE PRESCRIBED DEPARTMENT FORM, A LOG OF THE WELL(S) WITHIN 30 DAYS OF COMPLETION OF DRILLING. A MONITOR WELL SHALL BE IDENTIFIED AS SUCH, ON THE VAULT COVER OR AT THE TOP OF THE STEEL CASING. IDENTIFICATION INFORMATION WILL INCLUDE WELL REGISTRATION NUMBER.

DWR-55-44B-9/90

for DEPUTY DIRECTOR

REISSUE

MONITOR/PIEZOMETER WELL MONITOR/PIEZOMETER WELL

DEPARTMENT OF WATER RESOURCES
15 SOUTH 15th AVENUE
PHOENIX, ARIZONA 85007

THIS DRILLING CARD SHALL BE IN THE POSSESSION OF THE DRILLER BEFORE DRILLING OPERATIONS COMMENCE

AUTHORIZED DRILLER STEWART BROS. DRILLING CO. LICENSE NO. 314

Notice(s) of Intention to Drill/~~Deepen~~ Exploration Well(s) for MONITORING purposes has been filed with the Department by:

APPLICANT'S NAME CEC/WRA 4041 N. CENTRAL AVE S1050 PHX AZ 85012

Owner of Well PHELPS DODGE 2600 N. CENTRAL AVE PHX AZ 85004-3014
Name Address City State Zip

Well(s) to be located in: 23S 24E 34 NE SE NW
Township Range Section ¼ ¼ ¼

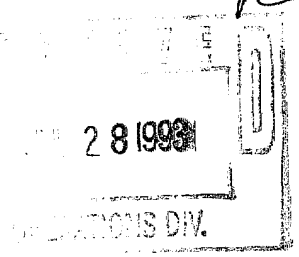
Number of Wells in Project: 1 Registration No. 55- 539785

This authorization to drill/~~deepen~~ the above well(s) expires at midnight on 6/30/94

PURSUANT TO ARS §45-600, R12-15-811.H.2, THE DRILLER SHALL FILE ON THE PRESCRIBED DEPARTMENT FORM, A LOG OF THE WELL(S) WITHIN 30 DAYS OF COMPLETION OF DRILLING. A MONITOR WELL SHALL BE IDENTIFIED AS SUCH, ON THE VAULT COVER OR AT THE TOP OF THE STEEL CASING. IDENTIFICATION INFORMATION WILL INCLUDE WELL REGISTRATION NUMBER.

DWR-55-44B-9/90

Lawrence H Ramsey
For: DEPUTY DIRECTOR



ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

28 1993
OPERATIONS DIV.

CHANGE OF WELL INFORMATION

Well Registration No. 55- 539 785 File No. D(23-24)34 BDA
(location)

I/We request the following well information be changed:
Drilling Firm from : Farwest Pump
to : Stewart Brothers Drilling Company
P.O. Box 2067, Milan, NM 87021
DWR License No. 314
ROC Category A-4 #75379

Date: 07/28/93 Signature of Current Well Owner HBamar MFG

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

ENTERED AUG - 1 1993

I, _____, state that I am (no longer) the (new)
(please print)
owner of the well described below:

Township_____ Range_____ Section_____; _____¼ _____¼ _____¼

Well Registration No.55-_____ File No._____
(location)

PRINT Previous Owner's Name _____ PRINT New Owner's Name _____

Address _____ Address _____

City _____ State _____ Zip _____ City _____ State _____ Zip _____

Dated:_____ Signature of New Owner_____

NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

DWR-55-71-3/90

ARIZ(A DEPARTMENT OF WATER RE. URCES

15 South 15th Avenue
Phoenix, Arizona 85007

DEPARTMENT OF WR
AUG 26 1994
OPERATIONS DIV.

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Name: Phelps Dodge
   Address: 2600 N. Central Ave. Phoenix AZ 85012
   (Street / City / State / Zip)
2. Driller Name: Stewart Brothers Drilling Company
   Address: PO Box 2067 Milan NM 87021
   (Street / City / State / Zip)
3. Location: ____ N/S ____ E/W ____ Section ____ 1/4 (10-acre) ____ 1/4 (40-acre) ____ 1/4 (160-acre)
   (Township / Range)
4. Well Registration No. 55- 539784 (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 400 ft.
7. Type of casing none
8. Diameter and length of casing _____ in. from _____ to _____, _____ in from _____ to _____.
9. Method of sealing at reduction points _____
10. Perforated from _____ to _____, from _____ to _____, from _____ to _____.
11. Size of cuts _____ Number of cuts per foot _____
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction _____
    (drilled, dug, driven, bored, jetted, etc)
14. Date started August (Month) 5 (Day) 1993 (Year)
15. Date completed August (Month) 8 (Day) 1993 (Year)
16. Depth to water no water ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
18. If flowing well, state method of flow regulation: _____
19. Remarks: This well was drilled to 400' and was a dry hole. It was plugged to bottom to top with neat cement 145 sks

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-539784
File No. D(23-24)34daa
Received _____ By _____
Entered ENTERED SEP - 2 1994

DWR-55-55-7/91 (Rev.)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encounterd, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	40	clay and gravel
40	47	sand and gravel
47	400	Glance Conglomerate

I hereby certify that this well was drilled by me (or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: [signature]

PO Box 2067
Street

Milan NM 87021
City State Zip

Date 8/24/94

ONITOR/PIEZOMETER WELL

:LING FEE $10.00

ARIZONA DEPARTMENT OF WATER RESOURCES
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

MONITOR/PIEZOMETER WELL

FILING FEE $10.00

MW-GL?

NOTICE OF INTENTION TO DRILL MONITOR/PIEZOMETER WELL

60L

ection § 45-596, Arizona Revised Statutes provide: Prior to drilling a monitor or piezometer well, a Notice of ntention to Drill shall be filed with the Department on a prescribed form.

1. WELL LOCATION:

23 N(S) 24 E(W) 34
Township | Range | Section

10 Acre Subdivision

NE 1/4 NE 1/4 SE 1/4
10 ACRE 40 ACRE 160 ACRE

2. Position location of the well on the land:

Latitude 31 0 23 · 10 "

Longitude 109 0 53 · 10 "

3. County: Cochise

4. **Owner of the land of wellsite:**

Phelps Dodge
Name
2600 N. Central Ave.
Address
Phoenix AZ 85004-3014
City State Zip

5. **Lessee of the land of wellsite:**

Name

Address

City State Zip

6. **Owner of well:**

Same
Name

Address

City State Zip

7. Consulting Firm: CEC/WRA

Contact Person: Marvin Glotfelty

Phone: (602) 248-8808

8. Purpose of well drilled pursuant to this notice

Monitor X

Piezometer

9. If for deepening or modifying, Well Registration Number

55-

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

File No. (23-24)34 DAA

Filed 6-29-93 By ek

Input ENTERED JUL 06 1993

DUPLICATE

Mailed 7-1-93 By ek

Registration 55- 539784

AMA/INA —

W/S 11 S/B

10. Construction will start:

07 15 93
Month Day Year

11. Period well will remain in use 10 Months (Years)

12. For monitoring wells, is pump equipment to be installed?

Yes No X

(a) If yes, design pump capacity

(b) What use will be made of the water

13. Drilling firm:

Forrest Pump
Name
800 East Maley
Address
Wilcox, Az. 85643
City State Zip

DWR License No. 307

A-16 # 8541 (-53)
ROC Category

14. Will this proposed well pump Colorado River water? Yes No X
(See condition VI on reverse)

15. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous material or petroleum storage areas and tanks?
Yes X No

16. Proposed method of abandonment of well after project is completed: A.A.C. Rule 12-15-816

17. Is this well to monitor existing contamination? _____ Potential contamination _____ Please explain: _____

GENERAL INSTRUCTIONS

1. Fill out this form in DUPLICATE and send WITH $10.00 FEE to 15 South 15th Avenue, Phoenix, AZ 85007.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. **Must be signed by land owner or lessee.**
4. Section §45-596(D), provides that the Director shall determine that all information required on form has been submitted. If not, the person filing will be notified and the drilling, deepening, or modification of the well may not proceed.

RECEIVED
JUN 29 1993
OPERATIONS DIV.

I state that Notice is filed in compliance with Section § 45-596 and is complete and correct to the best of my knowledge and belief and that I understand the conditions set forth on the reverse side of this form.

6/29/93
Date

HBarnar
Signature of Land Owner or Lessee

WR 55-44-9/91 (Rev.)

18. If construction plans have been coordinated with Arizona Department of Environmental Qualtiy, who is the agency contact? _____

If construction plans have been coordinated with Arizona Department of Water Resources, Hydrology/Water Quality Division, who is the division contact? _____

19. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air Rotary

b) Borehole diameters: 13 3/4 inches from 0 feet to 20 feet.
8 1/2 inches from 0 feet to 100 feet.

c) Casing materials (PVC, steel, hollow-stem auger, etc.)

material LC Steel diameter 9 5/8 inches from 0 feet to 20 feet
material LC Steel diameter 4 1/2 inches from 0 feet to 90 feet

d) Method of sealing at reductions

e) Annular seal materials (cement, grout, etc.); method of placement (tremied, circulated)

material grout method tremie from 0 feet to 30 feet
material bentonite method tremie from 30 feet to 40 feet

f) Filter packs (state material):

material 10-20 Colorado Silica from 40 feet to 100 feet
material _____ from _____ feet to _____ feet

g) Perforations or screen specifications:

type PVC Sch 80 from 50 feet to 90 feet
type _____ from _____ feet to _____ feet

h) Method of well development (bail, air lift, surge) Air Lift

i) Will surface or conductor casing extend above grade: Yes X No _____

20. Include detailed construction diagram showing expected water depth in feet below land surface, and details of vault, if specified.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with A.A.C. R12-15-811 and R12-15-816.

II. Drilling of the well shall be completed within one (1) year after the date of Notice.

III. A Well Driller Report, is required within 30 days of completion of drilling. A completion Report, is required to be filed with the Department within 30 days after installation of pump equipment for monitor wells.

IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the maximum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual volume of 10 acre feet total.

V. A.A.C. Rule R12-15-811.H.2, requires that: "A monitor well shall be identified as such on the vault cover or at the top of the steel casing. Identification information will include well registration number."

VI. If the proposed well is located near the Colorado River and if the proposed well may pump Colorado River Water, proof must be submitted with this notice that the applicant has the legal right to use Colorado River Water. Alternately, evidence needs to be submitted that supports the contention that Colorado River water will not be withdrawn by the well. Persons near the Colorado River may wish to contact the Colorado River Management Division, Department of Water Resources at (602) 542-1960 to determine those Townships and Ranges which will be affected by these requirements or with questions regarding the proof of right.

VII. Special construction standards required pursuant to A.A.C. Rule R12-15-821: _____

ARIZONA DEPARTMENT OF WATER RESOURCES

15 South 15th Avenue, Phoenix, Arizona 85007
Telephone (602) 542-1581
Fax (602) 542-3383

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

7/1/93

REGISTRATION# 55-539782 thru 55-539787

FILE# VARIOUS

Dear Well Owner:

Enclosed for your records is an annotated copy of the Notice of Intention to Drill a well. This is returned to you as evidence of compliance with A.R.S. §45-596. A drilling card has been mailed to your designated driller. Prior to drilling he must have it in his possession.

Since this well is being drilled as a Monitor well, or for Cathodic Protection, Grounding, Geotechnical or Piezometer purposes, our standard driller report form is also being furnished. He is required to complete it and return it to the Department within 30 days after the installation of the pumping equipment as required by A.R.S. §45-600.

A Change of Well Information form is enclosed for your future use . If you deem it necessary to change the location of the proposed well, please notify the Department on the enclosed form. A properly amended Drilling Card will then be issued and must be in possession of the driller before drilling begins. During the drilling of a new well, if it is determined that it must be abandoned, then a Well Abandonment Completion Report must be submitted per R12-15-816.F. Per A.R.S. §45-593, the person to whom a well is registered shall notify this Department of a change of ownership of the well and/or information pertaining to the physical characteristics of the well, in order to keep the well registration file current and accurate.

For additional information, you may contact the Operations Division at (602) 542-1581.

Sincerely,

Ellen Kane

Ellen Kane
Groundwater Permit Specialist

MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

DEPARTMENT OF WATER RESOURCES
15 SOUTH 15th AVENUE
PHOENIX, ARIZONA 85007

THIS DRILLING CARD SHALL BE IN THE POSSESSION OF THE DRILLER
BEFORE DRILLING OPERATIONS COMMENCE

AUTHORIZED DRILLER FARWEST PUMP LICENSE NO. 307

Notice(s) of Intention to Drill/~~Deepen~~ Exploration Well(s) for MONITORING purposes has been filed with the Department by:

APPLICANT'S NAME CEC/WRA

Owner of Well PHELPS DODGE 2600 N CENTRAL AVE PHX AZ 85004-3014
Name Address City State Zip

Well(s) to be located in: 23S 24E 34 NE NE SE
Township Range Section ¼ ¼ ¼

Number of Wells in Project: 1 Registration No. 55- 539784

This authorization to drill/~~deepen~~ the above well(s) expires at midnight on 6/30/94

PURSUANT TO ARS §45-600, R12-15-811.H.2, THE DRILLER SHALL FILE ON THE PRESCRIBED DEPARTMENT FORM, A LOG OF THE WELL(S) WITHIN 30 DAYS OF COMPLETION OF DRILLING. A MONITOR WELL SHALL BE IDENTIFIED AS SUCH, ON THE VAULT COVER OR AT THE TOP OF THE STEEL CASING. IDENTIFICATION INFORMATION WILL INCLUDE WELL REGISTRATION NUMBER.

DWR-55-44B-9/90

for DEPUTY DIRECTOR

RECEIPT

№ 6892

WATER RESOURCES ASSOCIATES, INC.
4041 N CENTRAL AVE S 1050
PHOENIX AZ 85012

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007
(602) 542-1581

ENTRY CODE 55

FILE NO. VARIOUS 539782 THRU 539787

ITEM DESCRIPTION	RATE	AMOUNT
FILING FEE FOR NOI TO DRILL WELLS	$10.00	$60.00
7/1/93/ek CK#10008		$60.00

PAID

CHECK NO. _____ FEE ACCOUNT NO. _____ TOTAL $ _____

CHIT NO. _____ RECEIVED BY _____ DATE _____

IPS 1821 – Rev. 4/91

MONITOR/PIEZOMETER WELL REISSUE MONITOR/PIEZOMETER WELL

DEPARTMENT OF WATER RESOURCES
15 SOUTH 15th AVENUE
PHOENIX, ARIZONA 85007

THIS DRILLING CARD SHALL BE IN THE POSSESSION OF THE DRILLER BEFORE DRILLING OPERATIONS COMMENCE

AUTHORIZED DRILLER STEWART BROS. DRILLING CO. LICENSE NO. 314

Notice(s) of Intention to Drill/~~Deepen~~ Exploration Well(s) for MONITORING purposes has been filed with the Department by:

APPLICANT'S NAME CEC/WRA 4041 N. CENTRAL AVE S1050 PHX AZ 85012

Owner of Well PHELPS DODGE 2600 N. CENTRAL AVE PHX AZ 85004-3014
Name Address City State Zip

Well(s) to be located in: 23S 24E 34 NE NE SE
Township Range Section ¼ ¼ ¼

Number of Wells in Project: 1 Registration No. 55- 539784

This authorization to drill/~~deepen~~ the above well(s) expires at midnight on 6/30/94

PURSUANT TO ARS §45-600, R12-15-811.H.2, THE DRILLER SHALL FILE ON THE PRESCRIBED DEPARTMENT FORM, A LOG OF THE WELL(S) WITHIN 30 DAYS OF COMPLETION OF DRILLING. A MONITOR WELL SHALL BE IDENTIFIED AS SUCH, ON THE VAULT COVER OR AT THE TOP OF THE STEEL CASING. IDENTIFICATION INFORMATION WILL INCLUDE WELL REGISTRATION NUMBER.

Lawrence A Ramsey
For: DEPUTY DIRECTOR

DWR-55-44B-9/90

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

JUL 28 1993

CHANGE OF WELL INFORMATION

Well Registration No. 55- 539784 File No. D(23-24)34 DAA (location)

I/(We) request the following well information be changed:

Drilling Firm from : Farwest Pump
to : Stewart Brothers Drilling Company
P.O. Box 2067, Milan, NM 87021
DWR License No. 314
ROC Category A-4 #75379

Date: 07/28/93 Signature of Current Well Owner JHamar MG

(DO NOT CUT THIS FORM IN HALF)

ENTERED AUG - 1 1993

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, _____ (please print), state that I am (no longer) the (new) owner of the well described below:

Township _____ Range _____ Section _____; ____ ¼ ____ ¼ ____ ¼

Well Registration No.55- _____ File No. _____ (location)

_____ PRINT Previous Owner's Name

_____ PRINT New Owner's Name

_____ Address

_____ Address

_____ City State Zip

_____ City State Zip

Dated: _____ Signature of New Owner _____

NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

DWR-55-71-3/90

GL-3

ARIZONA DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Name: Phelps Dodge
   Address: 2600 N. Central Ave. (Street) Phoenix (City) AZ (State) 85004 (Zip)
2. Driller Name: Stewart Brothers Drilling Co.
   Address: PO Box 2067 (Street) Milan (City) NM (State) 87021 (Zip)
3. Location: 23S N/S (Township) 24E E/W (Range) 34 (Section) NW 1/4 (10-acre) NW 1/4 (40-acre) NW 1/4 (160-acre)
4. Well Registration No. 55-539782 (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 825 ft.
7. Type of casing low carbon steel
8. Diameter and length of casing 4 in. from +2 to 780, _____ in from _____ to _____.
9. Method of sealing at reduction points _____
10. Perforated from _____ to _____, from _____ to _____, from _____ to _____.
11. Size of cuts _____ Number of cuts per foot _____
12. If screen was installed: Length 40 ft. Diam 4 in. Type continuous slotted (780-820)
13. Method of construction drilled
    (drilled, dug, driven, bored, jetted, etc)
14. Date started August (Month) 8 (Day) 1993 (Year)
15. Date completed August (Month) 11 (Day) 1993 (Year)
16. Depth to water _____ ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
    ground level
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-539782
File No. D(23-24)34 BBB
Received _____ By _____
Entered ENTERED OCT - 6 1993

DWR-55-55-7/91 (Rev.)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encounterd, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	175	sand and gravel with some clay
175	825	glance conglomerate, shist, quartz, chirt

I hereby certify that this well was drilled by me (or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: David R. Stewart

PO Box 2067
Street

Milan NM 87021
City **State** **Zip**

Date 9-27-93

MONITOR/PIEZOMETER WELL
FILING FEE $10.00

MW-GL3

ARIZONA DEPARTMENT OF WATER RESOURCES
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

MONITOR/PIEZOMETER WELL
FILING FEE $10.00

NOTICE OF INTENTION TO DRILL MONITOR/PIEZOMETER WELL

108

Section § 45-596, Arizona Revised Statutes provide: Prior to drilling a monitor or piezometer well, a Notice of Intention to Drill shall be filed with the Department on a prescribed form.

1. WELL LOCATION:
   23 N/S 24 E/W 33 34
   Township | Range | Section
   10 Acre Subdivision
   NW NW NW
   NE 1/4 NE 1/4 NE 1/4
   ~~40~~ ACRE ~~40~~ ACRE ~~160~~ ACRE
2. Position location of the well on the land:
   Latitude 31 0 24.0 "
   Longitude 109 0 54.10 "
3. County: Cochise
4. **Owner of the land of wellsite:**
   Phelps Dodge
   Name
   2600 N. Central Ave.
   Address
   Phoenix AZ 85004-3014
   City State Zip
5. **Lessee of the land of wellsite:**
   Name
   Address
   City State Zip
6. **Owner of well:**
   Same
   Name
   Address
   City State Zip
7. Consulting Firm: CEC/WRA
   Contact Person: Marvin Glotfelty
   Phone: (602) 248-8808
8. Purpose of well drilled pursuant to this notice
   Monitor X
   Piezometer
9. If for deepening or modifying, Well Registration Number
   55-
10. Construction will start:
    07 15 93
    Month Day Year
11. Period well will remain in use 10 Months (Years)
12. For monitoring wells, is pump equipment to be installed?
    Yes ____ No X
    (a) If yes, design pump capacity
    (b) What use will be made of the water
13. Drilling firm:
    Forrest Pump
    Name
    800 East Maley
    Address
    Wilcox, Az. 85643
    City State Zip
    DWR License No. 307
    A-16
    # 85412 ~~C-53~~
    ROC Category
14. Will this proposed well pump Colorado River water? Yes ____ No X
    (See condition VI on reverse)
15. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous material or petroleum storage areas and tanks?
    Yes X No ____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. D(23-24)34 BBB
Filed 6-29-93 By ek
Input ENTERED JUL 06 1993
DUPLICATE
Mailed 7-1-93 By ek
Registration 55- 539782
AMA/INA —
W/S 11 S/B

16. Proposed method of abandonment of well after project is completed: A.A.C. Rule 12-15-816
17. Is this well to monitor existing contamination? ____ Potential contamination ____. Please explain:

GENERAL INSTRUCTIONS

1. Fill out this form in DUPLICATE and send WITH $10.00 FEE to 15 South 15th Avenue, Phoenix, AZ 85007.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. **Must be signed by land owner or lessee.**
4. Section §45-596(D), provides that the Director shall determine that all information required on form has been submitted. If not, the person filing will be notified and the drilling, deepening, or modification of the well may not proceed.

RECEIVED
JUN 29 1993
OPERATIONS DIV.

I state that Notice is filed in compliance with Section § 45-596 and is complete and correct to the best of my knowledge and belief and that I understand the conditions set forth on the reverse side of this form.

6/29/93
Date

H Bamar
Signature of Land Owner or Lessee

DWR 55-44-9/91 (Rev.)

18. If construction plans have been coordinated with Arizona Department of Environmental Qualtiy, who is the agency contact? _____

If construction plans have been coordinated with Arizona Department of Water Resources, Hydrology/Water Quality Division, who is the division contact? _____

19. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air Rotary

b) Borehole diameters: 13 3/4 inches from 0 feet to 20 feet.
8 1/2 inches from 20 feet to 690 feet.

c) Casing materials (PVC, steel, hollow-stem auger, etc.)

material LC Steel diameter 9 5/8 inches from 0 feet to ~~620~~ 20 feet
material LC Steel diameter 4 1/2 inches from 0 ~~620~~ feet to 640 feet

d) Method of sealing at reductions

e) Annular seal materials (cement, grout, etc.); method of placement (tremied, circulated)

material Grout method tremie from 0 feet to 620 feet
material Bentonite method tremie from 620 feet to 630 feet

f) Filter packs (state material):

material 10-20 Colorado Silica from 630 feet to 690 feet
material _____ from _____ feet to _____ feet

g) Perforations or screen specifications:

type PVC Sch 80 from 640 feet to 680 feet
type _____ from _____ feet to _____ feet

h) Method of well development (bail, air lift, surge) Air Lift

i) Will surface or conductor casing extend above grade: Yes X No _____

20. Include detailed construction diagram showing expected water depth in feet below land surface, and details of vault, if specified.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with A.A.C. R12-15-811 and R12-15-816.

II. Drilling of the well shall be completed within one (1) year after the date of Notice.

III. A Well Driller Report, is required within 30 days of completion of drilling. A completion Report, is required to be filed with the Department within 30 days after installation of pump equipment for monitor wells.

IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the maximum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual volume of 10 acre feet total.

V. A.A.C. Rule R12-15-811.H.2, requires that: "A monitor well shall be identified as such on the vault cover or at the top of the steel casing. Identification information will include well registration number."

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VII. Special construction standards required pursuant to A.A.C. Rule R12-15-821: _____

RECEIPT

No. 6892

WATER RESOURCES ASSOCIATES, INC.
404' N CENTRAL AVE S 1050
PHOENIX AZ 85012

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007
(602) 542-1581

ENTRY CODE 55

FILE NO. VARIOUS 539782 **THRU** 539787

ITEM DESCRIPTION	RATE	AMOUNT
FILING FEE FOR NOI TO DRILL WELLS	$10.00	$60.00
7/1/93/ek CK#10008		$60.00

PAID JUL - 1 1993 PAID

CHECK NO. _____ FEE ACCOUNT NO. _____ TOTAL $ _____

CHIT NO. _____ RECEIVED BY _____ DATE _____

IPS 1821 – Rev. 4/91

ARIZONA DEPARTMENT OF WATER RESOURCES

15 South 15th Avenue, Phoenix, Arizona 85007
Telephone (602) 542-1581
Fax (602) 542-3383

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

7/1/93

REGISTRATION# 55-539782 thru 55-539787

FILE# VARIOUS

Dear Well Owner:

Enclosed for your records is an annotated copy of the Notice of Intention to Drill a well. This is returned to you as evidence of compliance with A.R.S. §45-596. A drilling card has been mailed to your designated driller. Prior to drilling he must have it in his possession.

Since this well is being drilled as a Monitor well, or for Cathodic Protection, Grounding, Geotechnical or Piezometer purposes, our standard driller report form is also being furnished. He is required to complete it and return it to the Department within 30 days after the installation of the pumping equipment as required by A.R.S. §45-600.

A Change of Well Information form is enclosed for your future use . If you deem it necessary to change the location of the proposed well, please notify the Department on the enclosed form. A properly amended Drilling Card will then be issued and must be in possession of the driller before drilling begins. During the drilling of a new well, if it is determined that it must be abandoned, then a Well Abandonment Completion Report must be submitted per R12-15-816.F. Per A.R.S. §45-593, the person to whom a well is registered shall notify this Department of a change of ownership of the well and/or information pertaining to the physical characteristics of the well, in order to keep the well registration file current and accurate.

For additional information, you may contact the Operations Division at (602) 542-1581.

Sincerely,

Ellen Kane

Ellen Kane
Groundwater Permit Specialist

MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

DEPARTMENT OF WATER RESOURCES
15 SOUTH 15th AVENUE
PHOENIX, ARIZONA 85007

THIS DRILLING CARD SHALL BE IN THE POSSESSION OF THE DRILLER BEFORE DRILLING OPERATIONS COMMENCE

AUTHORIZED DRILLER FARWEST PUMP LICENSE NO. 307

Notice(s) of Intention to Drill/~~Deepen~~ XXXXXXX Exploration Well(s) for MONITORING purposes has been filed with the Department by:

APPLICANT'S NAME CEC/WRA

Owner of Well PHELPS DODGE 2600 N. CENTRAL AVE PHX AZ 85004-3014
Name Address City State Zip

Well(s) to be located in: 23S 24E 33 NE NE NE
Township Range Section ¼ ¼ ¼

Number of Wells in Project: 1 Registration No. 55- 539782

This authorization to drill/~~deepen~~ XXXXXXX the above well(s) expires at midnight on 6/30/94

PURSUANT TO ARS §45-600, R12-15-811.H.2, THE DRILLER SHALL FILE ON THE PRESCRIBED DEPARTMENT FORM, A LOG OF THE WELL(S) WITHIN 30 DAYS OF COMPLETION OF DRILLING. A MONITOR WELL SHALL BE IDENTIFIED AS SUCH, ON THE VAULT COVER OR AT THE TOP OF THE STEEL CASING. IDENTIFICATION INFORMATION WILL INCLUDE WELL REGISTRATION NUMBER.

DEPUTY DIRECTOR

DWR-55-44B-9/90

REISSUED

MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

DEPARTMENT OF WATER RESOURCES
15 SOUTH 15th AVENUE
PHOENIX, ARIZONA 85007

THIS DRILLING CARD SHALL BE IN THE POSSESSION OF THE DRILLER
BEFORE DRILLING OPERATIONS COMMENCE

AUTHORIZED DRILLER STEWART BROS. DRILLING CO. LICENSE NO. 314

Notice(s) of Intention to Drill/~~Deepen~~ Exploration Well(s) for MONITORING purposes has been filed with the Department by:

APPLICANT'S NAME CEC/WRA 4041 N. CENTRAL AVE S1050 PHX AZ 85012

Owner of Well PHELPS DODGE 2600 N CENTRAL AVE PHX AZ 85004-3014
Name Address City State Zip

Well(s) to be located in: 23S 24E 33 NE NE NE
Township Range Section ¼ ¼ ¼

Number of Wells in Project: 1 Registration No. 55- 539782

This authorization to drill/~~deepen~~ the above well(s) expires at midnight on 6/30/94

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DWR-55-44B-9/90

For: Lawrence A. Ramsey DEPUTY DIRECTOR

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

RECEIVED
JUL 28 1993

CHANGE OF WELL INFORMATION

Well Registration No. 55- 539782 File No. D(23-24) ~~33 AAA~~ 34 ABB
(location)

I/We request the following well information be changed:
Drilling Firm from : Farwest Pump
to : Stewart Brothers Drilling Company
P.O. Box 2067, Milan, NM 87021
DWR License No. 314
ROC Category A-4 #75379

Date: 07/28/93 Signature of Current Well Owner JHRamar MFG

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

ENTERED AUG - 1 1993

I, _____, state that I am (no longer) the (new)
(please print)
owner of the well described below:

Township_____ Range_____ Section_____; _____¼ _____¼ _____¼

Well Registration No.55-_____ File No._____
(location)

PRINT Previous Owner's Name _____ PRINT New Owner's Name _____

Address _____ Address _____

City _____ State _____ Zip _____ City _____ State _____ Zip _____

Dated:_____ Signature of New Owner_____

NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

DWR-55-71-3/90

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

GL-3

CHANGE OF WELL INFORMATION

Well Registration No. 55-_____ File No._____
(location)

I/We request the following well information be changed:_____

Please change the well location from 23S 24E Sec. 33 NE NE NE to 23S 24E Sec. 34 NW NW NW.

Date: 9/27/93 Signature of Current Well Owner John Maloney - Stewart Bros. for Phelps Dodge

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, _____, state that I am (no longer) the (new)
(please print)
owner of the well described below:

_____¼ _____¼ _____¼; Section_____Township_____Range_____
10 acre 40 acre 160 acre

Well Registration No.55-_____ File No._____
(location)

_____ _____
PRINT Previous Owner's Name PRINT New Owner's Name

_____ _____
Address Address

_____ | | _____ _____ | | _____
City State Zip City State Zip

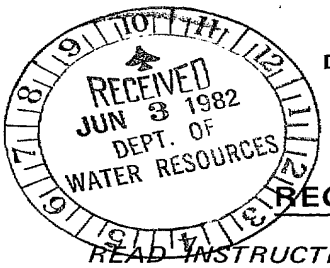
Dated:_____ Signature of New Owner_____

ENTERED OCT - 5 1993

NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

DWR-55-71-11/90





DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

FOR OFFICE USE ONLY
REGISTRATION NO. 55-40692
FILE NO. IX24-24 17a
FILED 4/21/82 (DATE) AT 9 (TIME)
INA
AMA

1. Name of Registrant:
Goar Service & Supply, inc.
P.O. Box 5804 (Address) Tucson (City) Az. (State) 85703 (Zip)

2. File and/or Control Number under previous groundwater law: No number, dug late 40's or early50's.
(File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ ¼ ¼, Section ~~XXXX~~ 17, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Purdy Subdivision, Lot No. None, Address R.R. 1, Purdy Lane - Bisbee, Az. 85603.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Stockwater and domestic.

5. If for irrigation use, number of acres irrigated from well 0.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. #6 Depth of Well 250' feet
b. Diameter of casing 6" ~~Submersible~~ inches
c. Depth of casing 250' feet
d. Type of casing Steel .
e. Maximum pump capacity Windmill gallons per minute.
f. Depth to water Approx.175' feet below land surface.
g. Date well completed Late 40's or early 50's. (Month) (Day) (Year)

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 4/15/82 SIGNATURE OF REGISTRANT Dola Fitzgerald Controller

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Goar Service & Supply, Inc
P O Box 5804
Tucson, AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	610686
	THRU
55	610692

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	**10.00**	70.00
					Existing Wells		
					File No. D(24-24)17 a		
					D(24-24)17 a		
					D(24-24)17 a		
					D(24-24)17 b		
					Various		

WAITER PAYMENT
GUESTS 7
CHK NO 12364
55-I 70.00
TAX 0.00
TOTL 70.00
GEN.CHEK 70.00

9592 A 13:21

Check # 12364

TOTAL **$** 70.00

MICROFILMED

June 22, 1982
sg

RECEIVED
JUN 3 1982
DEPT. OF
WATER RESOURCES

RECEIVED
APR. 21 1982
DEPT. OF
WATER RESOURCES

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

FOR OFFICE USE ONLY
REGISTRATION NO. 55-610691
FILE NO. D(24-24) 17a
FILED 4/21/82 (DATE) AT 9 (TIME)
INA
AMA

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 ☒

1. Name of Registrant:
Goar Service & Supply, Inc.
P.O. Box 5804 (Address) Tucson (City) Az. (State) 85703 (Zip)

2. File and/or Control Number under previous groundwater law: No number, dug late 40's or early 50's
(File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ ¼ ¼, Section ~~17NE~~ 17, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Purdy Subdivision, Lot No. None, Address R.R. 1, Purdy Lane -Bisbee, Az. 85603.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Stockwater and domestic.

5. If for irrigation use, number of acres irrigated from well 0.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
#7
a. Depth of Well 250' feet
b. Diameter of casing 6" inches
c. Depth of casing 250' feet
d. Type of casing Steel .
e. Maximum pump capacity Windmill gallons per minute.
f. Depth to water Approx. 175' feet below land surface.
g. Date well completed Late 40's or early 50's. (Month) (Day) (Year)

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 4/15/82 SIGNATURE OF REGISTRANT Dora Fitzgerald
Contractor

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Goar Service & Supply, Inc
P O Box 5804
Tucson, AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	610686
	THRU
55	610692

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	**10.00**	70.00
					Existing Wells		
					File No. D(24-24)17 a		
					D(24-24)17 a		
					D(24-24)17 a		
					D(24-24)17 b		
					Various		

WAITER PAYMENT
GUESTS 7
CHK NO 12364
55-I 70.00
TAX 0.00
TOTL 70.00
GEN.CHEK 70.00

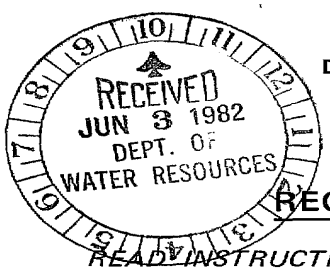
9592 A 13:21

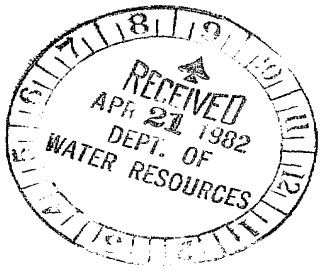
Check # 12364

TOTAL $ 70.00

June 22, 1982
sg

MICROFILMED





DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

FOR OFFICE USE ONLY
REGISTRATION NO. 55-610690
FILE NO. D(24-24)17 b
FILED 4/21/82 (DATE) AT 9 (TIME)
INA
AMA

1. Name of Registrant:
Goar Service & Supply, Inc.
P.O. Box 5804 (Address) Tucson, (City) Az. (State) 85703 (Zip)

2. File and/or Control Number under previous groundwater law: No Number, dug in late 40's or early 50's
(File Number) 35- (Control Number)

3. a. The well is located within the NW ¼ ¼ ¼, Section ~~XXXXXX~~ 17, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Purdy Subdivision, Lot No. None, Address R.R. 1, Purdy Lane = Bisbee, Az. 85603.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Stockwater and domestic.

5. If for irrigation use, number of acres irrigated from well 0.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. #5 Depth of Well 250' feet
b. Diameter of casing 6" inches
c. Depth of casing ~~XXX~~ 250' feet
d. Type of casing Steel.
e. Maximum pump capacity Windmill gallons per minute.
f. Depth to water Approx. 175' feet below land surface.
g. Date well completed Late 40's or early 50's. (Month) (Day) (Year)

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 4/15/82 SIGNATURE OF REGISTRANT Lola Fitzgerald Secretary

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Goar Service & Supply, Inc
P O Box 5804
Tucson, AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	610686
	THRU
55	610692

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	**10.00**	70.00
					Existing Wells		
					File No. D(24-24)17 a		
					D(24-24)17 a		
					D(24-24)17 a		
					D(24-24)17 b		
					Various		

WAITER PAYMENT
GUESTS 7
CHK NO 12364
55-I 70.00
TAX 0.00
TOTL 70.00
GEN.CHEK 70.00

9592 A 13:21

Check # 12364

TOTAL $ 70.00

June 22, 1982
sg

MICROFILMED

RECEIVED
JUN 3 1982
DEPT. OF
WATER RESOURCES

RECEIVED
APR 21 1982
DEPT. OF
WATER RESOURCES

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

FOR OFFICE USE ONLY
REGISTRATION NO. 55-610689
FILE NO. D(24-24)17a
FILED 4/21/82 (DATE) AT 9 (TIME)
INA
AMA

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 ☒

1. Name of Registrant:
Goar Service & Supply, Inc.
P.O. Box 5804 (Address) Tucson, (City) Az. (State) 85703 (Zip)

2. File and/or Control Number under previous groundwater law: No number, dug late 40's or early 50's.
(File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ ¼ ¼, Section 17 ~~XXNK~~, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Purdy Subdivision, Lot No. None, Address R.R. 1, Purdy Lane - Bisbee, Az. 85603.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation.

5. If for irrigation use, number of acres irrigated from well 25.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. #4 Depth of Well 250' feet
b. Diameter of casing 10" inches
c. Depth of casing 250' feet
d. Type of casing Steel.
e. Maximum pump capacity 60 gallons per minute.
f. Depth to water Approx 175' feet below land surface.
g. Date well completed Late 40's or early 50's. (Month) (Day) (Year)

8. The place(s) of use of water. If same as Item 3, check this box ☒.
¼ ¼ ¼, Section Township Range
¼ ¼ ¼, Section Township Range
Attach additional sheet if necessary.

9. DATE 4/15/82 SIGNATURE OF REGISTRANT Lola Fitzgerald
Controller

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

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INSTRUCTIONS FOR REGISTRATION QUESTIONS

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   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

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6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Goar Service & Supply, Inc
P O Box 5804
Tucson, AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	610686
	THRU
55	610692

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	**10.00**	70.00
					Existing Wells		
					File No. D(24-24)17 a		
					D(24-24)17 a		
					D(24-24)17 a		
					D(24-24)17 b		
					Various		

WAITER PAYMENT
GUESTS 7
CHK NO 12364
55-I 70.00
TAX 0.00
TOTL 70.00
GEN.CHEK 70.00

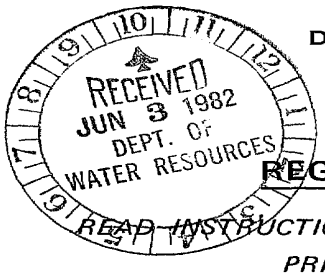
9592 A 13:21

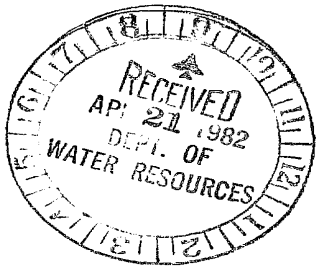
Check # 12364

TOTAL $ 70.00

June 22, 1982
sg

MICROFILMED





DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

FOR OFFICE USE ONLY
REGISTRATION NO. 55-610688
FILE NO. D(24-24)17a
FILED 4/21/82 (DATE) AT 9 (TIME)
INA
AMA

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 ☒

1. Name of Registrant:
Goar Service & Supply, Inc.
P.O. Box 5804 (Address) Tucson (City) Az. (State) 85703 (Zip)

2. File and/or Control Number under previous groundwater law: No number, Dug in early 50's or late 40's.
(File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ ¼ ¼, Section 17 ~~XXX~~, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Purdy Subdivision, Lot No. None, Address R.R. 1, Purdy Lane, Bisbee, AZ. 85603.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation.

5. If for irrigation use, number of acres irrigated from well 25.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. #3 Depth of Well 250' feet
b. Diameter of casing 10" inches
c. Depth of casing 250' feet
d. Type of casing Steel .
e. Maximum pump capacity 60 gallons per minute.
f. Depth to water Approx. 175' feet below land surface.
g. Date well completed Late 40's or early 50's. (Month) (Day) (Year)

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 4/15/82 SIGNATURE OF REGISTRANT John Fitzgerald Controller

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Goar Service & Supply, Inc
P O Box 5804
Tucson, AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	610686
	THRU
55	610692

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	**10.00**	70.00
					Existing Wells	WAITER	PAYMENT
						GUESTS 7	
						CHK NO 12364	
						55-I	70.00
					File No. D(24-24)17 a	TAX	0.00
					D(24-24)17 a	TOTL	70.00
					D(24-24)17 a	GEN.CHEK	70.00
					D(24-24)17 a		
					D(24-24)17 b	# 9592 A	13:21
					Various		

Check # 12364

TOTAL **$** 70.00

MICROFILMED

June 22, 1982
sg

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED APR 21 1982 DEPT. OF WATER RESOURCES

RECEIVED JUN 3 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 610687
FILE NO. D(24-24)17a
FILED 4/21/82 (DATE) AT 9 (TIME)
INA
AMA

1. Name of Registrant:
Goar Service & Supply, Inc.
P.O. Box 5804 (Address) Tucson (City) Az. (State) 85703 (Zip)

2. File and/or Control Number under previous groundwater law: No Numbers, Well dug in late 40's or early 50's.
(File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ ¼ ¼, Section ~~XXXX~~ 17, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Purdy Subdivision, Lot No. None, Address R.R. 1, Purdy Lane - Bisbee, Az. 85603.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation.

5. If for irrigation use, number of acres irrigated from well 25.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. #2 Depth of Well 250' feet
b. Diameter of casing 10" inches
c. Depth of casing ~~XXX~~ 250' feet
d. Type of casing Steel.
e. Maximum pump capacity 60 gallons per minute.
f. Depth to water Approx. 175' feet below land surface.
g. Date well completed Late 40's or early 50's (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
¼ ¼ ¼, Section Township Range
¼ ¼ ¼, Section Township Range
Attach additional sheet if necessary.

9. DATE 4/15/82 SIGNATURE OF REGISTRANT Dale Fitzgerald Controller

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Goar Service & Supply, Inc
P O Box 5804
Tucson, AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	610686
	THRU
55	610692

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	**10.00**	70.00
					Existing Wells		
					File No. D(24-24)17 a		
					D(24-24)17 a		
					D(24-24)17 a		
					D(24-24)17 b		
					Various		

WAITER PAYMENT
GUESTS 7
CHK NO 12364
55-I 70.00
TAX 0.00
TOTL 70.00
GEN.CHEK 70.00

9592 A 13:21

Check # 12364

TOTAL $ 70.00

MICROFILMED

June 22, 1982
sg

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED APR 21 1982 DEPT OF WATER RESOURCES

RECEIVED JUN 3 1982 DEPT OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 610686
FILE NO. D(24-24)17a
FILED 4-21-82 (DATE) AT — (TIME)
INA —
AMA —

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 ☒

1. Name of Registrant:
Goar Service & Supply, Inc.
P.O. Box 5804 (Address) Tucson, (City) Az. (State) 85703 (Zip)

2. File and/or Control Number under previous groundwater law: ~~XXXXXXXXXXXX~~ No Numbers, Wells dug in late 49's or early 50's.
(File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ ¼ ¼, Section 17 of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Purdy Subdivision, Lot No. None, Address R.R. 1, Purdy Lane - Bisbee, Az. 85603.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation.

5. If for irrigation use, number of acres irrigated from well 25.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. #1 Depth of Well 250' feet
b. Diameter of casing 10" inches
c. Depth of casing 250' feet
d. Type of casing Steel.
e. Maximum pump capacity 60 gallons per minute.
f. Depth to water Approx. 175' feet below land surface.
g. Date well completed Late 40's or early 50's (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
¼ ¼ ¼, Section Township Range
¼ ¼ ¼, Section Township Range
Attach additional sheet if necessary.

9. DATE 4/15/82 SIGNATURE OF REGISTRANT Lola Fitzgerald

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

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2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

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Goar Service & Supply, Inc
P O Box 5804
Tucson, AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	610686
	THRU
55	610692

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	10.00	70.00
					Existing Wells	WAITER	PAYMENT
						GUESTS	7
						CHK NO	12364
						55-I	70.00
					File No. D(24-24)17 a	TAX	0.00
					D(24-24)17 a	TOTL	70.00
					D(24-24)17 a	GEN.CHEK	70.00
					D(24-24)17 a		
					D(24-24)17 b	# 9592 A	13:21
					Various		

Check # 12364

TOTAL $ 70.00

June 22, 1982
sg

MICROFILMED

RECEIVED
JUN 3 1982
DEPT. C.
WATER RESOURCES

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED
APR 21 1982
DEPT. OF
WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 610694
FILE NO. (C24-24) 17a
FILED 4/21/82 AT 9
(DATE) (TIME)
INA
AMA

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

1. Name of Registrant:
GOAR SERVICE & SUPPLY, INC.
P.O. Box 5804 (Address) Tucson (City) Az. (State) 85703 (Zip)

2. File and/or Control Number under previous groundwater law: No NUmber,dug late 40's or early 50's.
(File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ ¼ ¼, Section 17 ~~17NE~~, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Purdy Subdivision, Lot No. None, Address R.R. 1, Purdy Lane - Bisbee, Az. 85603.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic.

5. If for irrigation use, number of acres irrigated from well 0.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. #9 Depth of Well 250' feet
b. Diameter of casing 6" inches
c. Depth of casing 250' feet
d. Type of casing Steel .
e. Maximum pump capacity 15 gallons per minute.
f. Depth to water Approx. 175' feet below land surface.
g. Date well completed Late 40's or early 50's. (Month) (Day) (Year)

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 4/15/82 SIGNATURE OF REGISTRANT Linda Fitzgerald
MICROFILMED Controller

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

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3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

RECEIVED
JUN 3 1982
DEPT. C
WATER RESOURCES

RECEIVED
APR 21 1982
DEPT. OF
WATER RESOURCES

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 610693
FILE NO. D(24-24)17a
FILED 4-21-82 (DATE) AT 9 (TIME)
INA
AMA

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☒
NON-EXEMPT WELL — $10.00 ☐

1. Name of Registrant:
Goar Service & Supply, Inc.
P.O. Box 5804 (Address) Tucson (City) Az. (State) 85703 (Zip)

2. File and/or Control Number under previous groundwater law: No number, dug late 40's or early 50's.
(File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ ¼ ¼, Section 17 ~~XXXXX~~, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Purdy Subdivision, Lot No. None, Address R.R. 1, Purdy Lane - Bisbee, Az. 85603.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic.

5. If for irrigation use, number of acres irrigated from well 0.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
#8
a. Depth of Well 250' feet
b. Diameter of casing 6" inches
c. Depth of casing 250' feet
d. Type of casing Steel .
e. Maximum pump capacity 15 gallons per minute.
f. Depth to water Approx. 175' feet below land surface.
g. Date well completed Late 40's or early 50's. (Month) (Day) (Year)

8. The place(s) of use of water. If same as Item 3, check this box ☒.
¼ ¼ ¼, Section Township Range
¼ ¼ ¼, Section Township Range
Attach additional sheet if necessary.

9. DATE 4/15/82 SIGNATURE OF REGISTRANT Dyla Fitzgerald

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

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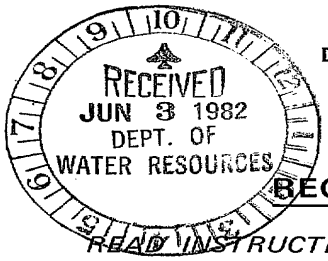
5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

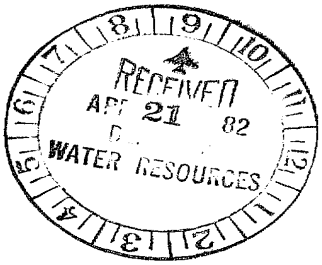
7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.



DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 610695
FILE NO. D(24-24)17a
FILED 4/21/82 AT 9
(DATE) (TIME)
INA
AMA

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☒
NON-EXEMPT WELL — $10.00 ☐

1. Name of Registrant:
Sheila Goar
R.R. 1, Purdy Lane (Address) Bisbee (City) Az. (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law: No number, dug late 40's or learly 50's.
(File Number) 35- (Control Number)

3. a. The well is located within the NE ~~¼~~ ¼ ~~¼~~ ¼ ¼, Section 17, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Purdy Subdivision, A portion of Lot No. Lot 1, Address R.R.1 Purdy Lane - Bisbee, Az. 85603.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic.

5. If for irrigation use, number of acres irrigated from well 0.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
#10
a. Depth of Well 250' feet
b. Diameter of casing 7" inches
c. Depth of casing 250' feet
d. Type of casing Steel .
e. Maximum pump capacity 15 gallons per minute.
f. Depth to water Approx. 175' feet below land surface.
g. Date well completed Late 40's or early 50's. (Month) (Day) (Year)

8. The place(s) of use of water. If same as Item 3, check this box ☒.
¼ ¼ ¼, Section Township Range
¼ ¼ ¼, Section Township Range
Attach additional sheet if necessary.

9. DATE 4/15/82 SIGNATURE OF REGISTRANT Sheila Goar

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

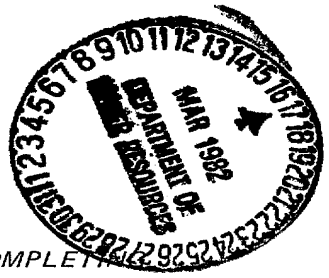
6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11 13

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55-630852
FILE NO. D(24-24)11dc
FILED MAR 17 1982 (DATE) AT 1pm (TIME)
INA
AMA

1. Name of Registrant:
BEVERLY H. JENNEY
1 MULBERRY LANE (Address) BISBEE (City) AZ (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the ¼ SW ¼ SE ¼, Section 11, of Township 24 N/S, Range 24 E/W, G & SRB & M, in the County of COCHISE.

   b. If in a subdivision: Name of subdivision ____, Lot No. ____, Address ____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC (HOUSE, POOL, LAWN & GARDEN).

5. If for irrigation use, number of acres irrigated from well ____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
____
____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
   a. Depth of Well N/A feet
   b. Diameter of casing ____ inches
   c. Depth of casing ____ feet
   d. Type of casing ____.
   e. Maximum pump capacity ____ gallons per minute.
   f. Depth to water ____ feet below land surface.
   g. Date well completed ____ (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   Attach additional sheet if necessary.

9. DATE 3-15-82 SIGNATURE OF REGISTRANT Beverly H. Jenney
Beverly H. Jenney

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

CHANGE OF WELL INFORMATION

Well Registration No. 55- 630852 File No. D(24-24)11DC
(location)

I/We request the following well information be changed: _____

Change water shed to: Whitewater Draw

Date: _____ Signature of Current Well Owner _____

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, _____, state that I am (no longer) the (new)
(please print)
owner of the well described below:

Township _____ Range _____ Section _____; _____ ¼ _____ ¼ _____ ¼

Well Registration No.55- _____ File No. _____
(location)

PRINT Previous Owner's Name	PRINT New Owner's Name
Address	Address
City State Zip	City State Zip

MICROFILMED

ENTERED JAN 21 1991

Dated: _____ Signature of New Owner _____

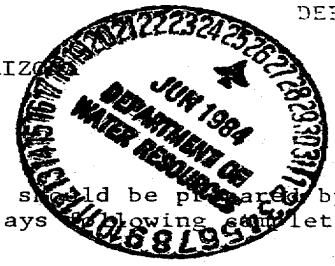
NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

DWR-55-71-3/90

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

STATE OF ARIZ



DEPARTMENT OF
WATER RESOURCES

V

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Jim Sayre
Name
P.O. Box 325 Bisbee AZ 85603
Address

2. Lessee or Operator
Name
Address

3. Driller J.R. SHARP GENERAL CONTRACTORS
Name
~~BOX 4529 922 NACO HWY.~~
BISBEE, ARIZ. 85603 432-4597
Address

4. Location of well: SW NW SE Sec. 5 T24S R24E

5. Permit No. (if issued)

DESCRIPTION OF WELL

6. Total depth of hole 313 ft.
7. Type of Casing P.E. Steel
8. Diameter and length of casing 5 in. from 0 to 313, _____ in from _____ to _____.
9. Method of sealing at reduction points
10. Perforated from 208 to 308, from _____ to _____, from _____ to _____
11. Size of cuts 1/4 x 6 Number of cuts per foot 2
12. If screen was installed: Length _____ ft. Diam _____ in. Type
13. Method of construction (drilled) dug, driven, bored, jetted, etc.
14. Date started 5 - 2 - 84 (Month - day - year)
15. Date completed 5 - 4 - 84 (Month - day - year)
16. Depth to water 208 ft. (If flowing well, so state.)
17. Describe point from which depth measurements were made, and give sea-level elevation if available. Top of Casing
18. If flowing well, state method of flow regulation
19. REMARKS:

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55-507823
Received _____ By _____
Entered 6.27.84 By SR
File No. D(24-24)5dbc

(Well log to appear on Reverse side)

DWR-55-6-5/83

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	20	6 5/8 O.D. x .188 wall steel pipe - grouted.
0	313	Red clay-like conglomerate with varying amounts of cobbles & gravel.
0	313	5" O.D. x .158 P.E. steel casing.

I hereby certify that this well was drilled by me (or under my supervison), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

J. R. SHARP GENERAL CONTRACTORS
BOX 4520 322 NACO HWY,
BISBEE, ARIZ. 85603 432-4577

Driller J. R. Sharp
Name

Address

City State Zip

Date 5-30-84

J R SHARP
P O BOX 4520
BISBEE AZ 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	507823
	THRU

SAYRE

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEE FOR NOTICE OF INTENTION		10.00
					TO DRILL AN EXEMPT WELL		
					FILE#D(24-24)5dbc		
					REG#55-507823		

WAITER PAYMENT
GUESTS 1
CHK NO 9814
55-I 10.00
TAX 0.00
TOTL 10.00
GEN.CHEK 10.00

CHECK#09814
4/20/84/ek

TOTAL $ # 1841 A 11:04 10.00

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL OR DEEPEN A WELL
OUTSIDE OF AN ACTIVE MANAGEMENT AREA

RECEIVED APR 10 1984 DEPT. OF WATER RESOURCES

MAR 30 1984 DEPARTMENT OF WATER RESOURCES

Section 45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management, a person may not drill or cause to be drilled any well or deepen an existing well without first filing a Notice of Intention to Drill with the Department.

NORTH
NW¼ NE¼
WEST EAST
SW¼ SE¼
SOUTH

INDICATE WELL LOCATION BY X
(Above diagram represents one 640 acre section)

WELL/LAND LOCATION:

1. Township 24 S
2. Range 24 E
3. Section 5
4. SW ¼, NW ¼, SE ¼
   10 acre subdivision
5. County Cochise
6. Owner of well:
   Jim Sayre
   Name
   Box 325
   Address
   Bisbee AZ 85603
   City State Zip
   Telephone 432-2693
7. Owner of land:
   Same
   Name
   Address
   City State Zip

DESCRIPTION OF WELL:

8. Diameter 5 inches
   Depth 300 feet
9. Type of casing P.E. Steel
10. Design pump capacity:
    35 gallons per minute
11. Estimate of total annual pumping: _____ acre feet
12. Principal use of water:
    Domestic
    (Be Specific)
13. Other uses intended:
    None
    (Be Specific)
14. If for irrigation, state the number of acres to be irrigated:
    _____ acres
15. Construction will start about:
    March '84
    Month Year

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
FILE NO. D(24-24)5 dbc
FILED 4-19-84 By EK
INPUT 4-20-84 By
DUPLICATE MAILED 4-20-84 By EK
REGISTRATION NO. 55-507823
Non Expansion Area
W/S 13 S/B

PLACE OF USE:

16. Township Same
17. Range
18. Section
19. Legal description of land

20. Type well:
    ✓ Exempt
    ___ Non-Exempt
21. Action Requested:
    Drill ✓ Deepen Replace
    55-
22. This notice filed by:
    Owner ✓
    Lessee
    Jim Sayre
    Name
    Same
    Address
    City State Zip
    Telephone
23. Driller's Name:
    J.R. Sharp Gen. Contrs.
    Name
    P.O. Box 4520
    Address
    Bisbee, AZ 85603
    City State Zip
    155 27862
    DWR License Number

GENERAL INSTRUCTIONS

1. Fill out this form in duplicate and send to 99 East Virginia, Suite 100, Phoenix, Az. 85004.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen or replace a well outside of an Active Management Area.
4. If the well is a replacement or deepening of an existing well, state the registration number of the existing well in Item 21.
5. Construction standards for new and replacement wells and the deepening and abandonment of existing wells shall be in accordance with Department Rules and Regulations.

I state that this Notice is filed in compliance with ARS §45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well set forth on the reverse side of this form.

DATE 3-28-84 Signature of Person Filing Jim Sayre

DWR-55-41-10/83

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Upon receipt of the return of this annotated Notice, the owner is authorized to proceed in drilling or deepening the well as set forth on this Notice.

2. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

3. Only one exempt well may be drilled or used to serve the same use at the same location.

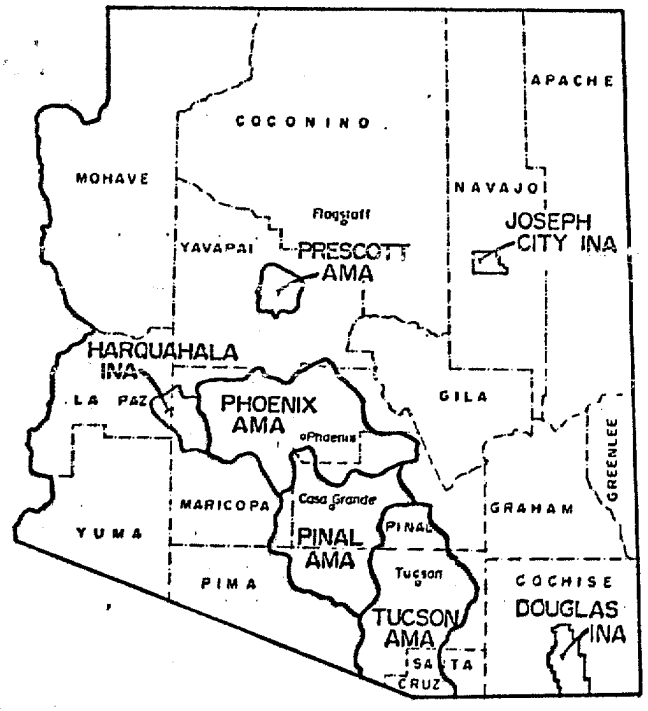
4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 2 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to ARS §45-434 or §45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of ARS §45-437.

5. The drilling or deepening of this well shall be completed within one (1) year of the date of this Notice.

6. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

7. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of the annotated copy of this Notice.

8. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.



DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 801607-L
FILE NO. DC24-24017b
FILED 7-3-84 (DATE) AT AM (TIME)
INA —
AMA —

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 XX

LATE FEE $10.00 XX

1. Name of Registrant:
John M. Haubert or Wanda Jay Haubert
RR 1, Box 315 Naco Hwy (Address) | Bisbee (City) | AZ (State) | 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
Unknown (File Number) 35- Unknown (Control Number)

3. a. The well is located within the NW ¼ ¼ ¼, Section 17, of Township 24 S N/S, Range 24 E E/W, G & SRB & M, in the County of Cochise.
b. If in a subdivision: Name of subdivision On west boundry line of Parcel No. 10, Chase L. Purdy Subdivision, 1955, Map 528, Lot No. _____, Address RR1, Box 315 Naco Hwy (PLEASE SEE ATTACHED LEGAL DESCRIPTION)

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation, Stockwater and Domestic.

5. If for irrigation use, number of acres irrigated from well Seven (7).

6. Owner of land on which well is located. If same as Item 1, check this box XX
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 195 feet
b. Diameter of casing 8 inches
c. Depth of casing 195 feet
d. Type of casing Steel.
e. Maximum pump capacity 60 gallons per minute.
f. Depth to water 114 feet below land surface.
g. Date well completed Estimated 1955 (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box XX.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 30 June 84 SIGNATURE OF REGISTRANT John M. Haubert or Wanda Jay Haubert

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

FILE COPY

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.



ORDER NO. 822773
LEGAL DESCRIPTION

THAT PORTION OF THE NORTHWEST QUARTER OF SECTION 17, TOWNSHIP 24 SOUTH, RANGE 24 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, COCHISE COUNTY, ARIZONA, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT WHICH IS 0 DEGREES 02 MINUTES EAST, 330.00 FEET FROM THE NORTHWEST CORNER OF THE NORTHWEST QUARTER OF SECTION 17;

THENCE NORTH 39 DEGREES 58 MINUTES EAST, 30.00 FEET TO THE SOUTH RIGHT-OF-WAY LINE OF THE BISBEE-NACO HIGHWAY, AS IT EXISTED ON SEPTEMBER 2, 1955;

THENCE NORTH 89 DEGREES 58 MINUTES EAST, 629.76 FEET TO THE NORTHEAST CORNER OF THIS PARCEL, WHICH IS ON THE WEST BOUNDARY LINE OF PARCEL NO. 10 OF THE CHASE L. PURDY SUBDIVISION, ACCORDING TO THAT CERTAIN MAP OF "CHASE L. PURDY SUBDIVISION" RECORDED JUNE 24, 1955, MAP NO. 528;

THENCE SOUTH 0 DEGREES 02 MINUTES EAST, 500.00 FEET TO THE SOUTHWEST CORNER OF SAID PARCEL NO. 10;

THENCE SOUTH 89 DEGREES 58 MINUTES WEST, 629.76 FEET TO THE EASTERLY RIGHT-OF-WAY LINE OF THE SAID BISBEE-NACO HUGHWAY;

THENCE SOUTH 89 DEGREES 58 MINUTES WEST, 30.00 FEET TO THE CENTER LINE OF SAID HIGHWAY;

THENCE NORTH 0 DEGREES 02 MINUTES WEST, 500.00 FEET TO THE POINT OF BEGINNING.

MICROFILMED

JOHN M HAUBERT
WANDA JAY HAUBERT
RT. 1 BOX 315 NACO HWY
BISBEE ARIZONA 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	80160?-L
	THRU

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					LATE FEE	20.00	20.00
					FILING FEE FOR REGISTRATION OF EXISTING	------	------
					WELLS		
					1 NON EXEMPT WELL		
					FILE NO D(24-24)17 b		

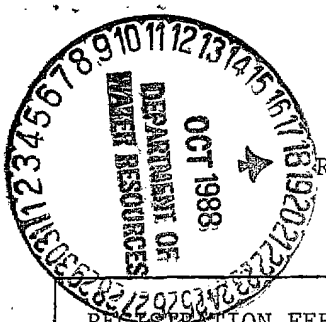
JUL 1984 PAID

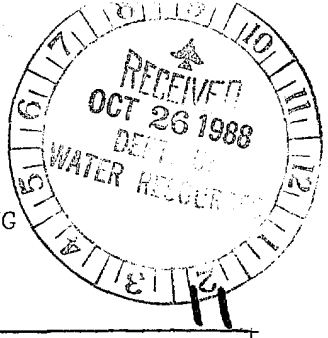
MICROFILMED

CHECK NO 185
75/84 mg

TOTAL $ 20.00

Arizona Department of Water Resources
15 South 15th Avenue
Phoenix, Arizona 85007





REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING

PRINT OR TYPE - FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)

EXEMPT WELL (NO CHARGE) ☒

NON-EXEMPT WELL - $10.00 ☐

LATE FEE $10.00 ☒

For Office Use Only

REGISTRATION NO. 55 805290-C

FILE NO. D(24.24)17 bA

FILED 10-26-88 (Date) at 10:00A (Time)

INA —

AMA —

1. Name of Registrant:
Elizabeth G.Welles

606 Purdy Lane (Address) Bisbee (City) Arizona (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law: _____ (File No.) 35 (Control No.)

3. a. The well is located within the NE ¼ NW ¼ ¼, Section 17 of Township 24 ●/S, Range 24 E/●, G&SRB&M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____

Lot No. _____ Address _____

4. The principal uses(s) of water: (Examples: irrigation, stockwater, domestic, municipal industrial Domestic

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒

Name Address City State Zip

7. Well data (If data not available, write N/A)

a. Depth of Well 316 ft. feet

b. Diameter of casing 6 in. inches

c. Depth of casing 316 feet

d. Type of casing 6 5/8 O.D. x. 188 P.E. casing with mild steel drive shoe

e. Maximum pump capacity 4" submersible 15 g.p.m. gallons per minute.

f. Depth to water 130 ft. feet below land surface.

g. Date well completed 3-2-64 (in use) (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒

____ ¼ ____ ¼ ____ ¼, Section ____ Township _____ Range _____

9. DATE 10-17-88 SIGNATURE OF REGISTRANT Elizabeth G. Welles

DWR-55-76-9/85

ENTERED OCT 27 1988
MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S.45-593, by filing this form in duplicate with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.
2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.
3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.
4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of less than two (2) acres of land.
5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.
2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.
3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, lot number and address.
4. Show all purposes for which the water is used.
5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.
6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.
7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.
8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, lot number and/or address on the blank line.
9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470 Fax (602) 417-2422

RECEIVED
OCT 30 1998
RECORDS MGT

REQUEST FORM TO CHANGE WELL INFORMATION OWNERSHIP * DRILLER * VARIANCE

Please complete the appropriate section of this request form and return to the above address with applicable fee. NOTE: A.R.S. §45-593.C requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)

NOTE: If the location of the proposed well changes after drilling authority has been issued, **attach a $10.00 reissue fee for each well.**

WELL REGISTRATION NO. 55-_____ **FILE NO:**_____

If known, I/We request the following well information be changed:_____

_____

_____

Date_____ **Signature of Current Well Owner**_____

2. STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, PETER J. HOBAN, state that I am the ~~Previous~~/New Owner of the well described below:

_____ ¼ _____ ¼ NW ¼ of Section 17 Township 24S Range 24E
10 Acre 40 Acre 160 Acre

Well Registration No. 55- 805290 File No. D(24-24)17 BA (if known)

RALPH R. CAMPBELL
PRINT Previous Owner's Name

4201 MONNETT CHAPEL RD
Mailing Address

BUCYRUS OH 44280
City State Zip

(419) 985-5123
Telephone Number

PETER J. HOBAN
PRINT New Owner's Name

125 E. FRY BLVD-STE 1
Mailing Address

SIERRA VISTA, AZ 85635
City State Zip

(520) 458-8828
Telephone Number

Signature of Previous/New Well Owner _____ **Date** 10-26-98

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470 Fax (602) 417-2422

3. REQUEST TO CHANGE WELL DRILLER $10.00 FEE REQUIRED FOR EACH WELL

This request must be received by this Department and the Drill Card issued to the new drilling firm prior to the drilling or completion of any well.

Well Registration No. 55-_____ File No._____

Original Well Driller	**New Well Driller**
Mailing Address	**Mailing Address**
Telephone Number	**Telephone Number**
ADWR License Number	**ADWR License Number**
R.O.C. License Category	**R.O.C. License Category**
Typed or Printed Name of Well Owner	**Signature of Well Owner** **Date**

The fee charge for well ownership and reissue of drill card is authorized by R12-15-151, effective June 30, 1994.

4. REISSUE OF DRILLING AUTHORITY FOR VARIANCE REQUEST: ($10.00 EACH WELL)

NOTE: If extraordinary or unusual conditions exist, after the initial drilling authority has been issued, the well owner or well driller may request a variance from the provisions of R12-15-811.

WELL REGISTRATION NO. 55-_____ FILE NO:_____

I/WE REQUEST THE FOLLOWING WELL DRILLING AUTHORITY BE REISSUED PER THE ATTACHED VARIANCE REQUEST:

Signature of Well Owner/Well Driller_____ Date_____

Operations Division, 500 North Third Street
Phoenix, Arizona 85004 Telephone (602) 417-2470

RECEIVED
FEB 26 1996
GROUNDWATER MGT

REQUEST FORM TO CHANGE WELL INFORMATION OWNERSHIP * DRILLER

Please complete the appropriate section of this request form and return to the above address with applicable fee. NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. CHANGE OF WELL INFORMATION — NO FEE REQUIRED

NOTE: If the location of the proposed well changes after drilling authority has been issued, **attach a $10.00 reissue fee for each well.**

Well Registration No. 55-_____ File No._____(If known)

I/We request the following well information be changed:_____

_____

_____

Date_____ Signature of Current Well Owner_____

2. STATEMENT OF CHANGE OF WELL OWNERSHIP — $10.00 FEE REQUIRED

If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate $10.00.

I, RALPH R. CAMPBELL, state that I am the ~~Previous~~/New Owner of the well described below:

____¼____¼____¼; Section 17 Township 24South Range 24East
10 acre 40 acre 160 acre

Well Registration No. 55- 805290 File No. 39-0001484 (If known)

ELIZABETH C. WELLES	RALPH R. CAMPBELL
PRINT Previous Owner's Name	PRINT New Owner's Name
1370 N. Ronda Oesta	1385 W. Purdy Lane
Mailing Address	Mailing Address
Tucson, Az. 85715	Bisbee, Az. 85603
City State Zip	City State Zip
520-751-1832	520-432-3073
Telephone	Telephone

Date _____ Signature of ~~Previous~~/New Well Owner Ralph R. Campbell

DWR-55-71-8/94(Rev)

ARIZONA DEPARTMENT OF WATER RESOURCES

Operations Division, 500 North Third Street
Phoenix, Arizona 85004 Telephone (602) 417-2470

3. REQUEST TO CHANGE WELL DRILLER $10.00 FEE REQUIRED FOR EACH WELL

This request must be received by this Department and the Drill Card issued to the new drilling firm PRIOR to the drilling or completion of any well.

Well Registration No. 55-_____ File No._____

_____	_____
Original Well Driller	New Well Driller
_____	_____
Mailing Address	Mailing Address
_____	_____
ADWR License Number	ADWR License Number
_____	_____
R.O.C. License Number	R.O.C. License Number

_____	_____	_____
Typed or Printed Name of Well Owner	**Signature of Well Owner**	**Date**

The fee charge for well ownership and reissue of drill card is authorized by R12-15-151, effective June 30, 1994.

DWR-55-71-8/94(Rev)

LAND OWNER	WATERSHED FILE NO.	LESSEE	LEASE-PERMIT ID
WELLES, ELIZABETH C.	111-24-DCD-0C5		

LOCATION OF USES

WATER USE #	COUNTY	BK	MAP	PRCL	SECTION	TWNP	RNG	WATER SOURCE	DIVERSION #	RESERVOIR #	CHANGE
DM001	COCHISE	102	053	0012	NWNENW17	24OS	24OE				

FILINGS AND DECREES
ADJUDICATION FILINGS

FILE NO.	CLAIMED USES	USE STATUS	CLAIMED POINTS DATES	OF DIVERSION	DATE FILED	FEE PAID
39-CCC1484	DOMESTIC	VERIFIED USE	1964		MAY 24,1979	7.00

SUMMARY

WATER USE #	POINTS OF DIVERSION	APPLICABLE ADJ FILING	APPLICABLE PRE FILING	PHOTO DATE	APPARENT PRIORITY	IRR ACRES OR CAPACITY	FACILITY NAME
DM001		39-CCC1484					

Well Registration # 55-805290 Sig Eichberg (man in Phoenix office 1-800-352-8488

TO AVOID PAYMENT OF PENALTY AND INTEREST THIS PAYMENT MUST BE IN THE OFFICE OF THE STATE LAND DEPARTMENT ON OR BEFORE THE DUE DATE. DATE OF POSTAL STAMP NOT ACCEPTED AS DATE OF PAYMENT.

Welles & Sharp Wells

STATE OF ARIZONA
STATE LAND DEPARTMENT
1624 WEST ADAMS – 4th FLOOR – PHOENIX, ARIZONA 85007

RECEIPT – PAYEE

ELIZABETH WELLES
PO BOX 5351
BISBEE AZ 85603

SECTION	TOWNSHIP	RANGE

49168

KIND ENTRY	LEASE-REFERENCE NO.
39	001484 to 001485 inclusive

ACCOUNT NO. GRANT FUND	ACCOUNT NO. SUB	CARRYING CAPACITY	BILLING DESCRIPTION	RATE	ACRES	$ AMOUNT
14	310 35		Filing Fees (2)	5 00		10 00
14	430 36		Recording Fee (2)	2 00		4 00

PAID
DATE

CERTIFICATE OF PURCHASE $ UNPAID BALANCE	BILLING PERIOD FROM MO.	DAY	YR	TO MO.	DAY	YR	DATE BILLED MO.	DAY	YR.	DATE DUE MO.	DAY	YR.	TOTAL ACRES	TOTAL AMOUNT $
							05	24	79					14 00

IF PAYMENT IS MADE ON OR BEFORE THIS DATE → PAY THIS AMOUNT

SEE OTHER SIDE FOR LAW PERTAINING TO PENALTY AND INTEREST – A. R. S. SEC. 37-288.

RENTAL AMOUNT SUBJECT TO PENALTY AND INTEREST IF NOT PAID ON OR BEFORE DATE DUE ($)

5% PENALTY OF RENTAL AMOUNT - - - - - - - - - - - - $

TOTAL RENTAL AMOUNT PLUS PENALTY - - - - - - - - ($) TOTAL PENALTY AND INTEREST

10% INTEREST PER ANNUM OF RENTAL AMOUNT AND PENALTY – NUMBER OF DAYS DELINQUENT ( ) $ $

TOTAL AMOUNT DUE INCLUDING PENALTY AND INTEREST - - - - - - - - - - - - $

CASH RECEIVED $

BALANCE DUE OR OVERPAYMENT $

PENALTY AND INTEREST DISTRIBUTION	$

Elizabeth Welles
606 Purdy Lane
Bisbee,Az. 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	805290-L
	THRU

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FEE FOR REGISTRATION OF EXISTING WELL		
					OUTSIDE AN A.M.A. EXEMPT WELL	10.00	
					REG. NO. 55-805290-L		
					FILE NO. D (24-24) 17ba		
					10/26/88 P. Rocko Check #1157		

PAID OCT 26 1988 PAID

TOTAL $ 10.00

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED MAY 7 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY	
REGISTRATION NO. 55-	606854
FILE NO.	D(24-24)5ccc a
FILED (DATE)	5-7-82 AT (TIME) 9-
INA	—
AMA	—

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

1. Name of Registrant:
Charles W Hall
Rte 1 Naco Hwy (Address) Bisbee (City) AZ (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
36-41841 (File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ SW ¼ SW ¼, Section 5, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: (irrigation) - stockwater - domestic - municipal - industrial)
_____.

5. If for irrigation use, number of acres irrigated from well 40.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 25 feet
b. Diameter of casing Dug well inches
c. Depth of casing Open feet
d. Type of casing _____.
e. Maximum pump capacity 200 gallons per minute.
f. Depth to water 220 feet below land surface.
g. Date well completed Prior to (Month) (Day) 1915 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☐.
____¼ SW ¼ SW ¼, Section 5 Township 24S Range 24E
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
_____
Attach additional sheet if necessary.

9. DATE 5-4-82 SIGNATURE OF REGISTRANT Charles W Hall
by power-of-Atty Margaret E Mitchell

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

CHARLES W. HULL
Rte 1 NACO HIGHWAY
BISBEE, AZ 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	606854 THRU

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing fee for Registration of Existing		
					Well	10.00	10.00
						WRITER PAYMENT	
					File No: D (24-24) 5 cca	GUESTS 1	
						CHK NO 2509	
						55-I 10.00	
						TAX 0.00	
						TOTL 10.00	
						GEN.CHEK 10.00	
					Check No: 2509	# 7945 A 11:19	

5/11/82
Ms

TOTAL $ 10.00

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED MAY 7 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY	
REGISTRATION NO. 55-	606855
FILE NO.	D(24-24)5bca
FILED (DATE)	5-7-82
AT (TIME)	9-
INA	—
AMA	—

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

1. Name of Registrant:
Charles W. Hull
Rte 1 Naco Hwy (Address) Bisbee (City) AZ (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
36-41841 (File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ SW ¼ NW ¼, Section 5, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - (domestic) - municipal - industrial)
_____.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 400 feet
b. Diameter of casing 8 inches
c. Depth of casing 200 feet
d. Type of casing Steel .
e. Maximum pump capacity 35 gallons per minute.
f. Depth to water 240 feet below land surface.
g. Date well completed Prior to 1915 (Month) (Day) (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 5-4-82 SIGNATURE OF REGISTRANT Charles Wm Hull
Power of attorney by Margaret E Hull

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 21 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY	
REGISTRATION NO. 55-	649153L
FILE NO.	D(24-24)18
FILED (DATE) AT (TIME)	
INA	
AMA	

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

1. Name of Registrant:
MANUELA HUMPHREY
P.O Box 36 (300 H St.) NACO, AZ 85620
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the ____¼ ____¼ ____¼, Section 18, of Township NACO 24SN/S, Range 24E E/W, G & SRB & M, in the County of COCHISE.
b. If in a subdivision: Name of subdivision NACO, ARIZONA, Lot No. 323, Address BLOCK 24.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC.

5. If for irrigation use, number of acres irrigated from well ____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 160 feet
b. Diameter of casing 8 inches
c. Depth of casing 20 feet
d. Type of casing STEEL.
e. Maximum pump capacity ____ gallons per minute.
f. Depth to water 120 feet below land surface.
g. Date well completed (Month) (Day) 1938 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6-18-82 SIGNATURE OF REGISTRANT Manuela Humphrey

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

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INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

was 55-609150 II

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00 VNB Ck. # 4619 attached.	XX

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 632924
FILE NO. D(24-24)17ab
FILED 5-17-82 (DATE) AT 8- (TIME)
INA —
AMA —

1. Name of Registrant:
IRONS, LEE (none) or IRONS, MILDRED MARIE
Post Office Box 1446 , Nogales, Arizona 85621
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
(9-1-81) 78-112963 (Grandfathered Grnd. Rts. 35- (unknown) none was ever given to us
(File Number) (Control Number)
(6-19-80 39-004024 (Az. Water Comm. -San Pedro River) (Control # unknown-none ever given to us)

3. a. The well is located within the NW ¼ NE ¼ ¼, Section 17, of Township 24 S N/S, Range 24 E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Chase L. Purdy, Lot No. 11 & 12, Address Purdy Lane n/a , Naco, Arizona (Cochise County).

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Irrigation and domestic.

5. If for irrigation use, number of acres irrigated from well 10 acres total

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well one hundred seventy five (175) feet
b. Diameter of casing ten (10) inches
c. Depth of casing one hundred seventy five (175) feet
d. Type of casing perforated steel casing .
e. Maximum pump capacity two hundred (200) gallons per minute.
f. Depth to water approximately 25-30 feet below land surface.
g. Date well completed December (Month) , 12 (Day) 1955 (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE _____ SIGNATURE OF REGISTRANT Lee Irons ~~Lee Irons~~
Mildred M. Irons Mildred M. Irons

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

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1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

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3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

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Lee Irons
P. O. Box 1446
Nogales, AZ 85621

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	~~600150~~
	THRU
55	

Reassigned to
55-632924

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	10.00	
					Existing Wells	WATER IMPROVEMENT	
						QUESTS 1 CHK NO 4619 55-I 10.00 TAX 0.00 TOTL 10.00 GEN.CHEK 10.00	
					File No. D(24-24) 17ab		
					Ck 4619 6/1/82	# 8674 A 9:44	

vf

Check # TOTAL $ 10.00

MICROFILMED

STATE OF ARIZONA

RECEIVED
SEP 14 1983
WATER RESOURCES

DEPARTMENT OF
WATER RESOURCES

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Joseph K. Jackson (Name)
220 S. Coleman, Barnett Acres, Bisbee, AZ 85603 (Address)

2. Lessee or Operator _____ (Name)
_____ (Address)

3. Driller J. R. SHARP GENERAL CONTRACTORS (Name)
BOX 4520 322 NACO HWY.
BISBEE, ARIZ. 85603 432-4597
_____ (Address)

4. Location of well: SW NE SE S5 T24S R24E

5. Permit No. (if issued) _____

DESCRIPTION OF WELL

6. Total depth of hole 342 ft.
7. Type of Casing P.E. steel
8. Diameter and length of casing 6 in. from 0 to 20, 5 in from 2 to 342.
9. Method of sealing at reduction points _____
10. Perforated from 240 to 340, from _____ to _____, from _____ to _____
11. Size of cuts 1/8 Number of cuts per foot 8
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction (drilled) dug, driven, bored, jetted, etc.
14. Date started 8 (Month) – 11 (day) – 83 (year)
15. Date completed 8 (Month) – 16 (day) – 83 (year)
16. Depth to water 208 ft. (If flowing well, so state.)
17. Describe point from which depth measurements were made, and give sea-level elevation if available. Top of Casing
18. If flowing well, state method of flow regulation _____
19. REMARKS: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55-506034
Received _____ By _____
Entered 9-16-83 By _____
File No. D(24-24)5dac

(Well log to appear on Reverse side)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	20	Top soil & Caliche Grouted.
20	342	Recent fan conglomerate with varying quantities of cobbles & gravel.
0	20	6 5/8" O.D. x .156 P.E. steel grouted.
2	342	5" O.D. x .135 P.E. steel.
240	340	Perforated @ 1/8 x 3 cuts per foot.
	240	First water, weak.
	208	Standing water level.

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

WATER RESOURCES
FEB 14 1983
RECEIVED

Driller J. R. Sharp
Name

J. R. SHARP GENERAL CONTRACTORS
BOX 4520 322 NACO HWY.
BISBEE, ARIZ. 85603 432-4597
Address

Date 8-15-83

RECEIVED
SEP 21 1984
DEPT. OF
WATER RESOURCES

DEPARTMENT OF WATER RESOURCES
99 East Virginia
Phoenix, Arizona 85004

Registration No. 55-50[redacted]6034
Owner of Joe Jackson
Well Site [redacted]
File No. (24-24) 5dac D([redacted])[redacted]

COMPLETION REPORT

1. Completion Report to be filed with the Department within 30 days after installation of pump equipment.

2. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

3. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.

4. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

LOCATION OF THE WELL

SW NE SE 35 T24S R24E .

Date Well Completed 8-16-83 Depth of Well 342

1. Well Test:
Test Pumping Capacity 30 (Gal. per min.) Date Well Tested 8-23-83
Method of Discharge Measurement Performance Chart (weir, orifice, current meter, etc.)

Static Groundwater Level 208 ft. Drawdown _____ ft.
Total Pumping Lift N/A ft. Drawdown _____ lbs. (Flowing Well)

2. Equipment Installed:

Kind of Pump 4" Submersible (turbine, centrifugal, etc.)

Kind of Power (Elec.), Nat. Gas, Etc.) H.P. Rating of Motor 3

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

J. R. Sharp
Signature

Address

9 - 12 - , 1984
Date

City State Zip

J.R. SHARP GENERAL CONTRACTORS
BOX 4520 322 NACO HWY.
BISBEE, ARIZ. 85603 432-4597

S. 24 & 25

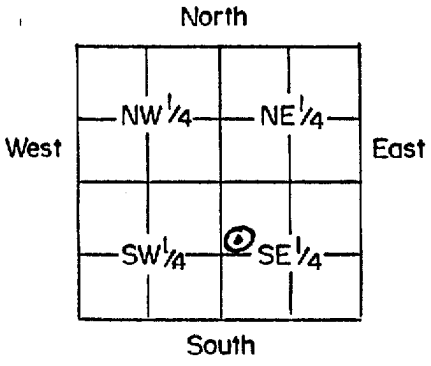
EXEMPT WELL

FILING FEE: ~~$3.00~~ 10.00

DEPARTMENT OF WATER RESOURCES
NOTICE OF INTENTION TO DRILL OR DEEPEN
AN EXEMPT WELL

EXEMPT WELL

Section 45-596, Arizona Revised Statutes, provides: A person may not drill or cause to be drilled any well or deepen or replace an existing well without first filing a Notice of Intention to Drill with the Department on a form prescribed and furnished by the Department. The well shall be completed within one year after the date of Notice. An exempt well means a well having a pump with a maximum design capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An exempt well may include the non-commercial irrigation of not more than 1 acre of land.



- Indicate Well Location by X
(Above diagram represents one 640 acre section)

WELL/LAND LOCATION:

1. Township 24S
2. Range 24E
3. Section 5
4. SW ¼ NE ¼ SE ¼
   10 acre sub-division
5. County Cochise
6. Owner of Well:

Joe Jackson
Name
P.O.Box 4520
Address
Bisbee, AZ 85603
City State Zip

7. Owner of Land:

Same
Name

Address

City State Zip

DESCRIPTION OF WELL:

8. Diameter 5
   Depth 300
9. Type of Casing
   P.E. steel
10. Principal use of Water.
    Domestic
11. Other uses Intended
    None
    (If for non-commercial irrigation, state approximate area being cultivated.)
12. Construction will start about:
    August 1983
    Month Year

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

FILE NO. D(24-24)5 dac
FILED 8-5-83 BY EK
INPUT 8-9-83 BY JC
DUPLICATE MAILED 8-5-83 BY EK
REGISTRATION NO 55-506634
AMA NON EXPANSION AREA —

PLACE OF USE:

13. Township 24S
14. Range 24E
15. Section 5
16. Legal description of land water is to be used on:
    SW NE SE
17. Design Pump Capacity
    35 gpm
18. Action Requested:
    Drill ✓
    Deepen
    Replace
19. This notice filed by:
    Owner
    Lessee
    Driller ✓

J.R. Sharp General Contractors
Name
P.O. Box 4520
Address
Bisbee AZ 85603
City State Zip

20. Drillers Name:

Same
Name

Address

City State Zip

155
Department License Number

1. Fill out this form in duplicate and mail to P.O. Box 2600, Phoenix, Arizona, 85002, or deliver to 222 N. Central Ave., Suite 550, Phoenix, Arizona, 85004.
2. If the Exempt Well is in fact a replacement (or deepening) well, state the registration number of the existing well. _____
3. Construction standards for new and replacement wells and the deepening and abandonment of existing wells, shall be in accordance with Department Rules and Regulations.

I, Joe Jackson, state that the construction will be under the direct and personal supervision of the well driller designated on this form and that the designated driller holds a contractors license pursuant to ARS 45-595.

8-3-83
Date

J. R. Sharp
Signature of Person Filing

J R SHARP GENERAL CONTRACTORS
P O BOX 4520
BISBEE AZ 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	506034
	THRU

JACKSON

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEE FOR NOTICE OF INTENTION TO DRILL		10.00
					AN EXEMPT WELL		
					FILE#D(24-24)5dac REg#55-506034		

WAITER PAYMENT
GUESTS 1
CHK NO 9563
55-I 10.00
TAX 0.00
TOTL 10.00
GEN.CHEK 10.00

0072 M 15:54

CHECK#9563
8/5/83/ek

TOTAL $ 10.00

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Pump Installation Completion Report

- Review instructions prior to completing form
- The registered well owner should file this report with the Department within 30 days following installation of pump equipment

** PLEASE PRINT CLEARLY **

RECEIVED
DEC 15 2005

FILE NUMBER: D(24-24) 17 BBD
WELL REGISTRATION NUMBER: 55- 209737

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: JALYN ASSOCIATES LLC

MAILING ADDRESS: PO BOX 4174

CITY / STATE / ZIP: BISBEE, AZ 85603

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER: 520-432-2808

FAX:

Location of Well

WELL LOCATION, ADDRESS (IF KNOWN):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	17	NW 1/4	NW 1/4	SE 1/4

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
102	53	007

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 2. EQUIPMENT INSTALLED

DATE PUMP INSTALLED: 11-24-05

Pump Type

CHECK ONE

- ☐ Air Lift
- ☐ Bucket
- ☐ Centrifugal
- ☐ Jet
- ☐ Piston
- ☐ Rotary
- ☒ Submersible
- ☐ Turbine
- ☐ Other (please specify)

Power Type

CHECK ONE

- ☐ Diesel Engine
- ☒ Electric Motor
- ☐ Gasoline Engine
- ☐ Hand
- ☐ Natural Gas
- ☐ Windmill
- ☐ Other (please specify)

RATED PUMP CAPACITY: 25 Gallons Per Minute

HORSE POWER RATING OF MOTOR: 2hp.

SECTION 3. WELL TEST

Pump Test Data

DATE WELL TESTED: 11-24-05

STATIC WATER LEVEL (A): 150 Feet Below Land Surface

PUMPING WATER LEVEL (B): Feet Below Land Surface

DRAWDOWN [(B) - (A)]: Power has not be

TEST PUMPING RATE: run To Web Site Gallons Per Minute

DURATION OF PUMP TEST (Minimum 4 Hours): (No - Test) Hours

TOTAL PUMPING LIFT: Feet

FOR FLOWING WELL, MEASURED SHUT IN HEAD ☐ FT ☐ PSI

Method of Discharge Measurement

CHECK ONE

- ☐ Bailer
- ☐ Bucket - Barrel - Stopwatch
- ☐ Current
- ☒ Estimated - Air Lift
- ☐ Gauge
- ☐ Meter
- ☐ Orifice
- ☐ Volume
- ☐ Weir - Flume
- ☐ Other (please specify)

Method of Measuring Water Level

CHECK ONE

- ☐ Air Line
- ☒ Electric Measuring Line (Sounder)
- ☐ Steel Tape
- ☐ Other (please specify)

ANSWERED DEC 2 2 2005

I HEREBY CERTIFY *that the above statements are true to the best of my knowledge and belief according to* A.R.S § 45-600(B)

SIGNATURE OF WELL OWNER: [signature]

DATE: 12-6-05

DWR-55-56 (Rev. 10/11/01)

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

RECEIVED NOV 21 2005 Information Management

- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

FILE NUMBER: D(24-24) 17 BBD
WELL REGISTRATION NUMBER: 55- 209737
PERMIT NUMBER (IF ISSUED):

SECTION 1. DRILLING AUTHORIZATION

Drilling Firm

NAME	DWR LICENSE NUMBER
ALLENS WELL SERVICE L.L.C	14
ADDRESS: 5509 W. GLEESON ROAD	TELEPHONE NUMBER: 520-642-3775
CITY/STATE/ZIP: ELFRIDA, AZ 85610-9050	FAX:

SECTION 2. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: JALYN ASSOCIATES LLC
MAILING ADDRESS: PO BOX 4174
CITY / STATE / ZIP: BISBEE, AZ 85603
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-432-2808
FAX:
WELL NAME:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24 S	24 E	17	NW 1/4	NW 1/4	SE 1/4

LATITUDE			LONGITUDE		
31 °	20 '	54 " N	109 °	56 '	01 " W

LAND SURFACE ELEVATION AT WELL: 4243 Feet Above Sea Level

METHOD OF LATITUDE / LONGITUDE (CHECK ONE): [X] Hand-Held
[ ] USGS Quad Map [ ] Conventional Survey [X] GPS : [ ] Survey-Grade

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
102	53	007

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. WELL CONSTRUCTION DETAILS

Drill Method

CHECK ONE
- [X] Air Rotary
- [ ] Bored or Augered
- [ ] Cable Tool
- [ ] Dual Rotary
- [ ] Mud Rotary
- [ ] Reverse Circulation
- [ ] Driven
- [ ] Jetted
- [ ] Air Percussion / Odex Tubing
- [ ] Other (please specify)

Method of Well Development

CHECK ONE
- [X] Airlift
- [ ] Bail
- [ ] Surge Back
- [ ] Surge Pump
- [ ] Other (please specify)

Method of Sealing at Reduction Points

CHECK ONE
- [X] None
- [ ] Packed
- [ ] Swedged
- [ ] Welded
- [ ] Other (please specify)

Condition of Well

CHECK ONE
- [X] Capped
- [ ] Pump Installed

Condition of Well

DATE WELL CONSTRUCTION STARTED: 11-15-05
DATE WELL CONSTRUCTION COMPLETED: 11-16-05

I state that this notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
Allen's Well Service	Harry Allen	11/18/05

DWR-55-55-10/01 (Rev.)

ENTERED DEC - 2 2005

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 209737

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
245	Feet Below Land Surface	245	Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
150 Feet Below Land Surface	11-17-05	9:00 AM	☐ Valve ☐ Other:

Borehole / Installed Casing

Borehole: DEPTH FROM SURFACE FROM (feet)	Borehole: DEPTH FROM SURFACE TO (feet)	Borehole: BOREHOLE DIAMETER (inches)	Installed Casing: DEPTH FROM SURFACE FROM (feet)	Installed Casing: DEPTH FROM SURFACE TO (feet)	Installed Casing: OUTER DIAMETER (inches)	MATERIAL TYPE (X): STEEL	MATERIAL TYPE (X): PVC	MATERIAL TYPE (X): ABS	MATERIAL TYPE (X): IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (X): BLANK OR NONE	PERFORATION TYPE (X): WIRE WRAP	PERFORATION TYPE (X): SHUTTER SCREEN	PERFORATION TYPE (X): MILLS KNIFE	PERFORATION TYPE (X): SLOTTED	PERFORATION TYPE (X): IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	12 1/4	+1	20	8 5/8	X										
20	245	8"	0	245	6		X									
				185 –	245				perforated					X		1/8

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (X): NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE: GROUT	BENTONITE: CHIPS	BENTONITE: PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK: SAND	FILTER PACK: GRAVEL	FILTER PACK: SIZE
0	20			X					NONE			

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 209737

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	45	red clay	
45	170	red clay + rock	
170	180	Gravel	X
180	210	red clay + rock	
210	215	Gravel	X
215	245	Clay + rock	

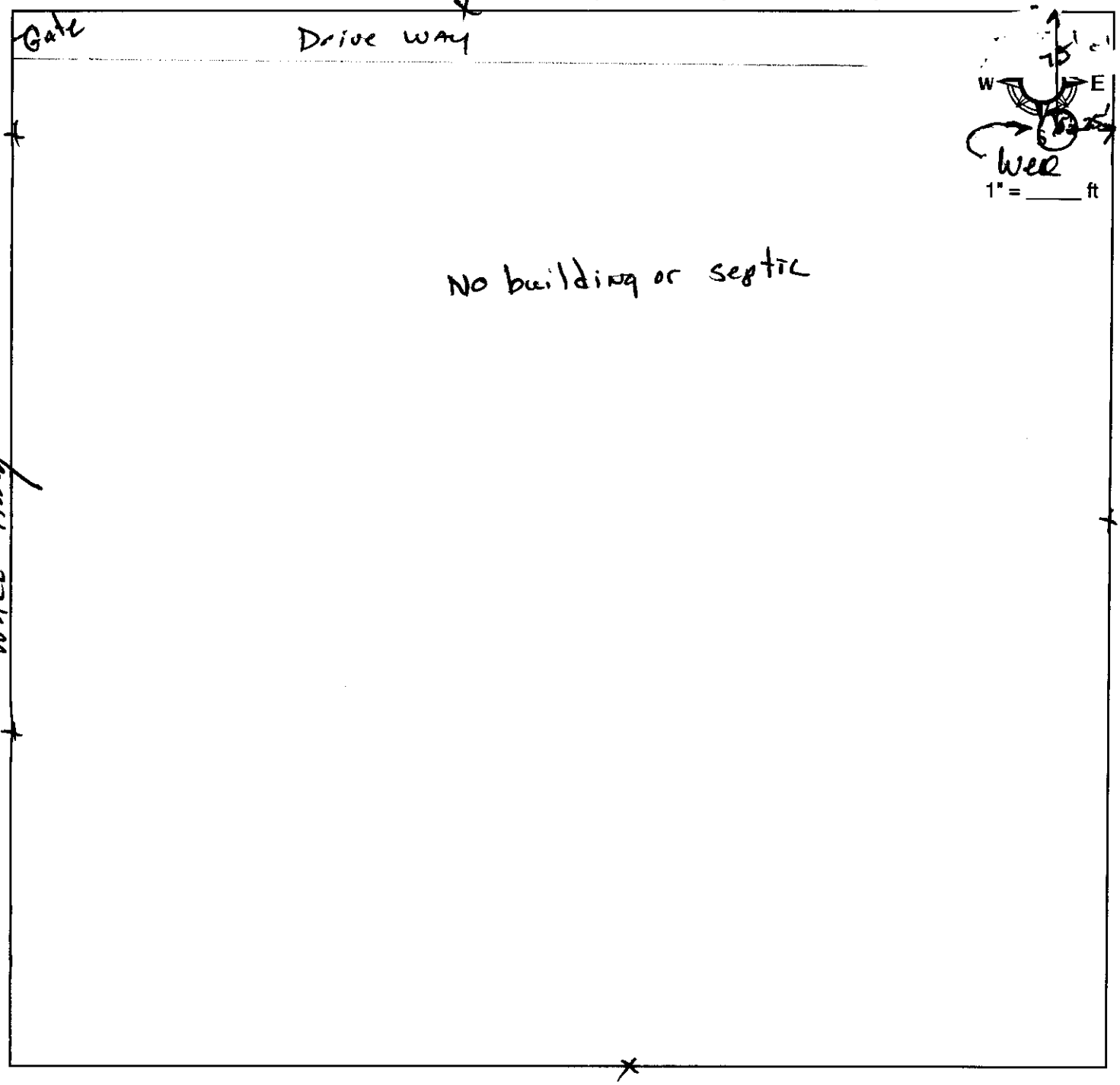
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 209737

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
JALYN ASSOCIATES LLC	102	53	007

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-209737

AUTHORIZED DRILLER: ALLENS WELL SERVICE L.L.C LICENSE NO: 14

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: JALYN ASSOCIATES LLC PO BOX 4174 BISBEE, AZ 85603

THE WELL(S) IS/ARE TO BE LOCATED IN THE:

SE ¼ OF THE NW ¼ OF THE NW ¼ SECTION 17 TOWNSHIP 24 SOUTH RANGE 24 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 102-53-007

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 13TH DAY OF OCTOBER, 2006

WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

October 17, 2005

Janet Napolitano
Governor

Herbert R. Guenther
Director

JALYN ASSOCIATES LLC
PO BOX 4174
BISBEE, AZ 85603

Registration No. 55- 209737
File No. D(24-24) 17 BBD

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well that you recently filed with this Department pursuant to A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed or otherwise provided a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card, which must be displayed on the drill rig during drilling.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the proposed well, you may not proceed with drilling until you file an amended NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the amended NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DWR form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed is a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55) within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at <http://www.water.az.gov/adwr/content/forms/default.htm#NOI>.

Sincerely,

Tiffany Hancock

Tiffany Hancock
NOI Unit
Water Management Support Section

Enclosures

Celebrating 25 Years

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

OCT 14 2005

** PLEASE PRINT CLEARLY **

AMA / INA	B 76 SB
RECEIVED DATE 10/14/05	WS 11
ISSUED DATE 10/17/05	WQARF CERCLA

FILE NUMBER D(24-24)17BBD
WELL REGISTRATION NUMBER 55 - 209737

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

- [X] County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
  - [X] Field Inspection Performed
  - [ ] Site Plan Review Only
- [ ] Insufficient Information to Make a Determination

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE Oct 13 2005
BY Carlos Diaz R.S.

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ R.S.

TELEPHONE NUMBER: 520 432-9442

DATE: Oct 13, 2005

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz R.S.

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

- [X] Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)
- [ ] Non-Exempt (Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: Gallons Per Minute

Proposed Action

CHECK ONE

- [X] Drill New Well
- [ ] Deepen
- [ ] Replace
- [ ] Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 -

MAXIMUM CAPACITY OF ORIGINAL WELL: 30 Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY): 3273 Naco Hwy. Bisbee, AZ

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	17	NW ¼	NW ¼	SE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
102	53	007	5.0

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Jalyn Associates LLC

MAILING ADDRESS: PO Box 4174

CITY / STATE / ZIP CODE: Bisbee, AZ 85603

CONTACT PERSON NAME AND TITLE: Jimmy Perez

TELEPHONE NUMBER: 520-432-2808

FAX: 520-432-2977

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL

MAILING ADDRESS

CITY / STATE / ZIP CODE

CONTACT PERSON NAME AND TITLE

TELEPHONE NUMBER

FAX

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 209737

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: Allen's Well Service

DWR LICENSE NUMBER: #14

ROC LICENSE CATEGORY: C53, L53

TELEPHONE NUMBER: 642-3775

FAX:

MAILING ADDRESS: 5509 Gleeson Rd

CITY / STATE / ZIP CODE: Elfrida, AZ 85610

OCT 14 2005

SECTION 6. WATER / SITE INFORMATION

Principal Use of Water	*Other Uses* of Water
CHECK ONE	CHECK ALL THAT APPLY
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☒ Domestic	☐ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify)*:	☐ Other *(please specify)*:

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

DATE CONSTRUCTION IS TO BEGIN: OCT 2005

Borehole			Casing													
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (T)				PERFORATION TYPE (T)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0-20	1-20	12 1/4"	+1	20'	8 5/8											
20	300	8"	0	300	6"	X*	X									Cement

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: Jalyn Associates LLC -

SIGNATURE OF WELL OWNER: [signature] DATE: 9-26-05

SIGNATURE OF LANDOWNER, IF APPLICABLE (SEE INSTRUCTIONS): DATE:

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 209737

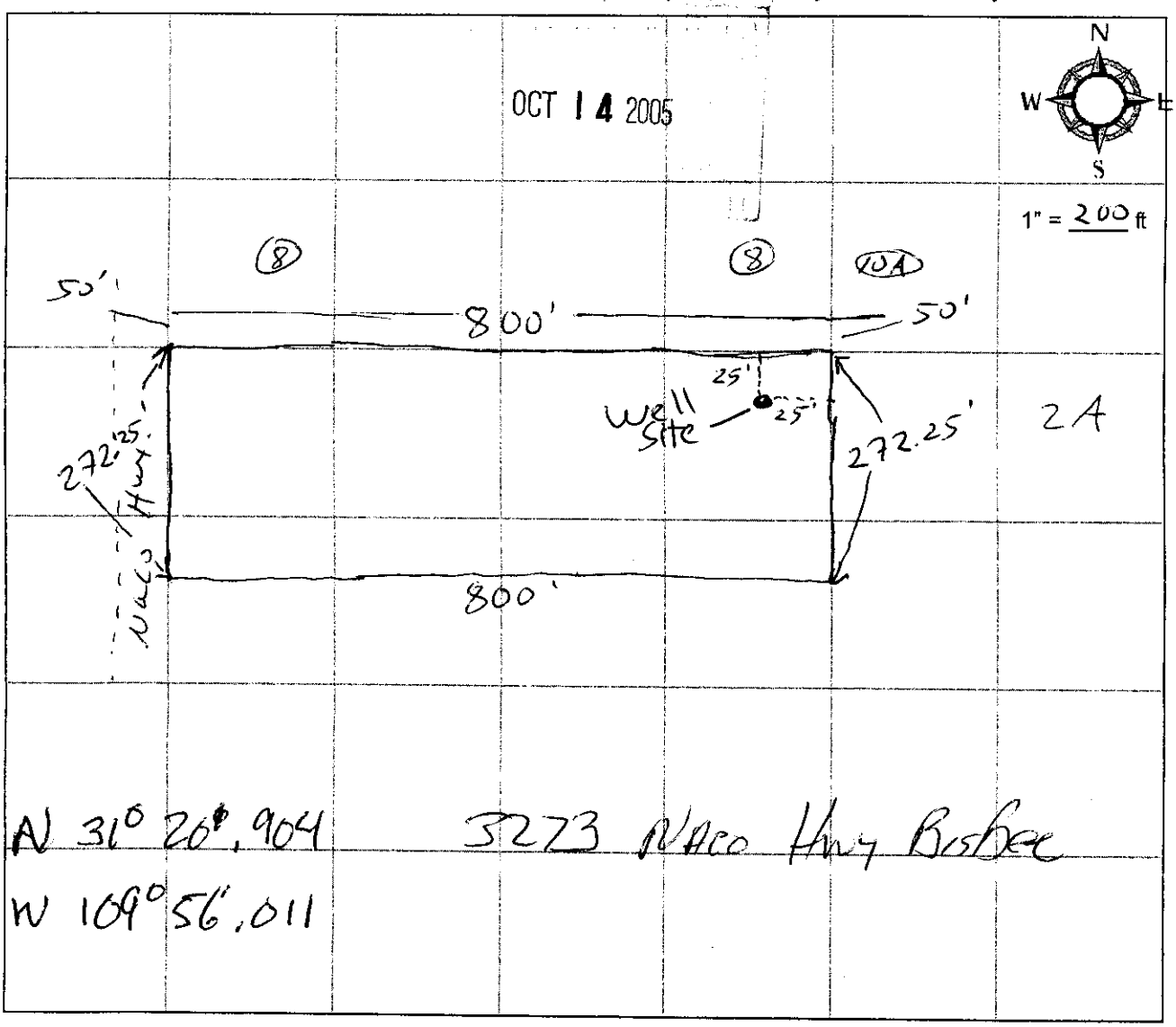
CHECK ONE: ☐ FILING MANUALLY
☐ FILING ELECTRONICALLY* *DRILLER'S E-MAIL ADDRESS:

*COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL CODE *If applicant is filing this NOI electronically via the ADWR website and County approval is required, please indicate approval by providing a County Approval Code.*	COUNTY APPROVAL CODE

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
Jalyn Associates, LLC	102	53	007

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE	APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION Official County or Local Seal or Stamp
Carlos Diaz RS	
COUNTY OR LOCAL AUTHORITY SIGNATURE	
Carlos Diaz RS	
TELEPHONE NUMBER: 520-432-9442 DATE: Oct 13, 2005	DATE Oct 13 2005 BY Carlos Diaz RS

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA	B	SB
RECEIVED DATE	WS	
ISSUED DATE	WQARF	CERCLA

FILE NUMBER

WELL REGISTRATION NUMBER

55 - 209737

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
☒ Field Inspection Performed

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE Oct 13 2005

Jimmy Perez - Business
P.O. Box 4174
Bisbee, AZ 85603
Ph. 520-432-2808

Bank of America
ACH R/T 122101706
8423 91-170/1221 AZ

1077

9-26-05

PAY TO THE ORDER OF ADWR $ 150.00/xx

One Hundred and Fifty and 00/100 DOLLARS

MEMO Permit for well

[redacted]

SECURITY FEATURES LISTED ON BACK

MP 0302

VERIFY THAT THIS IS AN ORIGINAL BY RUBBING THE FINGERPRINT ON THE BACK. THE COLOR SHOULD DISAPPEAR WHEN RUBBED AND REAPPEAR WHEN RELEASED.

SECTION 3. OWNER INFORMATION

Well Owner		Landowner (if different from Well Owner)	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Jalyn Associates LLC		FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL	
MAILING ADDRESS: PO Box 4174		MAILING ADDRESS	
CITY / STATE / ZIP CODE: Bisbee, AZ 85603		CITY / STATE / ZIP CODE	
CONTACT PERSON NAME AND TITLE: Jimmy Perez		CONTACT PERSON NAME AND TITLE	
TELEPHONE NUMBER: 520-432-2808	FAX: 520-432-2977	TELEPHONE NUMBER	FAX

RECEIVED OCT 14 2005 GROUNDWATER MGT

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Pump Installation Completion Report

- Review instructions prior to completing form
- The registered well owner should file this report with the Department within 30 days following installation of pump equipment

** PLEASE PRINT CLEARLY **

RECEIVED NOV 17 2005 Water Management

FILE NUMBER: D(24-24) 18 CBB
WELL REGISTRATION NUMBER: 55- 209744

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: CRAIG KEEFER
MAILING ADDRESS: PO BOX 530
CITY / STATE / ZIP: NACO, AZ 85620
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-236-7915
FAX:

Location of Well

WELL ~~LOCATION~~ ADDRESS (IF KNOWN): 3530 S. QueTel Av

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	18	SW 1/4	NW 1/4	NW 1/4

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT): BOOK 102 | MAP 57 | PARCEL 310

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 2. EQUIPMENT INSTALLED

DATE PUMP INSTALLED:

Pump Type CHECK ONE

- [x] Air Lift
- [ ] Bucket
- [ ] Centrifugal
- [ ] Jet
- [ ] Piston
- [x] Rotary
- [ ] Submersible
- [ ] Turbine
- [ ] Other (please specify)

Power Type CHECK ONE

- [ ] Diesel Engine
- [x] Electric Motor
- [ ] Gasoline Engine
- [ ] Hand
- [ ] Natural Gas
- [ ] Windmill
- [ ] Other (please specify)

RATED PUMP CAPACITY: 25 Gallons Per Minute
HORSE POWER RATING OF MOTOR: 2 hp

SECTION 3. WELL TEST

Pump Test Data

DATE WELL TESTED: 11-15-05
STATIC WATER LEVEL (A): 134 Feet Below Land Surface
PUMPING WATER LEVEL (B): 140 Feet Below Land Surface
DRAWDOWN [(B) - (A)]: 6
TEST PUMPING RATE: 20 Gallons Per Minute
DURATION OF PUMP TEST (Minimum 4 Hours): Hours
TOTAL PUMPING LIFT: 140 Feet
FOR FLOWING WELL, MEASURED SHUT IN HEAD: [ ] FT [ ] PSI

Method of Discharge Measurement

CHECK ONE

- [ ] Bailer
- [ ] Bucket - Barrel - Stopwatch
- [ ] Current
- [x] Estimated - Air Lift
- [ ] Gauge
- [ ] Meter
- [ ] Orifice
- [ ] Volume
- [ ] Weir - Flume
- [ ] Other (please specify)

Method of Measuring Water Level

CHECK ONE

- [ ] Air Line
- [x] Electric Measuring Line (Sounder)
- [ ] Steel Tape
- [ ] Other (please specify)

COMPLETED DEC 07 2005

I HEREBY CERTIFY *that the above statements are true to the best of my knowledge and belief according to* A.R.S § 45-600(B)

SIGNATURE OF WELL OWNER: Patricia A. Keefer
DATE: 11/16/05

DWR-55-56 (Rev. 10/11/01)

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

RECEIVED
NOV 2 - 2005
Information Management

- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

FILE NUMBER: D(24-24) 18 CBB
WELL REGISTRATION NUMBER: 55- 209744
PERMIT NUMBER (IF ISSUED):

SECTION 1. DRILLING AUTHORIZATION

Drilling Firm

NAME	DWR LICENSE NUMBER
ALLENS WELL SERVICE L.L.C	14
ADDRESS	TELEPHONE NUMBER
5509 W. GLEESON ROAD	520-642-3775
CITY/STATE/ZIP	FAX
ELFRIDA, AZ 85610-9050	

SECTION 2. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: CRAIG KEEFER
MAILING ADDRESS: PO BOX 530
CITY / STATE / ZIP: NACO, AZ 85620
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-236-7915
FAX:
WELL NAME:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN): 3530 S Quetez Av.

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	18	SW 1/4	NW 1/4	NW 1/4

LATITUDE				LONGITUDE			
30 °	20 ·	34 "	N	109 °	56 ·	55 "	W

LAND SURFACE ELEVATION AT WELL: 4249 Feet Above Sea Level

METHOD OF LATITUDE / LONGITUDE (CHECK ONE)
☐ USGS Quad Map ☐ Conventional Survey ☐ GPS : ☐ Survey-Grade ☐ Hand-Held

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
102	57	310

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. WELL CONSTRUCTION DETAILS

Drill Method

CHECK ONE
- ☒ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development

CHECK ONE
- ☒ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Condition of Well

CHECK ONE
- ☐ Capped
- ☒ Pump Installed

Method of Sealing at Reduction Points

CHECK ONE
- ☒ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☐ Other (please specify)

Condition of Well

DATE WELL CONSTRUCTION STARTED: 11-14-05
DATE WELL CONSTRUCTION COMPLETED: 11-15-05

I state that this notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
Allen's Well Service	Tracy Allen	11/17/05

ENTERED NOV 22 2005

DWR-55-55-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 209744

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
245	Feet Below Land Surface	245	Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
136 Feet Below Land Surface	11-16-05	10:00 AM	☐ Valve ☐ Other:

Borehole / Installed Casing

Borehole: DEPTH FROM SURFACE FROM (feet)	Borehole: DEPTH FROM SURFACE TO (feet)	Borehole: BOREHOLE DIAMETER (inches)	Installed Casing: DEPTH FROM SURFACE FROM (feet)	Installed Casing: DEPTH FROM SURFACE TO (feet)	Installed Casing: OUTER DIAMETER (inches)	MATERIAL TYPE (X): STEEL	MATERIAL TYPE (X): PVC	MATERIAL TYPE (X): ABS	MATERIAL TYPE (X): IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (X): BLANK OR NONE	PERFORATION TYPE (X): WIRE WRAP	PERFORATION TYPE (X): SHUTTER SCREEN	PERFORATION TYPE (X): MILLS KNIFE	PERFORATION TYPE (X): SLOTTED	PERFORATION TYPE (X): IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	12 1/4	+1	20	8 5/8	X										
20	245	8	-5	245	6		X									
			185	245										X		1/8

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (X): NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE: GROUT	BENTONITE: CHIPS	BENTONITE: PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK: SAND	FILTER PACK: GRAVEL	FILTER PACK: SIZE
0	20			X					NONE			

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 209744

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	18	red Clay	
18	40	Gravel	
40	160	Clay & rock	
160	170	Gravel	x
170	180	Clay & rock	
180	185	Gravel	x
185	245	Clay & rock	

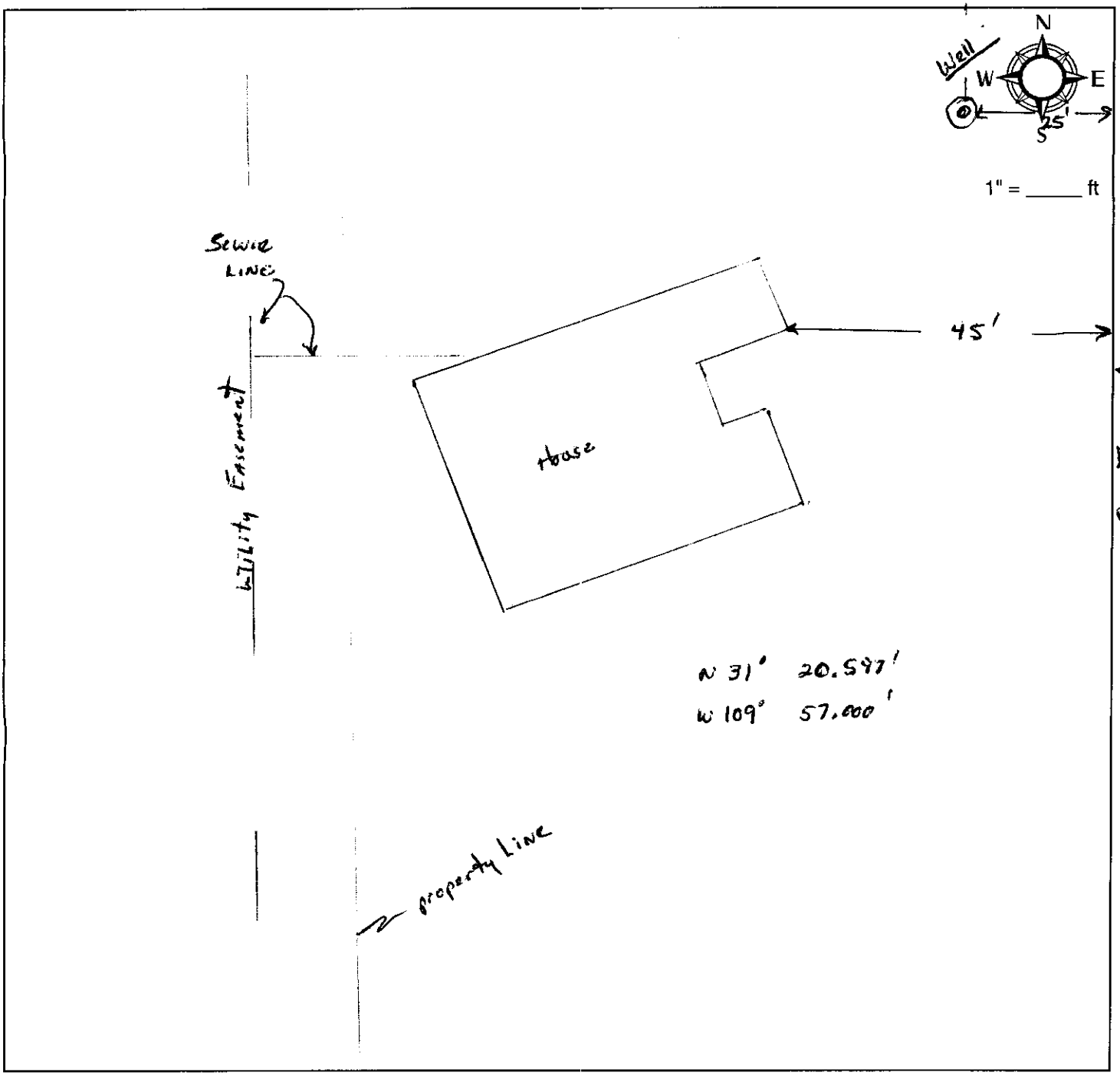
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 209744

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
CRAIG KEEFER	102	57	310

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Pump Installation Completion Report

* Review instructions prior to completing form
* The registered well owner should file this report with the Department within 30 days following installation of pump equipment

** PLEASE PRINT CLEARLY **

FILE NUMBER: D(24-24) 18 CBB
WELL REGISTRATION NUMBER: 55- 209744

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: CRAIG KEEFER

MAILING ADDRESS: PO BOX 530

CITY / STATE / ZIP: NACO, AZ 85620

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER: 520-236-7915

FAX:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN): 3530 S. Quetzal Rd

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24 S	24 E	18	SW 1/4	NW 1/4	NA 1/4

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
102	57	310

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 2. EQUIPMENT INSTALLED

DATE PUMP INSTALLED:

Pump Type

CHECK ONE

- [x] Air Lift
- [ ] Bucket
- [ ] Centrifugal
- [ ] Jet
- [ ] Piston
- [x] Rotary
- [ ] Submersible
- [ ] Turbine
- [ ] Other (please specify)

Power Type

CHECK ONE

- [ ] Diesel Engine
- [x] Electric Motor
- [ ] Gasoline Engine
- [ ] Hand
- [ ] Natural Gas
- [ ] Windmill
- [ ] Other (please specify)

RATED PUMP CAPACITY: 25 Gallons Per Minute

HORSE POWER RATING OF MOTOR: 3 hp

SECTION 3. WELL TEST

Pump Test Data

DATE WELL TESTED: 11-15-05

STATIC WATER LEVEL (A): 134 Feet Below Land Surface

PUMPING WATER LEVEL (B): 140 Feet Below Land Surface

DRAWDOWN [(B) - (A)]: 6

TEST PUMPING RATE: 20 Gallons Per Minute

DURATION OF PUMP TEST (Minimum 4 Hours): Hours

TOTAL PUMPING LIFT: 140 Feet

FOR FLOWING WELL, MEASURED SHUT IN HEAD: [ ] FT [ ] PSI

Method of Discharge Measurement

CHECK ONE

- [ ] Bailer
- [ ] Bucket - Barrel - Stopwatch
- [ ] Current
- [x] Estimated - Air Lift
- [ ] Gauge
- [ ] Meter
- [ ] Orifice
- [ ] Volume
- [ ] Weir - Flume
- [ ] Other (please specify)

Method of Measuring Water Level

CHECK ONE

- [ ] Air Line
- [x] Electric Measuring Line (Sounder)
- [ ] Steel Tape
- [ ] Other (please specify)

I HEREBY CERTIFY *that the above statements are true to the best of my knowledge and belief according to* A.R.S § 45-600(B)

SIGNATURE OF WELL OWNER: Craig A. Keefer

DATE: 11/16/05

ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-209744

AUTHORIZED DRILLER: ALLENS WELL SERVICE L.L.C LICENSE NO: 14

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: CRAIG KEEFER PO BOX 530 NACO, AZ 85620

THE WELL(S) IS/ARE TO BE LOCATED IN THE:

NW ¼ OF THE NW ¼ OF THE SW ¼ SECTION 18 TOWNSHIP 24 SOUTH RANGE 24 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 102-57-310

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 13TH DAY OF OCTOBER, 2006

WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax • www.water.az.gov

RECEIVED
OCT 14 2005
GROUNDWATER MGT.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

AMA / INA	B 76 SB
RECEIVED DATE 10-14-05	WS 11
ISSUED DATE 10-21-05	WQARF CERCLA

FILE NUMBER D(24-24)18CBB
WELL REGISTRATION NUMBER 55 - 209744

** PLEASE PRINT CLEARLY **

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☒ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ R.S.

TELEPHONE NUMBER: 520 432 9412

DATE: Oct 13 2005

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE Oct 13 2005
BY Carlos Diaz RS

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz R.S.

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

☑ Exempt
(Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)

☐ Non-Exempt
(Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 35 Gallons Per Minute

Proposed Action

CHECK ONE

☑ Drill New Well
☐ Deepen
☐ Replace
☐ Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 -

MAXIMUM CAPACITY OF ORIGINAL WELL: 30 Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY): 3530 S. QUETEL AV

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	1852	SW ¼	NW ¼	NW ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
102	57 3/6	310	5

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: COCHISE

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: CRAIG KEEFER
MAILING ADDRESS: P.O. BOX 530
CITY / STATE / ZIP CODE: NACO AZ 85620
CONTACT PERSON NAME AND TITLE: CRAIG KEEFER
TELEPHONE NUMBER: 520 236 7915
FAX: 520-432-7396

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: CRAIG KEEFER
MAILING ADDRESS: P.O. BOX 530
CITY / STATE / ZIP CODE: NACO AZ 85620
CONTACT PERSON NAME AND TITLE: CRAIG KEEFER
TELEPHONE NUMBER: 520-236-7915
FAX: 520 432-7396

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		✓	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		✓	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		✓	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 209744

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: ALLEN WELL DRILLING

DWR LICENSE NUMBER: 14

ROC LICENSE CATEGORY: C53, L53

TELEPHONE NUMBER: 520 642 3775

FAX: 520-642-3321

MAILING ADDRESS: 5509 W GLEESON RD

CITY / STATE / ZIP CODE: ELFRIDA, AZ

RECEIVED
OCT 14 2005
GROUNDWATER MGT

SECTION 6. WATER / SITE INFORMATION

***Principal Use* of Water** CHECK ONE	***Other Uses* of Water** CHECK ALL THAT APPLY
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☒ Domestic	☐ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify)*:	☐ Other *(please specify)*:

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

DATE CONSTRUCTION IS TO BEGIN: OCT 2005

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	12 1/4
20	300	8"

Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
-1	20'	8 5/8											
0	300	6"	X*	X									Cement

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: CRAIG A. KEEFER - OWNER

SIGNATURE OF WELL OWNER: Craig A. Keefer — DATE: 9/26/2005

SIGNATURE OF LANDOWNER, IF APPLICABLE (SEE INSTRUCTIONS) — DATE:

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 209744

CHECK ONE: ☒ FILING MANUALLY
☐ FILING ELECTRONICALLY* *DRILLER'S E-MAIL ADDRESS: _____

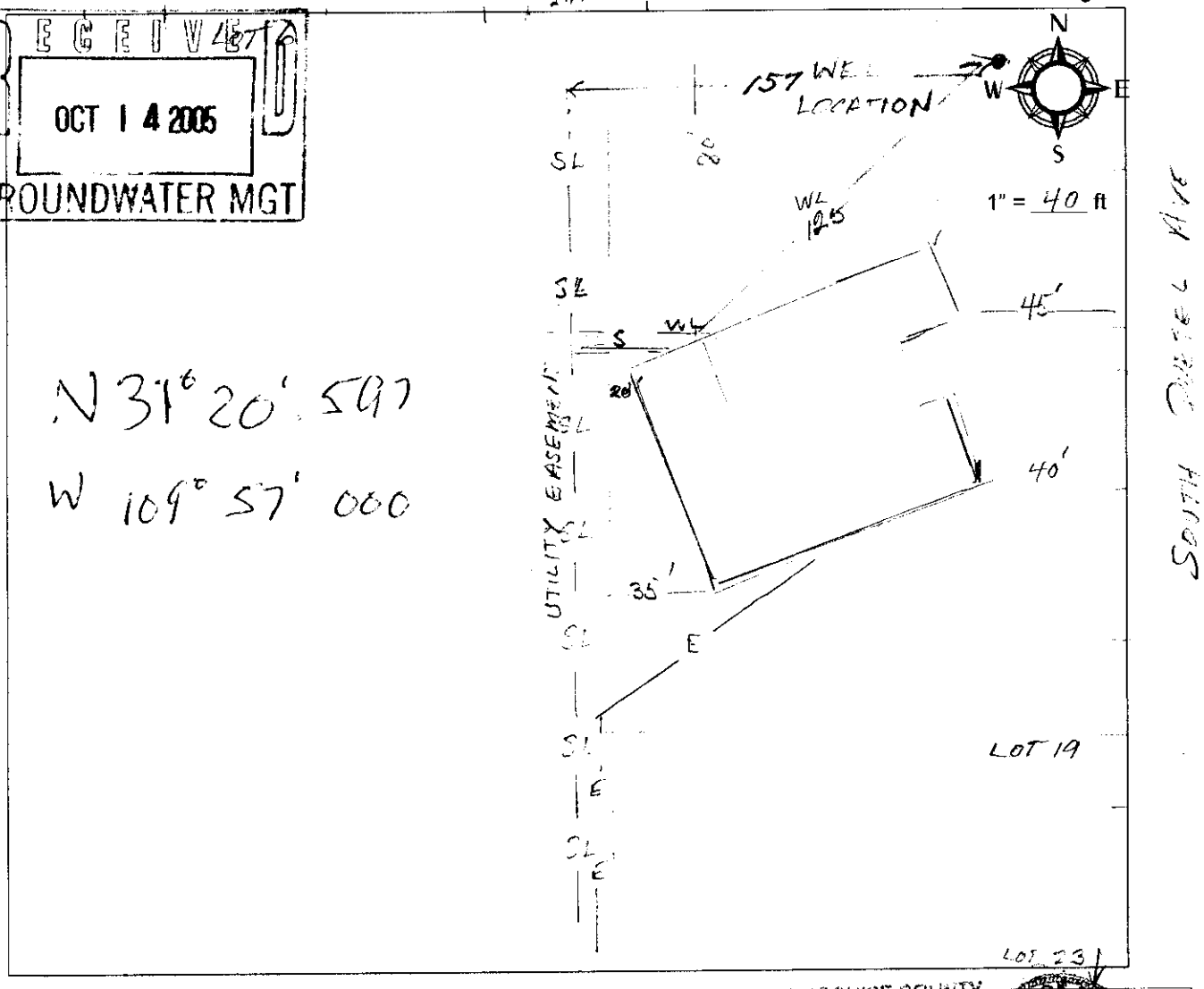
*COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL CODE	COUNTY APPROVAL CODE
If applicant is filing this NOI electronically via the ADWR website and County approval is required, please indicate approval by providing a County Approval Code.	

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
CRAIG KEEFER	105	57 3/4	310

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.

RECEIVED
OCT 14 2005
GROUNDWATER MGT



N 31° 20' 597
W 109° 57' 000

COUNTY OR LOCAL AUTHORITY NAME AND TITLE	
CARLOS DIAZ RS	
COUNTY OR LOCAL AUTHORITY SIGNATURE	
Carlos Diaz R.S.	
TELEPHONE NUMBER	DATE
520-432-9442	Oct 13, 2005

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE Oct 13 2005
BY Carlos Diaz R.S.
Official County or Local Seal or Stamp

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA		B	SB
RECEIVED	DATE	WS	
ISSUED	DATE	WQARF	CERCLA

FILE NUMBER

WELL REGISTRATION NUMBER

55 - 209744

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☒ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ RS

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE Oct 13 2005
BY Carlos Diaz RS

SIGNATURE: RS

1258

Craig A. Keefer
Patricia A. Keefer
P.O. Box 530
Naco, AZ 85620

Date 9/26/2005 91-532/1221 27

Pay to the Order of ADWR $ 150 00

One Hundred Fifty & no/100 Dollars

National Bank OF ARIZONA
1-800-497-8168
www.nbarizona.com

For

160 ACRE	40 ACRE	10 ACRE
SW ¼	NW ¼	NW ¼

AV

PARCEL 310 | # OF ACRES 5

(T FROM LOCATION OF WELL)

160 ACRE	40 ACRE	10 ACRE
¼	¼	¼

SECTION 3. OWNER INFORMATION

Well Owner	Landowner (if different from Well Owner)
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: CRAIG KEEFER	FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: CRAIG KEEFER
MAILING ADDRESS: P.O. BOX 530	MAILING ADDRESS: P.O. BOX 530
CITY / STATE / ZIP CODE: NACO AZ 85620	CITY / STATE / ZIP CODE: NACO AZ 85620
CONTACT PERSON NAME AND TITLE: CRAIG KEEFER	CONTACT PERSON NAME AND TITLE: CRAIG KEEFER
TELEPHONE NUMBER: 520 236 7915 / FAX: 520-432-7396	TELEPHONE NUMBER: 520-236-7915 / FAX: 520 432-7396

OCT 14 2005

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		✓	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		✓	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		✓	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

October 21, 2005

Janet Napolitano
Governor

Herbert R. Guenther
Director

CRAIG KEEFER
PO BOX 530
NACO, AZ 85620

Registration No. 55-209744
File No. D(24-24) 18 CBB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well that you recently filed with this Department pursuant to A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed or otherwise provided a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card, which must be displayed on the drill rig during drilling.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the proposed well, you may not proceed with drilling until you file an amended NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the amended NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DWR form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed is a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55) within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at <http://www.water.az.gov/adwr/content/forms/default.htm#NOI>.

Sincerely,

Monica Ortiz

Monica Ortiz
NOI Unit
Water Management Support Section

Enclosures

Celebrating 25 Years

BISBEE: Votaw

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED MAY 20 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 645912
FILE NO. D(24-25)18 bb
FILED 5-20-82 (DATE) AT 1P (TIME)
INA —
AMA —

1. Name of Registrant:
Wesley E. Polley

P. O. Box 5998 (Address) Bisbee (City) Arizona (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35- _____ (Control Number)

3. a. The well is located within the ____ ¼ NW ¼ NW ¼, Section 18, of Township 24S N/S, Range 25E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Stockwater and domestic.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒

_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 150 feet
b. Diameter of casing 6 inches
c. Depth of casing 140 feet
d. Type of casing Metal pipe.
e. Maximum pump capacity 25 gallons per minute.
f. Depth to water 50 feet below land surface.
g. Date well completed Prior to 1925 (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒
____ ¼ ____ ¼ ____ ¼, Section ____ Township _____ Range _____
____ ¼ ____ ¼ ____ ¼, Section ____ Township _____ Range _____
Attach additional sheet if necessary.

9. DATE 5/18/82 SIGNATURE OF REGISTRANT Wesley E. Polley

MICROFILMED

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470

RECEIVED
MAR 12 1998
RECORDS MGT

REQUEST FORM TO CHANGE WELL INFORMATION
OWNERSHIP * DRILLER * VARIANCE

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-0458 or hand deliver to the above address with applicable fee. NOTE: A.R.S. §45-593.C requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)

NOTE: If the location of the proposed well changes after drilling authority has been issued, attach a $10.00 reissue fee for each well.

WELL REGISTRATION NO. 55-_____ FILE NO:_____

If known, I/We request the following well information be changed:_____

_____

Date_____ Signature of Current Well Owner_____

2. STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

WE, ~~I~~, ALAN KEMP AND HOLLY KEMP, state that I am the ~~Previous~~/New Owner of the well described below:

Lot 1 _____¼ _____¼ _____¼ of Section 18 Township 24s Range 25 e
(10 Acre / 40 Acre / 160 Acre)

Assessor's tax parcel number of the parcel on which the well is located: Book 101 Map 49 Parcel 012-7.

Well Registration No. 55- 645912 File No. D(24-25)18 BB (if known)

Power
PRINT Previous Owner's Name

ALAN KEMP & HOLLY KEMP
PRINT New Owner's Name

Mailing Address

PO Box 234
Mailing Address

City State Zip

Little Rock WA 98556
City State Zip

Telephone Number

ENTERED MAR 12 1998
Telephone Number

Signature of ~~Previous~~/New Well Owner Alan W. K Date 3-10-98

DWR 55-71 (Rev 6/96) NEW WELL OWNER Holly A. Kemp DATE 3/10/98

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470 Fax (602) 417-2422

3. REQUEST TO CHANGE WELL DRILLER $10.00 FEE REQUIRED FOR EACH WELL

This request must be received by this Department and the Drill Card issued to the new drilling firm prior to the drillir or completion of any well.

Well Registration No. 55-_____ File No._____

Original Well Driller	New Well Driller
Mailing Address	Mailing Address
Telephone Number	Telephone Number
ADWR License Number	ADWR License Number
R.O.C. License Category	R.O.C. License Category
Typed or Printed Name of Well Owner	Signature of Well Owner Date

The fee charge for well ownership and reissue of drill card is authorized by R12-15-151, effective June 30, 1994.

4. REISSUE OF DRILLING AUTHORITY FOR VARIANCE REQUEST: ($10.00 EACH WELL)

NOTE: If extraordinary or unusual conditions exist, after the initial drilling authority has been issued, the well owner or well driller may request a variance from the provisions of R12-15-811.

WELL REGISTRATION NO. 55-_____ FILE NO:_____

I/WE REQUEST THE FOLLOWING WELL DRILLING AUTHORITY BE REISSUED PER THE ATTACHED VARIANCE REQUEST:

_____

Signature of Well Owner/Well Driller_____ Date_____

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470

RECEIVED
NOV 26 1997
RECORDS MGT

REQUEST FORM TO CHANGE WELL INFORMATION OWNERSHIP * DRILLER * VARIANCE

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-0458 or hand deliver to the above address with applicable fee. NOTE: **A.R.S. §45-593.C** requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)

NOTE: If the location of the proposed well changes after drilling authority has been issued, **attach a $10.00 reissue fee for each well.**

WELL REGISTRATION NO. 55-_____ **FILE NO:**_____

If known, I/We request the following well information be changed:_____

_____

Date_____ **Signature of Current Well Owner**_____

2. STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, Billie Joan Power, state that I am the **Previous/New Owner** of the well described below:

____ ¼ NW ¼ NW ¼ of Section 18 Township 24S Range 25E
10 Acre 40 Acre 160 Acre

Assessor's tax parcel number of the parcel on which the well is located: Book 101 Map 49 Parcel 12.

Well Registration No. 55- 645912 File No._____ (if known)

Wes Polley
PRINT Previous Owner's Name

Michael W + Billie Joan Power
PRINT New Owner's Name

PO Box 5998
Mailing Address

PO Box 1875
Mailing Address

Bisbee AZ 85603
City State Zip

Bisbee AZ 85603
City State Zip

Telephone Number

520-459-9806
Telephone Number

Signature of Previous/New Well Owner Billie Joan Power **Date** 11-3-97

DWR 55-71 (Rev 6/96)

ENTERED NOV 28 1997

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street
Phoenix, Arizona 85004

SEP - 4 2003

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. DRIVER DRILLING COMPANY
P.O. BOX 4345
HUACHUCA CITY, AZ 85616-0345

2. Owner Name: Edith Douglass
Address: Covington (City) OH (State) 45318 (Zip)

3. Location: 24 N/S 24 E/W 11 ¼ NE ¼ SE ¼ NE
(Township, Range, Section, 10-acre, 40-acre, 160-acre)

4. Well Registration No. 55-587749 (Required)

5. Permit No. _____ (If Issued)

DESCRIPTION OF WELL

6. Total depth of hole 400 ft. RECEIVED SEP 8 2003
7. Type of casing Steel + PVC
8. Diameter and length of casing 8 in. from 0 to 20, 5 in from 0 to 400
9. Method of sealing at reduction points _____
10. Perforated from 360 to 400, from _____ to _____ from _____ to _____
11. Size of cuts .25 Number of cuts per foot 3
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction drilled
(drilled, dug, driven, bored, jetted, etc)
14. Date started 05 (Month) 03 (Day) 02 (Year)
15. Date completed 05 (Month) 04 (Day) 02 (Year)
16. Depth to water 350 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea_level elevation if available
_____
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55- 587749
File No. D(24-24) 11 ADA
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	4	overburden
4	280	clay
280	400	Sandy clay

I hereby certify that this well was drilled by me (or under by supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: DRIVER DRILLING COMPANY

P.O. BOX 4345
Street

HUACHUCA CITY, AZ 85616-0345 520-459-3496
City State Zip Phone No.

Signature of Driller 6-1-02
Date

RECEIVED
JUL - 5 2001
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO P O BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL MONICA ORTIZ 602-417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT IF WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE

A. Eleth N Douglass (LANDOWNER S NAME) 8376 Covington-Gettysburg Rd (CURRENT MAILING ADDRESS) Covington (CITY) OH (STATE) 45318 (ZIP)

B TELEPHONE NO 937 473 8103 COUNTY ASSESSOR'S PARCEL ID INFORMATION

C WELL LOCATED IN Cochise COUNTY D 101 - 42 - 005A (BOOK - MAP - PARCEL) E 24 (# OF ACRES) OFFICIAL SEAL OR STAMP

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED)

F NE ¼ (10AC) SE ¼ (40AC) NE ¼ (160AC) OF SECTION 11 TOWNSHIP 24 N/S RANGE 24 E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE
G RECOMMEND APPROVAL _____ INSUFFICIENT INFORMATION TO MAKE A DETERMINATION _____ VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE _____ AUTHORIZED SIGNATURE _____ TITLE _____

1 OWNER OF WELL E. N. Douglass
NAME 8376 Covington-Gettysburg Rd
CURRENT MAILING ADDRESS Covington OH 45318
CITY STATE ZIP
TELEPHONE NUMBER 937 473 8103

2 ACTION REQUESTED
DRILL NEW WELL ✓ DEEPEN _____
MODIFY _____ REPLACE _____

WELL REGISTRATION NO 55 _____

FOR A REPLACEMENT WELL PROVIDE MAX CAPACITY OF THE ORIGINAL WELL _____ GALLONS PER MINUTE

DISTANCE FROM THE ORIGINAL WELL _____ FEET

3 CONSTRUCTION WILL START ABOUT
MONTH 8 YEAR 01

4 TYPE OF CASING FOR PROPOSED WELL
SURFACE CASING Steel
DIAMETER 6 DEPTH 20
DOWNHOLE CASING PVC
DIAMETER 4 DEPTH 250±

5 DESIGN PUMP CAPACITY
25 GALLONS PER MINUTE

6 LESSEE OF LAND OF WELLSITE
NAME _____
CURRENT MAILING ADDRESS _____
CITY STATE ZIP
TELEPHONE _____

7 PRINCIPAL USE OF WATER (BE SPECIFIC)
Future Domestic

8 OTHER USES OF WATER (BE SPECIFIC)
NONE

FOR DEPARTMENT USE ONLY
REGISTRATION NO 55 587749
DATE FILED 7-5-01
FILE NO D(24-24)11 ADA
AMA/INA (A) Douglas
W/S 13 S/B _____
PROCESSED BY MB
DATE MAILED 7-10-01
MO

9 PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NE ¼ (10AC) SE ¼ (40AC) NE ¼ (160AC) SECTION 11
TWNSHP 24 N/S RNG 24 E/W

10 TYPE OF WELL (CHECK ONE)
EXEMPT ✓ NON EXEMPT _____

11 CHECK ONE
RESIDENTIAL ✓ STOCKWATER _____
OTHER _____

12 IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM SEWER DISPOSAL AREA, LANDFILL HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES _____ NO ✓

13 DRILLING FIRM Driver Drilling
NAME Box 4345
MAILING ADDRESS Huachuca City Az 85616
CITY STATE ZIP
TELEPHONE NO 520 458 3496
DWR LICENSE NUMBER 177
ROC LICENSE CATEGORY 153 & C53

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. §45 596 IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM

E N Douglass	Eleth N Douglass	7-2-01
14 TYPE OR PRINT NAME AND TITLE	15 SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE	16 DATE

DWR 55-40 (REV 9/99)

APPLICATION GUIDELINES

In accordance with Arizona Revised Statutes ("A.R.S ") §§ 41 1008 and 1079 the Department of Water Resources (Department) provides the following information regarding the application review process for authority to drill

NECESSARY STEPS & INSTRUCTIONS TO OBTAIN DRILLING AUTHORITY

1 Pursuant to A.R.S § 45-596 a person may not drill cause to be drilled deepen or modify any well for which a permit is not required without first filing a Notice of Intent to Drill with the Department Only a well drilling contractor licensed in the State of Arizona or a single well licensee (a person licensed to drill or modify one exempt well on his or her own property) is authorized to drill deepen or modify a well Drilling may not begin until the well drilling contractor or licensee has possession of a drilling card at the well site issued by the Director in the name of the well drilling contractor or licensee and which authorizes the drilling of the specific well in a specific location To assist you in understanding the requirements for this application copies of A.R.S § 45-596 and Arizona Administrative Code (' A.A.C ") R12 15-810 are available at the Department bookstore (602-417-2450 x7127)

2 If replacing deepening or modifying an existing well provide the registration number of the existing well in item 2 A replacement well is one located no more than 660 feet from the original well and that is not expected to annually withdraw more groundwater than historically withdrawn from the original well

3 Information to complete items 3 4, 5 and 13 may be available from your driller

4 Information to complete items 9 and 12 may be available from your County Assessor's Office

5 For item 10, in an Active Management Area A.R.S § 45-454 only allows non irrigation uses for exempt" wells If the proposed use includes the growing of 2 or more acres of plants for sale or human/animal consumption (irrigation use) the well does not qualify as an exempt well

6 An exempt well, referred to in Item 10 means a well with a pump with a maximum capacity of not more than thirty-five gallons per minute and used for non irrigation purposes

7 For item 11, in an Active Management Area A.R.S §45-454 allow up to 56 acre feet per year of pumping from a domestic (residential) or stock watering exempt well and up to 10 acre ft per year from an exempt well used for other (usually commercial non-irrigation) purposes

8 If any water from a proposed well on a parcel of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant must submit a well site plan of the property The plan must be on an 8½ x 11" piece of plain paper with representation of the locations of all structures and proximity of adjacent lot lines to scale It must include the county assessor s parcel identification number The plan must show the proposed well location and the location of any septic tank or sewer system that is either located on the property or within one hundred feet of the proposed well site as well as indicating the measured shortest distance between the proposed well and existing septic tank system **The plan must demonstrate that the well will not be drilled within one hundred feet of any septic or sewer system**

9 The site plan must be approved by the county health authority or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems Endorsement by the county/local authority is based solely on the best available judgement that the proposed well as shown on the site plan submitted is 100 feet or more from all known and visually identifiable sewage treatment systems It is not a representation that a well placed at this site will be guaranteed as to quantity or quality In areas where there is no local or county authority that controls installation of septic tanks or sewer systems or if the health authority is unable to determine whether the proposed well location complies with state and local requirements the applicant must apply for approval directly to the Department of Water Resources

10 If an individual other than the land owner or lessee signs this notice an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific notice on his or her behalf must accompany the notice

11 Please mail **two original Notices** with **original signatures** and **two site plans** and, in accordance with A.R S § 45 113 a **check or money order (no cash) in the amount of $10 00** to P O Box 458 Phoenix Arizona 85001 0458 or hand deliver to 500 North Third Street Phoenix, Arizona

12 Arizona Revised Statute § 45 596(D) provides that the Director of the Department is to determine whether or not all information required on this form has been submitted If not the person filing the Notice will be notified and the drilling or modification of the well may **not** proceed

13 This form is not applicable for non exempt wells (those yielding more than thirty five gallons per minute) within an Active Management Area Contact Groundwater Management for further information regarding the appropriate notice to file with the Department

TIME FRAME FOR REVIEW OF YOUR APPLICATION

Within 15 days after receipt of your Notice of Intention the Arizona Department of Water Resources (' Department) will determine whether your application should be granted or denied unless this time is extended for lack of a complete application If your application is incomplete the Department will notify you in writing and will specify what information is necessary to make the application complete Until the missing information is received, the time frame for review of your application will be suspended Your application will not be complete until all of the requested information is received If you do not supply the missing information within sixty (60) days the Department may deem your application withdrawn and close the file

At the end of its review the Department will send you a written notice either granting or denying your application for drilling authority If your application is approved the Drill Card will be mailed directly to the drilling contractor If denied the Department s notice will state justification for the denial and an explanation of your right to appeal

CONSTRUCTION AND FOLLOW UP REQUIREMENTS

1 Construction and abandonment standards for wells must be in accordance with Department Regulations A.R.S § 45 594 and Arizona Administrative Code R12 15-811 require the well to be constructed with a twenty foot steel surface seal casing, including a one foot steel stickup and one and one-half inches of grout seal around the casing from the surface to a depth of twenty feet unless a variance is granted **(see A R S § 45-596 (G) for procedure to follow in requesting a variance)**

2 Pursuant to § 45-596(E) the drilling deepening or modification of the well must be completed within one year of the date of the Notice of Intent If the well is not completed within one year a new Notice of Intent must be filed before proceeding with further construction

3 If a well which was originally drilled as an exploration well a monitor well a piezometer well or for any use other than domestic use is later proposed to be converted to use for domestic purposes as defined in § 45-454 the well owner must file a Notice of Intention to Drill and comply with the requirements of § 45-596 before the well is converted and any water from that well is used for domestic purposes

4 Within thirty days after installation of pumping equipment the registered well owner must file a Completion Report with the Department The person to whom a well is registered also must notify the Department of a change in ownership or a change in data relating to this well

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO 55-587749

AUTHORIZED DRILLER DRIVER DRILLING COMPANY LICENSE NO 177

NOTICE OF INTENTION TO DRILL A EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY

WELL OWNER EDITH DOUGLASS 8376 COVINGTON-GETTYSBURG RD COVINGTON, OH 45318

The well(s) is/are to be located in the

NE ¼ of the SE ¼ of the NE ¼ Section 11 Township 24 SOUTH Range 24 EAST

No of wells in this project 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 3RD DAY OF JULY, 2002

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

T 24 S R 24 E

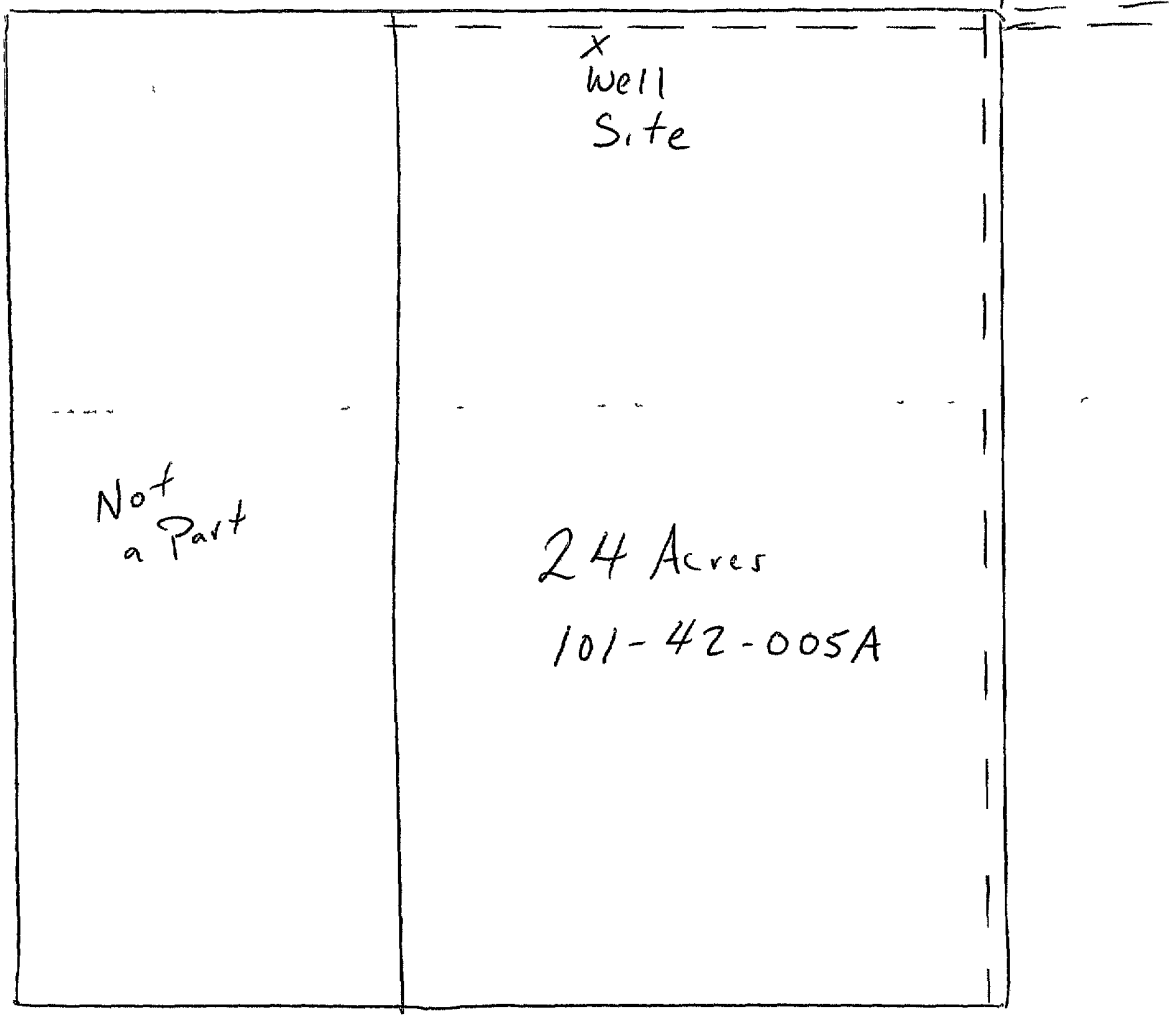
SE 1/4 of NE 1/4 Sec 11

40 160

RECEIVED
JUL - 5 2001
GROUNDWATER MGT

N

State Land



ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

July 10, 2001

JANE DEE HULL
Governor

JOSEPH C SMITH
Director

EDITH DOUGLASS
8376 COVINGTON-GETTYSBURG RD
COVINGTON, OH 45318

Registration No 55- 587749
File No D(24-24) 11 ADA

Dear Well Owner

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596 The enclosed Completion Report is to be submitted when pump equipment is installed The Drilling Card and Well Drilling Report form have been sent to your driller He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling If you change drillers, you must supply this Department with the new driller's identity Please ensure that the driller you select is licensed to drill the type of well you require All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling You should insist, and ensure, that both of these are done

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816 F

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate We have enclosed a Change of Well Information Form should it be needed in the future

Sincerely,

Toni Bergeman
Water Resource Technician
Groundwater Management Support Section

Enclosures

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 14 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 618175
FILE NO. D(24-24)17 bcc
FILED 6-14-82 (DATE) AT 4:30pm (TIME)
INA
AMA

1. Name of Registrant:
United Evangelism, Inc
408 E. Michigan Drive Tucson AZ 85714
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
D(24-24)17- bcc (File Number) 35- 2086 (Control Number)

3. a. The well is located within the SW ¼ SW ¼ NW ¼, Section 17, of Township 24 ~~N~~/S, Range 24 E/~~W~~, G & SRB & M, in the County of Cochise.

   b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater (domestic) municipal - industrial)
_____.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
   a. Depth of Well 301 feet
   b. Diameter of casing 6 inches
   c. Depth of casing 301 feet
   d. Type of casing P.E. Steel .
   e. Maximum pump capacity 100 gallons per minute.
   f. Depth to water 95 feet below land surface.
   g. Date well completed 6 (Month) – 26 (Day) – 72 (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   Attach additional sheet if necessary.

9. DATE 6-11-82 SIGNATURE OF REGISTRANT Marcos V. Lucero

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

UNITED EVANGELISM INC
408 E MICHIGAN
TUCSON AZ 85714

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	618175
	THRU
55	

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	10.00	10.00
					Existing Wells		
					File No. D(24-24)17 bcc		

WAITER PAYMENT
GUESTS 1
CHK NO 428
55-I 10.00
TAX 0.00
TOTL 10.00
CASH 10.00

1484 9 15:53

Check # 428

TOTAL $ 10.00

8/20/82 jc

MICROFILMED

ARIZONA DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Name: Leonard McConnell
   Address: Box 5032 (Street) Bisbee (City) AZ (State) 85603 (Zip)
2. Driller Name: WEBER DRILLING
   Address: RT. 1 BOX 276B (Street) ST. DAVID, AZ. 85630 (City, State, Zip)
3. Location: 24 (N/S) Township; 24 (E/W) Range; 17 Section; NW 1/4 10-acre; NW 1/4 40-acre; NW 1/4 160-acre
4. Well Registration No. 55- 539265 (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 216 ft.
7. Type of casing Steel
8. Diameter and length of casing 8 in. from 0 to 20, 6 in from 0 to 216.
9. Method of sealing at reduction points welded
10. Perforated from 174 to 216, from _____ to _____, from _____ to _____.
11. Size of cuts 8x8 Number of cuts per foot 4
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction Drilled (drilled, dug, driven, bored, jetted, etc)
14. Date started 7 (Month) 5 (Day) 93 (Year)
15. Date completed 7 (Month) 6 (Day) 93 (Year)
16. Depth to water 165 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
    Ground Level
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE

55-539265
Rc D(24-24)17BBB
Fi
Re ENTERED NOV 15 1993
Entered _____ by _____

DWR-55-55-7/91 (Rev.)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encounterd, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	216	Alluvial Conglomerate
		FIRST WATER 165'
		STATIC 135'

I hereby certify that this well was drilled by me (or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: Ronald E. Weber

Street WEBER DRILLING
RT. 1 BOX 276B
ST. DAVID, AZ. 85630

City State Zip

Date 10/5/93

ARIZONA DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

Registration No. 539265

File No. D (24-24),17 BBB

COMPLETION REPORT

1. Per A.R.S. § 45-600, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.

2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.

3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

ENTERED JUN 13 1994

LOCATION OF THE WELL:

24 S N/S	24 E/W	17	E½ NW 1/4	NW 1/4	NW 1/4
Township	Range	Section	10-acre	40-acre	160-acre

EQUIPMENT INSTALLED:

Kind of pump SUBMERSIBLE
Turbine, centrifugal, etc.

Kind of power ELECTRIC H.P. Rating of Motor 1
Electric, natural gas, gasoline, etc.

Pumping Capacity 20 Date pump installed:
Gallons per minute

WELL TEST:

Test pumping capacity 20 gal Date Well Tested: 8-1-93
Gallons per minute

Method of Discharge Measurement Bucket + stop watch
Weir, orifice, current meter, etc.

Static Groundwater Level 130 ft. Drawdown 0 ft.

Total Pumping Lift 130 ft. Drawdown 0 lbs.
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

June 9, 1994
Date

LEONARD McCONNELL
Print Well Owner's Name

Leonard McConnell
Signature of Well Owner or Agent

Box 1032
Address

Bisbee, Az 85603
City State Zip

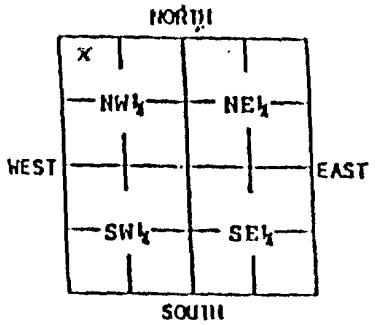
DWR-55-56-7/91 (Rev.)

FILING FEE $10.00 FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)

NOTICE OF INTENTION TO DRILL A WELL OUTSIDE OF AN ACTIVE MANAGEMENT AREA

Section §45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department.



INDICATE WELL LOCATION BY X
(Above diagram represents one 640 acre section)

WELL/LAND LOCATION

24 S | 24 E/W | 17

1. Township | 2. Range | 3. Section

4. NW 1/4 NW 1/4 NW 1/4
10 acre subdivision

5. County Cochise

6. Owner of well:
Leonard McConnell
Name
Box 5032
Mailing Address
Bisbee AZ 85603
City State Zip
Telephone: 432-7050

7. Owner of land:
Same
Name
Mailing Address
City State Zip
Telephone No.

DESCRIPTION OF PROPOSED WELL

8. Diameter 6 inches
Depth 160 feet
9. Type of Casing Steel
10. Design Pump Capacity:
20 gallons per minute
11. Estimate of total annual pumping:
10 acre feet
12. Principal use of water:(be specific)
Home
13. Other uses intended:(be specific)
Landscaping
14. Number of Multiple Drinking Water connections, if any: 0
15. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated: .5
16. Construction will start about:
5/93
Month Year

PLACE OF USE

17. Township NW SEC 17 N/S
18. Range 24E E/W
19. Section NW¼ - 17
20. Legal description of land: E½
a. NW 1/4 NW 1/4 NW 1/4
10 acre sub-division
b. County Assessor's I.D.
102 | 53 | 010
Book | Map | Parcel
21. Type well:
Exempt ✓ Non-exempt
22. Action Requested:
Drill New Well ✓ ; or
Deepen Replace Modify
Well No. 55-
23. Applicant: Owner ✓ Lessee
Same
Name
Mailing Address
City State Zip
Telephone: 432-7050
DRILLING FIRM
Weber Drilling
24. Firm Name
RT 1 Box 276B
Mailing Address
St. David AZ 85630
City State Zip
272
DWR License Number
A-4 C-53
Type of contractor License

DO NOT WRITE IN THIS SPACE
Office Record
File No. D(24-24)17 BBB
Filed 5/18/93 By dlc
Input By
Duplicate RECEIVED MAY 24 1993
Mailed 5/24/93 By dlc
Registration No. 55-539265
INA
W/S 11 S/B

25. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes No ✓

GENERAL INSTRUCTIONS

1. Fill out this form in DUPLICATE and send WITH $10.00 FEE to 15 South 15th Avenue, Phoenix, AZ 85007.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen, replace or modify a well outside of an Active Management Area.
4. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in Item 21.
5. Construction standards for wells, including abandonment, shall be in accordance with Department Rules and Regulations.

I state that Notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well as set forth on the reverse side of this form.

May 16, 1993
Date

Leonard McConnell
Virginia J. McConnell
Signature of well owner/lessee

DWR 55-40-4/90 (Rev.)

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Receipt of this annotated Notice constitutes authorization to proceed in drilling, deepening, or modifying the well as set forth on this Notice.

2. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well.

3. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

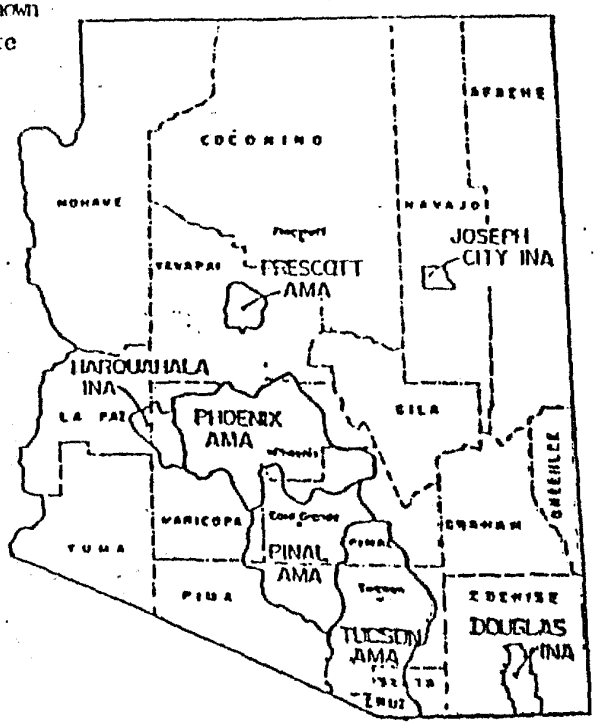
4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 3 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to A.R.S. § 45-434 or § 45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of A.R.S. § 45-437.

5. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of this Notice.

6. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

7. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of the annotated copy of this Notice.

8. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.



RECEIPT

№ 6242

Leonard McConnell
Box 5032
Bisbee, AZ 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007
(602) 542-1581

ENTRY CODE 55

FILE NO. 55-539265 THRU

ITEM DESCRIPTION	RATE	AMOUNT
FILING FEE FOR NOI TO DRILL A WELL	10.00	10.00
REG. NO.55-539265		
FILE NO.D(24-24)17BBB		

PAID

CHECK NO. 944 FEE ACCOUNT NO. _____ TOTAL $ 10.00

CHIT NO. _____ RECEIVED BY db DATE 05-24-93

IPS 1821 – Rev. 4/91

ARIZONA DEPARTMENT OF WATER RESOURCES

15 South 15th Avenue, Phoenix, Arizona 85007
Telephone (602) 542-1581
Fax (602) 542-3383

May 24, 1993

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

Lenord Mc Connell
Box 5032
Bisbee, AZ 85603

Registration No. 55-539265
File No. D(24-24)17BBB

Dear Mr. Mc Connell:

Enclosed is a copy of the Notice of Intention (NOI) to drill a well. This NOI, whic h was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized. **In no case may the replacement well be more than 660 feet from the well it is replacing.**

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593, the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

If the information you provided indicates your well is near the Colorado River; if in the future, it is determined that water from your well is supplied from the river and you do not have a perfected water right to Colorado River water established prior to 1929, the U.S. Bureau of Reclamation may require you to cease pumping or enter into a contract for use of Colorado River water.

Sincerely,

Dorothy Boggs
Groundwater Permit Specialist

db
Enclosures

EXEMPT WELL
WELL REGISTRATION NO.

55- 539265

DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

EXEMPT WELL

THIS DRILLING CARD SHALL BE IN THE POSSESSION OF THE DRILLER BEFORE DRILLING OPERATIONS COMMENCE

AUTHORIZED DRILLER Weber Drilling LICENSE NO. 272
(Unless superceded by notification of change of well driller)

Notice of Intention to X **Drill** ____ **Deepen** ____ **Replace** ____ **Modify** a well has been filed with the Department by:

Leonard McConnell	Box 5032	Bisbee	AZ	85603
Name	Address	City	State	Zip

This well is to be located in: Township 24S Range 24E Section 17 NW 1/4 NW 1/4 NW 1/4

This authorization to X Drill ____ Deepen ____ Replace ____ Modify the above well expires at midnight on 05-23-94.

PURSUANT TO A.R.S. § 45-600, THE DRILLER SHALL FILE, ON THE PRESCRIBED DEPARTMENT FORM, A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

Bruce [illegible]
for **Deputy Director**

DWR-55-54-3/91

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

June 21, 2002

Russell McConnell
P O Box 4513
Bisbee, AZ 85603

Re: Denial of Notice of Intention to Drill Well Number 55-590386

The Department of Water Resources notified you by letter on January 10, 2002 that your application to drill a well was incomplete. Pursuant to Arizona Revised Statutes (A.R.S.) § 41-1074(B), a list of the specific deficiencies preventing your application from being complete was provided to you in that letter. The completeness review time frame was suspended by the incomplete letter, and you were given sixty (60) days within which to provide the requested information. Our records indicate that you did not do so.

Therefore, pursuant to Arizona Administrative Code R12-15-401, the Department hereby denies your application.

The Departments decision to deny your application is an appealable agency action. In order to appeal this decision, you must request an appeal within thirty (30) days from receipt of this letter. A summary of the appeals process and appeal form is enclosed should you wish to pursue this option.

Alternatively, you may submit a new Notice of Intention for authority to drill at this particular location. To expedite the process, please include the information missing in your original Notice of Intention to Drill.

Should you have any questions, please contact Alan Dulaney of the Department of Water Resources at (602) 417-2470.

Sincerely,

Toni Bergeman

Toni Bergeman
Water Resource Technician

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

January 10, 2002

Russell McConnell
P O Box 4513
Bisbee, AZ 85603

Assigned Referenced Number: 55-590386

Dear Applicant:

The Department of Water Resources recently received your Notice of Intent to **Drill, Deepen, Replace, or Modify A Well.** However, our review indicates that the filing(s) is incomplete under the Groundwater Management Act for the following reason(s):

(A) Landowner Info. Incomplete: ____
(C) County not Given: ____
(D) Book, Map, Parcel Incorrect: ____
(E) Number of Acres Not Given: ✓
(F) Legal Description Incomplete: ____
____Incomplete Quarter Sections
____Incomplete/Incorrect Section
____Incomplete/Incorrect Township ?
____Incomplete/Incorrect Range
(G) Recommendation Not Selected: ____
(H) Date Of Approval Not Given: ____
(1) Well owner Info. Incomplete: ____
(2) Action Requested (check one): ____
(3) Starting Date Not Given: ____
(4) Casing To Be Used (answer all): ✓
(5) Design Capacity of Pump : ✓
(6) Lessee Info. Incomplete: ____
(7) Primary Water Use Not Given: ____
(8) Other Water Uses Not Given: ____

(9) Place of Use Incomplete (refer to "F"): ____
(10) Type of Well (check one): ____
(11) Select One (define "other"): ____
(12) Select "Yes" or "No": ____
(13) Incomplete Driller Information: ____
(14) Printed Name/Title Not Given: ____
(15) Incorrect/Unauthorized Signature: ____
Requires Current Forms: ____
Please Refer to the Attached Letter: ____
Requires $10.00 Filing Fee: ____
Need County Approval (see attached list) ____

Other Reason(s): Please verify Township - F & 9

PLEASE CALL TONI BERGEMAN AT 602-417-2400 EXT. 7148 WITH ANY QUESTIONS.

In accordance with A.R.S § 45-596; Paragraph D, this application is being returned as a "statement of determination", requesting information necessary to make it correct and complete. If the necessary information is not received by the Department within sixty (60) days, the application may be denied. You would then have to re-initiate the N.O.I. process to receive a drilling authority for this location. If you have any questions, please contact the Groundwater Management Support Section at (602) 417-2470. **ATTACH THIS CHECK LIST WHEN RESUBMITTING THE COMPLETED NOTICE OF INTENT AND RETURN TO BOX 458, PHOENIX, ARIZONA 85004-3003. YOU MAY ALSO CONTACT YOUR DRILLER OR COUNTY ASSESSORS OFFICE FOR ASSISTANCE PERTAINING TO THE NECESSARY INFORMATION THAT IS REQUIRED TO COMPLETE YOUR APPLICATION.**

RECEIVED
JAN 3 2002
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ (602)417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. Russell McConnell P.O. Box 4513 Pinetop AZ 85935
LANDOWNER'S NAME | CURRENT MAILING ADDRESS | CITY | STATE | ZIP

B. TELEPHONE NO. (520) 432-7388

C. WELL LOCATED IN Navajo COUNTY

COUNTY ASSESSOR'S PARCEL ID INFORMATION:
D. 102 (BOOK) 53 (MAP) 010B (PARCEL) E. _____ (# OF ACRES)

OFFICIAL SEAL OR STAMP

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NW¼ (10AC) NW¼ (40AC) NW¼ (160AC) OF SECTION 17 TOWNSHIP 24 N/S RANGE 24 E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL X ; INSUFFICIENT INFORMATION TO MAKE DETERMINATION _____ ; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE 12/24/01 AUTHORIZED SIGNATURE John T. Tom, R.S. TITLE Environmental Health Spec.

1. OWNER OF WELL:
Russell B. McConnell
NAME
P.O. Box 4513
CURRENT MAILING ADDRESS
Pinetop AZ 85935
CITY STATE ZIP

TELEPHONE NUMBER (520) 432-7388

2. ACTION REQUESTED:
DRILL NEW WELL ✓ DEEPEN _____
MODIFY _____ REPLACE _____

WELL REGISTRATION NO 55-_____

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL _____ GALLONS PER MINUTE;

DISTANCE FROM THE ORIGINAL WELL:
GREATER THAN 50 FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH JAN YEAR 2002

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: _____
DIAMETER: _____" DEPTH: _____'

DOWNHOLE CASING: _____
DIAMETER: _____" DEPTH: _____'

5. DESIGN PUMP CAPACITY:
_____ GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
_____
NAME
_____
CURRENT MAILING ADDRESS
_____
CITY STATE ZIP

TELEPHONE: _____

7. PRINCIPLE USE OF WATER: (BE SPECIFIC)
Household Domestic

8. OTHER USES OF WATER: (BE SPECIFIC).
Lawn / Garden

9. IF USE INCLUDES IRRIGATION, STATE TO NEAREST TENTH, THE NUMBER OF ACRES TO BE IRRIGATED: _____

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55-_____
DATE FILED _____
FILE NO. _____
AMA/INA _____
W/S _____ S/B _____
PROCESSED BY _____
DATE MAILED _____

10. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NW¼ (10AC) NW¼ (40AC) NW¼ (160AC) SECTION 17
TWNSHP 17 N/S RNG 24 E/W

11. TYPE OF WELL (CHECK ONE):
EXEMPT ✓ NON-EXEMPT _____

12. CHECK ONE:
RESIDENTIAL ✓ COMMERCIAL _____

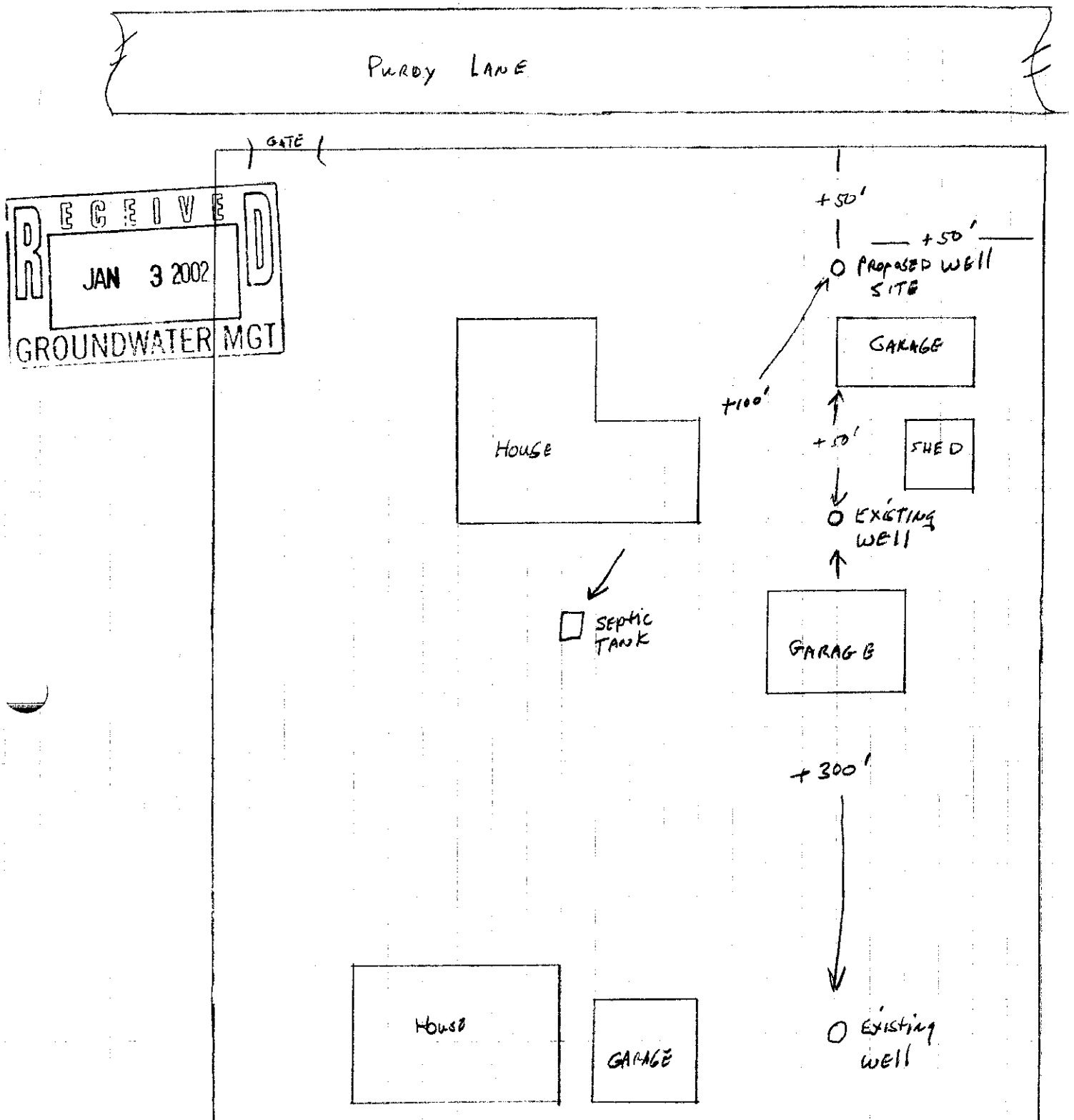
13. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES _____ NO ✓

14. DRILLING FIRM:
Tanner Well Service
NAME
7464 W. Frontier Rd.
MAILING ADDRESS
McNeal AZ 85617
CITY STATE ZIP
(520) 642-3654
TELEPHONE NO.
133
DWR LICENSE NUMBER
C-53
ROC LICENSE CATEGORY

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

Russell B. McConnell, owner — Russell B. McConnell — Dec. 28, 2001
15. TYPE OR PRINT NAME AND TITLE | 16. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE | 17. DATE

DWR 55-40 (REV 1/99)



RECEIVED
JAN 3 2002
GROUNDWATER MGT

SITE PLAN -
R.B. McConnell Well Application
1963 PURDY LANE

ATTEST: Russell B McConnell

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ (602)417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

RECEIVED
JAN 3 2002
GROUNDWATER MGT

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. Russell McConnell (LANDOWNER'S NAME) P.O. Box 4513 (CURRENT MAILING ADDRESS) Bisbee (CITY) AZ (STATE) 85603 (ZIP)

B. TELEPHONE NO. (520) 432-7388

C. WELL LOCATED IN Cochise COUNTY

COUNTY ASSESSOR'S PARCEL ID INFORMATION:
D. 102 (BOOK) 53 (MAP) 010B (PARCEL) E. _____ (# OF ACRES)

OFFICIAL SEAL OR STAMP -

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NW¼ (10AC) NW¼ (40AC) NW¼ (160AC) OF SECTION 17 TOWNSHIP 24 N/S RANGE 24 E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL X ; INSUFFICIENT INFORMATION TO MAKE DETERMINATION _____ ; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE 12/24/01 AUTHORIZED SIGNATURE John T. Fenn, R.S. TITLE Environmental Health Spec.

1. OWNER OF WELL:
Russell B. McConnell (NAME)
P.O. Box 4513 (CURRENT MAILING ADDRESS)
Bisbee (CITY) AZ (STATE) 85603 (ZIP)
TELEPHONE NUMBER (520) 432-7388

6. LESSEE OF LAND OF WELLSITE:
_____ (NAME)
_____ (CURRENT MAILING ADDRESS)
_____ (CITY) _____ (STATE) _____ (ZIP)
TELEPHONE: _____

10. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NW ¼ (10AC) NW ¼ (40AC) NW ¼ (160AC) SECTION 17
TWNSHP 17 N/S RNG 24 E/W

11. TYPE OF WELL (CHECK ONE):
EXEMPT ✓ NON-EXEMPT _____

. CHECK ONE:
SIDENTIAL ✓ COMMERCIAL _____

. IS THE PROPOSED WELLSITE WITHIN 100 ET OF A SEPTIC TANK SYSTEM, SEWER SPOSAL AREA, LANDFILL, HAZARDOUS ATERIALS OR PETROLEUM STORAGE EAS AND TANKS?
ES _____ NO ✓

. DRILLING FIRM:
Bauer Well Service
AME
7414 W. Frontier Rd.
AILING ADDRESS
N. Neal AZ 85617
TY STATE ZIP
(520) 642-3654
LEPHONE NO.
133
VR LICENSE NUMBER
C-53
ROC LICENSE CATEGORY

RUSSELL B. McCONNELL
LILLIAN C. McCONNELL
P.O. BOX 4513 (520) 432-7388
BISBEE, AZ 85603

1420
91-532/1221
27

Date Dec. 28, 2001

Pay to the Order of Arizona Department of Water Resources $ 10.00

Ten & 00/100 Dollars

National Bank OF ARIZONA
101 NACO Highway Bisbee, AZ 85603

For [redacted]

[redacted]

DIAMETER: _____" DEPTH: _____'

DATE MAILED _____

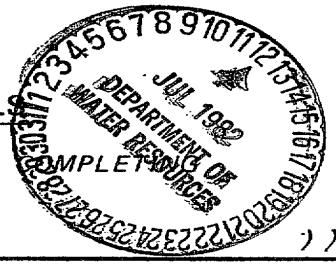
5. DESIGN PUMP CAPACITY:
_____ GALLONS PER MINUTE

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

Russell B. McConnell, Owner (15. TYPE OR PRINT NAME AND TITLE) Russell B. McConnell (16. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE) Dec. 28, 2001 (17. DATE)

DWR 55-40 (REV 1/99)

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55-650256-L
FILE NO. D(24-24)18 ddd
FILED 7-12-82 (DATE) AT 900A (TIME)
INA
AMA

1. Name of Registrant:
ALFREDO A. & MICAELA R. MENDEZ
314 4TH ST. (Address) MAILING: P.O. BOX 464 NACO (City) AZ (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law: UNKNOWN - PREVIOUS OWNER DECEASED
NONE (File Number) 35- (Control Number)

3. a. The well is located within the SE ¼ SE ¼ SE ¼, Section 18, of Township 24 N(S) Range 24 E(W), G & SRB & M, in the County of Cochise. UNKNOWN

b. If in a subdivision: Name of subdivision NACO TOWNSITES 102-57-099
NACO Lot No. 309, Address 314 4TH ST. NACO AZ 85620.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
IRRIGATION.

5. If for irrigation use, number of acres irrigated from well NONE.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 160 feet
b. Diameter of casing 6 inches
c. Depth of casing 100 feet
d. Type of casing STEEL.
e. Maximum pump capacity — gallons per minute.
f. Depth to water 120 feet below land surface.
g. Date well completed — (Month) — (Day) 1938 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒
___¼ ___¼ ___¼, Section ___ Township ___ Range ___
___¼ ___¼ ___¼, Section ___ Township ___ Range ___
NACO TOWNSITES, NACO LOT # 309, 314 4TH ST, NACO, AZ 85620
Attach additional sheet if necessary.

9. DATE 7/8/82 SIGNATURE OF REGISTRANT Alfredo A Mendez

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form in duplicate with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

LAND DEPARTMENT
WATER DIVISION
STATE OF ARIZONA

REPORT OF WELL DRILLER

RECEIVED
APR 27 1979
STATE LAND DEPT.
1416

This report should be prepared by the driller in all detail and filed with the State Land Commissioner following completion of the well.

1. OWNER Alfonso Metzler
Name
Address

2. Lessee or Operator
Name
Address

3. DRILLER J. R. SHARP GENERAL CONTRACTORS
Name J. R. SHARP
GENERAL CONTRACTORS
BOX 4520 NACO HWY.
BISBEE, ARIZ. 85603 432-4597
Address

4. Location of well: Twp. 24 S Rge. 24 E Section 5 NW ¼ NW ¼ SE ¼
10-acre sudivision

5. Intention to Drill File No. Permit No.

DESCRIPTION OF WELL

6. Total depth of hole 351 ft.

7. Type of casing P.E. Steel

8. Diameter and length of casing 6 in. from 0 to 351, in. from to, in. from to

9. Method of sealing at reduction points

10. Perforated from 245 to 345, from to, from to, from to

11. Size of cuts ¼ x 6 Number of cuts per foot 2

12. If screen was installed: Length ft. Diam. in. Type

13. Method of construction (drilled) dug, driven, bored, jetted, etc.

14. Date started 3 - 12 - 79 (Month Day Year)

15. Date completed 4 - 10 - 79 (Month Day Year)

16. Depth to water 2.38' ft.
If flowing well, so state.

17. Describe point from which depth measurements were made, and give sea-level elevation if available
Top of Casing

18. If flowing well, state method of flow regulation

19. REMARKS:

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received 4/27/79 by RMS

Filed by

File No. D(24-24)5 dbb
35-71891

(Well Log to Appear on Reverse Side)

WD FORM G-301
REV. 4-27-53

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	351	Recent Conglomerate with occasional Boulders
	238	Standing water Level
245	250	First water.
245	345	Perforations 2 1/4x6 each foot
0	351	6 5/8 O.D. x .188 P.E. pipe with drive shoe.

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller J. R. SHARP GENERAL CONTRACTORS
Name

J. R. SHARP
GENERAL CONTRACTORS
BOX 4520 NACO HWY.
BISBEE, ARIZ. 85603 432-4597 Address

J. R. Sharp

Date 4-14-79

2-73

- 62 -

12-15-78 not State

NOTICE OF INTENTION TO DRILL WELL

LAND DEPARTMENT
WATER DIVISION
STATE OF ARIZONA

RECEIVED
DEC 18 1978
STATE LAND DEPT.

By Law, no person shall drill, or cause to be drilled, any well for the development and use of Ground Water in Arizona without first filing Notice of Intention to Drill with the State Land Department. The only exceptions are for those irrigation wells within critical Ground Water areas for which Drilling Permits are required. No well shall be drilled by other than the owner without the driller being licensed with the Registrar of Contractors. The driller's license number must be included before the State Land Department will process the filing.

FILING FEE $3.00

LOCATION OF WELL

North

West — NW¼ NE¼ — East

SW¼ SE¼

South

Indicate Well Location by X
(Above diagram represents one 640 acre section)

1. Twp. 24S
2. Rge. 24E
3. Section 5
4. NW ¼ NW ¼ SE ¼
   10-acre subdivision
5. Owner of Well Site
   Alfonso Metzler

INSTRUCTIONS

Fill out both copies and mail to Water Division, State Land Department, 1624 W. Adams, Phoenix, Arizona, 85007.

Duplicate will be returned to Filer, together with Drilling Card.

71891

DESCRIPTION OF WELL

6. Diameter 6 in. depth 350 ft.
7. Type of casing P.E. Steel
8. Estimated depth to water 250 ft.
9. Proposed use domestic
10. Drilling will start about Feb. '79
    Month Year
11. Driller J.R. Sharp Gen. Contrs
    P.O. Box 4520
    Bisbee, AZ 85603
    Name / Address
    Driller's License No. 27262
12. Water will be applied to use about
    Feb. '79
    Month Year
20. This notice filed by:
    Check one { Owner ☐ Lessee ☐ Driller ☒
    Name J.R. Sharp Gen. Contrs.
    P.O. Box 4520
    Address Bisbee, AZ 85603

PLACE OF USE

13. Twp. 24S
14. Rge. 24E
15. Section 5
16. NW¼ NW¼ SE¼
    Legal Description of Land to be Irrigated or place of other use.
17. Acres (if irrigation)
18. Owner Alfonso Metzler
    P.O. Box 4520
    Name
19. Bisbee, AZ 85603
    Address

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received 12-18-78 By M
Filed 12-19-78 By M
Duplicate Mailed 12-19-78 By M
File Number D(24-24)5 dbb

TO AVOID PAYMENT OF PENALTY AND INTEREST THIS PAYMENT MUST BE IN THE OFFICE OF THE STATE LAND DEPARTMENT ON OR BEFORE THE DUE DATE. DATE OF POSTAL STAMP NOT ACCEPTED AS DATE OF PAYMENT.

STATE OF ARIZONA
STATE LAND DEPARTMENT
1624 WEST ADAMS – 4th FLOOR – PHOENIX, ARIZONA 85007

OFFICE COPY

J. R. Sharp, General Contractors
For: Alfonso Metzler
P.O. Box 4520
Bisbee, Arizona 85603

SECTION	TOWNSHIP	RANGE

38096

KIND ENTRY	LEASE-REFERENCE NO.
35	71891 00

	ACCOUNT NO. GRANT FUND	SUB	CARRYING CAPACITY	BILLING DESCRIPTION	RATE	ACRES	$ AMOUNT
14	312	32		Filing fee for Notice of Intention to Drill Well			3 00
				Water Rights (GW)			
				File # D(24-24)5 dbb			
				XXX Check #7278		1	CK CK M 3.00+
					3141	12 18 78	3.00+T

CERTIFICATE OF PURCHASE $ UNPAID BALANCE	BILLING PERIOD FROM MO.	DAY	YR	TO MO.	DAY	YR	DATE BILLED MO.	DAY	YR.	DATE DUE MO.	DAY	YR.	TOTAL ACRES	TOTAL AMOUNT $
							12	18	78					3 00

IF PAYMENT IS MADE ON OR BEFORE THIS DATE → PAY THIS AMOUNT

SEE OTHER SIDE FOR LAW PERTAINING TO PENALTY AND INTEREST – A. R. S. SEC. 37-288.

RENTAL AMOUNT SUBJECT TO PENALTY AND INTEREST IF NOT PAID ON OR BEFORE DATE DUE ($)

5% PENALTY OF RENTAL AMOUNT - - - - - - - - - - - $

TOTAL RENTAL AMOUNT PLUS PENALTY - - - - - - - - ($) TOTAL PENALTY AND INTEREST

10% INTEREST PER ANNUM OF RENTAL AMOUNT AND PENALTY = NUMBER OF DAYS DELINQUENT ( )$ $

TOTAL AMOUNT DUE INCLUDING PENALTY AND INTEREST - - - - - - - - - - - - $

CASH RECEIVED $

BALANCE DUE OR OVERPAYMENT $

PENALTY AND INTEREST DISTRIBUTION		$

BRUCE E BABBITT
GOVERNOR

Arizona
State Land Department
1624 WEST ADAMS
PHOENIX, ARIZONA 85007
602 - 271-4634

OFFICE OF
STATE LAND COMMISSIONER
John M. Little
Acting

December 19, 1978

J. R. Sharp General Contractors
For: Alfonso Metzler
P.O. Box 4520
Bisbee, Arizona 85603

Gentlemen:

File No. D(24-24)5 dbb D
35-71891

This copy of Notice of Intention to Drill Well in Twp. 24 S , Rge. 24 E , Section 5 , NW $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$, is returned to you for your file. Also enclosed are:

X WELL DRILLING CARD, which should be in the hands of the driller before construction of the well is started;

X REPORT OF WELL DRILLER form, which may be filled in by the driller but which you should make sure is mailed to us after completion of the well;

X REPORT OF EQUIPMENT INSTALLED form, which shall be filled in by you and sent to us after the installation of the pumping equipment;

____ DIAGRAMS of recommended cement grout seal and pump installation, supplied by the Department of Health.

In the event it is necessary to change the location of the proposed well, you should obtain the written permission of the State Land Commissioner before proceeding with the drilling.

Very truly yours,

XXXXXXXXXXXXXXXXXX
State Land Commissioner

By:
F. C. Ryan, Director
Water Rights Division

mm

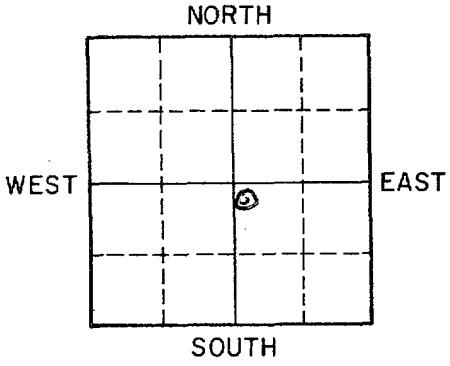
21-72

STATE LAND DEPARTMENT
Water Division
Phoenix, Arizona 85007

RECEIVED
APR 27 1979
STATE LAND DEPT.
1916

File No. D(24-24)5 dbb
85-71801

Location of Well



(Indicate Well Location by a circle "o" in the above Section Plat)

REPORT OF EQUIPMENT INSTALLED

OWNER Alfonso Metzler

LOCATION OF WELL:

NW ¼ NW ¼ SE ¼, Sec. 5 Twp. 24 S Rge. 24 E

Date Well Completed: 4-10-79 Depth 351'

1. Well Test:

Discharge: 15 (Gal. Per Min.) Date Well Tested: 4-10-79

Method of Discharge Measurement: Bailer test (weir, orifice, current meter, etc.)

Static Water Level: 238 ft. Drawdown 2 ± ft.

Total Pumping Lift 240 ft.

2. Equipment Installed:

Kind of Pump: 4RM19-1 Berkeley submersible (turbine, centrifugal, etc.)

Kind of Power: _____ (Elec., Nat. Gas, Etc.) H. P. Rating of Motor 1

I HEREBY CERTIFY that all the above statements are true to the best of my knowledge and belief.

J. R. SHARP GENERAL CONTRACTORS

J. R. Sharp
Signature

J. R. SHARP
GENERAL CONTRACTORS
BOX 4520 NACO HWY.
BISBEE, ARIZ. 85603 432-4597
Address

Date 4-14-, 1979.

63-73

F-4, Line

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED
APR 12 1982
DEPT. OF
WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY	
REGISTRATION NO. 55-	64134/
FILE NO.	D(24-24)17CAC
FILED (DATE)	4-12-82
AT (TIME)	3P
INA	
AMA	

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL – $10.00	☐

1. Name of Registrant: Charles Raymond Miller
Box 613 Naco Az 85620
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
_____ 35-_____
(File Number) (Control Number)

3. a. The well is located within the SW ¼ NE ¼ SW ¼, Section 17, of Township 24 S N/S, Range 24 E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Stock water.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 100 feet
b. Diameter of casing 6 inches
c. Depth of casing 100 feet
d. Type of casing Steel pipe casing.
e. Maximum pump capacity 10 gallons per minute.
f. Depth to water 60 feet below land surface.
g. Date well completed NA (Month) NA (Day) 1920 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
Attach additional sheet if necessary.

9. DATE 4-8-82 SIGNATURE OF REGISTRANT Charles Raymond Miller

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

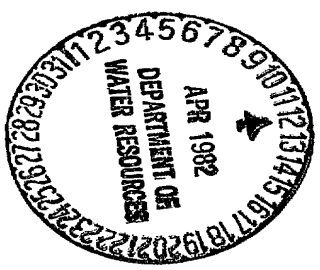
6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

11
FOR OFFICE USE ONLY
REGISTRATION NO. 55-641340
FILE NO. D(24-24)7 CAC
FILED 4-12-82 (DATE) AT 3P (TIME)
INA
AMA

1. Name of Registrant: Charles Raymond Miller
Box 613 (Address) Naco (City) Az (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35- (Control Number)

3. a. The well is located within the SW ¼ NE ¼ SW ¼, Section 7, of Township 24 S N/S, Range 24 E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial) stockwater & domestic.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____ (Address) _____ (City) _____ (State) _____ (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 200 feet
b. Diameter of casing 6 inches
c. Depth of casing 200 feet
d. Type of casing steel pipe casing.
e. Maximum pump capacity 10 gallons per minute.
f. Depth to water 150 feet below land surface.
g. Date well completed ____ (Month) ____ (Day) 1940 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 4-8-82 SIGNATURE OF REGISTRANT Charles Raymond Miller

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

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2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

B.J

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED
APR 1 2 1982
DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY	
REGISTRATION NO. 55-	641342
FILE NO.	D(24-24)15CCC
FILED (DATE)	4-12-82
AT (TIME)	3P
INA	
AMA	

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

1. Name of Registrant: Charles Raymond Miller
Box 613 (Address) Naco (City) Az (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35- (Control Number)

3. a. The well is located within the SW ¼ SW ¼ SW ¼, Section 15, of Township 24 S N/S, Range 24 E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Stock water.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____ (Address) _____ (City) _____ (State) _____ (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 200 feet
b. Diameter of casing 6 inches
c. Depth of casing 200 feet
d. Type of casing Steel pipe casing.
e. Maximum pump capacity 10 gallons per minute.
f. Depth to water 160 feet below land surface.
g. Date well completed NA (Month) NA (Day) 1957 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
Attach additional sheet if necessary.

9. DATE 4-8-82 SIGNATURE OF REGISTRANT Charles Raymond Miller

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 18 1982 DEP'T OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 650662L
FILE NO. D(24-24)11 d
FILED 6-18-82 (DATE) AT 10a (TIME)
INA —
AMA —

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☐

1. Name of Registrant:
Herbert R. Minnerly
Rt #1, 614 Border Rd (Address) Bisbee (City) Arizona (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35- _____ (Control Number)

3. a. The well is located within the ____ ¼ ____ ¼ SE ¼, Section 11, of Township 24 N/S, Range 24 E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
domestic.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☑
_____
_____ (Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well NA feet
b. Diameter of casing " inches
c. Depth of casing " feet
d. Type of casing " .
e. Maximum pump capacity " gallons per minute.
f. Depth to water " feet below land surface.
g. Date well completed " (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☑.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6/15/82 SIGNATURE OF REGISTRANT Herbert R Minnerly

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.



DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

MAY 1982 DEPARTMENT OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY	
REGISTRATION NO. 55-	633316
FILE NO.	D(24-24)18 add
FILED (DATE)	MAY 10 1982 AT (TIME) 11 a m
INA	
AMA	

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☐

1. Name of Registrant:
J. R. Sharp
P.O. Box 4520 (Address) Bisbee (City) AZ (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35-_____ (Control Number)

3. a. The well is located within the SE ¼ SE ¼ NE ¼, Section 18, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

   b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - (domestic) municipal - industrial)
_____.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
_____ (Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
   a. Depth of Well 208 feet
   b. Diameter of casing 8 inches
   c. Depth of casing 208 feet
   d. Type of casing P.E. steel .
   e. Maximum pump capacity 35 gallons per minute.
   f. Depth to water 95 feet below land surface.
   g. Date well completed ____ (Month) ____ (Day) 1955 (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 5-6-82 SIGNATURE OF REGISTRANT J. R. Sharp

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

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INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

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DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED MAY 10 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55-633317
FILE NO. D(24-24)18daa
FILED MAY 10 1982 (DATE) AT 11a m (TIME)
INA
AMA

1. Name of Registrant:
J. R. Sharp
P.O. Box 4520 (Address) Bisbee (City) AZ (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ NE ¼ SE ¼, Section 18, of Township 24 S N/S, Range 24 E E/W, G & SRB & M, in the County of Cochise.

   b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - (domestic) - municipal - industrial)
_____.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
   a. Depth of Well 155 feet
   b. Diameter of casing 6 inches
   c. Depth of casing 155 feet
   d. Type of casing P.E. Steel .
   e. Maximum pump capacity 35 gallons per minute.
   f. Depth to water 95 feet below land surface.
   g. Date well completed (Month) (Day) 1956 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   Attach additional sheet if necessary.

9. DATE 5-6-82 SIGNATURE OF REGISTRANT J. R. Sharp

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

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2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

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INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Request to Change Well Information

RECEIVED
JAN – 3
Water Management

FILE NUMBER

WELL REGISTRATION NUMBER
55 – 538847

- Review instructions prior to completing form in back or blue ink.
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL

MAILING ADDRESS

CITY / STATE / ZIP CODE

CONTACT PERSON NAME AND TITLE

TELEPHONE NUMBER | FAX

Location of Well

WELL LOCATION ADDRESS (IF ANY)
3606 WILLSON ROAD, NACO, AZ 85620

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	23E	13	SE ¼	NE ¼	NE ¼

LATITUDE			LONGITUDE		
° Degrees	' Minutes	" N Seconds	° Degrees	' Minutes	" W Seconds

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
		102-34-008-9

COUNTY WHERE WELL IS LOCATED
COCHISE

Type of Request (CHECK ONE)

☐ Change of Well Drilling Contractor *(Fill out Section 2)*
☐ Change of Well Ownership *(Fill out Section 3)*
☐ Change of Well Information *(location, use, etc.) (Fill out Section 4)*

SECTION 2. REQUEST TO CHANGE WELL DRILLING CONTRACTOR ($10 Fee Required)

- If drilling or abandoning a well, the Department must receive this request and issue authorization to the new drilling form prior to the commencement of well drilling or abandonment.

$10 FEE

Current Well Drilling Contractor		New Well Drilling Contractor	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	
DWR LICENSE NUMBER		DWR LICENSE NUMBER	ROC LICENSE CATEGORY
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP ($10 Fee Required)

$10 FEE

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

10

Previous Well Owner		New Well Owner	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	
GLORIA WILLSON		PATRICK B. MOORE	
MAILING ADDRESS		MAILING ADDRESS	
P.O. BOX 425		478 W. ROAD, 3 ½ N.	
CITY / STATE / ZIP CODE		CITY / STATE / ZIP CODE	
NACO, AZ 85620		CHINO VALLEY, AZ 86323	
CONTACT PERSON NAME AND TITLE		CONTACT PERSON NAME AND TITLE	
SAME AS ABOVE		SAME AS ABOVE	
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required)

NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE	SIGNATURE OF WELL OWNER
Gloria L. Willson, Trustee	Gloria L. Willson

Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Request to Change Well Information

- Review instructions prior to completing form in back or blue ink.
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

JAN - 9

FILE NUMBER	
WELL REGISTRATION NUMBER	55 – 538847

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL

MAILING ADDRESS

Location of Well

WELL LOCATION ADDRESS (IF ANY)
3606 WILLSON ROAD, NACO, AZ 85620

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	23E	13	SE ¼	NE ¼	NE ¼

Pioneer Title Agency, Inc.
P.O. BOX 1900
Sierra Vista, AZ 85636

NATIONAL BANK OF ARIZONA
1160 E. Fry Blvd.
Sierra Vista, Arizona 85635
91-532/1221

NO. 695336

FILE NUMBER	DATE	AMOUNT
00911601 - 006 DB	12/27/05	$10.00

Details on back.

Security Features Included.

PAY TEN DOLLARS and no/100

TO THE ORDER OF ARIZONA DEPARTMENT OF WATER RESOURCES
P.O. BOX 458
PHOENIX, AZ 85001

ESCROW ACCOUNT

[redacted]

[redacted]

SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP ($10 Fee Required)

$10 FEE

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

10

Previous Well Owner		New Well Owner	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL GLORIA WILLSON		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL PATRICK B. MOORE	
MAILING ADDRESS P.O. BOX 425		MAILING ADDRESS 478 W. ROAD, 3 ½ N.	
CITY / STATE / ZIP CODE NACO, AZ 85620		CITY / STATE / ZIP CODE CHINO VALLEY, AZ 86323	
CONTACT PERSON NAME AND TITLE SAME AS ABOVE		CONTACT PERSON NAME AND TITLE SAME AS ABOVE	
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required)

NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE	SIGNATURE OF WELL OWNER
Gloria L. Willson, Trustee	Gloria L. Willson

ARIZONA DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Name: Gloria Willson
   Address: P.O. Bx 425 (Street) Naco (City), Az (State) 85620 (Zip)
2. Driller Name: L. B. DRILLING
   Address: Box 4166 (Street) Huachuca City (City), AZ (State) 85616 (Zip)
3. Location: 24 N/S (Township) 23 E/W (Range) 13 (Section) NE 1/4 (10-acre) NE 1/4 (40-acre) SE 1/4 (160-acre)
4. Well Registration No. 55-538847 (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 220 ft.
7. Type of casing PVC
8. Diameter and length of casing 6 in. from 0 to 220, _____ in from _____ to _____.
9. Method of sealing at reduction points _____
10. Perforated from 220 to 180, from _____ to _____, from _____ to _____.
11. Size of cuts 1/8 Number of cuts per foot three
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction drilled air
    (drilled, dug, driven, bored, jetted, etc)
14. Date started April (Month) 23 (Day) 1993 (Year)
15. Date completed April (Month) 24 (Day) 1993 (Year)
16. Depth to water 125 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
    ground level
18. If flowing well, state method of flow regulation: N/A
19. Remarks: blew 25 g.p.m.

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Rc 55-538847
Fi D(24-23)13DAA
Rc
El ENTERED JUN 28 1993

DWR-55-55-7/91 (Rev.)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encounterd, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	193	clayey brown sand and gravel
193	220	brown cemented sand 1st water

I hereby certify that this well was drilled by me (or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: Lee Ott

L. B. DRILLING

Street Box 4166

Huachuca City, AZ 85616

City State Zip

Date 6-22-93

ARIZONA DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

55-538847
D(24-23)13DAA

COMPLETION REPORT

1. Per **A.R.S. § 45-600**, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.

2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.

3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24 N/(S)	23 (E)/W	13	NE 1/4	NE 1/4	SE 1/4
Township	Range	Section	10-acre	40-acre	160-acre

EQUIPMENT INSTALLED:

Kind of pump Submersible
Turbine, centrifugal, etc.

Kind of power Electric H.P. Rating of Motor 3/4
Electric, natural gas, gasoline, etc.

Pumping Capacity 10 GPM Date pump installed: 4-10-93
Gallons per minute

WELL TEST:

Test pumping capacity 25 GPM Date Well Tested: 4-8-93
Gallons per minute

Method of Discharge Measurement
Weir, orifice, current meter, etc.

Static Groundwater Level 125 ft. Drawdown 0 ft.

Total Pumping Lift 125 ft. Drawdown lbs.
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

ENTERED JUN 25 1993

GLORIA WILLSON
Print Well Owner's Name

6-8, 1993
Date

Signature of Well Owner or Agent

Box 556
Address

Eloy AZ 85610
City State Zip

DWR-55-56-7/91 (Rev.)

FILING FEE $10.00

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division
15 South 15th Avenue
Phoenix, Arizona 85007

FILING FEE $10.00

NOTICE OF INTENTION TO DRILL A WELL OUTSIDE OF AN ACTIVE MANAGEMENT AREA

Section §45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management, a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department.

WELL/LAND LOCATION:

24 N(S) | 23 (E)W | 13
1. Township | 2. Range | 3. Section

4. NE 1/4 (10 Acre) NE 1/4 (40 Acre) SE 1/4 (160 Acre)

5. County Assessor's I.D.
102 | 34 | 0089
Book | Map | Parcel

6. County Cochise

NORTH
NW¼ NE¼
WEST X EAST
SW¼ SE¼
SOUTH

INDICATE WELL LOCATION BY X
(Above diagram represents one 640 acre section)

7. Type of well:
Exempt X Non-exempt ____

8. Action Requested:
Drill New Well X; or Deepen ____
Replace ____ Modify ____
Well No. 55-____

9. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks?
Yes ____ No X

10. Will this proposed well pump Colorado River Water? Yes ____ No X
(See item 10 on reverse side)

11. Applicant: Owner X Lessee ____
Gloria Willson
Name
Po Box 425
Mailing Address
Naco, Az. 85620
City State Zip
Telephone: 432-2963

12. Owner or Lessee of Land at wellsite:
SAME
Name
Mailing Address
City State Zip
Telephone:

13. Owner of well:
SAME
Name
Mailing Address
City State Zip
Telephone:

DO NOT WRITE IN THIS SPACE
Office Record
File No. D(24-23)13 DAA
Filed 4/15/93 By dh
Input ENTERED APR 20 1993 By
Mailed 4/19/93 By dh
Registration No. 55-538847
INA ✓
W/S 11 S/B ✓

PLACE OF USE:
14. Township 24 N/S
Range 23 E/W
15. Section 13
16. Legal description of land:
NE 1/4 (10 Acre) NE 1/4 (40 Acre) SE 1/4 (160 Acre)

DESCRIPTION OF PROPOSED WELL:
17. Diameter 6 inches
Depth 200 feet
Type of Casing PVC
Design Pump Capacity:
15 gallons per minute
18. Estimate of total annual pumping:
6 8 acre feet
19. Principal use of water: (be specific)
domestic
20. Other uses intended: (be specific)
None
21. Number of Multiple Drinking Water connections, if any: one
(See item 5 on reverse side)
22. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated:
N/A
23. Construction will start about:
April 1993
Month Year

DRILLING FIRM:
24. ____
Firm L. B. DRILLING
Mailing BOX 4166 HUACHUCA CITY, AZ 85616
City D. W. R. LIC. #344 #0 6141-00 (A4 K. O. C. LIC. State #0 823 -0 (C-53 Zip
DWR License Number
ROC License classification

APR 15

GENERAL INSTRUCTIONS

1. Fill out this form in DUPLICATE and send WITH $10.00 FEE to 15 South 15th Avenue, Phoenix, AZ 85007.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen, replace or modify a well outside of an Active Management Area.
4. If the well is a replacement, deepening or modification of an existing well, provide the registation number of the existing well in Item 8.
5. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.
6. Section §45-596(D), provides that the Director shall determine that all information required on form has been submitted. If not, the person filing will be notified, and the drilling, deepening, or modification of the well may not proceed.

I state that this Notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well as set forth on the reverse side of this form.

GLORIA WILLSON
Typed or printed name

Gloria Willson
Signature [X] Land Owner [ ] Lessee of wellsite

April 12 1993
Date

DWR-55-40 9/92 (Rev.)

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Receipt of this annotated Notice constitutes authorization to proceed in drilling, deepening, or modifying the well as set forth on this Notice.

2. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

3. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an INA or AMA to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 3 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to A.R.S. §45-434 or §45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of A.R.S. §45-437.

5. Multiple Drinking Water Connections mean other parcels of land being served by your well that are not owned by you. Each separate parcel is considered one connection.

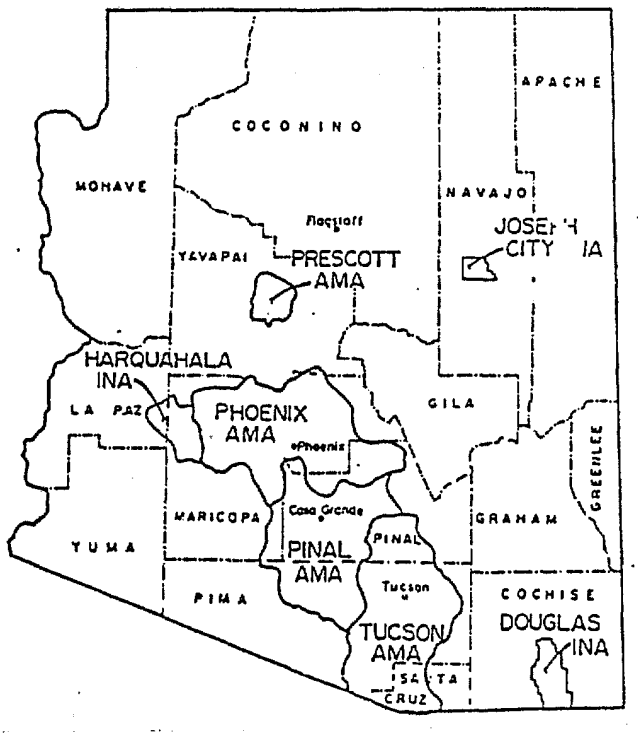
6. The drilling, deepening, or modification of this well shall be completed within one (1) year of the issuance of the drilling authority.

7. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

8. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

9. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.

10. If the proposed well is a non-exempt well and is located near the Colorado River and if the proposed well may pump Colorado River Water, proof must be submitted with this notice that the applicant has the legal right to use Colorado River Water. Alternately, evidence needs to be submitted that supports the contention that Colorado River water will not be withdrawn by the well. Persons near the Colorado River may wish to contact the Colorado River Management Division, Department of Water Resources at (602) 542-1960 to determine those Townships and Ranges which will be affected by these requirements or with questions regarding the proof of right.



RECEIPT

№ 5721

L. B. Drilling
P.O. Box 4166
Huachuca City, AZ 85616

Gloria Willson

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007
(602) 542-1581

ENTRY CODE 55

FILE NO. 55-538847 THRU

ITEM DESCRIPTION	RATE	AMOUNT
FILING FEE FOR NOI TO DRILL A WELL	10.00	10.00
REG. NO.55-538847		
FILE NO.D(24-23)13DAA		

PAID

CHECK NO. 2900 FEE ACCOUNT NO. _____ TOTAL $ 10.00

CHIT NO. _____ RECEIVED BY db DATE 04-19-93

IPS 1821 – Rev. 4/91

ARIZONA DEPARTMENT OF WATER RESOURCES

15 South 15th Avenue, Phoenix, Arizona 85007
Telephone (602) 542-1581
Fax (602) 256-0506

April 19, 1993

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

Gloria Willson
P.O. Box 425
Naco, AZ 85620

Registration No. 55-538847
File No. D(24-23)13DAA

Dear Ms. Willson:

Enclosed is a copy of the Notice of Intention (NOI) to drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized. **In no case may the replacement well be more than 660 feet from the well it is replacing.**

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593, the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

If the information you provided indicates your well is near the Colorado river. If, in the future, it is determined that water from your well is supplied from the river and you do not have a perfected water right to Colorado River water established prior to 1929, the U.S. Bureau of Reclamation may require you to cease pumping or enter into a contract for use of colorado river water.

Sincerely,

db

Dorothy Boggs
Groundwater Permit Specialist

db
Enclosures

EXEMPT WELL
WELL REGISTRATION NO.

55-538847

DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

EXEMPT WELL

THIS DRILLING CARD SHALL BE IN THE POSSESSION OF THE DRILLER BEFORE DRILLING OPERATIONS COMMENCE

AUTHORIZED DRILLER L. B. Drilling LICENSE NO. 344
(Unless superceded by notification of change of well driller)

Notice of Intention to X **Drill** ____ **Deepen** ____ **Replace** ____ **Modify** a well has been filed with the Department by:

Gloria Willson	P.O. Box 425	Naco	AZ	85620
Name	Address	City	State	Zip

This well is to be located in: Township 24S Range 23E Section 13 NE 1/4 NE 1/4 SE 1/4

This authorization to X Drill ____ Deepen ____ Replace ____ Modify the above well expires at midnight on 04-18-94.

PURSUANT TO A.R.S. § 45-600, THE DRILLER SHALL FILE, ON THE PRESCRIBED DEPARTMENT FORM, A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

DWR-55-54-3/91

by **Deputy Director**

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED
JUN 14 1982
DEP'T. OF
WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 647847
FILE NO. D(24-24)18
FILED 6-14-82 (DATE) AT 5 PM (TIME)
INA
AMA

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☒
NON-EXEMPT WELL — $10.00 ☐

1. Name of Registrant:
Helen Braun Moroyoqui
P.O Box 535 (Address) Naco (City) Arizona (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
N/A (File Number) 35- (Control Number)

3. a. The well is located within the ____ ¼ ____ ¼ ____ ¼, Section 18, of Township 24 S N/S, Range R24 E/W, G & SRB & M, in the County of Cochise.
b. If in a subdivision: Name of subdivision (Parcel 102-57-122 and Parcel 102-57-123), Lot No. ____, Address ____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic.

5. If for irrigation use, number of acres irrigated from well ____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 180 ft. feet
b. Diameter of casing 8" inches
c. Depth of casing 120" feet
d. Type of casing Welded casing steel .
e. Maximum pump capacity 25 Static Op-sl gallons per minute.
f. Depth to water 130 feet below land surface.
g. Date well completed June (Month) 18 (Day) 69 (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒xxx
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE ____ SIGNATURE OF REGISTRANT Helen Braun Moroyoqui

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

STATE OF ARIZONA

DEPARTMENT OF
WATER RESOURCES

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Robert J. Ness (Name)
P.O. Box BB, Campbell, CA 95008 (Address)

2. Lessee or Operator (Name)
(Address)

3. Driller J.R. SHARP GENERAL CONTRACTORS (Name)
BOX 4520 322 NACO HWY.
BISBEE, ARIZ. 85603 432-4397
(Address)

4. Location of well: NE NW SW Sec 1 T24S R24E

5. Permit No. (if issued)

DESCRIPTION OF WELL

6. Total depth of hole 812 ft.
7. Type of Casing Steel
8. Diameter and length of casing 6 in. from 0 to 20, Open ~~in~~ from 20 to 812.
9. Method of sealing at reduction points
10. Perforated ~~from~~ 0 to ____, from ____ to ____, from ____ to ____
11. Size of cuts None Number of cuts per foot
12. If screen was installed: Length ____ ft. Diam ____ in. Type ____
13. Method of construction ____ (drilled), dug, driven, bored, jetted, etc.
14. Date started ~~1-17-85~~ 10-9-84 (Month day year)
15. Date completed 1-30-85 (Month day year)
16. Depth to water 588 ft. (If flowing well, so state.)
17. Describe point from which depth measurements were made, and give sea-level elevation if available. Top of Casing
18. If flowing well, state method of flow regulation
19. REMARKS:

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55-509127
Received ____ By ____
Entered 6.6.85 By ____
File No. D(24-24)1CBA

(Well log to appear on Reverse side)

RECEIVED
JUN 3 1985
DEPT OF
WATER RESOURCES

DWR-55-6-5/83

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	20	Soil
20	380	Light brown congl.
380	400	Grey limestone
400	812	Alternate thin bedded brown shale and sandstone.
	588	Standing water level.
0	20	6 5/8 O.D. x .188 steel pipe, grouted.
20	812	6" open hole.

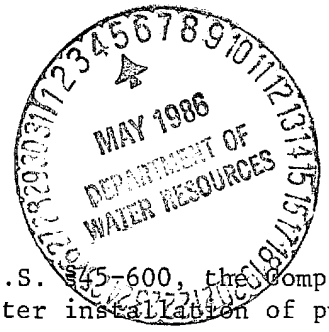
I hereby certify that this well was drilled by me (or under my supervison), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

J. R. SHARP GENERAL CONTRACTORS
BOX 4520 322 NACO HWY.
BISBEE, ARIZ. 85603 432-4597

Driller J. R. Sharp
Name
J. R. SHARP GENERAL CONTRACTORS
BOX 4520 322 NACO HWY.
Address
BISBEE, ARIZ. 85603 432-4597
City State Zip

Date 5-15-85

DEPARTMENT OF WATER RESOURCES
99 East Virginia
Phoenix, Arizona 85004



Registration No. 55-509127
Owner of Well Site WESTBAY LAND CO,
File No. D(24-24)1CBA

COMPLETION REPORT

1. Per A.R.S. 45-600, the Completion Report to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24S	24E	1	NE NW SW
Township	Range	Section	¼ ¼ ¼

EQUIPMENT INSTALLED:

Kind of pump SUBMERSIBLE
(Turbine, centrifugal, etc.)

Kind of power ELECTRIC (Electric, natural gas, gasoline, etc.) H.P. Rating of Motor 1½

Pumping Capacity 6 Gallons per minute Date installed 7/12/85

WELL TEST:

Test pumping capacity 6 Gallons per minute Date Well Tested 7/12/85

Method of Discharge Measurement VOLUME (Weir, orifice, current meter, etc.)

Static Groundwater Level 588' ft. Drawdown 3 ft.

Total Pumping Lift —— ft. Drawdown —— lbs (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

MAY 2, 1986
DATE

J. Sazabiz
Signature

WESTBAY LAND CO,
Address

316 CALIFORNIA AVE, #709
City State Zip

RENO, NV 89509

INPUT MAY 7 1986

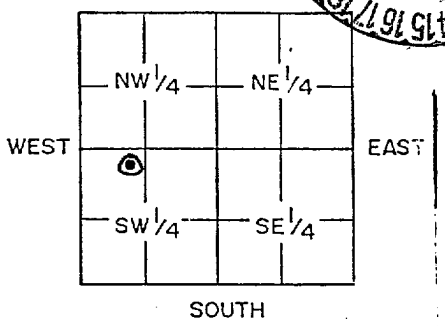
NOTE; THE WELL DRILLER, MR. J.R. SHARP DIED SHORTLY AFTER INSTALLING THE PUMP, THE ABOVE DATA SUPPLIED BY HIS FORMER OFFICE MANAGER,

DWR-55-7-3/84

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL OR DEEPEN WELL
OUTSIDE OF AN ACTIVE MANAGEMENT AREA

Section 45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management, a person may not drill or cause to be drilled any well or deepen an existing well without first filing a Notice of Intention to Drill with the Department.



INDICATE WELL LOCATION BY X
(Above diagram represents one 640 acre section)

WELL/LAND LOCATION:

1. Township 24S
2. Range 24E
3. Section 1
4. NE 1/4, NW 1/4, SW 1/4
   10 acre subdivision
5. County Cochise
6. Owner of well: Robt. Ness
   ~~Debra Souza~~
   Name
   P.O.Box 4520
   Address
   Bisbee, AZ 85603
   City State Zip
   Telephone 432-4597
7. Owner of land:
   Same
   Name
   Address
   City State Zip

DESCRIPTION OF WELL:

8. Diameter 5 inches
   Depth 200 feet
9. Type of casing steel
10. Design pump capacity:
    35 gallons per minute
11. Estimate of total annual pumping: 1 acre feet
12. Principal use of water:
    Domestic
    (Be Specific)
13. Other uses intended:
    None
    (Be Specific)
14. If for irrigation, state the number of acres to be irrigated:
    ✓ acres
15. Construction will start about:
    Aug '84
    Month Year

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
FILE NO. D(24-24)1CBA
FILED 9-4-84 By JB
INPUT 9-10-84 By SF
DUPLICATE MAILED 9-7-84 By JB
REGISTRATION NO. 55-509127
Non Expansion Area —
W/S 14 S/B

PLACE OF USE:

16. Township 24S
17. Range 24E
18. Section 1
19. Legal description of land NE NW SW
20. Type well:
    ✓ Exempt
    ___ Non-Exempt
21. Action Requested:
    Drill ✓ Deepen Replace
    55-
22. This notice filed by:
    Owner ✓
    Lessee
    See No. 6
    Name
    Address
    City State Zip
    Telephone
23. Driller's Name:
    J.R.Sharp Gen. Contrs.
    Name
    P.O.Box 4520
    Address
    Bisbee, AZ 85603
    City State Zip
    155 27262
    DWR ~~License~~ Number

GENERAL INSTRUCTIONS

1. Fill out this form in duplicate and send to 99 East Virginia, Suite 100, Phoenix, Az. 85004.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen or replace a well outside of an Active Management Area
4. If the well is a replacement or deepening of an existing well, state the registration number of the existing well in Item 21.
5. Construction standards for new and replacement wells and the deepening and abandonment of existing wells shall be in accordance with Department Rules and Regulations.

I state that this Notice is filed in compliance with ARS §45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well set forth on the reverse side of this form.

DATE 8-20-84 Signature of Person Filing [redacted]

DWR-55-41-10/83

VERIFIED

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Upon receipt of the return of this annotated Notice, the owner is authorized to proceed in drilling or deepening the well as set forth on this Notice.

2. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

3. Only one exempt well may be drilled or used to serve the same use at the same location.

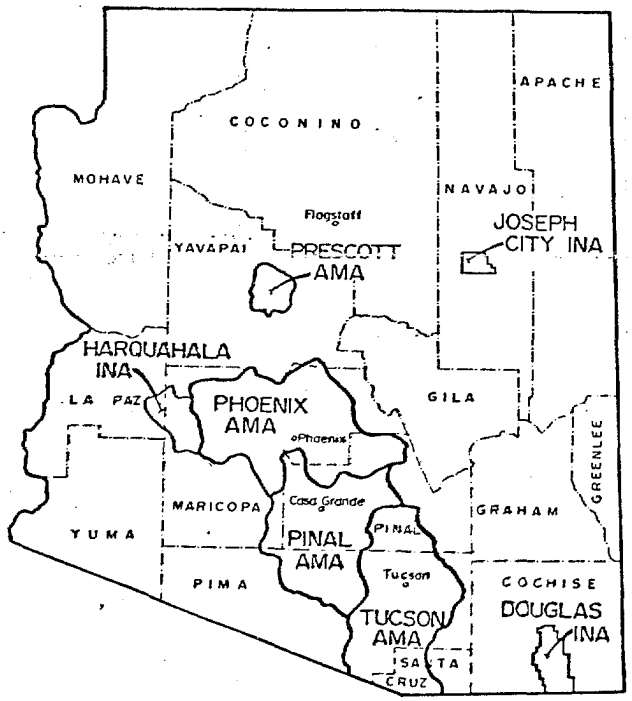
4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 2 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to ARS §45-434 or §45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of ARS §45-437.

5. The drilling or deepening of this well shall be completed within one (1) year of the date of this Notice.

6. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

7. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of the annotated copy of this Notice.

8. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.



J R SHARP GENERAL CONTRACTORS
P O BOX 4520
BISBEE AZ 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	509127
	THRU

NESS

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEE FOR NOTICE OF INTENTION TO		10.00
					DRILL A WELL	WRITER	PAYMENT
						GUESTS	1
						CHK NO	9976
					FILE#D(24-24)1CBA REG#55-509127	55-I	10.00
						TAX	0.00
						TOTL	10.00
						GEN.CHEK	10.00
						# 1826 A	15:13

CHECK# 9976
9-7-84 jb

TOTAL $ 10.00

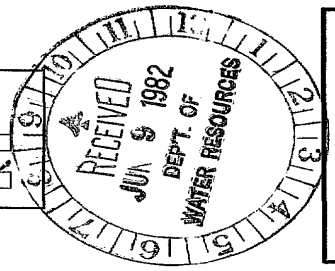
DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 ☑



FOR OFFICE USE ONLY
REGISTRATION NO. 55- 618611
FILE NO. D(24-24)17 a a
FILED 6-9-82 (DATE) AT 9:30 (TIME)
INA —
AMA —

1. Name of Registrant:
Alice J. Noble
El Rancho Motel Rt.1 Hwy. 92,, ~~Bisbee~~ Bisbee, Az. 85603
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35- (Control Number)

3. a. The well is located within the NE NE by M&B beg. 308'W of NE cor. of NE 4 Wof NE cpr ¼ ____ ¼ ____ ¼, Section 17, of Township 24 N/S, Range 24 E/W, G & SRB & M, in the County of Cochise of NE4 W 205' S 850'E 205' N 850'to beg.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well N/A feet
b. Diameter of casing Partially hand Dug inches
c. Depth of casing N/A feet
d. Type of casing N/A .
e. Maximum pump capacity N/A gallons per minute.
f. Depth to water N/A feet below land surface.
g. Date well completed N/A (Month) (Day) (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6-8-82 SIGNATURE OF REGISTRANT Alice J. Noble

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Alice Noble
El Rancho Apt. Motel
Hwy 92
Bisbee AZ 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	618611
	THRU

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing Wells	10.00	10.00
					File No. D(24-24)17aa		

WAITER PAYMENT
GUESTS 1
CHK NO 817
55-I 10.00
TAX 0.00
TOTL 10.00
GEN.CHEK 10.00

1707 A 14:14

Check No. 817
8-26-82 im

TOTAL $ 10.00

MICROFILMED

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 33589 Phoenix, Arizona 85067-3589
(602) 771-8500 • (800) 352-8488
www.azwater.gov

DSK

Request to Change Well Information

RECEIVED
NOV – 4 2008
WATER MGMT

- Review instructions prior to completing form in back or blue ink.
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

FILE NUMBER: D (24·24)2 BCC
WELL REGISTRATION NUMBER: 55 – 212483

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Russell NOteman
MAILING ADDRESS: P>O. Box 5203
CITY / STATE / ZIP CODE: Bisbee, AZ 85603
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER:
FAX:

Location of Well

WELL LOCATION ADDRESS (IF ANY): 2247 South Arziona

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24 E	2	NW ¼	SW ¼	SW ¼

LATITUDE			LONGITUDE		
° Degrees	' Minutes	" N Seconds	° Degrees	' Minutes	" W Seconds

METHOD OF LATITUDE/LONGITUDE (CHECK ONE)
☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Hand-Held ☐ *GPS: Survey-Grade

*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE)
☐ NAD-83 ☐ Other *(please specify)*:

COUNTY ASSESSOR'S PARCEL ID NUMBER			COUNTY WHERE WELL IS LOCATED
BOOK	MAP	PARCEL	
101	41	005	Cochise

Type of Request (CHECK ONE)

☐ Change of Well Drilling Contractor *(Fill out Section 2)*
☑ Change of Well Ownership *(Fill out Section 3)*
☐ Change of Well Information (location, use, etc.) *(Fill out Section 4)*

SECTION 2. REQUEST TO CHANGE WELL DRILLING CONTRACTOR ($10 Fee Required) — $10 FEE

- If drilling or abandoning a well, the Department must receive this request and issue authorization to the new drilling firm prior to the commencement of well drilling or abandonment.

Current Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL:
DWR LICENSE NUMBER:
TELEPHONE NUMBER:
FAX:

New Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL:
DWR LICENSE NUMBER:
ROC LICENSE CATEGORY:
TELEPHONE NUMBER:
FAX:

SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP ($10 Fee Required) — $10 FEE

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

Previous Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Russell Noteman
MAILING ADDRESS: P.O. Box 5203
CITY / STATE / ZIP CODE: Bisbee, AZ 85603
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER:
FAX:

New Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: **Thomas A. Bailey and Kathleen E. Bailey**
MAILING ADDRESS: P.O. Box 5445
CITY / STATE / ZIP CODE: BISBEE, AZ 85603
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER:
FAX:

NRC

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required) — NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: THOMAS A. BAILEY
SIGNATURE OF WELL OWNER:
DATE: 27 Oct 08

Printed: 10/30/2008 11:58:26 AM

Arizona Department of Water Resources

3550 N Central Ave.
Phoenix AZ 85012

Customer:

PIONEER TITLE AGENCY, INC
P.O.BOX 1900
SIERRA VISTA, AZ 85636

Receipt #: 09-1626
Office: MAIN OFFICE
Receipt Date: 10/31/2008
Sale Type: Mail
Cashier: WRCCC

Item No.	Index	AOBJ	Description	Ref ID	Qty	Unit Price	Ext Price
91	15238	4439-12	CHANGE OF WELL OWNERSHIP	55-212483	1	10.00	10.00
					RECEIPT TOTAL:		**10.00**

Payment type: CHECK
Amount Paid: $10.00

Check # 406501

Notes: RUSSELL NOTEMAN / THOMAS A. BAILEY AND KATHLEEN E. BAILEY

ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

3550 N. Central Avenue
Phoenix, Arizona 85012

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-212483

AUTHORIZED DRILLER: DRIVER DRILLING COMPANY LICENSE NO: 177

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: RUSSELL NOTEMAN 7041 S JAXEL HEREFORD, AZ 85615

THE WELL(S) IS/ARE TO BE LOCATED IN THE:
SW ¼ OF THE SW ¼ OF THE NW ¼ SECTION 2 TOWNSHIP 24 SOUTH RANGE 24 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 101-41-005

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 1ST DAY OF JUNE, 2007

WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue, Phoenix, Arizona 85012
Telephone (602) 771-8500
Fax (602) 771-8691

June 05, 2006

Janet Napolitano
Governor

Herbert R. Guenther
Director

RUSSELL NOTEMAN
7041 S JAXEL
HEREFORD, AZ 85615

Registration No. 55-212483
File No. D(24-24) 2 BCC

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well that you recently filed with this Department pursuant to A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed or otherwise provided a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card, which must be displayed on the drill rig during drilling.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the proposed well, you may not proceed with drilling until you file an amended NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the amended NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DWR form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed is a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55) within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at <http://www.water.az.gov/adwr/content/forms/default.htm#NOI>.

Sincerely,

T. Hancock

Tiffany Hancock
NOI Unit
Water Management Support Section

Enclosures

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA	B 76 SB
RECEIVED DATE 6/2/06	WS 11
ISSUED DATE 6/5/06	WQARF CERCLA

FILE NUMBER D(24 24)2BCC
WELL REGISTRATION NUMBER 55-212483

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☒ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ R.S.

TELEPHONE NUMBER: 520-432-9442

DATE: June 1, 2006

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE June 1 2006
BY Carlos Diaz R.S.

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz R.S.

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

☒ Exempt
(Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)

☐ Non-Exempt
(Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 10 Gallons Per Minute

Proposed Action

CHECK ONE

☒ Drill New Well
☐ Deepen
☐ Replace
☐ Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55-

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	2	NW ¼	SW ¼	SW ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
101	41	005	5

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: COCHISE

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: RUSSELL NOTEMAN

MAILING ADDRESS: 7041 JOXEL RS

CITY / STATE / ZIP CODE: HEREFORD AZ 85615

CONTACT PERSON NAME AND TITLE: RUSS OWNER CELL 5202663076

TELEPHONE NUMBER: 520 8038044

FAX: 803-8045

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL

MAILING ADDRESS

CITY / STATE / ZIP CODE

CONTACT PERSON NAME AND TITLE

TELEPHONE NUMBER

FAX

RECEIVED JUN - 2 2006 COCHISE WATER MGT

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-816).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55-212483

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: DRIVER DRILLING

DWR LICENSE NUMBER: 177

ROC LICENSE CATEGORY: K-53

TELEPHONE NUMBER: 520-459-3496

FAX: 520-459-8328

MAILING ADDRESS: P.O.BOX 4345

CITY / STATE / ZIP CODE: HUACHUCA CITY AZ 85616

SECTION 6. WATER / SITE INFORMATION

Principal Use **of Water** CHECK ONE	***Other Uses*** **of Water** CHECK ALL THAT APPLY
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☒ Domestic	☒ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify):*	☐ Other *(please specify):*

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

DATE CONSTRUCTION IS TO BEGIN:

Borehole			Casing													
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (T)				PERFORATION TYPE (T)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	20	12.25	+1	20	8.5	X*										Cement
20	400	8	0	400	5.5		X							X		

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

RECEIVED
JUN - 2 2006
AZ DEPT. OF WATER RESOURCES

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: RUSSELL NOTEMAN

SIGNATURE OF WELL OWNER: [signature]

DATE: 5/9/06

SIGNATURE OF LANDOWNER, IF APPLICABLE (SEE INSTRUCTIONS)

DATE

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 212483

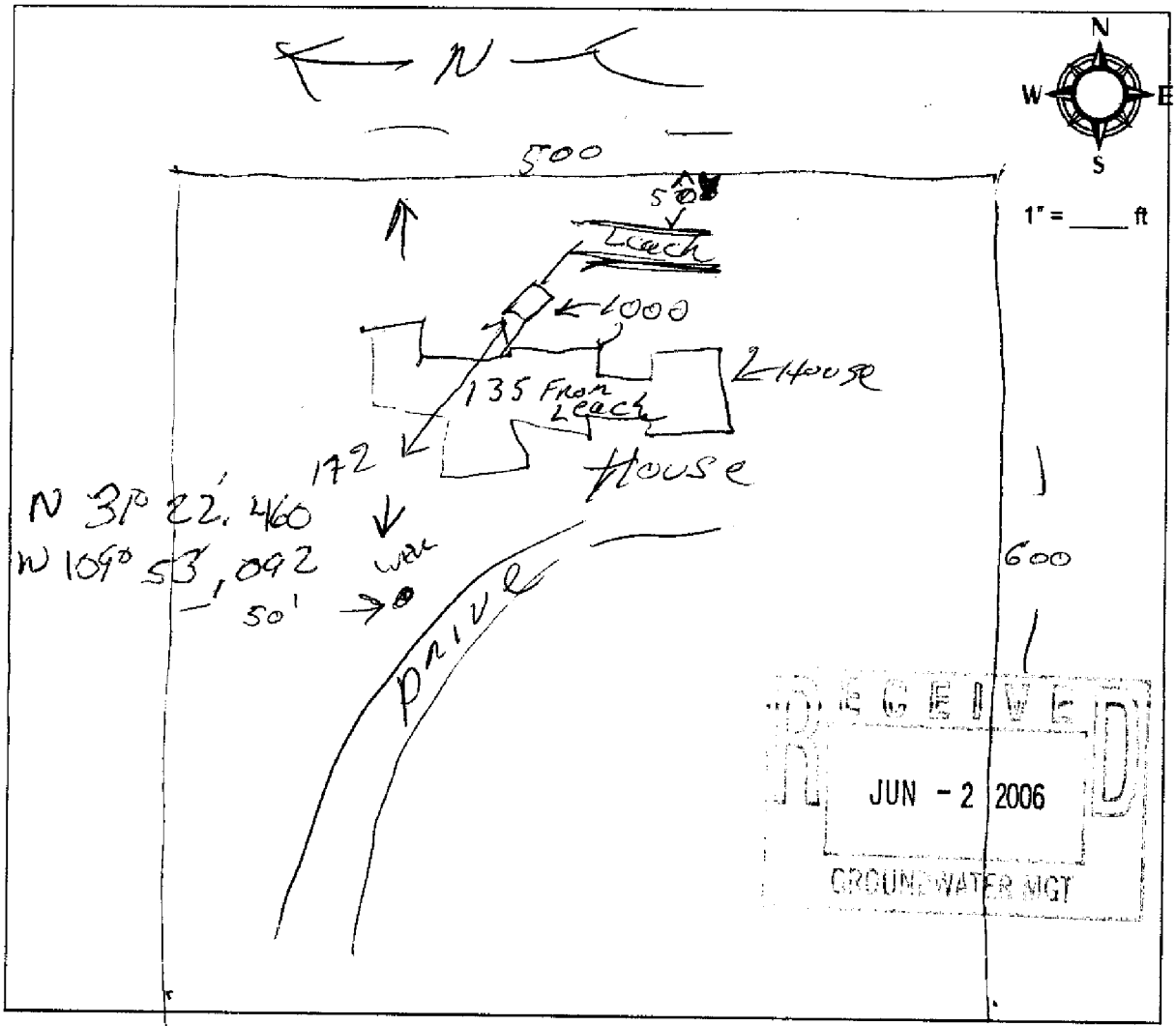
CHECK ONE: ☒ FILING MANUALLY
☐ FILING ELECTRONICALLY* *DRILLER'S E-MAIL ADDRESS: _____

*COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL CODE	COUNTY APPROVAL CODE
If applicant is filing this NOI electronically via the ADWR website and County approval is required, please indicate approval by providing a County Approval Code.	

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER BOOK	MAP	PARCEL
Russell Noteman	101	41	005 (54C

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE	Official County or Local Seal or Stamp
CARLOS DIAZ R.S.	APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
COUNTY OR LOCAL AUTHORITY SIGNATURE	DATE June 1, 2006
TELEPHONE NUMBER 520-432-9442 DATE June 1, 2006	BY Carlos Diaz R.S.

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA		B	SB
RECEIVED	DATE	WS	
ISSUED	DATE	WQARF	CERCLA

FILE NUMBER

WELL REGISTRATION NUMBER

55 - 212483

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☒ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ RS

TELEPHONE NUMBER | DATE

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DEPARTMENT
DATE June 1 2006
BY Carlos Diaz RS

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz RS

DRIVER DRILLING, INC. 01-02
PH. 520-459-3496
P.O. BOX 4345
HUACHUCA CITY, AZ 85616

4964

Date 5-24-06

91-170/1221 AZ
8524

Pay to the Order of ADWR

$ 100.00

One Hundred & 00/100 — Dollars

Bank of America

ACH R/T 122101706

For [redacted]

160 ACRE	40 ACRE	10 ACRE
NW ¼	SW ¼	SW ¼

PARCEL	# OF ACRES
005	5

160 ACRE	40 ACRE	10 ACRE
¼	¼	¼

SE

SECTION 3. OWNER INFORMATION

Well Owner	**Landowner** (if different from Well Owner)
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: RUSSELL NOTEMAN	FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL
MAILING ADDRESS: 7041 JOXEL RS	MAILING ADDRESS: SAME
CITY / STATE / ZIP CODE: HEREFORD AZ 85615	CITY / STATE / ZIP CODE
CONTACT PERSON NAME AND TITLE: RUSS OWNER COLE	CONTACT PERSON NAME AND TITLE
TELEPHONE NUMBER: 520 8038044 FAX: 803-804-5	TELEPHONE NUMBER FAX: 5202663076

RECEIVED
JUN - 2 2006
GROUNDWATER MGT

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-816).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

#2

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Naco Sanitary Dist.
P.O. Bx 755 Naco Az 85620
Name / Mailing Address

2. Driller Harry Bliss — H.B. Drlg
P.O. Bx 4166 Huachuca City, Az 85616
Name / Mailing Address

3. Location of well: T-24S R-23E S-13 NWx NWx NE

4. Permit No. _____ (If issued)

DESCRIPTION OF WELL

5. Total depth of hole 120 ft.

6. Type of casing Steel and PVC

7. Diameter and length of casing 12" steel in. from 0 to 62, 4" PVC in from 55 to 120.
4" steel + 2-5 ft.

8. Method of sealing at reduction points Bentonite Tablets and cement grout

9. Perforated from 115 to 75, from ____ to ____, from ____ to ____.

10. Size of cuts .20 Number of cuts per foot _____

11. If screen was installed: Length 40 ft. Diam 4 in. Type 4" PVC Flush Thread

12. Method of construction Test hole 6" air drilled Surface casing and finished well Forward mud
drilled, dug, driven, bored, jetted, etc

13. Date started April (Month) 26 (Day) 1990 (Year)

14. Date completed May (Month) 12 (Day) 1990 (Year)

15. Depth to water 84.54 ft. (If flowing well, so state)

16. Describe point from which depth measurements were made, and give sea-level elevation if available ground level elevation 4527

17. If flowing well, state method of flow regulation: N/A

18. Remarks: Bleu 10 gpm
Monitor Well No. 2

DO

55-527587
REG. No D(24-23)13abb

File No

Entered ENTERED JUN 1 1990 By

RECEIVED
MAY 25 1990
OPERATIONS DIV.

DWR-55-55-2/89

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	1	Sand Topsoil
1	8	brown clayey sand
8	13	dry gravel sand
13	87	clayey sand with gravel
87	120	clayey gravel with sand 1st water

I hereby certify that this well was drilled by me (or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller [signature]
Name

P.O. Box 4166
Address

Huachuca City, Az 85616
City State Zip

Date 5-14-90

[illegible]

DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

Registration No. 55-527587

File No. D (24-23) 13 abb

COMPLETION REPORT

1. Per **A.R.S. §45-600**, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

T24S	R23E	13	NW NW NE
Township	Range	Section	¼ ¼ ¼

EQUIPMENT INSTALLED:

Kind of pump Vertical Submersible
Turbine, centrifugal, etc.

Kind of power Electric H.P. Rating of Motor 3/4
Electric, natural gas, gasoline, etc.

Pumping Capacity 15 Date pump installed: May 11, 1990
Gallons per minute

WELL TEST:

Test pumping capacity 15 Date Well Tested: 5/11/1990
Gallons per minute

Method of Discharge Measurement Timed with Pail
Weir, orifice, current meter, etc.

Static Groundwater Level 84.54 ft. Drawdown 8 ft.

Total Pumping Lift 107 ft. Drawdown N/A lbs.
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Naco Sanitary District
Print Well Owner's Name

11-20-90, 1990
Date

Chuck Williams - Flood Control District OPS MANGER
Signature of Well Owner or Agent

BOX 1837
Address

BISBEE AZ 85603
City State Zip

NOV 26 1990

DWR-55-56-2/88

ENTERED NOV 30 1990

~~MONITOR/PIEZOMETER WELL~~ DEPARTMENT OF WATER RESOURCES (DWR) MONITOR/PIEZOMETER WELL
NOTICE OF INTENTION TO DRILL
MONITOR/PIEZOMETER WELL

FILING FEE: $10.00

Section 45-596, Arizona Revised Statutes and Rule R12-15-817 provide: Prior to drilling a monitor or piezometer well, the well owner or lessee shall file a Notice of Intention to Drill on a form provided by the Department.

WELL/LAND LOCATION

1. Township 24S N/S
   Range 23E E/W
   Section 13
   List 10-acre subdivision:
   NW ¼, NW ¼, NE ¼

2. County Cochise

3. Applicant:
   Naco Sanitary District
   Name
   P. O. Box 755
   Address
   Naco Az 85620
   City State Zip

4. Chuck Williams
   Name of Contact Person
   Phone: 432-5471 Ext: 650
   Agency: Cochise County FCD

5. Owner of Well:
   Naco Sanitary District
   Name
   P. O. Box 755
   Address
   Naco Az 85620
   City State Zip

6. Purpose of well drilled pursuant to this Notice:
   Monitor X
   Piezometer

7. If for Deepening; Well
   Registration No. 55-

8. Owner of land:
   Arizona Water Co,
   Name
   44 Main St.
   Address
   Bisbee Az 85603
   City State Zip
   432-5321
   Telephone No.

9. Construction will start:
   March 1990
   Month Day Year

10. Period well will remain in use: 30 months/years

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. D(24-23)13abb
Filed: 3-21-90 By ds
Input: ENTERED MAR 28 1990 By
Duplicate Mailed: 3-23-90 By ds
Registration No. 55-527587
AMA/INA
W/S 11 S/B

11. For monitoring wells, is pump equipment to be installed? Yes

(a) If so, what will be the design pump capacity 15 GPM in gallons per minute?

(b) Type of pump (submersible, turbine, etc.)
Vertical Submersible Turb

(c) What use will be made of the water?
Monitor ground water quality

12. Proposed method of abandonment of well after project is completed:
~~Capping~~
R12-15-816

13. Drilling firm:
L.B. Drilling
Name
P.O. Box 4166
Address
Huachuca City, AZ 85616
City State Zip
D.W.R. -344
076141-005 A4
DWR License & ROC Nos.
058233-006 (C-53
(continued on reverse)

GENERAL INSTRUCTIONS

Complete this form in DUPLICATE and mail to Department of Water Resources, 15 South 35th Avenue, Phoenix, Arizona 85007. FILING FEE MUST ACCOMPANY THIS NOTICE.

I state that this Notice is filed in compliance with Rule R12-15-809, and is complete and correct to the best of my knowledge and belief and that I understand the conditions set forth on the reverse side of this form.

RECEIVED MAR 21 1990 OPERATIONS

MAR 1990 HYDROLOGY APPROVED

DATE March 14, 1990

NACO SANITARY DISTRICT
Signature of Applicant President

DWR 55-44-9/88

13. Is this well to monitor existing contamination?_____ Potential contamination? X
Please explain Monitoring potential contamination from Naco Wastewater Treatment Plant.

14. If construction plans have been coordinated with Az. Dept. Health Services, Environmental Health Division, who is the agency contact? Dennis Pontius, ADEQ
If construction plans have been coordinated with Az. Dept. Water Resources, Hydrology/ Remedial Action Division, who is the division contact?_____

15. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Rotary

b) Borehole diameters:
16 inches from 0 feet to 80 feet
12 inches from 80 feet to 150 feet
____ inches from ____ feet to ____ feet

c) Casing materials (PVC, steel, stainless steel, etc.):
material Steel diameter 12 inches from 0 feet to 80 feet
material PVC diameter 4 inches from 0 feet to 95 feet
material ____ diameter ____ inches from ____ feet to ____ feet

d) Method of sealing at reductions_____

e) Annular seal materials (cement, grout, etc.) and method of placement(tremied,circulated:)
material Concrete method Tremied from 0 feet to 80 feet
material ____ method ____ from ____ feet to ____ feet
material ____ method ____ from ____ feet to ____ feet

f) Gravel packs (state material, and whether natural or artificial):
material Natural D50 pases No. 6 screen from 78 feet to 150 feet
material ____ from ____ feet to ____ feet

g) Perforations (if pre-manufactured, please give specs of perforations or screens):
type Nominal width 0.02", 3.5 in^2/Ft. from 95 feet to 129 feet
type ____ from ____ feet to ____ feet

h) Method of well development (bail, air lift, surge) airlift

i) Will surface or conductor casing extending above grade be used to protect the aquifer from additional surface contaminants during drilling and construction? Yes

16. Include detailed construction diagram, if available.

17. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes__ No X
If yes, a request for a variance must accompany this application pursuant to R12-15-820.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with DWR rules R12-15-811 and R12-15-816.
II. Drilling of the well shall be completed within one (1) year after the date of Notice.
III. A Well Driller Report, DWR-55-6-5/83, is required within 30 days of completion of drilling. A Completion Report, DWR-55-7-3/83, is required to be filed with the Department within 10 days after installation of pump equipment for monitor wells.
IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the minimum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual amount of 10 acre feet total.
V. Special construction standards required pursuant to R12-15-821:_____

NACO SANITARY DISTRICT
BOX 755
NACO, AZ 85620

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 S. 15TH AVENUE
PHOENIX, ARIZONA 85007

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	527587
	THRU

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEE FOR NOI MONITOR		10.00
					REG. NO. 55-527587		
					FILE NO. D(24-23)13abb		
					CHECK NO. 1089		
					3-20-90 dd		

PAID

TOTAL $ 10.00

#3

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Naco Sanitary Dist.
   Name
   P.O. Bx 755 Naco Az 85620
   Mailing Address
2. Driller Larry Bliss — L.B. Drlg
   Name
   P.O. Bx 4166 Huachuca City Az 85616
   Mailing Address
3. Location of well: T-24S R-23E S-13 SWx NWx NW
4. Permit No. _____
   (If issued)

DESCRIPTION OF WELL

5. Total depth of hole 100 ft.
6. Type of casing Steel and PVC
7. Diameter and length of casing 12" steel in. from 0 to 40, 4" PVC in from 35 to 100.
   4" steel +2-3 ft.
8. Method of sealing at reduction points bentonite Tablets and cement grout
9. Perforated from 95 to 55, from ____ to ____, from ____ to ____.
10. Size of cuts .20 Number of cuts per foot _____
11. If screen was installed: Length 40 ft. Diam 4 in. Type 4" PVC flush Thread
12. Method of construction Test hole 6" air Surface casing and finished well Forward Mud
    drilled, dug, driven, bored, jetted, etc
13. Date started May (Month) 7 (Day) 1990 (Year)
14. Date completed May (Month) 12 (Day) 1990 (Year)
15. Depth to water 66.32 ft. (If flowing well, so state)
16. Describe point from which depth measurements were made, and give sea-level elevation if available groundlevel elevation 4515
17. If flowing well, state method of flow regulation: N/A
18. Remarks: Blew 20 gpm
    Monitor Well No. 3

DO
55-527586
D(24-23)13bbc
REG. No.

File No. _____

Entered ENTERED JUN 1

RECEIVED
MAY 25 1990
OPERATIONS DIV.

ENTERED JUN 1 1990

DWR-55-55-2/89

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	4	clayey sand
4	9	dry sand and gravel
9	17	clayey sand
17	31	gravelly rocky clayey sand
31	73	clayey gravel with sand
		46-48 black rock
		66-68 rock
73	74	Rock 66-80 1st water
74	83	brown sand
83	100	clayey gravel with sand

I hereby certify that this well was drilled by me (or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller [signature] Name

P.O. Bx 4166 Address

Huachuca City, Az 85616 City State Zip

Date 5-14-90

DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

Registration No. 55-527586

File No. D (24-23) 13 bbc

COMPLETION REPORT

1. Per **A.R.S. §45-600**, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24S	23E	13	SW ¼ NW ¼ NW ¼
Township	Range	Section	

EQUIPMENT INSTALLED:

Kind of pump Vertical Submersilbe
(Turbine, centrifugal, etc.)

Kind of power Electric (Electric, natural gas, gasoline, etc.) H.P. Rating of Motor 3/4

Pumping Capacity 15 (Gallons per minute) Date pump installed: May 10, 1990

WELL TEST:

Test pumping capacity 15 (Gallons per minute) Date Well Tested: 5/10/1990

Method of Discharge Measurement Timed with Pail
(Weir, orifice, current meter, etc.)

Static Groundwater Level 66.32 ft. Drawdown 6 ft.

Total Pumping Lift 86 ft. Drawdown N/A (Flowing Well) lbs.

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Naco Sanitary District
Print Well Owner's Name

11-20, 1990
Date

Chuck Willis - Flood Control Asst. Ops Mgr
Signature of Well Owner or Agent

BOX 1837
Address

BISBEE AZ 85603
City State Zip

NOV 26 1990

DWR-55-56-2/88

ENTERED NOV 29 1990

MONITOR/PIEZOMETER WELL

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL
MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

FILING FEE: $10.00

Section 45-596, Arizona Revised Statutes and Rule R12-15-817 provide: Prior to drilling a monitor or piezometer well, the well owner or lessee shall file a Notice of Intention to Drill on a form provided by the Department.

WELL/LAND LOCATION

1. Township 24S N/S
   Range 23E E/W
   Section 13
   List 10-acre subdivision:
   SW ¼, NW ¼, NW ¼

2. County Cochise

3. Applicant:
   Naco Sanitary Dist.
   Name
   P. O. Box 755
   Address
   Naco, Az. 85620
   City State Zip

4. Chuck Williams
   Name of Contact Person
   Phone: 432-5471 Ext: 650
   Agency: Cochise County FCD

5. Owner of Well:
   Naco Sanitary Dist.
   Name
   P. O. Box 755
   Address
   Naco Az 85620
   City State Zip

6. Purpose of well drilled pursuant to this Notice:
   Monitor X
   Piezometer

7. If for Deepening; Well Registration No. 55-

8. Owner of land:
   Naco Sanitary Dist.
   Name
   P. O. Box 755
   Address
   Naco, Az. 85620
   City State Zip
   432-4312
   Telephone No.

9. Construction will start:
   March 1990
   Month Day Year

10. Period well will remain in use: 30 months/years

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

File No. D(24-23)13 bbc

Filed: 3-21-90 By ds

Input: ENTERED MAR 28 1990 By

Duplicate Mailed: 3-23-90 By ds

Registration No. 55-527586

AMA/INA —

W/S 11 S/B —

11. For monitoring wells, is pump equipment to be installed? yes

(a) If so, what will be the design pump capacity 15 GPM in gallons per minute?

(b) Type of pump (submersible, turbine, etc.)
Vertical Submersible Turb

(c) What use will be made of the water?
Monitor ground water quality

12. Proposed method of abandonment of well after project is completed:
~~Capping of well~~
R12-15-816

13. Drilling firm:
L.B. Drilling
Name
P.O. Box 4166
Address
Huachuca City, AZ 85616
City State Zip
D.W.R. -344
076141-005(A4
DWR License & ROC Nos.
058233-006(C-53

(continued on reverse)

GENERAL INSTRUCTIONS

Complete this form in DUPLICATE and mail to Department of Water Resources, 15 South 15th Avenue, Phoenix, Arizona 85007. FILING FEE MUST ACCOMPANY THIS NOTICE.

I state that this Notice is filed in compliance with Rule R12-15-809, and is complete and correct to the best of my knowledge and belief and that I understand the conditions set forth on the reverse side of this form.

MAR 1990 HYDROLOGY APPROVED

RECEIVED MAR 21 1990 OPERATIONS DIV.

DATE March 14, 1990

NACO SANITARY DISTRICT

Signature of Applicant President

DWR 55-44-9/88

13. Is this well to monitor existing contamination?_____ Potential contamination? X
Please explain Monitoring potential contamination from Naco Wastewater Treatment Plant

14. If construction plans have been coordinated with Az. Dept. Health Services, Environmental Health Division, who is the agency contact? Dennis Pontius, ADEQ
If construction plans have been coordinated with Az. Dept. Water Resources, Hydrology/ Remedial Action Division, who is the division contact?_____

15. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) rotary

b) Borehole diameters:
16 inches from 0 feet to 80 feet
12 inches from 80 feet to 150 feet
____ inches from ____ feet to ____ feet

c) Casing materials (PVC, steel, stainless steel, etc.):
material Steel diameter 12 inches from 0 feet to 80 feet
material PVC diameter 4 inches from 0 feet to 95 feet
material ____ diameter ____ inches from ____ feet to ____ feet

d) Method of sealing at reductions Rubber Ring Seals

e) Annular seal materials (cement, grout, etc.) and method of placement(tremied,circulated:)
material Concrete method Tremied from 0 feet to 80 feet
material ____ method ____ from ____ feet to ____ feet
material ____ method ____ from ____ feet to ____ feet

f) Gravel packs (state material, and whether natural or artificial):
material Natural D50 passes #6 Screen from 78 feet to 150 feet
material ____ from ____ feet to ____ feet

g) Perforations (if pre-manufactured, please give specs of perforations or screens):
type Nominal Width = 0.02" 3.5in^2/Ft. from 95 feet to 129 feet
type ____ from ____ feet to ____ feet

h) Method of well development (bail, air lift, surge) Air Lift

i) Will surface or conductor casing extending above grade be used to protect the aquifer from additional surface contaminants during drilling and construction? Yes

16. Include detailed construction diagram, if available.

17. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes__ No X
If yes, a request for a variance must accompany this application pursuant to R12-15-820.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with DWR rules R12-15-811 and R12-15-816.
II. Drilling of the well shall be completed within one (1) year after the date of Notice.
III. A Well Driller Report, DWR-55-6-5/83, is required within 30 days of completion of drilling. A Completion Report, DWR-55-7-3/83, is required to be filed with the Department within 10 days after installation of pump equipment for monitor wells.
IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the minimum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual amount of 10 acre feet total.
V. Special construction standards required pursuant to R12-15-821:_____

NACO SANITARY DISTRICT
BOX 755
NACO, AZ 85620

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 S. 15TH AVENUE
PHOENIX, ARIZONA 85007

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	527586
	THRU

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEE FOR NOI MONITOR		10.00
					REG. NO. 55-527586		
					FILE NO. D(24-23)13bbc		
					CHECK NO. 1089		
					3-23-90 ds		

PAID

TOTAL $ 10.00

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 9 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11 13

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 627696
FILE NO. D(24-24)11d
FILED JUN 9 1982 (DATE) AT 1pm (TIME)
INA
AMA

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☒
NON-EXEMPT WELL — $10.00 ☐

1. Name of Registrant:
Dominguez, Salim and Naco Water Co.
128D Street (Address) Naco (City) Arizona (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35- (Control Number)

3. a. The well is located within the ____¼ ____¼ SExx¼, Section 11, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Dillard, Lot No. portion 4, Address Bisbee Junction, Az.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
domestic

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____ (Address) _____ (City) _____ (State) _____ (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 175 feet
b. Diameter of casing 10 inches
c. Depth of casing 86 feet
d. Type of casing steel .
e. Maximum pump capacity under 35 gallons per minute.
f. Depth to water 104 feet below land surface.
g. Date well completed _____ (Month) _____ (Day) 1960 (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6/8/82 SIGNATURE OF REGISTRANT By Naco Water Co. & Salim Dominguez
Wilford R. Richardson
Wilford R. Richardson, Attorney

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

CHANGE OF WELL INFORMATION

Well Registration No. 55-627696 File No. D(24-24)11D
(location)

I/We request the following well information be changed:

Change water shed to: Whitewater Draw

Date: _____ Signature of Current Well Owner _____

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, _____, state that I am (no longer) the (new)
(please print)
owner of the well described below:

Township _____ Range _____ Section _____; _____ ¼ _____ ¼ _____ ¼

Well Registration No.55- _____ File No. _____
(location)

PRINT Previous Owner's Name	PRINT New Owner's Name
Address	Address
City State Zip	City State Zip

MICROFILMED JAN 21 1991

Dated: _____ Signature of New Owner _____

ENTERED JAN 21 1991

NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

DWR-55-71-3/90

D(24-24)10 DDD

Arizona Department of Water Resources
Records Management Section
500 N. 3rd Street • Phoenix, Arizona 85004
(602) 417-2405 • (800) 352-8488
www.water.az.gov

Notice of Well Capping

NO FEE

- Review instructions prior to completing form in black or blue ink.
- Within five (5) days after capping an open well, the owner of the well shall file this Notice.

RECEIVED
APR 22 2005

FILE NUMBER

WELL REGISTRATION NUMBER
55 -626702, 55-627685

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Type

CHECK ONE

- ☐ Domestic
- ☐ Stock
- ☐ Irrigation
- ☐ Municipal
- ☐ Monitor / Piezometer
- ☐ Geotechnical
- ☐ Mineral Exploration
- ☐ Other (*please specify*):

Location of Well

WELL LOCATION ADDRESS (IF ANY)
Bisbee Jct.

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
T24S	R24E	10	SE ¼	SE ¼	SE ¼

LATITUDE			LONGITUDE		
31 ° Degrees	21 ' Minutes	4.9 "N Seconds	109 ° Degrees	53 ' Minutes	14.6 "W Seconds

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL

COUNTY WHERE WELL IS LOCATED
Cochise

SECTION 2. OWNER AND FIRM INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
Union Pacific Railroad Company

MAILING ADDRESS
1400 Douglas Street, Stop 1030

CITY / STATE / ZIP CODE
Omaha, NE 68179

CONTACT PERSON NAME AND TITLE
Jim Gorley, Sr. Engineer, Cameron-Cole, LLC

TELEPHONE NUMBER	FAX
402-778-4600	402-778-4600

Person or Firm Installing the Cap

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
Layne Christensen Company

MAILING ADDRESS
12030 E. Riggs Road

CITY / STATE / ZIP CODE
Chandler, AZ 85249

CONTACT PERSON NAME AND TITLE
Jim Hausladen, District Manager

TELEPHONE NUMBER	FAX
480-895-9404	480-895-8699

SECTION 3. CASING AND CAPPING INFORMATION

DATE WELL WAS CAPPED
3/29/05

Surface Casing

OUTER DIAMETER (inches)	MATERIAL (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE

TYPE OF CAP
5/8" Steel Plate

MANUFACTURER OF CAP, IF ANY

REMARKS

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

SIGNATURE OF WELL OWNER
James M. Gorley, Cameron-Cole, LLC

DATE
4/7/05

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 9 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 627685
FILE NO. D(24-24)10ddd
FILED JUN 9 1982 (DATE) AT 1 pm (TIME)
INA
AMA

1. Name of Registrant:
Naco Water Co. & Salim Dominguez
128D Street (Address) Naco (City) Az. (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the ~~NW~~ SE ¼ ~~SW~~ SE ¼ SE ¼, Section 10, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address Bisbee Junction, Az.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
municipal

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 379 feet
b. Diameter of casing 16 inches
c. Depth of casing 379 feet
d. Type of casing steel .
e. Maximum pump capacity 180 gallons per minute.
f. Depth to water 216 feet below land surface.
g. Date well completed _____ (Month) _____ (Day) 1926 (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒.
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
Attach additional sheet if necessary.

9. DATE 6-8-82 SIGNATURE OF REGISTRANT Naco Water Co. & Salim Dominguez
By Wilford R. Richardson

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

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INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

RICHARDSON & MORTENSEN
ATTORNEYS AT LAW
BOX 247
SAFFORD AZ 85546

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

FOR: CLARK, DOMINGUEZ, MAYBERRY, MCKEEN, SMITHSON & WATSON

(10)

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	627681
	THRU
55	627690

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing Wells	10.00	100.00
					File Numbers:		
					B CLARK - - - - - D(8-17)17 dcd S DOMINGUEZ - - - D(24-24)I9 bab		
					D(24-24)18 cd D(24-24)18 add D(24-24)10 dcb		
					J MAYBERRY- - - - D(18-21)6 abb D(17-21)31 ada		
					J MCKEEN - - - - D(8-26)7 aaa C SMITHSON - - - D(8-26)7 aad		
					W WATSON - - - - D(10-16)16 dac		

WRITER PAYMENT
GUESTS 10
CHK NO 3381
55-I 100.00
TAX 0.00
TOTL 100.00
GEN.CHEK 100.00

4554 A 14:17

11/19/82 jc Check No. 3381 TOTAL $ 100.00

MICROFILMED

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

RECEIVED
OCT - 5 1995
RECORDS MGT

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. WEBER DRILLING
RTE 1 BOX 276B
ST DAVID, AZ 85630

2. Owner Name: SOUTHERN PACIFIC TRANS. CO.
Address: NACO AZ
Street City State Zip

3. Location: 24 N(S) 24 E(W) 10 ¼ ¼ ¼
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55-551849 (Required)

5. Permit No. (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 462 ft.
7. Type of casing STEEL
8. Diameter and length of casing 10 in. from 0 to 20.8 in from 0 to 462
9. Method of sealing at reduction points WELDED
10. Perforated from 322 to 462 ,from to from to
11. Size of cuts 1/8 x 2 1/2" Number of cuts per foot 20
12. If screen was installed: Length ft. Diam in. Type
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started AUG 22 1995
Month Day Year
15. Date completed AUG 24 1995
Month Day Year
16. Depth to water 375 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
GROUND LEVEL
18. If flowing well, state method of flow regulation:
19. Remarks:

DWR-55-55-7/95 (Rev.)

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-551849
File No. D(24-24)10 DDD
Received By
Entered ENTERED OCT 10 1995 By

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	19	CALICHE
19	375	LIMESTONE
375	440	SAND STONE
440	462	LIMESTONE
		FIRST WATER 375'
		2ND WATER 420'
		STATIC 280'

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: Ronald E. Weber

WEBER DRILLING
RT. 1 BOX 276B
ST. DAVID, AZ. 85630

Street

City State Zip Phone No.

Signature of Driller Date 10/2/95

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001- 0458
FOR INFORMATION: CALL MONICA ORTIZ AT (602)417-2470

RECEIVED
DEC 10 1999
GROUNDWATER MGT

REQUEST FORM TO CHANGE WELL INFORMATION
OWNERSHIP * DRILLER

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-045. In accordance with A.R.S. § 45-113, please submit the applicable fee. NOTE: A.R.S. §45-593 (C) requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)

NOTE: If the location of the proposed well changes after drilling authority has been issued, **attach a $10.00 reissue fee for each** of the drilling authorities to be changed.

WELL REGISTRATION NO. 55-_____ **FILE NO:**_____

I/We request the following well information be changed: _____

_____

Date_____ Signature of Current Well Owner_____
***Note: This information is on your copy of the Notice of Intent to Drill.**

2. STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, G. L. PINKER, state that ~~I am~~ the ~~Previous~~/New Owner of the well described below: UNION PACIFIC RAILROAD COMPANY IS

SE ¼ SE ¼ SE ¼ of Section 10 Township 24 N/S Range 24 E/W
10 Acre 40 Acre 160 Acre
Assessor's tax parcel number of the parcel on which the well is located: Book_____ Map_____ Parcel_____.

Well Registration No. 55- 551849 File No. 0(24-24)10 DDD (if known)

SOUTHERN PACIFIC
PRINT Previous Owner's Name

1200 CORPORATE CENTER
Mailing Address
MONTEREY PARK CA 91754
City State Zip

UNION PACIFIC RAILROAD CO.
1416 DODGE ST RM 930
OMAHA NE 68179
(402) 271- 6572 (JOEL STRAFELDA)

_____ _____
Telephone Number Telephone Number

Signature of ~~Previous~~/New Well Owner _____ **Date** 11/24/99

DWR 55-71a (Rev 1/99)

ANSWERED DEC 13 1999

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
FOR INFORMATION: CALL MONICA ORTIZ AT (602)417-2470

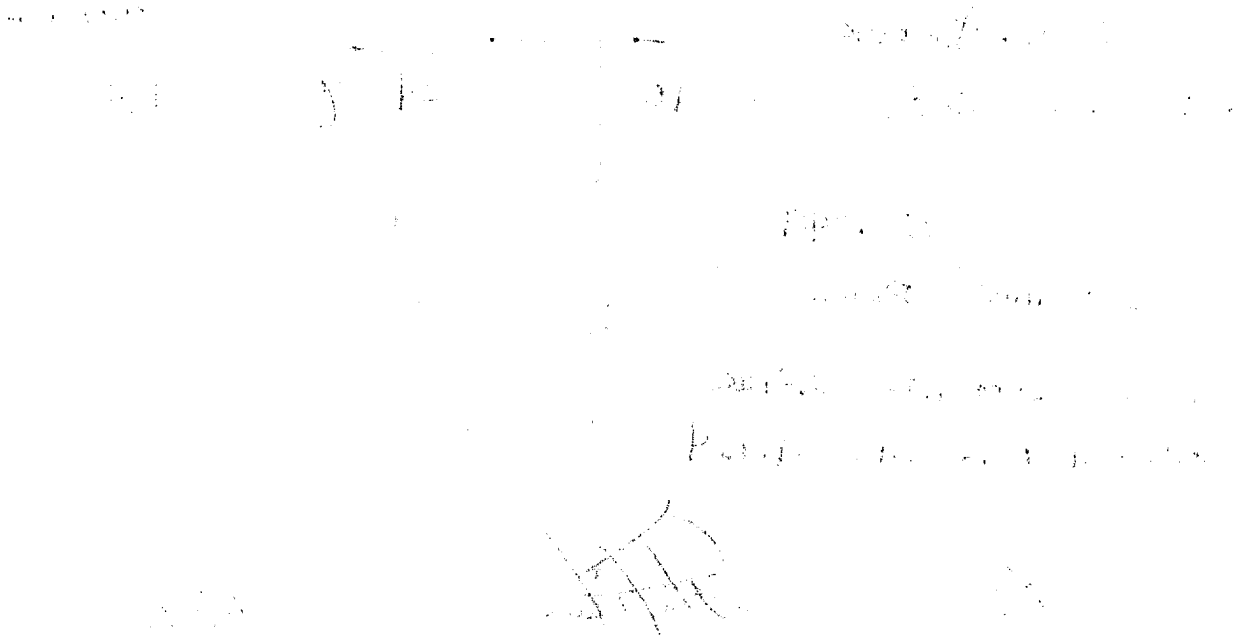
3. REQUEST TO CHANGE WELL DRILLER — $10.00 FEE REQUIRED FOR EACH WELL

This request must be received by this Department and the Drill Authorization issued to the new drilling firm prior to the start of drilling or the completion of the well listed below.

Well Registration No. 55- _____ **File No.** _____

Original Well Driller	**New Well Driller**
Mailing Address	**Mailing Address**
City State Zip	**City State Zip**
Telephone Number	**Telephone Number**
ADWR License Number	**ADWR License Number ROC License Category**
Typed or Printed Name of Well Owner	**Signature of Well Owner Date**

The fee charged for a change of well ownership and/or reissue of a drill card is authorized by R12-15-151, effective June 30, 1994.



ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division, 500 North Third Street
Phoenix, Arizona 85004 (602) 417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

RECEIVED AUG 10 1995 GROUNDWATER MGT

Section § 45-596, A.R.S., provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Departmen

IF PARCEL IS 20 ACRES OR LESS, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BELOW, BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES.

Southern Pacific TRANS. Co. (Land Owner's Name) 1200 CORPORATE CENTER DR. Suite 100, (Address) Monterey (City) CA (State) 91754 (Zip)

Telephone (213) 980-6939

County: Cochise

COUNTY ASSESSOR'S PARCEL ID INFORMATION:

102 (BOOK) 43 (MAP) 009 (PARCEL) UNK (No. of Acres of Parcel)

Well/Land Location: SE (10AC) 1/4 SE (40ac) 1/4 SE (160ac) 1/4 of Section 10 Township 24 S N/S Range 24 E E/W

APPROVED BY THE COCHISE COUNTY HEALTH DEPT. OFFICIAL SEAL DATE 8-9-95 BY [signature] Sanitarian

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

Check one:
Recommend Approval ✓ ; Insufficient information to make determination ____ ; Variance required ____ (Explanation attached).

DATE 8-9-95 AUTHORIZED SIGNATURE [signature]

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH

1. Section § 45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section § 45-596(D), provides that the Department has **15 days after** the receipt of a **complete and correct** notice of intention to record the notice and mail the duplicate to the owner.
3. Fill out this form and site plan in **DUPLICATE** and send **WITH $10.00 FEE** to 500 N. 3rd St., Phoenix, AZ 85004. **USE BLACK OR BLUE INK.**
4. For specific instructions, limitations and conditions, see the reverse side of this form.
5. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
6. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. **Owner of well:** Same as land owner
Name
Mailing Address
City State Zip
Telephone:

2. **Action requested:** Drill New Well ____ ; Deepen ____ Modify ____ Replace X
For a replacement well provide: Maximum capacity of the original well 175 gallons per minute; distance from the original well 30 feet.
Well Registration No. 55- ~~[illegible]~~ 55-626702 & 55-627685 DUP. FILE

3. **Construction will start about:** Month ASAP Year 1995

4. **DESCRIPTION OF PROPOSED WELL:**
Diameter 8 inches
Depth 450 feet
Type of Casing steel

5. **Design Pump Capacity:** 120 gallons per minute

6. **Lessee of Land of wellsite:** NACO WATER Co.
Name
P.O. Box 307
Mailing Address
NACO AZ 85620
City State Zip
Telephone: 1-800-315-5333

7. **Principal use of water:** (be specific) Water Co. distribution

8. **Other uses of water:** (be specific) NONE

9. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated: N/A

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. D(24-24)10 ddd By SV
Filed 8-10-95 By SV
Input ____ By ____
DUPLICATE MAILED
Date 9-8-95 By SV
Registration 55- 551849
AMA/INA
W/S S/B
ENTERED SEP 18 1995

10. **PLACE OF USE** (Legal Description of Land):
Township 24 S N/S Range 24 E E/W
Section 10 1/4 SE 1/4 SE 1/4 SE
11 SW SW SW

11. **Type of well:** Exempt ____ Non-Exempt X
Residential ____ Commercial X

12. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks? YES ____ NO X

13. **DRILLING FIRM:**
Weber Drilling Co
Firm Name
Rte 1, Box 276 B
Mailing Address
St. David AZ 85630
City State Zip
272
DWR License
A-4
ROC License Classification

LILLIAN M. DOMINGUEZ
NACO WATER CO
Typed or Printed Name of Owner or Lessee

Lillian M. Dominguez
Signature [ ] Land Owner [X] Lessee of Wellsite

8/9/95
DATE

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. If any water from a proposed well on a parcel of land of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant shall submit a site plan to scale of the property with the county assessor's parcel identification number. The site plan:

   a. Will be on a 8½"x11" piece of plain paper with representation of the locations of all structures, septic tank or sewer systems and proximity of adjacent lot lines to scale.
   b. Must show the proposed well location and the location of any septic or sewer system that is either located on the property or within one hundred feet of the proposed well site.
   c. Shall demonstrate to the director's satisfaction that the well will not be drilled within one hundred feet of any septic or sewer system.
   d. Must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Before approval, the health authority shall review the plan and determine whether the proposed well location complies with applicable state and local laws regarding the placement of wells. If so, the health authority shall endorse the site plan and the proposed well placement.

2. Endorsement by the county/local authority is based solely on the best available judgement that this well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. Information brought to light at a future date may render this determination invalid.

3. If a well which was originally drilled as an exploration well; a monitor well, a piezometer well or for any use other than domestic use and is later proposed to be converted to use for domestic purposes, as defined in § 45-454, the well owner shall file a notice of intention to drill and comply with the requirements prescribed pursuant to this section before the well is converted and any water from that well used for domestic purposes.

4. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

5. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an Irrigation Non-Expansion Area or Active Management Area to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

6. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of the notice (§ 45-596.E.).

7. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this notice.

8. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

9. If an individual other than the land owner or lessee signs this Notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific Notice on their behalf, shall accompany the Notice.

VERBAL AUTHORIZATION

DRILLER: Weber Drilling #272

OWNER: Naco Water Co.

TYPE OF WELL: Municipal

LEGAL: D(24-24)10 ddd

IF DEEPENING OR (REPLACING:) Will verify which well *

Registration No. 55- ? 626702 or 627685 (Might be duplicates of each other)

IN AN A-M-A, OR I-N-A, SAME OWNER, SAME LEGAL, MORE THAN ONE WELL, REQUIRES DIFFERENT PURPOSE:

NO. 23 or NO. 24 ON NOTICE OF INTENT:

WITHIN 100 FEET ____ YES X NO.

DATE OF VERBAL: 8/10/95 BY: M. Dale

TIME: 4:00 pm TO: D. Webber

REASON FOR VERBAL: Water company well failed. Drilling need for new well.

* 9/6/95

According to Don Webber of Weber Drilling, #272, there is only one well at the above legal description. Both well files (55-626702 & 627685) reflect the same general well data. Will adjust the files accordingly.

Mike Ball

Al-
Said this looks
Fine.
[illegible]

GRUNDFOS®

PHONE (209) 292-8000 • FAX (209) 291-1357
2555 CLOVIS AVENUE
CLOVIS, CALIFORNIA 93612

Don Webber
520-
405-0884
(Mobile)



Re NACO
H_2O Co
603-7657 MOBILE

"Pumping to Please..."

BUCK LEWIS
ENGINEERING
INC.

PLANNERS • ENGINEERS • SURVEYORS

TUCSON
P.O. Box 85160, 85754
Tel. (602) 624-4402
Tel. (602) 622-2115

SIERRA VISTA
1201 E. Fry Blvd.
Suite 3, 85635
P.O. Box 1690, 85636
Tel. (602) 459-1122

RECEIVED
AUG 10 1995
GROUNDWATER MGT

August 9, 1995

Rosemary Lopez, Operations Division
Arizona Dept. of Water Resources
500 North Third Street
Phoenix, AZ 85004-3903

Dear Ms. Lopez,

Enclosed, in duplicate, is an application to replace an existing well which has essentially failed, (Well Reg. # 55-627685). I request therefore that you consider this an emergency request for approval.

I am faxing this letter along with a copy of the completed application. The original Notice of Intention and a $10 fee check is being sent via FEDEX today.

Thank you for your assistance in this rather urgent matter.

Sincerely,

E. H. "Buck" Lewis

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

September 8, 1995

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

SOUTHERN PACIFIC TRANS. CO
1200 CORPORATE CENTER DR SUITE 100
MONTEREY, CA 91754

Registration No. 55-551849
File No. D(24-24)10 DDD

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill/deepen/replace/modify a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized. **In no case may the replacement well be more than 660 feet from the well it is replacing.**

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593, the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future. If, in the future, it is determined that water from your well is supplied from the river and you do not have a perfected water right to Colorado River water established prior to 1929, the U.S. Bureau of Reclamation may require you to cease pumping or enter into a contract for use of colorado river water.

Sincerely,

Sylvia Valdez
Water Resource Technician
Groundwater Section

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-551849

AUTHORIZED DRILLER: WEBER DRILLING COMPANY LICENSE NO: 272

NOTICE OF INTENTION TO DRILL A NON-EXEMPT WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: SOUTHERN PACIFIC TRANS. CO.

The well(s) is/are to be located in the:

SE 1/4 of the SE 1/4 of the SE 1/4 Section 10 Township 24 SOUTH Range 24 EAST

No. of Wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 9TH DAY OF AUGUST, 1996.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

RECEIPT № 22821

EH LEWIS
3533 SHAWNEE SV
SIERRA VISTA, AZ 85635

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
500 NORTH THIRD STREET
PHOENIX, ARIZONA 85004
(602) 417-2405

ENTRY CODE 55

FILE NO. FOR SOUTHERN PACIFIC **THRU**

ITEM DESCRIPTION	RATE	AMOUNT
NOI FEE		10.00
551849		

CHECK NO. 2787 FEE ACCOUNT NO. _____ TOTAL $ 10.00

CHIT NO. _____ RECEIVED BY SV DATE 9-7-95

IPS 1821 – Rev. 4/91

FedEx
Federal Express

USE THIS AIRBILL FOR SHIPMENTS WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII.
USE THE INTERNATIONAL AIR WAYBILL FOR SHIPMENTS TO PUERTO RICO AND ALL NON U.S. LOCATIONS
QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE
TRACKING NUMBER

3341565544

3 3 4 1 5 6 5 5 4 4

4287M 3341565544

SENDER'S FEDERAL EXPRESS ACCOUNT NUMBER
1782-1463-2

Date
8-9-95

From (Your Name) Please Print
BUCK LEWIS

Your Phone Number (Very Important)
(602-)459-1122

Company
BUCK LEWIS ENGINEERING

Department/Floor No.

1201 E FRY BLVD STE 3

City
SIERRA VISTA

State
AZ

ZIP Required
8 5 6 3 5

To (Recipient's Name) Please Print
ROSEMARY LOPEZ

Recipient's Phone Number (Very Important)
(602)417-2470

Company
AZ. DEPT WATER RESOURCES

Department/Floor No.
OPERATIONS

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes)
500 NORTH THIRD STREET

City
PHOENIX

State
AX

ZIP Required
85004-3903

(Optional) BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.)
SOUTHERN PACIFIC TRANS CO

XX

Bill Credit Card
Exp Date

IF HOLD AT FEDEX LOCATION, Print FEDEX Address Here
Street Address
City
State
ZIP Required

SERVICES

DELIVERY AND SPECIAL HANDLING

Weekday Service
HOLD AT FEDEX LOCATION WEEKDAY
DELIVER WEEKDAY

Saturday Service
HOLD AT FEDEX LOCATION SATURDAY
DELIVER SATURDAY

Special Handling
DANGER
DRY ICE

12 HOLIDAY DELIVERY (Extra Charge)

Freight Service
TWO-DAY FREIGHT**

XX

PACKAGES
WEIGHT
Total
Total

DIM SHIPMENT (Charges)

X
Received At
1 Regular Stop
2 On-Call Stop
3 Drop Box
Station

Emp. No.
Date
Street Address
City
State
Zip
Received By
X
Date/Time Received
FedEx Employee Number

Release Signature

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 4/94
PART #145412 EXEM 9/94
FORMAT #160

160

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U.S.A.

DESTINATION COPY

11 3

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 9 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 627684
FILE NO. D(24-24)18add
FILED JUN 9 1982 (DATE) AT 1pm (TIME)
INA
AMA

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 ☒

1. Name of Registrant:
Naco Water Co. & Salim Dominguez
128D Street (Address) Naco (City) Az. (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the SE¼ SE¼ NE¼, Section 18, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Country Club, Lot No. 35, Address Naco, Az.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial) municipal.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 179. feet
b. Diameter of casing 8 inches
c. Depth of casing 160. feet
d. Type of casing steel .
e. Maximum pump capacity 35 gallons per minute.
f. Depth to water 94 feet below land surface.
g. Date well completed (Month) (Day) 1930 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6/8/82 SIGNATURE OF REGISTRANT By Naco Water Co. & Salim Dominguez
Wilford R. Richardson
Wilford R. Richardson, Attorney

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

RICHARDSON & MORTENSEN
ATTORNEYS AT LAW
BOX 247
SAFFORD AZ 85546

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

FOR: CLARK, DOMINGUEZ, MAYBERRY, MCKEEN, SMITHSON & WATSON

(10)

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	627681
	THRU
55	627690

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing Wells	10.00	100.00
					File Numbers:		
					B CLARK - - - - - D(8-17)17 dcd S DOMINGUEZ - - - D(24-24)19 bab		
					D(24-24)18 cd D(24-24)18 add D(24-24)10 dcb		
					J MAYBERRY- - - - D(18-21)6 abb D(17-21)31 ada		
					J MCKEEN - - - - D(8-26)7 aaa C SMITHSON - - - D(8-26)7 aad		
					W WATSON - - - - D(10-16)16 dac		

WAITER PAYMENT
GUESTS 10
CHK NO 3381
55-I 100.00
TAX 0.00
TOTL 100.00
GEN.CHEK 100.00

4554 A 14:17

11/19/82 jc Check No. 3381 TOTAL $ 100.00

MICROFILMED

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

RECEIVED JUN 25 2004 Information Management

Well Driller Report and Well Log

- Review instructions prior to completing form.
- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

FILE NUMBER: D(24-24) 18 ADD
WELL REGISTRATION NUMBER: 55- 203321
PERMIT NUMBER (IF ISSUED):

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: NACO WATER CO
MAILING ADDRESS: PO BOX 85160
CITY / STATE / ZIP: TUCSON, AZ 85754
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-623-5172
FAX:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	18	SE 1/4	SE 1/4	NE 1/4

LATITUDE: ° , "N
LONGITUDE: ° , "W
LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level
METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☐ Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ GPS : ☐ Survey-Grade

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
918	2	370

COUNTY WHERE WELL IS LOCATED: PIMA

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME: WEBER DRILLING
DWR LICENSE NUMBER: 272
TELEPHONE NUMBER: 520-720-4800
FAX:

ANSWERED JUN 2 8 2004

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED: 6/20/04
DATE WELL CONSTRUCTION COMPLETED: 6/22/04
IF FLOWING WELL, METHOD OF FLOW REGULATION: ☐ Valve ☐ Other

Drill Method

CHECK ONE
- ☑ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development

CHECK ONE
- ☑ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Water Level Information

STATIC WATER LEVEL: 140 Feet Below Land Surface
DATE MEASURED: 6/22/04

Method of Sealing at Reduction Points

CHECK ONE
- ☐ None
- ☐ Packed
- ☐ Swedged
- ☑ Welded
- ☐ Other (please specify)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 203321

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	12 1/4
0	252	8
252	312	8

Installed Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (X) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (X) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	8 5/8	✓				✓						
0	252	6 5/8	✓				✓						
252	312		✓								✓		1/8 x 8

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (X) NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
0	20		✓									

DEPTH OF BORING	DEPTH OF COMPLETED WELL
312 Feet Below Land Surface	312 Feet Below Land Surface

DWR-55-55B-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 203321

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	312	VOLCANIC CONGLOMERET	FIRST WATER 150'

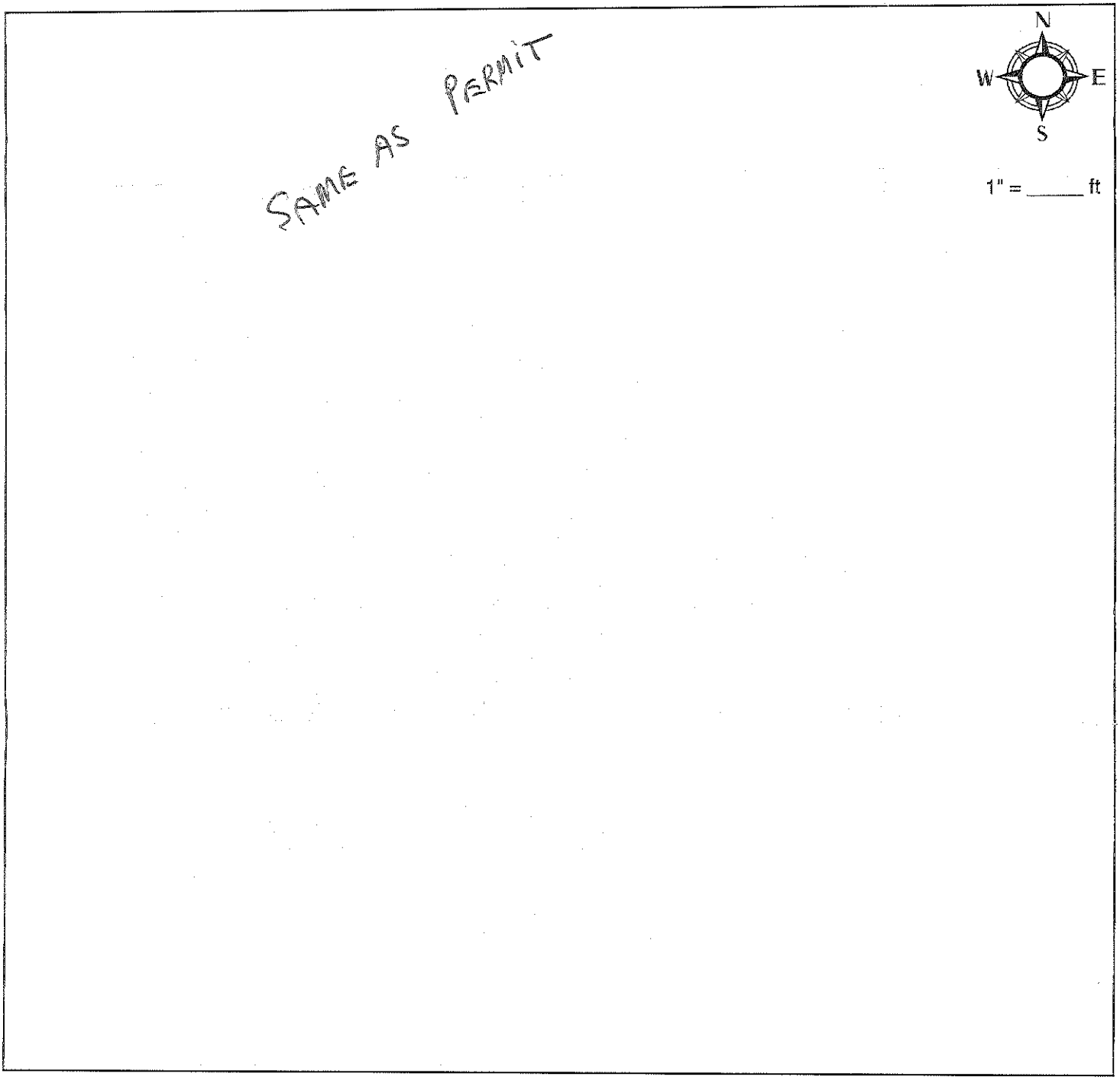
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 203321

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
NACO WATER CO	918	2	370

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



I state that this notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
WEBER DRILLING	Donald E. [illegible]	6-23-04

DWR-55-55 (Rev. 10/11/01)

ARIZONA DEPARTMENT OF WATER RESOURCES
WATER MANAGEMENT SUPPORT SECTION
500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-203321

AUTHORIZED DRILLER: WEBER DRILLING LICENSE NO: 272

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: NACO WATER CO PO BOX 85160 TUCSON, AZ 85754

The well(s) is/are to be located in the:

SE ¼ of the SE ¼ of the NE ¼ Section 18 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1 Assessor Parcel No: 918-2-370

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 10TH DAY OF MAY, 2005

5/10/04

WATER MANAGEMENT SUPPORT SECTION

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING



Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax • www.water.az.gov

RECEIVED APR 26 2004
RECEIVED MAY 11 2004
ADWR-ISD-WELL REGISTRATION

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $50 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $50.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596

** PLEASE PRINT CLEARLY **

AMA / INA		P	SD
		710	
RECEIVED DATE		WS	
4-26-04		11	
ISSUED DATE		WQARF	CERCLA
5-12-04			

FILE NUMBER: D(24-24)18ADD
WELL REGISTRATION NUMBER: 55 - 203321

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☒ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE April 23 2004
BY Carlos Diaz

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: Carlos Diaz Env. Hlth Spec I
TELEPHONE NUMBER: 520-432-9442
DATE: April 23, 2004
COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz

SECTION 2. REGISTRY INFORMATION

Well Type
CHECK ONE
☒ Exempt
(Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (See instructions.)
☐ Non-Exempt
(Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (See instructions.)
DESIGN PUMP CAPACITY: 35 Gallons Per Minute

Proposed Action
CHECK ONE
☒ Drill New Well
☐ Deepen
☐ Replace
☐ Modify
If Deepening, Replacing or Modifying:
ORIGINAL WELL REGISTRATION NUMBER: 55 - 627684
MAXIMUM CAPACITY OF ORIGINAL WELL: 35 Gallons Per Minute
DISTANCE & DIRECTION FROM ORIGINAL WELL: 30x30 Feet Lot #35

Location of Well
WELL LOCATION ADDRESS (IF ANY): Country Club Estates Lot #35

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	18	A ¼	D ¼	D ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
918	02	370 3	1/3 acre

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. OWNER INFORMATION

Well Owner
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: NACO WATER Co.; Salim Dominguez
MAILING ADDRESS: PO Box 85160
CITY / STATE / ZIP CODE: Tucson, Az, 85754
CONTACT PERSON NAME AND TITLE: Raymond Maldonado Field Supervisor
TELEPHONE NUMBER: 520-623-5172
FAX: 520-792-0377

Landowner (if different from Well Owner)
FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: Salim Dominguez
MAILING ADDRESS: 10050 E. Discovery Dr.
CITY / STATE / ZIP CODE: Tucson, Az 85748
CONTACT PERSON NAME AND TITLE: Salim Dominguez
TELEPHONE NUMBER: 520-623-5172
FAX: 520-792-0377

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?			If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

GPS N 31° 20' .710
W 109° 56' .195

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 203321

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: Weber Drilling

DWR LICENSE NUMBER: 272

ROC LICENSE CATEGORY: C53-A4

TELEPHONE NUMBER: 520-720-4800

FAX: 1-520-720-4059

MAILING ADDRESS: 453 Mecham Dr.

CITY / STATE / ZIP CODE: St. David, AZ. 85630

RECEIVED MAY 11 2004 GROUNDWATER MGT

RECEIVED APR 26 2004 GROUNDWATER MGT

SECTION 6. WATER / SITE INFORMATION

Principal Use of Water (CHECK ONE)	*Other Uses* of Water (CHECK ALL THAT APPLY)
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☐ Domestic	☐ Domestic
☒ Municipal	☒ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify):*	☐ Other *(please specify):*

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

DATE CONSTRUCTION IS TO BEGIN:

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	12"
0	350	8"

Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	20	8 5/8	X*				X						Cement
0	310	6 3/8	X				X						
310	350	6 3/8	X								X		

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: Raymond Maldonado Field Supervisor

SIGNATURE OF WELL OWNER: Calvin L. Loy Jr. DATE: 4/13/2004

SIGNATURE OF LANDOWNER, IF APPLICABLE (SEE INSTRUCTIONS): Calvin L. Loy Jr. DATE: 4/13/2004

Notice of Intent to Drill, Deepen, Replace or Modify a Well

RECEIVED
APR 26 2004
GROUNDWATER MGT.

WELL REGISTRATION NUMBER
55 - 203321

CHECK ONE: ☐ FILING MANUALLY
☐ FILING ELECTRONICALLY*

*COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL CODE: (if applicable)
If applicant is filing this NOI electronically via the ADWR website and County approval is required, please indicate approval by providing a County Approval Code.

COUNTY APPROVAL CODE*

WELL SITE PLAN

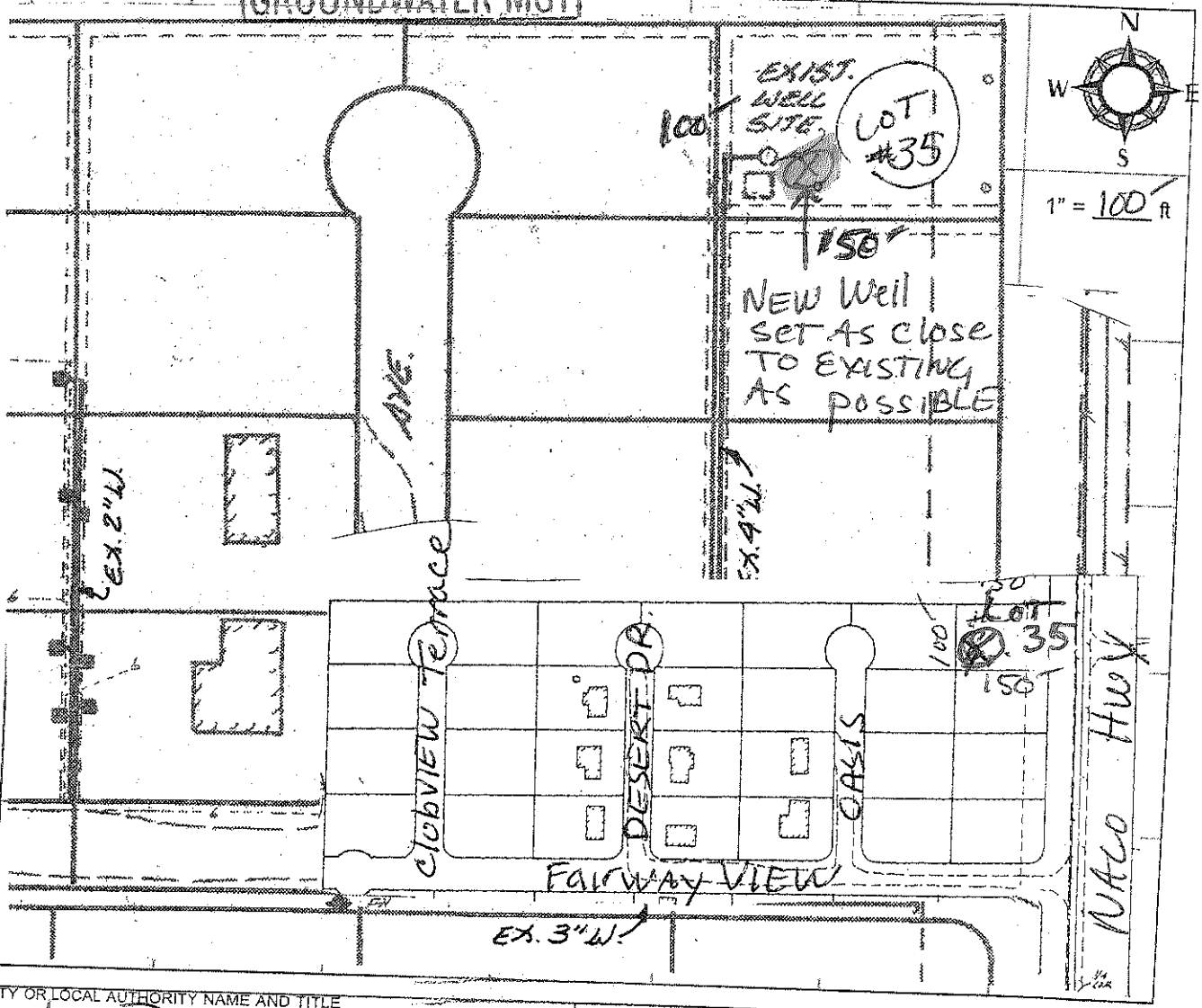
NAME OF WELL OWNER
NACO Water Co. & Salim Dominguez

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
918	02	370 3

RECEIVED
JUN 1 2004
GROUNDWATER MGT.

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE
Carlos Diaz Env Hlth Spec I

COUNTY OR LOCAL AUTHORITY SIGNATURE
Carlos Diaz

TELEPHONE NUMBER
520-432-9442

DATE
April 23 2004

Official County or Local Seal or Stamp
APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE April 23 04
BY Carlos Diaz

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax www.water.az.gov

RECEIVED MAY 1 1 2004 AZ DEPT OF WATER RESOURCES

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $50 FEE

AMA / INA		BA	SB
RECEIVED	DATE	WS	
ISSUED	DATE	WQARF	CERCLA

FILE NUMBER

WELL REGISTRATION NUMBER

55-

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $50.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

[X] County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- [X] Field Inspection Performed
- [ ] Site Plan Review Only

... Determination

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE April 23 2004
BY [signature]

NACO WATER COMPANY, LLC 10/94
P.O. BOX 307
NACO, AZ 85620

BANK OF AMERICA
91-170/1221

1405

PAY TO THE ORDER OF AZ Dept of Water Resources 4/15/2004

Fifty and 00/100********** $ **50.00

AZ Dept of Water Resources
PO Box 458
Phoenix AZ 85001-0458

DOLLARS

MO Notice of Intent to Drill

[redacted]

SECURITY FEATURES INCLUDED. DETAILS ON BACK.

SECTION 2. Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: NACO WATER Co	Salim Dumin
MAILING ADDRESS: PO Box 85160	MAILING ADDRESS: 10050 E Discovery DR.
CITY / STATE / ZIP CODE: TUCSON, AZ, 85754	CITY / STATE / ZIP CODE: TUCSON, AZ 85748
CONTACT PERSON NAME AND TITLE: Raymond Maldonado Field Supervisor	CONTACT PERSON NAME AND TITLE: Ray Maldonado Field Supervisor
TELEPHONE NUMBER: 520-623-5172 FAX: 520-792-0377	TELEPHONE NUMBER: 520-623-5172 FAX: 520-792-0377

SECTION 4. Questions

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?			If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

GPS N 31° 20'. 710
W 109° 56'. 195

RECEIVED
MAY 1 1 2004
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
Water Management Support Section – NOI Unit
500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

JANET NAPOLITANO
Governor

HERB GUENTHER
Director

April 28, 2004

NACO WATER CO
PO BOX 85160
TUCSON, AZ 85754

PLEASE RETURN
ALL PAPERS

Re: Well Registry Number: 55-203321
File (Location) Number: D(24-24)18ADD

Dear Applicant:

The Department of Water Resources recently received your Notice of Intent (NOI) to Drill, Deepen, Replace or Modify a Well. However, our review indicates that the NOI is incomplete under the Groundwater Management Act for the following reason(s):

- **NEED CORRECT FILING FEE WELL BEING USED FOR MUNICIPAL IS A $150 FEE. WELL OUTSIDE AMA BEING USED FOR DOMESTIC ONLY IS A $50 OTHERWISE THE FEE IS $150. NEED AN ADDITIONAL FEE OF $100 FOR YOUR APPLICATION TO BE PROCESS.**
- **NEED LANDOWNER SIGNATURE OR LETTER OF AUTHORIZATION.**
- **NEED TO FILE AN ABANDONMENT APPLICATION IF REPLACING. BUT BECAUSE YOUR OUTSIDE AND ACTIVE MANAGEMENT AREA YOUR CAN CHOOSE TO KEEP THE OLD WELL AND JUST APPLY FOR A NEW WELL.**

PLEASE CALL MONICA ORTIZ AT 602-417-2400 EXT. 7148 WITH ANY QUESTIONS.

In accordance with Arizona Revised Statutes (A.R.S.) § 45-596, Paragraph D, the Department is mailing this "statement of determination" as a request for information necessary to make the NOI complete and correct. Please provide the Department with the additional information and resubmit the corrected NOI form and any attachments (if applicable) to ADWR. The Department's substantive review time frame is suspended until all requested information is provided. If the Department does not receive the necessary information within sixty (60) days, the application may be denied. You would then have to re-initiate the NOI process and pay a new filing fee to receive a drilling authority for this location.

RECEIVED
NOV 1 1 2004
GROUNDWATER MGT

ATTACH THIS NOTICE WHEN RESUBMITTING THE COMPLETED NOI AND RETURN TO:

WATER MANAGEMENT SUPPORT SECTION
PO BOX 458
PHOENIX, ARIZONA 85001-0458

YOU MAY ALSO CONTACT YOUR DRILLER OR COUNTY ASSESSOR'S OFFICE FOR ASSISTANCE PERTAINING TO THE NECESSARY INFORMATION THAT IS REQUIRED TO COMPLETE YOUR APPLICATION.

PLEASE RETURN ALL PAPERS

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax • www.water.az.gov

RECEIVED APR 26 2004 GROUNDWATER MGT

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $50 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $50.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596

** PLEASE PRINT CLEARLY **

RECEIVED MAY 11 2004 GROUNDWATER MGT

AMA / INA	B	SB
—	76	
RECEIVED DATE	WS	
	11	
ISSUED DATE	WQARF	CERCLA
	—	

FILE NUMBER

WELL REGISTRATION NUMBER

55 -

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

- [X] County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
  - [X] Field Inspection Performed
  - [ ] Site Plan Review Only
- [ ] Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: Carlos Diaz Env. Hlth Spec I

TELEPHONE NUMBER: 520-432-9442

DATE: April 23 2004

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE April 23 2004
BY Carlos Diaz

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

- [X] Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)
- [ ] Non-Exempt (Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 35 Gallons Per Minute

Proposed Action

CHECK ONE

- [X] Drill New Well
- [ ] Deepen
- [ ] Replace
- [ ] Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 - 627684

MAXIMUM CAPACITY OF ORIGINAL WELL: 35 Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: 30'x30' Feet Lot #35

Location of Well

WELL LOCATION ADDRESS (IF ANY): Country Club Estates Lot #35

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	18	A ¼	D ¼	D ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
918	02	370 3	1/3 acre

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: NACO WATER Co; Salim Dominquez

MAILING ADDRESS: PO Box 85160

CITY / STATE / ZIP CODE: Tucson, Az, 85754

CONTACT PERSON NAME AND TITLE: [illegible]

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: Salim Dominquez

MAILING ADDRESS: 10050 E Discovery Dr.

CITY / STATE / ZIP CODE: Tucson, Az 85748

CONTACT PERSON NAME AND TITLE: [illegible]

1422

NACO WATER COMPANY, LLC 10/94
P.O. BOX 307
NACO, AZ 85620

BANK OF AMERICA
91-170/1221

5/11/2004

PAY TO THE ORDER OF AZ Dept of Water Resources $ **100.00

One Hundred and 00/100********** DOLLARS

AZ Dept of Water Resources
PO Box 458
Phoenix AZ 85001-0458

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

May 12, 2004

Janet Napolitano
Governor

Herb Guenther
Director

NACO WATER CO
PO BOX 85160
TUCSON, AZ 85754

Registration No. 55- 203321
File No. D(24-24) 18 ADD

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Pump Installation Completion Report is to be submitted when pump equipment is installed. The drilling card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the drilling card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended drilling card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a Pump Installation Completion Report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate Well Drillers Report and Well Log within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Monica Ortiz

Monica Ortiz
NOI Unit
Water Management Support Section

Enclosures

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 9 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 627683
FILE NO. D(24-24)18cd
FILED JUN 9 1982 (DATE) AT 1pm (TIME)
INA
AMA

1. Name of Registrant:
Naco Water Co. & Salim Dominguez
128D Street (Address) Naco (City) Az. (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the ¼ SE ¼ SW ¼, Section 18, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision ____, Lot No. 313, Address Block 21, Naco, Az.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
municipal

5. If for irrigation use, number of acres irrigated from well ____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 210 feet
b. Diameter of casing 8 inches
c. Depth of casing 210 feet
d. Type of casing steel .
e. Maximum pump capacity 175 gallons per minute.
f. Depth to water 131.4 feet below land surface.
g. Date well completed Aug. (Month) 2 (Day) 1959 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6/8/82 SIGNATURE OF REGISTRANT Naco Water Co. & Salim Dominguez
By Wilford R. Richardson
Wilford R. Richardson, Attorney

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

RICHARDSON & MORTENSEN
ATTORNEYS AT LAW
BOX 247
SAFFORD AZ 85546

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	627681
	THRU
55	627690

FOR: CLARK, DOMINGUEZ, MAYBERRY, MCKEEN, SMITHSON & WATSON

(10)

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing Wells	10.00	100.00
					File Numbers:		
					B CLARK - - - - - D(8-17)17 dcd S DOMINGUEZ - - - D(24-24)19 bab		
					D(24-24)18 cd D(24-24)18 add D(24-24)10 dcb		
					J MAYBERRY- - - - D(18-21)6 abb D(17-21)31 ada		
					J MCKEEN - - - - D(8-26)7 aaa C SMITHSON - - - D(8-26)7 aad		
					W WATSON - - - - D(10-16)16 dac		

WRITER PAYMENT
GUESTS 10
CHK NO 3381
55-I 100.00
TAX 0.00
TOTL 100.00
GEN.CHEK 100.00

4554 A 14:17

11/19/82 jc Check No. 3381 TOTAL $ 100.00

MICROFILMED

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

RECEIVED
JUN 17 1997
RECORDS MGT

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. WEBER DRILLING COMPANY
RTE 1 BOX 276B
ST DAVID AZ 85630-9721

ENTERED JUN 17 1997

2. Owner Name: NACO WATER CO LLC
Address: NACO AZ 85620
City State Zip

3. Location: 24 N/S 24 E/W 18 ¼ SE ¼ NE ¼ SW ¼
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55- 562944 (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 312 ft.
7. Type of casing STEEL
8. Diameter and length of casing 8 in. from 0 to 20.6 in from 0 to 312
9. Method of sealing at reduction points WELDED
10. Perforated from 212 to 312 ,from _____ to _____ from _____ to _____
11. Size of cuts 48X8 Number of cuts per foot 4
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started JUNE 10 1997
Month Day Year
15. Date completed JUNE 11 1997
Month Day Year
16. Depth to water 150 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
GROUND LEVEL
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DWR-55-55-7/95 (Rev.)

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-562944
File No. D(24-24)18 CAD
Received _____ **By** _____
Entered _____ **By** _____

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	150	CALICHIE
150	190	ALLUVIAL
190	210	CALICHIE
210	312	ALLUVIAL
		FIRST WATER 150'
		SECOND WATER 210'
		STATIC 150'

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: WEBER DRILLING

RT. 1 BOX 276B
Street

ST. DAVID, AZ. 85630
City State Zip

520-720-4800
Phone No.

X [signature]
Signature of Driller

6-13-97
Date

RECEIVED

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division, 500 North Third Street
Phoenix, Arizona 85004 (602) 417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

RECEIVED
JUN - 3 1997
GROUNDWATER MGT

Section § 45-596, A.R.S., provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Departme

IF PARCEL IS 20 ACRES OR LESS, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BELOW, BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES.

SALIM S. DOMINGUEZ P.O.Box 307, NACO AZ 85620
Land Owner's Name / Address / City / State / Zip

Telephone (520) 432-4397

County: COCHISE

COUNTY ASSESSOR'S PARCEL ID INFORMATION:
102 57 105 0.08AC
BOOK MAP PARCEL No. of Acres of Parcel

OFFICIAL SEAL

Well/Land Location:
SE 1/4 NE 1/4 SW 1/4 of Section 18 Township 24 S N/S Range 24 E E/W
10AC 40ac 160ac

SW. PART LOTS 301 thru 311 BLK 21 NACO TWN. SITE

COUNTY OR LOCAL AUTHORITY ENDORSEMENT
Check one: Recommend Approval ✓: Insufficient information to make determination _____: Variance required _____ (Explanation attached). Cochise County

DATE 6-2-97 AUTHORIZED SIGNATURE Ronald Nunez, DIR. ENV. Health

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH

1. Section § 45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section § 45-596(D), provides that the Department has 15 days after the receipt of a complete and correct notice of intention to record the notice and mail the duplicate to the owner.
3. Fill out this form and site plan in DUPLICATE and send WITH $10.00 FEE to 500 N. 3rd St., Phoenix, AZ 85004. USE BLACK OR BLUE INK.
4. For specific instructions, limitations and conditions, see the reverse side of this form.
5. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
6. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. Owner of well:
NACO WATER CO. LLC
Name
P.O. BOX 307
Mailing Address
NACO AZ 85620
City State Zip
Telephone: 1-800-315-5333

2. Action requested: Drill New Well _____ Deepen _____ Modify _____ Replace X
For a replacement well provide: Maximum capacity of the original well 120 gallons per minute; distance from the original well 30 feet.
Well Registration No. 55- 627683

3. Construction will start about:
Month JUNE Year 1997

4. DESCRIPTION OF PROPOSED WELL:
Diameter 8 inches
Depth 300 feet
Type of Casing STEEL

5. Design Pump Capacity:
140 gallons per minute

6. Lessee of Land of wellsite:
Name
N/A
Mailing Address
City State Zip
Telephone:

7. Principal use of water:(be specific)

8. Other uses of water:(be specific)

9. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated:

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. 0(24-24) IKCAd By MB
Filed 6-3-97 By MB
Input By
DUPLICATE MAILED
Date 6-5-97 By MB
Registration 55- 562944
AMA/INA
W/S II S/B

10. PLACE OF USE (Legal Description of Land):
Township 24 S N/S Range 24 E E/W
Section 18 1/4 SW 1/4 SE 1/4
NACO TOWNSITE

11. Type of well: Exempt _____ Non-Exempt X
Residential X Commercial X

12. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks? YES _____ NO X

13. DRILLING FIRM:
WEBER DRILLING CO.
Firm Name
Rte. 1, Box 276 B
Mailing Address
ST. DAVID AZ 85630
City State
272
DWR License
A-4
ROC License Classification

ENTERED JUN 9 1997

Lillian M. Dominguez
Typed or Printed Name of Owner or Lessee

Lillian M Dominguez
Signature [ ] Land Owner [ ] Lessee of Wellsite

6-2-97
DATE

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. If any water from a proposed well on a parcel of land of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant shall submit a site plan to scale of the property with the county assessor's parcel identification number. The site plan:

   a. Will be on a 8½"x11" piece of plain paper with representation of the locations of all structures, septic tank or sewer systems and proximity of adjacent lot lines to scale.
   b. Must show the proposed well location and the location of any septic or sewer system that is either located on the property or within one hundred feet of the proposed well site.
   c. Shall demonstrate to the director's satisfaction that the well will not be drilled within one hundred feet of any septic or sewer system.
   d. Must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Before approval, the health authority shall review the plan and determine whether the proposed well location complies with applicable state and local laws regarding the placement of wells. If so, the health authority shall endorse the site plan and the proposed well placement.

2. Endorsement by the county/local authority is based solely on the best available judgement that this well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. Information brought to light at a future date may render this determination invalid.

3. If a well which was originally drilled as an exploration well; a monitor well, a piezometer well or for any use other than domestic use and is later proposed to be converted to use for domestic purposes, as defined in § 45-454, the well owner shall file a notice of intention to drill and comply with the requirements prescribed pursuant to this section before the well is converted and any water from that well used for domestic purposes.

4. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

5. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an Irrigation Non-Expansion Area or Active Management Area to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

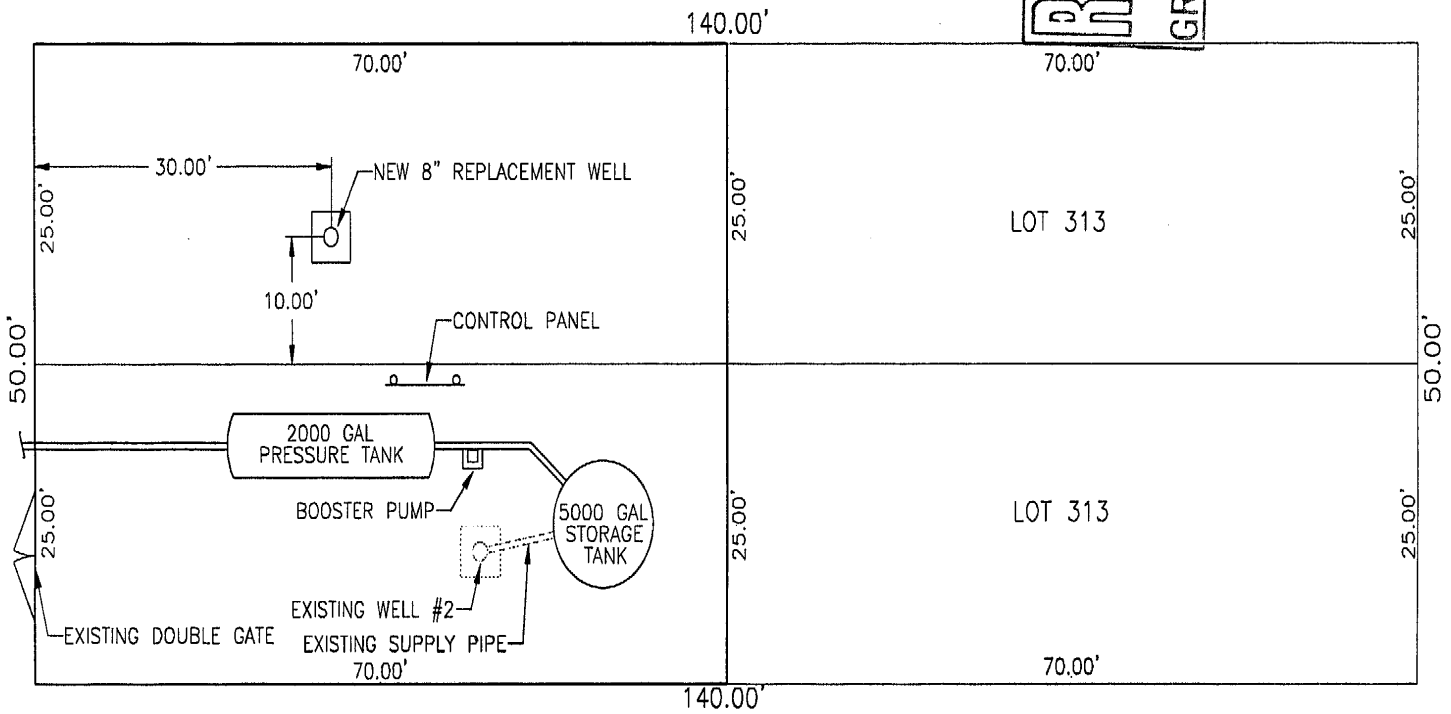
6. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of the notice (§ 45-596.E.).

7. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this notice.

8. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

9. If an individual other than the land owner or lessee signs this Notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific Notice on their behalf, shall accompany the Notice.

RECEIVED
JUN - 3 1997
GROUNDWATER MGT



LEGAL DESCRIPTION

THE WEST 70.00' OF LOTS 311 AND 313, OF BLOCK 21, NACO TOWNSITE, COCHISE COUNTY, ARIZONA.

N NORTH

PREPARED BY:

BUCK LEWIS ENGINEERING, INC.

PLANNERS ENGINEERS

TUCSON
P.O. BOX 85150
TUCSON, ARIZONA 85745
(602) 624-4402

SIERRA VISTA
P.O. BOX 1690
SIERRA VISTA, ARIZONA 85636
(520) 459-1122

NACO WATER COMPANY
WELL SITE #2

WELL RELOCATION

DWG:
XREFS:

SHEET 1 OF 1

JOB#:

6/2/97

GROUNDWATER MANAGEMENT SUPPORT SECTION

VERBAL AUTHORIZATION TO DRILL

IN ACCORDANCE WITH A.A.C. R12-15-810.C.

DRILLING FIRM: Weber Drilling Co. #272

WELL OWNER: NACO Water Co.

TYPE OF WELL: Municipal

LEGAL DESCRIPTION: D(24-24)18 cad

IF FOR DEEPENING OR REPLACEMENT OF AN EXISTING WELL, LIST THE ADWR REGISTRATION NUMBER 55- 627683

IN AN ACTIVE MANAGEMENT AREA (AMA) OR IRRIGATION NON-EXPANSION AREA (INA), SAME OWNER, SAME LEGAL DESCRIPTION, MORE THAN ONE WELL, REQUIRES A DIFFERENT PURPOSE FOR THE PROPOSED REPLACEMENT WELL. LIST THE DIFFERENT WELL USE: _____

NOTICE OF INTENT FILED IN ACCORDANCE WITH A.R.S. §45-596.F. & G.? X **YES** _____ **NO**

WELL DRILLED WITHIN 100 FEET OF SEPTIC SYSTEM OR HAZARDOUS WASTE SITE? _____ **YES** X **NO**

DATE OF VERBAL AUTHORIZATION: 6/4/97 **TIME:** 5:00 PM

BY: M. Bacc **TO:** D. Weber

REASON FOR VERBAL AUTHORIZATION: Well grout only.

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

June 5, 1997

NACO WATER CO LLC
P.O. BOX 307
NACO, AZ 85620

Registration No. 55-562944
File No. D(24-24)18 CAD

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill/deepen/modify/replace a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Toni M. Bergeman

Toni M. Bergeman
Water Resource Technician
Groundwater Management Support Section

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-562944

AUTHORIZED DRILLER: WEBER DRILLING COMPANY LICENSE NO: 272

NOTICE OF INTENTION TO DRILL A REPLACEMENT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: NACO WATER CO LLC P.O. BOX 307 NACO, AZ 85620

The well(s) is/are to be located in the:

SE 1/4 of the NE 1/4 of the SW 1/4 Section 18 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 2ND DAY OF JUNE, 1998.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

Arizona Department of Water Resources

500 North Third Street
PHOENIX AZ 85004

Invoice Number : **32380**

4:51 PM, 6/4/97

Customer Name : E. H. LEWIS DEPOSIT 6-3-97

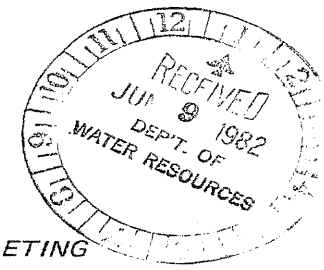
Fee Type	Description	Quantity	Price	ExtendedPrice
4279-06	Notice of Intent to Drill a Well	1	$10.00	$10.00

SubTotal:	$10.00
Tax :	$0.00
Total:	**$10.00**
Cash Tendered :	$0.00
Check Tendered :	$10.00
Total Amount Tendered :	$10.00
Change :	$0.00
Method of Payment :	CHECK
Check Number :	2983

THIS IS YOUR RECEIPT ---- "Thank You" Az Department of Water Resources

Register : DRAWER1 **Cashier :** WRPAB

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☒

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 627682
FILE NO. D(24-24)19bab
FILED JUN 9 1982 (DATE) AT 1pm (TIME)
INA
AMA

1. Name of Registrant:
Naco Water Co. & Salim Dominguez
128D Street (Address) Naco (City) Az. (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the NW ¼ NE ¼ NW ¼, Section 19, of Township 21S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. 412, 12 Block, Address Naco, Az.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial) municipal.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 215 feet
b. Diameter of casing 8 inches
c. Depth of casing 215 feet
d. Type of casing steel.
e. Maximum pump capacity 75 gallons per minute.
f. Depth to water 140 feet below land surface.
g. Date well completed Sept. (Month) 24 (Day) 1951 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6-8-82 SIGNATURE OF REGISTRANT Naco Water Co. & Salim Dominguez
By Wilford R. Richardson
Wilford R. Richardson, Attorney

RICHARDSON & MORTENSEN
ATTORNEYS AT LAW
BOX 247
SAFFORD AZ 85546

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	627681
	THRU
55	627690

FOR: CLARK, DOMINGUEZ, MAYBERRY, MCKEEN, SMITHSON & WATSON

(10)

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of Existing Wells	10.00	100.00
					File Numbers:		
					B CLARK - - - - - D(8-17)17 dcd S DOMINGUEZ - - - D(24-24)19 bab		
					D(24-24)18 cd D(24-24)18 add D(24-24)10 dcb		
					J MAYBERRY- - - - D(18-21)6 abb D(17-21)31 ada		
					J MCKEEN - - - - - D(8-26)7 aaa C SMITHSON - - - D(8-26)7 aad		
					W WATSON - - - - D(10-16)16 dac		

WRITER	PAYMENT
GUESTS	10
CHK NO	3381
55-I	100.00
TAX	0.00
TOTL	100.00
GEN.CHEK	100.00

4554 A 14:17

11/19/82 jc Check No. 3381 TOTAL $ 100.00

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004
WELL DRILLER REPORT

RECEIVED
SEP 28 1999
RECORDS MGT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. WEBER DRILLING
453 EAST MECHAM DRIVE
SAINT DAVID, AZ 85630-6235

2. Owner Name: NACO WATER CO.
Address: TUCSON (City) AZ (State) 85754 (Zip)

3. Location: 24 N/S 24 E/W 18 ¼ NE ¼ SW ¼ SW
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55- 575700 (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 410 ft.
7. Type of casing STEEL
8. Diameter and length of casing 10 in. from 0 to 20, 8" in from 0 to 340
9. Method of sealing at reduction points WELDED BOREHOLE 10" 340-410
10. Perforated from 180 to 279, from 302 to 340 from _____ to _____
11. Size of cuts 4"X8" Number of cuts per foot 4
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started SEPT (Month) 13 (Day) 1999 (Year)
15. Date completed SEPT (Month) 15 (Day) 1999 (Year)
16. Depth to water 140 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
GROUND LEVEL
18. If flowing well, state method of flow regulation: _____

19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-575700
File No. D(24-24) 18 CCA
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

ENTERED SEP 29 1999

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	130	ALLUVIAL
130	240	VOLCANIC CONGLOMORET
240	340	ALLUVIAL
340	410	ALLUVIAL WITH HIGH CLAY CONTENT
		FIRST WATER 140'
		STATIC 130'

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: WEBER DRILLING

453 EAST MECHAM DRIVE

Street

SAINT DAVID, AZ 85630-6235 1-520-720-4800

City State Zip Phone No.

X Daniel E. Weber 9-20-99

Signature of Driller Date

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-575700

AUTHORIZED DRILLER: WEBER DRILLING LICENSE NO: 272

NOTICE OF INTENTION TO DRILL A NON-EXEMPT WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: NACO WATER CO PO BOX 85160 TUCSON, AZ 85754

The well(s) is/are to be located in the:

NE 1/4 of the SW 1/4 of the SW 1/4 Section 18 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 28TH DAY OF JUNE, 2000.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ (602)417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

RECEIVED JUN 29 1999 GROUNDWATER MGT

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. Naco Water Co. P.O. Box 85160 Tucson Az 85754
LANDOWNER'S NAME CURRENT MAILING ADDRESS CITY STATE ZIP

B. TELEPHONE NO. (520) 623-5172

COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN Cochise COUNTY D. Part of 102 BOOK 57 MAP 189 PARCEL E. 0.14 # OF ACRES

OFFICIAL SEAL OR STAMP

RECEIVED JUL 12 1999 GROUNDWATER MGT

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NE ¼ SW ¼ SW ¼ OF SECTION 18 TOWNSHIP 24 N/S RANGE 24 E/W
10AC 40AC 160AC

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL ✓ ; INSUFFICIENT INFORMATION TO MAKE DETERMINATION _____ ; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE 6-17-99 AUTHORIZED SIGNATURE _____ TITLE _____

1. OWNER OF WELL:
Naco Water Co.
NAME
P.O. Box 85160
CURRENT MAILING ADDRESS
Tucson AZ 85754
CITY STATE ZIP

TELEPHONE NUMBER (520) 623-5172

2. ACTION REQUESTED:
DRILL NEW WELL X DEEPEN _____
MODIFY _____ REPLACE _____

WELL REGISTRATION NO 55- _____

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL _____ GALLONS PER MINUTE;

DISTANCE FROM THE ORIGINAL WELL: _____ FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH July 1 YEAR 1999

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: Steel
DIAMETER: 12 " DEPTH: 20 '

DOWNHOLE CASING: Steel
DIAMETER: 8 " DEPTH: 400 '

5. DESIGN PUMP CAPACITY:
130 GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
N/A
NAME
_____
CURRENT MAILING ADDRESS
_____
CITY STATE ZIP

TELEPHONE: _____

7. PRINCIPLE USE OF WATER: (BE SPECIFIC)
Water Co. Service Area

8. OTHER USES OF WATER: (BE SPECIFIC).
N/A

9. IF USE INCLUDES IRRIGATION, STATE TO NEAREST TENTH, THE NUMBER OF ACRES TO BE IRRIGATED: _____

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55- 575700
DATE FILED 6/18/99
FILE NO. D(24-24)18CCA
AMA/INA —
W/S 11 S/B —
PROCESSED BY BO
DATE MAILED 7-20-99

10. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NE ¼ SW ¼ SW ¼ SECTION 18
10AC 40AC 160AC
TWNSHP 24 N/S RNG 24 E/W

11. TYPE OF WELL (CHECK ONE):
EXEMPT _____ NON-EXEMPT X

12. CHECK ONE:
RESIDENTIAL _____ COMMERCIAL X

13. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES _____ NO X

14. DRILLING FIRM:
Weber Drilling Co.
NAME
Rte1 Box 276 B
MAILING ADDRESS
St. David AZ 85630
CITY STATE ZIP
(520) 720-4800
TELEPHONE NO.
272
DWR LICENSE NUMBER
A-4
ROC LICENSE CATEGORY

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

Salim S. Dominguez — Salim S. Dominguez — 6/16/99
15. TYPE OR PRINT NAME AND TITLE 16. SIGNATURE OF LANDOWNER/LESSEE OF WELL SITE 17. DATE

DWR 55-40 (REV 1/99)

APPLICATION GUIDELINES

In accordance with Arizona Revise Statutes ("A.R.S.") §§ 41-1008 and 1079, the Department of Water Resources (Department) provides the following information regarding the application review process for authority to drill.

NECESSARY STEPS & INSTRUCTIONS TO OBTAIN DRILLING AUTHORITY

1. Pursuant to A.R.S. § 45-596, a person may not drill, cause to be drilled, deepen or modify any well for which a permit is not required without first filing a Notice of Intent to Drill with the Department. Only a well drilling contractor licensed in the State of Arizona or a single well licensee (a person licensed to drill or modify one exempt well on his or her own property) is authorized to drill, deepen or modify a well. Drilling may not begin until the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, and which authorizes the drilling of the specific well in a specific location. To assist you in understanding the requirements for this application, copies of A.R.S. § 45-596 and Arizona Administrative Code ("A.A.C.") R12-15-810 are available at the Department bookstore (602-417-2450 x7127).
2. If replacing, deepening or modifying an existing well, provide the registration number of the existing well in item 2. A replacement well is one located no more than 660 feet from the original well and that is not expected to annually withdraw more groundwater than historically withdrawn from the original well.
3. Information to complete items 3, 4, 5 and 14 may be available from your driller.
4. Information to complete items 10 and 13 may be available from your County Assessor's Office.
5. An exempt well, referred to in Item 11, means a well with a pump with a maximum capacity of not more than thirty-five gallons per minute used primarily for domestic purposes, including the noncommercial irrigation of less than two acres of land.
6. If any water from a proposed well on a parcel of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant must submit a well site plan of the property. The plan must be on an 8½" x 11" piece of plain paper with representation of the locations of all structures and proximity of adjacent lot lines, to scale. It must include the county assessor's parcel identification number. The plan must show the proposed well location and the location of any septic tank or sewer system that is either located on the property or within one hundred feet of the proposed well site, as well as indicating the measured shortest distance between the proposed well and existing septic tank system. **The plan must demonstrate that the well will not be drilled within one hundred feet of any septic or sewer system.**
7. The site plan must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Endorsement by the county/local authority is based solely on the best available judgement that the proposed well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. In areas where there is no local or county authority that controls installation of septic tanks or sewer systems, or if the health authority is unable to determine whether the proposed well location complies with state and local requirements, the applicant must apply for approval directly to the Department of Water Resources.
8. If an individual other than the land owner or lessee signs this notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific notice on his or her behalf, must accompany the notice.
9. Please mail **two original Notices** with **original signatures** and **two site plans** and, in accordance with A.R.S. § 45-113, a **check or money order (no cash) in the amount of $10.00** to P. O. Box 458, Phoenix Arizona, 85001-0458, or hand deliver to 500 North Third Street, Phoenix, Arizona.
10. Arizona Revised Statute § 45-596(D) provides that the Director of the Department is to determine whether or not all information required on this form has been submitted. If not, the person filing the Notice will be notified, and the drilling or modification of the well may **not** proceed.
11. This form is not applicable for non-exempt wells (those yielding more than thirty-five gallons per minute) within an Active Management Area. Contact Groundwater Management for further information regarding the appropriate notice to file with the Department.

TIME FRAME FOR REVIEW OF YOUR APPLICATION

Within 15 days after receipt of your Notice of Intention, the Arizona Department of Water Resources ("Department") will determine whether your application should be granted or denied, unless this time is extended for lack of a complete application. If your application is incomplete, the Department will notify you in writing and will specify what information is necessary to make the application complete. Until the missing information is received, the time frame for review of your application will be suspended. Your application will not be complete until all of the requested information is received. If you do not supply the missing information within sixty (60) days, the Department may deem your application withdrawn and close the file.

At the end of its review, the Department will send you written notice either granting or denying your application for drilling authority. If your application is approved, the Drill Card will be mailed directly to the drilling company. If denied, the Department's notice will state justification for the denial and an explanation of your right to appeal.

CONSTRUCTION AND FOLLOW UP REQUIREMENTS

1. Construction and abandonment standards for wells, including abandonment, must be in accordance with Department Regulations. A.R.S. § 45-594 and Arizona Administrative Code R12-15-811 require the well to be constructed with a twenty foot steel surface seal casing, including a one foot steel stickup and one and one-half inches of grout seal, unless a variance is granted **(see A.R.S. § 45-596 (G) for procedure to follow in requesting a variance).**
2. Pursuant to § 45-596(E), the drilling, deepening or modification of the well must be completed within one year of the date of the Notice of Intent. If the well is not completed within one year, a new Notice of Intent must be filed before proceeding with further construction.
3. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use is later proposed to be converted to use for domestic purposes as defined in § 45-454, the well owner must file a Notice of Intention to Drill and comply with the requirements of § 45-596 before the well is converted and any water from that well is used for domestic purposes.
4. Within thirty days after installation of pumping equipment, the registered well owner must file a Completion Report with the Department. The person to whom a well is registered also must notify the Department of a change in ownership or a change in data relating to this well.

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division, 500 North Third Street
Phoenix, Arizona 85004 (602) 417-2470

RECEIVED
JUN 18 1999
GROUNDWATER MGT

NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

Section § 45-596, A.R.S., provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Departme

IF PARCEL IS 20 ACRES OR LESS, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BELOW, BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES.

Naco Water Co. | P.O. Box 85160 | Tucson | AZ | 85754
Land Owner's Name | Address | City | State | Zip

Telephone 520-623-5172

County: Cochise

COUNTY ASSESSOR'S PARCEL ID INFORMATION:
part of 102 | 57 | 189 | 0.14 (well site only)
BOOK | MAP | PARCEL | No. of Acres of Parcel

Well/Land Location:
NE 1/4 SW 1/4 SW 1/4 of Section 18 Township 24 N/S Range 24 E/W
10AC 40ac 160ac
(See Attached well site)

OFFICIAL SEAL

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

Check one:
Recommend Approval ✓ ; Insufficient information to make determination ____ ; Variance required ____ (Explanation attached)

DATE 6-17-99 AUTHORIZED SIGNATURE [signature]

RECEIVED
JUN 29 1999
GROUNDWATER MGT

RECEIVED
JUL 12 1999
GROUNDWATER MGT

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH

1. Section § 45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section § 45-596(D), provides that the Department has 15 days after the receipt of a complete and correct notice of intention to record the notice and mail the duplicate to the owner.
3. Fill out this form and site plan in DUPLICATE and send WITH $10.00 FEE to 500 N. 3rd St., Phoenix, AZ 85004. USE BLACK OR BLUE INK
4. For specific instructions, limitations and conditions, see the reverse side of this form.
5. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
6. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. **Owner of well:**
Naco Water Co.
Name
P.O. Box 85160
Mailing Address
Tucson AZ 85754
City State Zip
Telephone: (520) 623-5172

2. **Action requested:** Drill New Well X ; Deepen ____ Modify ____ Replace ____
For a replacement well provide: Maximum capacity of the original well ____ gallons per minute; distance from the original well ____ feet.
Well Registration No. 55- ____

3. **Construction will start about:**
Month July 1 Year 1999

4. **DESCRIPTION OF PROPOSED WELL:**
Diameter 8 inches
Depth 400 feet
Type of Casing Steel

5. **Design Pump Capacity:**
130 gallons per minute

6. **Lessee of Land of wellsite:**
N/A
Name
Mailing Address
City State Zip
Telephone:

7. **Principal use of water:(be specific)**
Water Co. Service Area Source

8. **Other uses of water:(be specific)**
N/A

9. **If use includes irrigation, state to nearest tenth, the number of acres to be irrigated:** ____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. ____ By ____
Filed ____ By ____
Input ____ By ____
DUPLICATE MAILED
Date ____ By ____
Registration 55- ____
AMA/INA ____
W/S ____ S/B ____

10. **PLACE OF USE (Legal Description of Land):**
Township 24 N/S Range 24 E/W
Section 18 1/4 SW 1/4 ____ 1/4 ____

11. **Type of well:** Exempt ____ Non-Exempt X
Residential X Commercial X

12. **Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks?** YES ____ NO X

13. **DRILLING FIRM:**
WEBER DRILLING Co
Firm Name
Rte. 1 Box 276 B
Mailing Address
St. David AZ 85630
City State Z
272
DWR License
A-4
ROC License Classification

Salim S. Dominguez
Typed or Printed Name of Owner or Lessee

[signature]
Signature [X] Land Owner [ ] Lessee of Wellsite

June 16, 1999
DATE

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. If any water from a proposed well on a parcel of land of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant shall submit a site plan to scale of the property with the county assessor's parcel identification number. The site plan:

   a. Will be on a 8½"x11" piece of plain paper with representation of the locations of all structures, septic tank or sewer systems and proximity of adjacent lot lines to scale.
   b. Must show the proposed well location and the location of any septic or sewer system that is either located on the property or within one hundred feet of the proposed well site.
   c. Shall demonstrate to the director's satisfaction that the well will not be drilled within one hundred feet of any septic or sewer system.
   d. Must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Before approval, the health authority shall review the plan and determine whether the proposed well location complies with applicable state and local laws regarding the placement of wells. If so, the health authority shall endorse the site plan and the proposed well placement.

2. Endorsement by the county/local authority is based solely on the best available judgement that this well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. Information brought to light at a future date may render this determination invalid.

3. If a well which was originally drilled as an exploration well; a monitor well, a piezometer well or for any use other than domestic use and is later proposed to be converted to use for domestic purposes, as defined in § 45-454, the well owner shall file a notice of intention to drill and comply with the requirements prescribed pursuant to this section before the well is converted and any water from that well used for domestic purposes.

4. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

5. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an Irrigation Non-Expansion Area or Active Management Area to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

6. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of the notice (§ 45-596.E.).

7. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this notice.

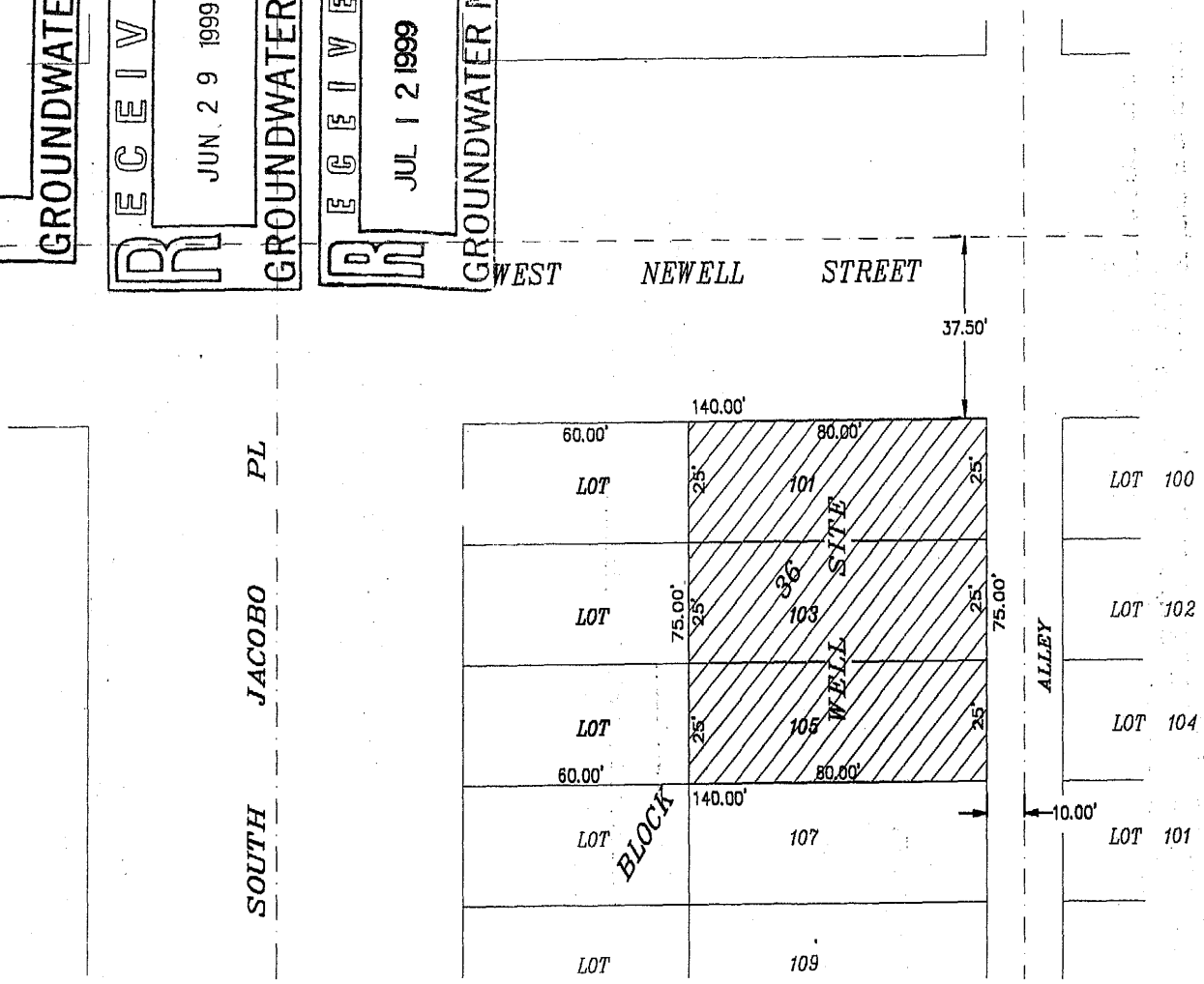
8. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

9. If an individual other than the land owner or lessee signs this Notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific Notice on their behalf, shall accompany the Notice.

RECEIVED
JUN 18 1999
GROUNDWATER MGT

RECEIVED
JUN 29 1999
GROUNDWATER MGT

RECEIVED
JUL 12 1999
GROUNDWATER MGT



LEGAL DESCRIPTION

THE EAST 80.00 FEET OF LOTS 101, 103 AND 105 OF BLOCK 36 OF THE NACO TOWNSITE AS RECORDED IN BOOK 1 OF MAPS, AT PAGE 391, IN THE COCHISE COUNTY RECORDER'S OFFICE.

N

SCALE 1" = 40'

WELL SITE – EXHIBIT "A"

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division, 500 North Third Street
Phoenix, Arizona 85004 (602) 417-2470

NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

RECEIVED JUN 18 1999 GROUNDWATER MGT

Section § 45-596, A.R.S., provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Departme

IF PARCEL IS 20 ACRES OR LESS, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BELOW, BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES

Naco Water Co. (Land Owner's Name) P.O. Box 85160 (Address) Tucson (City) AZ (State) 85754 (Zip)

Telephone 520-623-5172

County: Cochise

COUNTY ASSESSOR'S PARCEL ID INFORMATION:
Part of 102 (BOOK) 57 (MAP) 189 (PARCEL) 0.14 (well site only) (No. of Acres of Parcel)

Well/Land Location:
NE 1/4 (10AC) SW 1/4 (40ac) SW 1/4 (160ac) of Section 18 Township 24 N/S Range 24 E/W
(See Attached well Site)

OFFICIAL SEAL COCHISE COUNTY HEALTH DIVISION

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

Check one:
Recommend Approval V : Insufficient information to make determination _____ : Variance required _____ (Explanation attached).

DATE 6-17-99 AUTHORIZED SIGNATURE [signature]

RECEIVED JUN 29 1999 GROUNDWATER MGT

RECEIVED JUL 12 1999 GROUNDWATER MGT

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH

1. Section § 45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section § 45-596(D), provides that the Department has 15 days after the receipt of a complete and correct notice of intention to record the notice and mail the duplicate to the owner.
3. Fill out this form and site plan in DUPLICATE and send WITH $10.00 FEE to 500 N. 3rd St., Phoenix, AZ 85004. USE BLACK OR BLUE INK
4. For specific instructions, limitations and conditions, see the reverse side of this form.
5. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
6. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. Owner of well.
Naco Water Co. (Name)
P.O. Box 85160 (Mailing Address)
Tucson AZ 85754 (City State Zip)
Telephone: (520) 623-5172

2. Action requested: Drill New Well X ; Deepen ____ Modify ____ Replace ____
For a replacement well provide: Maximum capacity of the original well ____ gallons per minute; distance from the original well ____ feet.
Well Registration No. 55- ____

3. Construction will start about:
Month July 7 Year 1999

4. DESCRIPTION OF PROPOSED WELL:
Diameter 8 inches
Depth 400 feet
Type of Casing Steel

5. Design Pump Capacity:
130 gallons per minute

6. Lessee of Land of wellsite:
N/A (Name)
(Mailing Address)
(City State Zip)
Telephone:

7. Principal use of water:(be specific)
Water Co. Service Area Source

8. Other uses of water:(be specific)
N/A

9. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated: ____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. D(24-24)18ccA By SW
Filed 6-29-99 By SW
Input ____ By ____
DUPLICATE MAILED
Date 7-30-99 By SW
Registration 55- 595700
AMA/INA ____
W/S 11 S/B ____
M.D.

10. PLACE OF USE (Legal Description of Land):
Township 24 N/S Range 24 E/W
Section 18 1/4 SW 1/4 ____ 1/4 ____

11. Type of well: Exempt ____ Non-Exempt X
Residential X Commercial X

12. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks? YES ____ NO X

13. DRILLING FIRM:
WEBER DRILLING Co (Firm Name)
Rte. 1 Box 276 B (Mailing Address)
St. David AZ 85630 (City State Z)
272
DWR License
A-4
ROC License Classification

Salim S. Dominguez
Typed or Printed Name of Owner or Lessee

Salim S. Dominguez
Signature [X] Land Owner [ ] Lessee of Wellsite

June 16, 1999
DATE

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. If any water from a proposed well on a parcel of land of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant shall submit a site plan to scale of the property with the county assessor's parcel identification number. The site plan:

   a. Will be on a 8½"x11" piece of plain paper with representation of the locations of all structures, septic tank or sewer systems and proximity of adjacent lot lines to scale.
   b. Must show the proposed well location and the location of any septic or sewer system that is either located on the property or within one hundred feet of the proposed well site.
   c. Shall demonstrate to the director's satisfaction that the well will not be drilled within one hundred feet of any septic or sewer system.
   d. Must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Before approval, the health authority shall review the plan and determine whether the proposed well location complies with applicable state and local laws regarding the placement of wells. If so, the health authority shall endorse the site plan and the proposed well placement.

2. Endorsement by the county/local authority is based solely on the best available judgement that this well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. Information brought to light at a future date may render this determination invalid.

3. If a well which was originally drilled as an exploration well; a monitor well, a piezometer well or for any use other than domestic use and is later proposed to be converted to use for domestic purposes, as defined in § 45-454, the well owner shall file a notice of intention to drill and comply with the requirements prescribed pursuant to this section before the well is converted and any water from that well used for domestic purposes.

4. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

5. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an Irrigation Non-Expansion Area or Active Management Area to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

6. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of the notice (§ 45-596.E.).

7. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this notice.

8. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

9. If an individual other than the land owner or lessee signs this Notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific Notice on their behalf, shall accompany the Notice.

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

July 20, 1999

JANE DEE HULL
Governor

RITA P. PEARSON
Director

NACO WATER CO
PO BOX 85160
TUCSON, AZ 85754

Registration No. 55-575700
File No.D(24-24) 18 CCA

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Sylvia Valdez
Water Resource Technician
Groundwater Management Support Section

RECEIVED
JUL 12 1999
GROUNDWATER MGT

MEMO

TO: ADWR ***DATE:*** 7/8/99

FROM: Naco Water Co. ***JOB:***

SUBJECT: N.O.I. Ref #55-575700

Revised per your letter and telephone conversation 6/8/99.

-Southwestern Utility Management

PUT IT IN WRITING!

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

RECEIVED
JUL 12 1999
GROUNDWATER MGT

July 6, 1999

JANE DEE HULL
Governor

RITA P. PEARSON
Director

NACO WATER COMPANY
PO BOX 85160
TUCSON AZ 85754

Assigned Referenced Number: 55-575700

Dear Applicant:

The Department of Water Resources recently received your Notice of Intent to drill/deepen replace or modify a well. However, our review indicates that the filing(s) is incomplete under the Groundwater Management Act for the following reason(s):

Book, Map, and Parcel Number:	____	**ItemNo. (11.)Type of Well Exempt or Non-exempt**	____
Number of Acres:	____	**ItemNo. (12.)Residential or Commercial:**	✓
Requires site plan:	____	**ItemNo.(13.)Please Check Yes or No**	____
Requires Filing Fee $10.00	✓	**Item No.(14.)Drilling Firm:**	____
Incomplete Legal Description:		**Requires signature:**	____
Requires County Approval	____	**Requires reverse side of form:**	____
Item No. (1.) Owner of well:	____	**Requires letter of authorization:**	____
		Requires duplicate filing:	____
Item No. (2.) Action Requested:	____		
Item No. (3.) Construction date:	____	**Inside an AMA Only one exempt well may be drilled or used to serve the same non-irrigation use at the same location.**	____
Item No. (4.) Description of Proposed well:	____		
Item No. (5.) Design Pump Capacity:	____	**Renewal of driller license is required:**	____
Item No. (6.) Lessee of Land of Wellsite:	____		
		ItemNo.(4.)Must reference the "steel" surface seal	____
Item No. (7.) Principal Use of Water:	____		
Item No. (8.) Other uses of Water:	____	**Other reason:**	____
Item No. (9.) Irrigated acres:	✓		
ItemNo. (10.) Place of Use:	____	**Initials:**	

In accordance with A.R.S § 45-596; Paragraph D, this application is being returned as a "statement of determination", requesting information necessary to make it correct and complete. If the necessary information is not received by the Department within sixty (60) days, the application may be denied. You would then have to re-initiate the N.O.I. process to receive a drilling authority for this location. If you have any questions, please contact the Groundwater Management Support Section at (602) 417-2470. **ATTACH THIS CHECK LIST WHEN RESUBMITTING THE COMPLETED NOTICE OF INTENT AND RETURN TO THE BOX 458, PHOENIX, ARIZONA 85004-3003. YOU MAY ALSO CONTACT YOUR DRILLER OR COUNTY ASSESSORS OFFICE FOR ASSISTANCE PERTAINING TO THE NECESSARY INFORMATION THAT IS REQUIRED TO COMPLETE YOUR APPLICATION.**

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

July 6, 1999

JANE DEE HULL
Governor

RITA P. PEARSON
Director

NACO WATER COMPANY
PO BOX 85160
TUCSON AZ 85754

Assigned Referenced Number: 55-575700

Dear Applicant:

The Department of Water Resources recently received your Notice of Intent to drill/deepen replace or modify a well. However, our review indicates that the filing(s) is incomplete under the Groundwater Management Act for the following reason(s):

Book, Map, and Parcel Number:	____	**ItemNo. (11.)Type of Well Exempt or Non-exempt**	____
Number of Acres:	____	**ItemNo. (12.)Residential or Commercial:**	✓
Requires site plan:	____	**ItemNo.(13.)Please Check Yes or No**	____
Requires Filing Fee $10.00	___	**Item No.(14.)Drilling Firm:**	____
Incomplete Legal Description:		**Requires signature:**	____
Requires County Approval	____	**Requires reverse side of form:**	____
Item No. (1.) Owner of well:	____	**Requires letter of authorization:**	____
		Requires duplicate filing:	____
Item No. (2.) Action Requested:	____		
Item No. (3.) Construction date:	____	**Inside an AMA Only one exempt well may be drilled or used to serve the same non-irrigation use at the same location.**	____
Item No. (4.) Description of Proposed well:	____		
Item No. (5.) Design Pump Capacity:	____	**Renewal of driller license is required:**	____
Item No. (6.) Lessee of Land of Wellsite:	____		
		ItemNo.(4.)Must reference the "steel" surface seal	____
Item No. (7.) Principal Use of Water:	____		
Item No. (8.) Other uses of Water:	____	**Other reason:**	____
Item No. (9.) Irrigated acres:	✓		
ItemNo. (10.) Place of Use:	____	**Initials:**	

In accordance with A.R.S § 45-596; Paragraph D, this application is being returned as a "statement of determination", requesting information necessary to make it correct and complete. If the necessary information is not received by the Department within sixty (60) days, the application may be denied. You would then have to re-initiate the N.O.I. process to receive a drilling authority for this location. If you have any questions, please contact the Groundwater Management Support Section at (602) 417-2470.

ATTACH THIS CHECK LIST WHEN RESUBMITTING THE COMPLETED NOTICE OF INTENT AND RETURN TO THE BOX 458, PHOENIX, ARIZONA 85004-3003. YOU MAY ALSO CONTACT YOUR DRILLER OR COUNTY ASSESSORS OFFICE FOR ASSISTANCE PERTAINING TO THE NECESSARY INFORMATION THAT IS REQUIRED TO COMPLETE YOUR APPLICATION.

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ (602)417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

RECEIVED
JUN 29 1999
GROUNDWATER MGT

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. Naco Water Co. P.O.Box 85160 Tucson Az 85754
LANDOWNER'S NAME | CURRENT MAILING ADDRESS | CITY | STATE | ZIP

B. TELEPHONE NO (520)-623-5172

COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN Cochise COUNTY D. Part of 102 (BOOK) 57 (MAP) 189 (PARCEL) E. 0.14 (# OF ACRES)

OFFICIAL SEAL OR STAMP

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NE ¼ SW ¼ SW ¼ OF SECTION 18 TOWNSHIP 24 N/S RANGE 24 E/W
10AC 40AC 160AC

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL ✓; INSUFFICIENT INFORMATION TO MAKE DETERMINATION _____; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE 6-17-99 AUTHORIZED SIGNATURE _____ TITLE _____

1. OWNER OF WELL:
Naco Water Co.
NAME
P.O. Box 85160
CURRENT MAILING ADDRESS
Tucson Az 85754
CITY STATE ZIP

TELEPHONE NUMBER (520) 623-5172

2. ACTION REQUESTED:
DRILL NEW WELL X DEEPEN _____
MODIFY _____ REPLACE _____

WELL REGISTRATION NO 55-_____

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL _____ GALLONS PER MINUTE;

DISTANCE FROM THE ORIGINAL WELL: _____ FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH July YEAR 1999

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: 12 STEEL
DIAMETER: 12" " DEPTH: 20 '

DOWNHOLE CASING: Steel
DIAMETER: 8" " DEPTH: 400 '

5. DESIGN PUMP CAPACITY:
130 GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
N/A
NAME
_____
CURRENT MAILING ADDRESS
_____ _____ _____
CITY STATE ZIP

TELEPHONE: _____

7. PRINCIPLE USE OF WATER: (BE SPECIFIC)
Water Co. Service Area

8. OTHER USES OF WATER: (BE SPECIFIC).
N/A

9. IF USE INCLUDES IRRIGATION, STATE TO NEAREST TENTH, THE NUMBER OF ACRES TO BE IRRIGATED: _____

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55-575706
DATE FILED 6/18/99
FILE NO. D(24-24)18 CCA
AMA/INA —
W/S 11 S/B —
PROCESSED BY _____
DATE MAILED _____
M.O. _____

10. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
_____ ¼ _____ ¼ SW ¼ SECTION 18
10AC 40AC 160AC
TWNSHP 24 N/S RNG 24 E/W

11. TYPE OF WELL (CHECK ONE):
EXEMPT _____ NON-EXEMPT X

12. CHECK ONE:
RESIDENTIAL X COMMERCIAL X

13. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES _____ NO X

14. DRILLING FIRM:
Weber Drilling Co
NAME
Rte 1, Box 276 B
MAILING ADDRESS
St. David Az 85630
CITY STATE ZIP
(520) 720-4800
TELEPHONE NO.
272
DWR LICENSE NUMBER
A-4
ROC LICENSE CATEGORY

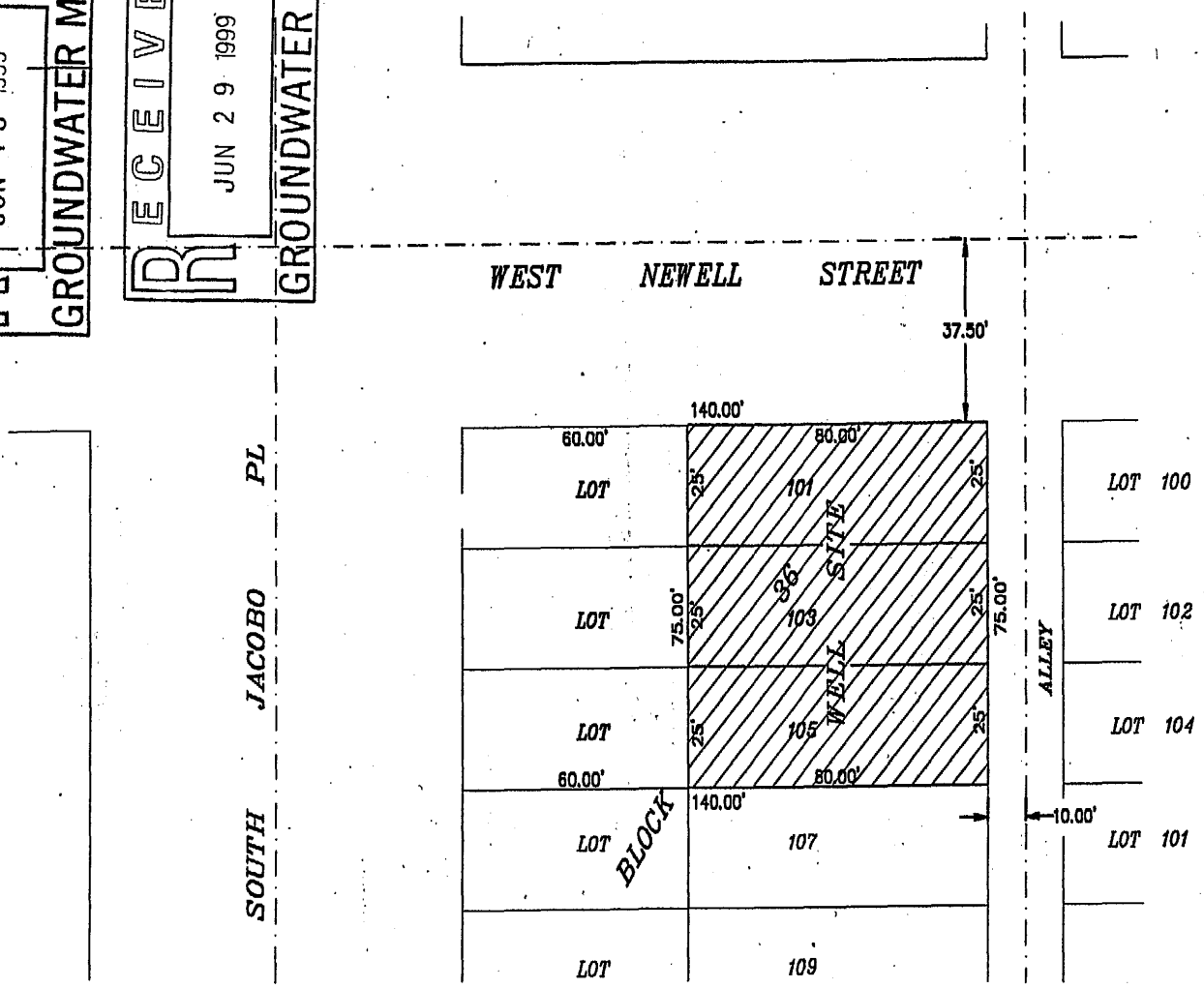
I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596. IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

Salim S. Dominguez — 15. TYPE OR PRINT NAME AND TITLE
16. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE
6/16/99 — 17. DATE

DWR 55-40 (REV 1/99)

RECEIVED
JUN 18 1999
GROUNDWATER MGT

RECEIVED
JUN 29 1999
GROUNDWATER MGT



LEGAL DESCRIPTION

THE EAST 80.00 FEET OF LOTS 101, 103 AND 105 OF BLOCK 36 OF THE NACO TOWNSITE AS RECORDED IN BOOK 1 OF MAPS, AT PAGE 391, IN THE COCHISE COUNTY RECORDER'S OFFICE.

N

SCALE 1" = 40'

WELL SITE – EXHIBIT "A"

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

RECEIVED
JUN 29 1999
GROUNDWATER MGT

June 24, 1999

JANE DEE HULL
Governor

RITA P. PEARSON
Director

NACO WATER CO
0 O BOX 85160
TUCSON, AZ 85754

Assigned Referenced Number: 55-575700

PLEASE RETURN ALL PAPERS

Dear Applicant:

The Department of Water Resources recently received your Notice of Intent to drill/deepen replace or modify a well. However, our review indicates that the filing(s) is incomplete under the Groundwater Management Act for the following reason(s):

Book, Map, and Parcel Number: ____
Number of Acres: ____
Requires site plan: ____

Requires Filing Fee $10.00
Incomplete Legal Description: needs direction
Requires County Approval ____

Item No. (1.) Owner of well: ____

Item No. (2.) Action Requested: ____
Item No. (3.) Construction date: ____

Item No. (4.) Description of Proposed well: ____
Item No. (5.) Design Pump Capacity: ____
Item No. (6.) Lessee of Land of Wellsite: ____

Item No. (7.) Principal Use of Water: ____
Item No. (8.) Other uses of Water: ____

Item No. (9.) Irrigated acres: ____
ItemNo. (10.) Place of Use: needs direction

ItemNo. (11.)Type of Well Exempt or Non-exempt ____
ItemNo. (12.)Residential or Commercial: ____
ItemNo.(13.)Please Check Yes or No ____

Item No.(14.)Drilling Firm: ____
Requires signature: ____
Requires reverse side of form: ____

Requires letter of authorization: ____
Requires duplicate filing: 2 original ✓

Inside an AMA Only one exempt well may be drilled or used to serve the same non-irrigation use at the same location. ____

Renewal of driller license is required: ____

ItemNo.(4.)Must reference the "steel" surface seal ____

Other reason: N or S ? E or W ?

Initials: bjp

In accordance with A.R.S § 45-596; Paragraph D, this application is being returned as a "statement of determination", requesting information necessary to make it correct and complete. If the necessary information is not received by the Department within sixty (60) days, the application may be denied. You would then have to re-initiate the N.O.I. process to receive a drilling authority for this location. If you have any questions, please contact the Groundwater Management Support Section at (602) 417-2470.

ATTACH THIS CHECK LIST WHEN RESUBMITTING THE COMPLETED NOTICE OF INTENT AND RETURN TO THE BOX 458, PHOENIX, ARIZONA 85004-3003. YOU MAY ALSO CONTACT YOUR DRILLER OR COUNTY ASSESSORS OFFICE FOR ASSISTANCE PERTAINING TO THE NECESSARY INFORMATION THAT IS REQUIRED TO COMPLETE YOUR APPLICATION.

Completed per your instructions 6/28/99
Thanks for your help.
Buck Lewis

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

June 24, 1999

JANE DEE HULL
Governor

RITA P. PEARSON
Director

NACO WATER CO
0 O BOX 85160
TUCSON, AZ 85754

Send back
New forms
direction on
legal

Assigned Referenced Number: 5

SE RETURN
APERS

Dear Applicant:

The Department of Water Resources recently received your Notice of Intent to drill/deepen replace or modify a well. However, our review indicates that the filing(s) is incomplete under the Groundwater Management Act for the following reason(s):

Book, Map, and Parcel Number: ____
Number of Acres: ____
Requires site plan: ____

Requires Filing Fee $10.00 ____
Incomplete Legal Description: ____
Requires County Approval ____

Item No. (1.) Owner of well: ____

Item No. (2.) Action Requested: ____
Item No. (3.) Construction date: ____

Item No. (4.) Description of Proposed well: ____
Item No. (5.) Design Pump Capacity: ____
Item No. (6.) Lessee of Land of Wellsite: ____

Item No. (7.) Principal Use of Water: ____
Item No. (8.) Other uses of Water: ____

Item No. (9.) Irrigated acres: ____
ItemNo. (10.) Place of Use: ____

ItemNo. (11.)Type of Well Exempt or Non-exempt ____
ItemNo. (12.)Residential or Commercial: ____
ItemNo.(13.)Please Check Yes or No ____

Item No.(14.)Drilling Firm: ____
Requires signature: ____
Requires reverse side of form: ____

Requires letter of authorization: ____
Requires duplicate filing: 2 original ✓

Inside an AMA Only one exempt well may be drilled or used to serve the same non-irrigation use at the same location. ____

Renewal of driller license is required: ____

ItemNo.(4.)Must reference the "steel" surface seal ____

Other reason: ____

Initials: lop

In accordance with A.R.S § 45-596; Paragraph D, this application is being returned as a "statement of determination", requesting information necessary to make it correct and complete. If the necessary information is not received by the Department within sixty (60) days, the application may be denied. You would then have to re-initiate the N.O.I. process to receive a drilling authority for this location. If you have any questions, please contact the Groundwater Management Support Section at (602) 417-2470. **ATTACH THIS CHECK LIST WHEN RESUBMITTING THE COMPLETED NOTICE OF INTENT AND RETURN TO THE BOX 458, PHOENIX, ARIZONA 85004-3003. YOU MAY ALSO CONTACT YOUR DRILLER OR COUNTY ASSESSORS OFFICE FOR ASSISTANCE PERTAINING TO THE NECESSARY INFORMATION THAT IS REQUIRED TO COMPLETE YOUR APPLICATION.**

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division, 500 North Third Street
Phoenix, Arizona 85004 (602) 417-2470

RECEIVED
JUN 18 1999
GROUNDWATER MGT

NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

Section § 45-596, A.R.S., provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department

IF PARCEL IS 20 ACRES OR LESS, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BELOW, BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES.

Naco Water Co. (Land Owner's Name) P.O. Box 85160 (Address) Tucson (City) AZ (State) 85754 (Zip)

Telephone 520-623-5172

County: Cochise

COUNTY ASSESSOR'S PARCEL ID INFORMATION:
Part of 102 (BOOK) 57 (MAP) 189 (PARCEL) 0.14 (No. of Acres of Parcel) (well site only)

Well/Land Location:
NE (10AC) 1/4 SW (40ac) 1/4 SW (160ac) 1/4 of Section 18 Township 24 N/S Range 24 E/W
(See Attached well site)

OFFICIAL SEAL COCHISE COUNTY HEALTH DIVISION

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

Check one:
Recommend Approval V : Insufficient information to make determination ____ : Variance required ____ (Explanation attached).

DATE 6-17-99 AUTHORIZED SIGNATURE [signature]

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH

1. Section § 45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section § 45-596(D), provides that the Department has 15 days after the receipt of a complete and correct notice of intention to record the notice and mail the duplicate to the owner.
3. Fill out this form and site plan in DUPLICATE and send WITH $10.00 FEE to 500 N. 3rd St., Phoenix, AZ 85004. USE BLACK OR BLUE INK
4. For specific instructions, limitations and conditions, see the reverse side of this form.
5. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
6. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. Owner of well.
Naco Water Co. (Name)
P.O. Box 85160 (Mailing Address)
Tucson AZ 85754 (City State Zip)
Telephone (520) 623-5172

2. Action requested: Drill New Well X ; Deepen ____ Modify ____ Replace ____
For a replacement well provide: Maximum capacity of the original well ____ gallons per minute; distance from the original well ____ feet.
Well Registration No. 55- ____

3. Construction will start about:
Month July 7 Year 1999

4. DESCRIPTION OF PROPOSED WELL:
Diameter 8 inches
Depth 400 feet
Type of Casing Steel

5. Design Pump Capacity:
130 gallons per minute

6. Lessee of Land of wellsite:
N/A (Name)
(Mailing Address)
(City State Zip)
Telephone:

7. Principal use of water:(be specific)
Water Co. Service Area Source.

8. Other uses of water:(be specific)
N/A

9. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated: ____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. D(24-24)18 CCA By ____
Filed ____ By ____
Input ____ By ____
DUPLICATE MAILED
Date ____ By ____
Registration 55- ____
AMA/INA ____
W/S 11 S/B ____
M.O.

10. PLACE OF USE (Legal Description of Land):
Township 24 N/S Range 24
Section 18 1/4 SW 1/4 ____ 1/4

11. Type of well: Exempt ____ Non-Exempt X
Residential X Commercial X

12. Is the proposed wellsite within 100 feet of a septic system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks? YES ____ NO X

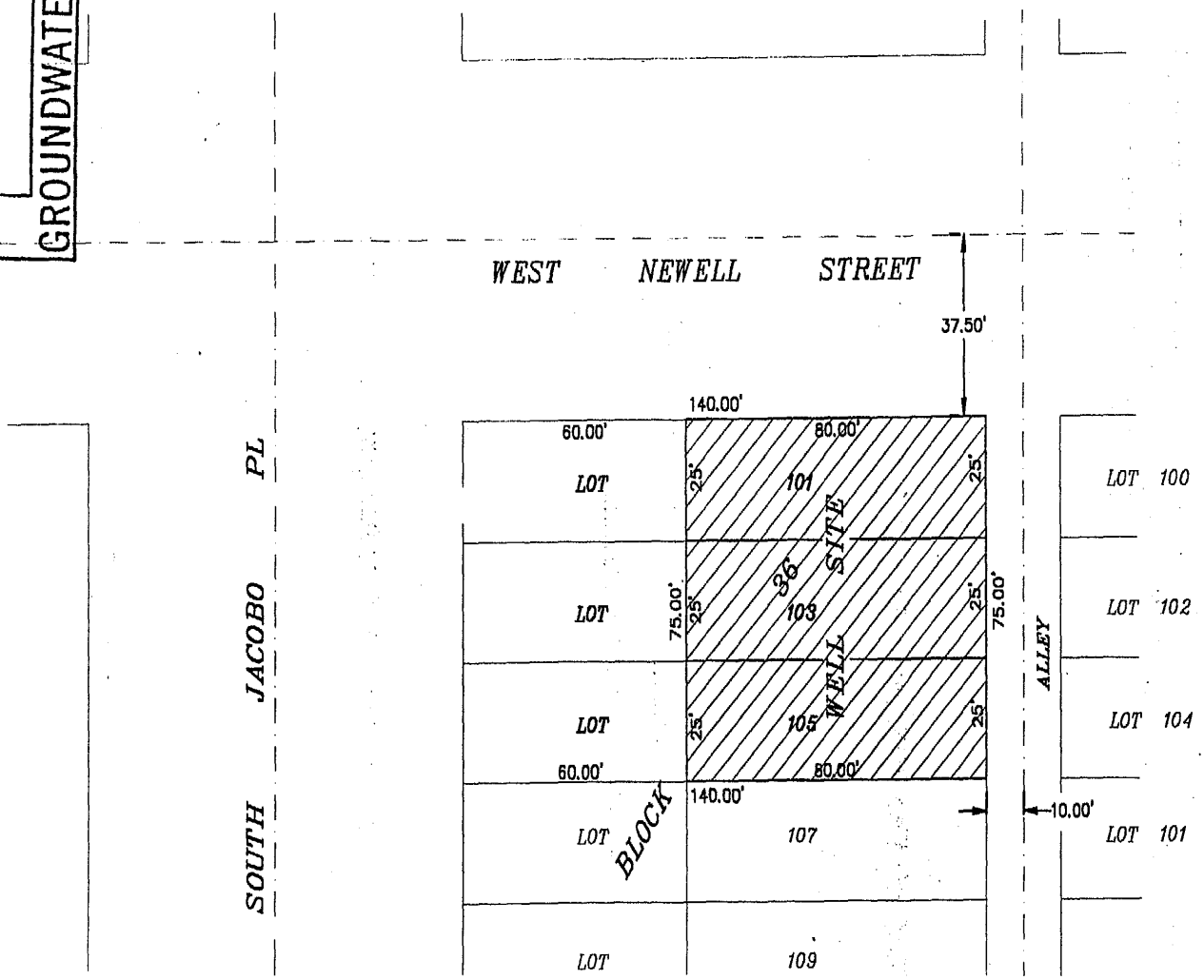
13. DRILLING FIRM:
WEBER DRILLING Co (Firm Name)
Rte. 1 Box 276 B (Mailing Address)
St. David AZ 85630 (City State)
DWR License 272
ROC License Classification A-4

Salim S. Dominguez
Typed or Printed Name of Owner or Lessee

Salim S. Dominguez
Signature [X] Land Owner [ ] Lessee of Wellsite

June 16, 1999
DATE

RECEIVED
JUN 18 1999
GROUNDWATER MG



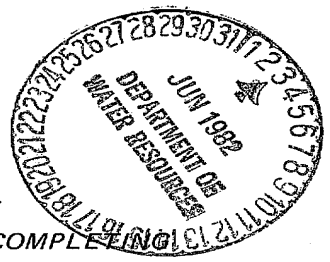
LEGAL DESCRIPTION

THE EAST 80.00 FEET OF LOTS 101, 103 AND 105 OF BLOCK 36 OF THE NACO TOWNSITE AS RECORDED IN BOOK 1 OF MAPS, AT PAGE 391, IN THE COCHISE COUNTY RECORDER'S OFFICE.

SCALE 1" = 40'

WELL SITE – EXHIBIT "A"

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☐

1 3

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 643436
FILE NO. D(24-24)11abc
FILED 6-3-82 (DATE) AT 11:15 (TIME)
INA
AMA

1. Name of Registrant:
ROBERT L. BROWN
RT#1 106 SWAN Rd. (Address) BISBEE (City), ARIZONA (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
— (File Number) 35- — (Control Number)

3. a. The well is located within the ~~NW~~ SW ¼ ~~NE~~ NW ¼ NE ¼, Section 11, of Township 24 N(S) Range 24 (E)W, G & SRB & M, in the County of COCHISE.
b. If in a subdivision: Name of subdivision —, Lot No. —, Address —.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC.

5. If for irrigation use, number of acres irrigated from well —0—.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 150 feet
b. Diameter of casing 8 inches
c. Depth of casing 150 feet
d. Type of casing STEEL.
e. Maximum pump capacity 20 gallons per minute.
f. Depth to water 67 feet below land surface.
g. Date well completed Aug. (Month) N/A (Day) 1966 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6/2/82 SIGNATURE OF REGISTRANT Robert L. Brown

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

OK

ABC

CHANGE OF WELL INFORMATION

Registration No. 55-643436

I request the following information be changed in Well File Number D(24-24) 11 as

FILED 6-3-82

NAME OF REGISTRANT, INCLOSED IS COPY OF DEATH CERTIFICATE, LETTERS TESTAMENTARY, (APPOINTING UNDERSIGNED AS PERSONAL REPRESENTATIVE) AND COPY OF CHANGE OF DEED OF REAL PROPERTY WHERE WELL IS LOCATED. REQUEST CHANGE BE MADE TO SHOW DORCAS A BROWN ~~AS OWNER OF RP~~ AS NEW OWNER.

Date 4-10, 1990 Doreen a Brown, AS Signature of Well Owner PERSONAL REPRESENTATIVE FOR ROBERT L. BROWN - DECEASED

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, DECEASED. state that I am (no longer) the

(new) owner of the well described below:

Township 24 S Range 4 E Section 11, NW ¼ NE ¼ ¼

Registration #55-643436 File No. ?

Doreen a Brown, PERSONAL REPRESENTATIVE FOR ROBERT L. BROWN	DORCAS A. BROWN
Previous Owner	New Owner
DECEASED	767 SARATOGA DR
Address	Address
City State Zip	SALINAS CA 93906
	City State Zip

NOTE: ARS 45-593 requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within 30 days after changes take place.

NOTE: SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP OR WELL DATA SUCH AS PUMP CAPACITY, ETC.

MICROFILMED
ENTERED APR 18 1990

APR 13 1990
CLERK

OK

RECEIVED
MAR 12 1991
OPERATIONS

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

CHANGE OF WELL INFORMATION

Well Registration No. 55- 643436 File No. D (24-24)11ab ABC
(location)

I/We request the following well information be changed: TO SHOW NEW OWNER OF WELL TO BE DALE G. OSBORN AND COLEEN A. OSBORN (~~SAHUARO~~ RESOURCES LTD)
301 15th Terrace, Bisbee, AZ 85603 (602)-432-4196

Date: 7-23-90 Signature of Current Well Owner Dorcas A Brown
INFO SENT TO NEW OWNER 2/7/91. Dorcas A Brown
(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, DORCAS A BROWN (please print) state that I am (no longer) the ~~(new)~~ owner of the well described below:

Township 24 S Range 24 E Section NW 1/4 ; NE 1/4 1/4 1/4

Well Registration No.55- 643436 File No. D (24-24) 11ab
(location)

DORCAS A BROWN
PRINT Previous Owner's Name

767 SARATOGA DR
Address

SALINAS | CA | 93906
City State Zip

Dale G. Osborn & Coleen A. Osborn, h/wJT
PRINT New Owner's Name

301 15th Terrace
Address

Bisbee | AZ | 85603
City State Zip

Dated: 3-10-91 Signature of New Owner Dale G. Osborn Coleen A. Osborn
Dale G. Osborn Coleen A. Osborn

MICROFILMED

ENTERED MAR 15 1991

NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

DWR-55-71-3/90

FILING FEE $10.00

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division
15 South 15th Avenue
Phoenix, Arizona 85007

FILING FEE $10.00

JUL - 2 1993

NOTICE OF INTENTION TO DRILL A WELL OUTSIDE OF AN ACTIVE MANAGEMENT AREA

Section §45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management, a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department.

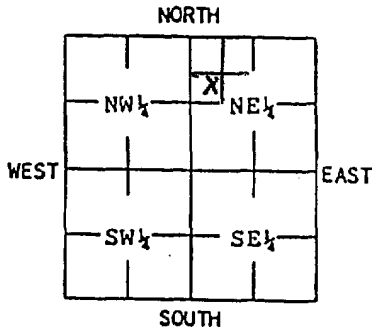
WELL/LAND LOCATION:

1. Township: 24 ☒N/☐S | 2. Range: 24 ☐E/☒W | 3. Section: 11

4. SW 1/4 (10 Acre) NW 1/4 (40 Acre) NE 1/4 (160 Acre)

5. County Assessor's I.D.: 101 (Book) | 42 (Map) | 003-0 (Parcel)

6. County: COCHISE



INDICATE WELL LOCATION BY X
(Above diagram represents one 640 acre section)

7. Type of well: Exempt ✓ Non-exempt ____

8. Action Requested:
Drill New Well ____; or Deepen ✓
Replace ____ Modify ____
Well No. 55- 643436

9. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks?
Yes ____ No ✓

10. Will this proposed well pump Colorado River Water? Yes ____ No ✓
(See item 10 on reverse side)

11. Applicant: Owner ✓ Lessee ____
DALE G. OSBORN
SAHUARO RESOURCES, LTD.
Name
SWAN ROAD P.O. BOX 5027
Mailing Address
BISBEE, AZ. 85603
City / State / Zip
Telephone: 602-432-4196

12. Owner or Lessee of Land at wellsite:
SAME
Name
Mailing Address
City State Zip
Telephone:

13. Owner of well:
SAME
Name
Mailing Address
City State Zip
Telephone:

DO NOT WRITE IN THIS SPACE
Office Record
File No. D(24-24)11 ABC
Filed 7/2/93 By dh
Input ENTERED JUL 14 1993
Mailed 7/13/93 By dh
Registration No. 55-643436
INA ____
W/S 13 S/B ____

PLACE OF USE:

14. Township 24 ☒S
Range 24 ☒E/☐W

15. Section 11

16. Legal description of land:
SW 1/4 (10 Acre) NW 1/4 (40 Acre) NE 1/4 (160 Acre)

DESCRIPTION OF PROPOSED WELL:

17. Diameter 8 inches
Depth 250 feet
Type of Casing STEEL
Design Pump Capacity:
20 gallons per minute

18. Estimate of total annual pumping:
1 acre feet

19. Principal use of water: (be specific)
DOMESTIC

20. Other uses intended: (be specific)
NONE

21. Number of Multiple Drinking Water connections, if any: 1
(See item 5 on reverse side)

22. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated:
-0-

23. Construction will start about:
JULY - 93
Month Year

DRILLING FIRM:

24. JANNER WELL SERVICE
Firm
7914 N. FRONTIER RD.
Mailing Address
McNEAL, AZ. 85617
City State Zip
133
DWR License Number
C-53
ROC License Classification

GENERAL INSTRUCTIONS

1. Fill out this form in DUPLICATE and send WITH $10.00 FEE to 15 South 15th Avenue, Phoenix, AZ 85007
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen, replace or modify a well outside of an Active Management Area.
4. If the well is a replacement, deepening or modification of an existing well, provide the registation number of the existing well in Item 8.
5. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.
6. Section §45-596(D), provides that the Director shall determine that all information required on form has been submitted. If not, the person filing will be notified, and the drilling, deepening, or modification of the well may not proceed.

MICROFILMED

I state that this Notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well as set forth on the reverse side of this form.

DALE G. OSBORN
Typed or printed name

Dale G. Osborn INDIVIDUALLY, AND AS PRES. OF SAHUARO RESOURCES
Signature of Owner / Lessee of wellsite

7-1-93
Date

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Receipt of this annotated Notice constitutes authorization to proceed in drilling, deepening, or modifying the well as set forth on this Notice.

2. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

3. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an INA or AMA to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 3 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to A.R.S. §45-434 or §45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of A.R.S. §45-437.

5. Multiple Drinking Water Connections mean other parcels of land being served by your well that are not owned by you. Each separate parcel is considered one connection.

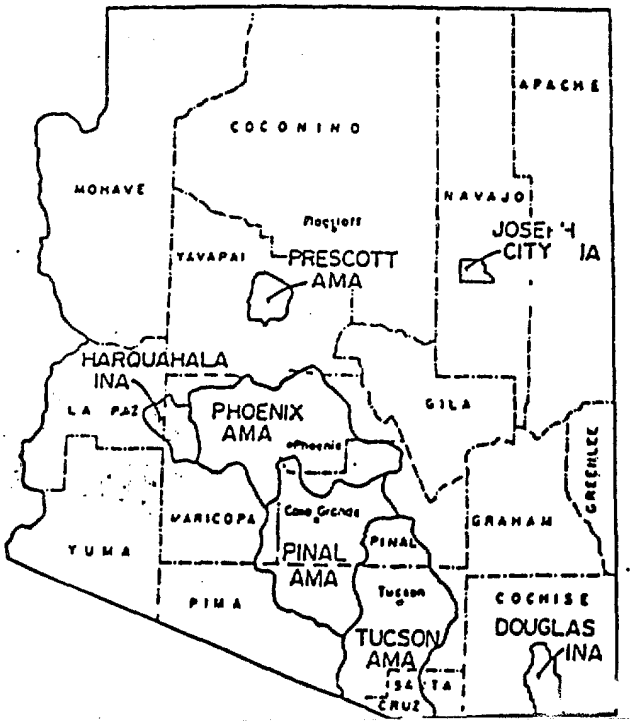
6. The drilling, deepening, or modification of this well shall be completed within one (1) year of the issuance of the drilling authority.

7. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

8. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

9. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.

10. If the proposed well is a non-exempt well and is located near the Colorado River and if the proposed well may pump Colorado River Water, proof must be submitted with this notice that the applicant has the legal right to use Colorado River Water. Alternately, evidence needs to be submitted that supports the contention that Colorado River water will not be withdrawn by the well. Persons near the Colorado River may wish to contact the Colorado River Management Division, Department of Water Resources at (602) 542-1960 to determine those Townships and Ranges which will be affected by these requirements or with questions regarding the proof of right.



SAMPLE

RECEIPT

№ 7322

Sahuaro Resources, Ltd.
Dale G. Osborn
P.O. Box 5027
Bisbee, AZ 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007
(602) 542-1581

ENTRY CODE 55

FILE NO. 55-643436 **THRU**

ITEM DESCRIPTION	RATE	AMOUNT
FILING FEE FOR NOI TO DEEPEN A WELL	10.00	10.00
REG. NO.55-643436		
FILE NO.D(24-24)11ABC		

PAID

CHECK NO. 3855 FEE ACCOUNT NO. _____ TOTAL $ 10.00

CHIT NO. _____ RECEIVED BY db DATE 07-13-93

IPS 1821 – Rev. 4/91

ARIZONA DEPARTMENT OF WATER RESOURCES

15 South 15th Avenue, Phoenix, Arizona 85007
Telephone (602) 542-1581
Fax (602) 542-3383

July 13, 1993

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

Dale G. Osborn
Sahuro Resource, Ltd.
P. O. Box 5027
Bisbee, AZ 85603

Registration No. 55-643436
File No. D(24-24)11ABC

Dear Mr. Osborn:

Enclosed is a copy of the Notice of Intention (NOI) to deepen a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized. **In no case may the replacement well be more than 660 feet from the well it is replacing.**

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

ENCLOSED

Per ARS §45-593, the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

If the information you provided indicates your well is near the Colorado River; if in the future, it is determined that water from your well is supplied from the river and you do not have a perfected water right to Colorado River water established prior to 1929, the U.S. Bureau of Reclamation may require you to cease pumping or enter into a contract for use of Colorado River water.

Sincerely,

Dorothy Boggs
Groundwater Permit Specialist

db
Enclosures

MICROFILMED

EXEMPT WELL
WELL REGISTRATION NO.
55- 643436

DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

EXEMPT WELL

THIS DRILLING CARD SHALL BE IN THE POSSESSION OF THE DRILLER BEFORE DRILLING OPERATIONS COMMENCE

AUTHORIZED DRILLER Tanner Well Service LICENSE NO. 133
(Unless superceded by notification of change of well driller)

Notice of Intention to ____ **Drill** X **Deepen** ____ **Replace** ____ **Modify** a well has been filed with the Department by:

Dale G. Osborn Sahuaro Resources, Ltd. P.O. Box 5027 Bisbee AZ 85603

Name Address City State Zip

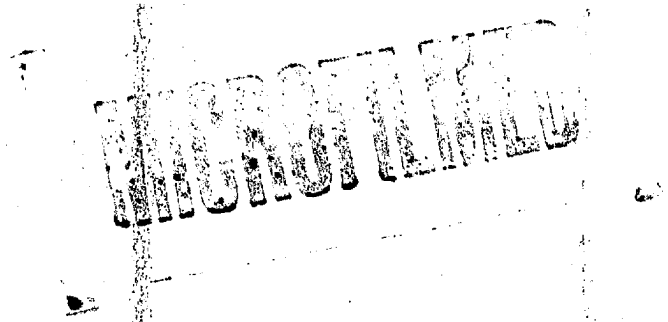
This well is to be located in: Township 24S Range 24E Section 11 SW 1/4 NW 1/4 NE 1/4

This authorization to ____ Drill X Deepen ____ Replace ____ Modify the above well expires at midnight on 07-12-94.

PURSUANT TO A.R.S. § 45-600, THE DRILLER SHALL FILE, ON THE PRESCRIBED DEPARTMENT FORM, A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

for **Deputy Director**

DWR-55-54-3/91



ARIZONA DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Name: DALE G. OSBORN-SAHUARO RESOURCES, LTD.
   Address: P.O BOX 5027 BISBEE, AZ. 85603
   Street City State Zip
2. Driller Name: JANNER WELL SERVICE
   Address: 7914 N. FRONTIER RD. McNEAL, AZ. 85617
   Street City State Zip
3. Location: 24 N/S (Township) 24 E/W (Range) 11 (Section) SW 1/4 (10-acre) NW 1/4 (40-acre) NE 1/4 (160-acre)
4. Well Registration No. 55- 643436 (Required)
5. Permit No. N/A (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 258 ft.
7. Type of casing PVC
8. Diameter and length of casing 6 in. from 0 to 258', _____ in from _____ to _____.
9. Method of sealing at reduction points N/A
10. Perforated from 122' to 258', from _____ to _____, from _____ to _____.
11. Size of cuts 1/8" x 6" Number of cuts per foot 3
12. If screen was installed: Length N/A ft. Diam _____ in. Type _____
13. Method of construction DRILLED
    (drilled, dug, driven, bored, jetted, etc)
14. Date started 7-22-93
    Month Day Year
15. Date completed 8-5-93
    Month Day Year
16. Depth to water 94 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
    FROM GROUND LEVEL
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
ENTERED AUG 23 1993
Re 55-643436
Fil D(24-24)11ABC
Re
En

DWR-55-55-7/91 (Rev.)

LOG OF WELL

1.

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encounterd, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
146	150	FILL
150	258	HARD RED ROCK

I hereby certify that this well was drilled by me (or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: Robert D. Tanner

7914 N. FRONTIER RD.
Street

McNEAL, Az. 85617
City State Zip

Date 8-9-93

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004
WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

RECEIVED
APR 18 2000
RECORDS MGT

1. L.B. DRILLING
P.O. BOX 4166
HUACHUCA CITY, AZ 85616-0166

2. Owner Name: Kristine Daniels
Address: PO Box 406 Bisbee, Az. 85603
City State Zip

3. Location: 24 N/S 24 E/W 12 ¼ SW ¼ NW ¼ SW
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55- 578819 (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 220 ft.
7. Type of casing Steel PVC
8. Diameter and length of casing Steel in. from 0 to 20, PVC in from 20 to 220
9. Method of sealing at reduction points _____
10. Perforated from 200 to 220, from _____ to _____ from _____ to _____
11. Size of cuts 1/8 Number of cuts per foot Three
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction drilled air
(drilled, dug, driven, bored, jetted, etc)
14. Date started Jan. 8 2000
Month Day Year
15. Date completed Jan. 10 2000
Month Day Year
16. Depth to water 68 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
ground level
18. If flowing well, state method of flow regulation: N/A
19. Remarks: blew 12 g.p.m.

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-578819
File No. D(24-24) 12 CBC
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	6"	Top soil brown sand
6"	206	redish brown sandstone Medium soft
206	216	grey broken medium fine sandstone water
216	220	redish brown fine drilling
		120 - 140 seep 1st H_2O
		dewatered in 30 minutes

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: L.B. DRILLING

P.O. BOX 4166
Street

HUACHUCA CITY, AZ 85616-0166 520-456-1657
City State Zip Phone No.

Larry Allen 1-11-00
Signature of Driller Date

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-578819

AUTHORIZED DRILLER: L.B. DRILLING LICENSE NO: 344

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: KRISTINE DANIELS PO BOX 406 BISBEE, AZ 85603

The well(s) is/are to be located in the:

SW 1/4 of the NW 1/4 of the SW 1/4 Section 12 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 22ND DAY OF DECEMBER, 2000.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ 602-417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

RECEIVED
DEC 23 1999
GROUNDWATER MGT

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. Kristine Daniels (LANDOWNER'S NAME) PO Box 406 (CURRENT MAILING ADDRESS) Bisbee (CITY) AZ (STATE) 85603 (ZIP)

B. TELEPHONE NO. 520 - 432 - 6000 COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN Cochise COUNTY D. 101 (BOOK) 39 (MAP) 0040 (PARCEL) E. 40 (# OF ACRES) OFFICIAL SEAL OR STAMP

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. SW ¼ (10AC) NW ¼ (40AC) SW ¼ (160AC) OF SECTION 12 TOWNSHIP 24 N(S) RANGE 24 E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL _____; INSUFFICIENT INFORMATION TO MAKE A DETERMINATION _____; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE _____ AUTHORIZED SIGNATURE _____ TITLE _____

1. OWNER OF WELL
Kristine Daniels
NAME
PO Box 406
CURRENT MAILING ADDRESS
Bisbee AZ 85603
CITY STATE ZIP
TELEPHONE NUMBER 520-432-6000

2. ACTION REQUESTED:
DRILL NEW WELL X DEEPEN N/A
MODIFY N/A REPLACE N/A
WELL REGISTRATION NO 55- NEW WELL

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL
N/A GALLONS PER MINUTE;
DISTANCE FROM THE ORIGINAL WELL:
N/A FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH DECEMBER YEAR 99

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: STEEL
DIAMETER: 4-6 " DEPTH: 0-20 '
DOWNHOLE CASING: PVC
DIAMETER: 4-6 " DEPTH: 20-175

5. DESIGN PUMP CAPACITY:
25 GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
N/A
NAME
N/A
CURRENT MAILING ADDRESS
N/A
CITY STATE ZIP
TELEPHONE: N/A - - -

7. PRINCIPAL USE OF WATER: (BE SPECIFIC)
DOMESTIC

8. OTHER USES OF WATER: (BE SPECIFIC).
N/A

JT

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55- 578819
DATE FILED 12-23-99
FILE NO. D(24-24)12 CBC
AMA/INA
W/S 13 S/B
PROCESSED BY M.O.
DATE MAILED 12-29-99
JT

9. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
SW ¼ (10AC) NW ¼ (40AC) SW ¼ (160AC) SECTION 12
TWNSHP 24 N(S) RNG 24 E/W

10. TYPE OF WELL (CHECK ONE):
EXEMPT X NON-EXEMPT _____

11. CHECK ONE:
RESIDENTIAL X STOCKWATER _____
OTHER N/A

12. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES _____ NO X

13. DRILLING FIRM:
LB Drilling
NAME
PO Box 4466
MAILING ADDRESS
Huachuca AZ. 85603
CITY STATE ZIP
520 - 456 - 1657
TELEPHONE NO.
344
DWR LICENSE NUMBER
A-4 C-53
ROC LICENSE CATEGORY

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

Kristine Daniels, owner — 14. TYPE OR PRINT NAME AND TITLE
15. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE
Dec 20th 1999 — 16. DATE

DWR 55-40 (REV 9/99)

APPLICATION GUIDELINES

In accordance with Arizona Revised Statutes ("A.R.S.") §§ 41-1008 and 1079, the Department of Water Resources (Department) provides the following information regarding the application review process for authority to drill.

NECESSARY STEPS & INSTRUCTIONS TO OBTAIN DRILLING AUTHORITY

1. Pursuant to A.R.S. § 45-596, a person may not drill, cause to be drilled, deepen or modify any well for which a permit is not required without first filing a Notice of Intent to Drill with the Department. Only a well drilling contractor licensed in the State of Arizona or a single well licensee (a person licensed to drill or modify one exempt well on his or her own property) is authorized to drill, deepen or modify a well. Drilling may not begin until the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, and which authorizes the drilling of the specific well in a specific location. To assist you in understanding the requirements for this application, copies of A.R.S. § 45-596 and Arizona Administrative Code ("A.A.C.") R12-15-810 are available at the Department bookstore (602-417-2450 x7127).
2. If replacing, deepening, or modifying an existing well, provide the registration number of the existing well in item 2. A replacement well is one located no more than 660 feet from the original well and that is not expected to annually withdraw more groundwater than historically withdrawn from the original well.
3. Information to complete items 3, 4, 5 and 13 may be available from your driller.
4. Information to complete items 9 and 12 may be available from your County Assessor's Office.
5. For item 10, in an Active Management Area, A.R.S § 45-454 only allows non-irrigation uses for "exempt" wells. If the proposed use includes the growing of 2 or more acres of plants for sale or human/animal consumption (irrigation use), the well does not qualify as an exempt well.
6. An exempt well, referred to in Item 10, means a well with a pump with a maximum capacity of not more than thirty-five gallons per minute and used for non-irrigation purposes.
7. For item 11, in an Active Management Area, A.R.S §45-454 allow up to 56 acre feet per year of pumping from a domestic (residential) or stock watering exempt well, and up to 10 acre ft per year from an exempt well used for other (usually commercial non-irrigation) purposes.
8. If any water from a proposed well on a parcel of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant must submit a well site plan of the property. The plan must be on an 8½" x 11" piece of plain paper with representation of the locations of all structures and proximity of adjacent lot lines, to scale. It must include the county assessor's parcel identification number. The plan must show the proposed well location and the location of any septic tank or sewer system that is either located on the property or within one hundred feet of the proposed well site, as well as indicating the measured shortest distance between the proposed well and existing septic tank system. **The plan must demonstrate that the well will not be drilled within one hundred feet of any septic or sewer system.**
9. The site plan must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Endorsement by the county/local authority is based solely on the best available judgement that the proposed well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. In areas where there is no local or county authority that controls installation of septic tanks or sewer systems, or if the health authority is unable to determine whether the proposed well location complies with state and local requirements, the applicant must apply for approval directly to the Department of Water Resources.
10. If an individual other than the land owner or lessee signs this notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific notice on his or her behalf, must accompany the notice.
11. Please mail **two original Notices** with **original signatures** and **two site plans** and, in accordance with A.R.S. § 45-113, a **check or money order (no cash) in the amount of $10.00** to P. O. Box 458, Phoenix Arizona, 85001-0458, or hand deliver to 500 North Third Street, Phoenix, Arizona.
12. Arizona Revised Statute § 45-596(D) provides that the Director of the Department is to determine whether or not all information required on this form has been submitted. If not, the person filing the Notice will be notified, and the drilling or modification of the well may **not** proceed.
13. This form is not applicable for non-exempt wells (those yielding more than thirty-five gallons per minute) within an Active Management Area. Contact Groundwater Management for further information regarding the appropriate notice to file with the Department.

TIME FRAME FOR REVIEW OF YOUR APPLICATION

Within 15 days after receipt of your Notice of Intention the Arizona Department of Water Resources ("Department") will determine whether your application should be granted or denied, unless this time is extended for lack of a complete application. If your application is incomplete, the Department will notify you in writing and will specify what information is necessary to make the application complete. Until the missing information is received, the time frame for review of your application will be suspended. Your application will not be complete until all of the requested information is received. If you do not supply the missing information within sixty (60) days, the Department may deem your application withdrawn and close the file.

At the end of its review, the Department will send you a written notice either granting or denying your application for drilling authority. If your application is approved, the Drill Card will be mailed directly to the drilling contractor. If denied, the Department's notice will state justification for the denial and an explanation of your right to appeal.

CONSTRUCTION AND FOLLOW UP REQUIREMENTS

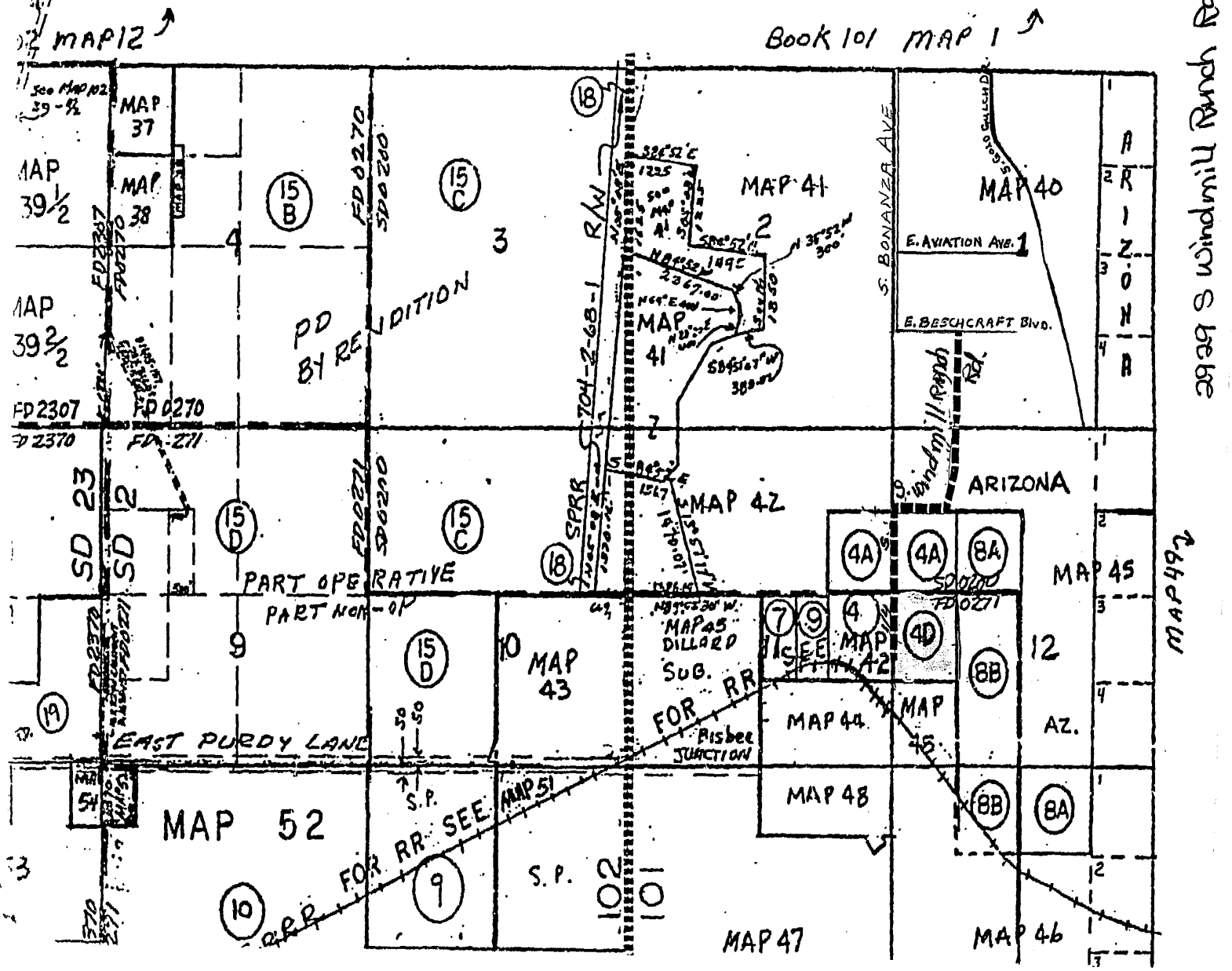
1. Construction and abandonment standards for wells, must be in accordance with Department Regulations. A.R.S. § 45-594 and Arizona Administrative Code R12-15-811 require the well to be constructed with a twenty foot steel surface seal casing, including a one foot steel stickup and one and one-half inches of grout seal around the casing from the surface to a depth of twenty feet, unless a variance is granted **(see A.R.S. § 45-596 (G) for procedure to follow in requesting a variance).**
2. Pursuant to § 45-596(E), the drilling, deepening or modification of the well must be completed within one year of the date of the Notice of Intent. If the well is not completed within one year, a new Notice of Intent must be filed before proceeding with further construction.
3. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use is later proposed to be converted to use for domestic purposes as defined in § 45-454, the well owner must file a Notice of Intention to Drill and comply with the requirements of § 45-596 before the well is converted and any water from that well is used for domestic purposes.
4. Within thirty days after installation of pumping equipment, the registered well owner must file a Completion Report with the Department. The person to whom a well is registered also must notify the Department of a change in ownership or a change in data relating to this well.

RECEIVED
DEC 23 1999
GROUNDWATER MGT

T. 24 R. 24 S. 12

BOOK 102-BOOK 101

MAP 36 MAP 39



RECEIVED
DEC 23 1999
GROUNDWATER NOT

BBB NW NW NW	BBA NE NW NW	BAB NW NE NW	BAA NE NE NW	ABB NW NW NE	ABA NE NW NE	AAB NW NE NE	AAA NE NE NE
BBC SW NW NW	BBD SE NW NW	BAC SW NE NW	BAD SE NE NW	ABC SW NW NE	ABD SE NW NE	AAC SW NE NE	AAD SE NE NE
BCB NW SW NW	BCA NE SW NW	BDB NW SE NW	BDA NE SE NW	ACB NW SW NE	ACA NE SW NE	ADB NW SE NE	ADA NE SE NE
BCC SW SW NW	BCD SE SW NW	BDC SW SE NW	BDD SE SE NW	ACC SW SW NE	ACD SE SW NE	ADC SW SE NE	ADD SE SE NE
CBB NW NW SW	CBA NE NW SW	CAB NW NE SW	CAA NE NE SW	DBB NW NW SE	DBA NE NW SE	DAB NW NE SE	DAA NE NE SE
CBC SW NW SW	CBD SE NW SW	CAC SW NE SW	CAD SE NE SW	DBC SW NW SE	DBD SE NW SE	DAC SW NE SE	DAD SE NE SE
CCB NW SW SW	CCA NE SW SW	CDB NW SE SW	CDA NE SE SW	DCB NW SW SE	DCA NE SW SE	DDB NW SE SE	DDA NE SE SE
CCC SW SW SW	CCD SE SW SW	CDC SW SE SW	CDD SE SE SW	DCC SW SW SE	DCD SE SW SE	DDC SW SE SE	DDD SE SE SE

41D

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Section 12

Township 24

Range 24

101-39-004D

RDWR TUCSON TEL:602-628-6759 Apr 26'99 8:43 No.001 P.03

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

December 29, 1999

JANE DEE HULL
Governor

RITA P. PEARSON
Director

KRISTINE DANIELS
PO BOX 406
BISBEE, AZ 85603

Registration No. 55-578819
File No.D(24-24) 12 CBC

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Monica Ortiz
Water Resource Technician
Groundwater Management Support Section

BISBEE: Christiansen Pasture

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELL

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11 13

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	XX
NON-EXEMPT WELL — $10.00	

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 642937
FILE NO. ~~D(24-24)11CD~~
FILED 5-28-82 (DATE) AT 3 (TIME)
INA
AMA

1. Name of Registrant:
Wesley E. Polley

P. O. Box 5998 (Address) | Bisbee (City) | Arizona (State) | 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the ____ ¼ NE ¼ SW ¼, Section 11, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision ____, Lot No. ____, Address ____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Stockwater.

5. If for irrigation use, number of acres irrigated from well ____.

6. Owner of land on which well is located. If same as Item 1, check this box XX

(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 100 feet
b. Diameter of casing 5 inches
c. Depth of casing 75 feet
d. Type of casing Metal Pipe.
e. Maximum pump capacity 20 gallons per minute.
f. Depth to water 50 feet below land surface.
g. Date well completed Prior to 1925 (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box X.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 5/27/82 SIGNATURE OF REGISTRANT Wesley E. Polley

MICROFILMED

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470

RECEIVED
FEB - 9 1998
RECORDS MGT

REQUEST FORM TO CHANGE WELL INFORMATION OWNERSHIP * DRILLER * VARIANCE

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-0458 or hand deliver to the above address with applicable fee. NOTE: A.R.S. §45-593.C requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)

NOTE: If the location of the proposed well changes after drilling authority has been issued, attach a $10.00 reissue fee for each well.

WELL REGISTRATION NO. 55- 642937 FILE NO: _____

If known, I/We request the following well information be changed: LOCATION SHOULD BE D-24-24 12 CBD

Date 11/3/97 Signature of Current Well Owner [signature]

ENTERED FEB 13 1998

2. STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, Bob Watkins, state that I am the Previous/(New Owner) of the well described below:

SE ¼ (10 Acre) NW ¼ (40 Acre) SW ¼ (160 Acre) of Section 12 Township 24S Range 24E

Assessor's tax parcel number of the parcel on which the well is located: Book_____ Map_____ Parcel_____.

Well Registration No. 55- 642937 File No. D(24-24)12 CBD (if known)

Wes Polley	Fidelity Title Trust # 10865
PRINT Previous Owner's Name	PRINT New Owner's Name
PO Box 5998	333 W Wilcox
Mailing Address	Mailing Address
Bisbee AZ 85603	Sierra Vista AZ 85635
City State Zip	City State Zip
	520-459-0930
Telephone Number	Telephone Number

Signature of Previous/(New Well Owner) [signature] Date 11/3/97

ENTERED FEB 13 1998

DWR 55-71 (Rev 6/96)

ARIZONA DEPARTMENT OF WATER RESOURCES

RECEIVED
NOV 16 1998
RECORDS MGT

GROUNDWATER MANAGEMENT SUPPORT SECTION
Mail to: P.O. Box 458- - Phoenix, AZ 8500
602-417-2470

NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place. **Therefore, this form may be completed in full by either the previous or new owner.**

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

CHANGE OF WELL INFORMATION

Well Registration No. 55- 642937 File No. _____ (If known)

I/We request the following well information be changed: D-24-24 12 CBD

Date: 11/11/98 **Signature of Current Well Owner** _____

STATEMENT OF CHANGE OF WELL OWNERSHIP

Fidelity Title Trust 10,865
I, Bob Watkins, spokesman state that I am (no longer) the (new) owner of the well described below:

SE ¼ NW ¼ SW ¼; Section 12 Township 24S Range 24E
10 acre 40 acre 160 acre

Well Registration No. 55- 642937 File No. _____ (If known)

Fidelity Title Trust #10,865
Bob Watkins, spokesman
PRINT Previous Owner's Name

333 W. Wilcox
Address

Sierra Vista, Az. 85635
City State Zip

Kristine F. Daniel and Helga K. McDaniel
PRINT New Owner's Name

589 E. Border Road
Address

Bisbee, Az. 85603
City State Zip

Dated 11/11/98 **Signature Previous/New Owner** X

DWR-55-71-6/93(Rev)

ANSWERED NOV 1 3 1998

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

CHANGE OF WELL INFORMATION

Well Registration No. 55- 642937 File No. ~~D(24-24)11CA~~
(location)

I/We request the following well information be changed: _____

Change water shed to: Whitewater Draw

Date: _____ Signature of Current Well Owner _____

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, _____, state that I am (no longer) the (new)
(please print)
owner of the well described below:

MICROFILMED

Township _____ Range _____ Section _____; _____ ¼ _____ ¼ _____ ¼

Well Registration No.55- _____ File No. _____
(location)

PRINT Previous Owner's Name _____

Address _____

City _____ State Zip

PRINT New Owner's Name _____

Address _____

ENTERED JAN 21 1991

City _____ State Zip

Dated: _____ Signature of New Owner _____

NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

DWR-55-71-3/90

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

STATE OF ARIZONA

DEPARTMENT OF
WATER RESOURCES

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner John W. Pool
Name
P.O. Box 4051 Bisbee, AZ 85603
Address

2. ~~Lessee or Operator~~
Name
J.R. SHARP GENERAL CONTRACTORS
BOX 4520 312 NACO HWY.
BISBEE, ARIZ. 85603 432-4597
Address

3. Driller
Name
J.R. SHARP GENERAL CONTRACTORS
BOX 4520 312 NACO HWY.
BISBEE, ARIZ. 85603 432-4597
Address

4. Location of well: NW SW NW S7 T24S R24E

5. Permit No. (if issued) _____

DESCRIPTION OF WELL

6. Total depth of hole 313'2" ft.
7. Type of Casing P.E. Steel 5 9/16 O.D. x .188
8. Diameter and length of casing 6 in. from 0 to 22, 5 9/16 in from 0 to 313.
9. Method of sealing at reduction points ✓
10. Perforated from 213 to 300, from _____ to _____, from _____ to _____
11. Size of cuts 1/4 x 6" Number of cuts per foot 2
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction _____ (drilled), dug, driven, bored, jetted, etc.
14. Date started 12-8-84 (Month-day-year)
15. Date completed 12-12-84 (Month-day-year)
16. Depth to water 174 ft. (If flowing well, so state.)
17. Describe point from which depth measurements were made, and give sea-level elevation if available.: Top of Casing
18. If flowing well, state method of flow regulation _____
19. REMARKS: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55-509518
Received _____ By _____
Entered 12-24-84 By [illegible]
File No. D(24-24)7bcb

(Well log to appear on Reverse side)

RECEIVED
DEC 19 1984
DEPT. OF
WATER RESOURCES

DWR-55-6-5/83

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	313	Recent conglomerate with varying amounts of gravel and boulders.
0	22	6 5/8 O.D. x .188 P.E. Steel, grouted.
0	313	5 9/16 O.D. x .188 P.E. Steel
213	300	Perforated 2 1/4 x 6 slots per foot.
	174	Standing water level.

I hereby certify that this well was drilled by me (or under my supervison), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller J. R. Sharp
Name

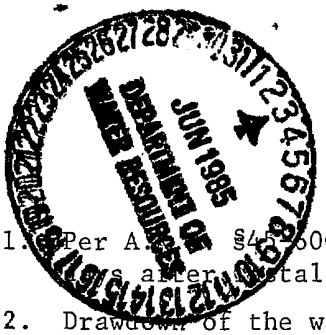
J. R. SHARP GENERAL CONTRACTORS
BOX 4520 322 NACO HWY.
BISBEE, ARIZ. 85603 432-4597

J. R. SHARP GENERAL CONTRACTORS
BOX 4520 322 NACO HWY.
BISBEE, ARIZ. 85603 432-4597
Address

City State Zip

Date 12-14-84

DEPARTMENT OF WATER RESOURCES
99 East Virginia
Phoenix, Arizona 85004



Registration No. 55-509518
Owner of Well Site POOL
File No. D(24-24)7bcb

COMPLETION REPORT

1. Per A.R.S. §45-600, the Completion Report to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24S	24E	7	NW ¼	SW ¼	NW ¼
Township	Range	Section			

EQUIPMENT INSTALLED:

Kind of pump Submersible
(Turbine, centrifugal, etc.)

Kind of power Electric
(Electric, natural gas, gasoline, etc.)

H.P. Rating of Motor 3

Pumping Capacity 30 Gallons per minute

Date installed 3-6-85

WELL TEST:

Test pumping capacity 30 Gallons per minute

Date Well Tested 3-6-85

Method of Discharge Measurement Volume
(Weir, orifice, current meter, etc.)

Static Groundwater Level 174 ft. Drawdown ? ft.

Total Pumping Lift _____ ft. Drawdown _____ lbs
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

5-15-, 1985
DATE

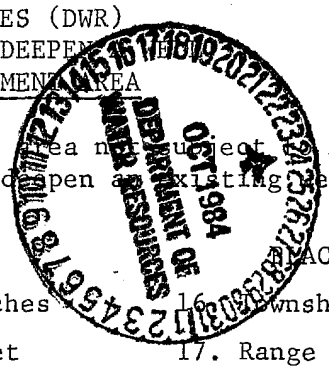
J. R. Sharp
Signature

J. R. SHARP GENERAL CONTRACTORS
Address BOX 4520 322 NACO HWY.
BISBEE, ARIZ. 85603 432-4597
City State Zip

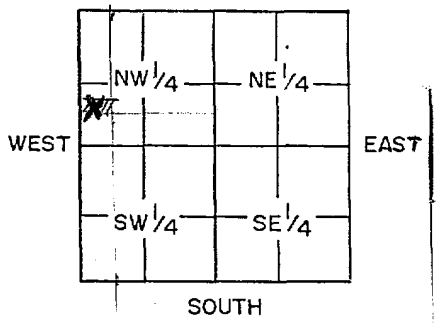
DWR-55-7-3/84

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL OR DEEPEN
OUTSIDE OF AN ACTIVE MANAGEMENT AREA



Section 45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management, a person may not drill or cause to be drilled any well or deepen an existing well without first filing a Notice of Intention to Drill with the Department.



INDICATE WELL LOCATION BY X
(Above diagram represents one 640 acre section)

WELL/LAND LOCATION:

1. Township 24S
2. Range 24E
3. Section 7
4. NW¼, SW¼, NW¼
   10 acre subdivision
5. County Cochise
6. Owner of well:
   John W Pool
   Name
   P.O.Box 4051
   Address
   Bisbee, AZ 85603
   City State Zip
   Telephone 432-2388
7. Owner of land:
   Same
   Name
   Address
   City State Zip

DESCRIPTION OF WELL:

8. Diameter 5 inches
   Depth 250 feet
9. Type of casing P.E.Steel
10. Design pump capacity:
    35 gallons per minute
11. Estimate of total annual pumping: 1 acre feet
12. Principal use of water:
    Domestic
    (Be Specific)
13. Other uses intended:
    None
    (Be Specific)
14. If for irrigation, state the number of acres to be irrigated:
    ✓ acres
15. Construction will start about:
    Dec. '84
    Month Year

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
FILE NO. D(24-24) 7bcb
FILED 10-24-84 BY ek
INPUT 10.24.84 BY
DUPLICATE MAILED 10-24-84 BY ek
REGISTRATION NO. 55-509518
INA
W/S 11 S/B

PLACE OF USE:

16. Township 24S
17. Range 24E
18. Section 7
19. Legal description of land S½ NW¼ SW¼ NW¼
20. Type well:
    ✓ Exempt
    ___ Non-Exempt
21. Action Requested:
    Drill ✓ Deepen Replace
    55-
22. This notice filed by:
    Owner ✓
    Lessee
    See #6
    Name
    Address
    City State Zip
    Telephone
23. Driller's Name:
    J.R. Sharp Gen. Contrs
    Name
    P.O.Box 4520
    Address
    Bisbee, AZ 85603
    City State Zip
    155 27262
    DWR License Number

GENERAL INSTRUCTIONS

1. Fill out this form in duplicate and send to 99 East Virginia, Suite 100, Phoenix, Az. 85004.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen or replace a well outside of an Active Management Area
4. If the well is a replacement or deepening of an existing well, state the registration number of the existing well in Item 21.
5. Construction standards for new and replacement wells and the deepening and abandonment of existing wells shall be in accordance with Department Rules and Regulations.

I state that this Notice is filed in compliance with ARS §45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well set forth on the reverse side of this form.

DATE 10-23-84 Signature of Person Filing John W Pool

DWR-55-41-10/83

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Upon receipt of the return of this annotated Notice, the owner is authorized to proceed in drilling or deepening the well as set forth on this Notice.

2. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

3. Only one exempt well may be drilled or used to serve the same use at the same location.

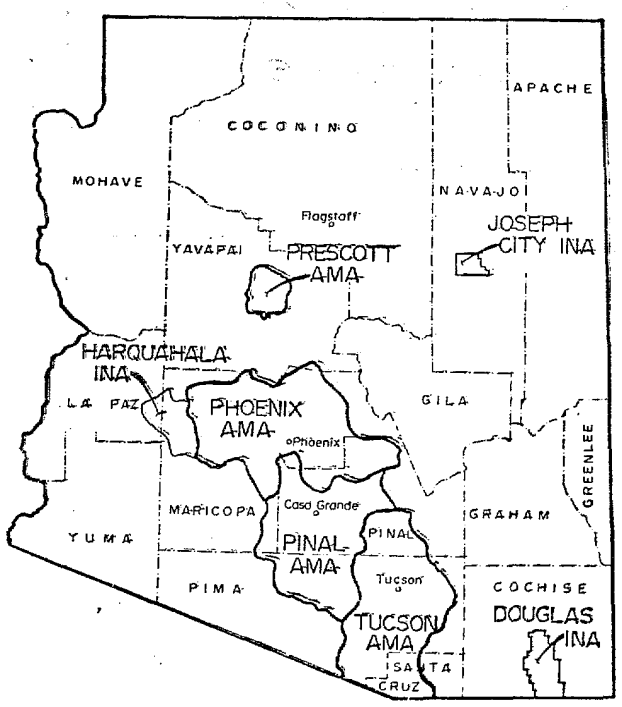
4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 2 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to ARS §45-434 or §45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of ARS §45-437.

5. The drilling or deepening of this well shall be completed within one (1) year of the date of this Notice.

6. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

7. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of the annotated copy of this Notice.

8. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.



¼ MN ¼ SW¼ ¼ MN ¼ S

J R SHARP GENERAL CONTRACTORS
P O BOX 4520
BISBEE AZ 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	509518
	THRU

POOL

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEE FOR NOTICE OF INTENTION		10.00
					TO DRILL AN EXEMPT WELL	WRITER	PAYMENT
						~~SUCSTS~~	1
						CHK NO	10047
						55-I	10.00
						TAX	0.00
					FILE#D(24-24)7bcb Reg#55-509518	TOTL	10.00
						GEN.CHEK	10.00
						# 3278 A	12:13

CHECK#10047 10/24/84/ek

TOTAL $ 10.00

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED
JUN 9 1982
DEP'T. OF
WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

FOR OFFICE USE ONLY	
REGISTRATION NO. 55-	613395
FILE NO.	D(24-24)18aaa
FILED (DATE)	6-9-82
AT (TIME)	4
INA	—
AMA	—

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL – $10.00	☒

1. Name of Registrant:
   Shamrell, Richard
   Box 4055 (Address) Bisbee (City) Az. (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
   _____ (File Number) 35- _____ (Control Number)

3. a. The well is located within the NE ¼ NE ¼ NE ¼, Section 18, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

   b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
   irrigation.

5. If for irrigation use, number of acres irrigated from well 15.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
   _____
   _____ (Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
   a. Depth of Well 300 feet
   b. Diameter of casing 6 inches
   c. Depth of casing 300 feet
   d. Type of casing steel .
   e. Maximum pump capacity 200 gallons per minute.
   f. Depth to water n/a feet below land surface.
   g. Date well completed _____ (Month) _____ (Day) 1964 (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒.
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   Attach additional sheet if necessary.

9. DATE 6/3/82 SIGNATURE OF REGISTRANT Richard Shamrell
   By Wilford R. Richardson
   Wilford R. Richardson, Attorney

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

JUN 11 1991

STATE OF ARIZONA } ss.
COUNTY OF COCHISE }

I hereby certify that the within instrument was filed and recorded in bo[illegible] at the request of

FEE # 910611234
OFFICIAL RECORDS
COCHISE COUNTY
DATE HOUR
06/11/91 8
REQUEST OF
FIDELITY NATIONAL TITLE
CHRISTINE RHODES-RECORDER
FEE : 12.00 PAGES : 3

Fee No.

Compared

Photostated

Fee:

For Tax Purposes:
102-56-038-0

When recorded, mail to:
Clarke and Patricia Raymond
3330 E. OAKHILL
SIERRA VISTA, AZ
85635

order

30-021;290-MH

Warranty Deed

For the consideration of Ten Dollars, and other valuable considerations, I or we,

CAROLINE RITA SHAMRELL; an unmarried woman; TIMOTHY J. SHAMRELL AND ANITA M. SHAMRELL; Husband and Wife

do hereby convey to

CLARKE RAYMOND AND PATRICIA B. RAYMOND, Husband and Wife, as Joint Tenants with the Right of Survivorship, as to an Und. 1/2 interest and LOREN F. BREWER AND JESSIE A.*

the following real property in Cochise County, Arizona

THE NORTH HALF OF THE NORTHEAST QUARTER OF THE NORTHEAST QUARTER OF SECTION 18, TOWNSHIP 24 SOUTH, RANGE 24 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, COCHISE COUNTY, ARIZONA.

EXCEPT THE EAST 330.00 FEET THEREOF.

*BREWER, Husband and Wife, as Joint Tenants with the Right of Survivorship, as to an undivided one-half interest.

JUL 1991

MICROFILMED

SUBJECT TO: Current taxes, assessments, reservations in patents and all easements, rights of way, encumbrances, liens, covenants, conditions and restrictions as may appear of record.

And I or we do warrant the title against all persons whomsoever subject to the matters above set forth.

Dated this 4th day of June, 1991

Caroline Rita Shamrell
CAROLINE RITA SHAMRELL

TIMOTHY J. SHAMRELL

ANITA M. SHAMRELL

STATE OF ARIZONA
County of ~~COCHISE~~ Pima

This instrument was acknowledged before me this 6th day of June, 1991 by Caroline Rita Shamrell

Notary Public

My commission will expire My Commission Expires March 31, 1995

STATE OF ARIZONA
County of PIMA

This instrument was acknowledged before me this 6th day of June, 1991 by Timothy J. Shamrell and Anita M. Shamrell

Notary Public

My commission will expire My Commission Expires March 31, 1995

COURTESY OF

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

OK

MAY 18 1992

CHANGE OF WELL INFORMATION

Well Registration No. 55- 613395 File No. D(24-24)18 AAA (location)

I/We request the following well information be ~~changed.~~ RECORDED:
ONE QUARTER (1/4) INTEREST TRANSFERED TO
LOREN AND JESSIE BREWER, P.O. Box 399
BIG TIMBER, MONTANA 59011

Date: 5/9/92 Signatures of Current Well Owners Clarke Raymond
Patricia B. Raymond

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

Patricia B. &
WE CLARKE RAYMOND, state that ~~I am~~ We are NOW ~~(no longer)~~ the 3/4 ~~(now)~~
(please print)
owners of the well described below:

____ 1/4 ____ 1/4 ____ 1/4; Section ____ Township ____ Range ____
10 acre 40 acre 160 acre

Well Registration No.55- 613395 File No. D(24-24)18 AAA

Patricia B.
& CLARKE RAYMOND
PRINT ~~Previous~~ Present Owner's Names (3/4 interest)

(location)
LOREN AND JESSIE BREWER
PRINT New Owner's Name 1/4 INTEREST

P.O. Box 1010
Address

P.O. Box 399
Address

NACO AZ. 85620
City State Zip

BIG TIMBER MT. 59011
City State Zip

Dated: 5-15-92 Signature of ~~New~~ PARTIAL Owner Lorin Brewer & Jessie G. Brewer

ENTERED MAY 28 1992

NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

DWR-55-74-11/90

D(24-24)18 AAA

Clarke Raymond
~~Sheridan, Montana 59749~~
Box 1010 NACO, Az. 85620

5/1/92

Arizona Dept. of Water Resources
Operations Division
15 S. 15th Ave.
Phoenix, Az. 85007

Sirs —

Herewith report the Transfer of a one-Quarter (1/4) interest in Well Registration # 55-WR-613395, File # D 24S - 24E, Section 18 AAA To LOREN and Jessie BREWER, Box 399, Big Timber, Montana 59011.

Clarke Raymond
Patricia B. Raymond } Dated — May 1, 1992

MICROFILMED

RECEIVED
MAY - 4 1992
OPERATIONS DIV.

ENTERED MAY 12 1992

OK

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

JUL 17 1991

CHANGE OF WELL INFORMATION

Well Registration No. 55- WR-613395 File No. D 24-24 18AAA (location)

I/We request the following well information be changed: _____

Date: 7/5/91 Signature of Current Well Owner Caroline R Shamrell
~~Clarke Raymond~~

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

WE, CLARKE & PATRICIA RAYMOND (please print), state that ~~I am~~ WE ARE (~~no longer~~) the (new) owners of the well described below:

Township 24S Range 24E Section 18 ; NE ¼ NE ¼ NE ¼

Well Registration No.55- WR 613395 File No. D 24-24 18AAA (location)

CAROLINE RITA SHAMRELL
PRINT Previous Owner's Name

CLARKE & PATRICIA RAYMOND
PRINT New Owner's Name

Box 4055
Address

3330 E. OAK HILL ST.
Address

BISBEE AZ 85603
City State Zip

SIERRA VISTA AZ. 85635
City State Zip

Dated: 7/3/'91 Signature of New Owner Clarke Raymond
Patricia B. Raymond

MICROFILMED

ENTERED JUL 17 1991

NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

DWR-55-71-3/90

Richardson and Mortensen
Box 247
Safford, AZ 85546

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	613366
	THRU
55	613381

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Fifteen (15) non exempt filing fees for ~~Well registrations~~		150.00
					James Bingham D(17-21) 31 daa Gary D. Curtis D(6-25) 36aba		
					~~James Bingham D (17-21) 31 daa Gary D. Curtis D(6-25)25 dcc~~		
					Bowman D(18-21) 5caa Milton D. Curtis D(18-21)33 aad		
					~~Bowman D(18-21) 5caa Milton D. Curtis D(18-21) 33 aad~~		
					Gary D. Curtis D(6-25) 25cdd Ernest H. Dykes D(11-18)3dcd		
					~~Gary D. Curtis D(6-25) 25ded Judith H. Dykes D(11-18)3dcb~~		
					Gary D. Curtis D(6-25)25dcb Acel East D(16-20)27 dcc		
					~~Mt.Graham Comm.HospD(7-25)13 dad~~		
					Richard Shamrell D(24-24) 18aaa		

WRITER PAYMENT
GUESTS 15
CHK NO 3372
15@ 10.00
55-I 150.00
TAX 0.00
TOTL 150.00
GEN.CHEK 150.00

~~# 603 R 15:18~~

Three checks TOTAL $ 150.00
$90.00 #3372 Richardson & Mortensen
$50.00 #970 Gary Curtis
$10.00 #1476 Acel W. East

MICROFILMED

STATE OF ARIZONA

DEPARTMENT OF
WATER RESOURCES

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner (Original) MERRILL MABERRY (Present Owner) J.R. Sharp P.O. Box 4520 Bisbee, AZ 85603
   Name
   49 Franklin Bisbee AZ 85603
   Address

2. Lessee or Operator J. R. SHARP GENERAL CONTRACTORS BOX 4520 322 NACO HWY. BISBEE, ARIZ. 85603 432-4597
   Name
   Address

3. Driller J. R. SHARP GENERAL CONTRACTORS BOX 4520 322 NACO HWY. BISBEE, ARIZ. 85603 432-4597
   Name
   Address

4. Location of well: NW SW NW S29 T23S R24E

5. Permit No. (if issued) _____

DESCRIPTION OF WELL

6. Total depth of hole 535 ft.
7. Type of Casing Steel
8. Diameter and length of casing 6 in. from 0 to 20, Open Hole from 20 to 535.
9. Method of sealing at reduction points _____
10. Perforated from _____ to _____, from _____ to _____, from _____ to _____
11. Size of cuts _____ Number of cuts per foot _____
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction _____ (drilled), dug, driven, bored, jetted, etc.
14. Date started March (Month) ? (day) '82 (year)
15. Date completed April (Month) ? (day) '82 (year)
16. Depth to water 350 ft. (If flowing well, so state.)
17. Describe point from which depth measurements were made, and give sea-level elevation if available. Top of Casing
18. If flowing well, state method of flow regulation _____
19. REMARKS: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55-502193
Received _____ By _____
Entered 1-7-85 By LG
File No. D(23-24)29 bcb

(Well log to appear on Reverse side)

RECEIVED JAN 4 1985 DEPT. OF WATER RESOURCES

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	3'	Top soil
3	5-35	Fractured Gray Limestone

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

J. R. SHARP GENERAL CONTRACTORS
BOX 4520 322 NACO HWY.
BISBEE, ARIZ. 85603 432-4597

Driller J. R. Sharp
Name
J. R. SHARP GENERAL CONTRACTORS
BOX 4520 322 NACO HWY.
BISBEE, ARIZ. 85603 432-4597
Address

Date 12-18-84

2-73

DEPARTMENT OF WATER RESOURCES
99 East Virginia
Phoenix, Arizona 85004

RECEIVED
JAN 4 1985
DEPT. OF
WATER RESOURCES

Registration No. 55-502193
Owner of
Well Site ~~MERRILL MABERRY~~ J.R. Sharp

File No. D(23-24)29bcb

COMPLETION REPORT

1. Completion Report to be filed with the Department within 30 days after installation of pump equipment.

2. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

3. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.

4. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

LOCATION OF THE WELL

NW SW NW S29 T23S R24E .

Date Well Completed April 1982 Depth of Well 535

1. Well Test:
Test Pumping Capacity 5 (Gal. per min.) Date Well Tested April '82
Method of Discharge Measurement Air Lift (weir, orifice, current meter, etc.)

Static Groundwater Level 350 ft. Drawdown _____ ft.
Total Pumping Lift _____ ft. Drawdown _____ lbs. (Flowing Well)

2. Equipment Installed:

Kind of Pump 4" Submersible (turbine, centrifugal, etc.)

Kind of Power (Elec.) Nat. Gas, Etc.) H.P. Rating of Motor 1½

1-7.85 M

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

J. R. Sharp
Signature

J.R. SHARP GENERAL CONTRACTORS
Address BOX 4520 322 NACO HWY.
BISBEE, ARIZ. 85603 432-4597

12-18-, 1984
Date

City State Zip

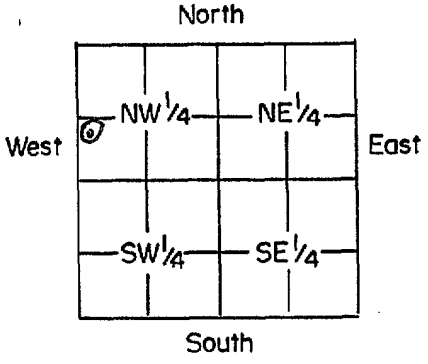
J.R. SHARP GENERAL CONTRACTORS
BOX 4520 322 NACO HWY.
BISBEE, ARIZ. 85603 432-4597

EXEMPT WELL
FILING FEE: $3.00

DEPARTMENT OF WATER RESOURCES
NOTICE OF INTENTION TO DRILL OR DEEPEN
AN EXEMPT WELL

EXEMPT WELL

Section 45-596, Arizona Revised Statutes, provides: A person may not drill or cause to be drilled any well or deepen or replace existing well without first filing a Notice of Intention to Drill with the Department on a form prescribed and furnished by the Department. The well shall be completed within one year after the date of Notice. An exempt well means a well having a pump with a maximum design capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An exempt well may include the non-commercial irrigation of not more than 1 acre of land.



- Indicate Well Location by X
(Above diagram represents one 640 acre section)

WELL/LAND LOCATION:

1. Township 23S
2. Range 24E
3. Section 29
4. NW ¼ SW ¼ NW ¼ — 10 acre sub-division
5. County Cochise
6. Owner of Well:

Merrill Maberry
Name
49 Franklin
Address
Bisbee, AZ 85603
City State Zip

7. Owner of Land:

Same
Name

Address

City State Zip

DESCRIPTION OF WELL:

8. Diameter 6"
   Depth 100'
9. Type of Casing P.E. Steel
10. Principal use of Water. Domestic
11. Other uses Intended

(If for non-commercial irrigation, state approximate area being cultivated.)

12. Construction will start about:
Feb. '82
Month Year

13

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
FILE NO. D(23-24) 29 bcb
FILED 3-4-82 BY EK
INPUT 3-4-82 BY
DUPLICATE MAILED 3-4-82 BY EK
REGISTRATION NO 55-502193
AMA NON EXPANSION AREA —

PLACE OF USE:

13. Township 23S
14. Range 24E
15. Section 29
16. Legal description of land water is to be used on:
NW SW NW Lot 49
Mt. Ranch Estates
17. Design Pump Capacity
35 gpm max
18. Action Requested:
Drill ✓
Deepen
Replace
19. This notice filed by:
Owner
Lessee
Driller ✓

J.R. Sharp Gen. Contrs.
Name
P.O. Box 4520
Address
Bisbee AZ 85603
City State Zip

20. Drillers Name:
Same
Name

Address

City State Zip
155
Department License Number

1. Fill out this form in duplicate and mail to P.O. Box 2600, Phoenix, Arizona, 85002, or deliver to 222 N. Central Ave., Suite 550, Phoenix, Arizona, 85004.
2. If the Exempt Well is in fact a replacement (or deepening) well, state the registration number of the existing well.
3. Construction standards for new and replacement wells and the deepening and abandonment of existing wells, shall be in accordance with Department Rules and Regulations.

I, Merrill W Maberry, state that the construction will be under the direct and personal supervision of the well driller designated on this form and that the designated driller holds a contractors license pursuant to ARS 45-595.

2-26-82
Date

J. R. Sharp
Signature of Person Filing

J R Sharp General Contractors
P O Box 4520
Bisbee, AZ 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	502193
	THRU

For: Maberry

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Notice of Intention		3.00
					To Drill An Exempt Well		
					FILE NO: D(23-24)29 bcb		
					Registration NO: 55-502193		
					Check # 8908		

WAITER PAYMENT
GUESTS 1
CHK NO 8908
55-I 3.00
TAX 0.00
TOTL 3.00
GEN.CHEK 3.00

4949 A 10:37

3/4/82/ek

TOTAL $ 3.00

CHANGE OF WELL INFORMATION

Registration No. 55- 502193

I request the following information be changed in Well File Number D(23-24)29 bcb

Date _____, 19___ _____
Signature of Well Owner

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, Marjorie C. Sharp. state that I am (no longer) the

~~(owner)~~ owner of the well described below:

Township 23S Range 24E Section 29, NW ¼ SW ¼ NW ¼

Registration #55- 502193 File No. D(23-24)29 Bcd

Marjorie C. Sharp	N.L. Pavlovich N L Pavlovich
Previous Owner	New Owner
124 Mountain View	49 Franklin St.
Address	Address
Bisbee Ariz. 85603	Bisbee, Az. 85603
City State Zip	City State Zip

NOTE: ARS 45-593 requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within 30 days after changes take place.

NOTE: SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP OR WELL DATA SUCH AS PUMP CAPACITY, ETC.

RECEIVED FEB 24 1989 DEPT. OF WATER RESOURCES

ENTERED MAR 07 1989

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004
WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

RECEIVED
NOV 15 1999
RECORDS MGT

1. TANNER WELL SERVICE
7914 NORTH FRONTIER ROAD
MCNEAL, AZ 85617-9718

2. Owner Name: STEVE A. PARRA
Address: PO BOX 5363 BISBEE, AZ. 85603
City State Zip

3. Location: 24 ☒S 24 E/☐W 5 ¼ NW ¼ NW ¼ SE
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55- 576415 (Required)
5. Permit No. N/A (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 355 ft.
7. Type of casing STEEL + PVC
8. Diameter and length of casing 6 in. from -1 to 125'45 in from 115' to 355'
9. Method of sealing at reduction points 10' OVER LAP
10. Perforated from 255' to 355', from ____ to ____ from ____ to ____
11. Size of cuts 1/8" x 6" Number of cuts per foot 3
12. If screen was installed: Length N/A ft. Diam ____ in. Type ____
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started 9-23-99
Month Day Year
15. Date completed 10-6-99
Month Day Year
16. Depth to water 263 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
FROM GROUND LEVEL
18. If flowing well, state method of flow regulation: N/A

19. Remarks: ____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-576415
File No. D(24-24) 5 DBB
Received ____ By ____
Entered ____ By ____

DWR-55-55-7/95 (Rev.)

ENTERED NOV 15 1999

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	15	CONGLOMERATE
15	275	ROCK + BROWN CLAY
275	278	GRAVEL (HIT WATER 275' - ROSE TO 263')
278	340	ROCK + CLAY
340	350	SAND + GRAVEL
350	355	ROCK + CLAY

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: TANNER WELL SERVICE

7914 NORTH FRONTIER ROAD

Street

MCNEAL, AZ 85617-9718 520-642-3654

City State Zip Phone No.

Robert L Tanner 10-7-99

Signature of Driller Date

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-576414

AUTHORIZED DRILLER: SANTA CRUZ WELL & PUMP COMPANY LICENSE NO: 121

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: VIRGINIA MIRANDA 1560 SOUTH 8TH TUCSON, AZ 85713

The well(s) is/are to be located in the:

SE 1/4 of the SE 1/4 of the SW 1/4 Section 25 Township 21 SOUTH Range 10 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 21ST DAY OF JULY, 2000.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

RECEIVED
JUL 22 1999
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ (602)417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. STEVE A. PARRA (LANDOWNER'S NAME) P.O. Box 5363 (CURRENT MAILING ADDRESS) BISBEE (CITY) AZ. (STATE) 85603 (ZIP)

B. TELEPHONE NO. 520-432-7432 COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN COCHISE COUNTY D. 102 (BOOK) - 39 (MAP) - 013 (PARCEL) E. 1.05 (# OF ACRES)

OFFICIAL SEAL OR STAMP
C.C.H.S.S.
1415 W. Melody Lane, Bldg. A
Bisbee, Arizona 85603-3090

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NW ¼ (10AC) NW ¼ (40AC) SE ¼ (160AC) OF SECTION 5 TOWNSHIP 24 ☒ N/S RANGE 24 ☒ E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL ✓; INSUFFICIENT INFORMATION TO MAKE DETERMINATION _____; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE 7-19-99 AUTHORIZED SIGNATURE Steve Herbert TITLE Envir. Health Spec.

1. OWNER OF WELL:
STEVE A. PARRA
NAME
P.O. BOX 5363
CURRENT MAILING ADDRESS
BISBEE, AZ. 85603
CITY STATE ZIP
TELEPHONE NUMBER 520-432-7432

2. ACTION REQUESTED:
DRILL NEW WELL X DEEPEN _____
MODIFY _____ REPLACE _____

WELL REGISTRATION NO 55-_____

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL _____ GALLONS PER MINUTE;

DISTANCE FROM THE ORIGINAL WELL: _____ FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH AUGUST YEAR 1999

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: STEEL
DIAMETER: 6 " DEPTH: 20 '

DOWNHOLE CASING: PVC
DIAMETER: 6 " DEPTH: 400 '

5. DESIGN PUMP CAPACITY:
25 GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
NONE
NAME
CURRENT MAILING ADDRESS
CITY STATE ZIP
TELEPHONE: _____

7. PRINCIPLE USE OF WATER: (BE SPECIFIC)
DOMESTIC

8. OTHER USES OF WATER: (BE SPECIFIC).
NONE

9. IF USE INCLUDES IRRIGATION, STATE TO NEAREST TENTH, THE NUMBER OF ACRES TO BE IRRIGATED: 0

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55- 576415
DATE FILED 7/22/99
FILE NO. D(24-24)5 DBB
AMA/INA —
W/S 11 S/B —
PROCESSED BY bjo
DATE MAILED 7/27/99
bjo

10. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NW ¼ (10AC) NW ¼ (40AC) SE ¼ (160AC) SECTION 5
TWNSHP 24 ☒ N/S RNG 24 ☒ E/W

11. TYPE OF WELL (CHECK ONE):
EXEMPT X NON-EXEMPT _____

12. CHECK ONE:
RESIDENTIAL X COMMERCIAL _____

13. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES _____ NO X

14. DRILLING FIRM:
TANNER WELL SERVICE
NAME
29141 N. FRONTIER RD.
MAILING ADDRESS
McNEAL, AZ. 85617
CITY STATE ZIP
(520) 642-3654
TELEPHONE NO.
133
DWR LICENSE NUMBER
C-53
ROC LICENSE CATEGORY

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

STEVE A. PARRA	Steve A. Parra	7-15-99
15. TYPE OR PRINT NAME AND TITLE	16. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE	17. DATE

DWR 55-40 (REV 1/99)

APPLICATION GUIDELINES

In accordance with Arizona Revise Statutes ("A.R.S.") §§ 41-1008 and 1079, the Department of Water Resources (Department) provides the following information regarding the application review process for authority to drill.

NECESSARY STEPS & INSTRUCTIONS TO OBTAIN DRILLING AUTHORITY

1. Pursuant to A.R.S. § 45-596, a person may not drill, cause to be drilled, deepen or modify any well for which a permit is not required without first filing a Notice of Intent to Drill with the Department. Only a well drilling contractor licensed in the State of Arizona or a single well licensee (a person licensed to drill or modify one exempt well on his or her own property) is authorized to drill, deepen or modify a well. Drilling may not begin until the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, and which authorizes the drilling of the specific well in a specific location. To assist you in understanding the requirements for this application, copies of A.R.S. § 45-596 and Arizona Administrative Code ("A.A.C.") R12-15-810 are available at the Department bookstore (602-417-2450 x7127).
2. If replacing, deepening or modifying an existing well, provide the registration number of the existing well in item 2. A replacement well is one located no more than 660 feet from the original well and that is not expected to annually withdraw more groundwater than historically withdrawn from the original well.
3. Information to complete items 3, 4, 5 and 14 may be available from your driller.
4. Information to complete items 10 and 13 may be available from your County Assessor's Office.
5. An exempt well, referred to in Item 11, means a well with a pump with a maximum capacity of not more than thirty-five gallons per minute used primarily for domestic purposes, including the noncommercial irrigation of less than two acres of land.
6. If any water from a proposed well on a parcel of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant must submit a well site plan of the property. The plan must be on an 8½" x 11" piece of plain paper with representation of the locations of all structures and proximity of adjacent lot lines, to scale. It must include the county assessor's parcel identification number. The plan must show the proposed well location and the location of any septic tank or sewer system that is either located on the property or within one hundred feet of the proposed well site, as well as indicating the measured shortest distance between the proposed well and existing septic tank system. **The plan must demonstrate that the well will not be drilled within one hundred feet of any septic or sewer system.**
7. The site plan must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Endorsement by the county/local authority is based solely on the best available judgement that the proposed well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. In areas where there is no local or county authority that controls installation of septic tanks or sewer systems, or if the health authority is unable to determine whether the proposed well location complies with state and local requirements, the applicant must apply for approval directly to the Department of Water Resources.
8. If an individual other than the land owner or lessee signs this notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific notice on his or her behalf, must accompany the notice.
9. Please mail **two original Notices** with **original signatures** and **two site plans** and, in accordance with A.R.S. § 45-113, a **check or money order (no cash) in the amount of $10.00** to P. O. Box 458, Phoenix Arizona, 85001-0458, or hand deliver to 500 North Third Street, Phoenix, Arizona.
10. Arizona Revised Statute § 45-596(D) provides that the Director of the Department is to determine whether or not all information required on this form has been submitted. If not, the person filing the Notice will be notified, and the drilling or modification of the well may **not** proceed.
11. This form is not applicable for non-exempt wells (those yielding more than thirty-five gallons per minute) within an Active Management Area. Contact Groundwater Management for further information regarding the appropriate notice to file with the Department.

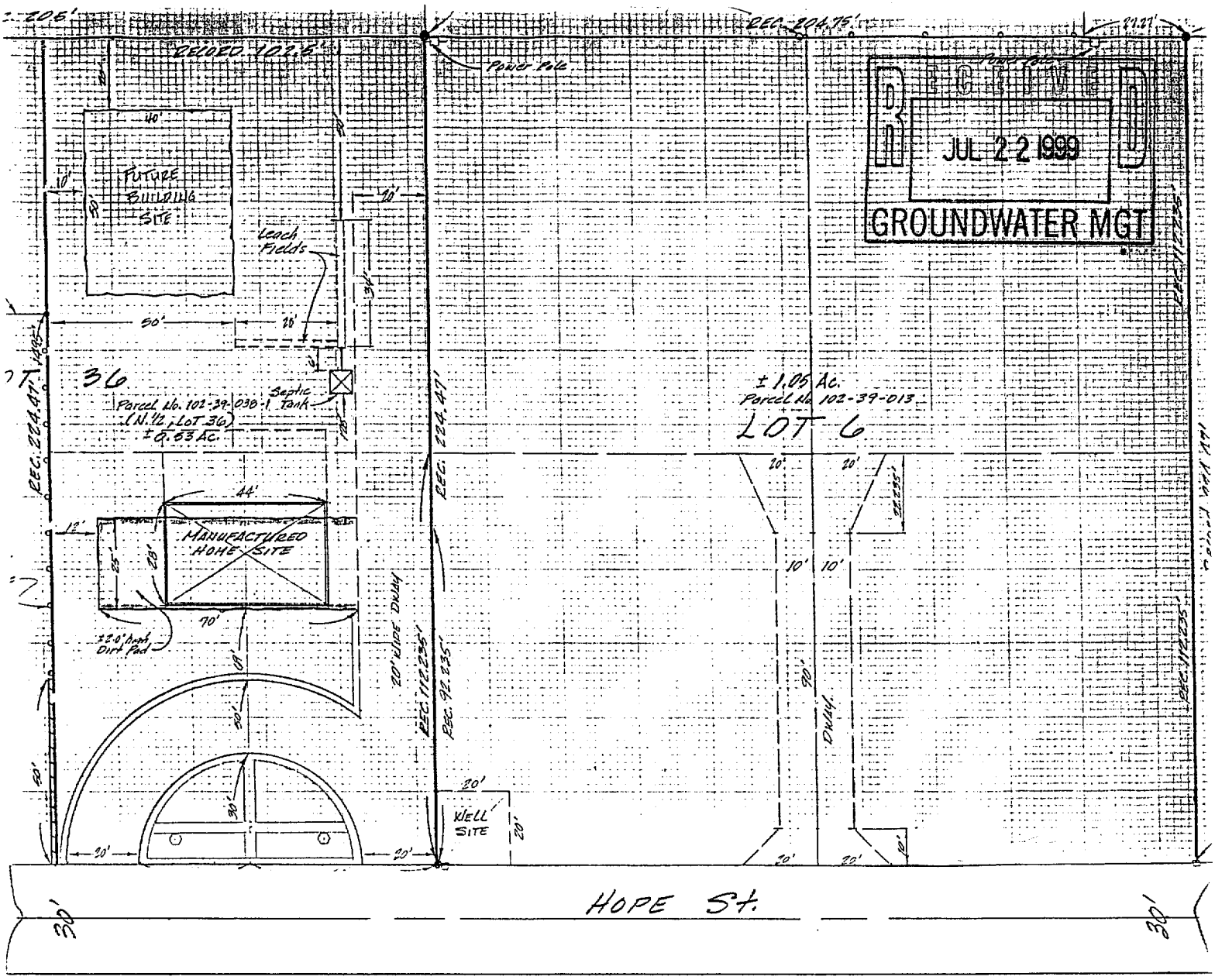
TIME FRAME FOR REVIEW OF YOUR APPLICATION

Within 15 days after receipt of your Notice of Intention, the Arizona Department of Water Resources ("Department") will determine whether your application should be granted or denied, unless this time is extended for lack of a complete application. If your application is incomplete, the Department will notify you in writing and will specify what information is necessary to make the application complete. Until the missing information is received, the time frame for review of your application will be suspended. Your application will not be complete until all of the requested information is received. If you do not supply the missing information within sixty (60) days, the Department may deem your application withdrawn and close the file.

At the end of its review, the Department will send you written notice either granting or denying your application for drilling authority. If your application is approved, the Drill Card will be mailed directly to the drilling company. If denied, the Department's notice will state justification for the denial and an explanation of your right to appeal.

CONSTRUCTION AND FOLLOW UP REQUIREMENTS

1. Construction and abandonment standards for wells, including abandonment, must be in accordance with Department Regulations. A.R.S. § 45-594 and Arizona Administrative Code R12-15-811 require the well to be constructed with a twenty foot steel surface seal casing, including a one foot steel stickup and one and one-half inches of grout seal, unless a variance is granted **(see A.R.S. § 45-596 (G) for procedure to follow in requesting a variance).**
2. Pursuant to § 45-596(E), the drilling, deepening or modification of the well must be completed within one year of the date of the Notice of Intent. If the well is not completed within one year, a new Notice of Intent must be filed before proceeding with further construction.
3. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use is later proposed to be converted to use for domestic purposes as defined in § 45-454, the well owner must file a Notice of Intention to Drill and comply with the requirements of § 45-596 before the well is converted and any water from that well is used for domestic purposes.
4. Within thirty days after installation of pumping equipment, the registered well owner must file a Completion Report with the Department. The person to whom a well is registered also must notify the Department of a change in ownership or a change in data relating to this well.



Site Plan of the N ½ of Lot 36 & Lot 6 of the Sunset Acres Subd. Located in the N.W. ¼, S.E. ¼ of Section 5, T. 24 S., R. 24 E., G. & S.R.M.

DRAWN BY: S. A. PARRA DATE: 7-14-99

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

July 27, 1999

JANE DEE HULL
Governor

RITA P. PEARSON
Director

STEVE A PARRA
P O BOX 5363
BISBEE, AZ 85603

Registration No. 55-576415
File No.D(24-24) 5 DBB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Barbara Sims

Barbara Sims
Water Resource Technician
Groundwater Management Support Section

See attached sheet

STATE OF ARIZONA

ARIZONA WATER COMMISSION
WATER RIGHTS ADMINISTRATION

REPORT OF WELL DRILLER

This report should be prepared by the driller in all detail and filed with the Az. Water Commission following completion of the well.

1. OWNER Panagakos
Name
Address

2. Lessee or Operator
Name
Address

3. DRILLER
Name
Address

4. Location of well: Twp. 24 S Rge. 24E Section 10 SW ¼ SE ¼ SE ¼
10-acre sudivision

5. Intention to Drill File No. Permit No.

DESCRIPTION OF WELL

6. Total depth of hole ft.

7. Type of casing

8. Diameter and length of casing in. from to , in. from to , in. from to

9. Method of sealing at reduction points

10. Perforated from to , from to , from to , from to

11. Size of cuts Number of cuts per foot

12. If screen was installed: Length ft. Diam. in. Type

13. Method of construction
drilled, dug, driven, bored, jetted, etc.

14. Date started
Month Day Year

15. Date completed
Month Day Year

16. Depth to water ft.
If flowing well, so state.

17. Describe point from which depth measurements were made, and give sea-level elevation if available

18. If flowing well, state method of flow regulation

19. REMARKS:

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received by
Filed 7-17-80 by Curt
File No. D(24-24)10 ddc
35-76413

(Well Log to Appear on Reverse Side)

80-4-10



LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller.....
Name

.....
Address

Date.....

2-73

TO AVOID PAYMENT OF PENALTY AND INTEREST THIS PAYMENT MUST BE IN THE OFFICE OF THE STATE LAND DEPARTMENT ON OR BEFORE THE DUE DATE. DATE OF POSTAL STAMP NOT ACCEPTED AS DATE OF PAYMENT.

STATE OF ARIZONA
STATE LAND DEPARTMENT
1624 WEST ADAMS – 4th FLOOR – PHOENIX, ARIZONA 85007

OFFICE COPY

Alfred X. Panagakos
Lida M. Panagakos
R.R. 1,
Palestine, Illinois 62451

SECTION	TOWNSHIP	RANGE

44192

KIND ENTRY	LEASE-REFERENCE NO.
35	76413 00

ACCOUNT NO. GRANT FUND	ACCOUNT NO. SUB	CARRYING CAPACITY	BILLING DESCRIPTION	RATE	ACRES	$ AMOUNT
14	312 32		Filing fee for Notice of Intention to Drill Well			3 00
			Water Rights GW			
			File # D(24-24)10 ddc		1	CK
			Check #1507	0506		CK M 3.00+ 3.00+T
					5 03 79	

CERTIFICATE OF PURCHASE UNPAID BALANCE $	BILLING PERIOD FROM MO.	FROM DAY	FROM YR	TO MO.	TO DAY	TO YR	DATE BILLED MO.	DATE BILLED DAY	DATE BILLED YR.	DATE DUE MO.	DATE DUE DAY	DATE DUE YR.	TOTAL ACRES	TOTAL AMOUNT $
							05	03	79					3 00

IF PAYMENT IS MADE ON OR BEFORE THIS DATE → PAY THIS AMOUNT

SEE OTHER SIDE FOR LAW PERTAINING TO PENALTY AND INTEREST – A. R. S. SEC. 37-288.

RENTAL AMOUNT SUBJECT TO PENALTY AND INTEREST IF NOT PAID ON OR BEFORE DATE DUE ($)

5% PENALTY OF RENTAL AMOUNT - - - - - - - - - - - - $

TOTAL RENTAL AMOUNT PLUS PENALTY - - - - - - - - ($) TOTAL PENALTY AND INTEREST

10% INTEREST PER ANNUM OF RENTAL AMOUNT AND PENALTY – NUMBER OF DAYS DELINQUENT ( ) $ $

TOTAL AMOUNT DUE INCLUDING PENALTY AND INTEREST - - - - - - - - - - - - $

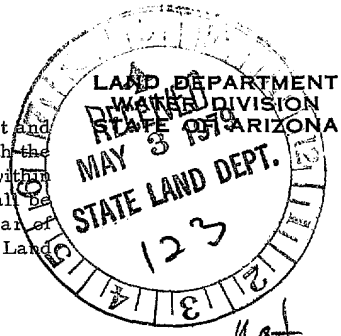
CASH RECEIVED $

BALANCE DUE OR OVERPAYMENT $

PENALTY AND INTEREST DISTRIBUTION		$

62

NOTICE OF INTENTION TO DRILL WELL



By Law, no person shall drill, or cause to be drilled, any well for the development and use of Ground Water in Arizona without first filing Notice of Intention to Drill with the State Land Department. The only exceptions are for those irrigation wells within critical Ground Water areas for which Drilling Permits are required. No well shall be drilled by other than the owner without the driller being licensed with the Registrar of Contractors. The driller's license number must be included before the State Land Department will process the filing.

FILING FEE $3.00

LOCATION OF WELL

North

West — NW¼ — NE¼ — East

SW¼ — SE¼ — X

South

Indicate Well Location by X
(Above diagram represents one 640 acre section)

1. Twp. 24 S
2. Rge. 24 E
3. Section 10
4. SW ¼ SE ¼ SE ¼
   10-acre subdivision
5. Owner of Well Site
   ALFRED X. PANAGAKOS

INSTRUCTIONS

Fill out both copies and mail to Water Division, State Land Department, 1624 W. Adams, Phoenix, Arizona, 85007.

Duplicate will be returned to Filer, together with Drilling Card. 7641 3

DESCRIPTION OF WELL

6. Diameter 8 in. depth 200 ft.
7. Type of casing 10ga welded pipe
8. Estimated depth to water 131 ft.
9. Proposed use Household + Irrigation
10. Drilling will start about JULY 1957
    Month Year
11. Driller J. R. SHARP
    Name
    BISBEE, ARIZ.
    Address
    Driller's License No.
12. Water will be applied to use about
    JULY 1957
    Month Year
20. This notice filed by:
    Check one { Owner ☒ / Lessee ☐ / Driller ☐
    Name ALFRED X. PANAGAKOS
    Address RR1, PALESTINE, ILL 62451

PLACE OF USE

Not State

13. Twp. 24
14. Rge. 24
15. Section 10
16.
    Legal Description of Land to be Irrigated or place of other use.
17. Acres (if irrigation) 4
18. Owner ALFRED X. PANAGAKOS
    Name
19. RR1 PALESTINE, ILL. 62451
    Address

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

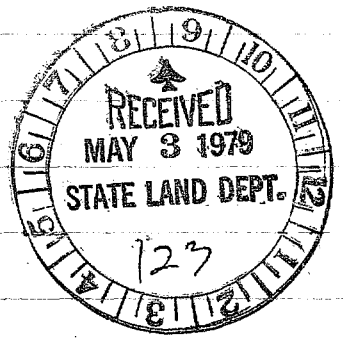
Received 5-3-79 By M
Filed 5-7-79 By M
Duplicate Mailed 5-7-79 By M
File Number D(24-24)10 ddc

4-30-79

Gentlemen:

We moved from our property in 1963 and are contemplating moving back in this a year or so. We understand that it is best that we now should have our well licensed and obtained this form from our driller, which we are now submitting.

Thank you
Sincerely,
Alex Panagakos
RR1
Palestine, Ill.



J. C. PUMP CO. [illegible] CONTRACTORS

File No. D(24-24)10 ddc

L O G

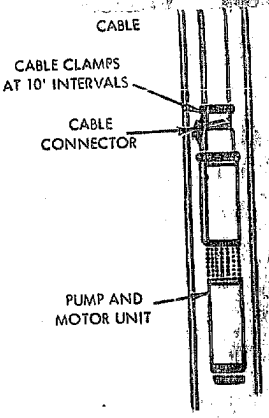
Al & Lid Panagakos Well ½ mile N.W. Bisbee Jct.

Depth	Formation
0-2	Top Soil
2-8	Red Gravelly Clay
8-80	Buff Gravelly Clay
80-100	Light Gray sandstone or Quartzite, very hard
100-144	Alternate thin bedded shale, sandstone and Conglomerate.
105	Seep of water
140-144	Increase in water in sandstone.
144-162	Hard Yellow Sandstone
162-168	Purplish brown shale
168- 203	Hard Yellow Sandstone
131	Static Water Level
204'9"	Bottom of 6 5/8" O.D. 10 ga. welded pipe.
141-200	¾" x 6" perforations, two every two feet.

35 minute bailing test of 25 gpm showed no perceptible lowering of water table.

Well drilled in July of 1957

Quantity	Description	Price	
1	Pump Model HAM 9 H.P. 1 Voltage 230 Phase 1	232	00
200	Cable - Size 12-3/c .29	58	00
189	Drop Pipe - Size 1" Galv .40	75	60
1	Well Seal - Size 1" x 8"	15	00
X	Fittings Package - Size		
1	~~Pressure Tank - Size~~ Misc wiring etc	20	00
—	Lot of Discharge Pipe Nipples and Fittings	—	—
1	~~Discharge Pipe - Size~~ 1" T, 1" Reducer, 1¼ x 1" Bushing	2	99
	~~Slip Coupling~~	—	
1	~~Gate Valve~~ 1 Pitless Connector	7	20
1	Splice Kit	3	00
	OPTIONAL EQUIPMENT		
	Contactor (required with low water cut-out on 1 phase pumps larger than 1 H.P.)		
	Safety Switch 30 psi 3=50+3=50+1=	26	16
	Low Water Cut-Out Switch (includes wire and electrodes)	—	—
	Gate Valve and Pipe Nipple - Size (for tank outlet)		
1	HTH	3	80
		550	95



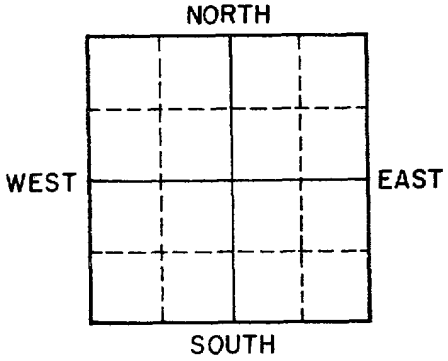
wired through control
[illegible]
Pressure [illegible]


RECEIVED
JUL 3 1980
ARIZONA WATER
COMMISSION

see attached sheet

ARIZONA WATER COMMISSION
WATER RIGHTS ADMINISTRATION
222 NORTH CENTRAL, SUITE 850
PHOENIX, ARIZONA 85004

Location of Well



(Indicate Well Location by a circle "o" in the above Section Plat)

File No. D(24-24)10 ddc
35-76413

REPORT OF EQUIPMENT INSTALLED

OWNER Panagakos

LOCATION OF WELL:

SW ¼ SE ¼ SE ¼, Sec. 10 Twp. 24S Rge. 24E

Date Well Completed: July 1957 Depth 200 ft

1. Well Test:

Discharge: _____ Date Well Tested: _____
(Gal. Per Min.)

Method of Discharge Measurement: _____
(weir, orifice, current meter, etc.)

Static Water Level: _____ ft. Drawdown _____ ft.

Total Pumping Lift _____ ft.

2. Equipment Installed:

Kind of Pump: _____
(turbine, centrifugal, etc.)

Kind of Power: _____ H.P. Rating of Motor _____
(Elec., Nat. Gas, Etc.)

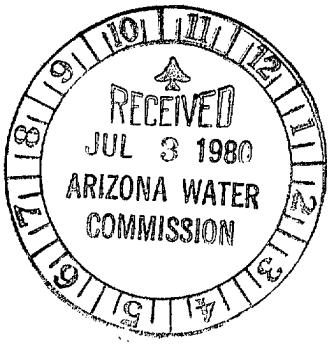
I HEREBY CERTIFY that all the above statements are true to the best of my knowledge and belief.

Alfred N. Panagakos
Signature

Date 6-25, 1980.

325 - Purdy Lane Pt 1
Address
Bisbee, Az - 85603

35-80-10


RECEIVED
JUL 3 1980
ARIZONA WATER
COMMISSION

KEL FOX, CH.
JOHN L. LEIBER, V. CH.
WESLEY E. STEINER
EXECUTIVE DIRECTOR
AND
STATE WATER ENGINEER
VICKIE MOONEY
SECRETARY

DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
222 North Central, Suite 850
Telephone (602) 255-1581

MEMBERS
PETER F. BIANCO
MARYBETH CARLILE
GLEN G. CURTIS
W. N. JACK SHAWVER
J. C. WETZLER
EXOFFICIO MEMBERS
JOE T. FALLINI
MARSHALL HUMPHREY

JUN 26 1980

76413 D-240-240-10DDCGS2 05-9

PANAGAKOS
RR 1
PALESTINE A X IL 62451

Re: Drilling of Well

Gentlemen:

Water Rights Administration, Department of Water Resources, is engaged in the process of bringing its well files up to date. These files indicate that a drilling card to drill a well was issued to you under file number as stated on address label, a year ago, and that the well has not been reported as completed.

Arizona Revised Statutes 45-596, 45-599, and 45-600 deal with Drilling of Wells and Filing of Log and Completion Report by the Driller.

Critical information included in these statutes requires that:

1. A well must be completed within one year of filing. If the well is not completed within one year, a new filing shall be made before proceeding with further construction.

2. Upon completion of drilling, a copy of the Well Driller Report shall be filed by the Driller with this Department within 30 days of completion of drilling.

3. Within 30 days after installation of pumping equipment, a Completion Report (Equipment Installed) shall be filed with this Department.

In the event the referenced well has been completed, please forward the Well Drillers and Completion Report of Equipment Installed to this Department within 30 days.

If no response is forthcoming, we will assume that the well is not completed and the related file retired as cancelled.

Yours very truly,

DEPARTMENT OF WATER RESOURCES

By: Richard A. Gessner
Richard A. Gessner, Chief
Records Section

BRUCE BABBITT
GOVERNOR

Arizona
State Land Department

1624 WEST ADAMS
PHOENIX, ARIZONA 85007
602 - 255 - 4634

OFFICE OF
STATE LAND COMMISSIONER

John M. Little
Acting

May 7, 1979

Mr. Alfred Panagakos
R.R. 1
Palestine, Illinois 62451

File No. D(24-24)10 ddc D & A
35-76413

Dear Sir:

This copy of Notice of Intention to Drill Well in Twp. 24 S, Rge. 24 E, Section 10, SW $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$, is returned to you for your file. Also enclosed are:

X WELL DRILLING CARD, which should be in the hands of the driller before construction of the well is started;

X REPORT OF WELL DRILLER form, which may be filled in by the driller but which you should make sure is mailed to us after completion of the well;

X REPORT OF EQUIPMENT INSTALLED form, which shall be filled in by you and sent to us after the installation of the pumping equipment;

____ DIAGRAMS of recommended cement grout seal and pump installation, supplied by the Department of Health.

In the event it is necessary to change the location of the proposed well, you should obtain the written permission of the State Land Commissioner before proceeding with the drilling.

Very truly yours,

State Land Commissioner

By:

F. C. Ryan, Director
Water Rights Division

mm

21-72

GG

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED FEB 10 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

13 K

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 624535
FILE NO. D(23-24)36cad
FILED 2-10-82 (DATE) AT 11:30 am (TIME)
INA —
AMA —

1. Name of Registrant:
Michael W Power
Box 1875 (Address) Bisbee (City) Arizona (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
D(23-24)36CADGS1 (File Number) 35- 62843 (Control Number)

3. a. The well is located within the SE ¼ NE ¼ SW ¼, Section 36, of Township 23S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.
b. If in a subdivision: Name of subdivision N/A, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Stockwater & domestic.

5. If for irrigation use, number of acres irrigated from well N/A.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
Michael W Power
Box 1875 (Address) Bisbee (City) Arizona (State) 85603 (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 100 feet
b. Diameter of casing 7 inches
c. Depth of casing 100 feet
d. Type of casing Metal .
e. Maximum pump capacity 15 gallons per minute.
f. Depth to water 25 feet below land surface.
g. Date well completed _____ (Month) _____ (Day) 1967 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 2/6/82 SIGNATURE OF REGISTRANT Michael W Power

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

CHANGE OF WELL INFORMATION

Well Registration No. 55-624535 File No. D(23-24)36CAD
(location)

I/We request the following well information be changed:

Change water shed to: White Water Draw

Date:_____ Signature of Current Well Owner_____

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, _____, state that I am (no longer) the (new)
(please print)
owner of the well described below:

Township_____ Range_____ Section_____; _____¼ _____¼ _____¼

Well Registration No.55-_____ File No._____
(location)

PRINT Previous Owner's Name _____ PRINT New Owner's Name _____

MICROFILMED

Address _____ Address _____

City _____ State Zip City _____ State Zip

ENTERED JAN 21 1991

Dated:_____ Signature of New Owner_____

NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

DWR-55-71-3/90

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004





REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

16 13

FOR OFFICE USE ONLY	
REGISTRATION NO. 55-	803742-L
FILE NO.	D(24-24)11 dc
FILED 5-19-86 (DATE) AT 11:23 (TIME)	a.m.
INA	Douglas
AMA	

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

LATE FEE $10.00 ☐

1. Name of Registrant:
LAWRENCE E. RAY
P.O. Box 4324 (Address) BISBEE (City) ARIZONA (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law:
N/A (File Number) 35- N/A (Control Number)

3. a. The well is located within the ____ ¼ SW ¼ SE ¼, Section 11, of Township 24 N/S Range 24 E/W, G & SRB & M, in the County of Cochise.

   b. If in a subdivision: Name of subdivision ____, Lot No. ____, Address ____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC.

5. If for irrigation use, number of acres irrigated from well N/A.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
   a. Depth of Well 100 feet
   b. Diameter of casing 8 inches
   c. Depth of casing N/A feet
   d. Type of casing N/A.
   e. Maximum pump capacity less than 35 gallons per minute.
   f. Depth to water ~~100~~ 60 feet below land surface.
   g. Date well completed N/A (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6 July 82 SIGNATURE OF REGISTRANT [signature]

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

D E S C R I P T I O N

PARCEL I:

That portion of the East one-half of the Southwest one-quarter of the Southeast one-quarter of Section 11, Township 24 South, Range 24 East, more particularly described as follows: BEGINNING at the Southwest corner of the said Southeast one-quarter; thence North along the West boundary thereof a distance of 416.00 feet, thence East 770.00 feet to the Southwest corner of a parcel of land conveyed to Arthur Jones by Deed recorded in Docket 274, Page 94; thence North along the West boundary of the said Jones parcel, a distance of 61.00 feet to the true point of beginning; thence continue North 198 feet; thence East 110.00 feet; thence Southwesterly in a straight line to a point which is located 94.80 feet East of the true point of beginning; thence West 94.80 feet to the true point of beginning.

D E S C R I P T I O N

PARCEL I:

That portion of the East one-half of the Southwest one-quarter of the Southeast one-quarter of Section 11, Township 24 South, Range 24 East, more particularly described as follows: BEGINNING at the Southwest corner of the said Southeast one-quarter; thence North along the West boundary thereof a distance of 416.00 feet, thence East 770.00 feet to the Southwest corner of a parcel of land conveyed to Arthur Jones by Deed recorded in Docket 274, page 94; thence North along the West boundary of the said Jones parcel, a distance of 61.00 feet to the true point of beginning; thence continue North 198 feet; thence East 110.00 feet; thence Southwesterly in a straight line to a point which is located 94.80 feet East of the true point of beginning; thence West 94.80 feet to the true point of beginning.

LAWRENCE E. RAY
P.O. BOX 4324
Bisbee, Az 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	803772-I
	THRU

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					LATE FEE FOR EXISTING WELL REGISTRATION	10.00	10.00
					1 EXEMPT WELL		
					FILE NO. R(24-24)11 dc		
					CHECK NO. 7575 5-20-86 sv		

WATER PAYMENT
GUESTS 1
CHK NO 7575
55-I 10.00
TAX 0.00
TOTL 10.00
GEN.CHEK 10.00

TOTAL $ # 1400 R 10.00 14:37-

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 771-8500 • (800) 352-8488
(602) 771-8691 fax • www.azwater.gov

RECEIVED
SEP 7 - 2007
WATER MGMT

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

PAID 8-2-07 RC #2015

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA	B / SB	FILE NUMBER
—	76	DC24-24218CCB
RECEIVED / DATE: 9-7-07	WS: 11	WELL REGISTRATION NUMBER: 55-216425
ISSUED / DATE: 9-10-07	WQARF / CERCLA	

DB

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

- [X] County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
  - [X] Field Inspection Performed
  - [ ] Site Plan Review Only
- [ ] Insufficient Information to Make a Determination

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE Sept 5, 2007
BY Carlos Diaz R.S.

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ R.S.

TELEPHONE NUMBER: 520-432-9442 | DATE: Sept 5, 2007 | COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz R.S.

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

- [X] Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)
- [ ] Non-Exempt (Pump has a maximum capacity of more than 35 gpm and the well is located outside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 20 Gallons Per Minute

Proposed Action

CHECK ONE

- [X] Drill New Well
- [ ] Deepen
- [ ] Replace
- [ ] Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 -

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY): 3710 Hillman

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	18	SW ¼	SW ¼	NW ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
102	57	183 [redacted]	.849 2±A

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. OWNER INFORMATION

Well Owner	Landowner (if different from Well Owner)
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Roberto + AIDA RAMIREZ	FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL:
MAILING ADDRESS: PO Box 362	MAILING ADDRESS:
CITY / STATE / ZIP CODE: Naco Az 85620-0362	CITY / STATE / ZIP CODE:
CONTACT PERSON NAME AND TITLE: AIDA RAMIREZ	CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520 432 7356 / FAX:	TELEPHONE NUMBER: / FAX:

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well (e.g., Lot 35 Well, Smith Well, etc.)?		X	PLEASE STATE
3. Is the proposed well a NEW well to be located within an Active Management Area? *(See instructions)*		X	Unless the well is a replacement well and the total number of operable exempt wells on the land is not increasing, you must also file a supplemental form A.R.S. § 45-454(C) & (D).
4. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

RECEIVED

SEP 7 - 2007

WATER MGMT

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 216425

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: Bradly Deming

DWR LICENSE NUMBER: 736

ROC LICENSE CATEGORY: C-53

TELEPHONE NUMBER: 520 456 2355

FAX:

MAILING ADDRESS: PO Box 4707

CITY / STATE / ZIP CODE: Huachuca City AZ 85616

DATE CONSTRUCTION IS TO BEGIN: Aug 2007

SECTION 6. WATER USE INFORMATION

Principal Use **of Water** (CHECK ONE)	***Other Uses*** **of Water** (CHECK ALL THAT APPLY)
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☒ Domestic	☐ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify)*:	☐ Other *(please specify)*:

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

Borehole			Casing													
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (T)				PERFORATION TYPE (T)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	20	12 1/4	0	20	8 5/8	X*				X						Cement
20	300	8"	10	250	6		X			X						
			250	300	6		X							X		

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: Aide Ramirez

SIGNATURE OF WELL OWNER: Aide Ramirez — DATE: 7-30-07

SIGNATURE OF LANDOWNER, IF APPLICABLE (SEE INSTRUCTIONS): Roberta R Deming — DATE: 7-30-07

Notice of Intent to Drill, Deepen, Replace or Modify a Well

RECEIVED
SEP 7 - 2007
WATER MGMT

WELL REGISTRATION NUMBER
55- 216425

CHECK ONE: ☐ FILING MANUALLY
☐ FILING ELECTRONICALLY* *DRILLER'S E-MAIL ADDRESS

COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL CODE

If applicant is filing this NOI electronically via the ADWR website and County approval is required, please indicate approval by providing a County Approval Code.

COUNTY APPROVAL CODE

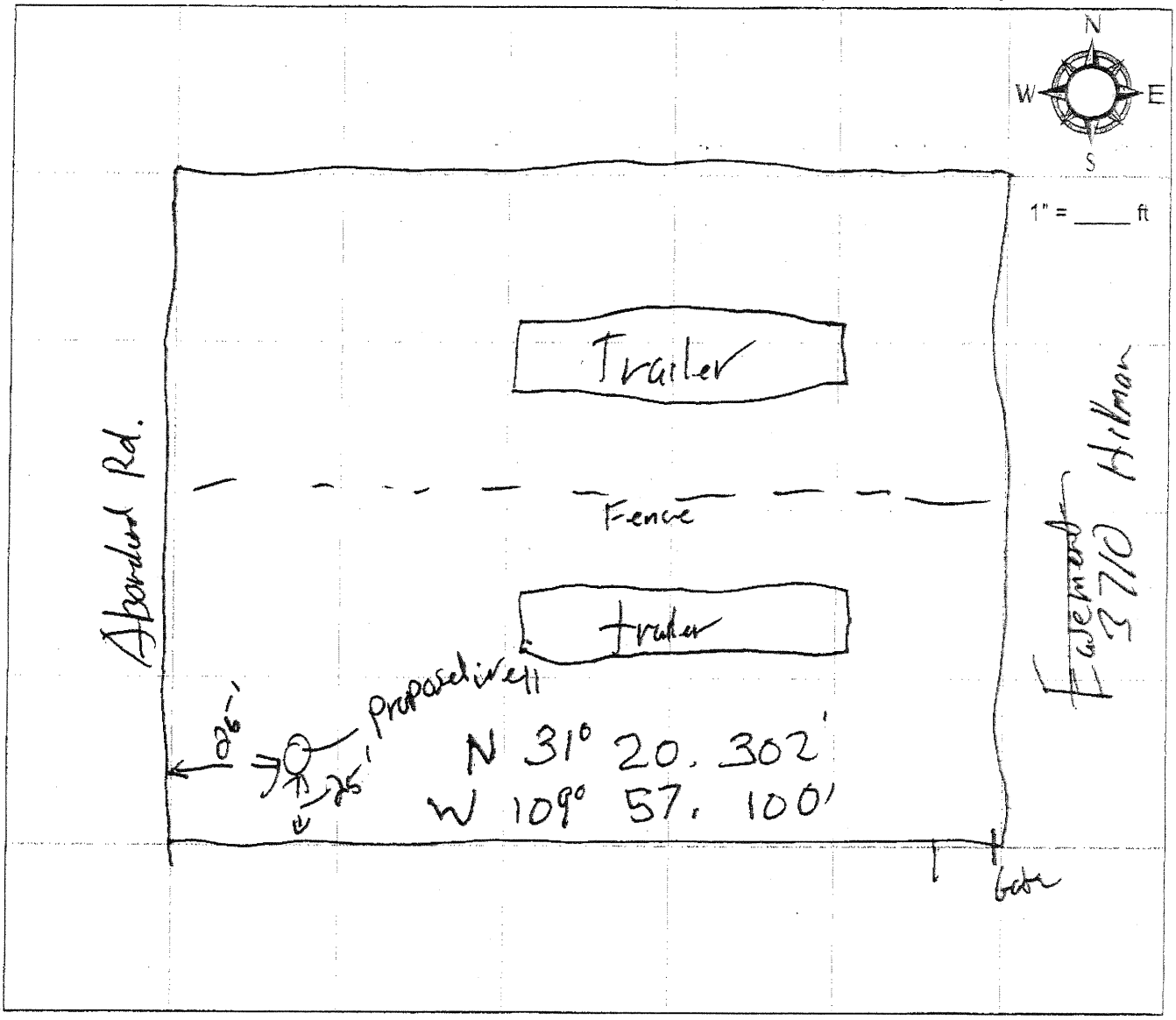
WELL SITE PLAN

NAME OF WELL OWNER: Roberto & Aida Ramirez

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
102	57	183 + 184

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ R.S.

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz R.S.

TELEPHONE NUMBER: 520-432-9442

DATE: Sept 5, 2007

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION

DATE Sept 5 2007

BY Carlos Diaz R.S.

Official County or Local Seal of Cochise County Arizona

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue, Phoenix, Arizona 85012
Telephone (602) 771-8500
Fax (602) 771-8691

September 10, 2007

Janet Napolitano
Governor

Herbert R. Guenther
Director

ROBERTO & AIDA RAMIREZ
P O BOX 362
NACO, AZ 85620 - 0362

Registration No. 55-216425
File No. D(24-24) 18 CCB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well that you recently filed with this Department pursuant t A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed or otherwise provided drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card, which must be displayed on the drill rig during drilling. PLEASE NOTE The Authorization to drill this well **DOES NOT constitute or guarantee an approval to use the well for the purpose of withdrawing groundwater for transportation to an Active Management Area (AMA)** pursuant to A.R.S. § 45-55 45-553, 45-554 or 45-555(A). Groundwater **may not** be withdrawn from this well for these transportation purposes **without official prior approval from the Department.** Please contact the office in the AMA where the groundwater is to be transported to determine what additional forms are needed and for more information on this process.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drillir is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lo tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the proposed well, you may not proceed with drilling until you file an amended NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the amended NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DW form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed i a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55 within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at <http://www.water.az.gov/adwr/content/forms/default.htm#NOI>.

Sincerely,

Toni Bergeman

Toni Bergeman
NOI Unit
Water Management Support Section

Enclosures

ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

3550 N. Central Avenue
Phoenix, Arizona 85012

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-216425

AUTHORIZED DRILLER: BRADLY DRILLING LICENSE NO: 736

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: ROBERTO & AIDA RAMIREZ P O BOX 362 NACO, AZ 85620

THE WELL(S) IS/ARE TO BE LOCATED IN THE:
NW ¼ OF THE SW ¼ OF THE SW ¼ SECTION 18 TOWNSHIP 24 SOUTH RANGE 24 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 102-57-183

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 6TH DAY OF SEPTEMBER, 2008

A. Cason

WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

NOTICE! The Authorization to drill this well **DOES NOT constitute or guarantee an approval to use the well** for the purpose of withdrawing groundwater **for transportation to an Active Management Area (AMA)** pursuant to A.R.S. § 45-552, 45-553, 45-554 or 45-555(A) **without official prior approval from the Department**.

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

Printed: 9/7/2007 2:10:37 PM

Store 001
Sale Receipt
9/7/200
Page

Arizona Department of Water Resources

3550 N Central Ave
Phoenix AZ 85012

216425

Date: 9/7/2007
Cashier: WRPAB
Type: Mail

ROBERT R RAMIREZ
PO BOX 362
NACO,AZ 85620
520-432-7356

DCS/INV#	DESCRIPTION		ATTR	SIZE	QTY	PRICE	EXT PRI
F 72	4439-06	NOTICE OF INTENT TO DRILL WELL	15245		1	100.00	100.
				1 Unit(s)		Subtotal:	1(
						RECEIPT TOTAL:	1(
						Tendered:	1(

Check #: 100.00 # 2204

ROBERTO RAMIREZ
WELL OWNER

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 22 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☐

11

FOR OFFICE USE ONLY
REGISTRATION NO. 55-648360-L
FILE NO. D(24-24)18dcd
FILED 6-22-82 (DATE) AT 10a (TIME)
INA —
AMA —

1. Name of Registrant:
JOSEFINA ALVAREZ DE MORA
117 C ST., (P.O. BOX 35) NACO ARIZONA 85620
(Address) (City) (State) (Zip)
25

2. File and/or Control Number under previous groundwater law:
(File Number) 35- (Control Number)

3. a. The well is located within the SE ¼ SW ¼ SE ¼, Section 18, of Township 24 N(S), Range 24 (E)W, G & SRB & M, in the County of COCHISE.

b. If in a subdivision: Name of subdivision TOWNSITE OF NACO, Lot No.s, 317, ~~Address~~ 319, 321, 323, BLOCK 19. 102-57.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC.

5. If for irrigation use, number of acres irrigated from well 0.

6. Owner of land on which well is located. If same as Item 1, check this box ☑
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A) WELL DRILLED APPROXIMATELY 50 YEARS AGO. DATA N/A
a. Depth of Well _____ feet
b. Diameter of casing _____ inches
c. Depth of casing _____ feet
d. Type of casing _____.
e. Maximum pump capacity _____ gallons per minute.
f. Depth to water _____ feet below land surface.
g. Date well completed _____ (Month) (Day) (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☑
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6-18-82 SIGNATURE OF REGISTRANT Josefina A. Vda. de Mora

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

DATA ENTRY INPUT FORM

DATE 7/29/83

TO: _____

FROM: _____

NUMBER OF FILES 55 - 648360 2 FILE NOS: _____

TYPE INPUT TRANSACTION:

ADD	_____	_____
CHANGE	_____	_____
DELETE	_____	_____
CANCEL	_____	_____
ASSIGNMENT	_____	_____
ADDRESS CHANGE	✓	_____
PERMIT	_____	_____
C W R	_____	_____
STATUS CHANGE	_____	_____

FILE DISPOSITION _____

REMARKS: PO Box 25

Naco Az. 85620

MICROFILMED



CHANGE OF WELL INFORMATION

Registration No. 55-648360-L

I request that the following information be changed in Well File Number D(24-24)18 dcd

Date AUGUST 19, 1983, ~~19~~ Josefina Alvarez de Mora
Signature of Well Owner

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, JOSEFINA ALVAREZ DE MORA. state that I am (no longer) the

~~(new)~~ owner of the well described below:

Township 24S Range 24E Section 18, SE ¼ SW ¼ SE ¼

Registration #55-648360-L File No D (24-24) 18 dcd

	MANUEL R. RODRIGUEZ
Previous Owner	New Owner
	P.O. BOX 513
Address	Address
	NACO, ARIZONA 85620
City State Zip	City State Zip

NOTE: ARS 45-593 requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within 30 days after changes take place.

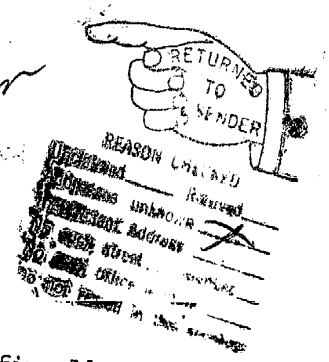
NOTE: SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP OR WELL DATA SUCH AS PUMP CAPACITY, ETC.

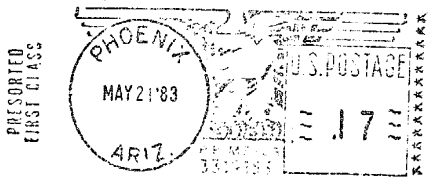
J.A.S.

MICROFILMED

State of Arizona
DEPARTMENT OF WATER RESOURCES
99 East Virginia Avenue
Phoenix, Arizona 85004

Unknown





D(24.24)18ded

648360

Josefina Alvarez DeMora
117 C St, P.O. Box 35
Naco, Az. 85620

#1 WELL

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED APR 28 1982 DEPT OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55-641803
FILE NO. D(24-24)18 dda
FILED 4-28-82 (DATE) AT 11A (TIME)
INA
AMA

1. Name of Registrant:
MILTON K. LUNA
P.O. Box 265 (Address) NACO (City), AZ. (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
N/A (File Number) 35- N/A (Control Number)

3. a. The well is located within the NE ¼ SE ¼ SE4 ¼, Section 18 NE, of Township 24S N(S) Range 24E E(W), G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic & irrigation.

5. If for irrigation use, number of acres irrigated from well 4.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
WELL #1
See Accomp. Map.

a. Depth of Well 140' feet
b. Diameter of casing 6" inches
c. Depth of casing 140' feet
d. Type of casing 3/8" WALL - STEEL .
e. Maximum pump capacity 20 gallons per minute.
f. Depth to water 92 feet below land surface.
g. Date well completed Prior to (Month) (Day) 1960 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
Attach additional sheet if necessary.

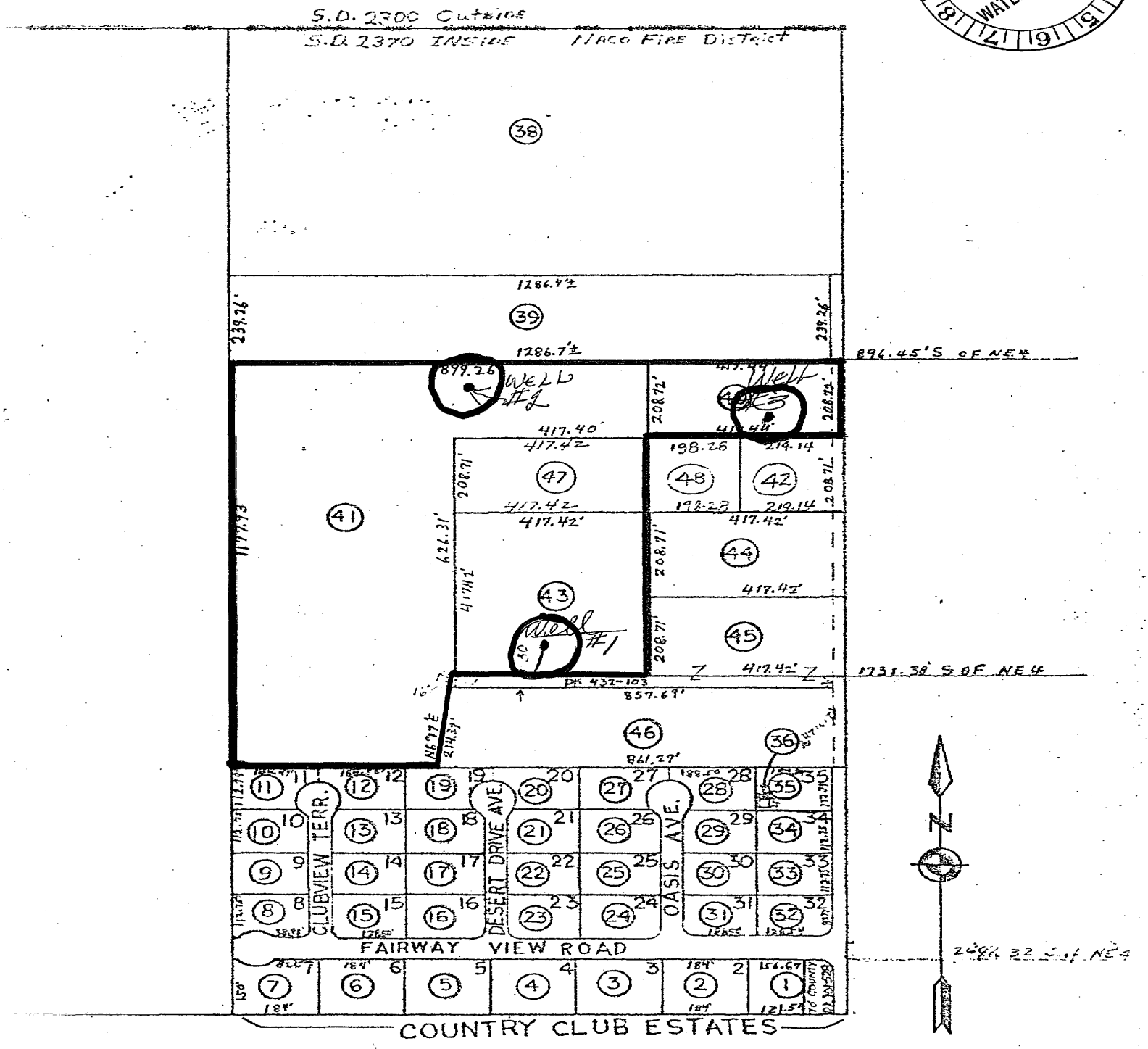
9. DATE 4-26-82 SIGNATURE OF REGISTRANT Milton K. Luna

MICROFILMED

SEC. 18NE TN. 24S RG 24E

BOOK 102
MAP 56

RECEIVED
APR 28 1982
DEPT
WATER RESOURCES



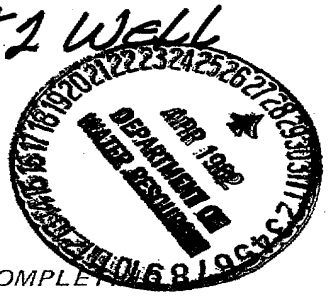
SCALE 1"= 300'

MICROFILMED

COUNTY ASSESSOR'S MAP

#1 Well

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

11

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 641801
FILE NO. D(24-24)18aad
FILED 4-28-82 (DATE) AT 11A (TIME)
INA
AMA

1. Name of Registrant: Milton K. Luna
P.O. Box 265 (Address) Naco (City), Az. (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
N/A (File Number) 35- N/A (Control Number)

3. a. The well is located within the SE ¼ NE ¼ NE ¼, Section 18NE,
of Township 24S N(S) Range 24E E(W), G & SRB & M, in the
County of Cochise.

b. If in a subdivision: Name of subdivision _____,
Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - (domestic) - municipal - industrial)
Domestic.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒

(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)

Well #2
See Accomp. Map.

a. Depth of Well 142' feet
b. Diameter of casing 6" inches
c. Depth of casing 142 feet
d. Type of casing 3/8" Weld-Steel .
e. Maximum pump capacity 20 gallons per minute.
f. Depth to water 92' feet below land surface.
g. Date well completed Prior to 1960 (Month) (Day) (Year).

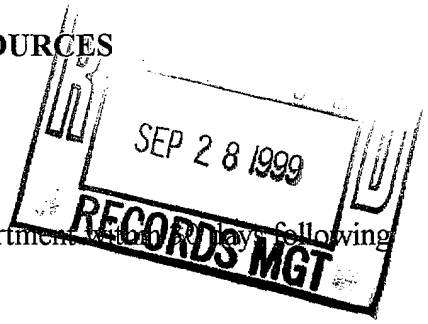
8. The place(s) of use of water. If same as Item 3, check this box ☒
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____

Attach additional sheet if necessary.

9. DATE 4-26-82 SIGNATURE OF REGISTRANT Milton K. Luna

MICROFILMED

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004
WELL DRILLER REPORT



This report should be prepared by the driller in all detail and filed with the Department within 20 days following completion of the well.

1. WEBER DRILLING
453 MECHAM DRIVE
SAINT DAVID, AZ 85630

2. Owner Name: MILTON K LUNA
Address: NACO AZ 85620
City State Zip

3. Location: 24 N/S 24 E/W 18 ¼ SW ¼ SE ¼ NE
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55- 573596 (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 290 ft.
7. Type of casing STEEL
8. Diameter and length of casing 8 in. from 0 to 20, 6 in from 0 to 290
9. Method of sealing at reduction points WELDED
10. Perforated from 230' to 290, from _____ to _____ from _____ to _____
11. Size of cuts 1/8 x 8 Number of cuts per foot 4
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started SEPT 15 1999
Month Day Year
15. Date completed SEPT 16 1999
Month Day Year
16. Depth to water 140 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
GROUND LEVEL
18. If flowing well, state method of flow regulation: _____

19. Remarks: _____

ENTERED SEP 29 1999

DWR-55-55-7/95 (Rev.)

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-573596
File No. D(24-24) 18 ADC
Received _____ By _____
Entered _____ By _____

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	140	ALLUVIAL
140	290	VOLCANIC CONGLOMORET
		FIRST WATER 140'
		STATIC 130'

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: WEBER DRILLING

453 MECHAM DRIVE

Street

SAINT DAVID, AZ 85630 1-520-720-4800

City State Zip Phone No.

X Daniel E. Weber 9-20-99

Signature of Driller Date

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-573596

AUTHORIZED DRILLER: WEBER DRILLING LICENSE NO: 272

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: MILTON K LUNA 1598 W MULE DEER ST NACO, AZ 85620

The well(s) is/are to be located in the:

SW 1/4 of the SE 1/4 of the NE 1/4 Section 18 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 3RD DAY OF MARCH, 2000.

/s/ CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

RECEIVED
MAR - 4 1999
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ (602)417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. MILTON K. LUNA - 1598 W MULE DEER ST. NACO, AZ. 85620-0265
LANDOWNER'S NAME CURRENT MAILING ADDRESS CITY STATE ZIP

B. TELEPHONE NO (520) 432-4077 COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN Cochise COUNTY D. 102 - 56 - 043 E. 4.00
BOOK MAP PARCEL # OF ACRES

OFFICIAL SEAL OR STAMP

C.C.H.S.S.
1415 W. Melody Lane, Bldg. A
Bisbee, Arizona 85603-3090

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. SW ¼ SE ¼ NE ¼ OF SECTION 18 TOWNSHIP 24 N(S) RANGE 24 (E)W
10AC 40AC 160AC

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL X ; INSUFFICIENT INFORMATION TO MAKE DETERMINATION _____; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE 3-1-99 AUTHORIZED SIGNATURE Steven Herbert TITLE Envir. Hlth Spec.

1. OWNER OF WELL:
MILTON K. LUNA
NAME
1598 W MULE DEER ST.
CURRENT MAILING ADDRESS
NACO, AZ. 85620-0265
CITY STATE ZIP
TELEPHONE NUMBER (520) 432-4077

2. ACTION REQUESTED:
DRILL NEW WELL V DEEPEN _____
MODIFY _____ REPLACE _____

WELL REGISTRATION NO 55- _____

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL
20 GALLONS PER MINUTE;
DISTANCE FROM THE ORIGINAL WELL:
41'4" FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH APRIL YEAR 99

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: STEEL
DIAMETER: 8 " DEPTH: 20'
DOWNHOLE CASING: 956 - 3/16" WALL STEEL
DIAMETER: 6 " DEPTH: 300'

5. DESIGN PUMP CAPACITY:
20 GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
NAME
CURRENT MAILING ADDRESS
CITY STATE ZIP
TELEPHONE:

7. PRINCIPLE USE OF WATER: (BE SPECIFIC)
DOMESTIC - Household - Yard - Trees

8. OTHER USES OF WATER: (BE SPECIFIC).
DOMESTIC - ANIMALS

9. IF USE INCLUDES IRRIGATION, STATE TO NEAREST TENTH, THE NUMBER OF ACRES TO BE IRRIGATED: _____

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55- 573596
DATE FILED 3-4-99
FILE NO. D(24-24)18 ADC
AMA/INA —
W/S 11 S/B —
PROCESSED BY bp
DATE MAILED 3/19/99

10. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
SW ¼ SE ¼ NE ¼ SECTION 18
10AC 40AC 160AC
TWNSHP 24 N(S) RNG 24 (E)W

11. TYPE OF WELL (CHECK ONE):
EXEMPT V NON-EXEMPT _____

12. CHECK ONE:
RESIDENTIAL V COMMERCIAL _____

13. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES _____ NO V

14. DRILLING FIRM:
NAME
WEBER DRILLING
MAILING ADDRESS
453 E. MECHAM DRIVE
CITY STATE ZIP
ST. DAVID, AZ. 85630
TELEPHONE NO.
(520) 720-4800
DWR LICENSE NUMBER 272
ROC LICENSE CATEGORY
C53

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

MILTON K. LUNA - OWNER — Milton K. Luna — Feb. 24-99
15. TYPE OR PRINT NAME AND TITLE 16. LANDOWNER/LESSEE OF WELLSITE 17. DATE

DWR 55-40 (REV 1/99)

APPLICATION GUIDELINES

In accordance with Arizona Revise Statutes ("A.R.S.") §§ 41-1008 and 1079, the Department of Water Resources (Department) provides the following information regarding the application review process for authority to drill.

NECESSARY STEPS & INSTRUCTIONS TO OBTAIN DRILLING AUTHORITY

1. Pursuant to A.R.S. § 45-596, a person may not drill, cause to be drilled, deepen or modify any well for which a permit is not required without first filing a Notice of Intent to Drill with the Department. Only a well drilling contractor licensed in the State of Arizona or a single well licensee (a person licensed to drill or modify one exempt well on his or her own property) is authorized to drill, deepen or modify a well. Drilling may not begin until the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, and which authorizes the drilling of the specific well in a specific location. To assist you in understanding the requirements for this application, copies of A.R.S. § 45-596 and Arizona Administrative Code ("A.A.C.") R12-15-810 are available at the Department bookstore (602-417-2450 x7127).
2. If replacing, deepening or modifying an existing well, provide the registration number of the existing well in item 2. A replacement well is one located no more than 660 feet from the original well and that is not expected to annually withdraw more groundwater than historically withdrawn from the original well.
3. Information to complete items 3, 4, 5 and 14 may be available from your driller.
4. Information to complete items 10 and 13 may be available from your County Assessor's Office.
5. An exempt well, referred to in Item 11, means a well with a pump with a maximum capacity of not more than thirty-five gallons per minute used primarily for domestic purposes, including the noncommercial irrigation of less than two acres of land.
6. If any water from a proposed well on a parcel of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant must submit a well site plan of the property. The plan must be on an 8½" x 11" piece of plain paper with representation of the locations of all structures and proximity of adjacent lot lines, to scale. It must include the county assessor's parcel identification number. The plan must show the proposed well location and the location of any septic tank or sewer system that is either located on the property or within one hundred feet of the proposed well site, as well as indicating the measured shortest distance between the proposed well and existing septic tank system. **The plan must demonstrate that the well will not be drilled within one hundred feet of any septic or sewer system.**
7. The site plan must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Endorsement by the county/local authority is based solely on the best available judgement that the proposed well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. In areas where there is no local or county authority that controls installation of septic tanks or sewer systems, or if the health authority is unable to determine whether the proposed well location complies with state and local requirements, the applicant must apply for approval directly to the Department of Water Resources.
8. If an individual other than the land owner or lessee signs this notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific notice on his or her behalf, must accompany the notice.
9. Please mail **two original Notices** with **original signatures** and **two site plans** and, in accordance with A.R.S. § 45-113, a **check or money order (no cash) in the amount of $10.00** to P. O. Box 458, Phoenix Arizona, 85001-0458, or hand deliver to 500 North Third Street, Phoenix, Arizona.
10. Arizona Revised Statute § 45-596(D) provides that the Director of the Department is to determine whether or not all information required on this form has been submitted. If not, the person filing the Notice will be notified, and the drilling or modification of the well may **not** proceed.
11. This form is not applicable for non-exempt wells (those yielding more than thirty-five gallons per minute) within an Active Management Area. Contact Groundwater Management for further information regarding the appropriate notice to file with the Department.

TIME FRAME FOR REVIEW OF YOUR APPLICATION

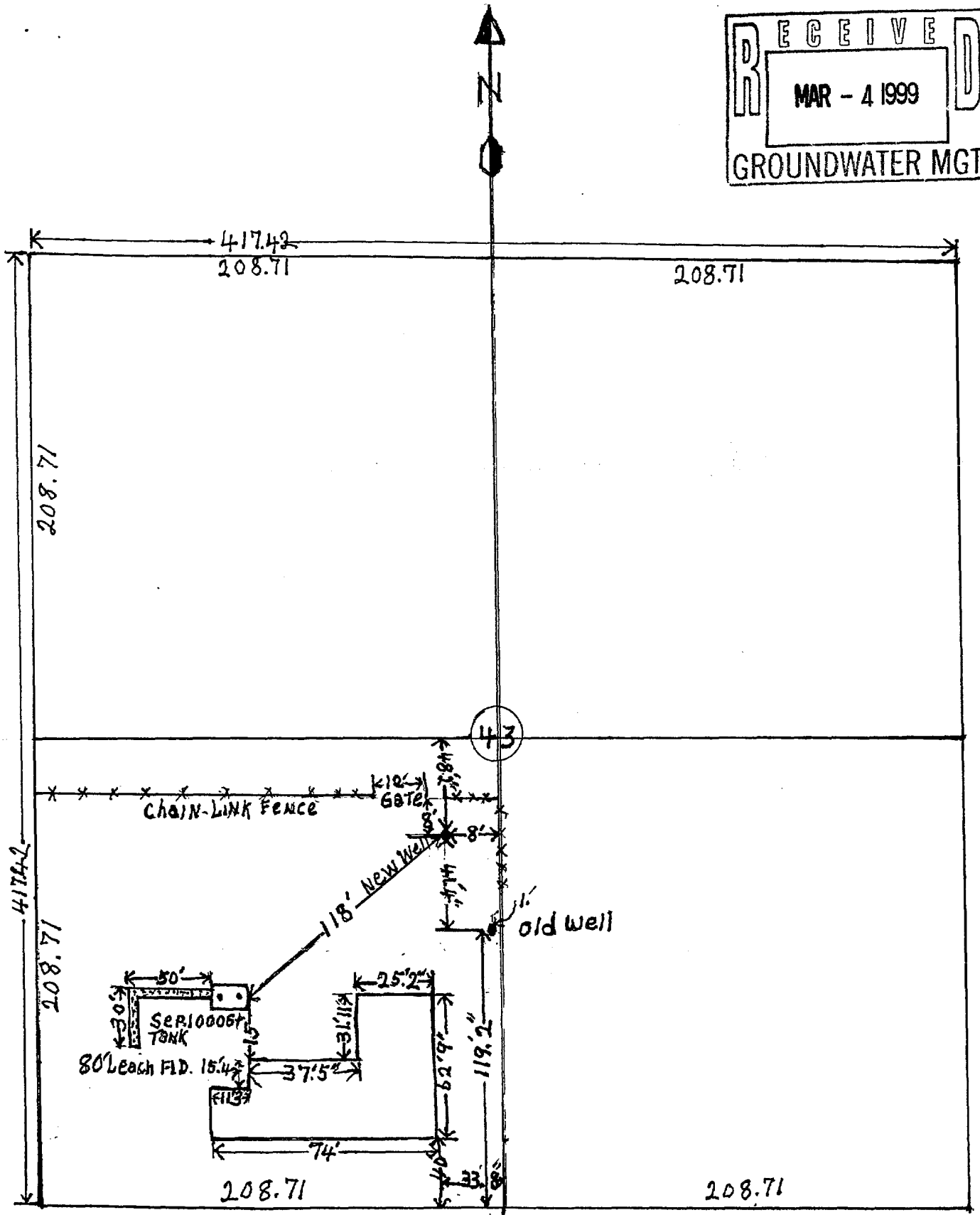
Within 15 days after receipt of your Notice of Intention, the Arizona Department of Water Resources ("Department") will determine whether your application should be granted or denied, unless this time is extended for lack of a complete application. If your application is incomplete, the Department will notify you in writing and will specify what information is necessary to make the application complete. Until the missing information is received, the time frame for review of your application will be suspended. Your application will not be complete until all of the requested information is received. If you do not supply the missing information within sixty (60) days, the Department may deem your application withdrawn and close the file.

At the end of its review, the Department will send you written notice either granting or denying your application for drilling authority. If your application is approved, the Drill Card will be mailed directly to the drilling company. If denied, the Department's notice will state justification for the denial and an explanation of your right to appeal.

CONSTRUCTION AND FOLLOW UP REQUIREMENTS

1. Construction and abandonment standards for wells, including abandonment, must be in accordance with Department Regulations. A.R.S. § 45-594 and Arizona Administrative Code R12-15-811 require the well to be constructed with a twenty foot steel surface seal casing, including a one foot steel stickup and one and one-half inches of grout seal, unless a variance is granted **(see A.R.S. § 45-596 (G) for procedure to follow in requesting a variance).**
2. Pursuant to § 45-596(E), the drilling, deepening or modification of the well must be completed within one year of the date of the Notice of Intent. If the well is not completed within one year, a new Notice of Intent must be filed before proceeding with further construction.
3. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use is later proposed to be converted to use for domestic purposes as defined in § 45-454, the well owner must file a Notice of Intention to Drill and comply with the requirements of § 45-596 before the well is converted and any water from that well is used for domestic purposes.
4. Within thirty days after installation of pumping equipment, the registered well owner must file a Completion Report with the Department. The person to whom a well is registered also must notify the Department of a change in ownership or a change in data relating to this well.

RECEIVED
MAR - 4 1999
GROUNDWATER MGT



ABOVE PLAT NOT TO SCALE
Measured WITH STEEL TAPE

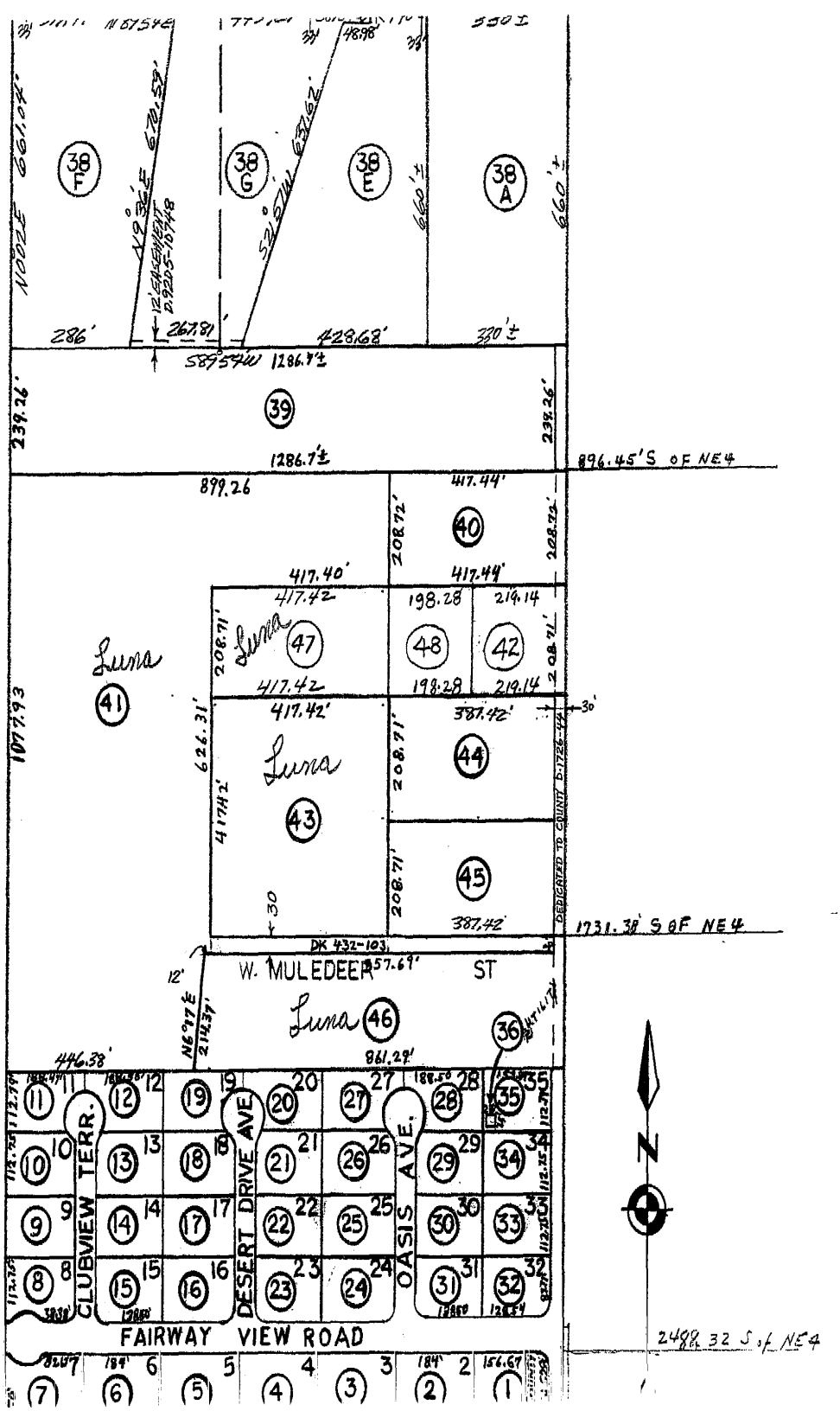
COCHISE COUNTY
PARCEL IDENTIFICATION
102-56-043
SEC 18 NE-TN 24-RNG 24

Sec 18 NE TN 24 Rng 24

RECEIVED
MAR - 4 1999
GROUNDWATER MGT

SEE MAP 36

PARCEL 2



ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

March 19, 1999

JANE DEE HULL
Governor

RITA P. PEARSON
Director

MILTON K LUNA
1598 W MULE DEER ST
NACO, AZ 85620

Registration No. 55-573596
File No.D(24-24) 18 ADC

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Barbara Sims

Barbara Sims
Water Resource Technician
Groundwater Management Support Section

ENTERED
NOV 28 2007
MO

ARIZONA DEPARTMENT OF WATER RESOURCES
Information Management Unit
P.O. Box 33589, Phoenix, Arizona 85067-3589
(602) 771-8527 * (800) 352-8488
www.water.az.gov

RECEIVED
NOV 26 2007
INFO MGMT

Well Driller Report and Well Log

This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

FILE NUMBER: D(24-24) 18 BCD
WELL REGISTRATION NUMBER: 55- 216018
PERMIT NUMBER (IF ISSUED)

Mail To:

SECTION 1. DRILLING AUTHORIZATION

Drilling Firm

NAME	DWR LICENSE NUMBER
BRADLY DRILLING	736
ADDRESS: 562 E. HWY 82	TELEPHONE NUMBER: 520-456-2355
CITY/STATE/ZIP: HUACHUCA CITY, AZ 85616	FAX

SECTION 2. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: ERNEST ROGERS
MAILING ADDRESS: PO BOX 608
CITY / STATE / ZIP: NACO, AZ 85620
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-432-3861
FAX:
WELL NAME (e.g., MW-1, PZ-3, Lot 25 Well, Smith Well, etc.):

Location of Well

WELL LOCATION ADDRESS (IF ANY):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	18	SE 1/4	SW 1/4	NW 1/4

LATITUDE			LONGITUDE		
° Degrees	' Minutes	"N Seconds	° Degrees	' Minutes	"W Seconds

METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Hand-Held ☐ *GPS: Survey-Grade

LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level

METHOD OF ELEVATION (CHECK ONE): ☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Hand-Held ☐ *GPS: Survey-Grade

*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE): ☐ NAD-83 ☐ Other (please specify):

COUNTY: Cochise

ASSESSOR'S PARCEL ID NUMBER: BOOK 102 | MAP 57 | PARCEL 140

SECTION 3. WELL CONSTRUCTION DETAILS

Drill Method (CHECK ONE)

- ☒ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development (CHECK ONE)

- ☒ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Method of Sealing at Reduction Points (CHECK ONE)

- ☐ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☒ Other (please specify) Native

Condition of Well (CHECK ONE)

- ☒ Capped
- ☐ Pump Installed

Construction Dates

DATE WELL CONSTRUCTION STARTED: 9-10-07
DATE WELL CONSTRUCTION COMPLETED: 9-10-07

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
Bradly Drilling		10-15-07

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 216018

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

DEPTH OF BORING	DEPTH OF COMPLETED WELL
285 Feet Below Land Surface	285 Feet Below Land Surface

Water Level Information 9-10-07

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
145 Feet Below Land Surface	~~3:30 PM~~	3:30 PM	☐ Valve ☐ Other:

Borehole			Installed Casing														
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (X)				PERFORATION TYPE (X)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	12¼	0	20	8⅝	X				X						
			5	240	6		X			X						
			240	285	6		X							X		1/8

Installed Annular Material												
DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)								FILTER PACK		
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	20		X						NATIVE			

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 216018

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	2	Topsoil	
2	165	Clay	
165	285	Brown Rock	X

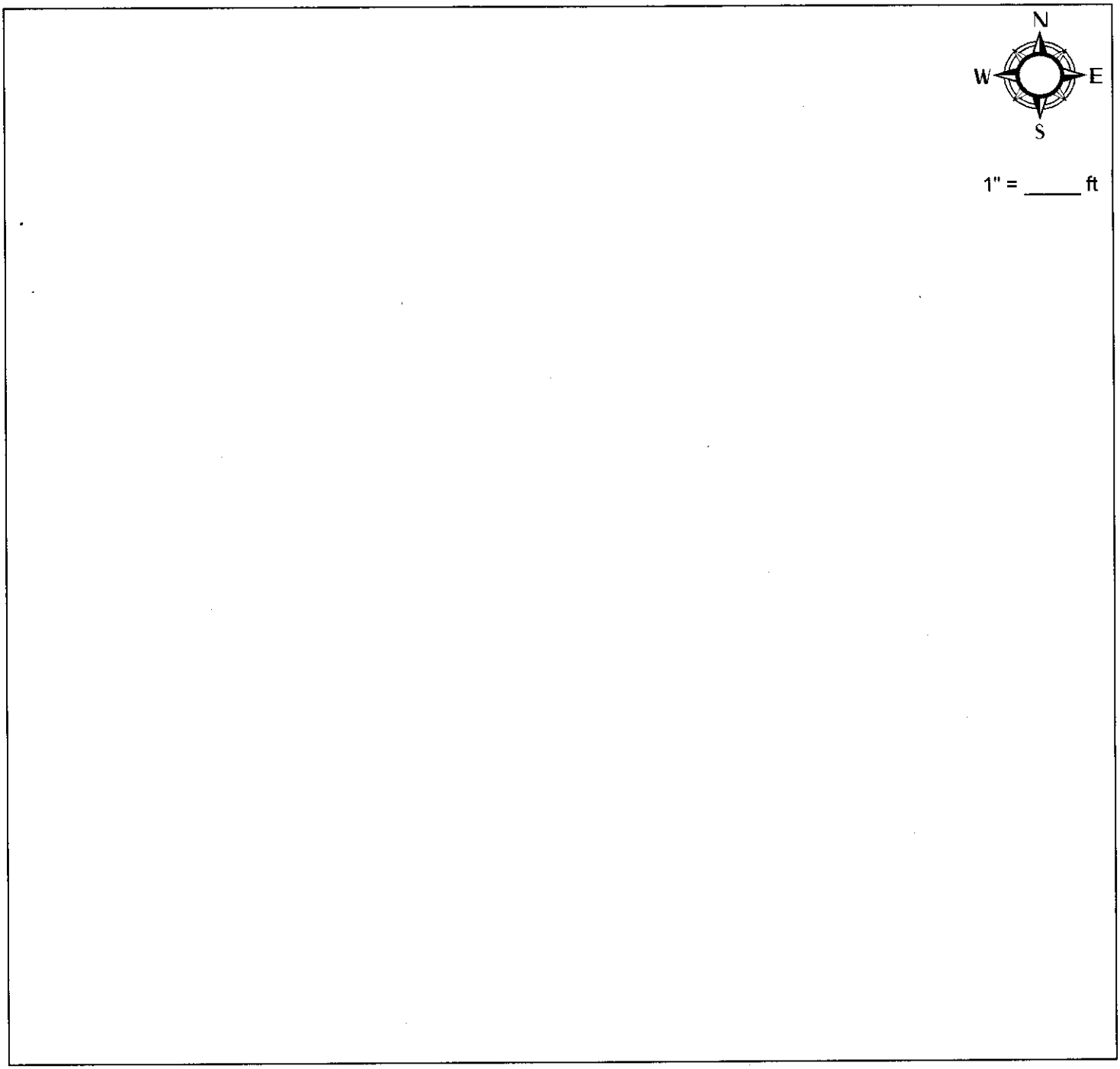
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 216018

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
ERNEST ROGERS	102	57	140

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

3550 N. Central Avenue
Phoenix, Arizona 85012

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-216018

AUTHORIZED DRILLER: BRADLY DRILLING LICENSE NO: 736

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: ERNEST ROGERS PO BOX 608 NACO, AZ 85620

THE WELL(S) IS/ARE TO BE LOCATED IN THE:
SE ¼ OF THE SW ¼ OF THE NW¼ SECTION 18 TOWNSHIP 24 SOUTH RANGE 24 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 102-57-140

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 27TH DAY OF JUNE, 2008

J. Cason

WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

NOTICE! The Authorization to drill this well **DOES NOT constitute or guarantee an approval to use the well** for the purpose of withdrawing groundwater **for transportation to an Active Management Area (AMA)** pursuant to A.R.S. § 45-552, 45-553, 45-554 or 45-555(A) **without official prior approval from the Department**.

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue, Phoenix, Arizona 85012
Telephone (602) 771-8500
Fax (602) 771-8691

August 14, 2007

Janet Napolitano
Governor

Herbert R. Guenther
Director

ERNEST ROGERS
PO BOX 608
NACO, AZ 85620

Registration No. 55-216018
File No. D(24-24) 18 BCD

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well that you recently filed with this Department pursuant to A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed or otherwise provided a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card, which must be displayed on the drill rig during drilling. **PLEASE NOTE:** The Authorization to drill this well **DOES NOT constitute or guarantee an approval to use the well for the purpose of withdrawing groundwater for transportation to an Active Management Area (AMA)** pursuant to A.R.S. § 45-552, 45-553, 45-554 or 45-555(A). Groundwater **may not** be withdrawn from this well for these transportation purposes **without official prior approval from the Department.** Please contact the office in the AMA where the groundwater is to be transported to determine what additional forms are needed and for more information on this process.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the proposed well, you may not proceed with drilling until you file an amended NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the amended NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DWR form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed is a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55) within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at <http://www.water.az.gov/adwr/content/forms/default.htm#NOI>.

Sincerely,

Toni Bergeman

Toni Bergeman
NOI Unit
Water Management Support Section

Enclosures

RECEIVED
JUN 28 2007
WATER MGMT

AUG 13 2007

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 771-8500 • (800) 352-8488
(602) 771-8691 fax • www.azwater.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well
(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA	B	SB
—	76	
RECEIVED DATE 6-28-07	WS 11	
ISSUED DATE	WQARF	CERCLA
	—	

FILE NUMBER: D(24-24)18 BCD
WELL REGISTRATION NUMBER: 55-216018

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE
- [X] County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
  - [X] Field Inspection Performed
  - [ ] Site Plan Review Only
- [ ] Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ R.S.

TELEPHONE NUMBER: 520-432-9442
DATE: July 31, 2007

Official County or Local Seal or Stamp
APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE July 31, 2007
BY Carlos Diaz RS

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz R.S.

Lots are 25 x 150

SECTION 2. REGISTRY INFORMATION

Well Type
CHECK ONE
- [X] Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)
- [ ] Non-Exempt (Pump has a maximum capacity of more than 35 gpm and the well is located outside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 20 Gallons Per Minute

Proposed Action
CHECK ONE
- [X] Drill New Well
- [ ] Deepen
- [ ] Replace
- [ ] Modify

If Deepening, Replacing or Modifying:
ORIGINAL WELL REGISTRATION NUMBER: 55 -
MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute
DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well
WELL LOCATION ADDRESS (IF ANY): 1820 W DOMINGUEZ ST

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	18	NW ¼	SW ¼	SE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 102 - MAP 57-140 PARCEL
OF ACRES: 11 LOTS

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	18	¼	¼	¼

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. OWNER INFORMATION

Well Owner		Landowner (if different from Well Owner)	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: ERNEST M ROGERS		FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL	
MAILING ADDRESS: P.O. BOX 608		MAILING ADDRESS	
CITY / STATE / ZIP CODE: NACO AZ. 85620		CITY / STATE / ZIP CODE	
CONTACT PERSON NAME AND TITLE: SAME		CONTACT PERSON NAME AND TITLE	
TELEPHONE NUMBER: 5204323861	FAX	TELEPHONE NUMBER	FAX

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well (e.g., Lot 35 Well, Smith Well, etc.)?		X	PLEASE STATE
3. Is the proposed well a NEW well to be located within an Active Management Area? *(See instructions)*		X	Unless the well is a replacement well and the total number of operable exempt wells on the land is not increasing, you must also file a supplemental form A.R.S. § 45-454(C) & (D).
4. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

RECEIVED JUN 28 2007

RECEIVED AUG 13 2007

WELL REGISTRATION NUMBER 55- 216018

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: Bradly Drilling

DWR LICENSE NUMBER: 736

ROC LICENSE CATEGORY: C-53

TELEPHONE NUMBER: 520 456 2357

FAX:

MAILING ADDRESS: PO Box 4707

CITY / STATE / ZIP CODE: HC AZ 85616

DATE CONSTRUCTION IS TO BEGIN: ASAP

SECTION 6. WATER / SITE INFORMATION

***Principal Use* of Water** CHECK ONE	***Other Uses* of Water** CHECK ALL THAT APPLY
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☒ Domestic	☐ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify):*	☐ Other *(please specify):*

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

Borehole			Casing													
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (T)				PERFORATION TYPE (T)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	20	12 1/4	0	20	8 5/8	X*				X						Cement
20	300	8 3/8	10	260	6		X			X						
			260	300	6		X							X		

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: ERNEST MARION ROGERS

SIGNATURE OF WELL OWNER: [signature] DATE: 6-26-07

SIGNATURE OF LANDOWNER, IF APPLICABLE (SEE INSTRUCTIONS): [signature] DATE: 6-26-07

RECEIVED RECEIVED
AUG 13 2007 JUN 28 2007
WATER MGMT WATER MGMT

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55-216018

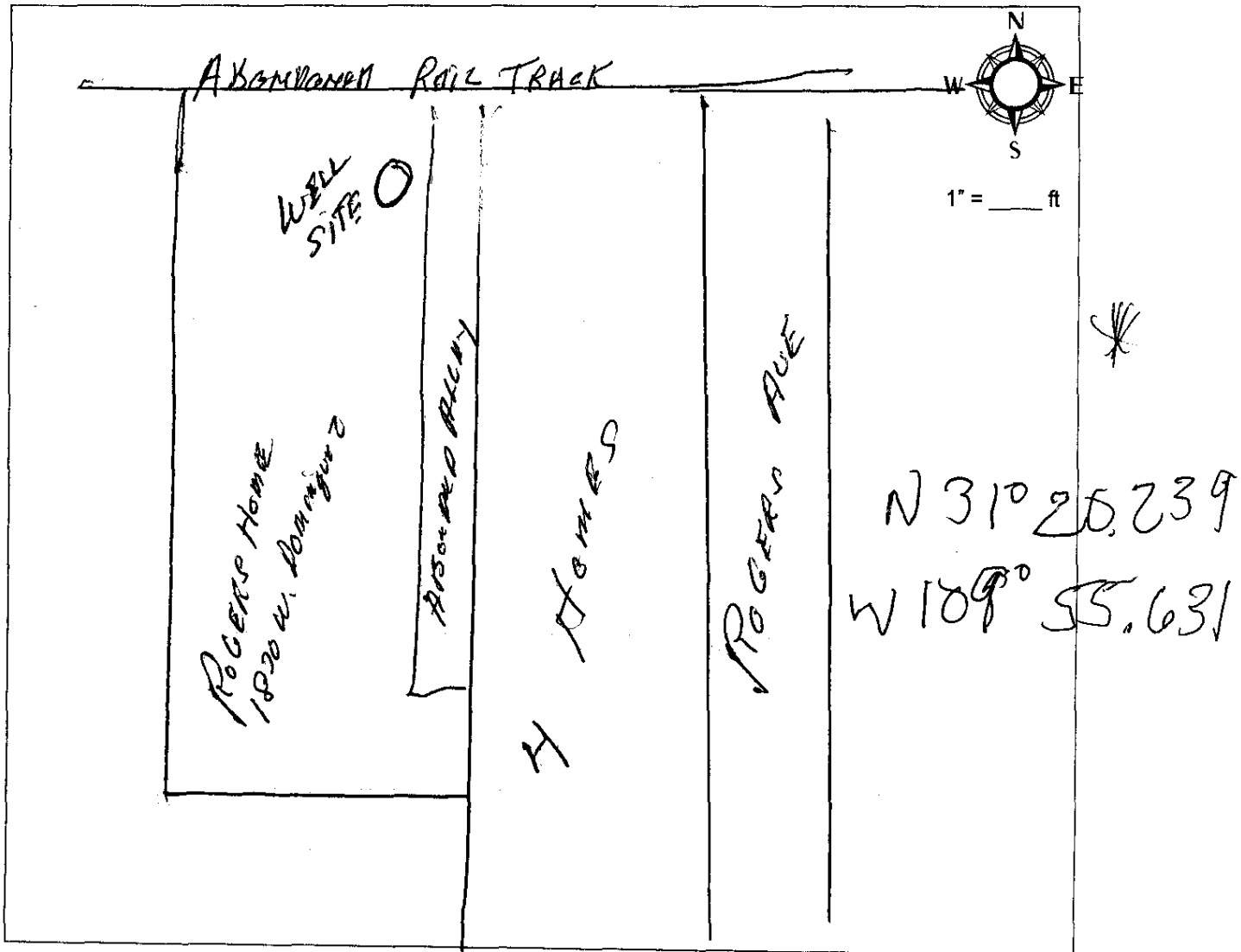
CHECK ONE: ☒ FILING MANUALLY
☐ FILING ELECTRONICALLY* *DRILLER'S E-MAIL ADDRESS

*COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL CODE	COUNTY APPROVAL CODE
If applicant is filing this NOI electronically via the ADWR website and County approval is required, please indicate approval by providing a County Approval Code.	

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
ERNEST M. ROGERS			102-51-140 5

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE	
Carlos Diaz R.S.	
COUNTY OR LOCAL AUTHORITY SIGNATURE	
Carlos Diaz R.S.	
TELEPHONE NUMBER	DATE
520-432-9442	July 31, 2007

Official County or Local Seal or Stamp
APPROVED BY THE COCHISE COUNTY
ENVIRONMENTAL HEALTH DIVISION
DATE July 31, 2007
BY Carlos Diaz R.S.

COUNTY OF COCHISE ARIZONA

ARIZONA DEPARTMENT OF WATER RESOURCES
Water Management Support Section – NOI Unit
3550 N Central Ave, Phoenix, Arizona 85012
Telephone (602) 771-8646
Fax (602) 771-8691

Janet Napolitano
Governor

Herbert R. Guenther
Director

July 10, 2007

PLEASE RETURN ALL PAPERS

Ernest M. Rogers
P.O. Box 608
Naco, AZ 85620

Re: Well Registry Number: 55-216018
File (Location) Number:

Dear Applicant:

The Department of Water Resources recently received your Notice of Intent (NOI) to Drill, Deepen, Replace or Modify a Well. However, our review indicates that the NOI is incomplete under the Groundwater Management Act for the following reason(s):

- **SECTION 1: COUNTY APPROVAL IS REQUIRED ON A PARCEL OF LAND OF 5 OR FEWER ACRES FOR WELLS BEING USED FOR DOMESTIC PURPOSES. UNDER SECTION 2 OF YOUR APPLICATION, THE NUMBER OF ACRES FOR THIS PARCEL WAS NOT ANSWERED. IF THE PARCEL OF LAND IS 5 OR FEWER ACRES, PLEASE COMPLETE ALL UNANSWERED QUESTIONS ON THE FORM AND FORWARD THE NOI FORM TO THE COCHISE COUNTY HEALTH AUTHORITY FOR APPROVAL.**
- **SECTION2: PLEASE COMEPLETE THE LEGAL DESCRIPTION OF THE WELL; WHICH IS THE TOWNSHIP, RANGE, SECTION AND 160, 40 AND 10 ACRE QUARTER LOCATION. IF THE WELL IS LOCATED IN AN ACTIVE MANAGEMENT AREA. AND THEREFORE, NEEDS AN AMA CERTIFICATION OF COMPLIANCE FORM "ARS 45-454 (C) & (D)". I HAVE ENCLOSED THE FORM SO PLEASE READ AND SIGN THE EXEMPT WELL CERTIFICATION OF COMPLIANCE FORM.**
- **SECTION 7: THE ANSWER FOR THE OUTER DIAMETER IS NOT CLEAR. PLEASE INDICATE THE NUMBER OF INCHES.**

IF YOU HAVE ANY QUESTIONS, PLEASE CALL DARLENE SUMPTER-KING AT 602-771-8646.

In accordance with Arizona Revised Statutes (A.R.S.) § 45-596, Paragraph D, the Department is mailing this "statement of determination" as a request for information necessary to make the NOI complete and correct. Please provide the Department with the additional information and resubmit the corrected NOI form and any attachments (if applicable) to ADWR. The Department's substantive review time frame is suspended until all requested information is provided. If the Department does not receive the necessary information within sixty (60) days, the application may be denied. You would then have to re-initiate the NOI process and pay a new filing fee to receive a drilling authority for this location.

WHEN RESUBMITTING THE COMPLETED FORM, RETURN TO:

WATER MANAGEMENT SUPPORT SECTION
NOI UNIT c/o DARLENE SUMPTER-KING
PO BOX 458
PHOENIX, ARIZONA 85001-0458

Printed: 6/28/2007 12:20:09 PM

216018

Store 0010
Sale Receipt #
6/28/2007
Page 1

Arizona Department of Water Resources

3550 N Central Ave
Phoenix AZ 85012

ROGERS BORDER SERVICE

3847 S TOWNER AVE
NACO,AZ 85620
520-432-3861

Date: 6/28/2007
Cashier: WRLXS
Type: Mail

DCS/INV#	DESCRIPTION		ATTR	SIZE	QTY	PRICE	EXT PRICE
F 72	4439-06	NOTICE OF INTENT TO DRILL WELL	15245		1	100.00	100.00
				1 Unit(s)		Subtotal:	100.00
						RECEIPT TOTAL:	**100.00**
						Tendered:	100.00

Check #: 100.00 # 3548

ERNEST M ROGERS

We Appreciate Your Business!

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED MAY 11 1982 DEPT WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	X
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
11
REGISTRATION NO. 55- 641750
FILE NO. D(24-24)18ddd
FILED 5-11-82 (DATE) AT 11 A (TIME)
INA
AMA

1. Name of Registrant: Mrs Mary W. Rollins
Naco Hwy P.O. Box 332 (Address) Naco (City) Arizona (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
(File Number) N/A 35- N/A (Control Number)

3. a. The well is located within the NE ¼ SE ¼ SE4 ¼, Section 18NE, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision ND, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial) Domestic.

5. If for irrigation use, number of acres irrigated from well ND.

6. Owner of land on which well is located. If same as Item 1, check this box X
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 126 ft. feet
b. Diameter of casing 2 inch inches
c. Depth of casing N/A feet
d. Type of casing NA .
e. Maximum pump capacity N/A gallons per minute.
f. Depth to water N/A feet below land surface.
g. Date well completed N/A (Month) (Day) (Year) .

8. The place(s) of use of water. If same as Item 3, check this box X
_____ ¼ _____ ¼ _____ ¼, Section _____ Township _____ Range _____
_____ ¼ _____ ¼ _____ ¼, Section _____ Township _____ Range _____
Attach additional sheet if necessary.

9. DATE 5-8-82 SIGNATURE OF REGISTRANT Mary W. Rollins

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

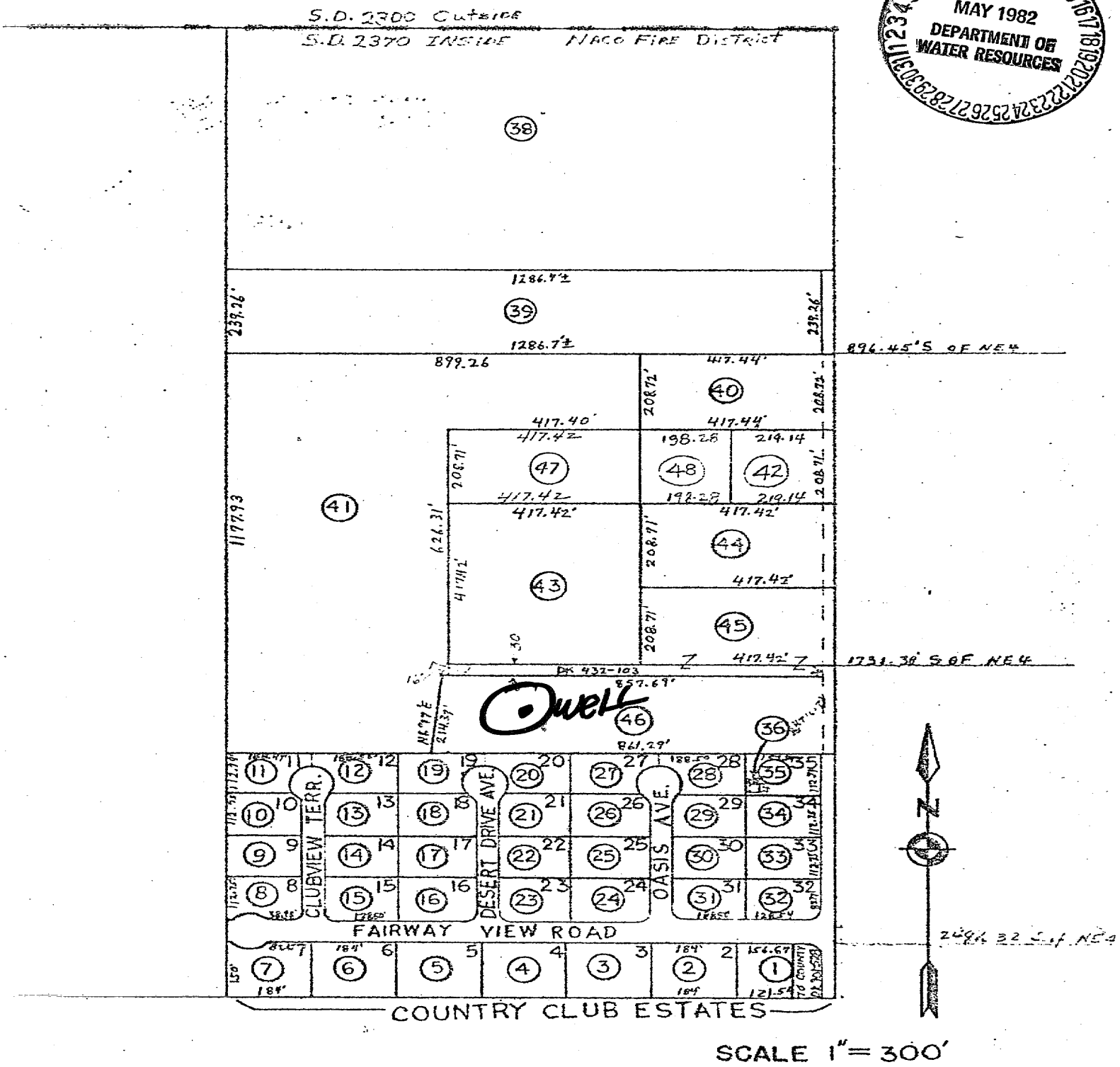
7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

BOOK 102
MAP 56

MAY 1982
DEPARTMENT OF WATER RESOURCES



MICROFILMED

COUNTY ASSESSOR'S MAP

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.



1. Owner Richard Ross
   Name
   P.O. Box 305 Naco, Az 85620
   Mailing Address
2. Driller Weber Drilling
   Name
   Rt-1 Box 276B St. David, Az 85630
   Mailing Address
3. Location of well: 24S Twp. Rge 24E Sec. 6 NW 1/4, NW 1/4, NW 1/4
4. Permit No. 55-517525 (if issued)

DESCRIPTION OF WELL

5. Total depth of hole 400 ft.
6. Type of casing Steel
7. Diameter and length of casing 8 in. from 0 to 20, ____ in from ____ to ____.
8. Method of sealing at reduction points ____
9. Perforated from ____ to ____, from ____ to ____, from ____ to ____.
10. Size of cuts ____ Number of cuts per foot ____
11. If screen was installed: Length ____ ft. Diam ____ in. Type ____
12. Method of construction Drilled
    drilled, dug, driven, bored, jetted, etc.
13. Date started 4 (Month) 16 (Day) 87 (Year)
14. Date completed 4 (Month) 17 (Day) 87 (Year)
15. Depth to water Dry Hole ft. (If flowing well, so state.)
16. Describe point from which depth measurements were made, and give sea-level elevation if available Ground Level
17. If flowing well, state method of flow regulation: ____
18. Remarks: ____

55-517525
D(24-24)6 bbb
ENTERED AUG26 1987
Entered ____ By ____

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	250	Decomposed granite & limestone conglomerate
250	400	muddy sandstone

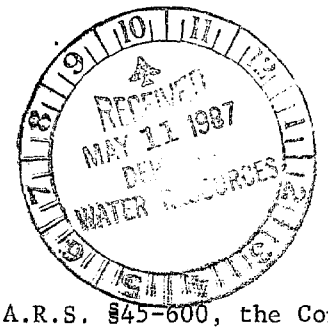
I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Donald L. Weber
Name

WEBER DRILLING
RT. 1 BOX 276B
ST. DAVID, AZ 85630
PHONE 586-4800

City State Zip

Date 8/20/87



DEPARTMENT OF WATER RESOURCES
99 East Virginia
Phoenix, Arizona 85004

55-517525
Registration No

D(24-24)6 bbb

File No.

COMPLETION REPORT

1. Per A.R.S. §45-600, the Completion Report to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24S	24E	6	NW ¼ NW ¼ NW ¼
Township	Range	Section	

EQUIPMENT INSTALLED:

Kind of pump _____
Turbine, centrifugal, etc.

Kind of power Electric
Electric, natural gas, gasoline, etc.

H.P. Rating of Motor 3

Pumping Capacity 35
Gallons per minute

Date installed 4-10-87

Electric is not turned on yet but will be 4/23/87.

WELL TEST:

Test pumping capacity 35
Gallons per minute

Date Well Tested _____

Method of Discharge Measurement _____
Weir, orifice, current meter, etc.

Static Groundwater Level _____ ft. Drawdown _____ ft.

Total Pumping Lift _____ ft. Drawdown _____ lbs
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

May 5, , 19 87
DATE

Richard Ross
Signature

209 Willson Road
Address

Naco, Arizona 85620
City State Zip

ENTERED MAY 14 1987

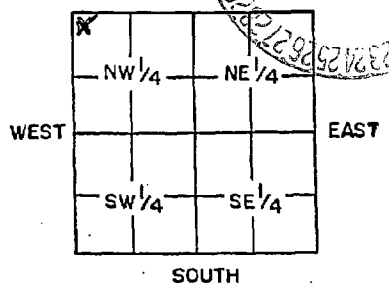
DWR-55-7-3/84

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL OR DEEPEN A WELL
OUTSIDE OF AN ACTIVE MANAGEMENT AREA

FILING FEE $10.00

APR 1987 DEPARTMENT OF WATER RESOURCES

Section 45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management, a person may not drill or cause to be drilled any well or deepen an existing well without first filing a Notice of Intention to Drill with the Department.



INDICATE WELL LOCATION BY X
(Above diagram represents one 640 acre section.)

WELL/LAND LOCATION:

1. Township 24S N/S
2. Range 24E E/W
3. Section 6
4. NW ¼, NW ¼, NW ¼
   10 acre subdivision
5. County Cochise
6. Owner of well:
   Richard Ross
   Name
   P.O. Box 305
   Mailing address
   Naco Az 85620
   City State Zip
   Telephone 432-5967
7. Owner of land:
   Richard Ross
   Name
   P.O. Box 305
   Mailing Address
   Naco Az 85620
   City State Zip

DESCRIPTION OF WELL:

8. Diameter 6 inches
   Depth 400 feet
9. Type of casing Steel
10. Design pump capacity:
    35 gallons per minute
11. Estimate of total annual pumping: N/A acre feet
12. Principal use of water:
    Two homes
    (Be Specific)
13. Other uses intended:
    Trees
    (Be Specific)
14. If for irrigation, state the number of acres to be irrigated:
    N/A acres
15. Construction will start about:
    4/87
    Month Year

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

FILE NO. D(24-24)6 bbb
FILED 4-9-87 BY SV
INPUT ENTERED APR 16 1987
DUPLICATE MAILED 4-15-87 BY SV
REGISTRATION NO. 55-517525
INA
W/S 13 S/B

PLACE OF USE:

16. Township 24S N/S
17. Range 24E E/W
18. Section 6
19. Legal description of land NW¼ NW¼ NW¼
20. Type well:
    ✓ Exempt
    ___ Non-Exempt
21. Action Requested:
    Drill ✓ Deepen ___ Replace ___
    55-___
22. This notice filed by:
    Owner ✓
    Lessee ___
    ___
    Name
    ___
    Address
    ___
    City State Zip
    Telephone ___
23. Drilling Firm:
    Weber Drilling
    Name
    RT 1 Box 276 B
    Address
    St. David Az 85630
    City State Zip
    (272) 55603
    DWR License Number

24, Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials: Yes ___ No ✓

GENERAL INSTRUCTIONS

1. Fill out this form in duplicate and send to 99 East Virginia, Suite 100, Phoenix, Az. 85004.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen or replace a well outside of an Active Management Area.
4. If the well is a replacement or deepening of an existing well, state the registration number of the existing well in Item 21.
5. Construction standards for new and replacement wells and the deepening and abandonment of existing wells shall be in accordance with Department Rules and Regulations.

I state that this Notice is filed in compliance with ARS §45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well set forth on the reverse side of this form.

DATE 4-1-87 Signature of Person Filing Richard Ross

DWR-55-41-8/86 (Revised)

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Upon receipt of the return of this annotated Notice, the owner is authorized to proceed in drilling or deepening the well as set forth on this Notice.

2. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

3. Only one exempt well may be drilled or used to serve the same use at the same location.

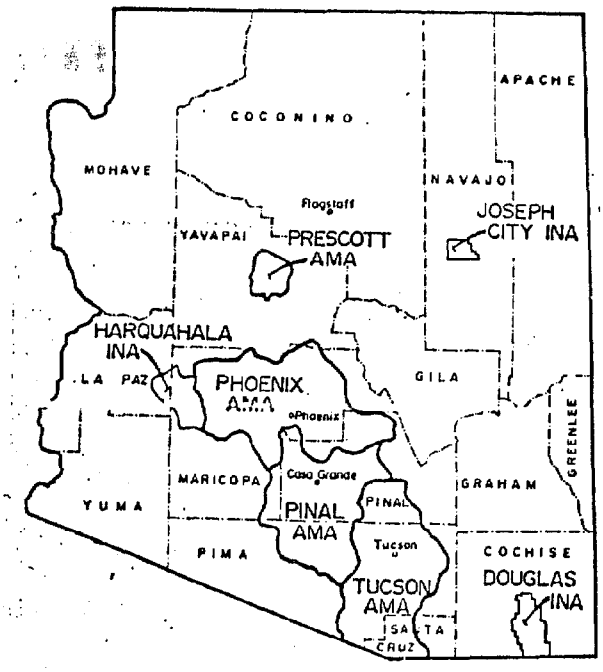
4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 2 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to ARS §45-434 or §45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of ARS §45-437.

5. The drilling or deepening of this well shall be completed within one (1) year of the date of this Notice.

6. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

7. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of the annotated copy of this Notice.

8. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.



DRILLER: Welbber Drlg.

OWNER: Richard Ross

DATE OF VERBAL: 3-31-87

TYPE OF WELL: Exempt

LEGAL: D (24-24) 6 bcc
SW SW NW

BY: mm

WEBER DRILLING
RT 1 Box 276 B
St. David, Az. 85630

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

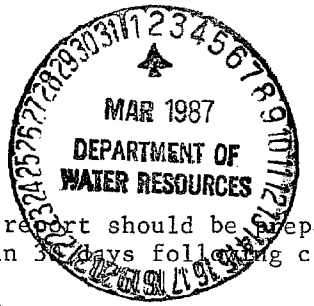
KIND ENTRY	FILE REFERENCE NO.
55	517525
	THRU
55	517526

FOR: RICHARD ROSS

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEE FOR NOTICE OF INTENT TO	10.00	10.00
					DRILL A WELL		
					CHECK NO. 1532 4-14-87 sv		

APR 1987
PAID

TOTAL $ 10.00



STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner _____
Name
_____
Mailing Address

2. Driller _____
Name
_____
Mailing Address

3. Location of well: _____

4. Permit No. (if issued) _____

DESCRIPTION OF WELL

5. Total depth of hole 200 ft.
6. Type of casing None
7. Diameter and length of casing 8 in. from 0 to 21, — in from _____ to _____.
8. Method of sealing at reduction points Grout
9. Perforated from N/A to —, from _____ to _____, from _____ to _____.
10. Size of cuts N/A Number of cuts per foot —
11. If screen was installed: Length — ft. Diam _____ in. Type _____
12. Method of construction _____
(drilled, dug, driven, bored, jetted, etc.)
13. Date started 1 (Month) 20 (Day) 87 (Year)
14. Date completed 1 (Month) 21 (Day) 87 (Year)
15. Depth to water None ft. (If flowing well, so state.)
16. Describe point from which depth measurements were made, and give sea-level elevation if available —
17. If flowing well, state method of flow regulation: _____
18. Remarks: Well was low Producer Ceasarted.

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55-516398
Received _____ By _____
Entered ENTERED MAR 03 1987 By _____
File No. _____
D(23-24)31 cad

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	2	Top
2	40	Sandy clay
40	200	Granite

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Lee's Well Drilling
P. O. Box 4568
Huachuca City, AZ. 85616
Address

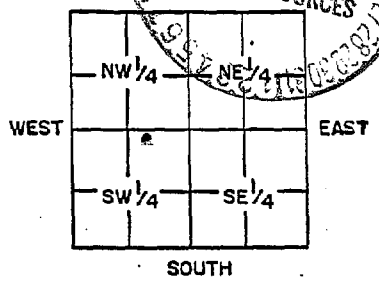
City State Zip

Date 2-12-87

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL OR DEEPEN A WELL
OUTSIDE OF AN ACTIVE MANAGEMENT AREA

FILING FEE $10.00

Section 45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management, a person may not drill or cause to be drilled any well or deepen an existing well without first filing a Notice of Intention to Drill with the Department.



INDICATE WELL LOCATION BY X
(Above diagram represents one 640 acre section.)

WELL/LAND LOCATION:

1. Township 23-S N/S
2. Range 24E E/W
3. Section 31
4. NW ¼, NE ¼, SW ¼
   10 acre subdivision
5. County Cochise
6. Owner of well:
   Richard Rose
   Name
   1104 Henry Rd
   Mailing address
   Bisbee Ariz. 85603
   City State Zip
   Telephone 432-5969
7. Owner of land:
   [signature]
   Name
   [signature]
   Mailing Address
   City State Zip

DESCRIPTION OF WELL:

8. Diameter 6 inches
   Depth 500 feet
9. Type of casing Drive Steel
10. Design pump capacity:
    300 gallons per minute
11. Estimate of total annual pumping: — acre feet
12. Principal use of water:
    Domestic
    (Be Specific)
13. Other uses intended:
    Lawn + Tree
    (Be Specific)
14. If for irrigation, state the number of acres to be irrigated:
    [illegible] acres
15. Construction will start about:
    12 86
    Month Year

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
FILE NO. D (23-24) 31 cab
FILED 12-18-86 BY S.V.
INPUT ENTERED JAN 08 1987
DUPLICATE MAILED 1-7-87 BY S.V.
REGISTRATION NO. 55-516398
INA
W/S 11 S/B

PLACE OF USE:

16. Township 23-S N/S
17. Range 24 E E/W
18. Section 31
19. Legal description of land
    NW NE SW
20. Type well:
    — Exempt
    ✓ Non-Exempt
21. Action Requested:
    Drill ✓ Deepen — Replace —
    55-
22. This notice filed by:
    Owner ✓
    Lessee —
    [signature]
    Name
    [signature]
    Address
    [signature]
    City State Zip
    Telephone
23. Drilling Firm:
    Lee's Well Drilling
    Name
    Box 4555
    Address
    H.C. AR12 85616
    City State Zip
    48919 T-80
    DWR License Number

24. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials: Yes — No ✓

GENERAL INSTRUCTIONS

1. Fill out this form in duplicate and send to 99 East Virginia, Suite 100, Phoenix, Az. 85004.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen or replace a well outside of an Active Management Area.
4. If the well is a replacement or deepening of an existing well, state the registration number of the existing well in Item 21.
5. Construction standards for new and replacement wells and the deepening and abandonment of existing wells shall be in accordance with Department Rules and Regulations.

I state that this Notice is filed in compliance with ARS §45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well set forth on the reverse side of this form.

DATE 12-16-86 Signature of Person Filing ✓ Richard Rose

DWR-55-41-8/86 (Revised)

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Upon receipt of the return of this annotated Notice, the owner is authorized to proceed in drilling or deepening the well as set forth on this Notice.

2. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

3. Only one exempt well may be drilled or used to serve the same use at the same location.

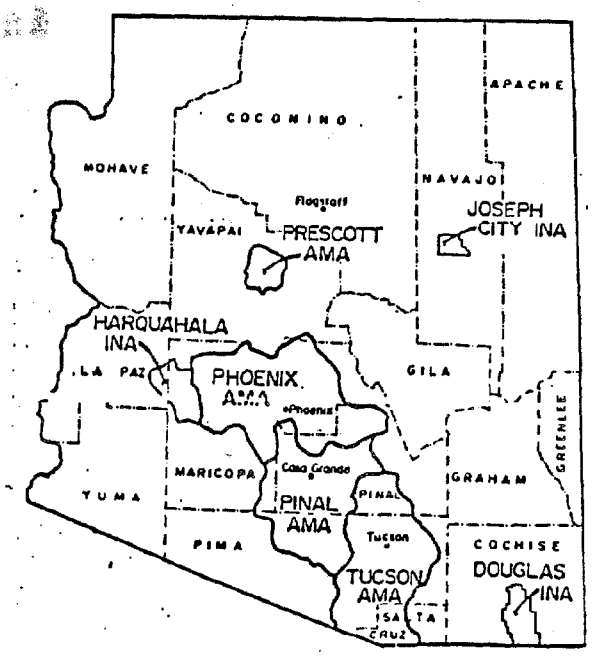
4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 2 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to ARS §45-434 or §45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of ARS §45-437.

5. The drilling or deepening of this well shall be completed within one (1) year of the date of this Notice.

6. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

7. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of the annotated copy of this Notice.

8. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.



RICHARD ROSS
1104 Highway 92
Bisbee, Az. 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
	55-516398
	THRU
	55-516399

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEE FOR NOTICE OF INTENT TO DRILL	10.00	20.00
					2 NON-EXEMPT WELLS OUTSIDE OF AMA		
					REG. NO. 55-516398 D(23-24)31 cab		
					55-516399 D(23-24)31 cad		
					CHECK NO. 0916 1-7-87 sv		

JAN 1987
PAID

TOTAL $ 20.00

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division
15 South 15th Avenue
Phoenix, Arizona 85007

CHANGE OF WELL INFORMATION

Well Reg. No.

File (location) No. - F 1989

I/We request the following well information be changed:

Date: _____, 19___ _____
Signature of current Well Owner

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, DAVID & TRUDY CONNOR, state that I am ~~(no longer)~~ the (new)
(please print)
owner of the well described below:

Township 23 Range 24 Section 31 ; ___ ¼ ___ ¼ ___ ¼

Well Registration No. 55-516398 File (location) No. D-230-240-31-CAB

RICHARD ROSS
Previous Owner

DAVID AND TRUDY CONNOR
PRINT New Owner's Name

1104 HWY 92
Address

Trudy Connor
Signature of New Owner

BISBEE AZ 85603
City State Zip

5561 E. FINISTERRA
Address

DATED: 11-28-89

TUCSON AZ 85603 ~~85703~~
City State Zip

NOTE: A.R.S. §45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER, PRIOR TO DRILLING THE WELL, IN ADDITION TO AMENDING INFORMATION PREVIOUSLY FILED.

* * * * *

ENTERED DEC 14 1989

DWR-55-71-7/88

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner R ROSS
Name
Mailing Address

2. Driller
Name
Mailing Address

3. Location of well:

4. Permit No. (if issued)

RECEIVED MAR 25 1986 DEPT OF WATER RESOURCES

DESCRIPTION OF WELL

5. Total depth of hole 740 ft.
6. Type of casing None except 20' of 8 steel
7. Diameter and length of casing 8 in. from 0 to 20, ____ in from ____ to ____.
8. Method of sealing at reduction points Grout
9. Perforated from ____ to ____, from ____ to ____, from ____ to ____.
10. Size of cuts N/A Number of cuts per foot N/A
11. If screen was installed: Length ____ ft. Diam ____ in. Type ____
12. Method of construction ____
drilled, dug, driven, bored, jetted, etc.
13. Date started 2 (Month) 5 (Day) 86 (Year)
14. Date completed 2 (Month) 8 (Day) 86 (Year)
15. Depth to water None ft. (If flowing well, so state.)
16. Describe point from which depth measurements were made, and give sea-level elevation if available ——
17. If flowing well, state method of flow regulation:
18. Remarks: Capped Not Producing

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55-513351
Received ____ By ____
Entered ____ By ____
File No. D(23-24)31 cad

ENTERED MAR 26 1986

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	200	Sandy clay
200	740	Granite w/ dry Crevices

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Lee's Well Drilling
Name
P. O. Box 4358
Huachuca City, AZ. 85616
Address

City State Zip

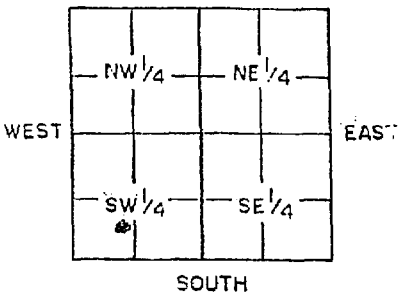
Date

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL OR DEEPEN A WELL
OUTSIDE OF AN ACTIVE MANAGEMENT AREA

CO
B/S

Section 45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management, a person may not drill or cause to be drilled any well or deepen an existing well without first filing a Notice of Intention to Drill with the Department.



INDICATE WELL LOCATION BY X
(Above diagram represents one 640 acre section)

WELL/LAND LOCATION:

1. Township 23-S
2. Range 24-E
3. Section 31
4. SE ¼, NE ¼, SW ¼
   10 acre subdivision
5. County Cochise
6. Owner of well:

   Name
   Address
   City State Zip
   Telephone

7. Owner of land:

   Richard Ross
   Name
   Box 305
   Address
   NACO, AZ 85620
   City State Zip

DESCRIPTION OF WELL:

8. Diameter 6 inches
   Depth 1000 feet
9. Type of casing PVC & Steel
10. Design pump capacity:
    500 gallons per minute
11. Estimate of total annual pumping: — acre feet
12. Principal use of water: Domestic & Trailer Park
    (Be Specific)
13. Other uses intended: Washing, Lawns & Garden
    (Be Specific)
14. If for irrigation, state the number of acres to be irrigated:
    Turf acres
15. Construction will start about:
    1 86
    Month Year

RECEIVED
FEB 3 1986
DEPT OF WATER RESOURCES

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
FILE NO. D(23-24)31cad
FILED 2-3-86 BY mg
INPUT 2-5-86 BY
DUPLICATE MAILED 2-4-86 By mg
REGISTRATION NO. 55-513351
Non Expansion Area —
W/S 11 S/B —

PLACE OF USE:

16. Township 23-S
17. Range 24-E
18. Section 31
19. Legal description of land
    SE NE SW
20. Type well:
    ___ Exempt
    ✓ Non-Exempt
21. Action Requested:
    Drill ✓ Deepen __ Replace __
    55-
22. This notice filed by:
    Owner ✓
    Lessee ___

    Name
    Address
    City State Zip
    Telephone

23. Driller's Name:

    Name
    Lee's Well Drilling
    Address P. O. Bx-4558
    Huachuca City, AZ. 85616
    City State Zip
    (1-80)
    DWR License Number

GENERAL INSTRUCTIONS

1. Fill out this form in duplicate and send to 99 East Virginia, Suite 100, Phoenix, Az. 85004.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen or replace a well outside of an Active Management Area
4. If the well is a replacement or deepening of an existing well, state the registration number of the existing well in Item 21.
5. Construction standards for new and replacement wells and the deepening and abandonment of existing wells shall be in accordance with Department Rules and Regulations.

I state that this Notice is filed in compliance with ARS §45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well set forth on the reverse side of this form.

DATE 1-30-86 Signature of Person Filing Richard Ross

DWR-55-41-10/83

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Upon receipt of the return of this annotated Notice, the owner is authorized to proceed in drilling or deepening the well as set forth on this Notice.

2. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

3. Only one exempt well may be drilled or used to serve the same use at the same location.

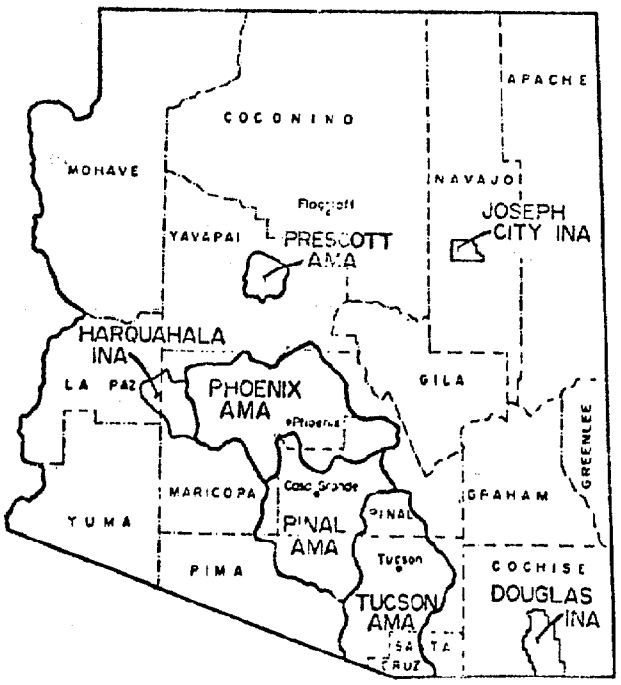
4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 2 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to ARS §45-434 or §45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of ARS §45-437.

5. The drilling or deepening of this well shall be completed within one (1) year of the date of this Notice.

6. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

7. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of the annotated copy of this Notice.

8. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.



[illegible] WELL DRILLING
P O BOX 455[illegible]
[illegible] CITY ARIZONA 85616-0550

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	513351
	THRU

ROSS

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEE FOR NOTICE OF INTENTION TO DRILL	10.00	10.00
					1 WELL		
					FILE NO D(23-24)31 cad	WAITER PAYMENT	
					REG NO 55-513351	GUESTS 1	
						CHK NO 6112	
						55-I 10.00	
						TAX 0.00	
						TOTL 10.00	
						GEN.CHEK 10.00	

CHECK NO 6112
2-4-86 [illegible]

2597 0 15:22

TOTAL $ 10.00

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED AUG 26 1987 DEPT. OF WATER RESOURCES

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Richard Ross
Name
P.O. Box 305 Naco, Az 85620
Mailing Address

2. Driller Weber Drilling
Name
Rt-1 Box 276B St. David, Az 85630
Mailing Address

3. Location of well: Twp 24S Rge 24E Sec. 6 SW¼, SW¼, NW¼

4. Permit No. 55-517526 (if issued)

DESCRIPTION OF WELL

5. Total depth of hole 425 ft.

6. Type of casing Steel

7. Diameter and length of casing 8 in. from 0 to 20, 6 in from 0 to 425.

8. Method of sealing at reduction points welded

9. Perforated from ____ to ____, from ____ to ____, from ____ to ____.

10. Size of cuts 8" x ½8" Number of cuts per foot 4

11. If screen was installed: Length ____ ft. Diam ____ in. Type ____

12. Method of construction drilled
drilled, dug, driven, bored, jetted, etc.

13. Date started 4 (Month) 15 (Day) 87 (Year)

14. Date completed 4 (Month) 16 (Day) 87 (Year)

15. Depth to water 375 ft. (If flowing well, so state.)

16. Describe point from which depth measurements were made, and give sea-level elevation if available Ground Level

17. If flowing well, state method of flow regulation: ____

18. Remarks: ____

55-517526

D(24-24)6 bcc

ENTERED AUG 26 1987

Entered ____ By ____

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
		First water 375' static 300
0	225	decomposed granite + limestone conglomerate
225	300	muddy sandstone
300	375	volcanic rock
375	425	muddy sandstone

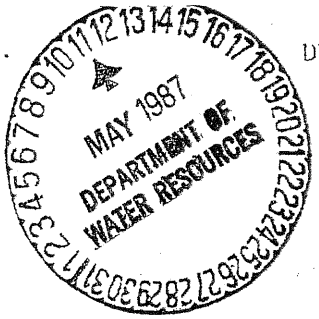
I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Ronald G. Weber
Name

WEBER DRILLING
RT. 1 BOX 276B
ST. DAVID, AZ 85630
PHONE 586-4800

City State Zip

Date 8/20/87



DEPARTMENT OF WATER RESOURCES
99 East Virginia
Phoenix, Arizona 85004

55-517526
Registration No.

D(24-24)6 bcc
File No.

COMPLETION REPORT

1. Per A.R.S. §45-600, the Completion Report to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24S	24E	6	SW ¼ SW ¼ NW ¼
Township	Range	Section	

EQUIPMENT INSTALLED:

Kind of pump _____
(Turbine, centrifugal, etc.)

Kind of power Electric (Electric, natural gas, gasoline, etc.) H.P. Rating of Motor 3

Pumping Capacity 35 (Gallons per minute) Date installed 4-10-87

Electricity is not turned on yet but will be 4/23/87

WELL TEST:

Test pumping capacity 35 (Gallons per minute) Date Well Tested _____

Method of Discharge Measurement _____
(Weir, orifice, current meter, etc.)

Static Groundwater Level _____ ft. Drawdown _____ ft.

Total Pumping Lift _____ ft. Drawdown _____ lbs
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

May 5, , 19 87
DATE

Richard Ross
Signature

209 Willson Road
Address

Naco, Arizona 85620
City State Zip

ENTERED MAY 14 1987

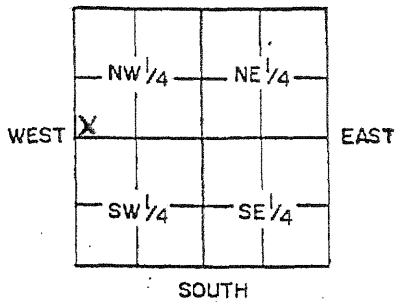
DWR-55-7-3/84

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL OR DEEPEN A WELL
OUTSIDE OF AN ACTIVE MANAGEMENT AREA

RECEIVED APR 9 1987 DEPT. OF WATER RESOURCES

Section 45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management, a person may not drill or cause to be drilled any well or deepen an existing well without first filing a Notice of Intention to Drill with the Department.



INDICATE WELL LOCATION BY X
(Above diagram represents one 640 acre section.)

WELL/LAND LOCATION:

1. Township 24 S N/S
2. Range 24 E E/W
3. Section 6
4. SW ¼, SW ¼, NW ¼
   10 acre subdivision
5. County Cochise
6. Owner of well:
   Richard Ross
   Name
   P.O. Box 305
   Mailing address
   Naco, AZ 85620
   City State Zip
   Telephone 432-5965
7. Owner of land:
   Richard Ross
   Name
   P.O. Box 305
   Mailing Address
   Naco AZ 85620
   City State Zip

DESCRIPTION OF WELL:

8. Diameter 6 inches
   Depth 400 feet
9. Type of casing Steel
10. Design pump capacity:
    35 gallons per minute
11. Estimate of total annual pumping: N/A acre feet
12. Principal use of water:
    Two homes
    (Be Specific)
13. Other uses intended:
    Trees
    (Be Specific)
14. If for irrigation, state the number of acres to be irrigated:
    N/A acres
15. Construction will start about:
    4/87
    Month Year

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
FILE NO. D(24-24)6 bcc
FILED 4-9-87 BY SV
INPUT ENTERED APR 16 1987 BY
DUPLICATE MAILED 4-15-87 BY SV
REGISTRATION NO. 55-517526
INA
W/S 13 S/B

PLACE OF USE:

16. Township 24 S N/S
17. Range 24E E/W
18. Section 6
19. Legal description of land SW¼ SW¼ NW¼
20. Type well:
    ✓ Exempt
    ___ Non-Exempt
21. Action Requested:
    Drill ✓ Deepen ___ Replace ___
    55-
22. This notice filed by:
    Owner ✓
    Lessee ___
    Name
    Address
    City State Zip
    Telephone
23. Drilling Firm:
    Weber Drilling
    Name
    RT 1 Box 276B
    Address
    St. David AZ 85630
    City State Zip
    272 5560
    DWR License Number

24, Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials: Yes ___ No ✓

GENERAL INSTRUCTIONS

1. Fill out this form in duplicate and send to 99 East Virginia, Suite 100, Phoenix, Az. 85004.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen or replace a well outside of an Active Management Area
4. If the well is a replacement or deepening of an existing well, state the registration number of the existing well in Item 21.
5. Construction standards for new and replacement wells and the deepening and abandonment of existing wells shall be in accordance with Department Rules and Regulations.

I state that this Notice is filed in compliance with ARS 45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well set forth on the reverse side of this form.

DATE 4-2-87 Signature of Person Filing Richard Ross

DWR-55-41-8/86 (Revised)

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Upon receipt of the return of this annotated Notice, the owner is authorized to proceed in drilling or deepening the well as set forth on this Notice.

2. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

3. Only one exempt well may be drilled or used to serve the same use at the same location.

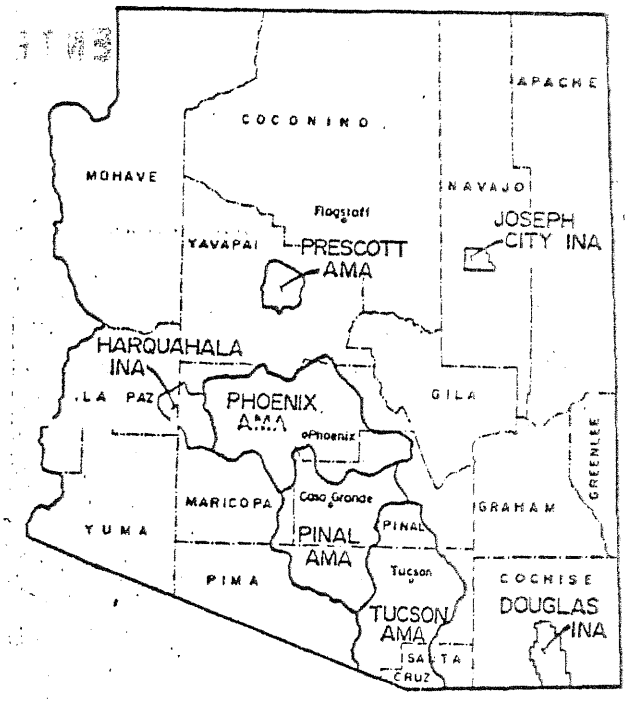
4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 2 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to ARS §45-434 or §45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of ARS §45-437.

5. The drilling or deepening of this well shall be completed within one (1) year of the date of this Notice.

6. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

7. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of the annotated copy of this Notice.

8. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.



STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner David G. Ruiz
P.O. Bx 4205 Bisbee, Az 85603
Name / Mailing Address

2. Driller L. B. DRILLING
Box 4166
Huachuca City, AZ 85616
Name / Mailing Address

3. Location of well: 1-24 S R-24 E S-4 SW x SW x NW

4. Permit No. _____ (If issued)

DESCRIPTION OF WELL

5. Total depth of hole 312 ft.
6. Type of casing PVC
7. Diameter and length of casing 6 in. from 0 to 312, ____ in from ____ to ____.
8. Method of sealing at reduction points _____
9. Perforated from 312 to 252, from ____ to ____, from ____ to ____.
10. Size of cuts 1/8 Number of cuts per foot Three
11. If screen was installed: Length ____ ft. Diam ____ in. Type _____
12. Method of construction drilled air
drilled, dug, driven, bored, jetted, etc
13. Date started May (Month) 28 (Day) 1991 (Year)
14. Date completed May (Month) 29 (Day) 1991 (Year)
15. Depth to water 254 ft. (If flowing well, so state)
16. Describe point from which depth measurements were made, and give sea-level elevation if available ground level
17. If flowing well, state method of flow regulation: N/A
18. Remarks: blew 15 gpm

AUG - 9 1991

DO NOT WRITE IN THIS SPACE

REG. No. 55-531770
File No. D(24-24)4 BCC
Entered _____ By _____
ENTERED AUG 13 1991

DWR-55-55-2/89

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	3	fill dirt Topsoil
3	265	brown sandy clay
265	280	clayey sand and gravel cemented 1st water 4 gpm
280	312	redish brown sedimentary cracks [illegible] water

I hereby certify that this well was drilled by me (or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller [signature]
Name

L. B. DRILLING
Box 4166
Huachuca City, AZ 85616
Address

City State Zip

Date 8-5-91

DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

Registration No. 55-531770
D(24-24)4 BCC

File No. _____

COMPLETION REPORT

1. Per **A.R.S. §45-600**, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24	24	4	SW SW NW
Township	Range	Section	¼ ¼ ¼

EQUIPMENT INSTALLED:

Kind of pump Sub
Turbine, centrifugal, etc.

Kind of power Electric H.P. Rating of Motor 3/4
Electric, natural gas, gasoline, etc.

Pumping Capacity 10 Date pump installed: 9July 91
Gallons per minute

WELL TEST:

Test pumping capacity 10 Date Well Tested: 9July 91
Gallons per minute

Method of Discharge Measurement Clock & Bucket
Weir, orifice, current meter, etc.

Static Groundwater Level 259 ft. Drawdown 0 ft.

Total Pumping Lift 259 ft. Drawdown _____ lbs.
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

David G. Ruiz
Print Well Owner's Name

July 23, 1991, 1991
Date

David G Ruiz
Signature of Well Owner or Agent

P.O. Box 4205
Address

Bisbee AZ 85603
City State Zip

RECEIVED
JUL 26 1991

DWR-55-56-2/88

ENTERED JUL 30 1991

FILING FEE $10.00

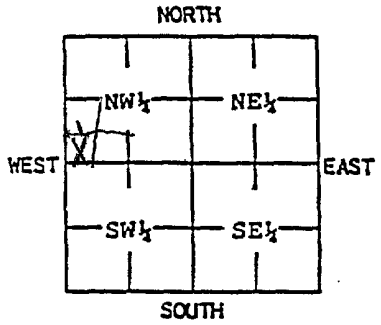
FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)

NOTICE OF INTENTION TO DRILL A WELL OUTSIDE OF AN ACTIVE MANAGEMENT AREA

MAY - 7 1991

Section §45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management, a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department.



INDICATE WELL LOCATION BY X

(Above diagram represents one 640 acre section)

WELL/LAND LOCATION

24 N(S) | 24 E(W) | 4

1. Township | 2. Range | 3. Section

4. SW 1/4 SW 1/4 NW 1/4

10 acre sub-division

5. County Cochise

6. Owner of well:

X DAVID G RUIZ

Name

P.O. Box 4205

Mailing Address

Bisbee AZ 85603

City State Zip

Telephone: 602-432-4122

7. Owner of land:

SAME

Name

Mailing Address

City State Zip

Telephone No.

DESCRIPTION OF PROPOSED WELL

8. Diameter 6 inches

Depth 250 feet

9. Type of Casing PVC

10. Design Pump Capacity:

40 gallons per minute

11. Estimate of total annual pumping:

1.6 acre feet

12. Principal use of water:(be specific)

Irrigation Lawn

13. Other uses intended:(be specific)

domestic

14. Number of Multiple Drinking Water connections, if any: TWO

15. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated: 2 Ac.

16. Construction will start about:

May / 1991

Month Year

DO NOT WRITE IN THIS SPACE

Office Record

File No. D(24-24)4 BCC

Filed 5-7-91 By EL

Input ENTERED MAY 9 1991 By

Duplicate

Mailed 5-9-91 By EL

Registration No. 55-531720

INA

W/S 11 S/B

PLACE OF USE

17. Township 24 N(S)

18. Range 24 E/W

19. Section 4

20. Legal description of land:

a. SW 1/4 SW 1/4 NW 1/4

10 acre sub-division

b. County Assessor's I.D.

102 | 38 | 002-3

Book | Map | Parcel

21. Type well:

Exempt ____ Non-exempt X

22. Action Requested:

Drill New Well X : or

Deepen ___ Replace ___ Modify ___

Well No. 55-

23. Applicant: Owner X Lessee ___

David G. Ruiz

Name

P.O. Box 4205

Mailing Address

Bisbee, AZ 85603

City State Zip

Telephone: 432-4122

DRILLING FIRM

L. B. DRILLING

Firm Name

BOX 4166

HUACHUCA CITY, AZ 85616

Mailing Address

D. W. R. LIC. #344

R. O. C. LIC. #076141-00 (A4

#058233-006 (C-53

City State Zip

L. B. DRILLING

DWR License Number

BOX 4166

HUACHUCA CITY, AZ 85616

Type of Contractor License

D. W. R. LIC. #344

R. O. C. LIC. #076141-00 (A4

#058233-006 (C-53

24. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes ____ No X

GENERAL INSTRUCTIONS

1. Fill out this form in DUPLICATE and send WITH $10.00 FEE to 15 South 15th Avenue, Phoenix, AZ 85007.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen, replace or modify a well outside of an Active Management Area.
4. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in Item 21.
5. Construction standards for wells, including abandonment, shall be in accordance with Department Rules and Regulations.

I state that Notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well as set forth on the reverse side of this form.

May 3 / 91

Date

David G. Ruiz

Signature of well owner/lessee

DWR 55-40-4/90 (Rev.)

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Receipt of this annotated Notice constitutes authorization to proceed in drilling, deepening, or modifying the well as set forth on this Notice.

2. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well.

3. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

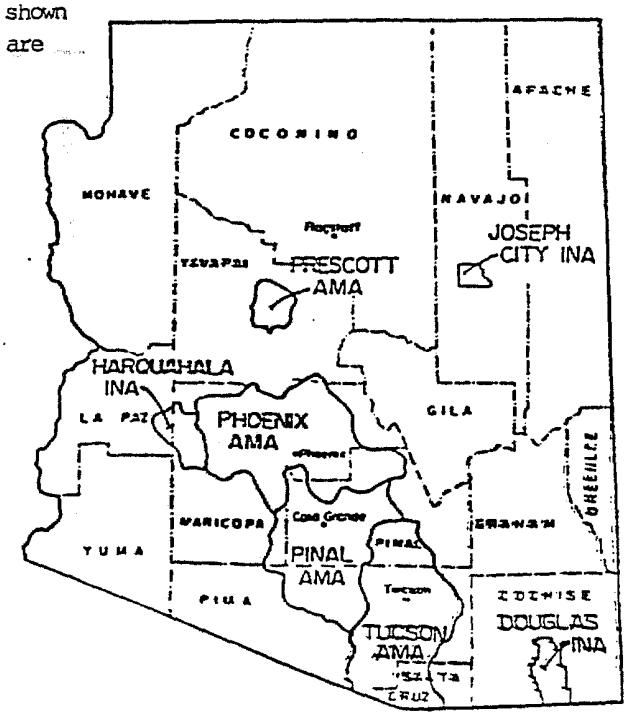
4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 3 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to A.R.S. § 45-434 or § 45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of A.R.S. § 45-437.

5. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of this Notice.

6. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

7. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of the annotated copy of this Notice.

8. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.



THIS IS NOT A BILL

L.B. Drilling
P.O. Box 4166
Huachuca City, AZ. 85616

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

R E C E I P T

KIND ENTRY 55
FILE REFERENCE NO. 531770 THRU

David G. Ruiz

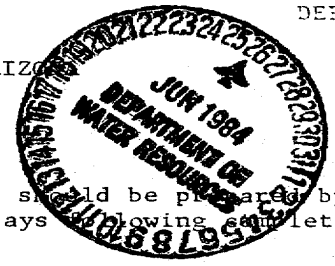
ITEM DESCRIPTION	RATE	AMOUNT
FILING FEE FOR NOI		10.00
REG. NO. 55-531770		
FILE NO.D(24-24)4 BCC		

PAID

CHECK NO 1480 RECEIVED BY EL DATE 05-08-91 TOTAL $ 10.00

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

STATE OF ARIZ



DEPARTMENT OF
WATER RESOURCES

V

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Jim Sayre
Name
P.O. Box 325 Bisbee AZ 85603
Address

2. Lessee or Operator
Name
Address

3. Driller J.R. SHARP GENERAL CONTRACTORS
Name
~~BOX 4529 922 NACO HWY.~~
BISBEE, ARIZ. 85603 432-4597
Address

4. Location of well: SW NW SE Sec. 5 T24S R24E

5. Permit No. (if issued)

DESCRIPTION OF WELL

6. Total depth of hole 313 ft.
7. Type of Casing P.E. Steel
8. Diameter and length of casing 5 in. from 0 to 313, _____ in from _____ to _____.
9. Method of sealing at reduction points
10. Perforated from 208 to 308, from _____ to _____, from _____ to _____
11. Size of cuts 1/4 x 6 Number of cuts per foot 2
12. If screen was installed: Length _____ ft. Diam _____ in. Type
13. Method of construction (drilled) dug, driven, bored, jetted, etc.
14. Date started 5 - 2 - 84 (Month - day - year)
15. Date completed 5 - 4 - 84 (Month - day - year)
16. Depth to water 208 ft. (If flowing well, so state.)
17. Describe point from which depth measurements were made, and give sea-level elevation if available. Top of Casing
18. If flowing well, state method of flow regulation
19. REMARKS:

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55-507823
Received _____ By _____
Entered 6.27.84 By SR
File No. D(24-24)5dbc

(Well log to appear on Reverse side)

DWR-55-6-5/83

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	20	6 5/8 O.D. x .188 wall steel pipe - grouted.
0	313	Red clay-like conglomerate with varying amounts of cobbles & gravel.
0	313	5" O.D. x .158 P.E. steel casing.

I hereby certify that this well was drilled by me (or under my supervison), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

J. R. SHARP GENERAL CONTRACTORS
BOX 4520 322 NACO HWY,
BISBEE, ARIZ. 85603 432-4577

Driller J. R. Sharp
Name

Address

City State Zip

Date 5-30-84

J R SHARP
P O BOX 4520
BISBEE AZ 85603

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	507823
	THRU

SAYRE

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEE FOR NOTICE OF INTENTION		10.00
					TO DRILL AN EXEMPT WELL		
					FILE#D(24-24)5dbc		
					REG#55-507823		

WAITER PAYMENT
GUESTS 1
CHK NO 9814
55-I 10.00
TAX 0.00
TOTL 10.00
GEN.CHEK 10.00

CHECK#09814
4/20/84/ek

TOTAL $ # 1841 A 11:04 10.00

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL OR DEEPEN A WELL
OUTSIDE OF AN ACTIVE MANAGEMENT AREA

RECEIVED APR 10 1984 DEPT. OF WATER RESOURCES

MAR 30 1984 DEPARTMENT OF WATER RESOURCES

Section 45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management, a person may not drill or cause to be drilled any well or deepen an existing well without first filing a Notice of Intention to Drill with the Department.

NORTH
NW¼ NE¼
WEST EAST
SW¼ SE¼
SOUTH

INDICATE WELL LOCATION BY X
(Above diagram represents one 640 acre section)

WELL/LAND LOCATION:

1. Township 24 S
2. Range 24 E
3. Section 5
4. SW ¼, NW ¼, SE ¼
   10 acre subdivision
5. County Cochise
6. Owner of well:
   Jim Sayre
   Name
   Box 325
   Address
   Bisbee AZ 85603
   City State Zip
   Telephone 432-2693
7. Owner of land:
   Same
   Name
   Address
   City State Zip

DESCRIPTION OF WELL:

8. Diameter 5 inches
   Depth 300 feet
9. Type of casing P.E. Steel
10. Design pump capacity:
    35 gallons per minute
11. Estimate of total annual pumping: _____ acre feet
12. Principal use of water:
    Domestic
    (Be Specific)
13. Other uses intended:
    None
    (Be Specific)
14. If for irrigation, state the number of acres to be irrigated:
    _____ acres
15. Construction will start about:
    March '84
    Month Year

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
FILE NO. D(24-24)5 dbc
FILED 4-19-84 By EK
INPUT 4-20-84 By
DUPLICATE MAILED 4-20-84 By EK
REGISTRATION NO. 55-507823
Non Expansion Area
W/S 13 S/B

PLACE OF USE:

16. Township Same
17. Range
18. Section
19. Legal description of land

20. Type well:
    ✓ Exempt
    ___ Non-Exempt
21. Action Requested:
    Drill ✓ Deepen Replace
    55-
22. This notice filed by:
    Owner ✓
    Lessee
    Jim Sayre
    Name
    Same
    Address
    City State Zip
    Telephone
23. Driller's Name:
    J.R. Sharp Gen. Contrs.
    Name
    P.O. Box 4520
    Address
    Bisbee, AZ 85603
    City State Zip
    155 27862
    DWR License Number

GENERAL INSTRUCTIONS

1. Fill out this form in duplicate and send to 99 East Virginia, Suite 100, Phoenix, Az. 85004.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen or replace a well outside of an Active Management Area.
4. If the well is a replacement or deepening of an existing well, state the registration number of the existing well in Item 21.
5. Construction standards for new and replacement wells and the deepening and abandonment of existing wells shall be in accordance with Department Rules and Regulations.

I state that this Notice is filed in compliance with ARS §45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well set forth on the reverse side of this form.

DATE 3-28-84 Signature of Person Filing Jim Sayre

DWR-55-41-10/83

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Upon receipt of the return of this annotated Notice, the owner is authorized to proceed in drilling or deepening the well as set forth on this Notice.

2. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

3. Only one exempt well may be drilled or used to serve the same use at the same location.

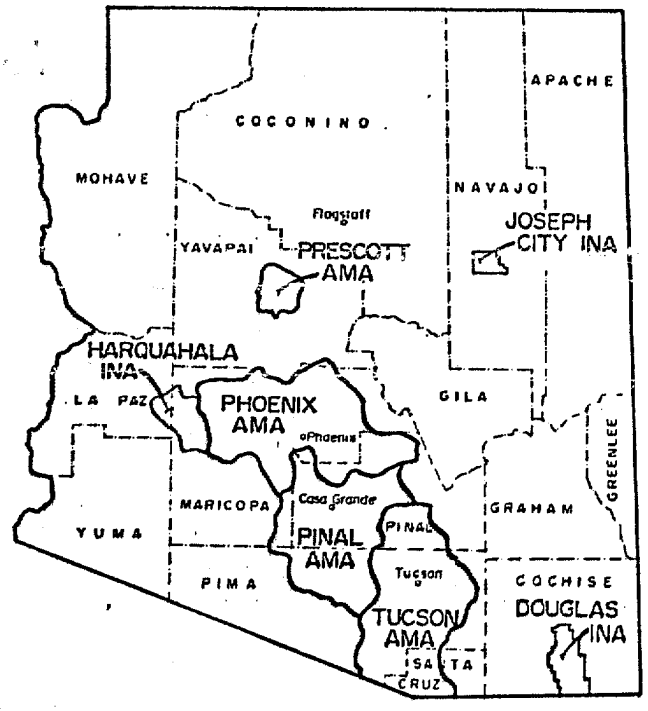
4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 2 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to ARS §45-434 or §45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of ARS §45-437.

5. The drilling or deepening of this well shall be completed within one (1) year of the date of this Notice.

6. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

7. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of the annotated copy of this Notice.

8. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.



ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

RECEIVED
FEB - 3 2004
Information Management

FILE NUMBER: D(24-24) 3 ADA
WELL REGISTRATION NUMBER: 55- 201531
PERMIT NUMBER (IF ISSUED):

- Review instructions prior to completing form
- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: SUNBELT MARKETING INC

MAILING ADDRESS: PO BOX 4006

CITY / STATE / ZIP: BISBEE, AZ 85603

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER: 520-432-7864

FAX:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24 S	24 E	3	NE 1/4	SE 1/4	NE 1/4

LATITUDE				LONGITUDE			
31 °	22 .	521	"N	109 °	53 .	121	"W

LAND SURFACE ELEVATION AT WELL: 4773 (31.26 / 7.2) Feet Above Sea Level

METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☒ Hand-Held
☐ USGS Quad Map ☐ Conventional Survey ☒ GPS : ☐ Survey-Grade

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
101	41	007C

COUNTY WHERE WELL IS LOCATED: COCHISE

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME: TANNER WELL SERVICE

DWR LICENSE NUMBER: 133

TELEPHONE NUMBER: 520-642-3654

FAX: 520- 803-7400

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED: 1-12-04

DATE WELL CONSTRUCTION COMPLETED: 1-15-04

IF FLOWING WELL, METHOD OF FLOW REGULATION: ☐ Valve ☐ Other

Drill Method

CHECK ONE

- ☒ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development

CHECK ONE

- ☒ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Method of Sealing at Reduction Points

CHECK ONE

- ☒ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☐ Other (please specify)

Water Level Information

STATIC WATER LEVEL: 296 Feet Below Land Surface

DATE MEASURED: 1-19-04

ANSWERED FEB - 3 2004

DWR-55-55-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 201531

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	12
20	380	8

Installed Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (X) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (X) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	$8\frac{5}{8}$	X				X						
20	380	$6\frac{5}{8}$		X			X						
300	380	$6\frac{5}{8}$		X							X		$\frac{1}{8}$" X 6"

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (X) NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
0	20			X								

DEPTH OF BORING: 380 Feet Below Land Surface

DEPTH OF COMPLETED WELL: 380 Feet Below Land Surface

DWR-55-55B-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 201531

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	2	TOP SOIL	
2	320	RED CLAY & ROCK	
320	380	RED CLAY & CONGLOMERATE	X

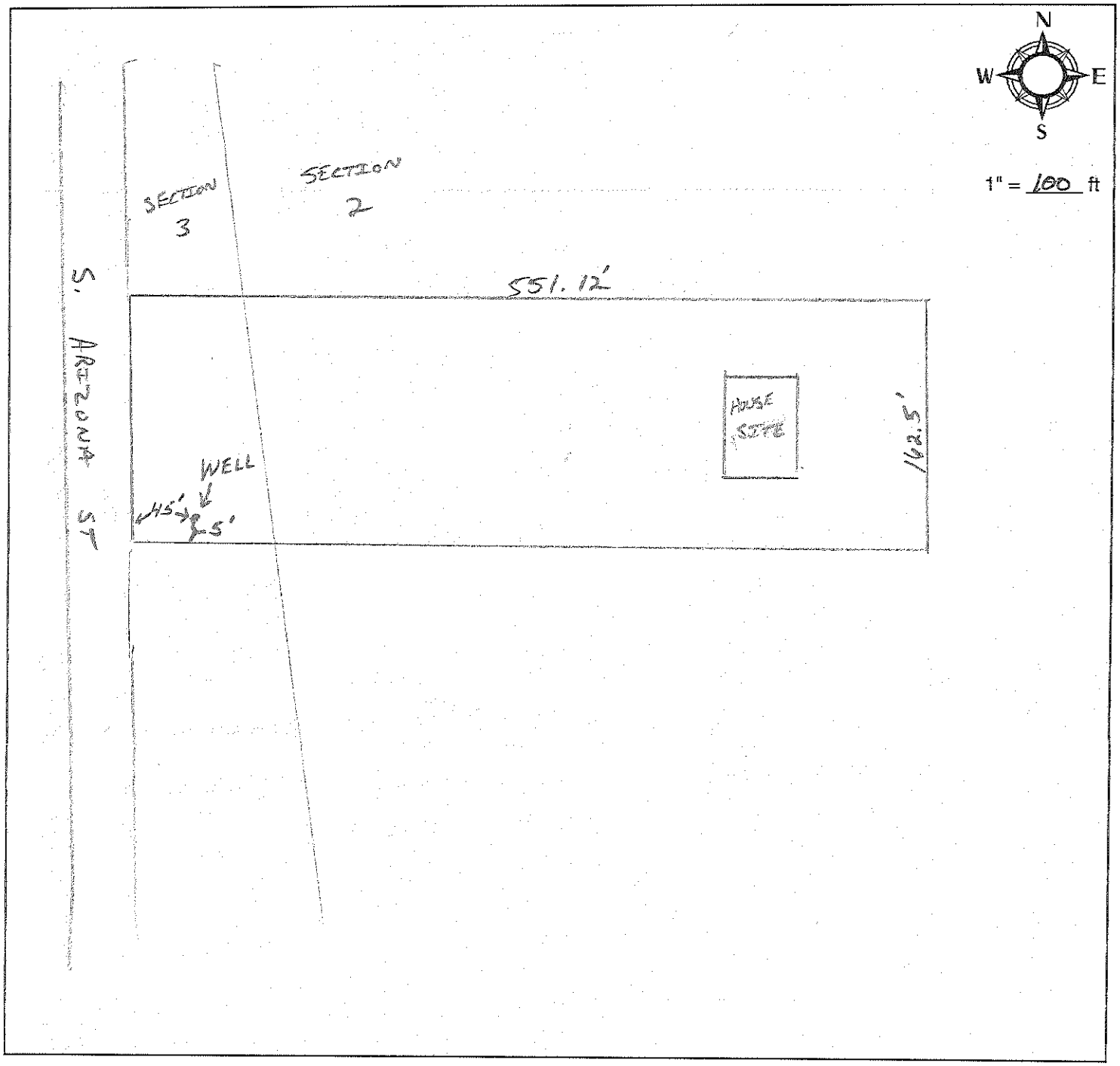
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 201531

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
SUNBELT MARKETING INC	101	41	007C

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



I state that this notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
TANNER WELL SERVICE, L.L.C.	Matthew L. Tanner	1-31-04

DWR-55-55 (Rev. 10/11/01)

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-201531

AUTHORIZED DRILLER: TANNER WELL SERVICE LICENSE NO: 133

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: SUNBELT MARKETING INC PO BOX 4006 BISBEE, AZ 85603

The well(s) is/are to be located in the:

NE ¼ of the SE ¼ of the NE ¼ Section 3 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 2ND DAY OF DECEMBER, 2004

Shannon L Reg
GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

December 04, 2003

Janet Napolitano
Governor

Herb Guenther
Director

SUNBELT MARKETING INC
PO BOX 4006
BISBEE, AZ 85603

Registration No. 55-201531
File No. D(24-24) 3 ADA

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Pump Installation Completion Report is to be submitted when pump equipment is installed. The drilling card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the drilling card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended drilling card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a Pump Installation Completion Report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate Well Drillers Report and Well Log within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Sharon Ward

Sharon Ward
NOI Unit
Water Management Support Section

Enclosures

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

RECEIVED DEC - 3 2003

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $50 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $50.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA	B	SE
	No	
RECEIVED DATE	WS	
12/3/03		
ISSUED DATE	WCARS	CERCLA
12/4/03		

FILE NUMBER
D24-24 23 ADA
WELL REGISTRATION NUMBER
55- 201531

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY ENDORSEMENT (If applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 before submission to the Department of Water Resources. You must also attach a site plan (see instructions).

CHECK ONE

☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☒ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION

DATE Dec 1, 2003

BY Carlos Diaz

COUNTY OF COCHISE STATE OF ARIZONA

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: Carlos Diaz Env. Hlth Spec I

TELEPHONE NUMBER: 520-432-9442

DATE: Dec 01, 2003

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

☒ Exempt
(Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)

☐ Non-Exempt
(Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 25 Gallons Per Minute

Proposed Action

CHECK ONE

☒ Drill New Well
☐ Deepen
☐ Replace
☐ Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 -

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24 S	24 E	3	NE ¼	SE ¼	NE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
101	41	007C	2

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: COCHISE

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: SUNBELT MARKETING INC.

MAILING ADDRESS: P.O. BOX 4006

CITY / STATE / ZIP CODE: BISBEE AZ. 85603

CONTACT PERSON NAME AND TITLE: DON LAEDING

TELEPHONE NUMBER: 520-432-7864

FAX:

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL:

MAILING ADDRESS:

CITY / STATE / ZIP CODE:

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER:

FAX:

SECTION 4.

Questions	Yes	No	If Yes,
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 201531

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: TANNER WELL SERVICE, L.L.C.

DWR LICENSE NUMBER: 133

ROC LICENSE CATEGORY: C-53

TELEPHONE NUMBER: 520-378-1606

FAX: 520-803-7400

MAILING ADDRESS: 7914 N. FRONTIER RD.

CITY / STATE / ZIP CODE: McNeal, Az. 85617

SECTION 6. WATER / SITE INFORMATION

Principal Use of Water (CHECK ONE)	Other Uses of Water (CHECK ALL THAT APPLY)
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☒ Domestic	☒ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify):*	☐ Other *(please specify):*

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach supplemental sheet if needed)

DATE CONSTRUCTION IS TO BEGIN: DECEMBER 2003

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	12
20	320	8

Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	20	8 5/8	X*										Cement
0	240	6		X			X						
240	320	6		X							X		

RECEIVED
DEC - 3 2003
WATER MGT

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: Don Lacing Pres.

SIGNATURE OF WELL OWNER OR LANDOWNER:

DATE: 11/24/03

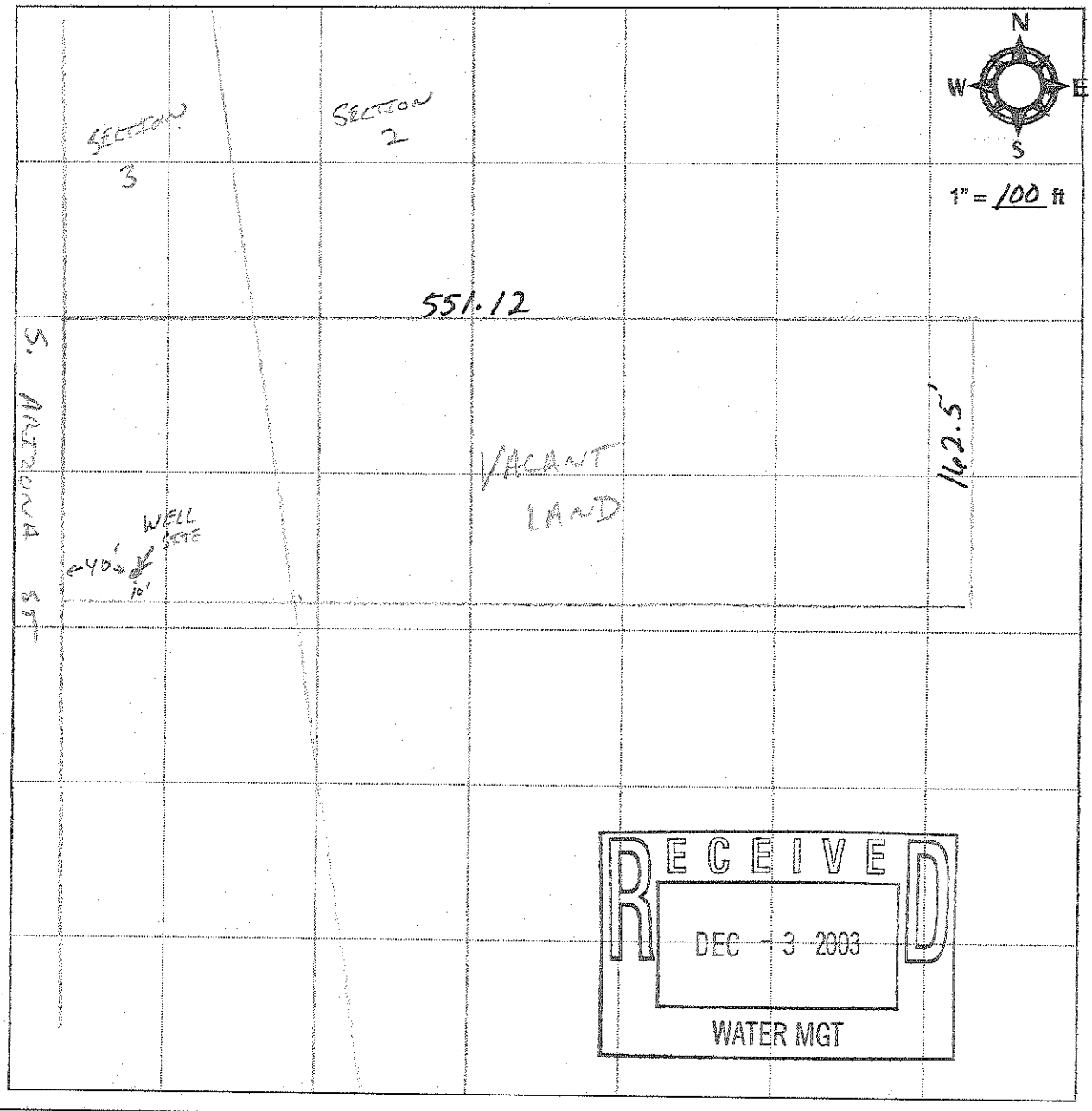
Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER 55-201531

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
SUNBELT MARKETING / DON LEADING	101	41	007C

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE	Official County or Local Seal or Stamp
Carlos Diaz Env Hlth Spec I	APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz	DATE Dec 1, 2003
TELEPHONE NUMBER: 520-432-9442 DATE: Dec 01, 2003	BY Carlos Diaz

DWR 55-40 (REVISED 05/01/03) Page 3 of 3

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

RECEIVED
DEC - 3 2003
WATER MGT.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $50 FEE

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- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $50.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA		6	38
RECEIVED	DATE	WQ#	
ISSUED	DATE	WQARF	CAGRD#

FILE NUMBER

WELL REGISTRATION NUMBER

55- 240130

SECTION 1: COUNTY OR LOCAL HEALTH AUTHORITY ENDORSEMENT (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 before submission to the Department of Water Resources. You must also attach a site plan (see instructions).

CHECK ONE

☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☒ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION

DATE Dec 1, 2003

BY Carlos Diaz

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ ENV. HLTH SPEC I

TELEPHONE NUMBER: 520-432-9442

DATE: Dec 01, 2003

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz

SECTION 2: REGISTRY INFORMATION

Well Type

CHECK ONE

☒ Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)

☐ Non-Exempt (Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 25 Gallons Per Minute

Proposed Action

CHECK ONE

☒ Drill New Well
☐ Deepen
☐ Replace
☐ Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55-

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	3	NE ¼	SE ¼	NE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
101	41	007C	2

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: COCHISE

SECTION 3: OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: SUNBELT MARKETING INC.

MAILING ADDRESS: P.O. BOX 4006

CITY / STATE / ZIP CODE: BISBEE AZ. 85603

CONTACT PERSON NAME AND TITLE: DON LAEDING

TELEPHONE NUMBER: 520-432-7864

FAX:

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL

MAILING ADDRESS

CITY / STATE / ZIP CODE

CONTACT PERSON NAME AND TITLE

TELEPHONE NUMBER

FAX

SECTION 4:

ariance (A.A.C. R12-15-818).

n Active Management Area, you must
m 55-40A.

UNBELT MARKETING, INC. 05-96
O BOX 4006 520-432-7864
BEE, AZ 85603-4006

91-170
2533 1221 AZ

2987

Date 11/11/03

ay to the order of A.D.W.R. $ 50 00

Fifty Dollars

Bank of America

PAID 10/11/96 SU

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street - Phoenix, Arizona 85004-3903
Phone (602) 417-2470

RECEIVED OCT 10 1996 GROUNDWATER MGT.

NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE READ SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS ON REVERSE SIDE OF THIS FORM BEFORE COMPLETING.

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES.

S. STARK / D. CAMPBELL | P.O. 4325 | BISBEE | AZ | 85603-4325
Land Owner's Name | Current Mailing Address | City | State | Zip

Telephone No. 520-432-3672

COUNTY ASSESSOR'S PARCEL ID INFORMATION:

Well Located in COCHISE County | 101 (BOOK) 43 (MAP) 005 (PARCEL) 2+ (# of Acres)

APPROVED BY THE COCHISE COUNTY HEALTH DEPT. OFFICIAL SEAL OR STAMP
DATE 10-7-96
BY [signature] Sanitarian

Well/Land Location (must be completed as requested):

NE NW ¼ SE ¼ SW ¼ of Section 11 Township 24 N/S Range 24 E/W
10AC 40AC 160AC

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

Check one:
Recommend Approval ✓; Insufficient Information to Make Determination ___; Variance Required ___ (Explanation attached)

DATE 10-7-96 AUTHORIZED SIGNATURE [signature] TITLE D.A. Environmental Health

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH ADWR

1. Section §45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section §45-596(d) provides that the Department has 15 days after the receipt of a complete and correct notice of intention to record the notice and mail duplicate to owner. Drill card will be mailed directly to drilling firm as stated in item #14.
3. Please mail two original notices with original signatures, a site plan in DUPLICATE, and a check or money order (no cash) in the amount of $10.00 to P.O. Box 458, Phoenix, Arizona 85001-0458 or hand deliver to 500 North Third Street, Phoenix, Arizona 85004-3903. USE BLACK OR BLUE INK.
4. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
5. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. Owner of well:
S. STARK / D CAMPBELL
Name
P.O. 4325
Current Mailing Address
BISBEE AZ 85603-4325
City State Zip
Telephone No. 520-432-3672

2. Action requested: Drill New Well ___; Deepen ✓ Modify ___ Replace ___.
For a replacement well provide: Maximum capacity of the original well 30 gallons per minute; distance from the original well ___ feet.
Well Registration No. 55- 643481

3. Construction will start about:
Month 10 Year 96

4. Description of proposed well:
Diameter 6 11 inches
Depth 190' feet
Type of Casing STEEL

5. Design pump capacity:
APPROX 15 gallons per minute

6. Lessee of land of wellsite:
NONE
Name
Current Mailing Address
City State Zip
Telephone No.

7. Principal Use of Water; (be specific):
HOME

8. Other uses of Water; (be specific):
NONE

9. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated; NONE

FOR DEPARTMENT USE ONLY
File No. D(24-24)11 cdbb
Filed 10-10-96 By SU
Input ___ By ___
DUPLICATE MAILED
Date 11-7-96
Registration 55- 643481
AMA/INA ___
W/S 11 S/B ___

ENTERED NOV 19 1996

10. Place of Use (Legal Description of Land):
NW¼ SE¼ SW¼ Section 11
10 AC 40AC 160AC
Township 24 N/S Range 24 E/W

11. Type of Well (Check One):
Exempt ✓ Non-Exempt ___

12. Check One:
Residential ✓ Commercial ___

13. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous materials or petroleum storage areas and tanks? Yes ___ No ✓

14. Drilling Firm:
OASIS DRILLING
Name
P.O. 436
Mailing Address
ANIMAS N.M. 88020
City State Zip
Telephone No. 327
DWR License Number 53
ROC License Category L53

RECEIVED NOV 4 1996 GROUNDWATER MGT

I State that this Notice is filed in compliance with A.R.S. §§45-595 and 45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations and conditions set forth on the reverse side of this form.

DON CAMPBELL | [signature] | 10/4/96
Typed or Printed Name and Title | Signature [ ] Land Owner [ ] Lessee of Wellsite, Title | Date

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Pursuant to Section §45-596, Arizona Revised Statutes, provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department.
2. If any water from a proposed well on a parcel of land of twenty or fewer acres will be used for domestic purposes, as defined in §45-454, the applicant shall submit a site plan to scale of the property with the county assessor's parcel identification number. The site plan:

   a. Will be on a 8½"x11" piece of plain paper with representation of the locations of all structures, septic tank or sewer systems and proximity of adjacent lot lines to scale.

   b. Must show the proposed well location and the location of any septic or sewer system that is either located on the property or within one hundred feet of the proposed well site.

   c. Shall demonstrate to the Director's satisfaction that the well will not be drilled within one hundred feet of any septic or sewer system.

   d. Must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Before approval, the health authority shall review the plan and determine whether the proposed well location complies with applicable state and local laws regarding the placement of wells. If so, the health authority shall endorse the site plan and the proposed well placement.

3. Endorsement by the county/local authority is based on the best available judgement that this well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. Information brought to light at a future date may render this determination invalid.

4. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use and is later proposed to be converted to use for domestic purposes, as defined in section §45-454, the well owner shall file a notice of intention to drill and comply with the requirements prescribed pursuant to this section before the well is converted and any water from that well used for domestic purposes.

5. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

6. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an Irrigation Non-Expansion Area or Active Management Area to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

7. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of the notice (§45-596.E.).

8. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this notice.

9. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

10. If an individual other than the land owner or lessee signs this Notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific Notice on their behalf, shall accompany the Notice.

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

November 7, 1996

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

STARK/CAMPBELL
PO BOX 4325
BISBEE AZ 85603-4325

Registration No. 55-643481
File No. D(24-24)11 CDB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill/deepen/modify/replace a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Sylvia Valdez
Water Resource Technician
Groundwater Management Support Section

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470

REQUEST FORM TO CHANGE WELL INFORMATION OWNERSHIP * DRILLER * VARIANCE

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-0458 or hand deliver to the above address with applicable fee. NOTE: **A.R.S. §45-593.C** requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)

NOTE: If the location of the proposed well changes after drilling authority has been issued, **attach a $10.00 reissue fee for each well.**

WELL REGISTRATION NO. 55-_____ **FILE NO:**_____

If known, I/We request the following well information be changed:_____

_____

Date_____ **Signature of Current Well Owner**_____

2. STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I,_____, state that I am the **Previous/New Owner** of the well described below:

_____¼ _____¼ _____¼ of Section_____ Township_____ Range_____
10 Acre 40 Acre 160 Acre

Assessor's tax parcel number of the parcel on which the well is located: Book_____ Map_____ Parcel_____.

Well Registration No. 55-_____ File No._____(if known)

_____ _____
PRINT Previous Owner's Name **PRINT** New Owner's Name

_____ _____
Mailing Address Mailing Address

_____ _____
City State Zip City State Zip

_____ _____
Telephone Number Telephone Number

Signature of Previous/New Well Owner_____ **Date**_____

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470 Fax (602) 417-2422

3. REQUEST TO CHANGE WELL DRILLER $10.00 FEE REQUIRED FOR EACH WELL

This request must be received by this Department and the Drill Card issued to the new drilling firm prior to the drilling or completion of any well.

Well Registration No. 55-_____ **File No.**_____

Original Well Driller	**New Well Driller**
Mailing Address	**Mailing Address**
Telephone Number	**Telephone Number**
ADWR License Number	**ADWR License Number**
R.O.C. License Category	**R.O.C. License Category**
Typed or Printed Name of Well Owner	**Signature of Well Owner** **Date**

The fee charge for well ownership and reissue of drill card is authorized by R12-15-151, effective June 30, 1994.

4. REISSUE OF DRILLING AUTHORITY FOR VARIANCE REQUEST: ($10.00 EACH WELL)

NOTE: If extraordinary or unusual conditions exist, after the initial drilling authority has been issued, the well owner or well driller may request a variance from the provisions of R12-15-811.

WELL REGISTRATION NO. 55-_____ **FILE NO:**_____

I/WE REQUEST THE FOLLOWING WELL DRILLING AUTHORITY BE REISSUED PER THE ATTACHED VARIANCE REQUEST:

_____

Signature of Well Owner/Well Driller_____ **Date**_____

STATE OF ARIZONA
ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470

COMPLETION REPORT
(Pump Installation Report)

1. **Per A.R.S. § 45-600, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.**

2. **Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation. For a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.**

3. **The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.**

4. **The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.**

REGISTRATION NO: 55-_____ **FILE NO: _____**

LOCATION OF THE WELL:

_____ N/S _____ E/W _____ ¼ _____ ¼ _____ ¼ _____
Township Range Section 10-acre 40-acre 160-acre

EQUIPMENT INSTALLED:

Kind of pump_____ Kind of power_____
Turbine, submersible, centrifugal, etc. (Electric, natural gas, gasoline, etc.

H.P. Rating of Motor_____ Pumping Capacity_____ Date Pump Installed_____

WELL TEST:

Test pumping capacity_____ Date Well Tested:_____
Gallons per minute

Method of Discharge Measurement_____
Weir, orifice, current meter, etc.

Static Groundwater Level_____ ft. Drawdown_____ ft.

Total Pumping Lift_____ ft. Drawdown_____ lbs.
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

_____
Print Well Owner's Name Address City State Zip

_____
Signature of Well Owner Phone Number Date

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470

RECEIVED
NOV - 4 1996
RECORDS MGT

REQUEST FORM TO CHANGE WELL INFORMATION
OWNERSHIP * DRILLER * VARIANCE

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-0458 or hand deliver to the above address with applicable fee. NOTE: A.R.S. §45-593.C requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. **CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)**

NOTE: If the location of the proposed well changes after drilling authority has been issued, **attach a $10.00 reissue fee for each well.**

WELL REGISTRATION NO. 55- 643481 **FILE NO:** _____

If known, I/We request the following well information be changed: _____

_____

Date 10/30/96 **Signature of Current Well Owner** D D Campbell

2. **STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)**

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, D. CAMPBELL / S. STARK, state that I am the ~~Previous~~/New **Owner** of the well described below:

NW ¼ (10 Acre) SE ¼ (40 Acre) SW ¼ (160 Acre) of Section 11 Township 24 S Range 24 E

Assessor's tax parcel number of the parcel on which the well is located: Book 101 Map 43 Parcel 005.

Well Registration No. 55- 643481	File No. _____ (if known)
FRED BAKER **PRINT** Previous Owner's Name	D. CAMPBELL / S. STARK **PRINT** New Owner's Name
_____ Mailing Address	PO # 4325 Mailing Address
_____ City State Zip	BISBEE AZ 85603-4325 City State Zip
_____ Telephone Number	520 432-3892 Telephone Number

Signature of ~~Previous~~/New Well Owner D D Campbell **Date** 10/31/96

DWR 55-71 (Rev 6/96)

ENTERED NOV - 7 1996

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470 Fax (602) 417-2422

3. REQUEST TO CHANGE WELL DRILLER — $10.00 FEE REQUIRED FOR EACH WELL

This request must be received by this Department and the Drill Card issued to the new drilling firm prior to the drilling or completion of any well.

Well Registration No. 55-_____ **File No.**_____

Original Well Driller	**New Well Driller**
Mailing Address	**Mailing Address**
Telephone Number	**Telephone Number**
ADWR License Number	**ADWR License Number**
R.O.C. License Category	**R.O.C. License Category**
Typed or Printed Name of Well Owner	**Signature of Well Owner** **Date**

The fee charge for well ownership and reissue of drill card is authorized by R12-15-151, effective June 30, 1994.

4. REISSUE OF DRILLING AUTHORITY FOR VARIANCE REQUEST: ($10.00 EACH WELL)

NOTE: If extraordinary or unusual conditions exist, after the initial drilling authority has been issued, the well owner or well driller may request a variance from the provisions of R12-15-811.

WELL REGISTRATION NO. 55-_____ **FILE NO:**_____

I/WE REQUEST THE FOLLOWING WELL DRILLING AUTHORITY BE REISSUED PER THE ATTACHED VARIANCE REQUEST:

_____

Signature of Well Owner/Well Driller_____ **Date**_____

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-643481

AUTHORIZED DRILLER: OASIS DRILLING LICENSE NO: 327

NOTICE OF INTENTION TO DEEPEN AN EXISTING WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: STARK/CAMPBELL

The well(s) is/are to be located in the:

NW 1/4 of the SE 1/4 of the SW 1/4 Section 11 Township 24 SOUTH Range 24 EAST

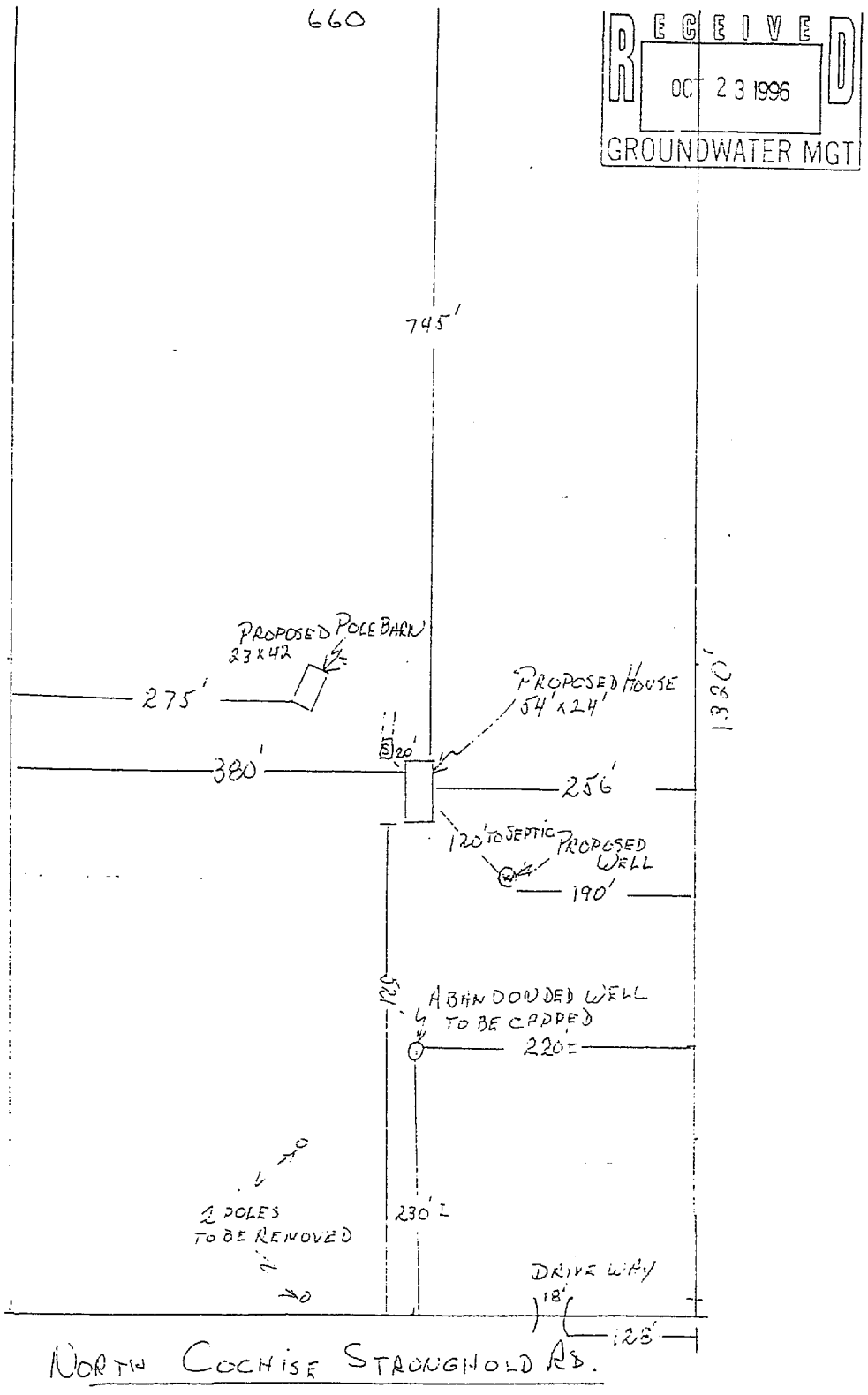
No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 9TH DAY OF OCTOBER, 1997.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912


660
RECEIVED
OCT 23 1996
GROUNDWATER MGT
745'
PROPOSED POLE BARN
23 x 42
275'
PROPOSED HOUSE
54' x 24'
20'
380'
256'
1330'
120' TO SEPTIC
PROPOSED WELL
190'
125'
ABANDONED WELL
TO BE CAPPED
220'
2 POLES
TO BE REMOVED
230'
DRIVE WAY
18'
125'
NORTH COCHISE STRONGHOLD RD.

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. OASIS DRILLING
   PO 436
   ANIMAS NM 88020

2. Owner Name:_____
   Address:_____
   City **State** **Zip**

3. Location:_____N/S _____E/W _____ ¼ _____ ¼ _____ ¼ _____
   Township **Range** **Section** **10-acre** **40-acre** **160-acre**

4. Well Registration No. 55-_____ (Required)
5. Permit No._____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole_____ft.
7. Type of casing_____
8. Diameter and length of casing_____in. from_____to_____,_____in from_____to_____
9. Method of sealing at reduction points_____
10. Perforated from_____to_____,from_____to_____ from_____to_____
11. Size of cuts_____ Number of cuts per foot_____
12. If screen was installed: Length_____ft. Diam_____in. Type_____
13. Method of construction_____
    (drilled, dug, driven, bored, jetted, etc)
14. Date started_____
    Month **Day** **Year**
15. Date completed_____
    Month **Day** **Year**
16. Depth to water_____ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
    _____
18. If flowing well, state method of flow regulation:_____
19. Remarks:_____
    _____
    _____
    _____
    _____

DWR-55-55-7/95 (Rev.)

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-643481
File No. D(24-24)11 CDB
Received_____**By**_____
Entered_____**By**_____

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name:_____

_____
Street

_____
City State Zip Phone No.

_____
Signature of Driller Date

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-643481

AUTHORIZED DRILLER: OASIS DRILLING LICENSE NO: 327

NOTICE OF INTENTION TO DEEPEN AN EXISTING WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: STARK/CAMPBELL

The well(s) is/are to be located in the:

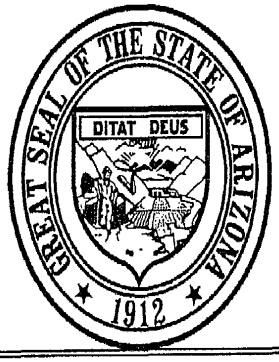
NW 1/4 of the SE 1/4 of the SW 1/4 Section 11 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 9TH DAY OF OCTOBER, 1997.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING



PAID 10/11/96 SU

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street - Phoenix, Arizona 85004-3903
Phone (602) 417-2470

RECEIVED OCT 10 1996 GROUNDWATER MGT

NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE READ SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS ON REVERSE SIDE OF THIS FORM BEFORE COMPLETING.

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES.

S. STARK/D. CAMPBELL — Land Owner's Name
PO. #4325 — Current Mailing Address
BISBEE — City
AZ — State
85603 — Zip

Telephone No. 520-432-3672

COUNTY ASSESSOR'S PARCEL ID INFORMATION:

Well Located in Cochise County — BOOK 101 — MAP 43 — PARCEL 05 — # of Acres 2+

Well/Land Location (must be completed as requested):

NW ¼ SE ¼ SW ¼ of Section 11 Township 24 N/S Range 24 E/W
10AC 40AC 160AC

OFFICIAL SEAL OR STAMP

APPROVED BY THE COCHISE COUNTY HEALTH DEPT. DATE 10-7-96 BY [signature] Sanitarian

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

Check one:
Recommend Approval ✓; Insufficient Information to Make Determination ___; Variance Required ___ (Explanation attached)

DATE 10-7-96 AUTHORIZED SIGNATURE [signature] TITLE DIR. Environmental Health

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH ADWR

1. Section §45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section §45-596(d) provides that the Department has 15 days after the receipt of a complete and correct notice of intention to record the notice and mail duplicate to owner. Drill card will be mailed directly to drilling firm as stated in item #14.
3. Please mail two original notices with original signatures, a site plan in DUPLICATE, and a check or money order (no cash) in the amount of $10.00 to P.O. Box 458, Phoenix, Arizona 85001-0458 or hand deliver to 500 North Third Street, Phoenix, Arizona 85004-3903. USE BLACK OR BLUE INK.
4. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
5. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. Owner of well:
S. STARK/D. CAMPBELL
Name
PO. 4325
Current Mailing Address
BISBEE AZ 85603
City State Zip
Telephone No. 432-3672

2. Action requested: Drill New Well ___; Deepen X Modify ___ Replace ___.
For a replacement well provide: Maximum capacity of the original well 20 gallons per minute; distance from the original well 196 feet.
Well Registration No.55- 643481

3. Construction will start about:
Month 10 Year 96

4. Description of proposed well:
Diameter 6" inches
Depth 196 feet
Type of Casing IRON

5. Design pump capacity:
Approx 15 gallons per minute

6. Lessee of land of wellsite:
Name
NONE
Current Mailing Address
City State Zip
Telephone No. ___

7. Principal Use of Water; (be specific):
HOME

8. Other uses of Water; (be specific):
NONE

9. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated; NONE

FOR DEPARTMENT USE ONLY
File No. D(24-24)11 cdb
Filed 10-10-96 By SU
Input ___ By ___
DUPLICATE MAILED
Date 11-7-96
Registration 55- 643481
AMA/INA ___
W/S 11 S/B ___

10. Place of Use (Legal Description of Land):
NW ¼ SE ¼ SW ¼ Section 11
10 AC 40AC 160AC
Township 24 N/S Range 24 E/W

11. Type of Well (Check One):
Exempt ✓ Non-Exempt ___

12. Check One:
Residential ✓ Commercial ___

13. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous materials or petroleum storage areas and tanks? Yes ___ No ✓

14. Drilling Firm:
OASIS DRILLING
Name
PO. 436
Mailing Address
ANIMAS N.M. 88020
City State Zip
Telephone No. 327
DWR License Number
C 53 of L 53
ROC License Category

RECEIVED NOV 4 1996 GROUNDWATER MGT

I State that this Notice is filed in compliance with A.R.S. §§45-595 and 45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations and conditions set forth on the reverse side of this form.

DON CAMPBELL — Typed or Printed Name and Title
[signature] — Signature [X] Land Owner [ ] Lessee of Wellsite, Title
10/7/96 — Date

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Pursuant to Section §45-596, Arizona Revised Statutes, provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department.

2. If any water from a proposed well on a parcel of land of twenty or fewer acres will be used for domestic purposes, as defined in §45-454, the applicant shall submit a site plan to scale of the property with the county assessor's parcel identification number. The site plan:

   a. Will be on a 8½"x11" piece of plain paper with representation of the locations of all structures, septic tank or sewer systems and proximity of adjacent lot lines to scale.

   b. Must show the proposed well location and the location of any septic or sewer system that is either located on the property or within one hundred feet of the proposed well site.

   c. Shall demonstrate to the Director's satisfaction that the well will not be drilled within one hundred feet of any septic or sewer system.

   d. Must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Before approval, the health authority shall review the plan and determine whether the proposed well location complies with applicable state and local laws regarding the placement of wells. If so, the health authority shall endorse the site plan and the proposed well placement

3. Endorsement by the county/local authority is based on the best available judgement that this well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. Information brought to light at a future date may render this determination invalid.

4. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use and is later proposed to be converted to use for domestic purposes, as defined in section §45-454, the well owner shall file a notice of intention to drill and comply with the requirements prescribed pursuant to this section before the well is converted and any water from that well used for domestic purposes.

5. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

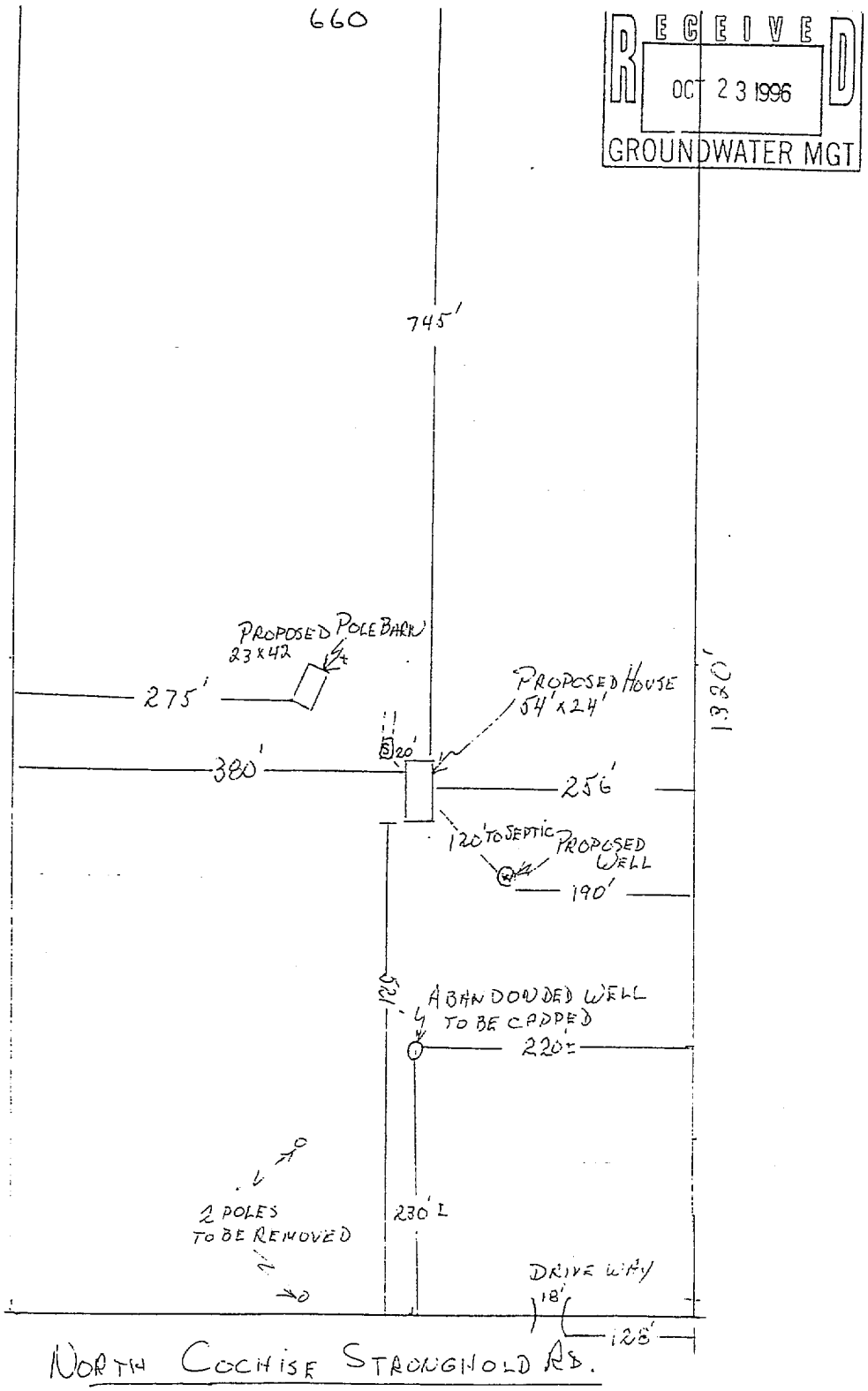
6. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an Irrigation Non-Expansion Area or Active Management Area to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

7. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of the notice (§45-596.E.).

8. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this notice.

9. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

10. If an individual other than the land owner or lessee signs this Notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific Notice on their behalf, shall accompany the Notice.


660
RECEIVED
OCT 23 1996
GROUNDWATER MGT
745'
PROPOSED POLE BARN
23x42
275'
PROPOSED HOUSE
54'x24'
20'
380'
256'
1320'
120' TO SEPTIC
PROPOSED WELL
190'
ABANDONED WELL
TO BE CAPPED
220±
230'±
2 POLES
TO BE REMOVED
DRIVE WAY
18'
125'
NORTH COCHISE STRONGHOLD RD.

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

November 7, 1996

STARK/CAMPBELL
PO BOX 4325
BISBEE AZ 85603-4325

Registration No. 55-643481
File No. D(24-24)11 CDB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill/deepen/modify/replace a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Sylvia Valdez
Water Resource Technician
Groundwater Management Support Section

Records Management Unit-Operations Division
Arizona Department of Water Resources
500 North Third Street
Phoenix, Arizona 85004

REQUEST FOR FILES AND COPIES OF FILES

FOR Carlane / Mr. Campbell DATE OF REQUEST 10-28-96

NAME _____ COPY OF DOCUMENT ( )

ADDRESS _____ REQUEST OF FILE (X)

CITY _____ STATE _____ ZIP _____

PHONE 520-432-3672

COMPLETE FILE (X)
TYPE OF DOCUMENT ( ) _____

_____

	REGISTRATION OR FILE NO.	ACTIVE/INACTIVE	LEGAL DESCRIPTION (FOR WELLS)
1.	D(24-24)11 CDB	55-643481	Box # 202 Archives
2.	Mr. Campbell has applied to deepen this well.		
3.			
4.	This file destroyed - Spoke w/Mr. Campbell		
5.	the VA had reposed this well & Mr. Campbell bought		
6.	it from VA - no registration paperwork was ever		
7.	given him. Mr. Baker is now		2/96
8.	deceased. Reconstruct this file		stayed
9.	Carlane		OF
10.	11-4-96		

ONLY TEN FILES PER SHEET

NO. OF COPIES _____ @ $.25 PER COPY - TOTAL FEE _____

MICROFICHE COPIES _____ @ $.30 PER COPY - TOTAL FEE _____

CERTIFIED COPIES _____ @ $2.75
DATE COMPLETED _____ BY _____

D 240 240 11 CDB WR 643481 FILE TYPE: REGISTRATION WELL TYPE: EXEMPT
DATE ISSUED: 01 26 984 PLANNED PUMP CAP:

NAME: BAKER IN CARE OF:
801 BORDER RD
BISBEE AZ 85603

ACCURACY: NOT VERIFIED WATER USES:
AREA: OUTSIDE
SUB-BASIN:
WATERSHED: SAN PEDRO RIVER WELL USES:
COUNTY: COCHISE
OWNER: PRIVATE DRILLER:

WELL DPTH: CASE DIAM: CASE DPTH: METH DET:
PUMP CAP: FINISH: ACRES IRR: YIELD:
DRAW DOWN: WATER LVL: LIFT: POWER:
DATE COMPLETED:
POU #1: POU #2:

STATUS: DATA OWN LOG N CRT N PQ NBR: IPQ STATUS: CANCELLED

ENTER - READ NEXT RECORD CLEAR TO RETURN TO SELECTION CRITERIA
4B A ↑ =-=PC LINE 2 COL 22

ARIZONA DEPARTMENT OF WATER RESOURCES
WATER WELL SCHEDULE
"55" WELLS UPDATE

D 240 240 11 CDB WR 643481

NAME: BAKER IN CARE OF:
801 BORDER RD
BISBEE AZ 85603
ACC: 1 FILE TYPE: R AREA: SB: WTR SHED: 11
WELL TYPE: E CNTY: 02 OWNER: P WTR USE:
WLL USE: ISSUED: 01 26 984 DRILLER:
I PUMP CAP: CHANGED: DATA OWN LOG N CRT N
PQ NUMBER: IPQ STATUS: CXL
WELL DEPTH: CASE DIAM: DEPTH: FN:
R PUMP CAP: WTR LVL:
COMP: ACRES IRR:
YIELD: MD: LT: PT: DRAW DOWN:
POU #1: POU #2:

HIT ENTER KEY TO COMPLETE ACTION HIT CLEAR KEY TO CANCEL ACTION

4B A ↑ =-=PC LINE 7 COL 17

State of Arizona
DEPARTMENT OF WATER RESOURCES
99 E. Virginia Avenue, Phoenix, Arizona 85004

BRUCE BABBITT, Governor
WESLEY E. STEINER, Director

000219

October 3, 1983

no Tel. #
listed

Mr. Baker
801 Border Rd.
Bisbee, Arizona 85603

Dear Mr. Baker:

We wrote to you on March 24, 1983, June 24, 1983 and again on July 21, 1983 regarding your well registration. We know that you did, in fact, register your well, but we do not have a copy of the well registration in our files. Until we have a copy of the registration form, we are not able to input the information into our computer.

We are enclosing a set of the well registration forms for your use in the event that you are not able to locate a copy of the original form. Please complete the forms and return two copies to us. We will complete both copies and return one copy to you for your files.

The Groundwater Management Act passed on June 12, 1980 states that a person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing in duplicate with the Department of Water Resources. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

For your future use, a Change of Well Information form will be enclosed should it become needed. Per A.R.S. 45-593, the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate.

Yours truly,

Marge Watson

Marge Watson
Chief, Groundwater Section

MW:lm
Enclosure

0006219

State of Arizona

DEPARTMENT OF WATER RESOURCES

99 E. Virginia Avenue, Phoenix, Arizona 85004

BRUCE BABBITT, Governor
WESLEY E. STEINER, Director

July 21, 1983

Mr. Baker
801 Border Rd.
Bisbee, Arizona 85603

Dear Mr. Baker:

We are in the process of purifying the 51,953 wells that were registered to comply with the Arizona Groundwater Management Act that was passed on June 12, 1980. Of these 51,953 wells registered, only 24 problem areas remain.

Our review indicates that we inadvertently did not keep a copy of your well registration form or that we simply lost it. We wrote to you on March 24, 1983 and again on June 24, 1983, asking for your help in obtaining a copy for our empty file folder. In order to input the information on your well into our computer and thus to assure that you were timely filed and in compliance with the law, we must have a copy of the form with our stamp which shows the original date received.

Your cooperation in this matter will be greatly appreciated and again we apologize for any inconvenience this may have caused you.

If you have any questions, please contact me at the above address or call at 602-255-1581.

Sincerely,

Marge Watson

Marge Watson
Chief, Groundwater Section

MW:lm

State of Arizona

DEPARTMENT OF WATER RESOURCES

99 E. Virginia Avenue, Phoenix, Arizona 85004

BRUCE BABBITT, Governor
WESLEY E. STEINER, Director

June 24, 1983

Mr. Baker
801 Border Road
Bisbee, Arizona 85603

Re: 55-643481
D(24-24)11 cbd

Dear Mr. Baker:

In regard to the above referenced Registration of Existing Well file, it appears that we have no copy of the Well Registration for our files.

Please send us a copy of the Registration form which was returned to you.

If you have any questions, please contact me at the above address or at 602-255-1581.

Sincerely,

Marge Watson

Marge Watson
Chief, Groundwater Section

MW:ct

0062219

State of Arizona

DEPARTMENT OF WATER RESOURCES

99 E. Virginia Avenue, Phoenix, Arizona 85004

BRUCE BABBITT, Governor
WESLEY E. STEINER, Director

3/24/83

#33-3907

MR BAKER
801 BORDER RD
BISBEE AZ 85603

DEAR MR BAKER:

Recently, in reviewing our files, it has been discovered that your application for well registration is missing from the folder. In order to assure your best interests, it is necessary for us to retain a copy of your application for our files for future reference.

Kindly send us a copy for our records. I am enclosing a stamped addressed envelope for your use.

I anticipate your cooperation and greatly appreciate it.

May I apologize for any inconvenience this may cause you.

Sincerely,

Ellen Kane

ELLEN KANE
OPERATIONS DIV

Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 ✦ Phoenix, Arizona 85001-0458
(602) 417-2470 ✦ (800) 352-8488
www.water.az.gov

Request to Change Well Information

RECEIVED
JUL 6 2007
INFO MGMT

FILE NUMBER: [illegible] CCC
WELL REGISTRATION NUMBER: 55 - 211345

- Review instructions prior to completing form
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL:

MAILING ADDRESS:

CITY / STATE / ZIP CODE:

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER: FAX:

Location of Well

WELL LOCATION ADDRESS (IF ANY):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
23S	24E	31-West	1/2	¼	¼

LATITUDE: ° ' "N LONGITUDE: ° ' "W

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
107	76	003

COUNTY WHERE WELL IS LOCATED: Cochise

Type of Request (CHECK ONE)

- ☐ Change of Well Drilling Contractor *(Fill out Section 2)*
- ☒ Change of Well Ownership *(Fill out Section 3)*
- ☐ Change of Well Information (location, use, etc.) *(Fill out Section 4)*

SECTION 2. REQUEST TO CHANGE WELL DRILLING CONTRACTOR ($10 Fee Required) — $10 FEE

- If drilling or abandoning a well, the Department must receive this request and issue authorization to the new drilling firm prior to the commencement of well drilling or abandonment.

Current Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL:

DWR LICENSE NUMBER:

TELEPHONE NUMBER: FAX:

New Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL:

DWR LICENSE NUMBER: ROC LICENSE CATEGORY:

TELEPHONE NUMBER: FAX:

SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP ($10 Fee Required) — $10 FEE

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

[illegible]	[illegible]
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: David Connor and Trudy Connor	FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Specialty Restaurants Corporation
MAILING ADDRESS: 6960 E. Rockledge Pl.	MAILING ADDRESS: 8191 E. Kaiser Blvd.
CITY / STATE / ZIP CODE: Tucson, Az. 85750	CITY / STATE / ZIP CODE: Anaheim, CA 92808
CONTACT PERSON NAME AND TITLE:	CONTACT PERSON NAME AND TITLE: Dennis J. Stahl
TELEPHONE NUMBER: FAX:	TELEPHONE NUMBER: 714-279-6100 FAX: 7140998-4861

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required) — NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN:

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE:

SIGNATURE OF WELL OWNER: David Taelicht DATE: 6/25/07

Arizona Department of Water Resources

3550 N Central Ave
Phoenix AZ 85012

FIDELITY NATIONAL TITLE A

2345 EAST FRY BLVD

SIERRA VISTA,AZ 85635

520-459-1883

Date: 7/6/2007
Cashier: WRPAB
Type: Mail

DCS/INV#	DESCRIPTION		ATTR	SIZE	QTY	PRICE	EXT PRICE
F 78	4439-12	CHANGE OF WELL OWNERSHIP	15238		1	10.00	10.00
				1 Unit(s)		Subtotal:	10.00
						RECEIPT TOTAL:	**10.00**
						Tendered:	10.00

Check #: 10.00 # 056882

55-211345

We Appreciate Your Business!

ARIZONA DEPARTMENT OF WATER RESOURCES
Information Management Unit
P.O. Box 458, Phoenix, Arizona 85001-0458
(602) 771-8527 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

3-20-07 INPUT MD

RECEIVED
MAR 16 2007
INFO MGMT

- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

FILE NUMBER: D(23-24) 31 CCC
WELL REGISTRATION NUMBER: 55- 211345
PERMIT NUMBER (IF ISSUED):

SECTION 1. DRILLING AUTHORIZATION

Mail To:

Drilling Firm

NAME	DWR LICENSE NUMBER
TANNER WELL SERVICE	133
ADDRESS	TELEPHONE NUMBER
7914 NORTH FRONTIER ROAD	520-378 1606
CITY/STATE/ZIP	FAX
MCNEAL, AZ 85617-7914	

SECTION 2. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: DAVID & TRUDY CONNOR
MAILING ADDRESS: 6960 E ROCKLEDGE PL
CITY / STATE / ZIP: TUCSON, AZ 85750
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-742-6464
FAX:
WELL NAME (e.g., MW-1, PZ-3, Lot 25 Well, Smith Well, etc.):

Location of Well

WELL LOCATION ADDRESS (IF ANY): HWY 92 & WILSON ROAD

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
23S	24E	31	SW 1/4	SW 1/4	NW 1/4

LATITUDE			LONGITUDE		
31 ° Degrees	22 · Minutes	968 "N Seconds	109 ° Degrees	57 · Minutes	075 "W Seconds

METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☒ *GPS: Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Survey-Grade

LAND SURFACE ELEVATION AT WELL: 4561 Feet Above Sea Level

METHOD OF ELEVATION (CHECK ONE): ☒ *GPS: Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Survey-Grade

*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE): ☐ NAD-83 ☐ Other (please specify):

COUNTY	ASSESSOR'S PARCEL ID NUMBER BOOK	MAP	PARCEL
COCHISE	102	26	003

SECTION 3. WELL CONSTRUCTION DETAILS

Drill Method (CHECK ONE)
- ☒ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development (CHECK ONE)
- ☒ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Method of Sealing at Reduction Points (CHECK ONE)
- ☐ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☒ Other (please specify) CAPPED

Condition of Well (CHECK ONE)
- ☒ Capped
- ☐ Pump Installed

Construction Dates
DATE WELL CONSTRUCTION STARTED: 2-3-07
DATE WELL CONSTRUCTION COMPLETED: 2-6-07

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
TANNER WELL SERVICE, LLC	[signature]	2-27-07

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 211345

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
965	Feet Below Land Surface	965	Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL		DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
395	Feet Below Land Surface	2-10-07	10:50 AM	☐ Valve ☐ Other:

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	12
20	965	8

Installed Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (X) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (X) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
+1	20	8 5/8	X				X						
0	845	6 5/8		X			X						
845	965	6 5/8		X							X		1/8" x 6"

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (X) NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
0	20			X								

DWR-55-55 (Revised 03/07/06) Page 2 of 4

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 211345

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	2	TOPSOIL	
2	25	CONGLOMERATE	
25	500	BROWN CLAY & ROCK	
500	965	RED SHALE	X

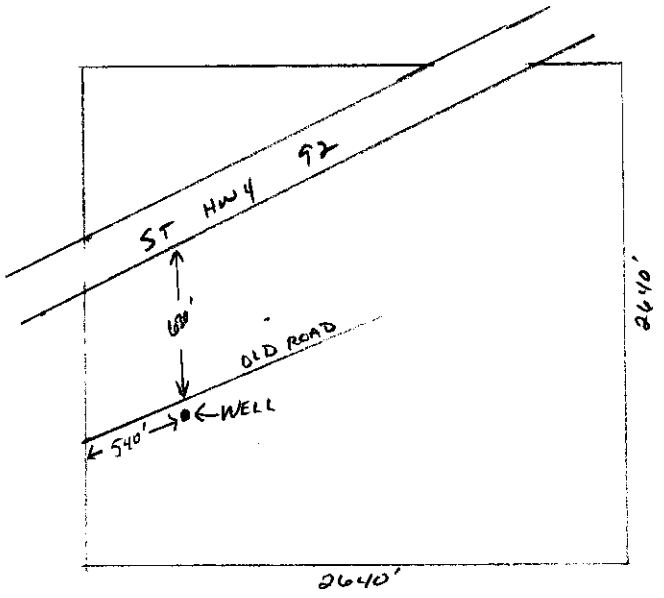
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 211345

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
DAVID & TRUDY CONNOR	102	26	003

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

3550 N. Central Avenue
Phoenix, Arizona 85012

REISSUE

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-211345

AUTHORIZED DRILLER: TANNER WELL SERVICE LICENSE NO: 133

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: DAVID & TRUDY CONNOR 6960 E ROCKLEDGE PL TUCSON, AZ 85750

THE WELL(S) IS/ARE TO BE LOCATED IN THE:
SW ¼ OF THE SW ¼ OF THE SW ¼ SECTION 31 TOWNSHIP 23 SOUTH RANGE 24 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 102-26-003

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 5TH DAY OF MARCH, 2007

WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 771-8500 • (800) 352-8488
www.azwater.gov

Request to Change Well Information

RECEIVED
NOV 20 2006
INFORMATION MANAGEMENT

FILE NUMBER: D(23)24/31CCC
WELL REGISTRATION NUMBER: 55 - 211345

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: David & Trudy Connor
MAILING ADDRESS: 9960 E. Rockledge Pl
CITY / STATE / ZIP CODE: Tucson Az 85750
CONTACT PERSON NAME AND TITLE: Trudy Connor, Owner
TELEPHONE NUMBER: 520-742-6464
FAX: 520-577-9038

Location of Well

WELL LOCATION ADDRESS (IF ANY): Highway 92 & Wilson Road

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
23S	24E	31	C ¼	C ¼	C ¼

LATITUDE Degrees	Minutes	Seconds N	LONGITUDE Degrees	Minutes	Seconds W
°	'	"	°	'	"

METHOD OF LATITUDE/LONGITUDE (CHECK ONE) ☐ *GPS: Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Survey-Grade
*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE) ☐ NAD-83 ☐ Other (*please specify*):

COUNTY ASSESSOR'S PARCEL ID NUMBER BOOK	MAP	PARCEL	COUNTY WHERE WELL IS LOCATED
102	26	003	Cochise

Type of Request (CHECK ONE)

☒ Change of Well Drilling Contractor *(Fill out Section 2)* ☐ Change of Well Ownership *(Fill out Section 3)* ☐ Change of Well Information (location, use, etc.) *(Fill out Section 4)*

SECTION 2. REQUEST TO CHANGE WELL DRILLING CONTRACTOR ($10 Fee Required) — $10 FEE

- If drilling or abandoning a well, the Department must receive this request and issue authorization to the new drilling firm prior to the commencement of well drilling or abandonment.

Current Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: BJ Drilling
DWR LICENSE NUMBER: 25
TELEPHONE NUMBER: 520-623-1010
FAX: 520-586-3282

New Well Drilling Contractor

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: Tanner Well Service, LLC
DWR LICENSE NUMBER: 133
ROC LICENSE CATEGORY: C-53
TELEPHONE NUMBER: 520-378-1606
FAX: 520-803-7400

SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP ($10 Fee Required) — $10 FEE

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

Previous Well Owner		New Well Owner	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	
MAILING ADDRESS		MAILING ADDRESS	
CITY / STATE / ZIP CODE		CITY / STATE / ZIP CODE	
CONTACT PERSON NAME AND TITLE		CONTACT PERSON NAME AND TITLE	
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required) — NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE	SIGNATURE OF WELL OWNER	DATE
TRUDY CONNOR	Trudy Connor	11/16/06

Arizona Department of Water Resources

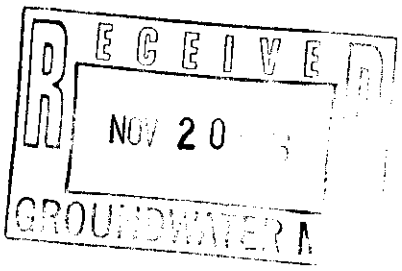
3500 N Central Ave
Phoenix AZ 85012

Customer: CONNOR, DAVID

Date: 11/20/2006
Cashier: WRPAB
Type: Mail

DCS/INV#	DESCRIPTION		ATTR	SIZE	QTY	PRICE	EXT PRICE
F 74	4439-08	REISSUE OF DRILL CARD			1	10.00	10.00
				1 Unit(s)		Subtotal:	10.00
						RECEIPT TOTAL:	**10.00**
						Tendered:	10.00
						Change:	0.00

Check #: 10.00 # 8899



We Appreciate Your Business!

ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

3550 N. Central Avenue
Phoenix, Arizona 85012

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-211345

AUTHORIZED DRILLER: B-J DRILLING COMPANY, INC. LICENSE NO: 25

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: DAVID & TRUDY CONNOR 6960 E ROCKLEDGE PL TUCSON, AZ 85750

THE WELL(S) IS/ARE TO BE LOCATED IN THE:
SW ¼ OF THE SW ¼ OF THE SW ¼ SECTION 31 TOWNSHIP 23 SOUTH RANGE 24 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 102-26-003

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 5TH DAY OF MARCH, 2007

WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue, Phoenix, Arizona 85012
Telephone (602) 771-8500
Fax (602) 771-8691

March 14, 2006

Janet Napolitano
Governor

Herbert R. Guenther
Director

DAVID & TRUDY CONNOR
6960 E ROCKLEDGE PL
TUCSON, AZ 85750

Registration No. 55-211345
File No. D(23-24) 31 CCC

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well that you recently filed with this Department pursuant to A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed or otherwise provided a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card, which must be displayed on the drill rig during drilling.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the proposed well, you may not proceed with drilling until you file an amended NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the amended NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DWR form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed is a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55) within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at <http://www.water.az.gov/adwr/content/forms/default.htm#NOI>.

Sincerely,

Monica Phillips
NOI Unit
Water Management Support Section

Enclosures

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice a check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 3 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

RECEIVED WATER MGT 2005 NOV 10 AM 10 37

AMA / INA	B	SB
✓	76	
RECEIVED DATE	WS	
03/06/06	11	
ISSUED DATE	WQARF	CERCLA
03/14/06		

FILE NUMBER: D(23-24)31 CCC
WELL REGISTRATION NUMBER: 55 - 211345

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

☐ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☐ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

Official County or Local Seal or Stamp

COUNTY OR LOCAL AUTHORITY NAME AND TITLE

TELEPHONE NUMBER | DATE | COUNTY OR LOCAL AUTHORITY SIGNATURE

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

☑ Exempt
(Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)

☐ Non-Exempt
(Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 20 Gallons Per Minute

Proposed Action

CHECK ONE

☑ Drill New Well
☐ Deepen
☐ Replace
☐ Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 -

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY): HIGHWAY 92 + WILSON ROAD

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
23 S	24 E	31	SW ¼	SW ¼	SW ¼

MCR per cochise assessors 3/14/06

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
102	26	003	143.67

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: COCHISE COUNTY

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: DAVID + TRUDY CONNOR
MAILING ADDRESS: 6960 E. ROCKLEDGE PL
CITY / STATE / ZIP CODE: TUCSON, AZ 85750
CONTACT PERSON NAME AND TITLE: TRUDY CONNOR, OWNER
TELEPHONE NUMBER: 520-742-6464 FAX: 520-577-9038

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: SAME
MAILING ADDRESS:
CITY / STATE / ZIP CODE:
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: FAX:

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		✓	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		✓	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		✓	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55-211345

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: B.J. DRILLING

DWR LICENSE NUMBER: 25

ROC LICENSE CATEGORY: A-04 & C53

TELEPHONE NUMBER: 520-586-3282

FAX: 520-623-1010

MAILING ADDRESS: P.O. BOX 815

CITY / STATE / ZIP CODE: BENSON, AZ 85602

SECTION 6. WATER / SITE INFORMATION

***Principal Use* of Water** CHECK ONE	***Other Uses* of Water** CHECK ALL THAT APPLY
☐ Irrigation	☑ Irrigation
☐ Utility	☐ Utility
☑ Commercial	☐ Commercial
☐ Domestic	☑ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☑ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify):*	☐ Other *(please specify):*

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MAR 6 2006
WATER MGT

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

DATE CONSTRUCTION IS TO BEGIN:

Borehole			Casing													
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (T)				PERFORATION TYPE (T)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	19	12 1/4	+1	19	8 5/8	X*				✓						Cement
19	700	6 3/4	0	600	5"		X			✓						
			600	700	5"		X							✓		

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: TRUDY CONNOR

SIGNATURE OF WELL OWNER: Trudy C — DATE: 2-27-2006

SIGNATURE OF LANDOWNER, IF APPLICABLE (SEE INSTRUCTIONS): Trudy C — DATE: 2-27-2006

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 211345

CHECK ONE: ☐ FILING MANUALLY
☐ FILING ELECTRONICALLY* *DRILLER'S E-MAIL ADDRESS: _____

*COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL CODE	COUNTY APPROVAL CODE
If applicant is filing this NOI electronically via the ADWR website and County approval is required, please indicate approval by providing a County Approval Code.	

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
DAVID + TRUDY CONNOR	102	26	003

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.

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WATER MGT

N
W E
S

1" = _____ ft

COUNTY OR LOCAL AUTHORITY NAME AND TITLE		***Official County or Local Seal or Stamp***
COUNTY OR LOCAL AUTHORITY SIGNATURE		
TELEPHONE NUMBER	DATE	

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA		B	SB
RECEIVED	DATE	WS	
ISSUED	DATE	WQARF	CERCLA

FILE NUMBER

WELL REGISTRATION NUMBER

55 - 211345

RECEIVED MAR 6 2006 WATER MGT

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

☐ County or Local Health Authority Recommends Approval

Official County or Local Seal or Stamp

David and Trudy Connor
6960 E. Rock Ledge Place
Tucson, AZ 85750
(520) 742-6464

BANK OF AMERICA
NATIONAL ASSOCIATION
TUCSON, AZ 85718
91-170/1221

6551

2/27/2006

Pay to the Order of ARIZONA DEPARTMENT OF WATER RESOURCES $ **150.00

One Hundred Fifty and 00/100********** Dollars

ARIZONA DEPARTMENT OF WATER RESOU
WATER MANAGEMENT SUPPORT SECTION-
P. O. BOX 458
PHOEIX, AZ 85001-0458

Notice of Intent to Drill/Well

[redacted]

SECTION 3. OWNER INFORMATION

Well Owner		**Landowner** (if different from Well Owner)	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL DAVID + TRUDY CONNOR		FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL SAME	
MAILING ADDRESS 6960 E. ROCKLEDGE PL		MAILING ADDRESS	
CITY / STATE / ZIP CODE TUCSON, AZ 85750		CITY / STATE / ZIP CODE	
CONTACT PERSON NAME AND TITLE TRUDY CONNOR, OWNER		CONTACT PERSON NAME AND TITLE	
TELEPHONE NUMBER 520-742-6464	FAX 520-577-9038	TELEPHONE NUMBER	FAX

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		✓	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		✓	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		✓	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGMENT SUPPORT SECTION

500 North Third Street - Phoenix, Arizona 85004-3903
Phone (602) 417-2470 Fax (602) 417-2422

RECEIVED
SEP 13 1996
RECORDS MGT

WELL DRILLER REPORT

This report should be prepared by the Driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner's Name: Constance Silvestri Thru Darling Homes contractor Rick Darling
   Address: P.O. Box 2566 (Street) Sierra Vista (City) Az. (State) 85635 (Zip) 520-378-2505 (Telephone Number)
2. Drilling Firm: L. B. DRILLING
   Address: Box 4166 (Street) Huachuca City, AZ 85616 (City, State, Zip) 520-456-1312 (Telephone Number)
3. Location: SE ¼ (10 Acre) NE ¼ (40 Acre) NW ¼ (160 Acre) of Section 31 Township 23S Range 23E
4. Well Registration No. 55-557742 (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total Depth of Hole 380 ft.
7. Type of Casing PVC
8. Diameter and length of casing 6 inches from 0 to 380, _____ inches from _____ to _____
9. Method of sealing at reduction points _____
10. Perforated from 340 to 380 from _____ to _____ from _____ to _____
11. Size of cuts 18 Number of cuts per foot Three
12. If screen was installed: Length _____ feet. Diameter _____ inches. Type _____
13. Method of construction drilled air
    (drilled, dug, driven, bored, jetted, etc.)
14. Date started July (Month) 10 (Day) 1996 (Year)
15. Date completed July (Month) 10 (Day) 1996 (Year)
16. Depth to water 251 ft. (If flowing well, so state).
17. Describe point from which depth measurements were made, and give sea-level elevation if available ground level
18. If flowing well, state method of flow regulation: N/A
19. Remarks: blew 30 gp.m.

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55-557742
File No. D(23-24)31bad
Received _____ By _____
Entered ENTERED SEP 17 1996 By _____

DWR-55-55 (Rev 2/96)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	
0	1	brown sand
2	4	Caliche
4	23	redish brown gravely clay
23	290	brown sandy clay
290	330	redish brown gravely clay
330	380	grey cemented sand and gravel 1st water

I hereby certify that this well was drilled by me (or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller's Name (Qualifying Party): L. B. DRILLING

Box 4166

Street Huachuca City, AZ 85616

City 520-456-1312 State 9-11-96 Zip

Phone Number Date

DWR 55-55 (Rev 2/96)

RECEIVED
SEP 27 1996
RECORDS MGT

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470 Fax: (602) 417-2422

COMPLETION REPORT
(Pump Installation Report)

1. Per A.R.S. § 45-600, The completion report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation. For a flowing well the shut-in presssure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

REGISTRATION NO: 55- 557742 FILE NO: D (23-24) 31

LOCATION OF THE WELL:

23S.	23	31	¼ S/E	¼ N/E	¼ N/W
Township	Range	Section	10-acre	40-acre	160-acre

EQUIPMENT INSTALLED:

Kind of Pump (SUBMERSIBLE) GOULDS PUMP INC. Kind of Power ELECTRICAL
(Turbine, Submersible, Centrifugal, etc.) (Electric, Natural Gas, Gasoline, etc.)

H.P. Rating of Motor 1½ HP Pumping Capacity 28 Date Pump Installed 8-26-96

WELL TEST:

Test Pumping Capacity 12 (Gallons per minute) Date Well Tested 8-26-96

Method of Discharge Measurement 5-GALLONS CONTAINER
(Weir, orifice, current meter, bucket, etc.)

Static Groundwater Level 250' ft. Drawdown 10' ft.

Total Pumping Lift 300' ft. Drawdown - STD - lbs.
(Flowing Well)

(*)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

COMMIE SILVESTRI	1426 S. FOUDY RD	BISBEE	AZ	85603
Print Well Owner's Name	Address	City	State	Zip

* Commie Silvestri	* (520) 538-0569	18 SEP 96
Signature of Well Owner	Phone Number	Date

DWR 55-56 (Rev 10/95)

ENTERED SEP 27 1996

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS - 500 NORTH 3RD. STREET
PHOENIX, AZ 85004 (602)417-2470

RECEIVED MAY 20 1996 GROUNDWATER MGT

NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL - 1996

Section § 45-596, A.R.S., provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department

IF PARCEL IS 20 ACRES OR LESS, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BELOW, BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES.

Constance Silvestri — P.O. Box 2566 — S.V. — Az. — 85636
Land Owner's Name — Address — City — State — Zip

Telephone 520-378-2505

County: Cochise

COUNTY ASSESSOR'S PARCEL ID INFORMATION: Tax I.D # 102-11-007-9
BOOK MAP PARCEL — No. of Acres of Parcel 37

Well/Land Location: NE. SE 1/4 — 1/4 — NW 1/4 of Section 31 Township 23S N/S Range 23 E/W (SEE ATTACHED)
10AC 40ac 160ac

OFFICIAL SEAL

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

Check one:
Recommend Approval _____; Insufficient information to make determination _____; Variance required _____ (Explanation attached).

DATE _____ AUTHORIZED SIGNATURE _____

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH

1. Section § 45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section § 45-596(D), provides that the Department has 15 days after the receipt of a complete and correct notice of intention to record the notice and mail the duplicate to the owner.
3. Fill out this form and site plan in DUPLICATE and send WITH $10.00 FEE to 500 N. THIRD ST., PHX., AZ 85004 USE BLACK OR BLUE INK.
4. For specific instructions, limitations and conditions, see the reverse side of this form.
5. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
6. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. **Owner of well:**
Constance Silvestri
Name
P.O. Box 2566
Mailing Address
S.V. Az. 85636
City State Zip
Telephone: 520-378-2505

2. **Action requested:** Drill New Well ✓; Deepen _____ Modify _____ Replace _____
For a replacement well provide: Maximum capacity of the original well _____ gallons per minute; distance from the original well _____ feet.
Well Registration No. 55- _____

3. **Construction will start about:**
Month May Year 1996

4. **DESCRIPTION OF PROPOSED WELL:**
Diameter 8" inches
Depth 400' TO 500' feet MAY?
Type of Casing STEEL TOP END

5. **Design Pump Capacity:**
5 TO 10 gallons per minute

6. **Lessee of Land of wellsite:**
Connie Silvestri (OWNER)
Name
P.O. Box 2566
Mailing Address
S.V. Az. 85636
City State Zip
Telephone: 520-378-2505

7. **Principal use of water:(be specific)**
Domestic use Only

8. **Other uses of water:(be specific)**
Domestic Use Only

9. If use includes **irrigation**, state to nearest tenth, the number of acres to be irrigated: N/A

10. **PLACE OF USE** (Legal Description of Land):
Township 23S N/S Range 23 E/W
Section 31 1/4 SE 1/4 NE 1/4 NW

11. **Type of well:** Exempt ✓ Non-Exempt _____
Residential ✓ Commercial _____

12. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks? YES _____ NO ✓

13. **DRILLING FIRM:**
L. B. DRILLING
Firm Name
P. O. BX. 4166
Mailing Address
HUACHUCA CITY, AZ. 85616
City State Zip
DWR License
#344
ROC License Classification
#076141-005(A4
#058233-006(C-53

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. D(23-23)31BAA By ak
Filed 5-20-96 By ak
Input _____ By _____
DUPLICATE MAILED
Date 5-28-96 By ak
Registration 55- 55 77042
AMA/INA —
W/S II S/B
ENTERED MAY 31 1996

RECEIVED MAY 20 1996 GROUNDWATER MGT

CS 5/15/96

Constance Silvestri
Typed or Printed Name of Owner or Lessee

Signature [ ] Land Owner [ ] Lessee of Wellsite

30 APR 96
DATE

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. If any water from a proposed well on a parcel of land of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant shall submit a site plan to scale of the property with the county assessor's parcel identification number. The site plan:

   a. Will be on a 8½"x11" piece of plain paper with representation of the locations of all structures, septic tank or sewer systems and proximity of adjacent lot lines to scale.
   b. Must show the proposed well location and the location of any septic or sewer system that is either located on the property or within one hundred feet of the proposed well site.
   c. Shall demonstrate to the director's satisfaction that the well will not be drilled within one hundred feet of any septic or sewer system.
   d. Must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Before approval, the health authority shall review the plan and determine whether the proposed well location complies with applicable state and local laws regarding the placement of wells. If so, the health authority shall endorse the site plan and the proposed well placement.

2. Endorsement by the county/local authority is based solely on the best available judgement that this well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. Information brought to light at a future date may render this determination invalid.

3. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use and is later proposed to be converted to use for domestic purposes, as defined in § 45-454, the well owner shall file a notice of intention to drill and comply with the requirements prescribed pursuant to this section before the well is converted and any water from that well used for domestic purposes.

4. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

5. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an Irrigation Non-Expansion Area or Active Management Area to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

6. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of the notice (§ 45-596.E.).

7. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this notice.

8. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

9. If an individual other than the land owner or lessee signs this Notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific Notice on their behalf, shall accompany the Notice.

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2401

RECEIVED
MAY 20 1996
GROUNDWATER MGT

May 9, 1996

Darling Homes, Inc. (Constance Silvestri)
P. O. Box 2566
Sierra Vista, AZ 85636

Dear Applicant:

We are recently in receipt of your filing an (NOI) to drill/deepen/replace/modify a well. However, our review indicates that the filing(s) is incomplete under the Groundwater Management Act for the following reason(s):

Please complete all highlighted areas.

If the parcel on which the well is to be located is 20 acres or less, the NOI's, along with a site plan is required to go to the county for approval before being submitted to ADWR for processing.

Until clarification, or correction, no further action can be taken by this Department pending receipt of information that completes the application, as indicated above.

Sincerely,

Dorothy Boggs

Dorothy Boggs
Groundwater Permit Specialist

hs
Enclosures

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

RECEIVED
MAY 20 1996
GROUNDWATER MGT

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

July 25, 1995

Dear Well Applicants, Well Drillers and Health Officials:

This letter is being directed to all parties that may potentially be impacted by a revision of A.R.S. § 45-596. This statute requires an applicant to file a notice of intention to drill a well and receive authority from the Department of Water Resources before commencing to drill. The revision in the statute became effective July 17, 1994.

The revision pertains to all new wells that will provide **ANY** water for domestic purposes on parcels of land of twenty (20.0) acres or less. Domestic purposes is defined in A.R.S. § 45-454.I.1. Essentially it means uses related to the supply, service and activities of households and private residences.

To assist well applicants, well drillers and health authorities to transition to the revised procedure, the Department has revised its Notice Of Intention (NOI) to drill form, developed a brochure to provide information about the change and provided this letter to explain procedures to be followed.

An individual supply of the new forms and the brochure are being included with this letter. Please take a moment to review them. The brochure can be copied and recopied as much as anyone wishes because its only purpose is to be a source of information.

The NOI must be completed and filed **in duplicate**, with **both** sides of the form on the same sheet of paper. This is because there are conditions and restrictions on the back of the form that the applicant is attesting to by their signature. Improper or incomplete NOI forms will be returned without action. Faxed copies will not be accepted because: 1) the fee must accompany the filing; 2) the signature on the form must be the original signature of the landowner or lessee; 3) a fax can not meet the requirement of having both sides of the form on the same sheet of paper.

The filing fee that is required to be paid to the Department must accompany the NOI. **A check or money order, made payable to the AZ Dept of Water Resources (ADWR), in the amount of $10.00** must be attached to the duplicate NOIs and the site plan when they are submitted to the appropriate county or local health authority.

The duplicate NOIs and the site plan will be filed with the appropriate county or local health authority. The name, address and phone number of those places for filing are on the back of the brochure. That authority will review and endorse the NOI and site plan and forward it to DWR. In some cases, DWR may have to request further information from the applicant before issuing authority to drill.

A NOI claiming a parcel size of over 20 acres, and exemption from county or local authority review, must still provide the parcel number and parcel size. DWR will verify that information with the appropriate county assessor before issuing authority to drill.

Beginning July 18, 1994, the following Notice Of Intention forms become obsolete and will no longer be accepted by ADWR:

1. NOI to Drill an Exempt Well In An Active Management Area.
2. NOI to Drill a well Outside Of An Active Management Area.

Notice Of Intention forms not affected by the revised law are:

1. NOI to Drill Monitor/Piezometer Well.
2. NOI to Drill and Abandon Exploration Well(s).
3. NOI to Deepen, Replace or Modify an Existing, Non Exempt Well At Approximately the Same Location In An Active Management Area.
4. NOI to Abandon a Well
5. Notice of Well Capping.

For an additional supply of NOI forms, call Liz Choukalas at (602) 417-2470.

Sincerely,

Lawrence A. Ramsey
Groundwater Management Support

Attachments

DWR 45-596 (7/95Rev)

RECEIVED
MAY 2 1996
GROUNDWATER MGT

EXHIBIT "A"

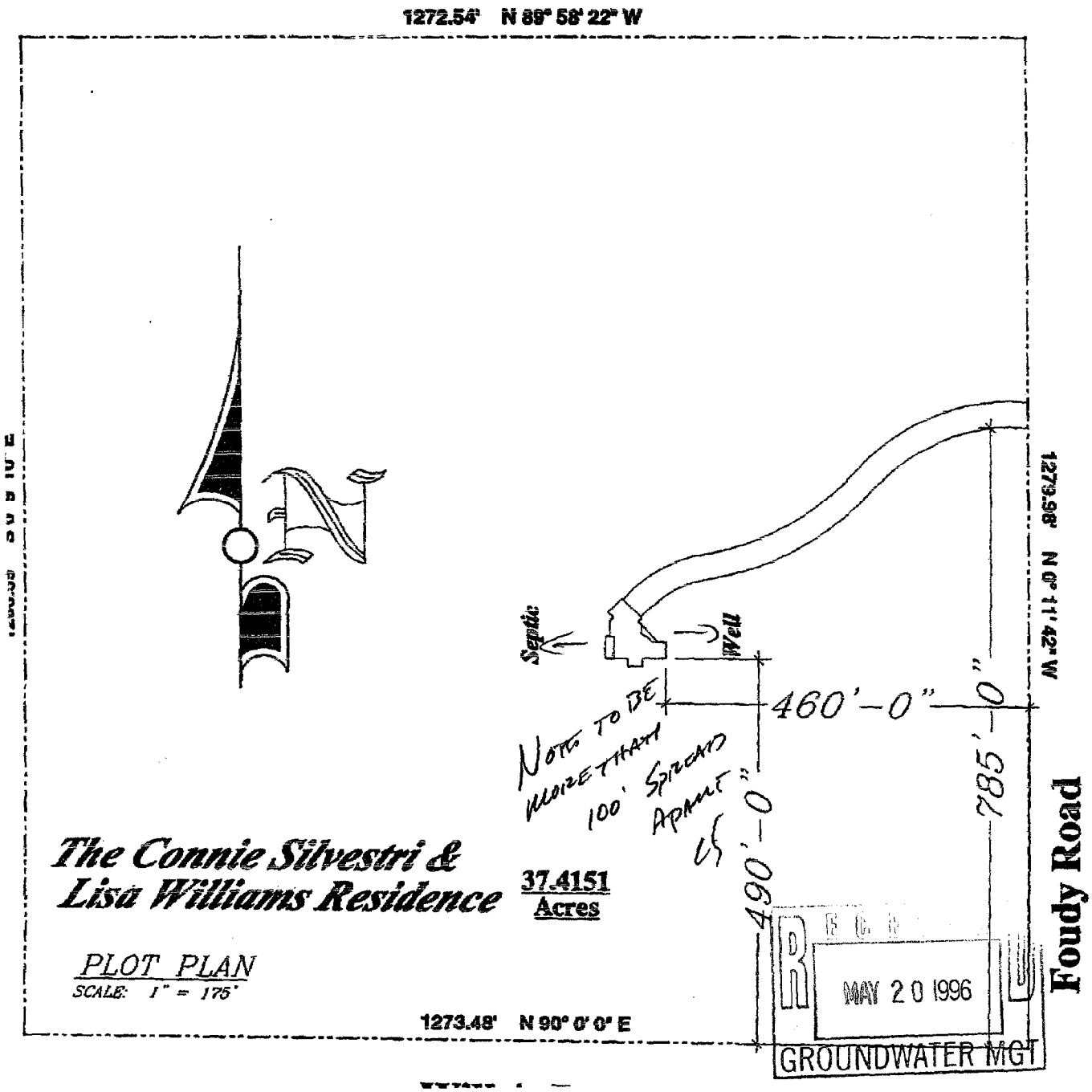
That portion of the Southeast quarter of the Northeast quarter of Section 31, Township 23 South, Range 23 East of the Gila and Salt River Base and Meridian, Cochise County, Arizona, more particularly described as follows:

COMMENCING at the Government Land Office Brass Capped Monument that marks the East quarter corner of said Section 31;
thence West 50.00 feet;
thence North 01° 11' 42" West 40.00 feet to the POINT OF BEGINNING;
thence North 01° 11' 42" West parallel to the East line of said Section 31, 1,279.98 feet to the North line of said Southeast quarter of the Northeast quarter;
thence North 89° 58' 22" West, 1,272.54 feet to the Northwest corner of said Southeast quarter of the Northeast quarter;
thence South 00° 09' 10" East, 1,280.59 feet along the West line of said Southeast quarter of the Northeast quarter;
thence East 1,273.48 feet to the POINT OF BEGINNING.

EXCEPT all coal and other minerals as reserved in Patent from United States of America.

RECEIVED
MAY 20 1996
GROUNDWATER MGT

RECEIVED
MAY 2 1996
GROUNDWATER MGT



RECEIVED
MAY 20 1996
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

May 28, 1996

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

CONSTANCE SILVESTRI
P O BOX 2568
SIERRA VIEST, AZ. 85636

Registration No. 55-557742
File No. D(23-24)31BAD

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill/deepen/modify a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593(C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Ellen Kane
Water Resource Technician
Groundwater Management Support Section

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-557742

AUTHORIZED DRILLER:L. B. DRILLING LICENSE NO: 344

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: CONSTANCE SILVESTRI

The well(s) is/are to be located in the:

SE 1/4 of the NE 1/4 of the NW 1/4 Section 31 Township 23S Range 23E

No. of Wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 19TH DAY OF MAY, 1997.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 14 1982 DEP'T. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55-649994
FILE NO. D(24-24)18dcc
FILED 6-14-82 AT 3p
(DATE) (TIME)
INA —
AMA —

1. Name of Registrant:
Shafer, Earnest E.
315 I St. PO. BOX 545 Naco Arizona 85620
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law:
D(24-24)18 dcc (File Number) 35- (Control Number)

3. a. The well is located within the SW ¼ SW ¼ SE ¼, Section 18, of Township 24(S) N/S, Range 24(E) E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
domestice.

5. If for irrigation use, number of acres irrigated from well none.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 162 feet
b. Diameter of casing 8 inches
c. Depth of casing 162 feet
d. Type of casing welded, steel .
e. Maximum pump capacity 30, static 0 psi gallons per minute.
f. Depth to water 120 feet below land surface.
g. Date well completed July (Month) 15 (Day) 1966 (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE June 12/82 SIGNATURE OF REGISTRANT Earnest E Shafer

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
3550 N.Central Avenue * Phoenix, Arizona 85012
(602) 771-8500 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

RECEIVED JUL 14 2006

FILE NUMBER: D(24-24) 18 ADC
WELL REGISTRATION NUMBER: 55- 210865
PERMIT NUMBER (IF ISSUED):

SECTION 1. DRILLING AUTHORIZATION

Drilling Firm

NAME	DWR LICENSE NUMBER
BRADLY DRILLING	736
ADDRESS	TELEPHONE NUMBER
PO Box 4707	520-456-2355
CITY/STATE/ZIP	FAX
HUACHUCA CITY, AZ 85616	

SECTION 2. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: ROBERT & ELIZABETH SCHWARTZ
MAILING ADDRESS: 2003 BRUSH WOOD DR
CITY / STATE / ZIP: SIERRA VISTA, AZ 85650
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-458-4311
FAX:
WELL NAME:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE 1/4	40 ACRE 1/4	10 ACRE 1/4

LATITUDE: ° ' "N
LONGITUDE: ° ' "W
LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level
METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☐ Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ GPS : ☐ Survey-Grade
COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 102 MAP 56 PARCEL 009
COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. WELL CONSTRUCTION DETAILS

Drill Method

CHECK ONE
- ☒ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development

CHECK ONE
- ☒ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☒ Other (please specify)

Condition of Well

CHECK ONE
- ☐ Capped
- ☒ Pump Installed

Method of Sealing at Reduction Points

CHECK ONE
- ☐ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☒ Other (please specify) NATIVE

Condition of Well

DATE WELL CONSTRUCTION STARTED: 6-10-06
DATE WELL CONSTRUCTION COMPLETED: 6-11-06

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM: Bradly Drilling
SIGNATURE OF QUALIFYING PARTY:
DATE: 6-11-06

DWR-55-55-10/01 (Rev.)

ENTERED JUL 21 2006

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 210865

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

DEPTH OF BORING	DEPTH OF COMPLETED WELL
305' Feet Below Land Surface	305' Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
123' Feet Below Land Surface	6-11-06	NOON	☐ Valve ☐ Other:

Borehole / Installed Casing

Borehole: DEPTH FROM SURFACE FROM (feet)	Borehole: DEPTH FROM SURFACE TO (feet)	Borehole: BOREHOLE DIAMETER (inches)	Installed Casing: DEPTH FROM SURFACE FROM (feet)	Installed Casing: DEPTH FROM SURFACE TO (feet)	Installed Casing: OUTER DIAMETER (inches)	MATERIAL TYPE (X): STEEL	MATERIAL TYPE (X): PVC	MATERIAL TYPE (X): ABS	MATERIAL TYPE (X): IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (X): BLANK OR NONE	PERFORATION TYPE (X): WIRE WRAP	PERFORATION TYPE (X): SHUTTER SCREEN	PERFORATION TYPE (X): MILLS KNIFE	PERFORATION TYPE (X): SLOTTED	PERFORATION TYPE (X): IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	12¼	0	20	8⅝	X				X						
20	305	8"	10	260	6		X			X						
			260	305	6		X							X		1/8"

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (X): NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE: GROUT	BENTONITE: CHIPS	BENTONITE: PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK: SAND	FILTER PACK: GRAVEL	FILTER PACK: SIZE
0	20		X									
20	305							NATIVE				

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 210865

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	18	Top Soil	
18	35	Clay	
35	68	Sand Clay	
68	105	Clay	
105	195	Clay Some Sand	
195	215	Sand	X
215	230	Clay	
230	240	Sand	X
240	305	Sand & Clay Layers	X

Well Driller Report and Well Log

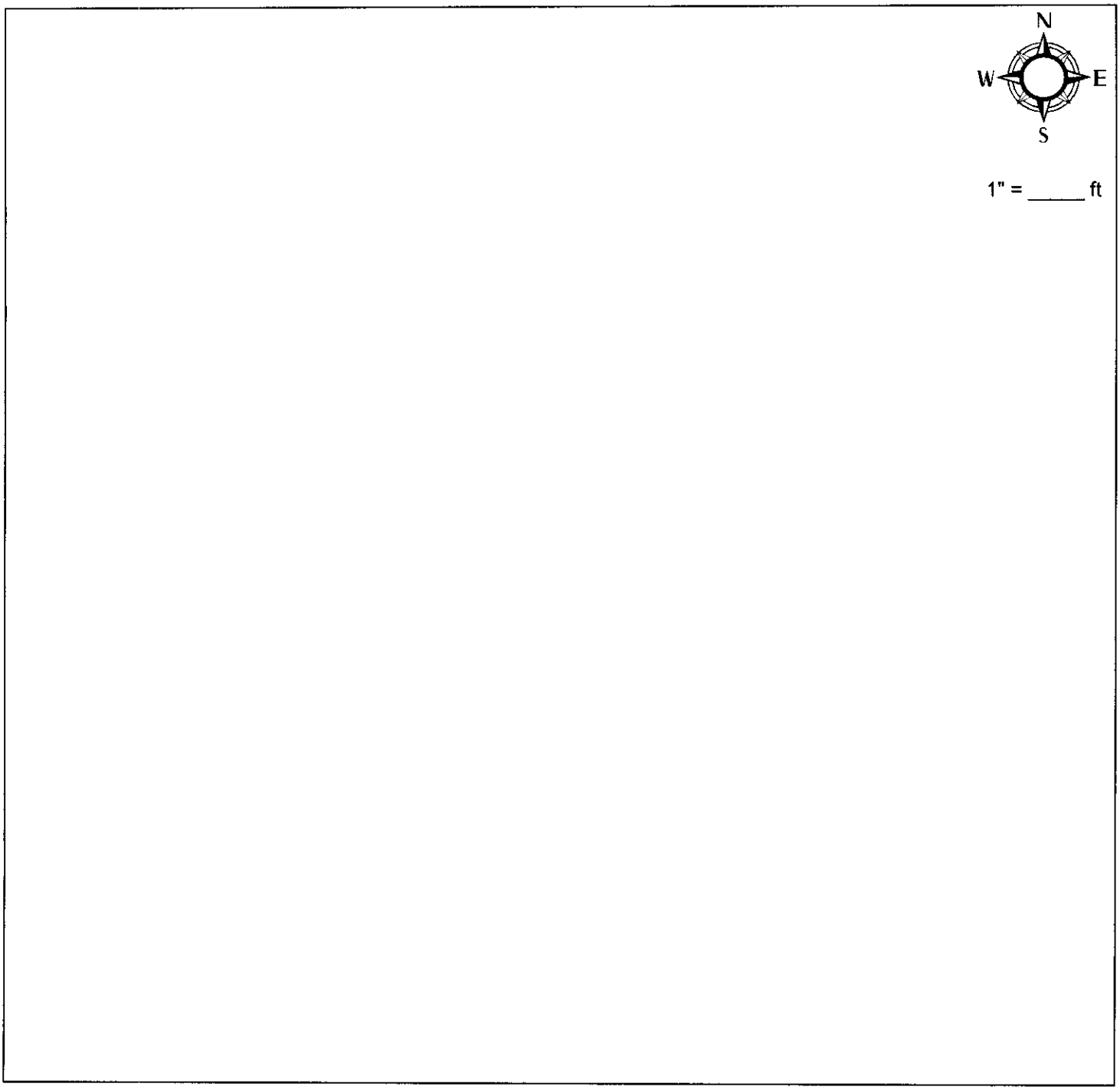
WELL REGISTRATION NUMBER
55- 210865

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
ROBERT & ELIZABETH SCHWARTZ	102	56	009

Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.

Please indicate the distance between the well location and any septic tank system or sewer system.



ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
3550 N. Central Avenue * Phoenix, Arizona 85012
(602) 771-8500 * (800) 352-8488
www.water.az.gov

Pump Installation Completion Report

RECEIVED
JUN 29 2006
INFORMATION MANAGEMENT

Review instructions prior to completing form
The registered well owner should file this report with the Department within 30 days following installation of pump equipment
** PLEASE PRINT CLEARLY **

FILE NUMBER: D(24-24) 18 ADC
WELL REGISTRATION NUMBER: 55- 210865

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: ROBERT & ELIZABETH SCHWARTZ
MAILING ADDRESS: 2003 BRUSH WOOD DR
CITY / STATE / ZIP: SIERRA VISTA, AZ 85650
CONTACT PERSON NAME AND TITLE: ROBERT SCHWARTZ
TELEPHONE NUMBER: 520-458-4311
FAX:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN): 3466 S. CLUBVIEW TERRACE BISBEE, AZ. 85603

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	18	NE 1/4	SE 1/4	SW 1/4

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
102	56	009

COUNTY WHERE WELL IS LOCATED: COCHISE

SECTION 2. EQUIPMENT INSTALLED

DATE PUMP INSTALLED:

Pump Type
CHECK ONE

- ☐ Air Lift
- ☐ Bucket
- ☐ Centrifugal
- ☐ Jet
- ☐ Piston
- ☐ Rotary
- ☒ Submersible
- ☐ Turbine
- ☐ Other (please specify)

Power Type
CHECK ONE

- ☐ Diesel Engine
- ☒ Electric Motor
- ☐ Gasoline Engine
- ☐ Hand
- ☐ Natural Gas
- ☐ Windmill
- ☐ Other (please specify)

RATED PUMP CAPACITY: 16 Gallons Per Minute
HORSE POWER RATING OF MOTOR: 2 HP.

SECTION 3. WELL TEST

Pump Test Data

DATE WELL TESTED:
STATIC WATER LEVEL (A): 130 Feet Below Land Surface
PUMPING WATER LEVEL (B): 285 Feet Below Land Surface
DRAWDOWN [(B) - (A)]: 155
TEST PUMPING RATE: 16 GPM Gallons Per Minute
DURATION OF PUMP TEST (Minimum 4 Hours): 4 hr Hours
TOTAL PUMPING LIFT: 285 Feet
FOR FLOWING WELL, MEASURED SHUT IN HEAD ☐ FT ☐ PSI

Method of Discharge Measurement
CHECK ONE

- ☐ Bailer
- ☒ Bucket - Barrel - Stopwatch
- ☐ Current
- ☐ Estimated - Air Lift
- ☐ Gauge
- ☐ Meter
- ☐ Orifice
- ☐ Volume
- ☐ Weir - Flume
- ☐ Other (please specify)

Method of Measuring Water Level
CHECK ONE

- ☐ Air Line
- ☒ Electric Measuring Line (Sounder)
- ☐ Steel Tape
- ☐ Other (please specify)

ENTERED JUL 14 2006

I HEREBY CERTIFY *that the above statements are true to the best of my knowledge and belief according to* A.R.S § 45-600(B)

SIGNATURE OF WELL OWNER: Robert Schwartz Elizabeth Schwartz
DATE: 6/20/06

DWR-55-56 (Rev. 10/11/01)

ARIZONA DEPARTMENT OF WATER RESOURCES

WATER MANAGEMENT SUPPORT SECTION

3550 N. Central Avenue
Phoenix, Arizona 85012

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-210865

AUTHORIZED DRILLER: BRADLY DRILLING LICENSE NO: 736

NOTICE OF INTENTION TO DRILL A NON-EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: ROBERT & ELIZABETH SCHWARTZ 2003 BRUSH WOOD DR SIERRA VISTA, AZ 85650

THE WELL(S) IS/ARE TO BE LOCATED IN THE:
SW ¼ OF THE SE ¼ OF THE NE ¼ SECTION 18 TOWNSHIP 24 SOUTH RANGE 24 EAST

NO. OF WELLS IN THIS PROJECT: 1 ASSESSOR PARCEL NO: 102-56-009

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 22ND DAY OF JANUARY, 2007

WATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax www.water.az.gov

JAN 2 3 2006

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

FEB - 6 2006

AMA / INA	B	SB
—	76	
RECEIVED DATE 1-23-06	WS 11	
ISSUED DATE 2-7-06	WQARF	CERCLA —

FILE NUMBER D(24-24)18ADC

WELL REGISTRATION NUMBER 55 - 210865

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

- [X] County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
  - [X] Field Inspection Performed
  - [ ] Site Plan Review Only
- [ ] Insufficient Information to Make a Determination

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE Jan 19 2006
BY Carlos Diaz R.S.

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: CARLOS DIAZ R.S.

TELEPHONE NUMBER: 520-432-9442 | DATE: JAN 18, 2006

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carlos Diaz R.S.

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

- [ ] Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)
- [✓] Non-Exempt (Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 50 Gallons Per Minute

Proposed Action

CHECK ONE

- [✓] Drill New Well
- [ ] Deepen
- [ ] Replace
- [ ] Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 -

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY): 3466 S. CLUBVIEW TERRACE. BIZBEE AZ. 85603

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	18	NE ¼	SE ¼	SW ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
102	56	009	½

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: COCHISE

SECTION 3. OWNER INFORMATION

Well Owner	**Landowner** (if different from Well Owner)
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: ROBERT ELIZABETH SCHWARTZ	FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL: ROBERT ELIZABETH
MAILING ADDRESS: 2003 BRUSHWOOD DRIVE	MAILING ADDRESS: 2003 BRUSHWOOD DRIVE
CITY / STATE / ZIP CODE: SIERRA VISTA, AZ. 85650	CITY / STATE / ZIP CODE: SIERRA VISTA, AZ. 85650
CONTACT PERSON NAME AND TITLE: ROBERT SCHWARTZ	CONTACT PERSON NAME AND TITLE: ROBERT SCHWARTZ
TELEPHONE NUMBER: 520-458-4311 FAX:	TELEPHONE NUMBER: 520-458-4311 FAX:

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		✓	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		✓	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		✓	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 210865

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: BRADLEY DRILLING

DWR LICENSE NUMBER: 736

ROC LICENSE CATEGORY: C-53

TELEPHONE NUMBER: 520-456-2355

FAX: 520-456-0247

MAILING ADDRESS: PO BOX 4707

CITY / STATE / ZIP CODE: HUACHUCA CITY, AZ. 85616

RECEIVED JAN 23 2006 GROUNDWATER MGT

SECTION 6. WATER / SITE INFORMATION

Principal Use **of Water** (CHECK ONE)	***Other Uses*** **of Water** (CHECK ALL THAT APPLY)
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☑ Domestic	☑ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify)*:	☐ Other *(please specify)*:

RECEIVED FEB - 6 2006 GROUNDWATER MGT

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

DATE CONSTRUCTION IS TO BEGIN: FEB 2006

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	12 1/4
20	300	8

Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	20	8 5/8	X*				X						Cement
10	260	6		X			X						
260	300	6		X							X		

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: ROBERT SCHWARTZ — OWNER

SIGNATURE OF WELL OWNER: Robert Schwartz Elizabeth Schwartz — DATE: 1-10-2006

SIGNATURE OF LANDOWNER, IF APPLICABLE (SEE INSTRUCTIONS): Robert Schwartz Elizabeth Schwartz — DATE: 1-10-2006

RECEIVED
FEB - 6 2006

RECEIVED
JAN 23 2006

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 210865

CHECK ONE: ☒ FILING MANUALLY ☐ FILING ELECTRONICALLY*

*DRILLER'S E-MAIL ADDRESS:

COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL CODE

If applicant is filing this NOI electronically via the ADWR website and County approval is required, please indicate approval by providing a County Approval Code.

COUNTY APPROVAL CODE

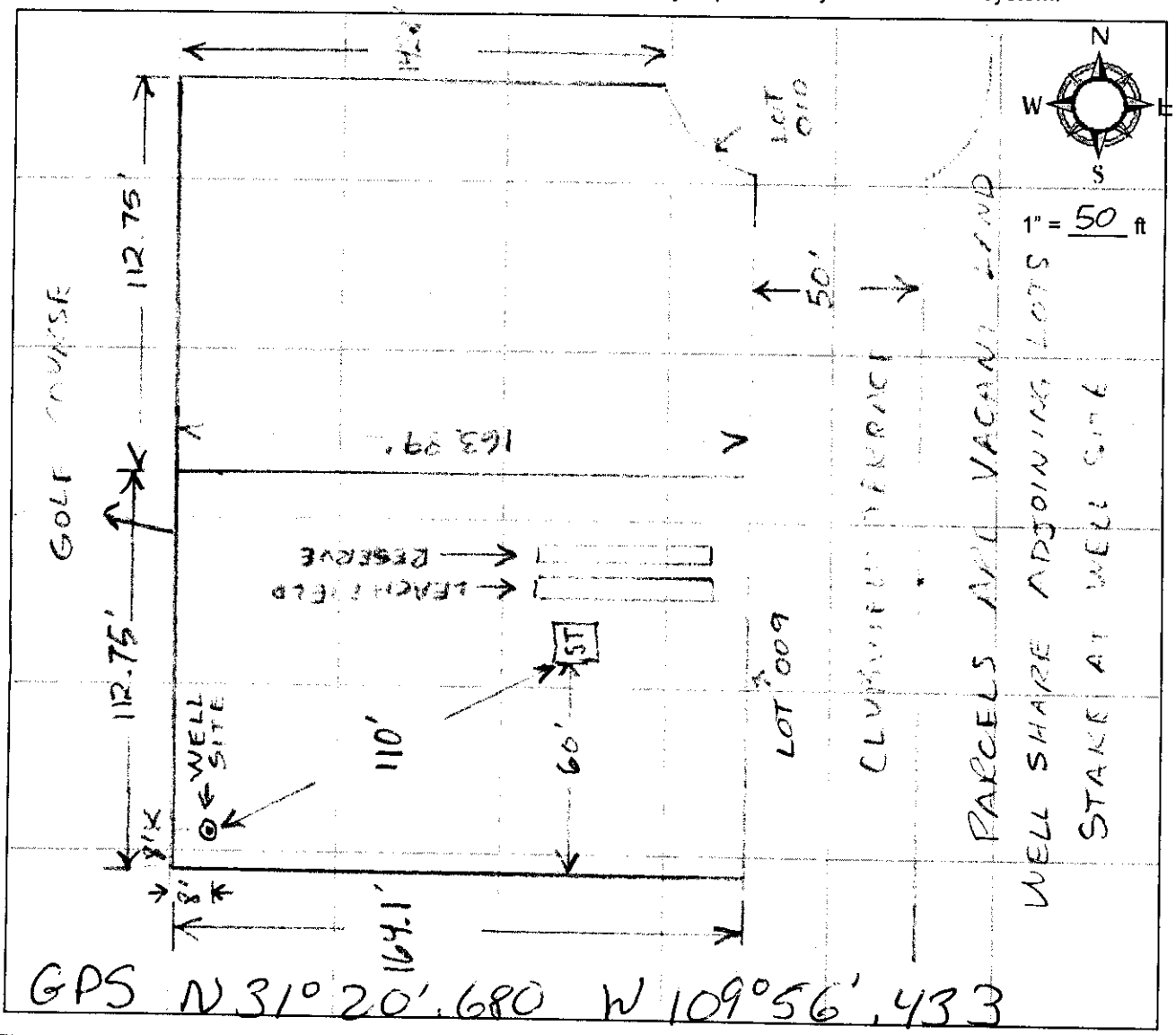
WELL SITE PLAN

NAME OF WELL OWNER
ROBERT SCHWARTZ

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL
102	56	009

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE
CARLOS DIAZ R.S.

COUNTY OR LOCAL AUTHORITY SIGNATURE
Carlos Diaz R.S.

TELEPHONE NUMBER
520-432-9442

DATE
Jan 18, 2006

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION

DATE Jan 18, 2006

BY Carlos Diaz R.S.

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $100 FEE

RECEIVED FEB - 6 2006 GROUNDWATER MGT.

- Review instructions prior to completing form. Use black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $100.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

JAN 23 2006

** PLEASE PRINT CLEARLY **

AMA / INA		B	SB
RECEIVED	DATE	WS	
ISSUED	DATE	WQARF	CERCLA

FILE NUMBER

WELL REGISTRATION NUMBER

55 - 210865

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☒ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE
Carlos Diaz RS

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE Jan 19 2006
BY Carlos Diaz RS

COUNTY OR LOCAL AUTHORITY SIGNATURE
Carlos Diaz RS

ROBERT SCHWARTZ
ELIZABETH A SCHWARTZ
2003 BRUSHWOOD
SIERRA VISTA, AZ 85650

754

date 1-10-2006 91-574/1221 963

PAY to the order of ADRW $150.00/100

One Hundred Fifty + 00/100 dollars

Compass Bank
Sierra Vista, Arizona

for WELL PERMIT

[redacted]

RACE. BIZBEE AZ. 85603

160 ACRE	40 ACRE	10 ACRE
¼	¼	¼

MBER

PARCEL	# OF ACRES
009	½

ERENT FROM LOCATION OF WELL)

160 ACRE	40 ACRE	10 ACRE
¼	¼	¼

Gallons Per Minute

SECTION 3. OWNER INFORMATION

Well Owner		**Landowner** (if different from Well Owner)	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL ROBERT ELIZABETH SCHWARTZ		FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL ROBERT ELIZABETH	
MAILING ADDRESS 2003 BRUSHWOOD DRIVE		MAILING ADDRESS 2003 BRUSHWOOD DRIVE	
CITY / STATE / ZIP CODE SIERRA VISTA, AZ. 85650		CITY / STATE / ZIP CODE SIERRA VISTA, AZ. 85650	
CONTACT PERSON NAME AND TITLE ROBERT SCHWARTZ		CONTACT PERSON NAME AND TITLE ROBERT SCHWARTZ	
TELEPHONE NUMBER 520-458-4311	FAX	TELEPHONE NUMBER 520-458-4311	FAX

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		✓	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		✓	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		✓	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

ARIZONA DEPARTMENT OF WATER RESOURCES
Water Management Support Section – NOI Unit
3550 N Central Ave, 2nd Fl., Phoenix, Arizona 85012-2105
Telephone (602) 771-8646
Fax (602) 771-8691

RECEIVED
FEB - 6 2006
GROUNDWATER MGT

JANET NAPOLITANO
Governor

HERB GUENTHER
Director

PLEASE RETURN ALL PAPERS

January 27, 2006

ROBERT & ELIZABETH SCHWARTZ
2003 BRUSHWOOD DR
SIERRA VISTA, AZ 85650

Re: Well Registry Number: 55-210865
File (Location) Number: D(24-24)18

Dear Applicant:

The Department of Water Resources recently received your Notice of Intent (NOI) to Drill, Deepen, Replace or Modify a Well. However, our review indicates that the NOI is incomplete under the Groundwater Management Act for the following reason(s):

- **NEED ALL QUARTERS SEE ATTACHED SHEET FOR BREAKDOWN OR CONTACT YOUR COUNTY ASSESSORS OFFICE FOR THIS INFORMATION.**

PLEASE CALL MONICA ORTIZ AT 602-771-8643 WITH ANY QUESTIONS.

In accordance with Arizona Revised Statutes (A.R.S.) § 45-596, Paragraph D, the Department is mailing this "statement of determination" as a request for information necessary to make the NOI complete and correct. Please provide the Department with the additional information and resubmit the corrected NOI form and any attachments (if applicable) to ADWR. The Department's substantive review time frame is suspended until all requested information is provided. If the Department does not receive the necessary information within sixty (60) days, the application may be denied. You would then have to re-initiate the NOI process and pay a new filing fee to receive a drilling authority for this location.

ATTACH THIS NOTICE WHEN RESUBMITTING THE COMPLETED NOI AND RETURN TO:

WATER MANAGEMENT SUPPORT SECTION
PO BOX 458
PHOENIX, ARIZONA 85001-0458

YOU MAY ALSO CONTACT YOUR DRILLER OR COUNTY ASSESSOR'S OFFICE FOR ASSISTANCE PERTAINING TO THE NECESSARY INFORMATION THAT IS REQUIRED TO COMPLETE YOUR APPLICATION.

ARIZONA DEPARTMENT OF WATER RESOURCES
3550 N. Central Avenue, Phoenix, Arizona 85012
Telephone (602) 771-8500
Fax (602) 771-8691

February 07, 2006

Janet Napolitano
Governor

Herbert R. Guenther
Director

ROBERT & ELIZABETH SCHWARTZ
2003 BRUSH WOOD DR
SIERRA VISTA, AZ 85650

Registration No. 55-210865
File No. D(24-24) 18 ADC

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well that you recently filed with this Department pursuant to A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed or otherwise provided a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card, which must be displayed on the drill rig during drilling.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the proposed well, you may not proceed with drilling until you file an amended NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the amended NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DWR form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed is a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55) within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at <http://www.water.az.gov/adwr/content/forms/default.htm#NOI>.

Sincerely,

Monica Ortiz

Monica Ortiz
NOI Unit
Water Management Support Section

Enclosures

D(24-24)17 BCB

RECEIVED
JAN 3 0 2006
INFORMATION MANAGEMENT

Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Request to Change Well Information

- Review instructions prior to completing form in back or blue ink.
- Attach instructions with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

** PLEASE PRINT CLEARLY **

FILE NUMBER

WELL REGISTRATION NUMBER
55 – 588270

SECTION 1. REGISTRY INFORMATION

Well Owner	Location of Well					
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	WELL LOCATION ADDRESS (IF ANY)					
MAILING ADDRESS	TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
	24S	24E	17	NW ¼	SW ¼	NW ¼
CITY / STATE / ZIP CODE	LATITUDE					

Pioneer Title Agency, Inc.
P.O. BOX 1900
Sierra Vista, AZ 85636

NATIONAL BANK OF ARIZONA
1160 E. Fry Blvd.
Sierra Vista, Arizona 85635
91-532/1221

NO. 696527

FILE NUMBER	DATE	AMOUNT
00911557 - 006 DB	01/23/06	$10.00

PAY TEN DOLLARS and no/100

[redacted] ACCOUNT

TO THE ORDER OF ARIZONA DEPARTMENT OF WATER
P.O. BOX 458
PHOENIX, AZ 85004

ANSWERED FEB 0 1 2006

[redacted]

... OF CHANGE OF WELL OWNERSHIP ($10 Fee Required)

$10 FEE

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

Previous Well Owner		New Well Owner	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL EARNEST ROGERS		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL SUNNYSIDE HOLDINGS, LLC	
MAILING ADDRESS P.O. BOX 608		MAILING ADDRESS P.O. BOX 1303	
CITY / STATE / ZIP CODE NACO, AZ 85620		CITY / STATE / ZIP CODE HEREFORD, AZ 85615	
CONTACT PERSON NAME AND TITLE		CONTACT PERSON NAME AND TITLE	
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required)

NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE	SIGNATURE OF WELL OWNER
Ernest Rogers	[signature]

D24-2417 BCB

RECEIVED
JAN 30 2006
INFORMATION MANAGEMENT

Arizona Department of Water Resources
Groundwater Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Request to Change Well Information

FILE NUMBER

WELL REGISTRATION NUMBER
55 - 588270

- Review instructions prior to completing form in back or blue ink.
- Administrative Completeness Notice:
  - Check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner		Location of Well					
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		WELL LOCATION ADDRESS (IF ANY)					
MAILING ADDRESS		TOWNSHIP (N/S) 24S	RANGE (E/W) 24E	SECTION 17	160 ACRE NW ¼	40 ACRE SW ¼	10 ACRE NW ¼
CITY / STATE / ZIP CODE		LATITUDE ° Degrees	' Minutes	"N Seconds	LONGITUDE ° Degrees	' Minutes	"W Seconds
CONTACT PERSON NAME AND TITLE		COUNTY ASSESSOR'S PARCEL ID NUMBER BOOK	MAP	PARCEL			
TELEPHONE NUMBER	FAX	COUNTY WHERE WELL IS LOCATED					

Type of Request (CHECK ONE)

☐ Change of Well Drilling Contractor *(Fill out Section 2)*
☐ ☑☑Change of Well Ownership *(Fill out Section 3)*
☐ Change of Well Information *(location, use, etc.) (Fill out Section 4)*

SECTION 2. REQUEST TO CHANGE WELL DRILLING CONTRACTOR ($10 Fee Required)

- If drilling or abandoning a well, the Department must receive this request and issue authorization to the new drilling form prior to the commencement of well drilling or abandonment.

$10 FEE

Current Well Drilling Contractor		New Well Drilling Contractor	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	
DWR LICENSE NUMBER		DWR LICENSE NUMBER	ROC LICENSE CATEGORY
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP ($10 Fee Required)

$10 FEE

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

Previous Well Owner		New Well Owner	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL EARNEST ROGERS		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL SUNNYSIDE HOLDINGS, LLC	
MAILING ADDRESS P.O. BOX 608		MAILING ADDRESS P.O. BOX 1303	
CITY / STATE / ZIP CODE NACO, AZ 85620		CITY / STATE / ZIP CODE HEREFORD, AZ 85615	
CONTACT PERSON NAME AND TITLE		CONTACT PERSON NAME AND TITLE	
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required)

NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE	SIGNATURE OF WELL OWNER
Ernest Rogers	

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458 - PHOENIX ARIZONA 85001-0458
Phone 602-417-2470

RECEIVED
SEP 6 2001
RECORDS MGT

COMPLETION REPORT
(Pump Installation Report)

A. Per A.R.S. § 45-600.B, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.

B. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operations. For a flowing well the shut-in pressure should be measured in feet above the land surface or in pounds per square inch at the land surface.

C. The static groundwater level should be measured in feet from the land surface immediately prior to the capacity test.

D. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well be measuring the natural flow at the land surface.

E. Items 1 and 2 are available from the Notice of Intent to Drill.

F. Items 3 and 4 may be available from the driller.

1. REGISTRATION NO: 55- 588270 **FILE NO:** D(24-24)17 BCB

2. LOCATION OF THE WELL:

24 N/S	24 E/W	17	¼ NW	¼ SW	¼ NW
Township	Range	Section	10-acre	40-acre	160-acre

3. EQUIPMENT INSTALLED:

Kind of pump SUBMERSIBLE (Turbine, Submersible, Centrifugal, etc.) **Kind of power** ELEC. (Electric, natural gas, gasoline, etc.)

H.P. Rating of Motor 1 **Pumping Capacity** 10 **Date Pump Installed** 8/28/01

4. WELL TEST:

Test pumping capacity 10 Gallons per minute **Date Well Tested** 8/28/01

Method of Discharge Measurement ORIFICE (Weir, orifice, current meter, etc.)

Static Groundwater Level 115 ft. **Drawdown** 125 ft.

Total Pumping Lift 160 ft. **Drawdown** — lbs (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

ERNEST ROGERS	P.O Box 608	NACO	AZ	85620
Print Well Owner's Name	Address	City	State	Zip

[signature]	432-3861	8/30/01
Signature of Well Owner	Phone Number	Date

ANSWERED SEP 2001

DWR 55-56 (Rev 1/99)

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street
Phoenix, Arizona 85004

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

RECEIVED
SEP 6 2001
RECORDS MGT

1. JS & K DRILLING, INC.
2235 N. RANCH TRAIL
HUACHUCA CITY, AZ 85616-8283

2. Owner Name: ERNEST ROGERS
Address: NACO (City) AZ (State) 85620 (Zip)

3. Location: 24 N/S 24 E/W 17 (Section) ¼ NW (10-acre) ¼ SW (40-acre) ¼ NW (160-acre)
(Township, Range)

4. Well Registration No. 55-588270 (Required)

5. Permit No. _____ (If Issued)

N 31° 20.732
W 109° 56.089

DESCRIPTION OF WELL

6. Total depth of hole 200 ft.
7. Type of casing PVC
8. Diameter and length of casing 8 in. from 0' to 20', 6 in from 10' to 200'
9. Method of sealing at reduction points NATIVE SOIL
10. Perforated from 160 to 200, from — to _____ from _____ to _____
11. Size of cuts 1/8 Number of cuts per foot 2
12. If screen was installed: Length — ft. Diam _____ in. Type _____
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started AUG (Month) 27 (Day) 01 (Year)
15. Date completed AUG (Month) 28 (Day) 01 (Year)
16. Depth to water 115 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea_level elevation if available
TOP OF SURFACE 4594'
18. If flowing well, state method of flow regulation: —
19. Remarks: —

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55- 588270
File No. D(24-24) 17 BCB
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

RECEIVED SEP 7 2001

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	4	Top Soil
4	58	Clay
58	165	Rocky Clay
165	200	Gravel w/Small Clay Layers

I hereby certify that this well was drilled by me (or under by supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: JS & K DRILLING, INC.

2235 N. RANCH TRAIL
Street

HUACHUCA CITY, AZ 85616-8283 456-2355
City State Zip Phone No.

Signature of Driller 8/29/01
Date

pd ck #2158

RECEIVED
AUG 2 2001
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ 602-417-2470
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. ERNEST M ROGERS (LANDOWNER'S NAME) P.O. BOX 608 (CURRENT MAILING ADDRESS) NACO (CITY) AZ (STATE) 85620 (ZIP)

B. TELEPHONE NO. 432-3861 COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN COCHISE COUNTY D. 102-53-019-020-021 (BOOK-MAP-PARCEL) E. 16 (# OF ACRES) OFFICIAL SEAL OR STAMP

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NW ¼ (10AC) SW ¼ (40AC) NW ¼ (160AC) OF SECTION 17 TOWNSHIP 24 N/S RANGE 24 E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL X; INSUFFICIENT INFORMATION TO MAKE A DETERMINATION ____; VARIANCE REQUIRED ____ (EXPLANATION ATTACHED)

H. DATE 7/30/01 AUTHORIZED SIGNATURE John Titan TITLE Env. Health Spec.

1. OWNER OF WELL:
NAME ERNEST M ROGERS
CURRENT MAILING ADDRESS P.O. BOX 608 NACO 85620
CITY STATE ZIP
TELEPHONE NUMBER 432-3861

2. ACTION REQUESTED:
DRILL NEW WELL X DEEPEN ____
MODIFY ____ REPLACE ____

WELL REGISTRATION NO 55-____

FOR A REPLACEMENT WELL PROVIDE:
MAX. CAPACITY OF THE ORIGINAL WELL ____ GALLONS PER MINUTE;

DISTANCE FROM THE ORIGINAL WELL: ____ FEET

3. CONSTRUCTION WILL START ABOUT:
MONTH SEPT YEAR 01

4. TYPE OF CASING FOR PROPOSED WELL:
SURFACE CASING: STEEL
DIAMETER: 8 " DEPTH: 20 '
DOWNHOLE CASING: PVC
DIAMETER: 6 " DEPTH: 160 '

5. DESIGN PUMP CAPACITY:
15 GALLONS PER MINUTE

6. LESSEE OF LAND OF WELLSITE:
NAME
CURRENT MAILING ADDRESS
CITY STATE ZIP
TELEPHONE: - -

7. PRINCIPAL USE OF WATER: (BE SPECIFIC)
DOMESTIC

8. OTHER USES OF WATER: (BE SPECIFIC).

FOR DEPARTMENT USE ONLY
REGISTRATION NO. 55-588270
DATE FILED 8-2-01
FILE NO. D(24-24)17 BCB
AMA/INA ____
W/S 11 S/B 76
PROCESSED BY KB
DATE MAILED 8-6-01
mo.

9. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NW ¼ (10AC) SW ¼ (40AC) NW ¼ (160AC) SECTION 17
TWNSHP 24 N/S RNG 24 E/W

10. TYPE OF WELL (CHECK ONE):
EXEMPT X NON-EXEMPT ____

11. CHECK ONE:
RESIDENTIAL X STOCKWATER ____
OTHER ____

12. IS THE PROPOSED WELLSITE WITHIN 100 FEET OF A SEPTIC TANK SYSTEM, SEWER DISPOSAL AREA, LANDFILL, HAZARDOUS MATERIALS OR PETROLEUM STORAGE AREAS AND TANKS?
YES ____ NO X

13. DRILLING FIRM:
JS & K DRILLING, INC.
NAME
2235 N. RANCH TR.
MAILING ADDRESS
HUACHUCA CITY AZ 85616
CITY STATE ZIP
520 456-2855
TELEPHONE NO.
565
IDWR LICENSE NUMBER
C53
ROC LICENSE CATEGORY

I STATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND THE LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

ERNEST M ROGERS — 14. TYPE OR PRINT NAME AND TITLE
15. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE
7/27/01 — 16. DATE

DWR 55-40 (REV 9/99)

APPLICATION GUIDELINES

In accordance with Arizona Revised Statutes ("A.R.S.") §§ 41-1008 and 1079, the Department of Water Resources (Department) provides the following information regarding the application review process for authority to drill.

NECESSARY STEPS & INSTRUCTIONS TO OBTAIN DRILLING AUTHORITY

1. Pursuant to A.R.S. § 45-596, a person may not drill, cause to be drilled, deepen or modify any well for which a permit is not required without first filing a Notice of Intent to Drill with the Department. Only a well drilling contractor licensed in the State of Arizona or a single well licensee (a person licensed to drill or modify one exempt well on his or her own property) is authorized to drill, deepen or modify a well. Drilling may not begin until the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, and which authorizes the drilling of the specific well in a specific location. To assist you in understanding the requirements for this application, copies of A.R.S. § 45-596 and Arizona Administrative Code ("A.A.C.") R12-15-810 are available at the Department bookstore (602-417-2450 x7127).
2. If replacing, deepening, or modifying an existing well, provide the registration number of the existing well in item 2. A replacement well is one located no more than 660 feet from the original well and that is not expected to annually withdraw more groundwater than historically withdrawn from the original well.
3. Information to complete items 3, 4, 5 and 13 may be available from your driller.
4. Information to complete items 9 and 12 may be available from your County Assessor's Office.
5. For item 10, in an Active Management Area, A.R.S § 45-454 only allows non-irrigation uses for "exempt" wells. If the proposed use includes the growing of 2 or more acres of plants for sale or human/animal consumption (irrigation use), the well does not qualify as an exempt well.
6. An exempt well, referred to in Item 10, means a well with a pump with a maximum capacity of not more than thirty-five gallons per minute and used for non-irrigation purposes.
7. For item 11, in an Active Management Area, A.R.S §45-454 allow up to 56 acre feet per year of pumping from a domestic (residential) or stock watering exempt well, and up to 10 acre ft per year from an exempt well used for other (usually commercial non-irrigation) purposes.
8. If any water from a proposed well on a parcel of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant must submit a well site plan of the property. The plan must be on an 8½" x 11" piece of plain paper with representation of the locations of all structures and proximity of adjacent lot lines, to scale. It must include the county assessor's parcel identification number. The plan must show the proposed well location and the location of any septic tank or sewer system that is either located on the property or within one hundred feet of the proposed well site, as well as indicating the measured shortest distance between the proposed well and existing septic tank system. **The plan must demonstrate that the well will not be drilled within one hundred feet of any septic or sewer system.**
9. The site plan must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Endorsement by the county/local authority is based solely on the best available judgement that the proposed well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. In areas where there is no local or county authority that controls installation of septic tanks or sewer systems, or if the health authority is unable to determine whether the proposed well location complies with state and local requirements, the applicant must apply for approval directly to the Department of Water Resources.
10. If an individual other than the land owner or lessee signs this notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific notice on his or her behalf, must accompany the notice.
11. Please mail **two original Notices** with **original signatures** and **two site plans** and, in accordance with A.R.S. § 45-113, a **check or money order (no cash) in the amount of $10.00** to P. O. Box 458, Phoenix Arizona, 85001-0458, or hand deliver to 500 North Third Street, Phoenix, Arizona.
12. Arizona Revised Statute § 45-596(D) provides that the Director of the Department is to determine whether or not all information required on this form has been submitted. If not, the person filing the Notice will be notified, and the drilling or modification of the well may **not** proceed.
13. This form is not applicable for non-exempt wells (those yielding more than thirty-five gallons per minute) within an Active Management Area. Contact Groundwater Management for further information regarding the appropriate notice to file with the Department.

TIME FRAME FOR REVIEW OF YOUR APPLICATION

Within 15 days after receipt of your Notice of Intention the Arizona Department of Water Resources ("Department") will determine whether your application should be granted or denied, unless this time is extended for lack of a complete application. If your application is incomplete, the Department will notify you in writing and will specify what information is necessary to make the application complete. Until the missing information is received, the time frame for review of your application will be suspended. Your application will not be complete until all of the requested information is received. If you do not supply the missing information within sixty (60) days, the Department may deem your application withdrawn and close the file.

At the end of its review, the Department will send you a written notice either granting or denying your application for drilling authority. If your application is approved, the Drill Card will be mailed directly to the drilling contractor. If denied, the Department's notice will state justification for the denial and an explanation of your right to appeal.

CONSTRUCTION AND FOLLOW UP REQUIREMENTS

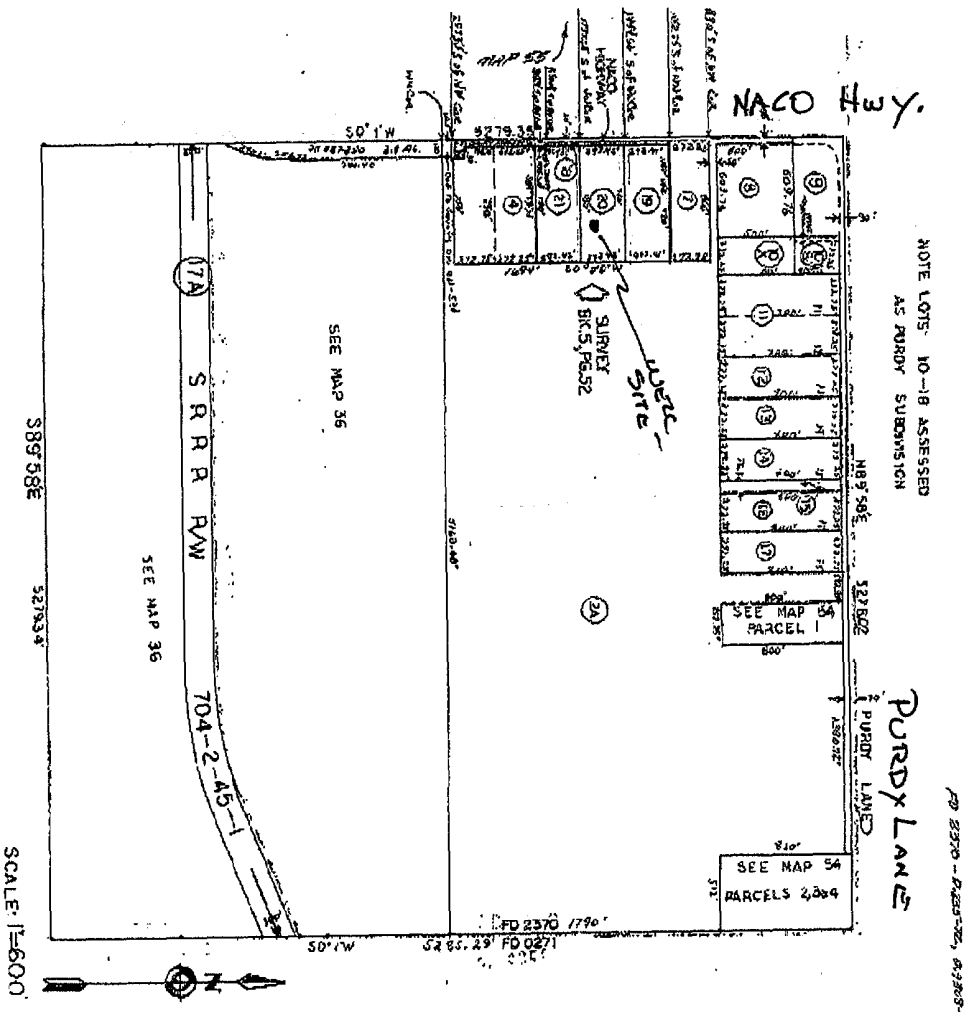
1. Construction and abandonment standards for wells, must be in accordance with Department Regulations. A.R.S. § 45-594 and Arizona Administrative Code R12-15-811 require the well to be constructed with a twenty foot steel surface seal casing, including a one foot steel stickup and one and one-half inches of grout seal around the casing from the surface to a depth of twenty feet, unless a variance is granted **(see A.R.S. § 45-596 (G) for procedure to follow in requesting a variance).**
2. Pursuant to § 45-596(E), the drilling, deepening or modification of the well must be completed within one year of the date of the Notice of Intent. If the well is not completed within one year, a new Notice of Intent must be filed before proceeding with further construction.
3. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use is later proposed to be converted to use for domestic purposes as defined in § 45-454, the well owner must file a Notice of Intention to Drill and comply with the requirements of § 45-596 before the well is converted and any water from that well is used for domestic purposes.
4. Within thirty days after installation of pumping equipment, the registered well owner must file a Completion Report with the Department. The person to whom a well is registered also must notify the Department of a change in ownership or a change in data relating to this well.

RECEIVED
AUG 2 2001
GROUNDWATER MGT

1-800-345-7334

SEC 17 TN 24 RG 24

BOOK 102
MAP 53



NOTE LOTS 10-18 ASSESSED AS PURDY SUBDIVISION

COUNTY ASSESSOR'S MAP

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

August 07, 2001

JANE DEE HULL
Governor
JOSEPH C. SMITH
Director

ERNEST ROGERS
PO BOX 608
NACO, AZ 85620

Registration No. 55-588270
File No. D(24-24) 17 BCB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

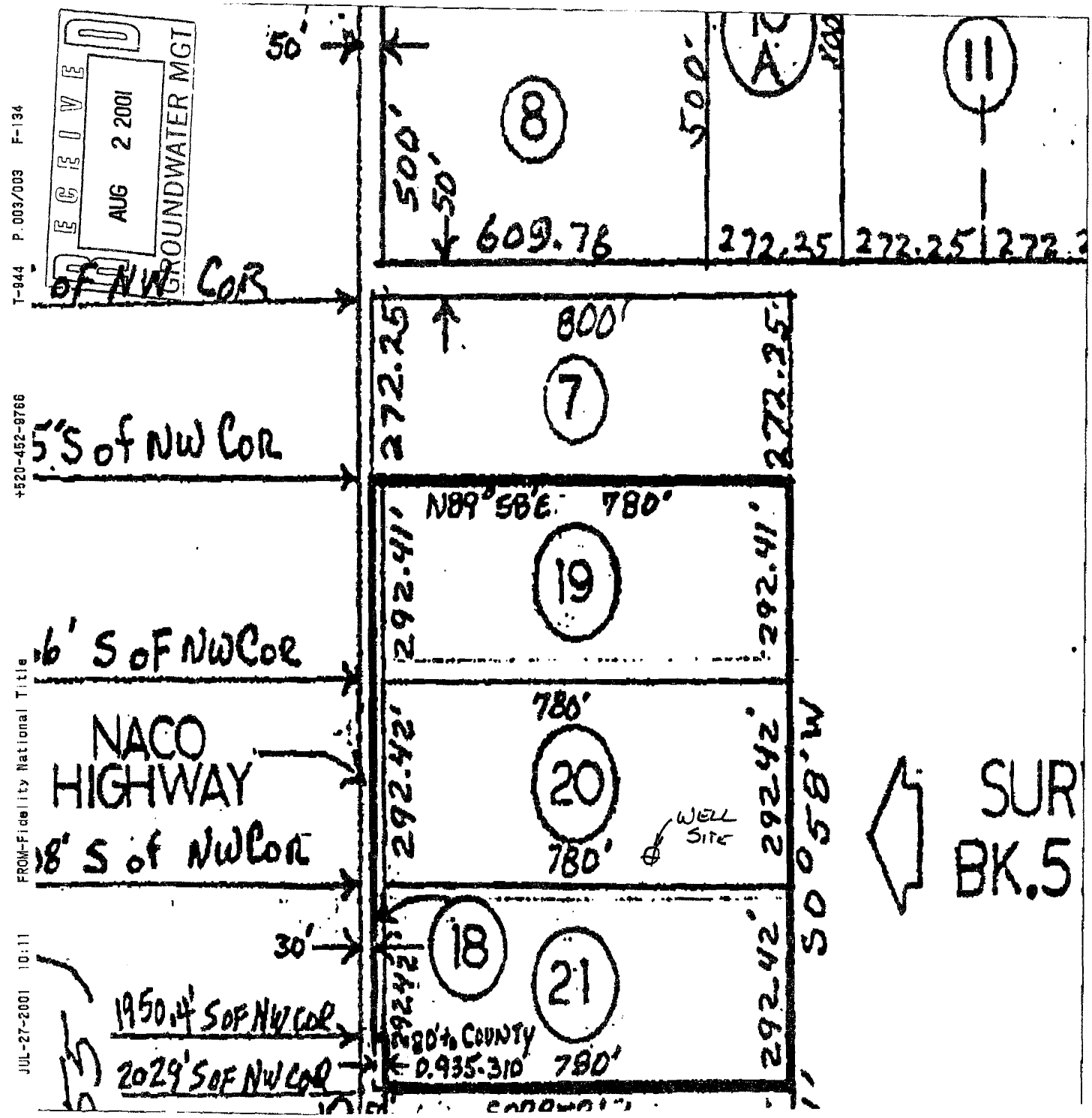
Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Toni Bergeman

Toni Bergeman
Water Resource Technician
Groundwater Management Support Section

Enclosures



JUL-27-2001 10:11 FROM-Fidelity National Title +520-452-9766 T-944 P.003/003 F-134

Pd ck "2152

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AUG 2 2001
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P. O. BOX 458, PHOENIX, ARIZONA 85001-0458
FOR MORE INFORMATION CALL: MONICA ORTIZ 602-417-2478
NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMISSION TO THE DEPARTMENT OF WATER RESOURCES. ITEMS C, D, E, AND F MAY BE AVAILABLE FROM YOUR COUNTY ASSESSOR'S OFFICE.

A. ERNEST M ROGERS (LANDOWNER'S NAME) P.O. BOX 608 (CURRENT MAILING ADDRESS) NACO (CITY) AZ (STATE) 85620 (ZIP)

B. TELEPHONE NO. 432-3861 COUNTY ASSESSOR'S PARCEL ID INFORMATION:

C. WELL LOCATED IN COCHISE COUNTY D. 102-53-019-020-021 (BOOK-MAP-PARCEL) E. 16 (# OF ACRES) OFFICIAL SEAL OR STAMP

WELL/LAND LOCATION (MUST BE COMPLETED AS REQUESTED):

F. NW ¼ (10AC) SW ¼ (40AC) NW ¼ (160AC) OF SECTION 17 TOWNSHIP 24 N/S RANGE 24 E/W

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

CHECK ONE:
G. RECOMMEND APPROVAL X ; INSUFFICIENT INFORMATION TO MAKE A DETERMINATION _____ ; VARIANCE REQUIRED _____ (EXPLANATION ATTACHED)

H. DATE 7/30/01 AUTHORIZED SIGNATURE John T. Tam TITLE Env. Health Spec.

OWNER OF WELL:

AME ERNEST M ROGERS
JRRENT MAILING ADDRESS P.O. BOX 608 NACO
TY STATE ZIP 85620
ELEPHONE NUMBER 432-3861

6. LESSEE OF LAND OF WELLSITE:

NAME
CURRENT MAILING ADDRESS
CITY STATE ZIP
TELEPHONE: - -

9. PLACE OF USE (LEGAL DESCRIPTION OF LAND):
NW ¼ (10AC) SW ¼ (40AC) NW ¼ (160AC) SECTION ____
TWNSHP _____ N/S RNG _____ E/W

10. TYPE OF WELL (CHECK ONE):
EXEMPT X NON-EXEMPT _____

TATE THAT THIS NOTICE IS FILED IN COMPLIANCE WITH A.R.S. § 45-596, IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT I UNDERSTAND
3 LIMITATIONS AND CONDITIONS SET FORTH ON THE REVERSE SIDE OF THIS FORM.

ERNEST M ROGERS (14. TYPE OR PRINT NAME AND TITLE) (15. SIGNATURE OF LANDOWNER/LESSEE OF WELLSITE) 7/27/01 (16. DATE)

VR 55-40 (REV 9/99)

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-588270

AUTHORIZED DRILLER: JS & K DRILLING, INC. LICENSE NO: 565

NOTICE OF INTENTION TO DRILL A EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: ERNEST ROGERS PO BOX 608 NACO, AZ 85620

The well(s) is/are to be located in the:

NW ¼ of the SW ¼ of the NW ¼ Section 17 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 1ST DAY OF AUGUST, 2002

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

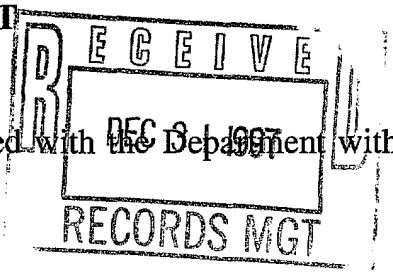
GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

[redacted]

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

35201108
TM-45

WELL DRILLER REPORT



This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. LANG EXPLORATORY DRILLING
   2286 W 1500 SOUTH
   SALT LAKE CITY UT 84104

2. Owner Name: PHELPS DODGE MINING COMPANY
   Address: 36 WEST HIGHWAY 92, BISBEE, AZ 85603
   City State Zip

3. Location: 23 N(S) 24 E(W) 27 ¼ SW ¼ SW ¼ NW ¼
   Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55- 564728 (Required)

5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 520 ft.
7. Type of casing FIBERGLASS
8. Diameter and length of casing 4-1/2 in. from 0 to 400, 4-1/2 in from 480 to 500
9. Method of sealing at reduction points _____
10. Perforated from _____ to _____, from _____ to _____ from _____ to _____
11. Size of cuts _____ Number of cuts per foot _____
12. If screen was installed: Length 80 ft. Diam 4-1/2 in. Type .040 SLOTTED
13. Method of construction DRILLED
    (drilled, dug, driven, bored, jetted, etc)
14. Date started 11-13-97
    Month Day Year
15. Date completed 11-17-97
    Month Day Year
16. Depth to water 415 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
    GROUND LEVEL
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DWR-55-55-7/95 (Rev.)

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-564728
File No. D(23-24)27 ~~BBC~~ bcc
Received _____ **By** _____
Entered _____ **By** _____

ENTERED JAN - 9 1998

35201108
TM-45

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	520	BASIN FILL - GRAVELS/SAND

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: ALAN LANG

2745 WEST CALIFORNIA AVENUE
Street

SALT LAKE CITY, UTAH 84104-4579 801-973-6667
City State Zip Phone No.

Alan Lang 12-12-79
Signature of Driller Date

D(23-24)27 BCC45

STATE OF ARIZONA
ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602)417-2470

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MAR 18 1998
RECORDS MGT

COMPLETION REPORT
(Pump Installation Report)

1. Per A.R.S. § 45-600, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.

2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.

3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

REGISTRATION NO: 55- 564728 **FILE NO:** D(23-24) 27 bcc

LOCATION OF THE WELL:

23	~~N/S~~	24	~~E/W~~	27	¼ SW	¼ SW	¼ NW
Township		Range		Section	10-acre	40-acre	160-acre

EQUIPMENT INSTALLED:

Kind of pump Submersible
Turbine, submersible, centrifugal, etc.

Kind of power Electric (Electric, natural gas, gasoline, etc.) H.P. Rating of Motor 1.5 H.P.

Pumping Capacity 4.9 Date Pump Installed 1/21/98

WELL TEST:

Test pumping capacity 4.9 Gallons per minute Date Well Tested: 3/3/98

Method of Discharge Measurement Flow determined by filling measured container
Weir, orifice, current meter, etc.

Static Groundwater Level 455 ft. Drawdown 40 ft.

Total Pumping Lift 495 ft. Drawdown _____ lbs.
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Phelps Dodge Corp.	36 W. Hwy 92	Bisbee	Ariz.	85603
Print Well Owner's Name	Address	City	State	Zip

Bob R Bullard (520) 432-3591
Signature of Well Owner (AGENT) Phone Number

DWR 55-56 (Rev 10/95)

ENTERED MAR 20 1998

55-564728

Richard N. (Rick) Mohr
Manager Environmental Services
Arizona Operations

phelps dodge Mining Company
Arizona Operations

orenci, Arizona 85540-9795 • (520) 865-4521

4521 U.S. Highway 191, Morenci, AZ 85540
(520) 865-4521, Ext. 6207
Fax: (520) 865-3861

Ms. Carol Norton
Arizona Department of Water Resources
500 North 3rd Street
Phoenix, Arizona 85004

Subject: Addendum to NOI Application

Dear Ms. Norton:

As a follow-up to your request, we have revised our response to item 15 of the Notice of Intent to Drill (NOI) to read *pursuant to Rule R12-15-816*, for the following Registration Numbers.

CTSA Monitor Wells	*	55-564726
	*	55-564727
	*	55-564728 D (23-24) 27 BCC
	*	55-564729
	*	55-564730
DRW Monitor Wells	*	55-564697
	*	55-564698
	*	55-564699
	*	55-564700

If you have any questions, please call.

Very truly yours,

Richard N Mohr

Mr. Richard N. Mohr
Manager Environmental Services,
Arizona Operations

cc: Mr. Stephen D. Noel, Southwest Ground-water Consultants, Inc.

RECEIVED
6 1997

DEP[illegible]TMENT OF WATER RESOUR[illegible]S
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 NORTH THIRD STREET, PHOENIX, ARIZONA 85004-3903
PHONE (602) 417-2470 FAX (602) 417-2422

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GROUNDWATER MGT

NOTICE OF INTENTION TO DRILL MONITOR/PIEZOMETER WELL

Section §45-596, Arizona Revised Statutes provide: Prior to drilling a monitor or piezometer well, a Notice of Intention to Drill shall be filed with the Department

1. **Well/land Location:**
   T 23 S (Township) *R 24 E* (Range) *27* (Section)
   SW ¼ (10 Acre) *SW* ¼ (40 Acre) *NW* ¼ (160 Acre)

2. **Position location of the well on the land:**
   Latitude *31* o *24* ' *07* "
   Longitude *109* o *54* ' *05* "

3. **County:** *Cohise*

4. **Owner of the land of wellsite:**
   Phelps Dodge Mining Co.
   Name
   36 West Highway 92
   Address
   Bisbee (City) *AZ* (State) *85603* (Zip)
   Phone Number *520 432 3621*

5. **Lessee of the land of wellsite:**
   Name
   Address
   City State Zip
   Phone Number

6. **Owner of well:**
   Phelps Dodge Mining Co.
   Name
   36 West Highway 92
   Address
   Bisbee (City) *AZ* (State) *85603* (Zip)
   Phone Number *520 432 3621*

7. **Consulting firm:**
   Southwest Ground-water Consult.
   Name
   Stephen Noel, P.G.
   Contact Person
   602 955 5547
   Phone Number

8. **Purpose of well drilled pursuant to this notice:**
   Monitor *X*
   Piezometer

9. **If for deepening or modifying, list well registration number:**
   55-

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No D(23-24)20bcc
Filed 9-19-97 By SW
Input By
NOV 12 1997
DUPLICATE
Mailed By SW
Registration 55-561728
AMA/INA
W/S 3 S/B

10. **Construction will start:**
    October (Month) *1* (Day) *1997* (Ye)

11. **Period well will remain in use:**
    Indefinate Months/Years

12. **For monitoring wells, is pump equipment to be installed?**
    Yes *X* No
    (a). If yes, design pump capacity:
    <35 gpm
    (b). What use will be made of the water *sample only*

13. **Drilling Firm:**
    Lang Exploratory Drilling
    Name
    2286 W. 1500 South
    Address
    Salt Lake City, UT *84104*
    City State Z
    801 973 9572
    Phone Number
    468
    DWR License Number
    C-53
    ROC License Category

14. **Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area hazardous material or petroleum storage areas and tanks?** Yes No *X*

15. **Proposed method of abandonment of well after project is completed:** *Abandonment is not anticipated, if well is abandoned it will be per ADWR rules*

16. **Is this well to monitor existing contamination?** ____ **Potential contamination** *X* **. Please explain:** *Well located in in vicinity of tailings impoundment*

GENERAL INSTRUCTIONS

1. Fill out this form in DUPLICATE AND SEND WITH $10.00 FEE to 500 North Third Street, Phoenix, Arizona 85004-3903.
2. For specific instructions, limitations and conditions, see the reverse side of this form.

I state that this Notice is filed in compliance with Rule A.A.C. R12-15-809 and R12-15-816(F), and is complete and correct to the best of knowledge and belief and that I understand the limitations and conditions set forth on the reverse side of this form.

Richard N. Mohr — Typed or Printed Name

Richard N Mohr — Signature [X] Land Owner [ ] Lessee of Wellsite

9.16.97 — Date

CONDITIONS

17. If construction plans have been coordinated with Arizona Department of Environmental Quality, who is the agency contact? *N/A*

If construction plans have been coordinated with Arizona Department of Water Resources, who is the agency contact? *N/A*

18. WELL CONSTRUCTION PLAN:

a) Drilling method (mud rotary, hollow-stem auger, etc.) *Air Rotary*

b) Borehole diameters: *14.75* inches from *0* feet to *20* feet.
7.875 inches rom *20* feet to *1030* feet.

c) Casing materials (PVC), steel, hollow-stem auger, etc.)

material *Low Carbon Steel* diameter *10* inches from *0* feet to *20* fe
material *Fiberglass* diameter *4* inches from *0* feet to *1030* fe

d) Method of sealing at reductions *N/A*

e) Annular seal materials (cement, grout, etc.,); method of placement (tremied, circulated):

material *Cement Grout* method *Tremie* from *0* feet to *20* fe
material *Bentonite Seal* method *Tremie* from *20* feet to *925* fe

f) Filter packs (state material):

material *8 - 12 Mesh Silica Sand* from *925* feet to *1030* fe
material from feet to fe

g) Perforations or screen specifications:

Type *4-inch fiberglass wire wrap, 0.040-inch slots* from *930* feet to *1010* fe
Type from feet to fe

h) Method of well development (bail, air lift, surge) *Air Lift, Surge*

i) Will surface or conductor casing extend above grade?: Yes *X* No

19. Include detailed construction diagram showing expected water depth in feet below land surface, and details of vault, if specified.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with A.A.C. R12-15-811 and R12-15-816.

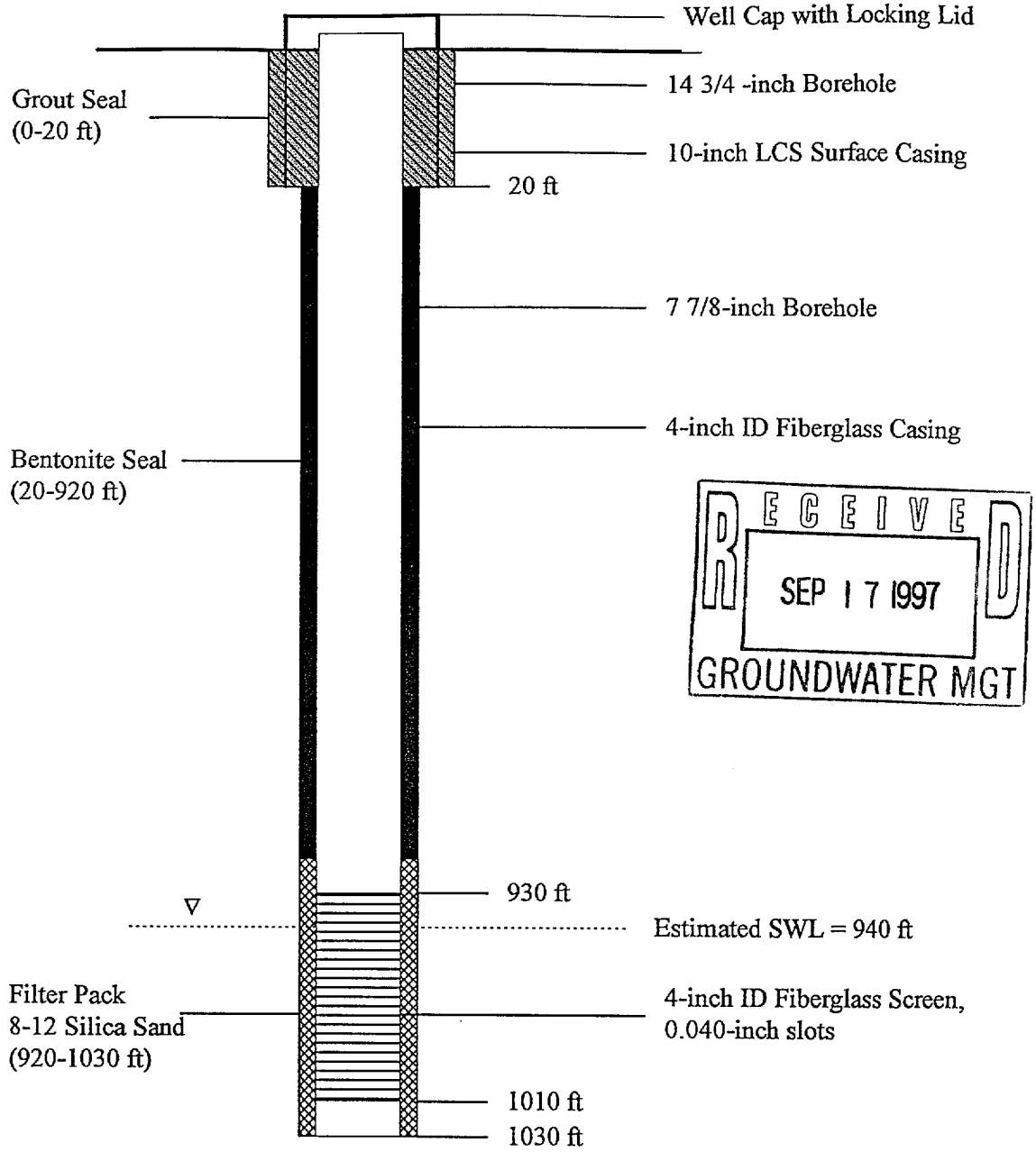
II. Drilling of the well shall be completed within one year after the date of Notice.

III. A Well Driller Report is required within thirty days of completion of drilling. A Completion Report is required to be filed with th Department within thirty days after installation of pump equipment for monitor wells.

IV. Pump equipment <u>may not</u> be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited the maximum amount required for monitor purposes, <u>but in no case may exceed 35 gallons per minute and an annual volume of 1 acre feet total</u>.

V. A.A.C. Rule R12-15-811.H.2, requires that: "A monitor well shall be identified as such on the vault cover or at the top of the steel casin Identification information will include well registration number."

VI. Special construction standards required pursuant to A.A.C. Rule R12-15-821:



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SEP 17 1997
GROUNDWATER MGT

-NOT TO SCALE

- CASING CENTALIZERS EVERY 100 FEET

Southwest Ground-water Consultants, Inc. **Project B.248 September 12, 1997**	**TM-43, TM-44, TM-45, and TM-46 Preliminary Design** **Phelps Dodge Corporation**	**Figure 1**

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

October 20, 1997

JANE DEE HULL
Governor

RITA P. PEARSON
Director

PHELPS DODGE MINING COMPANY
36 WEST HIGHWAY 92
BISBEE AZ 85603

RE: Registration No. 55-564726 THRU 55-564730
File No. VARIOUS

Dear Well Owner:

Enclosed for your records is an annotated copy of the Notice of Intention to Drill a well. This is returned to you as evidence of compliance with A.R.S. §45-596. A drilling card has been mailed to your designated driller. Prior to drilling he must have it in his possession.

Since this well is being drilled as a Monitor well, or for Cathodic Protection, Grounding, Geotechnical or Piezometer purposes, our standard driller report form is also being furnished to the driller. He is required to complete it and return it to the Department within 30 days after the completion of the well. A Completion Report form is being furnished for monitor wells where pump installation is authorized. This must be completed within thirty days of installation as required by A.R.S. §45-600.

A Change of Well Information form is enclosed for your future use . If you deem it necessary to change the location of the proposed well, please notify the Department on the enclosed form. A properly amended Drilling Card will then be issued and must be in possession of the driller before drilling begins. During the drilling of a new well, if it is determined that it must be abandoned, then a Well Abandonment Completion Report must be submitted per R12-15-816.F.

Per A.R.S. §45-593, the person to whom a well is registered shall notify this Department of a change of ownership of the well and/or information pertaining to the physical characteristics of the well, in order to keep the well registration file current and accurate.

Sincerely,

Sylvia Valdez
Water Resource Technician
Groundwater Management Support Section

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-564728

AUTHORIZED DRILLER: LANG EXPLORATORY DRILLING LICENSE NO: 468

NOTICE OF INTENTION TO DRILL A MONITOR WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

CONSULTANT: SOUTHWEST GROUND-WATER CONSULTANT

WELL OWNER: PHELPS DODGE MINING COMPANY 36 WEST HIGHWAY 92 BISBEE AZ 85603

The well(s) is/are to be located in the:

SW 1/4 of the SW 1/4 of the NW 1/4 Section 27 Township 23 SOUTH Range 24 EAST

No. of Wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 16TH DAY OF SEPTEMBER, 1998

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

SV

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

35201108
TM 44

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. LANG EXPLORATORY DRILLING
2286 W 1500 SOUTH
SALT LAKE CITY UT 84104

2. Owner Name: PHELPS DODGE MINING COMPANY
Address: 36 WEST HIGHWAY 92 BISBEE, AZ 85603
City State Zip

3. Location: 23 N/(S) 24 (E)/W 27 ¼ SW ¼ NW ¼ NE
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55- 564730 (Required)

5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 1150 ft.
7. Type of casing FIBERGLASS
8. Diameter and length of casing 4-1/2 in. from +3 to 1030 , 4-1/2 in from 1110 to 1130
9. Method of sealing at reduction points _____
10. Perforated from _____ to _____ , from _____ to _____ from _____ to _____
11. Size of cuts _____ Number of cuts per foot _____
12. If screen was installed: Length 80 ft. Diam 4-1/2 in. Type .040 SLOT
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started 10/22/97
Month Day Year
15. Date completed 10/26/97
Month Day Year
16. Depth to water 870 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
GROUND LEVEL
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DWR-55-55-7795 (Rev.)

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-564730
File No. D(23-24)27 ABC
Received _____ **By** _____
Entered _____ **By** _____

ENTERED DEC 0 4 1997

35201108
TM 44

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	2	TOP SOIL
2	1150	OLDER SEDIMENTARY BED ROCK

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: ALAN LANG

2745 WEST CALIFORNIA AVENUE
Street

SALT LAKE CITY, UTAH 84104-4579 801-973-6667
City State Zip Phone No.

Alan Lang 11-25-97
Signature of Driller Date

D(23-24) 27 ABC 44

STATE OF ARIZONA
ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602)417-2470

RECEIVED
MAR 18 1998
RECORDS MGT

COMPLETION REPORT
(Pump Installation Report)

1. Per A.R.S. § 45-600, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.

2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.

3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

REGISTRATION NO: 55- 564730 **FILE NO:** D(23-24) qbc

LOCATION OF THE WELL:

T23 ~~N~~ S	R24 ~~E~~ W	27	¼ SW	¼ NW	¼ NE
Township	Range	Section	10-acre	40-acre	160-acre

EQUIPMENT INSTALLED:

Kind of pump Submersible
Turbine, submersible, centrifugal, etc.

Kind of power Electric (Electric, natural gas, gasoline, etc.) H.P. Rating of Motor 3

Pumping Capacity 3.6 GPM Date Pump Installed 2/23/98

WELL TEST:

Test pumping capacity 4.16 Gallons per minute Date Well Tested: 2/23/98

Method of Discharge Measurement Flow determined by filling measured Container
Weir, orifice, current meter, etc.

Static Groundwater Level 865.2 ft. Drawdown 2.5 ft.

Total Pumping Lift 1,125 ft. Drawdown _____ lbs.
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Phelps Dodge Corp. 36 W. Hwy 92	Bisbee	Ariz	85603
Print Well Owner's Name Address	City	State	Zip

Bob R Bulland (Agent) (520) 432-3591
Signature of Well Owner Phone Number

DWR 55-56 (Rev 10/95)

ENTERED MAR 20 1998

ENTERED MAR 20 1998

55-564730

Richard N. (Rick) Mohr
Manager Environmental Services
Arizona Operations

phelps dodge Mining Company
Arizona Operations

orenci, Arizona 85540-9795 • (520) 865-4521

4521 U.S. Highway 191, Morenci, AZ 85540
(520) 865-4521, Ext. 6207
Fax: (520) 865-3861

Ms. Carol Norton
Arizona Department of Water Resources
500 North 3rd Street
Phoenix, Arizona 85004

Subject: Addendum to NOI Application

Dear Ms. Norton:

As a follow-up to your request, we have revised our response to item 15 of the Notice of Intent to Drill (NOI) to read *pursuant to Rule R12-15-816*, for the following Registration Numbers.

CTSA Monitor Wells	*	55-564726
	*	55-564727
	*	55-564728
	*	55-564729
	*	55-564730 D (23-24) 27 ABC
DRW Monitor Wells	*	55-564697
	*	55-564698
	*	55-564699
	*	55-564700

If you have any questions, please call.

Very truly yours,

Richard N Mohr

Mr. Richard N. Mohr
Manager Environmental Services,
Arizona Operations

cc: Mr. Stephen D. Noel, Southwest Ground-water Consultants, Inc.

RECEIVED
6 997

DEP TMENT OF WATER RESOUR S
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 NORTH THIRD STREET, PHOENIX, ARIZONA 85004-3903
PHONE (602) 417-2470 FAX (602) 417-2422

RECEIVED
SEP 17 1997
GROUNDWATER MGT

NOTICE OF INTENTION TO DRILL MONITOR/PIEZOMETER WELL

Section §45-596, Arizona Revised Statutes provide: Prior to drilling a monitor or piezometer well, a Notice of Intention to Drill shall be filed with the Departm

1. **Well/land Location:**
   T 23 S (Township) R 24 E (Range) 27 (Section)
   SW ¼ (10 Acre) NW ¼ (40 Acre) NE ¼ (160 Acre)

2. **Position location of the well on the land:**
   Latitude 31 o 24 ' 20 "
   Longitude 109 o 53 ' 34 "

3. **County:** Cohise

4. **Owner of the land of wellsite:**
   Phelps Dodge Mining Co.
   Name
   36 West Highway 92
   Address
   Bisbee AZ 85603
   City State Zip
   Phone Number 520 432 3621

5. **Lessee of the land of wellsite:**
   Name
   Address
   City State Zip
   Phone Number

6. **Owner of well:**
   Phelps Dodge Mining Co.
   Name
   36 West Highway 92
   Address
   Bisbee AZ 85603
   City State Zip
   Phone Number 520 432 3621

7. **Consulting firm:**
   Southwest Ground-water Consult.
   Name
   Stephen Noel, P.G.
   Contact Person
   602 955 5547
   Phone Number

8. **Purpose of well drilled pursuant to this notice:**
   Monitor X
   Piezometer

9. **If for deepening or modifying, list well registration number:**
   55-

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. D(23-24)22abc
Filed 9-17-97 By SU
Input By
NOV 12 1997
DUPLICATE
Mailed By SU
Registration 55-569130
AMA/INA
W/S 13 S/B

10. **Construction will start:**
    October (Month) 1 (Day) 1997 (Ye)

11. **Period well will remain in use:**
    Indefinate Months/Years

12. **For monitoring wells, is pump equipment to be installed?**
    Yes X No
    (a). If yes, design pump capacity:
    <35 gpm
    (b). What use will be made of the water sample only

13. **Drilling Firm:**
    Lang Exploratory Drilling
    Name
    2286 W. 1500 South
    Address
    Salt Lake City, UT 84104
    City State Z
    801 973 9572
    Phone Number
    468
    DWR License Number
    C-53
    ROC License Category

14. **Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area hazardous material or petroleum storage areas and tanks?** Yes No X

15. **Proposed method of abandonment of well after project is completed:** Abandonment not anticipated, if well is abandoned it will be per ADWR rules

16. **Is this well to monitor existing contamination?** ____ **Potential contamination** X **. Please explain:** Well located in in vicinity of tailings impoundment

GENERAL INSTRUCTIONS

1. Fill out this form in DUPLICATE AND SEND WITH $10.00 FEE to 500 North Third Street, Phoenix, Arizona 85004-3903.
2. For specific instructions, limitations and conditions, see the reverse side of this form.

I state that this Notice is filed in compliance with Rule A.A.C. R12-15-809 and R12-15-816(F), and is complete and correct to the best of knowledge and belief and that I understand the limitations and conditions set forth on the reverse side of this form.

Richard N. Mohr — Richard N Mohr — 9-16-97

Typed or Printed Name | Signature [X] Land Owner [ ] Lessee of Wellsite | Date

CONDITIONS

17. If construction plans have been coordinated with Arizona Department of Environmental Quality, who is the agency contact? *N/A*

If construction plans have been coordinated with Arizona Department of Water Resources, who is the agency contact? *N/A*

18. WELL CONSTRUCTION PLAN:

a) Drilling method (mud rotary, hollow-stem auger, etc.) *Air Rotary*

b) Borehole diameters: *14.75* inches from *0* feet to *20* feet.
7.875 inches rom *20* feet to *1030* feet.

c) Casing materials (PVC), steel, hollow-stem auger, etc.)

material *Low Carbon Steel* diameter *10* inches from *0* feet to *20* fe
material *Fiberglass* diameter *4* inches from *0* feet to *1030* fe

d) Method of sealing at reductions *N/A*

e) Annular seal materials (cement, grout, etc.,); method of placement (tremied, circulated):

material *Cement Grout* method *Tremie* from *0* feet to *20* fe
material *Bentonite Seal* method *Tremie* from *20* feet to *925* fe

f) Filter packs (state material):

material *8 - 12 Mesh Silica Sand* from *925* feet to *1030* fe
material from feet to fe

g) Perforations or screen specifications:

Type *4-inch fiberglass wire wrap, 0.040-inch slots* from *930* feet to *1010* fe
Type from feet to fe

h) Method of well development (bail, air lift, surge) *Air Lift, Surge*

i) Will surface or conductor casing extend above grade?: Yes *X* No

19. Include detailed construction diagram showing expected water depth in feet below land surface, and details of vault, if specified.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with A.A.C. R12-15-811 and R12-15-816.

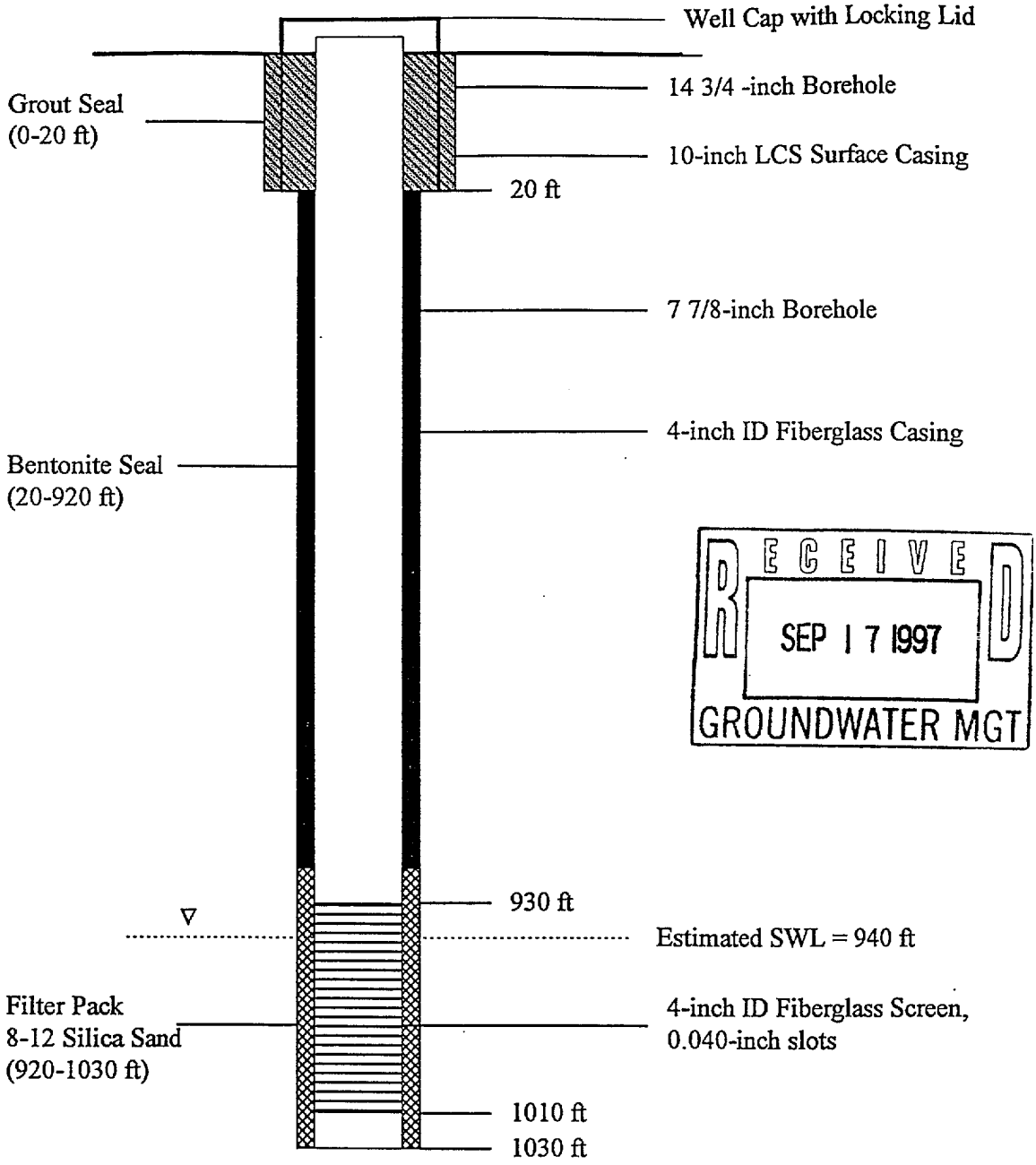
II. Drilling of the well shall be completed within one year after the date of Notice.

III. A Well Driller Report is required within thirty days of completion of drilling. A Completion Report is required to be filed with th Department within thirty days after installation of pump equipment for monitor wells.

IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited t the maximum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual volume of 1 acre feet total.

V. A.A.C. Rule R12-15-811.H.2, requires that: "A monitor well shall be identified as such on the vault cover or at the top of the steel casin Identification information will include well registration number."

VI. Special construction standards required pursuant to A.A.C. Rule R12-15-821:



RECEIVED
SEP 17 1997
GROUNDWATER MGT

-NOT TO SCALE

- CASING CENTALIZERS EVERY 100 FEET

Southwest Ground-water Consultants, Inc. **Project B.248 September 12, 1997**	**TM-43, TM-44, TM-45, and TM-46 Preliminary Design** **Phelps Dodge Corporation**	**Figure 1**

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

October 20, 1997

JANE DEE HULL
Governor

RITA P. PEARSON
Director

PHELPS DODGE MINING COMPANY
36 WEST HIGHWAY 92
BISBEE AZ 85603

RE: Registration No. 55-564726 THRU 55-564730
File No. VARIOUS

Dear Well Owner:

Enclosed for your records is an annotated copy of the Notice of Intention to Drill a well. This is returned to you as evidence of compliance with A.R.S. §45-596. A drilling card has been mailed to your designated driller. Prior to drilling he must have it in his possession.

Since this well is being drilled as a Monitor well, or for Cathodic Protection, Grounding, Geotechnical or Piezometer purposes, our standard driller report form is also being furnished to the driller. He is required to complete it and return it to the Department within 30 days after the completion of the well. A Completion Report form is being furnished for monitor wells where pump installation is authorized. This must be completed within thirty days of installation as required by A.R.S. §45-600.

A Change of Well Information form is enclosed for your future use . If you deem it necessary to change the location of the proposed well, please notify the Department on the enclosed form. A properly amended Drilling Card will then be issued and must be in possession of the driller before drilling begins. During the drilling of a new well, if it is determined that it must be abandoned, then a Well Abandonment Completion Report must be submitted per R12-15-816.F.

Per A.R.S. §45-593, the person to whom a well is registered shall notify this Department of a change of ownership of the well and/or information pertaining to the physical characteristics of the well, in order to keep the well registration file current and accurate.

Sincerely,

Sylvia Valdez
Water Resource Technician
Groundwater Management Support Section

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-564730

AUTHORIZED DRILLER: LANG EXPLORATORY DRILLING LICENSE NO: 468

NOTICE OF INTENTION TO DRILL A MONITOR WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

CONSULTANT: SOUTHWEST GROUND-WATER CONSULTANT

WELL OWNER: PHELPS DODGE MINING COMPANY 36 WEST HIGHWAY 92 BISBEE AZ 85603

The well(s) is/are to be located in the:

SW 1/4 of the NW 1/4 of the NE 1/4 Section 27 Township 23 SOUTH Range 24 EAST

No. of Wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 16TH DAY OF SEPTEMBER, 1998

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

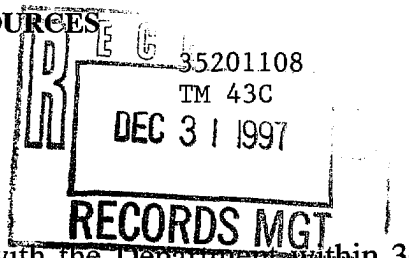
GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

sv

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

WELL DRILLER REPORT



This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. LANG EXPLORATORY DRILLING
   2286 W 1500 SOUTH
   SALT LAKE CITY, UT 84104-4126

2. Owner Name: PHELPS DODGE MINING CO.
   Address: 36 WEST HIGHWAY 92, BISBEE, AZ 85603
   City **State** **Zip**

3. Location: 23 N/S 24 E/W 27 ¼ SE ¼ SE ¼ NE
   Township **Range** **Section** **10-acre** **40-acre** **160-acre**

4. Well Registration No. 55-565005 (Required)

5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 270 ft.
7. Type of casing PVC
8. Diameter and length of casing 5 in. from 0 to 199, 5 in from 239 to 259
9. Method of sealing at reduction points _____
10. Perforated from _____ to _____, from _____ to _____ from _____ to _____
11. Size of cuts _____ Number of cuts per foot _____
12. If screen was installed: Length 40 ft. Diam 5 in. Type .040 SLOT PVC
13. Method of construction DRILLED
    (drilled, dug, driven, bored, jetted, etc)
14. Date started 11-11-97
    Month **Day** **Year**
15. Date completed 11-12-97
    Month **Day** **Year**
16. Depth to water 210 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
    GROUND LEVEL
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DWR-55-55-7/95 (Rev.)

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-565005
File No. D(23-24)27 ADD
Received _____ **By** _____
Entered _____ **By** _____

ENTERED JAN - 8 1998

35201108
TM 43C

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	50	alluvium (sand & gravel)
50	270	mudstone (hard - red)

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: ALAN LANG

2745 WEST CALIFORNIA AVENUE
Street

SALT LAKE CITY, UTAH 84104-4579 801-973-6667
City State Zip Phone No.

Alan Lang 12-12-97
Signature of Driller Date

43C

D(23-24)27 ADD

STATE OF ARIZONA
ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602)417-2470

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MAR 18 1998
RECORDS MGT

COMPLETION REPORT
(Pump Installation Report)

1. Per A.R.S. § 45-600, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.

2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.

3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

REGISTRATION NO: 55- 565005 **FILE NO:** D(23-24) 27Add

LOCATION OF THE WELL:

23 (N/S) 24 (E/W) 27 ¼ SE ¼ SE ¼ NE
Township Range Section 10-acre 40-acre 160-acre

EQUIPMENT INSTALLED:

Kind of pump Submersible
Turbine, submersible, centrifugal, etc.

Kind of power Electric H.P. Rating of Motor ½ HP
(Electric, natural gas, gasoline, etc.)

Pumping Capacity 6.3 Date Pump Installed 1/20/98

WELL TEST:

Test pumping capacity 6.3 Date Well Tested: 1/29/98
Gallons per minute

Method of Discharge Measurement Flow determined by pumping into measured Container
Weir, orifice, current meter, etc.

Static Groundwater Level 72.6 ft. Drawdown 132.4 ft.

Total Pumping Lift 205 ft. Drawdown _____ lbs.
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Phelps Dodge Corp. 36 W. Hwy. 92 Bisbee Ariz. 85603
Print Well Owner's Name Address City State Zip

Bob R Bullard (520)432-3591
Signature of Well Owner Phone Number

DWR 55-56 (Rev 10/95)

ENTERED MAR 20 1998

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 NORTH THIRD STREET, PHOENIX, ARIZONA 85004-3903
PHONE (602) 417-2470 FAX (602) 417-2422

RECEIVED
OCT - 9 1997
GROUNDWATER MGT

NOTICE OF INTENTION TO DRILL MONITOR/PIEZOMETER WELL

Section §45-596, Arizona Revised Statutes provide: Prior to drilling a monitor or piezometer well, a Notice of Intention to Drill shall be filed with the Departme

1. Well/land Location:
T23S R24E 27
Township Range Section
SE ¼ SE ¼ NE ¼
10 Acre 40 Acre 160 Acre

2. Position location of the well on the land:
Latitude 31 o 24 · 06 "
Longitude 109 o 53 · 09 "

3. County: Cochise

4. Owner of the land of wellsite:
Phelps Dodge Mining Co.
Name
36 West Highway 92
Address
Bisbee Az 85603
City State Zip
Phone Number 520-432-3621

5. Lessee of the land of wellsite:
Name
Address
City State Zip
Phone Number

6. Owner of well:
Phelps Dodge Mining Co.
Name
36 West Highway 92
Address
Bisbee Az 85603
City State Zip
Phone Number 520-432-3621

7. Consulting firm:
Southwest Groundwater Consult.
Name
Stephen Noel P.G.
Contact Person
602-955-5547
Phone Number

8. Purpose of well drilled pursuant to this notice:
Monitor X
Piezometer

9. If for deepening or modifying, list well registration number:
55-

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. 19(23-24)27 AQL
Filed 10-9-97 By CB
Input NOV 12 1997 By
DUPLICATE
Mailed 10-21-97 By CB
Registration 55-565005
AMA/INA —
W/S II S/B —

10. Construction will start:
10 25 97
Month Day Year

11. Period well will remain in use:
Indefinite Months/Years

12. For monitoring wells, is pump equipment to be installed?
Yes X No

(a). If yes, design pump capacity:
< 35 gpm

(b). What use will be made of the water Sample only

13. Drilling Firm:
Lang Exploratory Drilling
Name
2286 W. 1500 South
Address
Salt Lake City Ut. 84104
City State Zip
801 973 9572
Phone Number
468
DWR License Number
C-53
ROC License Category

14. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous material or petroleum storage areas and tanks? Yes No X

15. Proposed method of abandonment of well after project is completed: Pursuant to ADWR rule R12-15-816

16. Is this well to monitor existing contamination? ____ Potential contamination X. Please explain: Well located in vicinity of tailings impoundment

GENERAL INSTRUCTIONS

1. Fill out this form in DUPLICATE AND SEND WITH $10.00 FEE to 500 North Third Street, Phoenix, Arizona 85004-3903.
2. For specific instructions, limitations and conditions, see the reverse side of this form.

I state that this Notice is filed in compliance with Rule A.A.C. R12-15-809 and R12-15-816(F), and is complete and correct to the best of knowledge and belief and that I understand the limitations and conditions set forth on the reverse side of this form.

RICHARD N MOHR — Richard N Mohr — 10.8.97
Typed or Printed Name — Signature [ ] Land Owner [ ] Lessee of Wellsite — Date

CONDITIONS

17. If construction plans have been coordinated with Arizona Department of Environmental Quality, who is the agency contact?_____

If construction plans have been coordinated with Arizona Department of Water Resources, who is the agency contact?_____

18. **WELL CONSTRUCTION PLAN:**

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air Rotary

b) Borehole diameters: 14.75 inches from 0 feet to 20 feet.
7.875 inches rom 20 feet to 210 feet.

c) Casing materials (PVC), steel, hollow-stem auger, etc.)

material Low Carbon Steel diameter 10 inches from 0 feet to 20 fe
material Schedule 80 PVC diameter 4.5 inches from 0 feet to 210 fe

d) Method of sealing at reductions N/A

e) Annular seal materials (cement, grout, etc.,); method of placement (tremied, circulated):

material Cement Grout method Tremie from 0 feet to 20 fe
material Bentonite Seal method Tremie from 20 feet to 150 fe

f) Filter packs (state material):

material 12-20 mesh Silica Sand from 150 feet to 210 fe
material _____ from _____ feet to _____ fe

g) Perforations or screen specifications:

Type 4.5 inch schedule 80 PVC, wire wrap 0.04 inch slots from _____ feet to _____ fe
Type _____ from _____ feet to _____ fe

h) Method of well development (bail, air lift, surge) Air Lift, Surge

i) Will surface or conductor casing extend above grade?: Yes X No____

19. Include detailed construction diagram showing expected water depth in feet below land surface, and details of vault, if specified.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with A.A.C. R12-15-811 and R12-15-816.

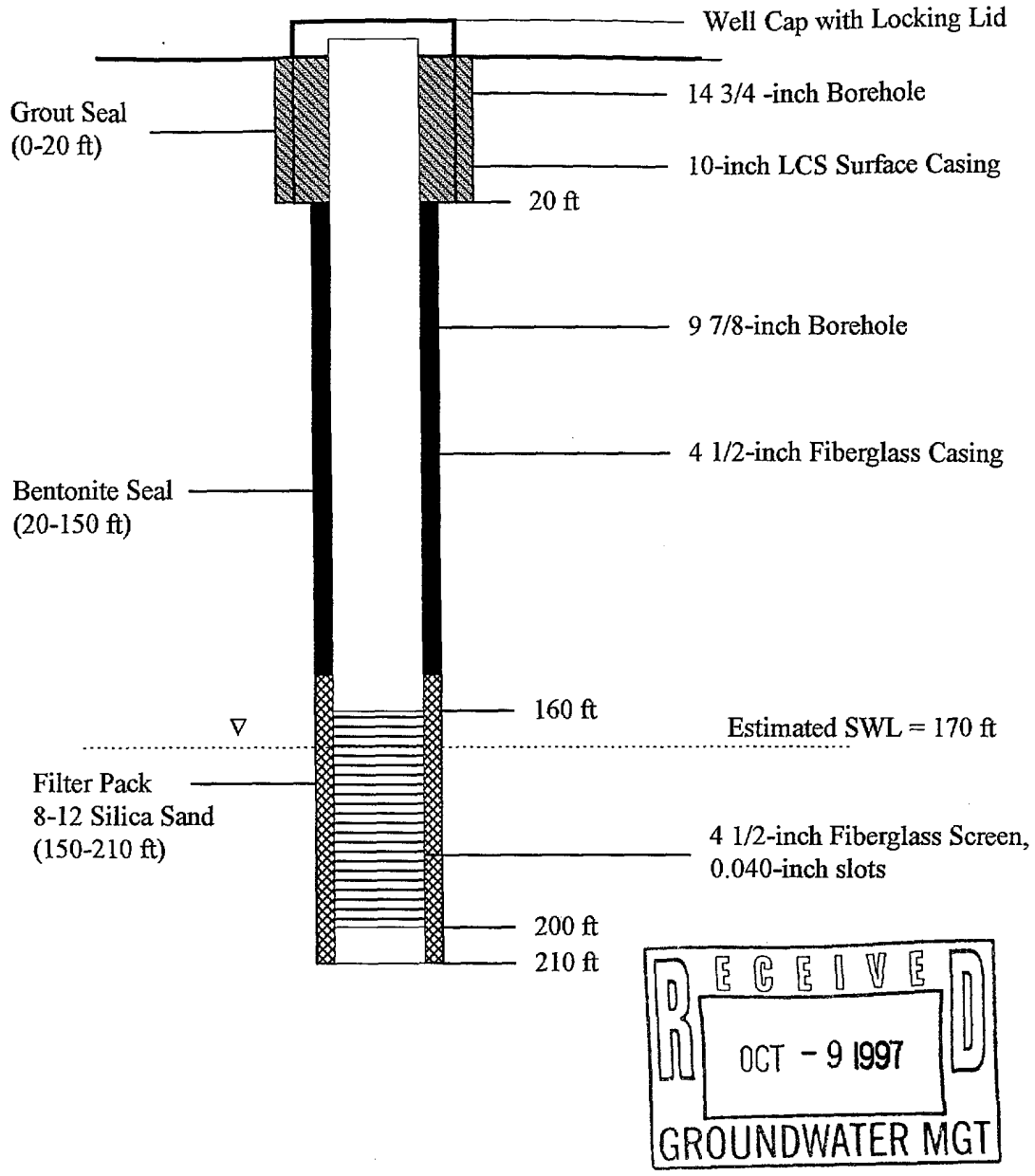
II. Drilling of the well shall be completed within one year after the date of Notice.

III. A Well Driller Report is required within thirty days of completion of drilling. A Completion Report is required to be filed with th Department within thirty days after installation of pump equipment for monitor wells.

IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited t the maximum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual volume of 1 acre feet total.

V. A.A.C. Rule R12-15-811.H.2, requires that: "A monitor well shall be identified as such on the vault cover or at the top of the steel casing Identification information will include well registration number."

VI. Special construction standards required pursuant to A.A.C. Rule R12-15-821: _____



RECEIVED
OCT - 9 1997
GROUNDWATER MGT

-NOT TO SCALE

Southwest Ground-water Consultants, Inc. **Project B.248 October 9, 1997**	**TM-43b and TM-43c Preliminary Design** **Phelps Dodge Corporation**	**Figure 1**

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

October 21, 1997

JANE DEE HULL
Governor

RITA P. PEARSON
Director

PHELPS DODGE MINING CO
36 WEST HIGHWAY 92
BISBEE, AZ 85603

RE: Registration No. 55-565004 THROUGH 55-565005
File No. VARIOUS

Dear Well Owner:

Enclosed for your records is an annotated copy of the Notice of Intention to Drill a well. This is returned to you as evidence of compliance with A.R.S. §45-596. A drilling card has been mailed to your designated driller. Prior to drilling he must have it in his possession.

Since this well is being drilled as a Monitor well, or for Cathodic Protection, Grounding, Geotechnical or Piezometer purposes, our standard driller report form is also being furnished to the driller. He is required to complete it and return it to the Department within 30 days after the completion of the well. A Completion Report form is being furnished for monitor wells where pump installation is authorized. This must be completed within thirty days of installation as required by A.R.S. §45-600.

A Change of Well Information form is enclosed for your future use . If you deem it necessary to change the location of the proposed well, please notify the Department on the enclosed form. A properly amended Drilling Card will then be issued and must be in possession of the driller before drilling begins. During the drilling of a new well, if it is determined that it must be abandoned, then a Well Abandonment Completion Report must be submitted per R12-15-816.F.

Per A.R.S. §45-593, the person to whom a well is registered shall notify this Department of a change of ownership of the well and/or information pertaining to the physical characteristics of the well, in order to keep the well registration file current and accurate.

Sincerely,

Toni M. Bergeman

Toni M. Bergeman
Water Resource Technician
Groundwater Management Support Section

VARIANCE CHECKLIST
HYDROLOGY

DATE RECEIVED: 10/9/97 POTENTIAL REG. NO. 55-_____
DATE TO HYDRO: 10/14/97 10-15-97
DATE TO GWMSS: 10-15-97 55-565004 THRU 55-565005

FRONT OF N.O.I. COMPLETE/CORRECT: (YES) NO

REQUEST FOR VARIANCE RECEIVED: YES (NO)

DIAGRAM/SITE PLAN RECEIVED: (YES) NO

TYPE AND NUMBER OF WELLS:

- 2 MONITOR
- ____ PIEZOMETER
- ____ GEOTECHNICAL
- ____ MINERAL EXPLORATION
- ____ WATER PRODUCTION
- ____ CATHODIC PROTECTION
- ____ GROUNDING
- ____ HEAT PUMP
- ____ OTHER _____ (DESCRIBE TYPE OF WELL)

VARIANCE: (PLEASE CHECK APPROPRIATE BLOCKS)

- ____ REQUIRED
- √ NOT REQUIRED
- ____ GRANTED
- ____ NOT GRANTED
- ____ LETTER ISSUED

ATTENTION NOTICE OF INTENT TEAM:

- ____ HARD COPY OF LETTER TO FOLLOW
- ____ CALL FOR PICKUP

COMMENTS:

GWMSS REVIEWER: YB HYDRO REVIEWER: _____

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-565005

AUTHORIZED DRILLER: LANG EXPLORATORY DRILLING LICENSE NO: 468

NOTICE OF INTENTION TO DRILL MONITOR WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

CONSULTANT: SOUTHWEST GROUNDWATER CONSULTANTS

WELL OWNER: PHELPS DODGE MINING CO 36 WEST HIGHWAY 92 BISBEE, AZ 85603

The well(s) is/are to be located in the:

SE 1/4 of the SE 1/4 of the NE 1/4 Section 27 Township 23 SOUTH Range 24 EAST

No. of Wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 8TH DAY OF OCTOBER, 1998

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

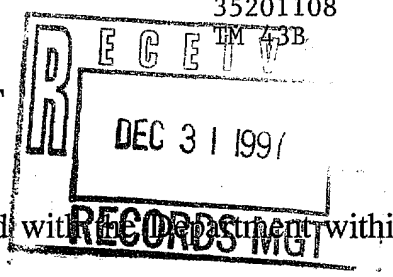
TB

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street
Phoenix, Arizona 85004

WELL DRILLER REPORT

35201108
TM 43B



This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. LANG EXPLORATORY DRILLING
   2286 W 1500 SOUTH
   SALT LAKE CITY, UT 84104-4126

2. Owner Name: PHELPS DODGE MINING CO.
   Address: 36 WEST HIGHWAY 92, BISBEE, AZ 85603
   City **State** **Zip**

3. Location: 23 N/S 24 E/W 27 ¼ SE ¼ NE ¼ SE
   Township **Range** **Section** **10-acre** **40-acre** **160-acre**

4. Well Registration No. 55- 565004 (Required)

5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 215 ft.
7. Type of casing 5" PVC SCH 80
8. Diameter and length of casing 5 in. from 0 to 150 , 5 in from 190 to 210
9. Method of sealing at reduction points _____
10. Perforated from _____ to _____ ,from _____ to _____ from _____ to _____
11. Size of cuts _____ Number of cuts per foot _____
12. If screen was installed: Length 40 ft. Diam 5 in. Type .040 SLOT
13. Method of construction DRILLED
    (drilled, dug, driven, bored, jetted, etc)
14. Date started 10-28-97
    Month **Day** **Year**
15. Date completed 10-29-97
    Month **Day** **Year**
16. Depth to water 170 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
    GROUND LEVEL
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DWR-55-55-7/95 (Rev.)

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-565004
File No. D(23-24)27 DAD
Received _____ **By** _____
Entered _____ **By** _____

ENTERED JAN - 9 1998

35201108
TM43B

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	80	alluvium (clayey gravel)
80	215	mudstone (hard - red)

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: ALAN LANG

2745 WEST CALIFORNIA AVENUE
Street

SALT LAKE CITY, UTAH 84104-4579 801-973-6667
City State Zip Phone No.

Alan Lang 12-12-97
Signature of Driller Date

D(23-24)27 DAD

STATE OF ARIZONA
ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602)417-2470

RECEIVED
MAR 18 1998
RECORDS MGT

COMPLETION REPORT
(Pump Installation Report)

1. Per A.R.S. § 45-600, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.

2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.

3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

REGISTRATION NO: 55- 565004 **FILE NO:** D(23-24)27DAD

LOCATION OF THE WELL:

23	24	27	¼ SE	¼ NE	¼ SE
Township	Range	Section	10-acre	40-acre	160-acre

EQUIPMENT INSTALLED:

Kind of pump: Submersible
(Turbine, submersible, centrifugal, etc.)

Kind of power: Electric (Electric, natural gas, gasoline, etc.) H.P. Rating of Motor: ½

Pumping Capacity: 5.75 Date Pump Installed: 1/19/98

WELL TEST:

Test pumping capacity: 6.00 Gallons per minute Date Well Tested: 1/19/98

Method of Discharge Measurement: Flow determined by filling measured container
(Weir, orifice, current meter, etc.)

Static Groundwater Level: 165 ft. Drawdown: 40' ft.

Total Pumping Lift: 205' ft. Drawdown: lbs.
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Phelps Dodge Corp	36 W. Hwy. 92	Bisbee	Ariz.	85603
Print Well Owner's Name	Address	City	State	Zip

Bob R Bullard (Agent) (520) 432-3591
Signature of Well Owner Phone Number

DWR 55-56 (Rev 10/95)

ENTERED MAR 20 1998

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 NORTH THIRD STREET, PHOENIX, ARIZONA 85004-3903
PHONE (602) 417-2470 FAX (602) 417-2422

RECEIVED
OCT - 9 1997
GROUNDWATER MGT

NOTICE OF INTENTION TO DRILL MONITOR/PIEZOMETER WELL

Section §45-596, Arizona Revised Statutes provide: Prior to drilling a monitor or piezometer well, a Notice of Intention to Drill shall be filed with the Departme

1. Well/land Location:
T23S R24E 27
Township Range Section
SE ¼ NE ¼ SE ¼
10 Acre 40 Acre 160 Acre

2. Position location of the well on the land:
Latitude 31 o 23 · 55 "
Longitude 109 o 53 · 06 "

3. County: Cochise

4. Owner of the land of wellsite:
Phelps Dodge Mining Co.
Name
36 west Highway 92
Address
Bisbee Az 85603
City State Zip
Phone Number 520 432 3621

5. Lessee of the land of wellsite:
Name
Address
City State Zip
Phone Number –

6. Owner of well:
Phelps Dodge Mining Co.
Name
36 west Highway 92
Address
Bisbee Az 85603
City State Zip
Phone Number 520-432-3621

7. Consulting firm:
Southwest Ground-water Consult.
Name
Stephen Noel P.G.
Contact Person
602-955-5547
Phone Number

8. Purpose of well drilled pursuant to this notice:
Monitor X
Piezometer

9. If for deepening or modifying, list well registration number:
55-

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. D(23-24) 87dad
Filed 10-9-97 By WB
Input By
NOV 1 8 1997
DUPLICATE
Mailed 10-21-97 By WB
Registration 55-565004
AMA/INA
W/S II S/B

10. Construction will start:
10 25 97
Month Day Year

11. Period well will remain in use:
Indefinite Months/Years

12. For monitoring wells, is pump equipment to be installed?
Yes X No

(a). If yes, design pump capacity:
∠ 35 gpm

(b). What use will be made of the water Sample only

13. Drilling Firm:
Lang Exploratory Drilling
Name
2286 W. 1500 South
Address
Salt Lake City Ut. 84104
City State Zi
801-973-9572 4126
Phone Number
468
DWR License Number
C-53
ROC License Category

14. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area hazardous material or petroleum storage areas and tanks? Yes No X

15. Proposed method of abandonment of well after project is completed: Pursuant to ADWR rule R12-15-816

16. Is this well to monitor existing contamination? Potential contamination X. Please explain: Well located in vicinity of tailings impoundment

GENERAL INSTRUCTIONS

1. Fill out this form in DUPLICATE AND SEND WITH $10.00 FEE to 500 North Third Street, Phoenix, Arizona 85004-3903.
2. For specific instructions, limitations and conditions, see the reverse side of this form.

I state that this Notice is filed in compliance with Rule A.A.C. R12-15-809 and R12-15-816(F), and is complete and correct to the best of knowledge and belief and that I understand the limitations and conditions set forth on the reverse side of this form.

RICHARD N. MOHR — Richard N Mohr — 10.8.97
Typed or Printed Name — Signature [ ] Land Owner [ ] Lessee of Wellsite — Date

CONDITIONS

17. If construction plans have been coordinated with Arizona Department of Environmental Quality, who is the agency contact?_____

If construction plans have been coordinated with-Arizona Department of Water Resources, who is the agency contact?_____

18. **WELL CONSTRUCTION PLAN:**

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air Rotary

b) Borehole diameters: 14.75 inches from 0 feet to 20 feet.
7.875 inches rom 20 feet to 210 feet.

c) Casing materials (PVC), steel, hollow-stem auger, etc.)

material Low Carbon Steel diameter 10 inches from 0 feet to 20 fe
material Schedule 80 PVC diameter 4.5 inches from 0 feet to 210 fe

d) Method of sealing at reductions N/A

e) Annular seal materials (cement, grout, etc.,); method of placement (tremied, circulated):

material Cement Grout method Tremie from 0 feet to 20 fe
material Bentonite Seal method Tremie from 20 feet to 150 fe

f) Filter packs (state material):

material 12-20 mesh silica Sand from 150 feet to 210 fe
material _____ from _____ feet to _____ fe

g) Perforations or screen specifications:

Type 4.5inch Sched 80 PVC, wirewrap 0.04inch slots from 160 feet to 200 fe
Type _____ from _____ feet to _____ fe

h) Method of well development (bail, air lift, surge) Air Lift, Surge

i) Will surface or conductor casing extend above grade?: Yes X No____

19. Include detailed construction diagram showing expected water depth in feet below land surface, and details of vault, if specified.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with A.A.C. R12-15-811 and R12-15-816.

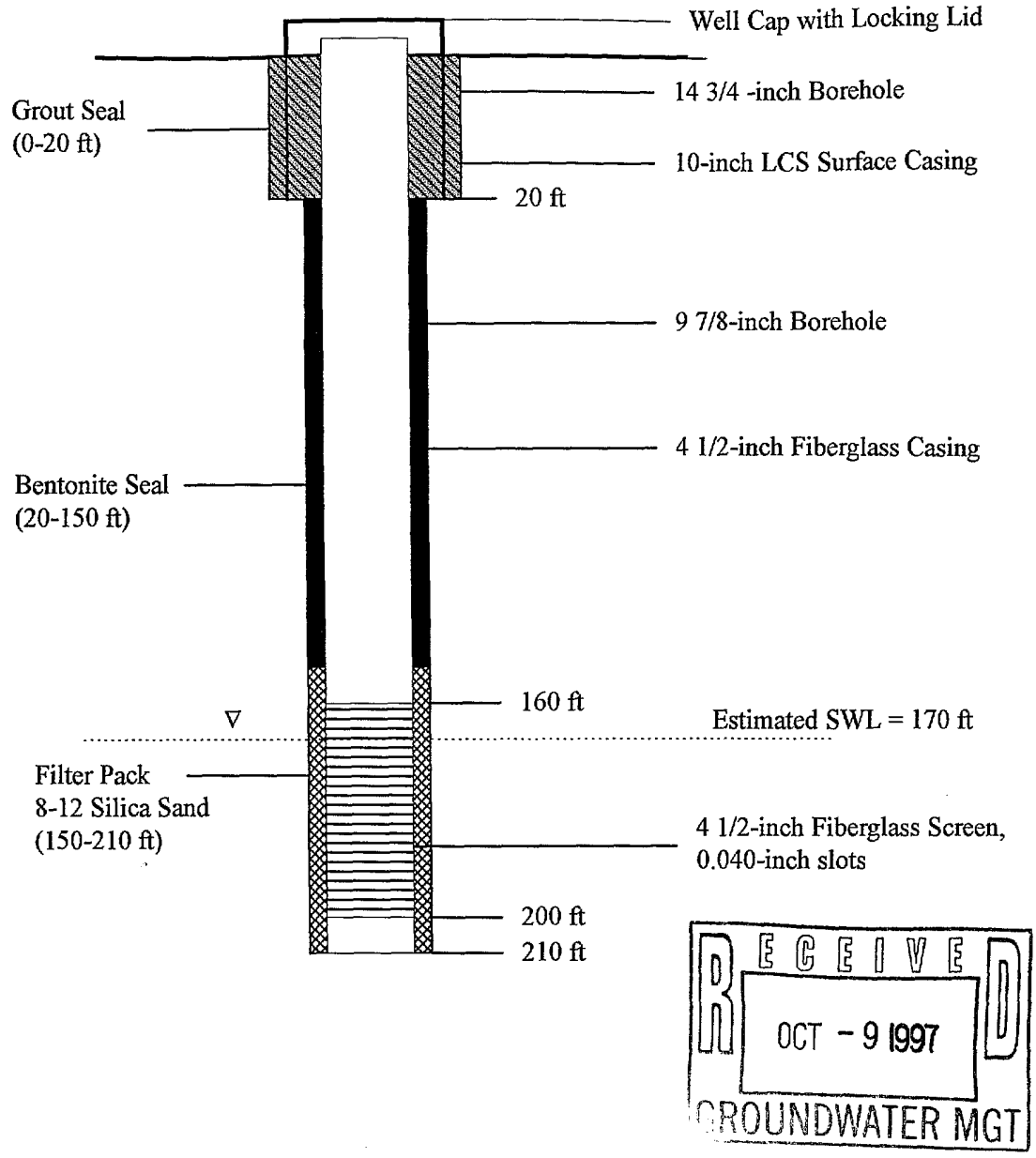
II. Drilling of the well shall be completed within one year after the date of Notice.

III. A Well Driller Report is required within thirty days of completion of drilling. A Completion Report is required to be filed with th Department within thirty days after installation of pump equipment for monitor wells.

IV. Pump equipment <u>may not</u> be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited t the maximum amount required for monitor purposes, <u>but in no case may exceed 35 gallons per minute and an annual volume of 1 acre feet total.</u>

V. A.A.C. Rule R12-15-811.H.2, requires that: "A monitor well shall be identified as such on the vault cover or at the top of the steel casing Identification information will include well registration number."

VI. Special construction standards required pursuant to A.A.C. Rule R12-15-821: _____



RECEIVED
OCT - 9 1997
GROUNDWATER MGT

-NOT TO SCALE

Southwest Ground-water Consultants, Inc. **Project B.248 October 9, 1997**	**TM-43b and TM-43c Preliminary Design** **Phelps Dodge Corporation**	**Figure 1**

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

October 21, 1997

JANE DEE HULL
Governor

RITA P. PEARSON
Director

PHELPS DODGE MINING CO
36 WEST HIGHWAY 92
BISBEE, AZ 85603

RE: Registration No. 55-565004 THROUGH 55-565005
File No. VARIOUS

Dear Well Owner:

Enclosed for your records is an annotated copy of the Notice of Intention to Drill a well. This is returned to you as evidence of compliance with A.R.S. §45-596. A drilling card has been mailed to your designated driller. Prior to drilling he must have it in his possession.

Since this well is being drilled as a Monitor well, or for Cathodic Protection, Grounding, Geotechnical or Piezometer purposes, our standard driller report form is also being furnished to the driller. He is required to complete it and return it to the Department within 30 days after the completion of the well. A Completion Report form is being furnished for monitor wells where pump installation is authorized. This must be completed within thirty days of installation as required by A.R.S. §45-600.

A Change of Well Information form is enclosed for your future use . If you deem it necessary to change the location of the proposed well, please notify the Department on the enclosed form. A properly amended Drilling Card will then be issued and must be in possession of the driller before drilling begins. During the drilling of a new well, if it is determined that it must be abandoned, then a Well Abandonment Completion Report must be submitted per R12-15-816.F.

Per A.R.S. §45-593, the person to whom a well is registered shall notify this Department of a change of ownership of the well and/or information pertaining to the physical characteristics of the well, in order to keep the well registration file current and accurate.

Sincerely,

Toni M. Bergeman

Toni M. Bergeman
Water Resource Technician
Groundwater Management Support Section

VARIANCE CHECKLIST
HYDROLOGY

DATE RECEIVED: 10/9/97 POTENTIAL REG. NO. 55-_____
DATE TO HYDRO: 10/14/97 10-15-97
DATE TO GWMSS: 10-15-97 55-565004 THRU 55-565005

FRONT OF N.O.I. COMPLETE/CORRECT: (YES) NO

REQUEST FOR VARIANCE RECEIVED: YES (NO)

DIAGRAM/SITE PLAN RECEIVED: (YES) NO

TYPE AND NUMBER OF WELLS:

- 2 MONITOR
- ____ PIEZOMETER
- ____ GEOTECHNICAL
- ____ MINERAL EXPLORATION
- ____ WATER PRODUCTION
- ____ CATHODIC PROTECTION
- ____ GROUNDING
- ____ HEAT PUMP
- ____ OTHER _____ (DESCRIBE TYPE OF WELL)

VARIANCE: (PLEASE CHECK APPROPRIATE BLOCKS)

- ____ REQUIRED
- ✓ NOT REQUIRED
- ____ GRANTED
- ____ NOT GRANTED
- ____ LETTER ISSUED

ATTENTION NOTICE OF INTENT TEAM:

- ____ HARD COPY OF LETTER TO FOLLOW
- ____ CALL FOR PICKUP

COMMENTS:

GWMSS REVIEWER: KB HYDRO REVIEWER: _____

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-565004

AUTHORIZED DRILLER: LANG EXPLORATORY DRILLING LICENSE NO: 468

NOTICE OF INTENTION TO DRILL MONITOR WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

CONSULTANT: SOUTHWEST GROUNDWATER CONSULTANTS

WELL OWNER: PHELPS DODGE MINING CO 36 WEST HIGHWAY 92 BISBEE, AZ 85603

The well(s) is/are to be located in the:

SE 1/4 of the NE 1/4 of the SE 1/4 Section 27 Township 23 SOUTH Range 24 EAST

No. of Wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 8TH DAY OF OCTOBER, 1998

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

TB

35201108
TM 43A

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004
WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. LANG EXPLORATORY DRILLING
2286 W 1500 SOUTH
SALT LAKE CITY UT 84104

2. Owner Name: PHELPS DODGE MINING COMPANY
Address: 36 WEST HIGHWAY 92 BISBEE AZ 85603
City State Zip

3. Location: 23 N/(S) 24 (E)/W 27 ¼ NW ¼ NE ¼ SE
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55- 564726 (Required)

5. Permit No. _____ (If issued)

Rec'd DWR 12-5-96

DESCRIPTION OF WELL

6. Total depth of hole 215 ft.
7. Type of casing PVC SCH 80
8. Diameter and length of casing 5 OD in. from 0 to 130, 5 OD in from 190 to 210
9. Method of sealing at reduction points _____
10. Perforated from _____ to _____, from _____ to _____ from _____ to _____
11. Size of cuts _____ Number of cuts per foot _____
12. If screen was installed: Length 60 ft. Diam 5 OD in. Type .040 SLOT
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started 10/27/97
Month Day Year
15. Date completed 10/28/97
Month Day Year
16. Depth to water 133 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
GROUND LEVEL
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DWR-55-55-7/95 (Rev.)

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-564726
File No. D(23-24)27 DAB
Received _____ By _____
Entered _____ By _____
ENTERED DEC 0 5 1997

35201108
TM 43A

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	15	GRAVEL WITH FINE & COARSE SAND - CALICHE
15	25	SILTY SAND & GRAVEL
25	45	SANDY CLAY & GRAVEL
45	50	GRAVEL
50	60	DARK RED CLAY WITH COARSE SAND & GRAVEL
60	90	CLAY WITH SANDY GRAVEL
90	110	GRAVEL
110	150	SANDY GRAVEL
150	155	PINKISH WHITE CEMENTED SANDSTONE 10 GPM
155	160	DARK RED SILTSTONE
160	190	PINKISH WHITE CEMENTED SANDSTONE
190	215	DARK RED SILTSTONE

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: ALAN LANG

2745 WEST CALIFORNIA AVENUE
Street

SALT LAKE CITY, UTAH 84104-4579 801-973-6667
City State Zip Phone No.

Alan Lang 11-25-97
Signature of Driller Date

43A

D(23-24)27 DAB

STATE OF ARIZONA
ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602)417-2470

RECEIVED
MAR 18 1998
RECORDS MGT

COMPLETION REPORT
(Pump Installation Report)

1. Per A.R.S. § 45-600, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.

2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.

3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

REGISTRATION NO: 55- 564726 **FILE NO:** D(23-24) 27 dq 6

LOCATION OF THE WELL:

23	24	27	¼ NW	¼ NE	¼ SE
Township	Range	Section	10-acre	40-acre	160-acre

EQUIPMENT INSTALLED:

Kind of pump: Submersible
(Turbine, submersible, centrifugal, etc.)

Kind of power: Elect (Electric, natural gas, gasoline, etc.) H.P. Rating of Motor: 1/2

Pumping Capacity: 4.5 Date Pump Installed: 1/19/98

WELL TEST:

Test pumping capacity: 7.5 GPM (Gallons per minute) Date Well Tested: 1/19/98

Method of Discharge Measurement: Flow determined by filling measured container
(Weir, orifice, current meter, etc.)

Static Groundwater Level: 133 ft. Drawdown: 49 ft.

Total Pumping Lift: 205 ft. Drawdown: _____ lbs.
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Phelps Dodge Corp	36W Hwy 92	Bisbee	Ariz.	85603
Print Well Owner's Name	Address	City	State	Zip

Bob R Bullard (agent) 520-432-3591
Signature of Well Owner — Phone Number

DWR 55-56 (Rev 10/95)

ENTERED MAR 20 1998

55 - 564726

phelps dodge Morenci Inc. 4521 U.S. Highway 191, Morenci, Arizona 85540-9795 • (520) 865-4521

October 1, 1997

Ms. Carol Norton
Arizona Department of Water Resources
500 North 3rd Street
Phoenix, Arizona 85004

Subject: Addendum to NOI Application

Dear Ms. Norton:

As a follow-up to your request, we have revised our response to item 15 of the Notice of Intent to Drill (NOI) to read *pursuant to Rule R12-15-816*, for the following Registration Numbers.

CTSA Monitor Wells	*	55-564726 D (23-24) 27 DAB
	*	55-564727
	*	55-564728
	*	55-564729
	*	55-564730
DRW Monitor Wells	*	55-564697
	*	55-564698
	*	55-564699
	*	55-564700

If you have any questions, please call.

Very truly yours,

Richard N. Mohr

Richard N. (Rick) Mohr
Manager Environmental Services
Arizona Operations

phelps dodge Mining Company
Arizona Operations
4521 U.S. Highway 191, Morenci, AZ 85540
(520) 865-4521, Ext. 6207
Fax: (520) 865-3861

Mr. Richard N. Mohr
Manager Environmental Services,
Arizona Operations

cc: Mr. Stephen D. Noel, Southwest Ground-water Consultants, Inc.

RECEIVED
OCT 6 1997
HYDROLOGY DIV.

DEP[ ]TMENT OF WATER RESOUR[ ]S
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 NORTH THIRD STREET, PHOENIX, ARIZONA 85004-3903
PHONE (602) 417-2470 FAX (602) 417-2422

RECEIVED
SEP 17 1997
GROUNDWATER MGT

NOTICE OF INTENTION TO DRILL MONITOR/PIEZOMETER WELL

Section §45-596, Arizona Revised Statutes provide: Prior to drilling a monitor or piezometer well, a Notice of Intention to Drill shall be filed with the Departm

1. Well/land Location:
   T 23 S (Township) *R 24 E* (Range) *27* (Section)
   NW ¼ (10 Acre) *NE* ¼ (40 Acre) *SE* ¼ (160 Acre)

2. Position location of the well on the land:
   Latitude *31* o *23* ' *59* "
   Longitude *109* o *53* ' *38* "

3. County: *Cohise*

4. Owner of the land of wellsite:
   Phelps Dodge Mining Co. (Name)
   36 West Highway 92 (Address)
   Bisbee (City) *AZ* (State) *85603* (Zip)
   Phone Number *520 432 3621*

5. Lessee of the land of wellsite:
   Name
   Address
   City State Zip
   Phone Number

6. Owner of well:
   Phelps Dodge Mining Co. (Name)
   36 West Highway 92 (Address)
   Bisbee (City) *AZ* (State) *85603* (Zip)
   Phone Number *520 432 3621*

7. Consulting firm:
   Southwest Ground-water Consult. (Name)
   Stephen Noel, P.G. (Contact Person)
   602 955 5547 (Phone Number)

8. Purpose of well drilled pursuant to this notice:
   Monitor *X*
   Piezometer

9. If for deepening or modifying, list well registration number:
   55-

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No D(23-24)29 dab
Filed 9-17-97 By BU
Input By
NOV 1 2 1997
DUPLICATE
Mailed By
Registration 55-
AMA/INA
W/S 17 S/B

10. Construction will start:
    October (Month) *1* (Day) *1997* (Ye)

11. Period well will remain in use:
    Indefinate Months/Years

12. For monitoring wells, is pump equipment to be installed?
    Yes *X* No
    (a). If yes, design pump capacity:
    <35 gpm
    (b). What use will be made of the water *sample only*

13. Drilling Firm:
    Lang Exploratory Drilling (Name)
    2286 W. 1500 South (Address)
    Salt Lake City, UT *84104* (City State Z)
    801 973 9572 (Phone Number)
    468 (DWR License Number)
    C-53 (ROC License Category)

14. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area hazardous material or petroleum storage areas and tanks? Yes No *X*

15. Proposed method of abandonment of well after project is completed: *Abandonment not anticipated, if well is abandoned it will per ADWR rules*

16. Is this well to monitor existing contamination? Potential contamination *X*. Please explain: *Well located in in vicinity of tailings impoundment*

GENERAL INSTRUCTIONS

1. Fill out this form in DUPLICATE AND SEND WITH $10.00 FEE to 500 North Third Street, Phoenix, Arizona 85004-3903.
2. For specific instructions, limitations and conditions, see the reverse side of this form.

I state that this Notice is filed in compliance with Rule A.A.C. R12-15-809 and R12-15-816(F), and is complete and correct to the best of knowledge and belief and that I understand the limitations and conditions set forth on the reverse side of this form.

Richard N. Mohr (Typed or Printed Name)
Richard N Mohr (Signature [X] Land Owner [ ] Lessee of Wellsite)
9-16-97 (Date)

CONDITIONS

17. If construction plans have been coordinated with Arizona Department of Environmental Quality, who is the agency contact? N/A

If construction plans have been coordinated with Arizona Department of Water Resources, who is the agency contact? N/A

18. WELL CONSTRUCTION PLAN:

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air Rotary

b) Borehole diameters: 14.75 inches from 0 feet to 20 feet.
7.875 inches rom 20 feet to 210 feet.

c) Casing materials (PVC), steel, hollow-stem auger, etc.)

material Low Carbon Steel diameter 10 inches from 0 feet to 20 fe
material Schedule 80 PVC diameter 4.5 inches from 0 feet to 210 fe

d) Method of sealing at reductions N/A

e) Annular seal materials (cement, grout, etc.,); method of placement (tremied, circulated):

material Cement Grout method Tremie from 0 feet to 20 fe
material Bentonite Seal method Tremie from 20 feet to 150 fe

f) Filter packs (state material):

material 8-12 Mesh Silica Sand from 150 feet to 210 fe
material from feet to fe

g) Perforations or screen specifications:

Type 4.5-inch Schedule 80 PVC, wire wrap 0.040-inch slots from 160 feet to 200 fe
Type from feet to fe

h) Method of well development (bail, air lift, surge) Air Lift, Surge

i) Will surface or conductor casing extend above grade?: Yes X No

19. Include detailed construction diagram showing expected water depth in feet below land surface, and details of vault, if specified.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with A.A.C. R12-15-811 and R12-15-816.

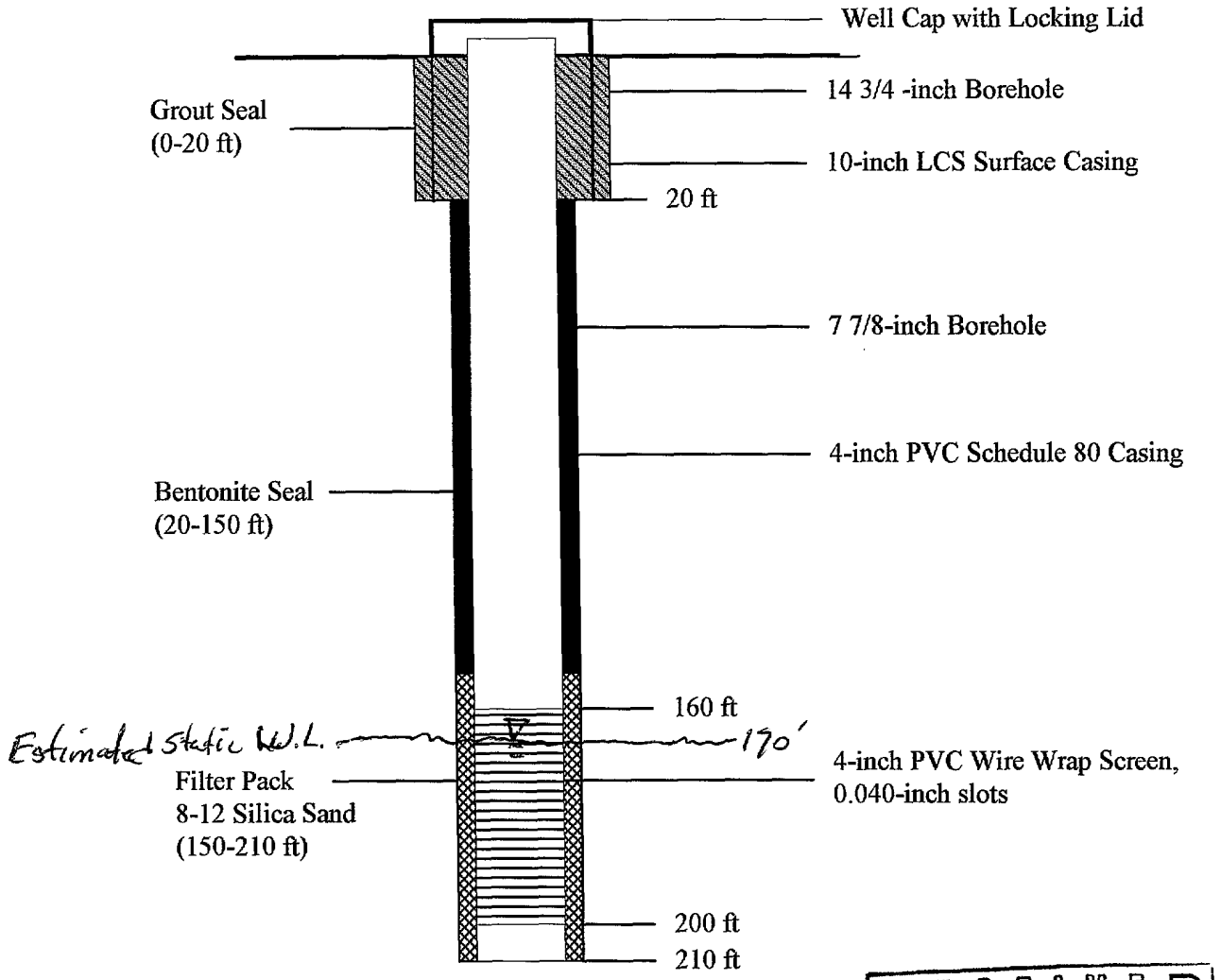
II. Drilling of the well shall be completed within one year after the date of Notice.

III. A Well Driller Report is required within thirty days of completion of drilling. A Completion Report is required to be filed with th Department within thirty days after installation of pump equipment for monitor wells.

IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited the maximum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual volume of 1 acre feet total.

V. A.A.C. Rule R12-15-811.H.2, requires that: "A monitor well shall be identified as such on the vault cover or at the top of the steel casin Identification information will include well registration number."

VI. Special construction standards required pursuant to A.A.C. Rule R12-15-821:



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SEP 17 1997
GROUNDWATER MGT

-NOT TO SCALE

Southwest Ground-water Consultants, Inc. **Project B.248 September 12, 1997**	**TM-43a** **Preliminary Design** **Phelps Dodge Corporation**	**Figure** **2**

VARIANCE CHECKLIST
HYDROLOGY

DATE RECEIVED: 9/11/97 POTENTIAL REG. NO. 55-_____
DATE TO HYDRO: 9/24/97
DATE TO GWMSS: 10/8/97 55- 564726 THRU 55- 564730

FRONT OF N.O.I. COMPLETE/CORRECT: (YES) NO

REQUEST FOR VARIANCE RECEIVED: YES (NO)

DIAGRAM/SITE PLAN RECEIVED: (YES) NO

TYPE AND NUMBER OF WELLS:

- 5 MONITOR
- ____ PIEZOMETER
- ____ GEOTECHNICAL
- ____ MINERAL EXPLORATION
- ____ WATER PRODUCTION
- ____ CATHODIC PROTECTION
- ____ GROUNDING
- ____ HEAT PUMP
- ____ OTHER _____ (DESCRIBE TYPE OF WELL)

VARIANCE: (PLEASE CHECK APPROPRIATE BLOCKS)

- ____ REQUIRED
- ✓ NOT REQUIRED
- ____ GRANTED
- ____ NOT GRANTED
- ____ LETTER ISSUED

ATTENTION NOTICE OF INTENT TEAM:

- ✓ HARD COPY OF LETTER TO FOLLOW
- ____ CALL FOR PICKUP

from Richard Mohr stating "pursuant to R12-15-816" for item number 15. Glotfelty came in today & will have Mohr send us a letter.

COMMENTS:
9/26/97 talked to Steve Noel at (602) 955-5547. He said Mark Glotfelty will come by today & write the w.l. on the diagram. CEN
Done.
9/29/97 Mark Glotfelty called & said there are four more monitor wells that were submitted with this one. He wants to get letter from landowner saying all 9 55 numbers. I could not find the other 4. He will call back. CEN 10/8/97

GWMSS REVIEWER: HB HYDRO REVIEWER: _____

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

October 20, 1997

JANE DEE HULL
Governor

RITA P. PEARSON
Director

PHELPS DODGE MINING COMPANY
36 WEST HIGHWAY 92
BISBEE AZ 85603

RE: Registration No. 55-564726 THRU 55-564730
File No. VARIOUS

Dear Well Owner:

Enclosed for your records is an annotated copy of the Notice of Intention to Drill a well. This is returned to you as evidence of compliance with A.R.S. §45-596. A drilling card has been mailed to your designated driller. Prior to drilling he must have it in his possession.

Since this well is being drilled as a Monitor well, or for Cathodic Protection, Grounding, Geotechnical or Piezometer purposes, our standard driller report form is also being furnished to the driller. He is required to complete it and return it to the Department within 30 days after the completion of the well. A Completion Report form is being furnished for monitor wells where pump installation is authorized. This must be completed within thirty days of installation as required by A.R.S. §45-600.

A Change of Well Information form is enclosed for your future use . If you deem it necessary to change the location of the proposed well, please notify the Department on the enclosed form. A properly amended Drilling Card will then be issued and must be in possession of the driller before drilling begins. During the drilling of a new well, if it is determined that it must be abandoned, then a Well Abandonment Completion Report must be submitted per R12-15-816.F.

Per A.R.S. §45-593, the person to whom a well is registered shall notify this Department of a change of ownership of the well and/or information pertaining to the physical characteristics of the well, in order to keep the well registration file current and accurate.

Sincerely,

Sylvia Valdez
Water Resource Technician
Groundwater Management Support Section

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-564726

AUTHORIZED DRILLER: LANG EXPLORATORY DRILLING **LICENSE NO:** 468

NOTICE OF INTENTION TO DRILL A MONITOR WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

CONSULTANT: SOUTHWEST GROUND-WATER CONSULTANT

WELL OWNER: PHELPS DODGE MINING COMPANY 36 WEST HIGHWAY 92 BISBEE AZ 85603

The well(s) is/are to be located in the:

NW 1/4 of the NE 1/4 of the SE 1/4 Section 27 Township 23 SOUTH Range 24 EAST

No. of Wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 16TH DAY OF SEPTEMBER, 1998

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

SV

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

35201108
TM 43

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. LANG EXPLORATORY DRILLING
2286 W 1500 SOUTH
SALT LAKE CITY UT 84104

2. Owner Name: PHELPS DODGE MINING COMPANY
Address: 36 WEST HIGHWAY 92 BISBEE, AZ 85603
City State Zip

3. Location: 23 (N/S) 24 (E/W) 27 ¼ NW ¼ NE ¼ SE
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55- 564726 (Required)

5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 830 ft.
7. Type of casing 4-1/2 ID FIBERGLASS
8. Diameter and length of casing 4-1/2 in. from 0 to 720, 4½ ID in from 800 to 820
9. Method of sealing at reduction points _____
10. Perforated from _____ to _____, from _____ to _____ from _____ to _____
11. Size of cuts _____ Number of cuts per foot _____
12. If screen was installed: Length 80 ft. Diam 4-1/2 ID in. Type .040 SLOTTED
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started 11/04/97
Month Day Year
15. Date completed 11/10/97
Month Day Year
16. Depth to water 718 ft. (If flowing well, so state)

17. Describe point from which depth measurements were made, and give sea-level elevation if available
GROUND LEVEL
18. If flowing well, state method of flow regulation: _____

19. Remarks: 1ST WATER ENCOUNTERED IS CASED OFF

DWR-55-55-7/95 (Rev.)

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-564729
File No. D(23-24)27 DAB
Received _____ **By** _____
Entered _____ **By** _____
ENTERED DEC 05 1997

35201108
TM 43

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	170	BASIN FILL (GRAVELS - SAND) FIRST WATER APPROX. 130'
170	830	MORETA FORMATION (SANDSTONE - SILSTONE - MUDSTONE)
		WTER ALSO ENCOUNTERED BETWEEN 725' & 730'

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: ALAN LANG

2745 WEST CALIFORNIA AVENUE
Street

SALT LAKE CITY, UTAH 84104-4579 801-973-6667
City State Zip Phone No.

Alan Lang 11-25-97
Signature of Driller Date

D(23-24)27 DAB

STATE OF ARIZONA
ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602)417-2470

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MAR 18 1998
RECORDS MGT

COMPLETION REPORT
(Pump Installation Report)

1. Per A.R.S. § 45-600, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.

2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.

3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

REGISTRATION NO: 55- 564729 **FILE NO:** D(23-24)27dab

LOCATION OF THE WELL:

23	24	27	¼ NW	¼ NE	¼ SE
Township ~~N/S~~	Range ~~E/W~~	Section	10-acre	40-acre	160-acre

EQUIPMENT INSTALLED:

Kind of pump: Submersible
(Turbine, submersible, centrifugal, etc.)

Kind of power: Electric. (Electric, natural gas, gasoline, etc.) H.P. Rating of Motor: 2

Pumping Capacity: 4.5 Date Pump Installed: 2/12/98

WELL TEST:

Test pumping capacity: 8.1 GPM (Gallons per minute) Date Well Tested: 2/12/98

Method of Discharge Measurement: Flow determined by filling measured container (Weir, orifice, current meter, etc.)

Static Groundwater Level: 147.05' ft. Drawdown: 485' ft.

Total Pumping Lift: 815 ft. Drawdown: _____ lbs. (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Phelps Dodge Corp	36 W. Hwy. 92	Bisbee	Ariz.	85603
Print Well Owner's Name	Address	City	State	Zip

Bob R Bullard (Agent) (520) 432-3591
Signature of Well Owner Phone Number

DWR 55-56 (Rev 10/95)

ENTERED MAR 20 1998

55-564729

Richard N. (Rick) Mohr
Manager Environmental Services
Arizona Operations

phelps dodge Mining Company
Arizona Operations

orenci, Arizona 85540-9795 • (520) 865-4521

4521 U.S. Highway 191, Morenci, AZ 85540
(520) 865-4521, Ext. 6207
Fax: (520) 865-3861

Ms. Carol Norton
Arizona Department of Water Resources
500 North 3rd Street
Phoenix, Arizona 85004

Subject: Addendum to NOI Application

Dear Ms. Norton:

As a follow-up to your request, we have revised our response to item 15 of the Notice of Intent to Drill (NOI) to read *pursuant to Rule R12-15-816*, for the following Registration Numbers.

CTSA Monitor Wells	*	55-564726
	*	55-564727
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	*	55-564729 D(23-24)27 DAB
	*	55-564730
DRW Monitor Wells	*	55-564697
	*	55-564698
	*	55-564699
	*	55-564700

If you have any questions, please call.

Very truly yours,

Richard N. Mohr

Mr. Richard N. Mohr
Manager Environmental Services,
Arizona Operations

cc: Mr. Stephen D. Noel, Southwest Ground-water Consultants, Inc.

RECEIVED
6 '97

DEP[illegible]TMENT OF WATER RESOUR[illegible]S
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 NORTH THIRD STREET, PHOENIX, ARIZONA 85004-3903
PHONE (602) 417-2470 FAX (602) 417-2422

RECEIVED
SEP 17 1997
GROUNDWATER MGT

NOTICE OF INTENTION TO DRILL MONITOR/PIEZOMETER WELL

Section §45-596, Arizona Revised Statutes provide: Prior to drilling a monitor or piezometer well, a Notice of Intention to Drill shall be filed with the Departm

1. Well/land Location:
   T 23 S — Township; R 24 E — Range; 27 — Section
   NW ¼ (10 Acre); NE ¼ (40 Acre); SE ¼ (160 Acre)

2. Position location of the well on the land:
   Latitude 31 ° 23 ' 59 "
   Longitude 109 ° 53 ' 37 "

3. County: Cohise

4. Owner of the land of wellsite:
   Phelps Dodge Mining Co. — Name
   36 West Highway 92 — Address
   Bisbee — City; AZ — State; 85603 — Zip
   Phone Number 520 432 3621

5. Lessee of the land of wellsite:
   Name
   Address
   City State Zip
   Phone Number

6. Owner of well:
   Phelps Dodge Mining Co. — Name
   36 West Highway 92 — Address
   Bisbee — City; AZ — State; 85603 — Zip
   Phone Number 520 432 3621

7. Consulting firm:
   Southwest Ground-water Consult. — Name
   Stephen Noel, P.G. — Contact Person
   602 955 5547 — Phone Number

8. Purpose of well drilled pursuant to this notice:
   Monitor X
   Piezometer

9. If for deepening or modifying, list well registration number:
   55-

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. D(23-24)27 dab
Filed 9-17-97 By SU
Input NOV 12 1997
DUPLICATE
Mailed By SU
Registration 55-564729
AMA/INA
W/S 13 S/B

10. Construction will start:
    October — Month; 1 — Day; 1997 — Ye

11. Period well will remain in use:
    Indefinate Months/Years

12. For monitoring wells, is pump equipment to be installed?
    Yes X No
    (a). If yes, design pump capacity: <35
    (b). What use will be made of the water sample only

13. Drilling Firm:
    Lang Exploratory Drilling — Name
    2286 W. 1500 South — Address
    Salt Lake City, UT — City; State; 84104 — Z
    801 973 9572 — Phone Number
    468 — DWR License Number
    C-53 — ROC License Category

14. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area hazardous material or petroleum storage areas and tanks? Yes ____ No X

15. Proposed method of abandonment of well after project is completed: Abandonment not anticipated, if well is abandoned it will be per ADWR rules

16. Is this well to monitor existing contamination? ____ Potential contamination X. Please explain: Well located in in vicinity of tailings impoundment

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Richard N. Mohr — Typed or Printed Name
Richard N Mohr — Signature [X] Land Owner [ ] Lessee of Wellsite
9.16.97 — Date

CONDITIONS

17. If construction plans have been coordinated with Arizona Department of Environmental Quality, who is the agency contact? N/A

If construction plans have been coordinated with Arizona Department of Water Resources, who is the agency contact? N/A

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a) Drilling method (mud rotary, hollow-stem auger, etc.) Air Rotary

b) Borehole diameters: 14.75 inches from 0 feet to 20 feet.
7.875 inches rom 20 feet to 1030 feet.

c) Casing materials (PVC), steel, hollow-stem auger, etc.)

material Low Carbon Steel diameter 10 inches from 0 feet to 20 fe
material Fiberglass diameter 4 inches from 0 feet to 1030 fe

d) Method of sealing at reductions N/A

e) Annular seal materials (cement, grout, etc.,); method of placement (tremied, circulated):

material Cement Grout method Tremie from 0 feet to 20 fe
material Bentonite Seal method Tremie from 20 feet to 925 fe

f) Filter packs (state material):

material 8 - 12 Mesh Silica Sand from 925 feet to 1030 fe
material from feet to fe

g) Perforations or screen specifications:

Type 4-inch fiberglass wire wrap, 0.040-inch slots from 930 feet to 1010 fe
Type from feet to fe

h) Method of well development (bail, air lift, surge) Air Lift, Surge

i) Will surface or conductor casing extend above grade?: Yes X No

19. Include detailed construction diagram showing expected water depth in feet below land surface, and details of vault, if specified.

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VI. Special construction standards required pursuant to A.A.C. Rule R12-15-821:

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-564729

AUTHORIZED DRILLER: LANG EXPLORATORY DRILLING LICENSE NO: 468

NOTICE OF INTENTION TO DRILL A MONITOR WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

CONSULTANT: SOUTHWEST GROUND-WATER CONSULTANT

WELL OWNER: PHELPS DODGE MINING COMPANY 36 WEST HIGHWAY 92 BISBEE AZ 85603

The well(s) is/are to be located in the:

NW 1/4 of the NE 1/4 of the SE 1/4 Section 27 Township 23 SOUTH Range 24 EAST

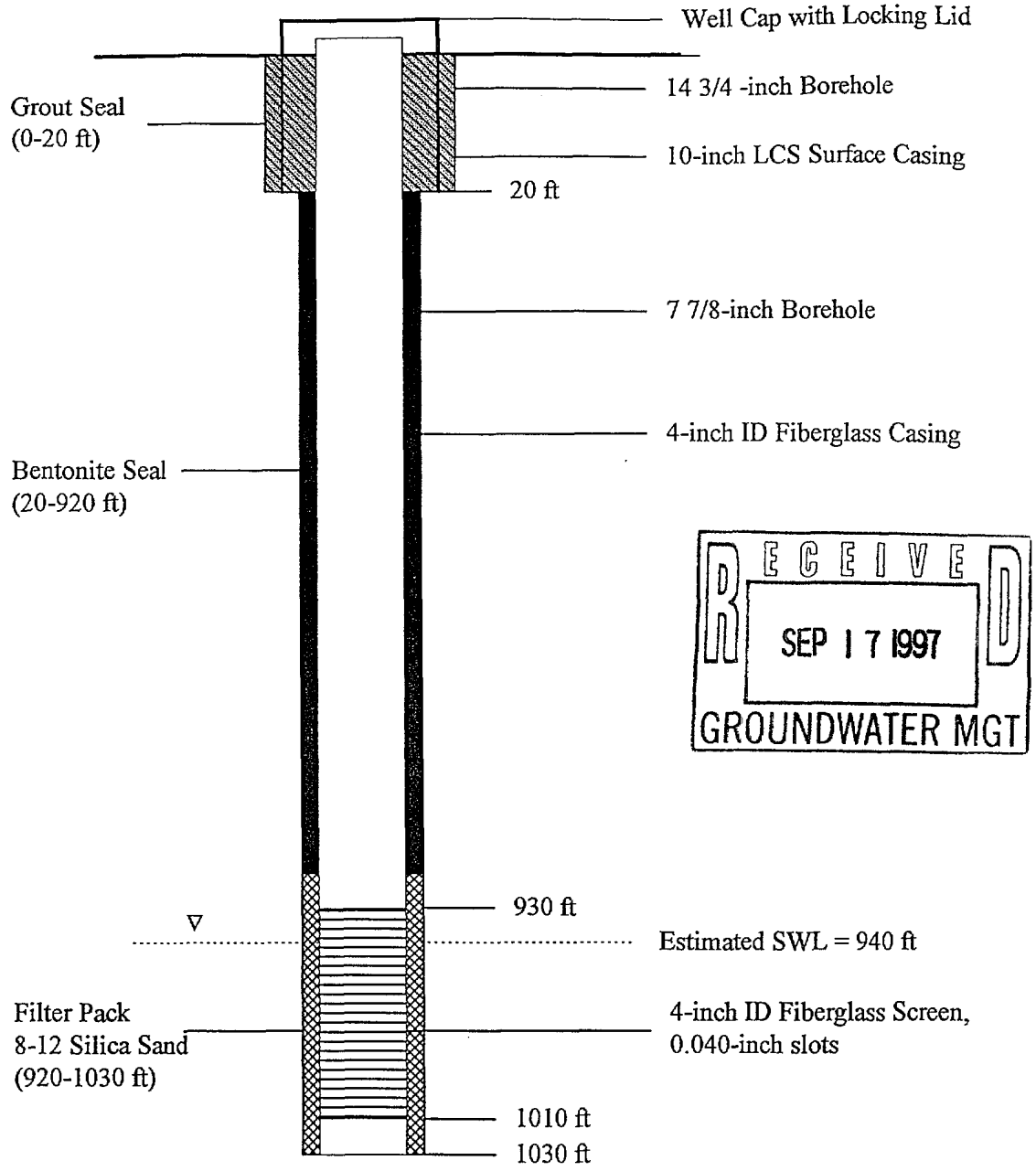
No. of Wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 16TH DAY OF SEPTEMBER, 1998

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

SV



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SEP 17 1997
GROUNDWATER MGT

-NOT TO SCALE

- CASING CENTALIZERS
EVERY 100 FEET

Southwest Ground-water Consultants, Inc. **Project B.248 September 12, 1997**	**TM-43, TM-44, TM-45, and TM-46 Preliminary Design** **Phelps Dodge Corporation**	**Figure 1**

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

October 20, 1997

JANE DEE HULL
Governor

RITA P. PEARSON
Director

PHELPS DODGE MINING COMPANY
36 WEST HIGHWAY 92
BISBEE AZ 85603

RE: Registration No. 55-564726 THRU 55-564730
File No. VARIOUS

Dear Well Owner:

Enclosed for your records is an annotated copy of the Notice of Intention to Drill a well. This is returned to you as evidence of compliance with A.R.S. §45-596. A drilling card has been mailed to your designated driller. Prior to drilling he must have it in his possession.

Since this well is being drilled as a Monitor well, or for Cathodic Protection, Grounding, Geotechnical or Piezometer purposes, our standard driller report form is also being furnished to the driller. He is required to complete it and return it to the Department within 30 days after the completion of the well. A Completion Report form is being furnished for monitor wells where pump installation is authorized. This must be completed within thirty days of installation as required by A.R.S. §45-600.

A Change of Well Information form is enclosed for your future use . If you deem it necessary to change the location of the proposed well, please notify the Department on the enclosed form. A properly amended Drilling Card will then be issued and must be in possession of the driller before drilling begins. During the drilling of a new well, if it is determined that it must be abandoned, then a Well Abandonment Completion Report must be submitted per R12-15-816.F.

Per A.R.S. §45-593, the person to whom a well is registered shall notify this Department of a change of ownership of the well and/or information pertaining to the physical characteristics of the well, in order to keep the well registration file current and accurate.

Sincerely,

Sylvia Valdez
Water Resource Technician
Groundwater Management Support Section

RECEIVED
JUL - 7 1997
RECORDS

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

WELL DRILLER REPORT

35201070
TM-42

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. LANG EXPLORATORY DRILLING
   2286 WEST 1500 SOUTH
   SALT LAKE CITY, UT 84104-4126

2. Owner Name: PHELPS DODGE CORP.
   Address: 36 W. HWY 92 (City) BISBEE (State) AZ (Zip) 85603

3. Location: 23 (Township) N(S) 24 (Range) E(W) 10 (Section) ¼ SW (10-acre) ¼ NW (40-acre) ¼ SW (160-acre)

4. Well Registration No. 55- 562554 (Required)

5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 250 ft.
7. Type of casing LOW CARBON STEEL 0-20, SCH 80 PVC 0-241
8. Diameter and length of casing 10 in. from 0 to 20, 5 in from +1.5 to 241
9. Method of sealing at reduction points -
10. Perforated from 180 to 240, from _____ to _____ from _____ to _____
11. Size of cuts 0.040 INCH Number of cuts per foot _____
12. If screen was installed: Length 60 ft. Diam 5 in. Type SCH 80 PVC
13. Method of construction DRILLED
    (drilled, dug, driven, bored, jetted, etc)
14. Date started JUNE 12, 1997
    (Month Day Year)
15. Date completed JUNE 13, 1997
    (Month Day Year)
16. Depth to water 186 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
    BELOW GROUND SURFACE
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-562554
File No. D(23-24)10CBC
Received _____ By _____
Entered _____ By _____
ENTERED JUL 17 1997

DWR-55-55-7/95 (Rev.)

35201070

LOG OF WELL

TM-42

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	10	TOP SOIL
10	65	ALLUVIUM
65	250	MORITA FORMATION
		1ST WATER AT 195'

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: ALAN LANG

2286 WEST 1500 SOUTH
Street

SALT LAKE CITY, UTAH 84104 801-973-6667
City State Zip Phone No.

JUNE 23, 1997
Signature of Driller Date

TM-42

STATE OF ARIZONA
ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470

RECEIVED
JUL 15 1997
RECORDS MGT

COMPLETION REPORT
(Pump Installation Report)

1. Per A.R.S. § 45-600, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.

2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation. For a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.

3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

REGISTRATION NO: 55- 562554 **FILE NO:** D(23-24) 10CBC

LOCATION OF THE WELL:

23 N/S	24 E/W	10	¼ SW	¼ NW	¼ SW
Township	Range	Section	10-acre	40-acre	160-acre

EQUIPMENT INSTALLED:

Kind of pump SUBMERSIBLE (Turbine, submersible, centrifugal, etc.) Kind of power ELECTRIC (Electric, natural gas, gasoline, etc.)

H.P. Rating of Motor 1 1/2 HP Pumping Capacity 5.5 Date Pump Installed 6/30/97

WELL TEST:

Test pumping capacity 5.6 Gallons per minute Date Well Tested: 7-11-97

Method of Discharge Measurement FLOW DETERMED BY FILLING MEASURED CONTAINER (Weir, orifice, current meter, etc.)

Static Groundwater Level 192 ft. Drawdown 1.6 ft.

Total Pumping Lift 240 ft. Drawdown ____ lbs. (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Phelps Dodge Corp	36 w. Hwy 92	Bisbee	Ariz	85603
Print Well Owner's Name	Address	City	State	Zip

Bob R Sullivan (Agent)	(520) 432-3591	7-14-97
Signature of Well Owner	Phone Number	Date

ENTERED JUL 24 1997

DWR 55-56 (Rev 10/95)

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 NORTH THIRD STREET, PHOENIX, ARIZONA 85004-3903
PHONE (602) 417-2470 FAX (602) 417-2422

MAY 19 1997

NOTICE OF INTENTION TO DRILL MONITOR/PIEZOMETER WELL

Section §45-596, Arizona Revised Statutes provide: Prior to drilling a monitor or piezometer well, a Notice of Intention to Drill shall be filed with the Departmen

1. **Well/land Location:**
   23S (Township) 24E (Range) 10 (Section)
   SW ¼ (10 Acre) NW ¼ (40 Acre) SW ¼ (160 Acre)

2. **Position location of the well on the land:**
   Latitude 30 o 24 ' 30 "
   Longitude 109 o 53 ' 35 "

3. **County:** Cochise

4. **Owner of the land of wellsite:**
   Phelps Dodge Corp (Name)
   36W. Highway 92 (Address)
   Bisbee, Ariz. 85603 (City State Zip)
   Phone Numbe (520) 432-3621

5. **Lessee of the land of wellsite:**
   Name
   Address
   City State Zip
   Phone Number

6. **Owner of well:**
   Phelps Dodge Corp. (Name)
   36 W. Hwy. 92 (Address)
   Bisbee, Ariz. 85603 (City State Zip)
   Phone Numbe (520) 432-3621

7. **Consulting firm:**
   STEFFEN, Robertson, & Kirsten (Name)
   Gültekin Sauci (Contact Person)
   (303) 985-1333 (Phone Number)

8. **Purpose of well drilled pursuant to this notice:**
   Monitor ✓
   Piezometer

9. **If for deepening or modifying, list well registration number:**
   55-

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. D(23-24)10CBC
Filed 5/19/97 By dh
Input By
DUPLICATE
Mailed 6/4/97 By dh
Registration 55-562554 ✓
AMA/INA
W/S 13 S/B ✓

10. **Construction will start:** 6 (Month) 2 (Day) 97 (Year)

11. **Period well will remain in use:** Ind. Months/Years

12. **For monitoring wells, is pump equipment to be installed?** Yes X No
    (a). If yes, design pump capacity: < 10 GPM
    (b). What use will be made of the water Sampling Only

13. **Drilling Firm:** Layne Exploratory Drilling (Name)
    2286 W. 1500 S. (Address)
    Salt Lake City, UT. 84104 (City State Zip)
    801-973-6667 (Phone Number)
    468 4/26 (DWR License Number / ROC License Category)

ENTERED JUN 5 1997

14. **Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area c hazardous material or petroleum storage areas and tanks?** Yes No X

15. **Proposed method of abandonment of well after project is completed:** Fill to total depth with Cement Grout After PVC Removal

16. **Is this well to monitor existing contamination?** No **Potential contamination** No. **Please explain:** Future Ground Water Permit

GENERAL INSTRUCTIONS

1. Fill out this form in DUPLICATE AND SEND WITH $10.00 FEE to 500 North Third Street, Phoenix, Arizona 85004-3903.
2. For specific instructions, limitations and conditions, see the reverse side of this form.

I state that this Notice is filed in compliance with Rule A.A.C. R12-15-809 and R12-15-816(F), and is complete and correct to the best of knowledge and belief and that I understand the limitations and conditions set forth on the reverse side of this form.

Bob R. Bullard — Bob R. Bullard — 5/14/97

Typed or Printed Name — Signature [ ] Land Owner [ ] Lessee of Wellsite — Date

CONDITIONS

17. If construction plans have been coordinated with Arizona Department of Environmental Quality, who is the agency contact?_____

If construction plans have been coordinated with-Arizona Department of Water Resources, who is the agency contact?_____

18. **WELL CONSTRUCTION PLAN:**

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air / Mud Rotary

b) Borehole diameters: 16 inches from 0 feet to 20 feet.
8 inches rom 20 feet to 250 feet.

c) Casing materials (PVC), steel, hollow-stem auger, etc.)

material Low Carbon Steel diameter 10 inches from +1 feet to 20 fee
material PVC diameter 4" inches from +1 feet to 250 fee

d) Method of sealing at reductions N/A

e) Annular seal materials (cement, grout, etc.,); method of placement (tremied, circulated):

material Cement method Tremied from 0 feet to 20 fee
material Bentowite method Tremied from 20 feet to 25 fee

f) Filter packs (state material):

material #8 Silica Sand from 200 feet to 250 fee
material _____ from _____ feet to _____ fee

g) Perforations or screen specifications:

Type 0.020 Slot PVC Screen from 200 feet to 250 fee
Type _____ from _____ feet to _____ fee

h) Method of well development (bail, air lift, surge) Swab, Air lift, Pump & Surge

i) Will surface or conductor casing extend above grade?: Yes X No____

19. Include detailed construction diagram showing expected water depth in feet below land surface, and details of vault, if specified.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with A.A.C. R12-15-811 and R12-15-816.

II. Drilling of the well shall be completed within one year after the date of Notice.

III. A Well Driller Report is required within thirty days of completion of drilling. A Completion Report is required to be filed with the Department within thirty days after installation of pump equipment for monitor wells.

IV. Pump equipment **may not** be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the maximum amount required for monitor purposes, **but in no case may exceed 35 gallons per minute and an annual volume of 10 acre feet total.**

V. A.A.C. Rule R12-15-811.H.2, requires that: "A monitor well shall be identified as such on the vault cover or at the top of the steel casing Identification information will include well registration number."

VI. Special construction standards required pursuant to A.A.C. Rule R12-15-821: _____

INFORMATION FOR NEW WELLS TO BE DRILLED AT CTSA AREA

The Information for the wells designated on the attached Figure as "A" and "B" :

WELL "A"

Designation: (D-24-24) 3ccc

DRAFT

Coordinates:

Easting	583000 feet
Northing	133000

Surface Elevation (Approx.)	4730 Feet
Groundwater Elevation (Est.)	4527 Feet
Depth to H2O	203 Feet below ground surface
Bottom Elevation of Well:	4477 Feet
Total Depth:	253 Feet
Bottom Elevation of Basin Fill:	4500 Feet

Expected Lithology:

BASIN-FILL DEPOSITS:

0-25 ft	Silt and clay with gravel, sand and some caliche.
25-230 ft	Sandy gravel with silt and clay.

MORITA FORMATION:

230-253	pale-red, angular, arkosic, calcareous sandstone.

WELL "B"

Designation: (D-24-24) 9cdd

Coordinates:

Easting	579500 Feet
Northing	128000

Surface Elevation (Approx.)	4655 Feet
Groundwater Elevation (Est.)	4447 Feet
Depth to H2O	208 Feet below ground surface
Bottom Elevation of Well:	4397 Feet
Total Depth:	258 Feet
Bottom Elevation of Basin Fill:	4200 Feet

Expected Lithology:

BASIN-FILL DEPOSITS:

0-25 ft	Silt and clay with gravel+D24, sand and some caliche.
25-258 ft	Sandy gravel with silt and clay.

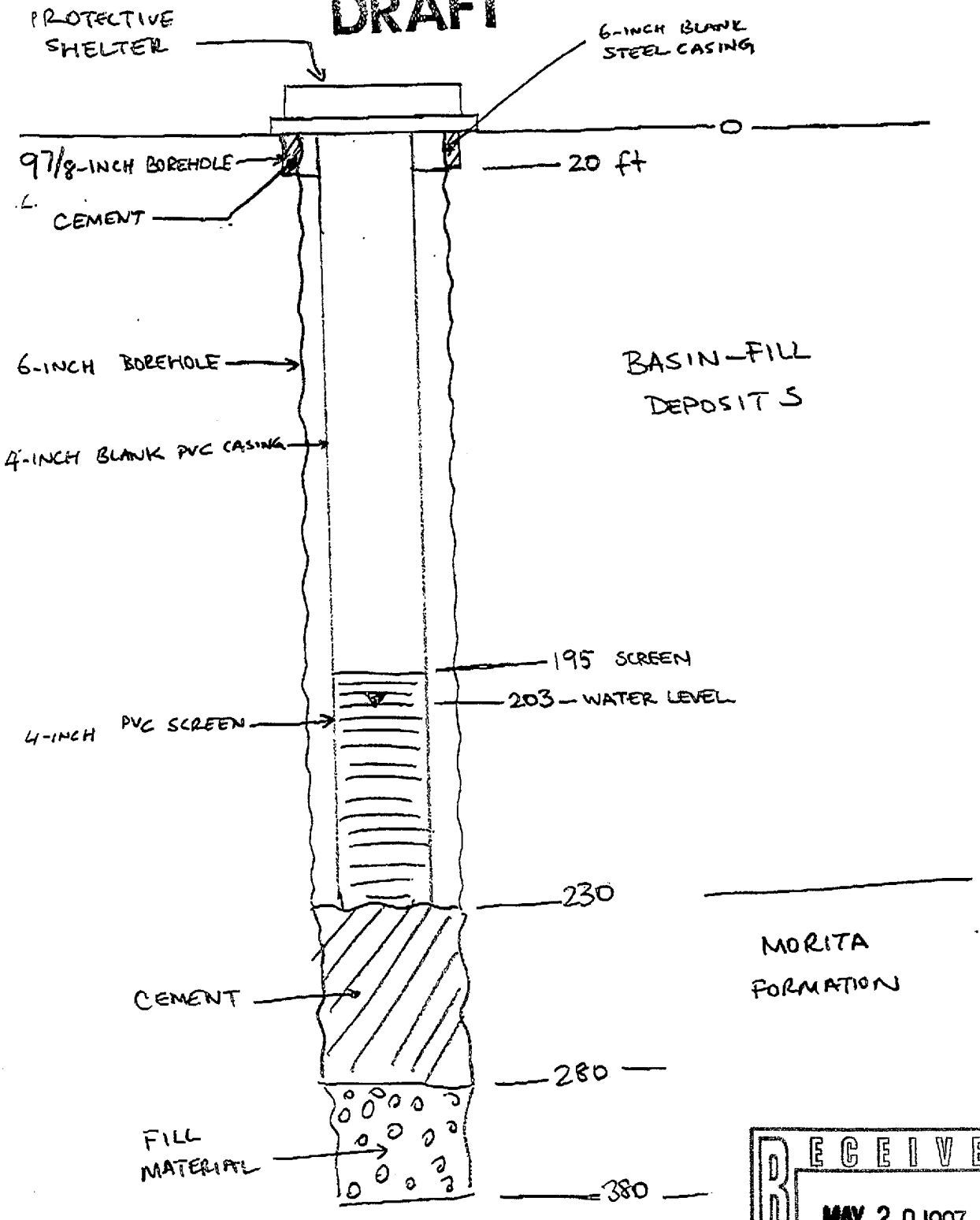
RECEIVED
MAY 2 0 1997
HYDROLOGY DIV.

WELL "A"

STEFFEN ROBERTSON & KIRSTEN
Consulting Engineers & Scientists

PROJECT:	NO.
CALCULATED BY:	DATE:
CHECKED BY:	DATE:
SHEET OF	

DRAFT



RECEIVED
MAY 20 1997
HYDROLOGY DIV.

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

June 4, 1997

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

PHELPS DODGE CORP.
36 W HWY. 92
BISBEE, AZ 85603

RE: Registration No. 55-562554
File No. D(23-24)10CBC

Dear Well Owner:

Enclosed for your records is an annotated copy of the Notice of Intention to Drill a well. This is returned to you as evidence of compliance with A.R.S. §45-596. A drilling card has been mailed to your designated driller. Prior to drilling he must have it in his possession.

Since this well is being drilled as a Monitor well, or for Cathodic Protection, Grounding, Geotechnical or Piezometer purposes, our standard driller report form is also being furnished to the driller. He is required to complete it and return it to the Department within 30 days after the completion of the well. A Completion Report form is being furnished for monitor wells where pump installation is authorized. This must be completed within thirty days of installation as required by A.R.S. §45-600.

A Change of Well Information form is enclosed for your future use . If you deem it necessary to change the location of the proposed well, please notify the Department on the enclosed form. A properly amended Drilling Card will then be issued and must be in possession of the driller before drilling begins. During the drilling of a new well, if it is determined that it must be abandoned, then a Well Abandonment Completion Report must be submitted per R12-15-816.F.

Per A.R.S. §45-593, the person to whom a well is registered shall notify this Department of a change of ownership of the well and/or information pertaining to the physical characteristics of the well, in order to keep the well registration file current and accurate.

Sincerely,

Dorothy Boggs

Dorothy Boggs
Water Resource Technician
Groundwater Management Support Section

VARIANCE CHECKLIST
HYDROLOGY

DATE RECEIVED: 5/9/97 POTENTIAL REG. NO. 55-_____
DATE TO HYDRO: 5/19/97 20
DATE TO GWMSS: 5/22/97 55-562554 THRU 55-562555

FRONT OF N.O.I. COMPLETE/CORRECT: (YES) NO

REQUEST FOR VARIANCE RECEIVED: YES (NO)

DIAGRAM/SITE PLAN RECEIVED: YES (NO)

TYPE AND NUMBER OF WELLS:

2 MONITOR	____ CATHODIC PROTECTION
____ PIEZOMETER	____ GROUNDING
____ GEOTECHNICAL	____ HEAT PUMP
____ MINERAL EXPLORATION	
____ WATER PRODUCTION	____ OTHER _____ (DESCRIBE TYPE OF WELL)

VARIANCE: (PLEASE CHECK APPROPRIATE BLOCKS)

____ REQUIRED	____ GRANTED
✓ NOT REQUIRED	____ NOT GRANTED
	____ LETTER ISSUED

ATTENTION NOTICE OF INTENT TEAM:

____ HARD COPY OF LETTER TO FOLLOW
____ CALL FOR PICKUP

COMMENTS: ~~No discussion 5-21-97 Call consulting company~~ talk w/ Amy - will send diagram.

GWMSS REVIEWER: _____ HYDRO REVIEWER: _____

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-562554

AUTHORIZED DRILLER: LANG EXPLORATORY DRILLING LICENSE NO: 468

NOTICE OF INTENTION TO DRILL A MONITOR WELL/S HAS BEEN FILED WITH THE DEPARTMENT BY:

CONSULTANT: STEFFEN, ROBERTSON & KIRSTON

WELL OWNER: PHELPS DODGE CORP. 36 W HWY. 92 BISBEE, AZ 85603

The well(s) is/are to be located in the:

SW 1/4 of the NW 1/4 of the SW 1/4 Section 10 Township 23 SOUTH Range 24 EAST

No. of Wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 18TH DAY OF MAY, 1998

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

db

TM-41

STATE OF ARIZONA
ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470

COMPLETION REPORT
(Pump Installation Report)

1. Per A.R.S. § 45-600, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.

2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation. For a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.

3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

REGISTRATION NO: 55- 562555 **FILE NO:** D(23-24) 3CCC

LOCATION OF THE WELL:

23 N/S	24 E/W	3	¼ SW	¼ SW	¼ SW
Township	Range	Section	10-acre	40-acre	160-acre

EQUIPMENT INSTALLED:

Kind of pump SUBMERSIBLE (Turbine, submersible, centrifugal, etc.) Kind of power ELECTRIC (Electric, natural gas, gasoline, etc.)

H.P. Rating of Motor 1 1/2 HP Pumping Capacity 6.5 Date Pump Installed 6/26/97

WELL TEST:

Test pumping capacity 6.1 Gallons per minute Date Well Tested: 7-10-97

Method of Discharge Measurement FLOW DETERMED BY FILLING MEASURED CONTAINER (Weir, orifice, current meter, etc.)

Static Groundwater Level 158.85 ft. Drawdown 8.5 ft.

Total Pumping Lift 195' ft. Drawdown _____ lbs. (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Phelps Dodge Corp	36 W. Hwy. 92	Bisbee	Arizona	85603
Print Well Owner's Name	Address	City	State	Zip

Bob R Bullard (Agent)	(520) 432-3591	7-14-97
Signature of Well Owner	Phone Number	Date

DWR 55-56 (Rev 10/95)

TM 41

DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 NORTH THIRD STREET, PHOENIX, ARIZONA 85004-3903
PHONE (602) 417-2470 FAX (602) 417-2422

NOTICE OF INTENTION TO DRILL MONITOR/PIEZOMETER WELL

Section §45-596, Arizona Revised Statutes provide: Prior to drilling a monitor or piezometer well, a Notice of Intention to Drill shall be filed with the De

1. Well/land Location:
23S 24E 3
Township Range Section
SW ¼ SW ¼ SW ¼
10 Acre 40 Acre 160 Acre

2. Position location of the well on the land:
Latitude 30 o 23 · 25 ·
Longitude 109 o 53 · 33 ·

3. County: Cochise

4. Owner of the land of wellsite:
Phelps Dodge Corp
Name
36 W. Highway 92
Address
Bisbee, Ariz. 85603
City State Zip
Phone Numbe (520) 432-3621

5. Lessee of the land of wellsite:
Name
Address
City State Zip
Phone Number –

6. Owner of well:
Phelps Dodge Corp.
Name
36 W. Hwy. 92
Address
Bisbee, Ariz. 85603
City State Zip
Phone Numbe (520) 432-3621

7. Consulting firm:
STEFFEN, Robertson, & Kirsten
Name
GülTekin Sauci
Contact Person
(303) 985-1333
Phone Number

8. Purpose of well drilled pursuant to this notice:
Monitor ✓
Piezometer

9. If for deepening or modifying, list well registration number:
55-

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. D(23-24)3CCC
Filed 5/19/97 By dk
Input By
DUPLICATE
Mailed 6/4/97 By dk
Registration 55- 562555
AMA/INA ✓
W/S 13 S/B ✓

10. Construction will start:
6 2
Month Day

11. Period well will remain in us
Ind. Months/Y

12. For monitoring wells, is pum equipment to be installed?
Yes X No
(a). If yes, design pump capa
< 10 GPM
(b). What use will be made c
water Sampling

13. Drilling Firm:
Layne Explora
Name
2286 W. 1500.
Address
Salt Lake City, UT. 8
City State
801-973-666
Phone Number
468
DWR License Number
A-4
ROC License Category

14. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage hazardous material or petroleum storage areas and tanks? Yes No X

15. Proposed method of abandonment of well after project is completed: Fill to total depth with Cement Grout After PVC Removal

16. Is this well to monitor existing contamination? No Potential contamination No. Please explain: Future Ground Water Permit

GENERAL INSTRUCTIONS

1. Fill out this form in DUPLICATE AND SEND WITH $10.00 FEE to 500 North Third Street, Phoenix, Arizona 85004-3903.
2. For specific instructions, limitations and conditions, see the reverse side of this form.

I state that this Notice is filed in compliance with Rule A.A.C. R12-15-809 and R12-15-816(F), and is complete and correct to the b knowledge and belief and that I understand the limitations and conditions set forth on the reverse side of this form.

Bob R Bullard Bob R Bullard 5/14/9
Typed or Printed Name Signature [ ] Land Owner [ ] Lessee of Wellsite Date

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

35201070

WELL DRILLER REPORT

TM-41

This report should be prepared by the driller in all detail and filed with the Department within 30 day following completion of the well.

1. LANG EXPLORATORY DRILLING
   2286 WEST 1500 SOUTH
   SALT LAKE CITY, UT 84104

2. Owner Name: PHELPS DODGE CORP
   Address: 36 WEST HWY 92 BISBEE, AZ 85603
   City State Zip

3. Location: 23 N/(S) 24 (E)/W 3 ¼ SW ¼ SW ¼ SW
   Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55- 562555 (Required)

5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 210 ft.
7. Type of casing LOW CARBON STEEL +15 - 20 SCH 80 PVC +1 - 201
8. Diameter and length of casing 10 in. from 0 to 20, 5 in from +1 to 201
9. Method of sealing at reduction points -
10. Perforated from 145 to 200, from _____ to _____ from _____ to _____
11. Size of cuts .040 INCHES Number of cuts per foot _____
12. If screen was installed: Length 55 ft. Diam 5 in. Type SCH 80 PVC
13. Method of construction DRILLED
    (drilled, dug, driven, bored, jetted, etc)
14. Date started JUNE 9, 1997
    Month Day Year
15. Date completed JUNE 12, 1997
    Month Day Year
16. Depth to water 157 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-562555
File No. D(23-24)3CCC
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

35201070

WELL DRILLER REPORT

TM-41

This report should be prepared by the driller in all detail and filed with the Department within 30 day following completion of the well.

1. LANG EXPLORATORY DRILLING
2286 WEST 1500 SOUTH
SALT LAKE CITY, UT 84104

2. Owner Name: PHELPS DODGE CORP
Address: 36 WEST HWY 92 BISBEE, AZ 85603
City State Zip

3. Location: 23 N/S 24 E/W 3 ¼ SW ¼ SW ¼ SW
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55- 562555 (Required)

5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 210 ft.
7. Type of casing LOW CARBON STEEL +15 - 20 SCH 80 PVC +1 - 201
8. Diameter and length of casing 10 in. from 0 to 20, 5 in from +1 to 201
9. Method of sealing at reduction points -
10. Perforated from 145 to 200, from _____ to _____ from _____ to _____
11. Size of cuts .040 INCHES Number of cuts per foot _____
12. If screen was installed: Length 55 ft. Diam 5 in. Type SCH 80 PVC
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started JUNE 9, 1997
Month Day Year
15. Date completed JUNE 12, 1997
Month Day Year
16. Depth to water 157 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-562555
File No. D(23-24)3CCC
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

35201070

WELL DRILLER REPORT

TM-41

This report should be prepared by the driller in all detail and filed with the Department within 30 da following completion of the well.

1. LANG EXPLORATORY DRILLING
   2286 WEST 1500 SOUTH
   SALT LAKE CITY, UT 84104

2. Owner Name: PHELPS DODGE CORP
   Address: 36 WEST HWY 92 BISBEE, AZ 85603
   City State Zip

3. Location: 23 N/S 24 E/W 3 ¼ SW ¼ SW ¼ SW
   Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55- 562555 (Required)

5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 210 ft.
7. Type of casing LOW CARBON STEEL +1.5 - 20 SCH 80 PVC +1 - 201
8. Diameter and length of casing 10 in. from 0 to 20, 5 in from +1 to 201
9. Method of sealing at reduction points -
10. Perforated from 145 to 200, from _____ to _____ from _____ to _____
11. Size of cuts .040 INCHES Number of cuts per foot _____
12. If screen was installed: Length 55 ft. Diam 5 in. Type SCH 80 PVC
13. Method of construction DRILLED
    (drilled, dug, driven, bored, jetted, etc)
14. Date started JUNE 9, 1997
    Month Day Year
15. Date completed JUNE 12, 1997
    Month Day Year
16. Depth to water 157 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-562555
File No. D(23-24)3CCC
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

35201070

TM-41

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. LANG EXPLORATORY DRILLING
2286 WEST 1500 SOUTH
SALT LAKE CITY, UT 84104

2. Owner Name: Phelps Dodge Corp.
Address: 36 W. Hwy 92 Bisbee Az 85603
City State Zip

3. Location: 23 N/S 24 E/W 3 ¼ SW ¼ SW ¼ SW
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55-562555 (Required)

5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 250 ft.
7. Type of casing Low Carbon Steel +1.5-20, Sched 80 PVC +1-241
8. Diameter and length of casing 10 in. from +1.5 to 20, 5 in from +1 to 241
9. Method of sealing at reduction points —
10. Perforated from 180 to 240, from _____ to _____ from _____ to _____
11. Size of cuts 0.040 inches Number of cuts per foot _____
12. If screen was installed: Length 60 ft. Diam 5 in. Type Sched 80 P.V.C.
13. Method of construction Drilled
(drilled, dug, driven, bored, jetted, etc)
14. Date started June 12 1997
Month Day Year
15. Date completed June 13 1997
Month Day Year
16. Depth to water 186 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-562555
File No. D(23-24)3CCC
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

TM 41

DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 NORTH THIRD STREET, PHOENIX, ARIZONA 85004-3903
PHONE (602) 417-2470 FAX (602) 417-2422

NOTICE OF INTENTION TO DRILL MONITOR/PIEZOMETER WELL

Section §45-596, Arizona Revised Statutes provide: Prior to drilling a monitor or piezometer well, a Notice of Intention to Drill shall be filed with the Depa

1. Well/land Location:
   23S (Township) 24E (Range) 3 (Section)
   SW ¼ (10 Acre) SW ¼ (40 Acre) SW ¼ (160 Acre)

2. Position location of the well on the land:
   Latitude 30 o 23 · 25 "
   Longitude 109 o 53 · 33 "

3. County: Cochise

4. Owner of the land of wellsite:
   Phelps Dodge Corp
   Name
   36W. Highway 92
   Address
   Bisbee, Ariz. 85603
   City State Zip
   Phone Numbe (520) 432-3621

5. Lessee of the land of wellsite:
   Name
   Address
   City State Zip
   Phone Number

6. Owner of well:
   Phelps Dodge Corp.
   Name
   36. W. Hwy. 92
   Address
   Bisbee, Ariz. 85603
   City State Zip
   Phone Numbe (520) 432-3621

7. Consulting firm:
   STEFFEN, Robertson, & Kirsten
   Name
   GülTekin Sauci
   Contact Person
   (303) 985-1333
   Phone Number

8. Purpose of well drilled pursuant to this notice:
   Monitor ✓
   Piezometer

9. If for deepening or modifying, list well registration number:
   55-

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. D(23-24)3CCC
Filed 5/9/97 By dk
Input By
DUPLICATE
Mailed 6/4/97 By dk
Registration 55- 562555
AMA/INA ✓
W/S 13 5/B ✓

10. Construction will start:
    6 (Month) 2 (Day) 9

11. Period well will remain in use:
    Ind. Months/Yea

12. For monitoring wells, is pump equipment to be installed?
    Yes X No
    (a). If yes, design pump capac
    < 10 GPM
    (b). What use will be made of water Sampling C

13. Drilling Firm:
    Lang Explorat
    Name
    2286 W. 1500S
    Address
    Salt Lake City, UT. 84
    City State
    801-973-6663
    Phone Number
    468
    DWR License Number
    A-4
    ROC License Category

14. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage a hazardous material or petroleum storage areas and tanks? Yes No X

15. Proposed method of abandonment of well after project is completed: Fill To Total depth with Cement Grout After PVC Removal

16. Is this well to monitor existing contamination? No Potential contamination No. Please explain: Future Ground Water Permit

GENERAL INSTRUCTIONS

1. Fill out this form in DUPLICATE AND SEND WITH $10.00 FEE to 500 North Third Street, Phoenix, Arizona 85004-3903.
2. For specific instructions, limitations and conditions, see the reverse side of this form.

I state that this Notice is filed in compliance with Rule A.A.C. R12-15-809 and R12-15-816(F), and is complete and correct to the be knowledge and belief and that I understand the limitations and conditions set forth on the reverse side of this form.

Bob R Bullard — Bob R Bullard — 5/14/97

Typed or Printed Name — Signature [ ] Land Owner [ ] Lessee of Wellsite — Date

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

35201070

WELL DRILLER REPORT

TM-41

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. LANG EXPLORATORY DRILLING
   2286 WEST 1500 SOUTH
   SALT LAKE CITY, UT 84104

2. Owner Name: PHELPS DODGE CORP
   Address: 36 WEST HWY 92 (City) BISBEE, AZ (State) 85603 (Zip)

3. Location: 23 (Township) N/(S) 24 (Range) E/W 3 (Section) ¼ SW (10-acre) ¼ SW (40-acre) ¼ SW (160-acre)

4. Well Registration No. 55- 562555 (Required)

5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 210 ft.
7. Type of casing LOW CARBON STEEL +15 - 20 SCH 80 PVC +1 - 201
8. Diameter and length of casing 10 in. from 0 to 20, 5 in from +1 to 201
9. Method of sealing at reduction points -
10. Perforated from 145 to 200, from _____ to _____ from _____ to _____
11. Size of cuts .040 INCHES Number of cuts per foot _____
12. If screen was installed: Length 55 ft. Diam 5 in. Type SCH 80 PVC
13. Method of construction DRILLED
    (drilled, dug, driven, bored, jetted, etc)
14. Date started JUNE 9, 1997
    (Month) (Day) (Year)
15. Date completed JUNE 12, 1997
    (Month) (Day) (Year)
16. Depth to water 157 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
    _____
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-562555
File No. D(23-24)3CCC
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

35201070

WELL DRILLER REPORT

TM-41

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. LANG EXPLORATORY DRILLING
   2286 WEST 1500 SOUTH
   SALT LAKE CITY, UT 84104

2. Owner Name: PHELPS DODGE CORP
   Address: 36 WEST HWY 92 BISBEE, AZ 85603
   City State Zip

3. Location: 23 N/(S) 24 (E)/W 3 ¼ SW ¼ SW ¼ SW
   Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55- 562555 (Required)

5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 210 ft.
7. Type of casing LOW CARBON STEEL +1.5 - 20 SCH 80 PVC +1 - 201
8. Diameter and length of casing 10 in. from 0 to 20, 5 in from +1 to 201
9. Method of sealing at reduction points -
10. Perforated from 145 to 200, from _____ to _____ from _____ to _____
11. Size of cuts .040 INCHES Number of cuts per foot _____
12. If screen was installed: Length 55 ft. Diam 5 in. Type SCH 80 PVC
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    (drilled, dug, driven, bored, jetted, etc)
14. Date started JUNE 9, 1997
    Month Day Year
15. Date completed JUNE 12, 1997
    Month Day Year
16. Depth to water 157 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-562555
File No. D(23-24)3CCC
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

35201070

TM-41

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. LANG EXPLORATORY DRILLING
2286 WEST 1500 SOUTH
SALT LAKE CITY, UT 84104

2. Owner Name: Phelps Dodge Corp.
Address: 36 W. Hwy 92 (City) Bisbee (State) AZ (Zip) 85603

3. Location: 23 (Township) N/S 24 (Range) E/W 3 (Section) ¼ SW (10-acre) ¼ SW (40-acre) ¼ SW (160-acre)

4. Well Registration No. 55- 562555 (Required)

5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 250 ft.
7. Type of casing Low Carbon Steel 10", Sched 80 PVC +1 - 241
8. Diameter and length of casing 10 in. from +1.5 to 20, 5 in from +1 to 241
9. Method of sealing at reduction points —
10. Perforated from 180 to 240, from _____ to _____ from _____ to _____
11. Size of cuts 0.040 inches Number of cuts per foot _____
12. If screen was installed: Length 60 ft. Diam 5 in. Type Sched 80 P.V.C.
13. Method of construction Drilled (drilled, dug, driven, bored, jetted, etc)
14. Date started June (Month) 12 (Day) 1997 (Year)
15. Date completed June (Month) 13 (Day) 1997 (Year)
16. Depth to water 186 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available _____
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-562555
File No. D(23-24)3CCC
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

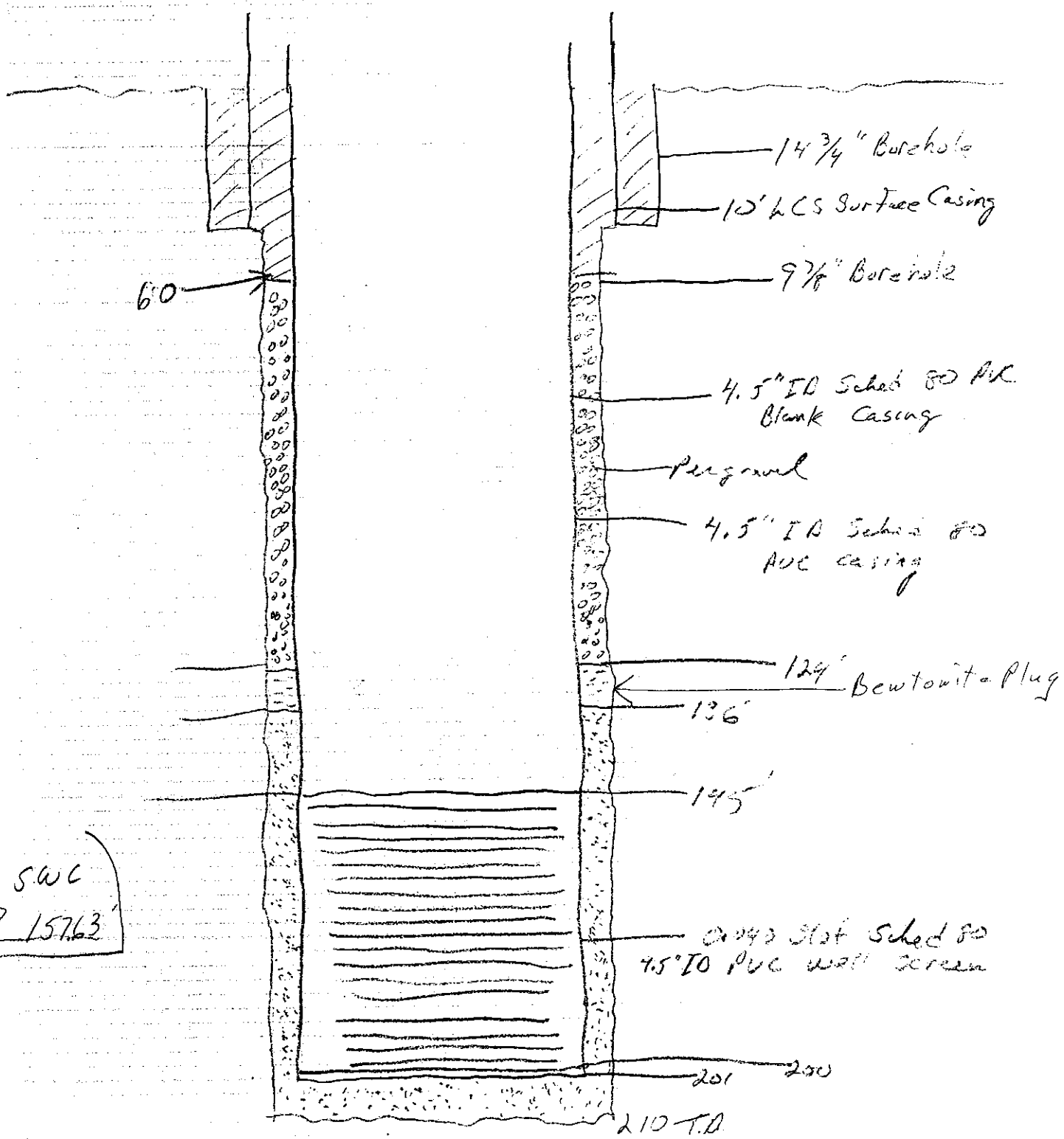
1 OF ____

ENVIRONMENTAL SERVICES, Inc.

BY [illegible] CHKD. ____

PROJECT Copper Queen PROJECT NO. ____

SUBJECT MW-01 As Built 6/11/97 TASK NO. ____



TM-41

STATE OF ARIZONA
ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602) 417-2470

COMPLETION REPORT
(Pump Installation Report)

1. Per A.R.S. § 45-600, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.

2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation. For a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.

3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

REGISTRATION NO: 55- 562555 **FILE NO:** D(23-24) 3CCC

LOCATION OF THE WELL:

23 N/S	24 E/W	3	¼ SW	¼ SW	¼ SW
Township	Range	Section	10-acre	40-acre	160-acre

EQUIPMENT INSTALLED:

Kind of pump SUBMERSIBLE (Turbine, submersible, centrifugal, etc.) Kind of power ELECTRIC (Electric, natural gas, gasoline, etc.)

H.P. Rating of Motor 1 1/2 HP Pumping Capacity 6.5 Date Pump Installed 6/26/97

WELL TEST:

Test pumping capacity 6.1 Gallons per minute Date Well Tested: 7-10-97

Method of Discharge Measurement FLOW DETERMED BY FILLING MEASURED CONTAINER (Weir, orifice, current meter, etc.)

Static Groundwater Level 158.85 ft. Drawdown 8.5 ft.

Total Pumping Lift 195' ft. Drawdown _____ lbs. (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Phelps Dodge Corp	36 W. Hwy. 92	Bisbee	Arizona	85603
Print Well Owner's Name	Address	City	State	Zip

Bob R Bullard (Agent)	(520) 432-3591	7-14-97
Signature of Well Owner	Phone Number	Date

DWR 55-56 (Rev 10/95)

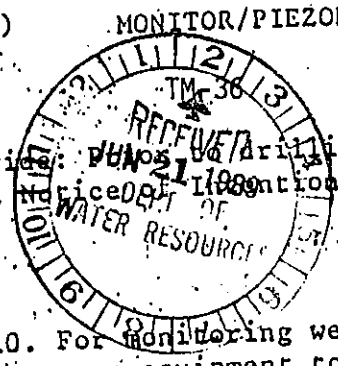
TM-36

MONITOR/PIEZOMETER WELL

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL
MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER



Section 45-596, Arizona Revised Statutes and Rule R12-15-817 provide: Prior to drilling a monitor or piezometer well, the well owner or lessee shall file a Notice of Intention to Dr on a form provided by the Department.

WELL/LAND LOCATION

1. Township 23 N/S
   Range 24 E/W
   Section 25

NW NW SW

2. County Cochise

3. Applicant:

Phelps Dodge Corporation
Name

Copper Queen Branch
Address

Bisbee AZ 85603
City State Zip

4. Lance Pape
NAME OF CONTACT PERSON

Phone: 602-432-5342

Agency: Phelps Dodge Corporation

5. Owner of well:

Phelps Dodge Corporation
Name

Copper Queen Branch
Address

Bisbee AZ 85603
City State Zip

6. Purpose of well drilled pursuant to this Notice:

Monitor X

Piezometer

7. Owner of land:

Phelps Dodge Corporation
Name

Copper Queen Branch
Address

Bisbee AZ 85603
City State Zip

602-432-5342
Telephone number

8. Construction will start:

July 1989
Month Day Year

9. Period well will remain in use: Indef. months/years

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

File No. D(23-24)25 ccb

Filed 6-21-89 By mk

Input By

Duplicate Mailed 6- -89 By mk

Registration No. 55-525138

AMA/INA —

W/S 17 S/B

10. For monitoring wells, i pump equipment to be installed? Uncertain

(a) If so, what will be the design pump capacit 10 gallons per minut

(b) Type of pump (submersible, turbine, etc.

Submersible

(c) What use will be ma of the water?

Sampling only

11. Proposed method of abandonment of well after project is completed:

Fill to total depth

with cement grout

after PVC removal

12. Drilling firm:

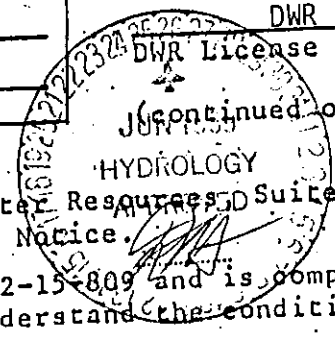
BJ Drilling Co., Inc.
Name

P. O. Box 815
Address

Benson AZ 856
City State Zi

DWR #25
DWR License Number

(continued on reverse)



GENERAL INSTRUCTIONS

Fill out this form in duplicate and mail to Department of Water Resources, Suite 100, 99 E Virginia, Phoenix, Arizona 85004. Filing fee must accompany Notice.

I state that this Notice is filed in compliance with Rule R12-15-809 and is complete and correct to the best of my knowledge and belief and that I understand the conditions set for on the reverse side of this form.

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Phelps Dodge Corporation
   Name
   Copper Queen Branch Bisbee, AZ 85603
   Mailing Address
2. Driller Joe I. Salazar Drilling, Inc.
   Name
   P.O. Box 916 Grants, NM 87020
   Mailing Address
3. Location of well: TWP 23S Rge 24E Section 34 NE¼ SE¼ SW¼
4. Permit No. (if issued) 55-525144

DESCRIPTION OF WELL

5. Total depth of hole 800 ft.
6. Type of casing Steel
7. Diameter and length of casing 6 in. from +1' to 199', ____ in from ____ to ____.
8. Method of sealing at reduction points cemented
9. Perforated from ____ to ____, from ____ to ____, from ____ to ____.
10. Size of cuts ____ Number of cuts per foot ____
11. If screen was installed: Length ____ ft. Diam ____ in. Type ____
12. Method of construction Drilled
    drilled, dug, driven, bored, jetted, etc.
13. Date started 08/18/89
    Month Day Year
14. Date completed 09/07/89
    Month Day Year
15. Depth to water Dry Hole ft. (If flowing well, so state.)
16. Describe point from which depth measurements were made, and give sea-level elevation if available ____
17. If flowing well, state method of flow regulation: ____
18. Remarks: Dry hole, cemented to land surface

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
REG. NO. 55-525144
File No. D(23-24)34 cda
Entered ENTERED NOV 09 1989

NOV 2 1989

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	110	Pebbled caliche with minor interbedded silt clay alluvium
110	435	Grey-maroon arkosic to quartzitic siltstone
435	800	Brick red arkosic siltstone and shale

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Joe Salazar
Name

Joe I. Salazar Drilling, Inc.
P.O. Box 916
Address

Grants, NM 87020
City State Zip

Date 10-31-89

22a. Change Driller to:

Joe Salazar Drilling

P.O. Box 916

Address

Grants NM 87020

City State Zip

425 A-14

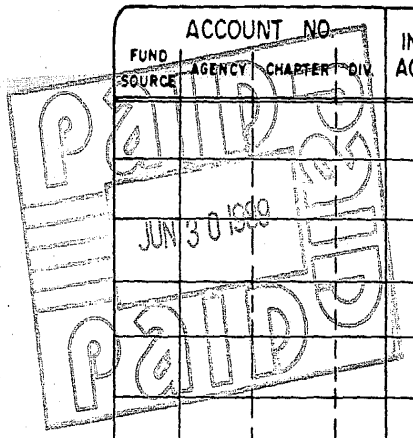
DWR License No. Roc.No.

PHELPS DODGE CORP
WESTERN EXPLORATION
P O BOX 50427
TUCSON, AZ. 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	525136 THRU
55	525148



ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEE FOR NOTICES OF INTENTION TO	10.00	130.00
					DRILL WELLS		
					REGISTRATION#55-525136 thru 55-525148		

6/30/89/ek
CK#1444

TOTAL $ 130.00

MONITOR/PIEZOMETER WELL

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL
MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WE

TM-26

Section 45-596, Arizona Revised Statutes and Rule R12-15-817 provide: Prior to drilling a monitor or piezometer well, the well owner or lessee shall file a Notice of Intention to Dril on a form provided by the Department.

RECEIVED JUN 21 1989 WATER RESOURCES

WELL/LAND LOCATION

1. Township 23 N/S
   Range 24 E/W
   Section 34
   I
   ~~NE~~ ~~SE~~ ~~SW~~

2. County Cochise

3. Applicant:

Phelps Dodge Corporation
Name

Copper Queen Branch
Address

Bisbee AZ 85603
City State Zip

4. Lance Pape
NAME OF CONTACT PERSON

Phone: 602-432-5342

Agency: Phelps Dodge Corporation

5. Owner of well:

Phelps Dodge Corporation
Name

Copper Queen Branch
Address

Bisbee AZ 85603
City State Zip

6. Purpose of well drilled pursuant to this Notice:
   Monitor X
   Piezometer

7. Owner of land:

Phelps Dodge Corporation
Name

Copper Queen Branch
Address

Bisbee AZ 85603
City State Zip

602-432-5342
Telephone number

8. Construction will start:

July 1989
Month Day Year

9. Period well will remain in use: Indef. months/years

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

File No. D(23-24)34cdd

Filed 6-21-89 By ek

Input ENTERED JUL 05 1989 By

Duplicate Mailed 6-30-89 By ek

Registration No. 55-525144

AMA/INA —

W/S 13 S/B

10. For monitoring wells, is pump equipment to be installed? Uncertain

(a) If so, what will be the design pump capacity?
10 gallons per minute

(b) Type of pump (submersible, turbine, etc.)
Submersible

(c) What use will be made of the water?
Sampling only

11. Proposed method of abandonment of well after project is completed:
Fill to total depth with cement grout after PVC removal

12. Drilling firm:

BJ Drilling Co., Inc.
Name

P. O. Box 815
Address

Benson AZ
City State Zip

DWR #25 A-4
DWR License Number

JUN 1989
HYDROLOGY
APPROVED

(continued on reverse)

GENERAL INSTRUCTIONS

Fill out this form in duplicate and mail to Department of Water Resources, Suite 400, 99 East Virginia, Phoenix, Arizona 85004. Filing fee must accompany Notice.

I state that this Notice is filed in compliance with Rule R12-15-809 and is complete and correct to the best of my knowledge and belief and that I understand the conditions set forth on the reverse side of this form.

DATE 6-19-89 Donald A. Stallwell
Signature of Applicant

13. Is this well to monitor existing contamination? No Potential contamination? No

Please explain Future groundwater permit

14. If construction plans have been coordinated with Az. Dept. Health Services, Environmental Health Division, who is the agency contact? None

If construction plans have been coordinated with Az. Dept. Water Resources, Hydrology/ Remedial Action Division, who is the division contact? None

15. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air rotary

b) Borehole diameters:

10 inches from 0 feet to 200 feet

6 inches from 200 feet to 300 feet

____ inches from ____ feet to ____ feet

c) Casing materials (PVC, steel, stainless steel, etc.):

material Steel diameter 6 inches from 0 feet to 200 feet

material PVC diameter 4 inches from 0 feet to 300 feet

material ____ diameter ____ inches from ____ feet to ____ feet

d.) Method of sealing at reductions None

e) Annular seal materials (cement, grout, etc.) and method of placement(tremied,circulated:)

material Grout method Poured from 0 feet to 200 feet

material ____ method ____ from ____ feet to ____ feet

material ____ method ____ from ____ feet to ____ feet

f) Gravel packs (state material, and whether natural or artificial):

material None from ____ feet to ____ feet

material ____ from ____ feet to ____ feet

g) Perforations (if pre-manufactured, please give specs of perforations or screens):

type Uncertain from 250 feet to 300 feet

type ____ from ____ feet to ____ feet

h) Method of well development (bail, air lift, surge) ____

i) Will surface or conductor casing extending above grade be used to protect the aquifer from additional surface contaminants during drilling and construction? Yes

Include detailed construction diagram, if available.

Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes__ No X

If yes, a request for a variance must accompany this application pursuant to R12-15-820.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with DWR rules R12-15-811 and R12-15-816.

II. Drilling of the well shall be completed within one (1) year after the date of Notice.

III. A Well Driller Report, DWR-55-6-5/83, is required within 30 days of completion of drilling. A Completion Report, DWR-55-7-3/83, is required to be filed with the Department within 10 days after installation of pump equipment for monitor wells.

IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the minimum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual amount of 10 acre feet total.

V. Special construction standards required pursuant to R12-15-821: ____

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division
15 South 15th Avenue
Phoenix, Arizona 85007



CHANGE OF WELL INFORMATION

Well Reg. No. 55-525144
D(23-24)34 cda

File (location) No

I/We request the following well information be changed:

Change of Driller From BT Drilling
to Joe I Salazar Drilling, Co. INC. # 425

Date: 7-27-89, 19___

Joe Salazar
Signature of current Well Owner

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, _____, state that I am (no longer) the (new)
(please print)
owner of the well described below:

Township _____ Range _____ Section _____; _____¼ _____¼ _____¼

Well Registration No. _____ File (location) No. _____

Previous Owner

Address

City State Zip

DATED:

PRINT New Owner's Name

ENTERED JUL 28 1989

Signature of New Owner

Address

City State Zip

NOTE: A.R.S. §45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER, PRIOR TO DRILLING THE WELL, IN ADDITION TO AMENDING INFORMATION PREVIOUSLY FILED.

* * * * *

DWR-55-51-7/88

EXPLORATION WELL EXPLORATION WELL

DEPARTMENT OF WATER RESOURCES
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

THIS DRILLING CARD SHALL BE IN THE POSSESSION OF THE DRILLER
BEFORE DRILLING OPERATIONS COMMENCE

Authorized Driller Joe Salazar Drilling LICENSE NO. 425
(unless superceded by a notification of change of well driller)

Notice(s) of Intention to Drill/~~Deepen~~ Exploration Well(s) for Monitor purposes has been filed with the Department by:

APPLICANT'S NAME Phelps Dodge Corp. Copper Queen Branch Bisbee, Az. 85603

Owner of Well " " "
Name Address City State Zip

Well(s) to be located in: 23S 24E 34 NE SE SW
Township Range Section ¼ ¼ ¼

Number of Wells in Project: 1 Registration No. 55- 525144

This authorization to drill/~~deepen~~ the above well(s) expires at midnight on 6-29-90

PURSUANT TO ARS 45-600, THE DRILLER SHALL FILE ON THE PRESCRIBED DEPARTMENT FORM, A LOG OF THE WELL(S) WITHIN 30 DAYS OF COMPLETION OF DRILLING.

for Director
Deputy Director

DWR-55-45-9/87

10. Size of cuts _____ Number of _____

11. If screen was installed: Length ____ ft. Diam ____ in. Type _____

12. Method of construction _____
drilled, dug, driven, bored, jetted, etc

13. Date started _____
Month Day Year

14. Date completed _____
Month Day Year

15. Depth to water _____ ft. (If flowing well, so state)

16. Describe point from which depth measurements were made, and give sea-level elevation if available _____

17. If flowing well, state method of flow regulation: _____

18. Remarks: _____

55-525144
D(23-24)34 cda

Entered _____ By _____

DWR-55-6-Rev. 2/89

ARIZONA DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

NOTICE OF ABANDONMENT

A.R.S. §45-594; R12-15-816(E): The owner or operator of the well shall notify the Department in writing no later than thirty days after the abandonment has been completed.

1. Well location;

   Township 23S

   Range 24E

   Section 34

   NE ¼ SE ¼ SW ¼
   (10 acre subdivision)

   County COCHISE

2. Owner of the well:

   PHELPS DODGE CORPORATION
   Name

   COPPER QUEEN BRANCH - HWY 92
   Address

   BISBEE AZ 85603
   City State Zip

3. Owner of the land:

   PHELPS DODGE CORPORATION
   Name

   COPPER QUEEN BRANCH - HWY 92
   Address

   BISBEE AZ 85603
   City State Zip

4. Well Description:

   Depth of hole 800'

   Diameter of hole 9-7/8" 0-200'
   6" 200-800'

   Type of casing Steel 6" 0-200'

5. Well Registration Number:

   55-525144

   File Number:
   D(23-24) 34 cda

6. Prior to abandonment, did the well penetrate any water-bearing layers?

   Yes ____ No XX Unknown ____

7. Prior to abandonment, did the well have 20' of steel surface casing and 20' of grout in the annular space surrounding the surface casing?
   200' casing
   Yes X & grout No ____

8. If the answer to No. 7 is no, was the top 20' of casing removed prior to setting the cement plug?

   Yes NA No XX

9. Was the well filled with cuttings or other non-toxic material prior to setting the cement plug?

   Yes ____ No XX

10. If the answer to No. 9 is yes, what material was used to fill the well?

    NA

11. How deep does the cement plug extend below land surface?

    0-800' TD.

12. Was the well backfilled above the cement plug?

    Yes ____ No XX

13. Date abandonment complete:

    9-7-89

I state that this Notice is filed in compliance with A.R.S. §45-594: R12-15-816(E), and is complete and correct to the best of my knowledge and belief.

RECEIVED
APR 1990

DATE MARCH 29, 1990 SIGNATURE [signature] AGENT:
PHELPS DODGE CORPORATION

ENTERED APR 10 1990

DWR-55-46-12/83

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
PHOENIX, ARIZONA 85007

Tm 22 [27 bad]

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Phelps Dodge Corporation (Name)
   Copper Queen Branch Bisbee, AZ 85603 (Mailing Address)
2. Driller Joe I. Salazar Drilling, Inc. (Name)
   P.O. Box 916 Grants, NM 87020 (Mailing Address)
3. Location of well: Twp 23S Rge 24E Section 27 NE¼ NE¼ NW¼
4. Permit No. (if issued) 55-525146

DESCRIPTION OF WELL

5. Total depth of hole 1000 ft.
6. Type of casing Steel and plastic
7. Diameter and length of casing 6 in. from +1 to 20, 4 in from +1 to 1000.
8. Method of sealing at reduction points cemented
9. Perforated from 600 to 1000, from _____ to _____, from _____ to _____.
10. Size of cuts .125 x 1¼" Number of cuts per foot 160
11. If screen was installed: Length _____ ft. Diam _____ in. Type _____
12. Method of construction Drilled (drilled, dug, driven, bored, jetted, etc.)
13. Date started 08-20-89 (Month Day Year)
14. Date completed 11-04-89 (Month Day Year)
15. Depth to water Dry ft. (If flowing well, so state.)
16. Describe point from which depth measurements were made, and give sea-level elevation if available _____
17. If flowing well, state method of flow regulation: _____
18. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
REG. NO. 55-525146
File No. D(23-24)27baa
Entered _____ By _____

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	550	Red-brown to grey fine arkosic to quartzitic shale & sands
550	900	Brick red arkosic to quartzitic siltstone and shale
900	1000	Grey maroon arkosic to quartzitic siltstone and shale

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Joe I. Salazar
Name

Joe I. Salazar Drilling, Inc.
P.O. Box 916
Address

Grants, NM 87020
City State Zip

Date 11-30-89

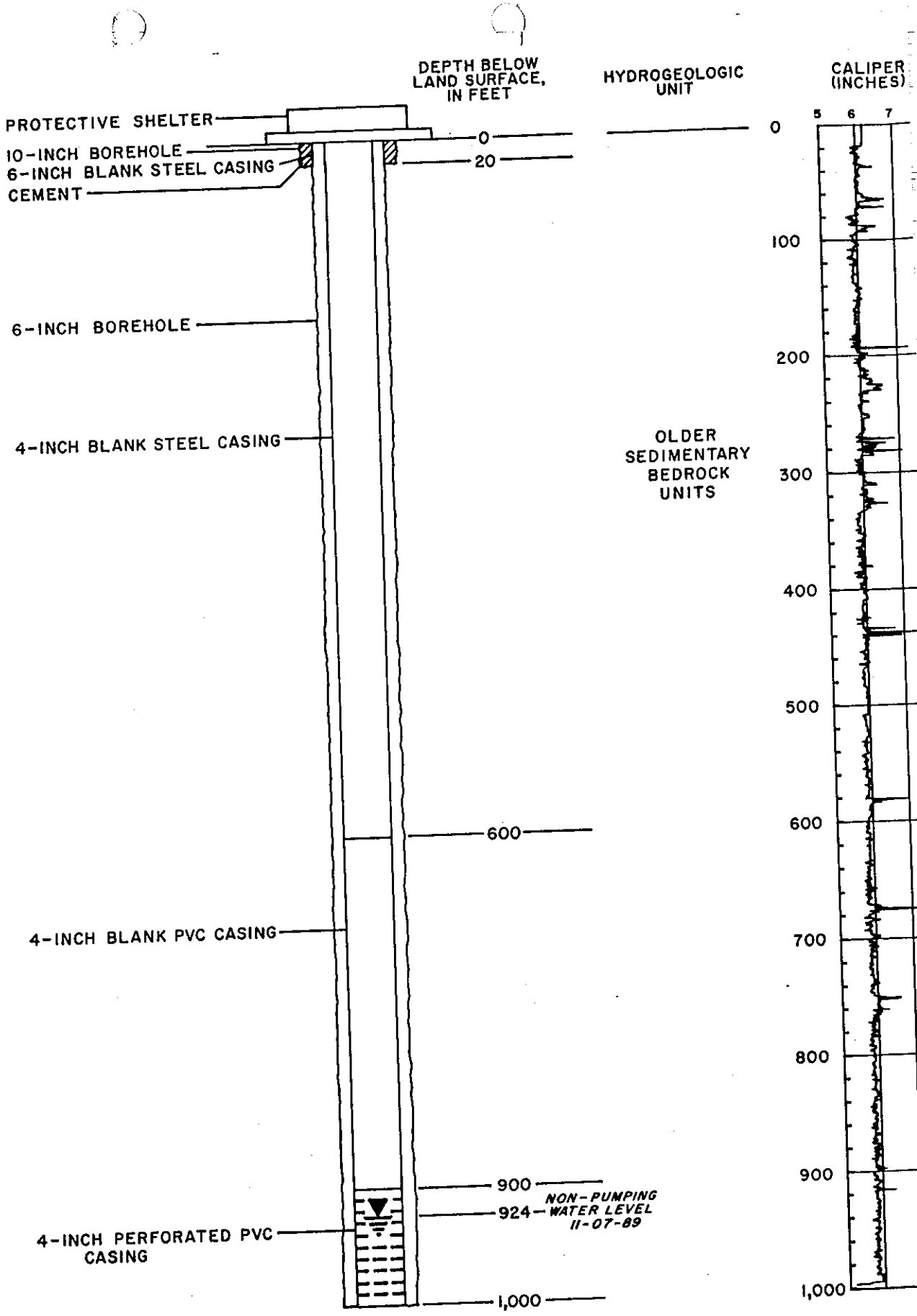
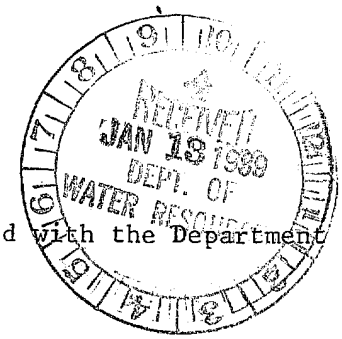


FIGURE B-43. SCHEMATIC DIAGRAM OF WELL CONSTRUCTION AND BOREHOLE G
WELL (D-23-24) 27bad [TM-22]

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007



WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner PHELPS DODGE CORPORATION
Name
COPPER QUEEN BRANCH, BISBEE, AZ 85603
Mailing Address

2. Driller B-J DRILLING COMPANY, INC.
Name
P.O. BOX 815, BENSON, AZ 85602
Mailing Address

3. Location of well: Twp 24S, Rge 24E, Section 8: SW¼,SE¼,SE¼

4. Permit No. (if issued) 55-522580

DESCRIPTION OF WELL

5. Total depth of hole 700 ft.

6. Type of casing Steel & plastic

7. Diameter and length of casing 10 in. from +16" to 23'.6", 6 in from +10" to 572 ., 4" from +1' to 695'.

8. Method of sealing at reduction points Cemented

9. Perforated from 585' to 695', from _____ to _____, from _____ to _____.

10. Size of cuts .050 x 1¼" Number of cuts per foot 160

11. If screen was installed: Length _____ ft. Diam _____ in. Type _____

12. Method of construction Drilled
drilled, dug, driven, bored, jetted, etc.

13. Date started 11/08/88
Month Day Year

14. Date completed 11/16/88
Month Day Year

15. Depth to water 158' ft. (If flowing well, so state.)

16. Describe point from which depth measurements were made, and give sea-level elevation if available Top of casing

17. If flowing well, state method of flow regulation: _____

18. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
REG. NO. 55-522580
File No. D(24-24)8ddc
Entered ENTERED JAN 25 1989 By _____

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	78	Interlayered gravel & light red-brown silt/clay with
		interbedded limestone pebble caliche
78	535	Interlayered gravel & red-brown silt/clay
535	575	Multicolored quartzitic to arkosic sandstone & siltstone
575	615	Light tan-green coarse quartz sandstone to siltstone
615	700	Light to meduim red-brown & grey-green interbedded fine
		sandstone to clay siltstone

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Robert A. Jackson
Name

B-J Drilling Company, Inc.
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

Date 12/29/88

DEPARTMENT OF WATER RESOURCES
15 South 15th Ave., Phoenix, AZ 85007

RECEIVED JUN 7 1989 DEPT. OF WATER RESOURCES

Registration No. 55-522580

File No. D(24-24)8ddc - 2

COMPLETION REPORT TM-19 monitor

1. Per A.R.S. §45-600, the Completion Report to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

RECEIVED MAY 30 1989 WATER

LOCATION OF THE WELL:

24S	24E	8	SW SE SE
Township	Range	Section	¼ ¼ ¼

EQUIPMENT INSTALLED:

Kind of pump *Submersible*
Turbine, centrifugal, etc.

Kind of power *Electric* H.P. Rating of Motor *3/4 HP*
Electric, natural gas, gasoline, etc.

Pumping Capacity *13* Date installed *12/09/88*
Gallons per minute

WELL TEST:

Test pumping capacity *13 GPM* Date Well Tested *12/10/88*
Gallons per minute

Method of Discharge Measurement *timed volume*
Weir, orifice, current meter, etc.

Static Groundwater Level *153* ft. Drawdown *6'* ft.

Total Pumping Lift *159* ft. Drawdown _____ lbs
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

2/25/89
DATE

RECEIVED MAR 2 1989 DEPT. OF WATER RESOURCES

Robert L. Jackson
Signature

R-J Drilling Company, Inc.
P.O. Box 813
Address

Benson, AZ 85602
City State Zip

ENTERED JUN 12 1989

DWR-55-7-3/84

MONITOR/PIEZOMETER WELL

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL
MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

TM-19

Section 45-596, Arizona Revised Statutes and Rule R12-15-817 provide: Prior to drilling a monitor or piezometer well, the well owner or lessee shall file a Notice of Intention to Drill on a form provided by the Department.

ELL/LAND LOCATION

1. Township 24 N/S
   Range 24 E/W
   Section 8
   ist 10-acre subdivision
   SW ¼, SE ¼, SE ¼
2. County Cochise
3. Applicant:

Phelps Dodge Corp.
ame

Copper Queen Branch
ddress

Bisbee, AZ 85603
ty State Zip

Lance Pape
NAME OF CONTACT PERSON

one: 602-432-5342

ency: Phelps Dodge Corp

Owner of well:

Phelps Dodge Corp.
me

Copper Queen Branch
dress

Bisbee, AZ 85603
ty State Zip

Purpose of well drilled pursuant to this Notice:

Monitor X
Piezometer

7. Owner of land:

Phelps Dodge Corp.
Name

Copper Queen Branch
Address

Bisbee, AZ 85603
City State Zip

602-432-5342
Telephone number

8. Construction will start:

October 1988
Month Day Year

9. Period well will remain in use: indef. months/years

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

File No. D(24-24)8 ddc

Filed 10-5-88 By ek

Input ENTERED OCT 11 1988 By

Duplicate Mailed 10-7-88 By ek

Registration No. 55-522580

AMA/INA —

W/S 14 S/B

10. For monitoring wells, is pump equipment to be installed? Yes

(a) If so, what will be the design pump capacity?
10 gallons per minute

(b) Type of pump (submersible, turbine, etc.)

Submersible

(c) What use will be made of the water?

Sampling only

11. Proposed method of abandonment of well after project is completed:

Fill to total depth

with cement grout

after PVC removal

12. Drilling firm:

BJ Drilling Co., Inc.
Name

P.O. Box 815
Address

Benson, AZ 85602
City State Zip

DWR #25
DWR License Number

(continued on reverse)

GENERAL INSTRUCTIONS

1 out this form in duplicate and mail to Department of Water Resources, Suite 100, 99 East ginia, Phoenix, Arizona 85004. Filing fee must accompany Notice.

tate that this Notice is filed in compliance with Rule R12-15-809 and is complete and rect to the best of my knowledge and belief and that I understand the conditions set forth the reverse side of this form.

E 10/4/88

Donald A. Stillwell
Signature of Applicant

RECEIVED OCT 5 1988 HYDROLOGY

OCT 1988 HYDROLOGY APPROVED

RECEIVED OCT 5 1988 DEPT. OF WATER RESOURCES

13. Is this well to monitor existing contamination? Yes Potential contamination? ___
Please explain SO_4 and TDS in Bisbee-Naco area

14. If construction plans have been coordinated with Az. Dept. Health Services, Environmental Health Division, who is the agency contact? R. Kennett, J. DuBois
If construction plans have been coordinated with Az. Dept. Water Resources, Hydrology/ Remedial Action Division, who is the division contact? None

15. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air rotary

b) Borehole diameters:
10 inches from 0 feet to 20 feet
6 inches from 20 feet to 190 feet
___ inches from ___ feet to ___ feet

c) Casing materials (PVC, steel, stainless steel, etc.):
material Steel diameter 6 inches from 0 feet to 20 feet
material PVC diameter 4 inches from 0 feet to 190 feet
material ___ diameter ___ inches from ___ feet to ___ feet

d) Method of sealing at reductions None

e) Annular seal materials (cement, grout, etc.) and method of placement(tremied,circulated:)
material Grout method Poured from 0 feet to 20 feet
material ___ method ___ from ___ feet to ___ feet
material ___ method ___ from ___ feet to ___ feet

f) Gravel packs (state material, and whether natural or artificial):
material None from ___ feet to ___ feet
material ___ from ___ feet to ___ feet

g) Perforations (if pre-manufactured, please give specs of perforations or screens):
type Factory slotted PVC from 140 feet to 190 feet
type ___ from ___ feet to ___ feet

h) Method of well development (bail, air lift, surge) Air lift

i) Will surface or conductor casing extending above grade be used to protect the aquifer from additional surface contaminants during drilling and construction? Yes

16. Include detailed construction diagram if available.

7. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes__ No X
If yes, a request for a variance must accompany this application pursuant to R12-15-820.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with DWR rules R12-15-811 and R12-15-816.
II. Drilling of the well shall be completed within one (1) year after the date of Notice.
III. A Well Driller Report, DWR-55-6-5/83, is required within 30 days of completion of drilling. A Completion Report, DWR-55-7-3/83, is required to be filed with the Department within 10 days after installation of pump equipment for monitor wells.
IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the minimum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual amount of 10 acre feet total.
V. Special construction standards required pursuant to R12-15-821: ___

10/7/88

PHELPS DODGE CORP
COPPER QUEEN BRANCH
BISBEE AZ 85603

ARIZONA DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue, Phoenix, AZ 85007

Registration No. 55-522569 thru 55-522581
File No. D(24-24) 9aab 4aac (2) 35bba 4bca 33bca
10dba 21cdd 8ddc (2)

Dear Well Owner:

Enclosed for your records is an annotated copy of the Notice of Intention to Drill an exploration well which was recently filed with this Department. This is returned to you as evidence of compliance with A.R.S. §45-596. Your designated driller has been mailed separately a Well Drilling Card which he is required to have in his possession before commencing to drill the well.

[X] Since this well is being drilled as a monitor well, or for cathodic protection, grounding, geotechnical or piezometer purposes, our standard driller report form is also being furnished to the driller which he is required to complete and return to the Department within 30 days after the completion of drilling. A Completion Report form is being furnished for monitor wells where pump equipment is authorized to be installed as part of this packet so that you may submit the report within 30 days after the installation of pumping equipment on a monitor well as required by A.R.S. §45-600.

[ ] This well is authorized to be drilled for mineral exploration purposes. Because of this, no pump equipment may be installed. A Project Completion Report is being furnished your designated driller for each hole to be drilled. Your driller is required to submit this Project Completion Report within 30 days after completion of drilling. You should insist that this is done.

For monitor, geotechnical, cathodic protection, grounding and piezometer wells, you should obtain the written permission of the Department of Water Resources before proceeding with the drilling in the event that you determine it necessary to change the location of the proposed well. A properly signed amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

For your future use, a Change of Well Information form is enclosed should it become needed. Per A.R.S. §45-593, the person to whom a well is registered shall notify this Department of a change of ownership of the well and/or information pertaining to the physical characteristics of the well, including abandonment, in order to keep the well registration file current and accurate.

Sincerely,

R. A. Gessner
Chief, Operations Division

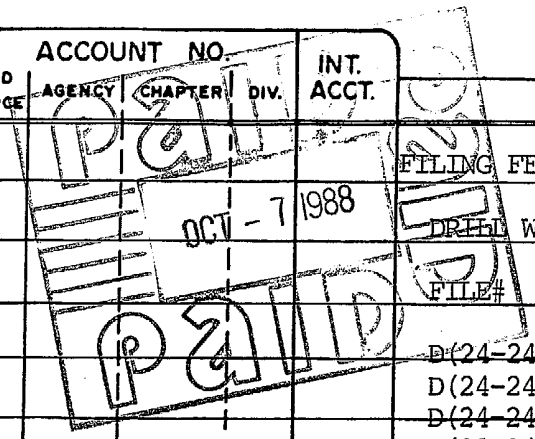
RAG:
Enclosures
DWR-55-8-8/84

PHELPS DODGE CORP
P O BOX 50427
TUCSON AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

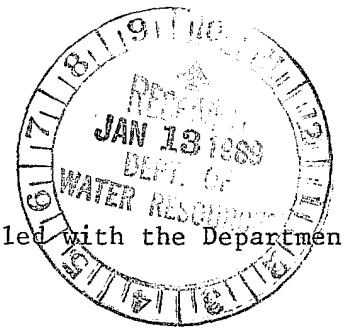
KIND ENTRY	FILE REFERENCE NO.
55	522569
	THRU
55	522580



ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEES FOR NOTICES OF INTENTION TO DRILL WELLS	10.00	100.00
					FILE# REGISTRATION#		
					~~D(24-24)9aab 55-522569~~		
					D(24-24)4aac 55-522573		
					~~D(24-24)4aac 55-522574~~		
					D(23-24)35bba 55-522575		
					~~D(24-24)4bca 55-522576~~		
					D(23-24)33bca 55-522577		
					~~D(24-24)10dba 55-522578~~		
					D(23-24)21cdd 55-522579		
					D(24-24)8ddc 55-522580		
					D(24-24)8ddc 55-522581		
					10/7/88/ek		
					CK#1324		

TOTAL $ 100.00

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007



WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner PHELPS DODGE CORPORATION
   Name
   COPPER QUEEN BRANCH, BISBEE, AZ 85603
   Mailing Address
2. Driller B-J DRILLING COMPANY, INC.
   Name
   P.O. BOX 815, BENSON, AZ 85602
   Mailing Address
3. Location of well: Twp 24S, Rge 24E, Section 8: SW¼,SE,SE
4. Permit No. 55-522581 (if issued)

DESCRIPTION OF WELL

5. Total depth of hole 210' ft.
6. Type of casing Steel and Plastic
7. Diameter and length of casing 6 in. from +1' to 20', 4 in from +1' to 210'.
8. Method of sealing at reduction points Cemented
9. Perforated from 150' to 210', from _____ to _____, from _____ to _____.
10. Size of cuts .050 x 1¼" Number of cuts per foot 160
11. If screen was installed: Length _____ ft. Diam _____ in. Type _____
12. Method of construction Drilled
    drilled, dug, driven, bored, jetted, etc.
13. Date started 11/16/88
    Month Day Year
14. Date completed 11/17/88
    Month Day Year
15. Depth to water 153' static ft. (If flowing well, so state.)
16. Describe point from which depth measurements were made, and give sea-level elevation if available Top of casing
17. If flowing well, state method of flow regulation: _____
18. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

REG. NO. 55-522581

File No. D(24-24)8ddc

Entered ENTERED JAN 25 1989

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	78	Interlayered gravel & light red-brown silt/clay with
		interbedded limestone pebble caliche
78	210	Interlayered gravel & light red-brown silt/clay

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Robert A. Jackson
Name

B-J Drilling Company, Inc.

P.O. Box 815
Address

Benson, AZ 85602
City State Zip

Date 12/29/88

DEPARTMENT OF WATER RESOURCES
15 South 15th Ave., Phoenix, AZ 85007

RECEIVED JUN 7 1989 DEPT. OF WATER RESOURCES

Registration No. 55-522581

File No. D(24-24)8ddc -1

TW-19A deep

COMPLETION REPORT

1. Per A.R.S. §45-600, the Completion Report to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

RECEIVED MAY 30 1989 WATER RESOURCES

LOCATION OF THE WELL:

24S	24E	8	SW SE SE
Township	Range	Section	¼ ¼ ¼

EQUIPMENT INSTALLED:

Kind of pump: submersible (Turbine, centrifugal, etc.)

Kind of power: electric (Electric, natural gas, gasoline, etc.) H.P. Rating of Motor: 3 HP

Pumping Capacity: 48 GPM (Gallons per minute) Date installed: 12/10/88

WELL TEST:

Test pumping capacity: 48 GPM (Gallons per minute) Date Well Tested: 12/10/88

Method of Discharge Measurement: timed volume (Weir, orifice, current meter, etc.)

Static Groundwater Level: 153.7 ft. Drawdown: 15.3' ft.

Total Pumping Lift: 169 ft. Drawdown: _____ lbs (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

2/26/89
DATE

RECEIVED MAR 1989 WATER RESOURCES

Robert D. Jackson
Signature

B-J Drilling Company, Inc.
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

DWR-55-7-3/84

ENTERED JUN 12 1989

MONITOR/PIEZOMETER WELL

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL
MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

TM-19A

Section 45-596, Arizona Revised Statutes and Rule R12-15-817 provide: Prior to drilling a monitor or piezometer well, the well owner or lessee shall file a Notice of Intention to Drill on a form provided by the Department.

WELL/LAND LOCATION

1. Township 24 N/S
   Range 24 E/W
   Section 8
   List 10-acre subdivision
   SW ¼, SE ¼, SE ¼

2. County Cochise

3. Applicant:

   Phelps Dodge Corp.
   Name

   Copper Queen Branch
   Address

   Bisbee, AZ 85603
   City State Zip

   NAME OF CONTACT PERSON

   Phone: 602-432-5342

   Agency: Phelps Dodge Corp.

Owner of well:

Phelps Dodge Corp.
Name

Copper Queen Branch
Address

Bisbee, AZ 85603
City State Zip

Purpose of well drilled pursuant to this Notice:

Monitor X

Piezometer

7. Owner of land:

   Phelps Dodge Corp.
   Name

   Copper Queen Branch
   Address

   Bisbee, AZ 85603
   City State Zip

   602-432-5342
   Telephone number

8. Construction will start:

   October 1988
   Month Day Year

9. Period well will remain in use: indef. months/years

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

File No. D(24-24)8dda

Filed 10-5-88 By ak

Input ENTERED OCT 11 1988 By

Duplicate Mailed 10-7-88 By ak

Registration No. 55-522581

AMA/INA —

W/S 14 S/B

10. For monitoring wells, is pump equipment to be installed? Yes

    (a) If so, what will be the design pump capacity?
    10 gallons per minute

    (b) Type of pump (submersible, turbine, etc.)

    Submersible

    (c) What use will be made of the water?

    Sampling only

11. Proposed method of abandonment of well after project is completed:

    Fill to total depth with cement grout after PVC removal

12. Drilling firm:

    BJ Drilling Co., Inc.
    Name

    P.O. Box 815
    Address

    Benson, AZ 85602
    City State Zip

    DWR #25
    DWR License Number

(continued on reverse)

GENERAL INSTRUCTIONS

Fill out this form in duplicate and mail to Department of Water Resources, Suite 100, 99 East Virginia, Phoenix, Arizona 85004. Filing fee must accompany Notice.

I state that this Notice is filed in compliance with Rule R12-15-809 and is complete and correct to the best of my knowledge and belief and that I understand the conditions set forth on the reverse side of this form.

DATE 10/4/88

Donald A. Stillwell
Signature of Applicant

RECEIVED OCT 5 1988 HYDROLOGY

OCT 1988 HYDROLOGY APPROVED

13. Is this well to monitor existing contamination?_____ Potential contamination?____
Please explain Deep geologic observation well

14. If construction plans have been coordinated with Az. Dept. Health Services, Environmental Health Division, who is the agency contact? R. Kennett, J. DuBois
If construction plans have been coordinated with Az. Dept. Water Resources; Hydrology/ Remedial Action Division, who is the division contact? None

15. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air rotary

b) Borehole diameters:

10 inches from 0 feet to 20 feet
6 inches from 20 feet to 700 feet
____ inches from ____ feet to ____ feet

c) Casing materials (PVC, steel, stainless steel, etc.):

material Steel diameter 6 inches from 0 feet to 20 feet
material Steel diameter 4 inches from 20 feet to 300 feet
material PVC diameter 4 inches from 300 feet to 700 feet

d) Method of sealing at reductions Welding

e) Annular seal materials (cement, grout, etc.) and method of placement(tremied,circulated:)

material Grout method Poured from 0 feet to 20 feet
material ____ method ____ from ____ feet to ____ feet
material ____ method ____ from ____ feet to ____ feet

f) Gravel packs (state material, and whether natural or artificial):

material None from ____ feet to ____ feet
material ____ from ____ feet to ____ feet

g) Perforations (if pre-manufactured, please give specs of perforations or screens):

type Factory slotted PVC from 650 feet to 700 feet
type ____ from ____ feet to ____ feet

h) Method of well development (bail, air lift, surge) Air lift

i) Will surface or conductor casing extending above grade be used to protect the aquifer from additional surface contaminants during drilling and construction? Yes

16. Include detailed construction diagram, if available.

17. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes__ No X
If yes, a request for a variance must accompany this application pursuant to R12-15-820.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with DWR rules R12-15-811 and R12-15-816.
II. Drilling of the well shall be completed within one (1) year after the date of Notice.
III. A Well Driller Report, DWR-55-6-5/83, is required within 30 days of completion of drilling. A Completion Report, DWR-55-7-3/83, is required to be filed with the Department within 10 days after installation of pump equipment for monitor wells.
IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the minimum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual amount of 10 acre feet total.
V. Special construction standards required pursuant to R12-15-821:____

PHELPS DODGE CORP
P O BOX 50427
TUCSON AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	522569
	THRU
55	522580

PAID
OCT - 7 1988
PAID

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEES FOR NOTICES OF INTENTION TO	10.00	100.00
					DRILL WELLS		
					FILE# REGISTRATION#		
					~~D(24-24) 9aab 55-522569~~		
					D(24-24) 4aac 55-522573		
					~~D(24-24) 4aac 55-522574~~		
					D(23-24) 35bba 55-522575		
					~~D(24-24) 4bca 55-522576~~		
					D(23-24) 33bca 55-522577		
					~~D(24-24) 10dba 55-522578~~		
					D(23-24) 21cdd 55-522579		
					D(24-24) 8ddc 55-522580		
					D(24-24) 8ddc 55-522581		
					10/7/88/ek		
					CK#1324		

TOTAL $ 100.00

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

+M-18

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner PHELPS DODGE CORPORATION
Name
COPPER QUEEN BRANCH, BISBEE, AZ 85603
Mailing Address
2. Driller B-J DRILLING COMPANY, INC.
Name
P.O. BOX 815, BENSON, AZ 85602
Mailing Address
3. Location of well: Twp 23S, Rge 24E, Section 21: SE¼,SE¼,SW¼
4. Permit No. (if issued) 55-522579

DESCRIPTION OF WELL

5. Total depth of hole 787.5' ft.
6. Type of casing Steel & Plastic
7. Diameter and length of casing 8 in. from +1' to 20', 4 in from 0 to 780'.
8. Method of sealing at reduction points Cemented
9. Perforated from 680' to 780', from ____ to ____, from ____ to ____.
10. Size of cuts .050 x 1½" Number of cuts per foot 160
11. If screen was installed: Length ____ ft. Diam ____ in. Type ____
12. Method of construction Drilled
drilled, dug, driven, bored, jetted, etc.
13. Date started 10/24/87
Month Day Year
14. Date completed 10/27/88
Month Day Year
15. Depth to water 655' static ft. (If flowing well, so state.)
16. Describe point from which depth measurements were made, and give sea-level elevation if available Top of casing
17. If flowing well, state method of flow regulation:
18. Remarks:

COPY

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
REG. NO. 55-522579
File No. D(23-24)21cdd
Entered ____ By ____

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	45	Light to medium grey fine crystalline limestone
45	170	Interbedded light red-brown fine crystalline limestone and grey arkosic siltstone
170	230	Dark grey, tan and red fine grain to crystalline limestone
230	355	Interbedded tan-grey limestone & sandstone/siltstone
355	575	Light multi-colored interbedded quartzite to quartz siltstone
575	730	Off-white to multi-colored quartzite to quartz sand
730	787.5	Light grey-green pinal schist

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Robert D. Jackson
Name

B-J Drilling Company, Inc.
P.O, Box 815
Address

Benson, AZ 85602
City State Zip

Date 12/29/88

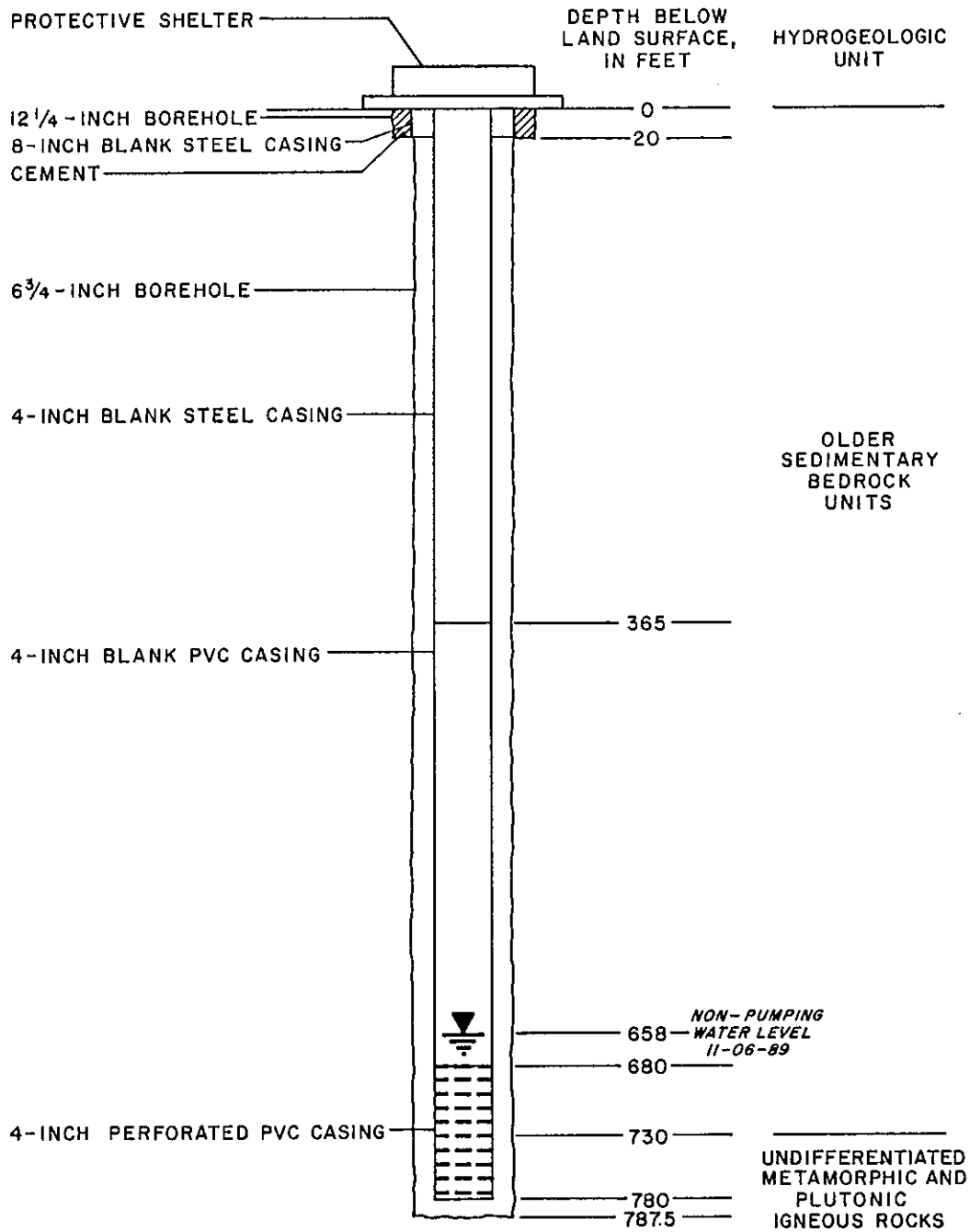


FIGURE 8-45. SCHEMATIC DIAGRAM OF WELL CONSTRUCTION FOR MONITOR WELL (D-23-24)21cdd [TM-18]

15 South 15th Ave., Phoenix, AZ 8500[illegible]

Tm-18

Registration No. 55-522579

File No. D(23-24)21cdd

COMPLETION REPORT Tm-18

1. Per A.R.S. §45-600, the Completion Report to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

23S	24E	21	SE SE SW
Township	Range	Section	¼ ¼ ¼

EQUIPMENT INSTALLED:

Kind of pump *submersible*
Turbine, centrifugal, etc.

Kind of power *electric* H.P. Rating of Motor *1½ HP*
Electric, natural gas, gasoline, etc.

Pumping Capacity _____ Date installed *12/10/88*
Gallons per minute

WELL TEST:

Test pumping capacity *3.4 GPM* Date Well Tested *12/10/88*
Gallons per minute

Method of Discharge Measurement *timed volume*
Weir, orifice, current meter, etc.

Static Groundwater Level *655'* ft. Drawdown *95'* ft.

Total Pumping Lift *750'* ft. Drawdown _____ lbs
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

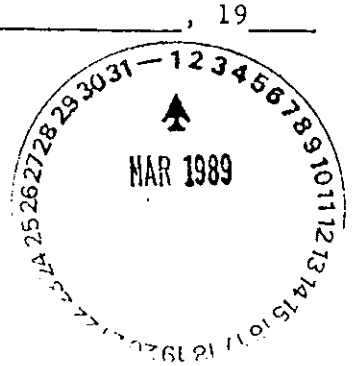
2/25/89, 19____
DATE

Robert A. Jackson
Signature

B-J Drilling Company, Inc.
P.O. Box 873
Address

Benson, AZ 85602
City State Zip

FILE COPY



DWR-55-7-3/84

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner *Phelps Dodge Corporaiton*
   Name
   Copper Queen Branch, Bisbee, AZ 85603
   Mailing Address
2. Driller *B-J Drilling Company, Inc.*
   Name
   P.O. Box 815, Benson, AZ 85602
   Mailing Address
3. Location of well: *Twp 24S, Rge 24E, Section 16: NE¼, SW¼, NE¼*
4. Permit No. (if issued) *55-522700*

DESCRIPTION OF WELL

5. Total depth of hole *200'* ft.
6. Type of casing *Steel & Plastic*
7. Diameter and length of casing *6* in. from *+1'* to *19'*, *4* in from *+1'* to *200'*.
8. Method of sealing at reduction points *Cemented*
9. Perforated from *150'* to *200'*, from _____ to _____, from _____ to _____.
10. Size of cuts *.125 x 1¼"* Number of cuts per foot *160*
11. If screen was installed: Length _____ ft. Diam _____ in. Type _____
12. Method of construction *Drilled*
    drilled, dug, driven, bored, jetted, etc.
13. Date started *1/16/89*
    Month Day Year
14. Date completed *1/17/89*
    Month Day Year
15. Depth to water *159.2 static* ft. (If flowing well, so state.)
16. Describe point from which depth measurements were made, and give sea-level elevation if available *top of casing*
17. If flowing well, state method of flow regulation: _____
18. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

REG. NO. 55-522700

File No. D(24-24)16aca

Entered ENTERED MAR 07 1989

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	70	Interlayered gravel and tan-brown silt/clay with interbedded caliche.
70	200	Light to medium grey tight micrite. Mural limestone

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Robert D. Jackson
Name

B-J Drilling Company, Inc.
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

Date 2/24/89

DEPARTMENT OF WATER RESOURCES
15 South 15th Ave., Phoenix, AZ 85007

Registration No. 55-522700

D(24-24)16aca

File No. _____

COMPLETION REPORT TM-17

1. Per A.R.S. §45-600, the Completion Report to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24S	24E	16	NE SW NE
Township	Range	Section	¼ ¼ ¼

EQUIPMENT INSTALLED:

Kind of pump *Submersible* (Turbine, centrifugal, etc.)

Kind of power *Electric* (Electric, natural gas, gasoline, etc.) H.P. Rating of Motor *3/4 HP*

Pumping Capacity _____ (Gallons per minute) Date installed *2/05/89*

WELL TEST:

Test pumping capacity *13.8 GPM* (Gallons per minute) Date Well Tested *2/05/89*

Method of Discharge Measurement *timed volume* (Weir, orifice, current meter, etc.)

Static Groundwater Level *159.2* ft. Drawdown *11.8'* ft.

Total Pumping Lift *171* ft. Drawdown _____ lbs (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

2/26/89 19
DATE

RECEIVED MAR 1989 WATER RESOURCES

Robert D. Jackson
Signature *B-J Drilling Company, Inc.*
P.O. Box 815
Address
Benson, AZ 85602
City State Zip

ENTERED MAR 07 1989

DWR-55-7-3/84

MONITOR/PIEZOMETER WELL

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL
MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

TM-17

RECEIVED OCT 18 1988 WATER RESOURCES

Section 45-596, Arizona Revised Statutes and Rule R12-15-817 provide: Prior to drilling a monitor or piezometer well, the well owner or lessee shall file a Notice of Intention to Drill on a form provided by the Department.

WELL/LAND LOCATION

1. Township 24 N/S
Range 24 E/W
Section 16
List 10-acre subdivision
NE ¼, SW ¼, NE ¼

2. County Cochise

3. Applicant:
Phelps Dodge Corp.
Name
Copper Queen Branch
Address
Bisbee, AZ 85603
City State Zip

4. Lance Pape
NAME OF CONTACT PERSON
Phone: 602-432-5342
Agency: Phelps Dodge Corp.

5. Owner of well:
Phelps Dodge Corp.
Name
Copper Queen Branch
Address
Bisbee, AZ 85603
City State Zip

6. Purpose of well drilled pursuant to this Notice:
Monitor X
Piezometer

7. Owner of land:
Charles R. Miller
Name
P.O. Box 613
Address
Naco, AZ 85620
City State Zip
Telephone number

8. Construction will start:
October 1988
Month Day Year

9. Period well will remain in use: indef. months/years

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. D(24-24)16aca
Filed 10-18-88 By sk
Input ENTERED OCT 25 1988 By
Duplicate Mailed 10-21-88 By sk
Registration No. 55-522700
AMA/INA —
W/S 14 S/B

10. For monitoring wells, is pump equipment to be installed? Yes

(a) If so, what will be the design pump capacity?
10 gallons per minute

(b) Type of pump (submersible, turbine, etc.)
Submersible

(c) What use will be made of the water?
Sampling only

11. Proposed method of abandonment of well after project is completed:
Fill to total depth with cement grout after PVC removal

12. Drilling firm:
BJ Drilling Co., Inc.
Name
P.O. Box 815
Address
Benson, AZ 85602
City State Zip
A-4
DWR #25
DWR License Number

(continued on reverse)

OCT 19 1988 HYDROLOGY APPROVED

GENERAL INSTRUCTIONS

ill out this form in duplicate and mail to Department of Water Resources, Suite 1000, 99 East irginia, Phoenix, Arizona 85004. Filing fee must accompany Notice.

state that this Notice is filed in compliance with Rule R12-15-809 and is complete and orrect to the best of my knowledge and belief and that I understand the conditions set forth n the reverse side of this form.

ATE 10/14/88

Donald A. Stillwell
Signature of Applicant

13. Is this well to monitor existing contamination? Yes Potential contamination? ____
Please explain SO_4 and TDS in Bisbee-Naco area

14. If construction plans have been coordinated with Az. Dept. Health Services, Environmental Health Division, who is the agency contact? None
If construction plans have been coordinated with Az. Dept. Water Resources, Hydrology/ Remedial Action Division, who is the division contact? None

15. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air rotary

b) Borehole diameters:
10 inches from 0 feet to 20 feet
6 inches from 20 feet to 180 feet
____ inches from ____ feet to ____ feet

c) Casing materials (PVC, steel, stainless steel, etc.):
material Steel diameter 6 inches from 0 feet to 20 feet
material PVC diameter 4 inches from 0 feet to 180 feet
material ____ diameter ____ inches from ____ feet to ____ feet

d) Method of sealing at reductions None

e) Annular seal materials (cement, grout, etc.) and method of placement(tremied,circulated:)
material Grout method Poured from 0 feet to 20 feet
material ____ method ____ from ____ feet to ____ feet
material ____ method ____ from ____ feet to ____ feet

f) Gravel packs (state material, and whether natural or artificial):
material None from ____ feet to ____ feet
material ____ from ____ feet to ____ feet

g) Perforations (if pre-manufactured, please give specs of perforations or screens):
type Factory slotted PVC from 130 feet to 180 feet
type ____ from ____ feet to ____ feet

h) Method of well development (bail, air lift, surge) Air lift

i) Will surface or conductor casing extending above grade be used to protect the aquifer from additional surface contaminants during drilling and construction? yes

16. Include detailed construction diagram, if available.

17. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes__ No X
If yes, a request for a variance must accompany this application pursuant to R12-15-820.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with DWR rules R12-15-811 and R12-15-816.
II. Drilling of the well shall be completed within one (1) year after the date of Notice.
III. A Well Driller Report, DWR-55-6-5/83, is required within 30 days of completion of drilling. A Completion Report, DWR-55-7-3/83, is required to be filed with the Department within 10 days after installation of pump equipment for monitor wells.
IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the minimum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual amount of 10 acre feet total.
V. Special construction standards required pursuant to R12-15-821: ____

PHELPS DODGE CORP
P O BOX 50427
TUCSON AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	522693
	THRU
55	~~XXXX~~ 5227000

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEES FOR NOTICES OF INTENTION TO	10.00	80.00
					DRILL WELLS		
					FILE# REGISTRATION#		
					D(24-24)2bcc 55-522693		
					D(24-24)21aab 55-522694		
					D(24-24)14bca 55-522695		
					D(24-24)5bdc 55-522696		
					D(24-24)20bab 55-522697		
					D(24-24)8bcc 55-522698		
					D(24-24)6bcc 55-522699		
					D(24-24)16aca 55-522700		

PAID OCT 21 1988

PAID

TOTAL $ 80.00

10/21/88/ek
CK#1330

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

RECEIVED
FEB 28 1989
HYDROLOGY

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Phelps Dodge Corporation
Name
Copper Queen Branch, Bisbee, AZ 85603
Mailing Address

2. Driller B-J Drilling Company, Inc.
Name
P.O. Box 815, Benson, AZ 85602
Mailing Address

3. Location of well: Twp 24S, Rge 24E, Section 10: NE¼,NW¼,SE¼

4. Permit No. (if issued) 55-522578

DESCRIPTION OF WELL

5. Total depth of hole 115' ft.

6. Type of casing Steel & Plastic

7. Diameter and length of casing 6 in. from +1' to 20', 4 in from +1' to 115'.

8. Method of sealing at reduction points Cemented

9. Perforated from 65' to 115', from _____ to _____, from _____ to _____.

10. Size of cuts .125 x 1¼" Number of cuts per foot 160

11. If screen was installed: Length _____ ft. Diam _____ in. Type _____

12. Method of construction Drilled
drilled, dug, driven, bored, jetted, etc.

13. Date started 12/15/88
Month Day Year

14. Date completed 12/15/88
Month Day Year

15. Depth to water 75' static ft. (If flowing well, so state.)

16. Describe point from which depth measurements were made, and give sea-level elevation if available Top of casing

17. If flowing well, state method of flow regulation: _____

18. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
REG. NO. 55-522578
File No. D(24-24)10dba
Entered ENTERED MAR 07 1989 By _____

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	40	Interlayered gravel and red-brown silt/clay with interbedded gypsum and limestone pebble caliche.
40	95	Grey-maroon to choclate brown siltstone.
95	115	Tan fine-grained quartz sandstone

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Robert A. Jackson
Name

B-J Drilling Company, Inc.
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

Date 2/24/89

DEPARTMENT OF WATER RESOURCES
15 South 15th Ave., Phoenix, AZ 85007

Registration No. 55-522578

File No. D(24-24)10dba

COMPLETION REPORT Tm-16

1. Per A.R.S. §45-600, the Completion Report to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24S	24E	10	NE NW SE
Township	Range	Section	¼ ¼ ¼

EQUIPMENT INSTALLED:

Kind of pump *Submersible*
Turbine, centrifugal, etc.

Kind of power *Electric* H.P. Rating of Motor *3/4 HP*
Electric, natural gas, gasoline, etc.

Pumping Capacity _____ Date installed *1/14/89*
Gallons per minute

WELL TEST:

Test pumping capacity *19.3 GPM* Date Well Tested *1/14/89*
Gallons per minute

Method of Discharge Measurement *timed volume*
Weir, orifice, current meter, etc.

Static Groundwater Level *78.6'* ft. Drawdown *.6'* ft.

Total Pumping Lift *79* ft. Drawdown _____ lbs
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

2/26/89
DATE

RECEIVED MAR 6 1989 DEPT OF WATER RESOURCES

Robert D. Jackson
Signature *B-J Drilling Company, Inc.*

P.O. Box 815
Address

Benson, AZ 85602
City State Zip

DWR-55-7-3/84

ENTERED MAR 07 1989

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division
15 South 15th Avenue
Phoenix, Arizona 85007

NOV - 6 1989

CHANGE OF WELL INFORMATION

Well Reg. No. 55-522578

File (location) No. D(24-24)10 dba

I/We request the following well information be changed:

Resurveyed location is: T24S, R24E, Sec. 10 SE.SW.NE

Amend file number ACD

Date: November 2, 19 89

Phelps Dodge Corporation
Signature of current Well Owner

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, _____, state that I am (no longer) the (new)
(please print)
owner of the well described below:

Township _____ Range _____ Section _____; _____ ¼ _____ ¼ _____ ¼

Well Registration No. _____ File (location) No. _____

Previous Owner

PRINT New Owner's Name

Address

Signature of New Owner

City State Zip

Address

ENTERED NOV 14 1989

DATED:

City State Zip

NOTE: A.R.S. §45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER, PRIOR TO DRILLING THE WELL, IN ADDITION TO AMENDING INFORMATION PREVIOUSLY FILED.

* * * * *

MONITOR/PIEZOMETER WELL

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL
MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

TM-16

Section 45-596, Arizona Revised Statutes and Rule R12-15-817 provide: Prior to drilling a monitor or piezometer well, the well owner or lessee shall file a Notice of Intention to Drill on a form provided by the Department.

WELL/LAND LOCATION

1. Township 24 N/S

Range 24 E/W

Section 10

ist 10-acre subdivision

NE ¼, NW ¼, SE ¼

. County Cochise

. Applicant:

Phelps Dodge Corp.

ame

Copper Queen Branch

ddress

Bisbee, AZ 85603

ity State Zip

Lance Pape

NAME OF CONTACT PERSON

one: 602-432-5342

ency: Phelps Dodge Corp.

. Owner of well:

Phelps Dodge Corp.

me

Copper Queen Branch

dress

Bisbee, Az 85603

ty State Zip

Purpose of well drilled pursuant to this Notice:

Monitor X

Piezometer

7. Owner of land:

Phelps Dodge Corp.

Name

Copper Queen Brnach

Address

Bisbee, AZ 85603

City State Zip

602-432-5342

Telephone number

8. Construction will start:

October 1988

Month Day Year

9. Period well will remain in use: indef. months/years

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

File No. D(24-24)10 acd

Filed 10-5-88 By sk

In[illegible] ENTERED OCT 11 1988 By

Duplicate Mailed 10-7-88 By sk

Registration No. 55-522578

AMA/INA —

W/S 14 S/B

10. For monitoring wells, is pump equipment to be installed? Yes

(a) If so, what will be the design pump capacity? 10 gallons per minute

(b) Type of pump (submersible, turbine, etc.)

Submersible

(c) What use will be made of the water? Sampling only

11. Proposed method of abandonment of well after project is completed:

Fill to total depth with cement grout after PVC removal

12. Drilling firm:

BJ Drilling Co., Inc.

Name

P.O. Box 815

Address

Benson, AZ 85602

City State Zip

DWR #25

DWR License Number

(continued on reverse)

GENERAL INSTRUCTIONS

ll out this form in duplicate and mail to Department of Water Resources, Suite 100, 99 East rginia, Phoenix, Arizona 85004. Filing fee must accompany Notice.

state that this Notice is filed in compliance with Rule R12-15-809 and is complete and rrect to the best of my knowledge and belief and that I understand the conditions set forth the reverse side of this form.

TE 10/4/88

Donald A. Stillwell

Signature of Applicant

RECEIVED OCT 5 1988 HYDROLOGY

OCT 1988 HYDROLOGY APPROVED

13. Is this well to monitor existing contamination? Yes Potential contamination? ___
Please explain SO_4 and TDS in Bisbee-Naco area

14. If construction plans have been coordinated with Az. Dept. Health Services, Environmental Health Division, who is the agency contact? None
If construction plans have been coordinated with Az. Dept. Water Resources; Hydrology/ Remedial Action Division, who is the division contact? None

15. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air rotary

b) Borehole diameters:
10 inches from 0 feet to 20 feet
6 inches from 20 feet to 170 feet
___ inches from ___ feet to ___ feet

c) Casing materials (PVC, steel, stainless steel, etc.):
material Steel diameter 6 inches from 0 feet to 20 feet
material PVC diameter 4 inches from 0 feet to 170 feet
material ___ diameter ___ inches from ___ feet to ___ feet

d.) Method of sealing at reductions None

e) Annular seal materials (cement, grout, etc.) and method of placement(tremied,circulated:)
material Grout method Poured from 0 feet to 20 feet
material ___ method ___ from ___ feet to ___ feet
material ___ method ___ from ___ feet to ___ feet

f) Gravel packs (state material, and whether natural or artificial):
material None from ___ feet to ___ feet
material ___ from ___ feet to ___ feet

g) Perforations (if pre-manufactured, please give specs of perforations or screens):
type Factory slotted PVC from 120 feet to 170 feet
type ___ from ___ feet to ___ feet

h) Method of well development (bail, air lift, surge) Air lift

i) Will surface or conductor casing extending above grade be used to protect the aquifer from additional surface contaminants during drilling and construction? Yes

16. Include detailed construction diagram, if available.

/. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes__ No X
If yes, a request for a variance must accompany this application pursuant to R12-15-820.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with DWR rules R12-15-811 and R12-15-816.
II. Drilling of the well shall be completed within one (1) year after the date of Notice.
III. A Well Driller Report, DWR-55-6-5/83, is required within 30 days of completion of drilling. A Completion Report, DWR-55-7-3/83, is required to be filed with the Department within 10 days after installation of pump equipment for monitor wells.
IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the minimum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual amount of 10 acre feet total.
V. Special construction standards required pursuant to R12-15-821: ___

PHELPS DODGE CORP
P O BOX 50427
TUCSON AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	522569
	THRU
55	522580

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEES FOR NOTICES OF INTENTION TO	10.00	100.00
					DRILL WELLS		
					FILE# REGISTRATION#		
					~~D(24-24)9aab 55-522569~~		
					D(24-24)4aac 55-522573		
					~~D(24-24)4aac 55-522574~~		
					D(23-24)35bba 55-522575		
					~~D(24-24)4bca 55-522576~~		
					D(23-24)33bca 55-522577		
					~~D(24-24)10dba 55-522578~~		
					D(23-24)21cdd 55-522579		
					D(24-24)8ddc 55-522580		
					D(24-24)8ddc 55-522581		
					10/7/88/ek		
					CK#1324		

TOTAL $ 100.00

RECEIVED
OCT - 7 1988
PHELPS DODGE

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner *Phelps Dodge Corporation*
   Name
   Copper Queen Branch, Bisbee, AZ 85603
   Mailing Address
2. Driller *B-J Drilling Company, Inc.*
   Name
   P.O. Box 815, Benson, AZ 85602
   Mailing Address
3. Location of well: *Twp 24S, Rge 24E, Section 6: SW¼,SW¼,NW¼*
4. Permit No. (if issued) *55-522699*

DESCRIPTION OF WELL

5. Total depth of hole *325'* ft.
6. Type of casing *Steel & Plastic*
7. Diameter and length of casing *6"* in. from *+1'* to *19'*, *4* in from *+1'* to *325'*.
8. Method of sealing at reduction points *Cemented*
9. Perforated from *260'* to *320'*, from _____ to _____, from _____ to _____.
10. Size of cuts *.125 x 1¼"* Number of cuts per foot *160*
11. If screen was installed: Length _____ ft. Diam _____ in. Type _____
12. Method of construction *Drilled*
    drilled, dug, driven, bored, jetted, etc.
13. Date started *1/10/89*
    Month Day Year
14. Date completed *1/11/89*
    Month Day Year
15. Depth to water *265' static* ft. (If flowing well, so state.)
16. Describe point from which depth measurements were made, and give sea-level elevation if available *Top of casing*
17. If flowing well, state method of flow regulation: _____
18. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
REG. NO 55-522699
File No. D(24-24)6bcc
Entered _____ By _____
ENTERED MAR 07 1989

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	220	Interlayered gravel with interbedded limestone pebble caliche and tan-brown silt/clay. Alluvium

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Robert A. Jackson
Name

B-J Drilling Company, Inc.
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

Date 2/24/89

DEPARTMENT OF WATER RESOURCES
15 South 15th Ave., Phoenix, AZ 85007

Registration No. 55-522699

File No. D(24-24)6bcc

COMPLETION REPORT TM-15

1. Per A.R.S. §45-600, the Completion Report to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24S	24E	6	SW ¼	SW ¼	NW ¼
Township	Range	Section			

EQUIPMENT INSTALLED:

Kind of pump Submersible
(Turbine, centrifugal, etc.)

Kind of power Electric (Electric, natural gas, gasoline, etc.) H.P. Rating of Motor 1½ HP

Pumping Capacity ____ (Gallons per minute) Date installed 2/03/89

WELL TEST:

Test pumping capacity 13 (Gallons per minute) Date Well Tested 2/03/89

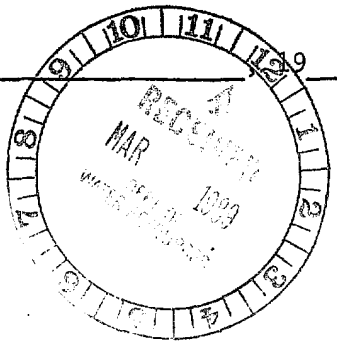
Method of Discharge Measurement Timed volume
(Weir, orifice, current meter, etc.)

Static Groundwater Level 265 ft. Drawdown 1 ft.

Total Pumping Lift 270 ft. Drawdown ____ lbs (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

2/26/89
DATE



Robert A. Jackson
Signature B-J Drilling Company, Inc.

P.O. Box 815
Address

Benson, AZ 85602
City State Zip

ENTERED MAR 07 1989

DWR-55-7-3/84

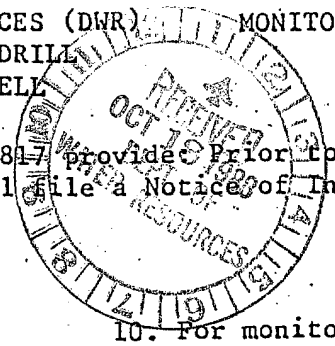
MONITOR/PIEZOMETER WELL

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

TM-15



Section 45-596, Arizona Revised Statutes and Rule R12-15-817 provide: Prior to drilling a monitor or piezometer well, the well owner or lessee shall file a Notice of Intention to Drill on a form provided by the Department.

WELL/LAND LOCATION

1. Township 24 N/S
   Range 24 E/W
   Section 6
   List 10-acre subdivision
   SW ¼, SW ¼, NW ¼

2. County Cochise

3. Applicant:
   Phelps Dodge Corp.
   Name
   Copper Queen Branch
   Address
   Bisbee, AZ 85603
   City State Zip

4. Lance Pape
   NAME OF CONTACT PERSON
   Phone: 602-432-5342
   Agency: Phelps Dodge Corp.

5. Owner of well:
   Phelps Dodge Corp.
   Name
   Copper Queen Branch
   Address
   Bisbee, AZ 85603
   City State Zip

6. Purpose of well drilled pursuant to this Notice:
   Monitor X
   Piezometer

7. Owner of land:
   Charles R. Miller-Trustee
   Name
   P.O. Box 613
   Address
   Naco, AZ 85620
   City State Zip
   Telephone number

8. Construction will start:
   October 1988
   Month Day Year

9. Period well will remain in use: indef. months/years

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

File No. D(24-24)6bcc

Filed 10-18-88 By ek

Input ENTERED OCT 25 1988 By

Duplicate Mailed 10-21-88 By ek

Registration No. 55-522699

AMA/INA —

W/S 14 S/B

10. For monitoring wells, is pump equipment to be installed? Yes

(a) If so, what will be the design pump capacity?
10 gallons per minute

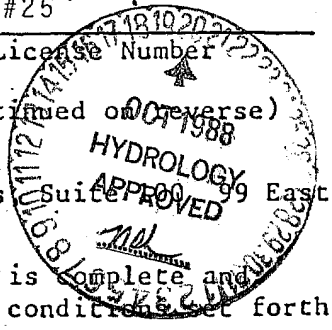
(b) Type of pump (submersible, turbine, etc.)
Submersible

(c) What use will be made of the water?
Sampling only

11. Proposed method of abandonment of well after project is completed:
Fill to total depth with cement grout after PVC removal

12. Drilling firm:
BJ Drilling Co., Inc.
Name
P.O. Box 815
Address
Benson, AZ 85602
City State Zip
DWR #25 A-4
DWR License Number

(continued on reverse)



GENERAL INSTRUCTIONS

ill out this form in duplicate and mail to Department of Water Resources, Suite 99 East irginia, Phoenix, Arizona 85004. Filing fee must accompany Notice.

state that this Notice is filed in compliance with Rule R12-15-809 and is complete and orrect to the best of my knowledge and belief and that I understand the conditions set forth n the reverse side of this form.

ATE 10/14/88

Donald A. Stallwell
Signature of Applicant

13. Is this well to monitor existing contamination? Yes Potential contamination? ___
Please explain SO_4 and TDS in Bisbee-Naco area

14. If construction plans have been coordinated with Az. Dept. Health Services, Environmental Health Division, who is the agency contact? None
If construction plans have been coordinated with Az. Dept. Water Resources; Hydrology/ Remedial Action Division, who is the division contact? None

15. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air rotary

b) Borehole diameters:

10 inches from 0 feet to 20 feet
6 inches from 20 feet to 370 feet
___ inches from ___ feet to ___ feet

c) Casing materials (PVC, steel, stainless steel, etc.):

material Steel diameter 6 inches from 0 feet to 20 feet
material PVC diameter 4 inches from 0 feet to 370 feet
material ___ diameter ___ inches from ___ feet to ___ feet

d) Method of sealing at reductions ___

e) Annular seal materials (cement, grout, etc.) and method of placement(tremied,circulated:)

material Grout method poured from 0 feet to 20 feet
material ___ method ___ from ___ feet to ___ feet
material ___ method ___ from ___ feet to ___ feet

f) Gravel packs (state material, and whether natural or artificial):

material None from ___ feet to ___ feet
material ___ from ___ feet to ___ feet

g) Perforations (if pre-manufactured, please give specs of perforations or screens):

type Factory slotted from 320 feet to 370 feet
type ___ from ___ feet to ___ feet

h) Method of well development (bail, air lift, surge) Air lift

i) Will surface or conductor casing extending above grade be used to protect the aquifer from additional surface contaminants during drilling and construction? Yes

16. Include detailed construction diagram, if available.

17. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes__ No X
If yes, a request for a variance must accompany this application pursuant to R12-15-820.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with DWR rules R12-15-811 and R12-15-816.
II. Drilling of the well shall be completed within one (1) year after the date of Notice.
III. A Well Driller Report, DWR-55-6-5/83, is required within 30 days of completion of drilling. A Completion Report, DWR-55-7-3/83, is required to be filed with the Department within 10 days after installation of pump equipment for monitor wells.
IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the minimum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual amount of 10 acre feet total.
V. Special construction standards required pursuant to R12-15-821: ___

PHELPS DODGE CORP
P O BOX 50427
TUCSON AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	522693
	THRU
55	~~8888~~ 5227000

PAID
OCT 21 1988
PAID

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEES FOR NOTICES OF INTENTION TO	10.00	80.00
					DRILL WELLS		
					FILE# REGISTRATION#		
					D(24-24)2bcc 55-522693		
					D(24-24)21aab 55-522694		
					D(24-24)14bca 55-522695		
					D(24-24)5bdc 55-522696		
					D(24-24)20bab 55-522697		
					D(24-24)8bcc 55-522698		
					D(24-24)6bcc 55-522699		
					D(24-24)16aca 55-522700		

TOTAL $ 80.00

10/21/88/ek
CK#1330

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001- 0458
FOR INFORMATION: CALL MONICA ORTIZ AT (602)417-2470

RECEIVED
MAR 21 2005
Information Management

REQUEST FORM TO CHANGE WELL INFORMATION
OWNERSHIP * DRILLER

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-0458. In accordance with A.R.S. § 45-113, please submit the applicable fee. NOTE: A.R.S. §45-593 (C) requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration Well data and ownership changes must be submitted within thirty

---

Pioneer Title Agency, Inc.
P.O. BOX 1900
Sierra Vista, AZ 85636

NATIONAL BANK OF ARIZONA
1160 E. Fry Blvd.
Sierra Vista, Arizona 85635
91-532/1221

NO. 678737

FILE NUMBER	DATE	AMOUNT
00910987 - 006 DB	03/17/05	$10.00

PAY TEN DOLLARS and no/100

TO THE ORDER OF ARIZONA DEPT OF WATER RESOURCE
P.O. BOX 458
PHOENIX, AZ 85001

[redacted]OUNT

ANSWERED MAR 2 8 2005

[redacted]

Details on back
Security Features Included

---

2. **STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)**

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00

I, SAM PRESSLEY state that I am the **Previous/New Owner** of the well described below:

____ ¼ ____ ¼ ____ ¼ Section ____ Township ____ N/S Range ____ E/W
10 Acre 40 Acre 160 Acre

Assessor's tax parcel number of the parcel on which the well is located: Book____ Map____ Parcel____.

Well Registration No. 55- 622916

File No.____ (if known)

JAMES & IRENE WILNER
PRINT Previous Owner's Name

SAM PRESSLEY
PRINT New Owner's Name

P.O. BOX 950
Mailing Address

P.O. BOX 607
Mailing Address

NACO AZ 85620
City State Zip

BISBEE AZ 85603
City State Zip

Telephone Number

Telephone Number

Signature of Previous/New Well Owner [signature] Date 3/10/05

DWR 55-71a (Rev 1/99)

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001- 0458
FOR INFORMATION: CALL MONICA ORTIZ AT (602)417-2470

RECEIVED
MAR 21 2005
Information Management

REQUEST FORM TO CHANGE WELL INFORMATION OWNERSHIP * DRILLER

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-045. In accordance with A.R.S. § 45-113, please submit the applicable fee. NOTE: A.R.S. §45-593 (C) requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. **CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)**

NOTE: If the location of the proposed well changes after drilling authority has been issued, **attach a $10.00 reissue fee for each** of the drilling authorities to be changed.

WELL REGISTRATION NO. 55-_____ **FILE NO:** D(8-24)7 AAA

I/We request the following well information be changed: _____

_____

Date_____ Signature of Current Well Owner_____
***Note: This information is on your copy of the Notice of Intent to Drill.**

2. **STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)**

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, SAM PRESSLEY, state that I am the **Previous/New Owner** of the well described below:

_____¼ _____¼ _____¼ of Section_____ Township_____N/S Range_____E/W
10 Acre 40 Acre 160 Acre
Assessor's tax parcel number of the parcel on which the well is located: Book_____ Map_____ Parcel_____.

Well Registration No. 55-522816 File No._____(if known)

JAMES & IRENE WIDNER
PRINT Previous Owner's Name

SAM PRESSLEY
PRINT New Owner's Name

P.O. BOX 350
Mailing Address

P.O. BOX 607
Mailing Address

NACO AZ 85620
City State Zip

BISBEE AZ 85603
City State Zip

Telephone Number

Telephone Number

Signature of Previous/New Well Owner Sam Pressley **Date** 3/10/05

DWR 55-71a (Rev 1/99)

JB

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner *Phelps Dodge Corporation*
   Name
   Copper Queen Branch, Bisbee, AZ 85603
   Mailing Address

2. Driller *B-J Drilling Company, Inc.*
   Name
   P.O. Box 815, Benson, AZ 85602
   Mailing Address

3. Location of well: *Twp 24S, Rge 24E, Section 7: SW¼,NW¼,NW¼*

4. Permit No. (if issued) *55-522816*

DESCRIPTION OF WELL

5. Total depth of hole *215* ft.
6. Type of casing *Steel & Plastic*
7. Diameter and length of casing *6"* in. from *+1'* to *19.2'*, *4* in from *+1'* to *215'*.
8. Method of sealing at reduction points *Cemented*
9. Perforated from *165'* to *215'*, from _____ to _____, from _____ to _____.
10. Size of cuts *.125 x 1¼"* Number of cuts per foot *160*
11. If screen was installed: Length _____ ft. Diam _____ in. Type _____
12. Method of construction *Drilled*
    drilled, dug, driven, bored, jetted, etc.
13. Date started *1/11/89*
    Month Day Year
14. Date completed *1/12/89*
    Month Day Year
15. Depth to water *178.25 static* ft. (If flowing well, so state.)
16. Describe point from which depth measurements were made, and give sea-level elevation if available *top of casing*
17. If flowing well, state method of flow regulation: _____
18. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
REG. NO. 55-522816
File No. D(24-24)7bbc
Entered ENTERED MAR 07 1989

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	115	Interlayered gravel and brown silt/clay with interbedded limestone pebble caliche. Alluvium
115	215	Alluvial gravel with minor silt/clay

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Robert A. Jackson
Name

B-J Drilling Company, Inc.
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

Date 2/24/89

DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

Registration No. 55-522816

File No. D(24-24)7bbc

TM-14

COMPLETION REPORT

1. Per A.R.S. §45-600, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24S	24E	7	SW NW NW
Township	Range	Section	¼ ¼ ¼

EQUIPMENT INSTALLED:

Kind of pump: Submersible (Turbine, centrifugal, etc.)

Kind of power: Electric (Electric, natural gas, gasoline, etc.) H.P. Rating of Motor: 3/4 HP

Pumping Capacity: _____ (Gallons per minute) Date pump installed: 2/10/89

WELL TEST:

Test pumping capacity: 13.1 GPM (Gallons per minute) Date Well Tested: 2/10/89

Method of Discharge Measurement: timed volume (Weir, orifice, current meter, etc.)

Static Groundwater Level: 178.25 ft. Drawdown: 5.85' ft.

Total Pumping Lift: 184.1 ft. Drawdown: _____ lbs. (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Phelps Dodge Corporation
Print Well Owner's Name

2/26/89
Date

Robert A. Jackson
Signature of Well Owner or Agent

B-J Drilling Company, Inc.
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

RECEIVED MAR 2 1989 DEPT OF WATER RESOURCES

ENTERED DWR07[illegible]

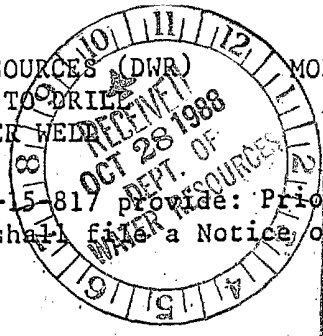
DWR-55-7-11/88

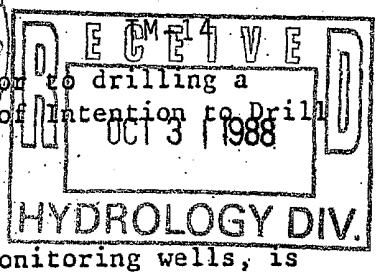
MONITOR/PIEZOMETER WELL

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL
MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL





Section 45-596, Arizona Revised Statutes and Rule R12-15-817 provide: Prior to drilling a monitor or piezometer well, the well owner or lessee shall file a Notice of Intention to Drill on a form provided by the Department.

WELL/LAND LOCATION

1. Township 24 N/S
   Range 24 E/W
   Section 7
   List 10-acre subdivision
   SW ¼, NW ¼, NW ¼

2. County Cochise

3. Applicant:
   Phelps Dodge Corp.
   Name
   Copper Queen Branch
   Address
   Bisbee, AZ 85603
   City State Zip

4. Lance Pape
   NAME OF CONTACT PERSON
   Phone: 602-432-5342
   Agency: Phelps Dodge Corp.

5. Owner of well:
   Phelps Dodge Corp.
   Name
   Copper Queen Branch
   Address
   Bisbee, AZ 85603
   City State Zip

6. Purpose of well drilled pursuant to this Notice:
   Monitor X
   Piezometer

7. Owner of land:
   Diana Barnes
   Name
   3232 Bimini
   Address
   Corpus Christi, TX 78418
   City State Zip
   Telephone number

8. Construction will start:
   October 1988
   Month Day Year

9. Period well will remain in use: indef. months/years

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. D(24-24)7 bcb
Filed 10-28-88 By k
Input ENTERED NOV 07 1988
Duplicate Mailed 11-7-88 By k
Registration No. 55-522816
AMA/INA —
W/S 14 S/B

10. For monitoring wells, is pump equipment to be installed? Yes
    (a) If so, what will be the design pump capacity?
    10 gallons per minute
    (b) Type of pump (submersible, turbine, etc.)
    Submersible
    (c) What use will be made of the water?
    Sampling only

11. Proposed method of abandonment of well after project is completed:
    Fill to total depth with cement grout after PVC removal

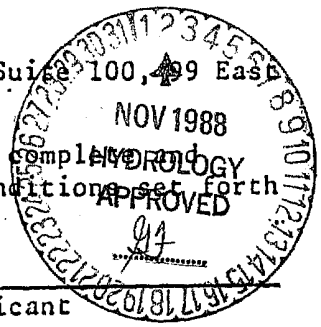
12. Drilling firm:
    B.J. Drilling Co., Inc.
    Name
    P.O. Box 815
    Address
    Benson, AZ 85602
    City State Zip
    DWR #25 A-41
    DWR License Number

(continued on reverse)

GENERAL INSTRUCTIONS

Fill out this form in duplicate and mail to Department of Water Resources, Suite 100, 99 East Virginia, Phoenix, Arizona 85004. Filing fee must accompany Notice.

I state that this Notice is filed in compliance with Rule R12-15-809 and is complete and correct to the best of my knowledge and belief and that I understand the conditions set forth on the reverse side of this form.



DATE 10/26/88

Donald A. Stallwell
Signature of Applicant

13. Is this well to monitor existing contamination? Yes Potential contamination? ___
Please explain SO4 and TDS in Bisbee-Naco area

14. If construction plans have been coordinated with Az. Dept. Health Services, Environmental Health Division, who is the agency contact? None
If construction plans have been coordinated with Az. Dept. Water Resources, Hydrology/ Remedial Action Division, who is the division contact? None

15. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air rotary

b) Borehole diameters:
10 inches from 0 feet to 20 feet
6 inches from 20 feet to 230 feet
___ inches from ___ feet to ___ feet

c) Casing materials (PVC, steel, stainless steel, etc.):
material Steel diameter 6 inches from 0 feet to 20 feet
material PVC diameter 4 inches from 0 feet to 230 feet
material ___ diameter ___ inches from ___ feet to ___ feet

d.) Method of sealing at reductions ___

e) Annular seal materials (cement, grout, etc.) and method of placement(tremied,circulated:)
material Grout method Poured from 0 feet to 20 feet
material ___ method ___ from ___ feet to ___ feet
material ___ method ___ from ___ feet to ___ feet

f) Gravel packs (state material, and whether natural or artificial):
material None from ___ feet to ___ feet
material ___ from ___ feet to ___ feet

g) Perforations (if pre-manufactured, please give specs of perforations or screens):
type Factory slotted PVC from 180 feet to 230 feet
type ___ from ___ feet to ___ feet

h) Method of well development (bail, air lift, surge) Air lift

i) Will surface or conductor casing extending above grade be used to protect the aquifer from additional surface contaminants during drilling and construction? Yes

16. Include detailed construction diagram, if available.

17. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes__ No X
If yes, a request for a variance must accompany this application pursuant to R12-15-820.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with DWR rules R12-15-811 and R12-15-816.
II. Drilling of the well shall be completed within one (1) year after the date of Notice.
III. A Well Driller Report, DWR-55-6-5/83, is required within 30 days of completion of drilling. A Completion Report, DWR-55-7-3/83, is required to be filed with the Department within 10 days after installation of pump equipment for monitor wells.
IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the minimum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual amount of 10 acre feet total.
V. Special construction standards required pursuant to R12-15-821: ___

PHELPS DODGE CORP
P O BOX 50427
TUCSON AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	522815
	THRU
55	522817

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEES FOR NOTICES OF INTENTION TO	10.00	30.00
					DRILL WELLS		
					FILE# REGISTRATION#		
					D(24-24)18aab 55-522815		
					D(24-24)7bbc 55-522816		
					D(24-24)1ccc 55-522817		

PAID
NOV - 7 1988

11/7/88/ek
CK#1333

TOTAL $ 30.00

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division
15 South 15th Avenue
Phoenix, Arizona 85007

ok

RECEIVED
JAN 27 1992
OPERATIONS DIV

CHANGE OF WELL INFORMATION

Well Reg. No. 55-522816

File (location) No. D(24-24) 07 bcb2

I/We request the following well information be changed:

Date: _____, 19____ _____
Signature of current Well Owner

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, _____, state that I am (no longer) the (new)
(please print)
owner of the well described below:

Township 24 S Range 24 E Section 07 ; NW ¼ SW ¼ NW ¼

Well Registration No. 55-522816 File (location) No. (24-24) 07 bcb2

PHELPS DODGE CORPORATION
Previous Owner
Copper Queen Branch
Hwy 92
Address

Bisbee AZ 85603
City State Zip

DATED: January 24, 1992

JAMES B & IRENE M. WIDNER
PRINT New Owner's Name

James B Widner
Signature of New Owner

P.O. Box 4023
Address

BISBEE AZ 85603
City State Zip

ENTERED FEB 19 1992

NOTE: A.R.S. §45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER, PRIOR TO DRILLING THE WELL, IN ADDITION TO AMENDING INFORMATION PREVIOUSLY FILED.

* * * * *

DWR-55-51-7/88

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division
15 South 15th Avenue
Phoenix, Arizona 85007

NOV - 6 1989

CHANGE OF WELL INFORMATION

Well Reg. No. 55-522816

File (location) No. D(24-24)7 bbc

I/We request the following well information be changed:

Resurveyed location is: T24S, R24E, Sec. 7 NW,SW,NW

Amend file number

Well not drilled at Barnes location.

Well drilled ~ 200 feet south on Widner land

Date: November 2, 19 89

Phelps Dodge Corporation
Signature of current Well Owner

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, _____ (please print), state that I am (no longer) the (new) owner of the well described below:

Township _____ Range _____ Section _____; ____ ¼ ____ ¼ ____ ¼

Well Registration No. _____ File (location) No. _____

Diana Barnes	James Widner
Previous Owner of land	PRINT New Owner's Name of land
3232 Bimini	Phelps Dodge Corporation
Address	Signature of New Owner
Corpus Christi, TX 78418	Box 4058
City State Zip	Address
DATED: 11-2-89	Bisbee AZ 85603
	City State Zip

NOTE: A.R.S. §45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

ENTERED NOV 15 1989

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER, PRIOR TO DRILLING THE WELL, IN ADDITION TO AMENDING INFORMATION PREVIOUSLY FILED.

* * * * *

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner *Phelps Dodge Corporation*
   Name
   Copper Queen Branch, Bisbee, AZ 85603
   Mailing Address
2. Driller *B-J Drilling Company, Inc.*
   Name
   P.O. Box 815, Benson, AZ 85602
   Mailing Address
3. Location of well: *Twp 24S, Rge 24E, Section 8: SW¼,SW¼,NW¼*
4. Permit No. (if issued) *55-522698*

DESCRIPTION OF WELL

5. Total depth of hole *200'* ft.
6. Type of casing *Steel & Plastic*
7. Diameter and length of casing *6"* in. from *+1'* to *20'*, *4* in from *+1* to *200'*.
8. Method of sealing at reduction points *Cemented*
9. Perforated from *140'* to *200'*, from _____ to _____, from _____ to _____.
10. Size of cuts *.125 x 1¼"* Number of cuts per foot *160*
11. If screen was installed: Length _____ ft. Diam _____ in. Type _____
12. Method of construction *Drilled*
    drilled, dug, driven, bored, jetted, etc.
13. Date started *1/05/89*
    Month Day Year
14. Date completed *1/05/89*
    Month Day Year
15. Depth to water *152.5 static* ft. (If flowing well, so state.)
16. Describe point from which depth measurements were made, and give sea-level elevation if available *Top of casing*
17. If flowing well, state method of flow regulation: _____
18. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
REG. NO. 55-522698
File No. D(24-24)8bcc
Entered ENTERED MAR 07 1989 By _____

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	200	Interlayered gravel and tan-brown silt/clay. Alluvium

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Robert L. Jackson
Name

B-J Drilling Company, Inc.
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

Date 2/24/89

DEPARTMENT OF WATER RESOURCES
15 South 15th Ave., Phoenix, AZ 85007

Registration No. 55-522698

File No. D(24-24)8bcc

COMPLETION REPORT Tm-13

1. Per A.R.S. §45-600, the Completion Report to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24S	24E	8	SW SW NW
Township	Range	Section	¼ ¼ ¼

EQUIPMENT INSTALLED:

Kind of pump Submersible
(Turbine, centrifugal, etc.)

Kind of power Electric (Electric, natural gas, gasoline, etc.) H.P. Rating of Motor 1 HP

Pumping Capacity _____ (Gallons per minute) Date installed 1/15/89

WELL TEST:

Test pumping capacity 18.1 GPM (Gallons per minute) Date Well Tested 1/15/89

Method of Discharge Measurement timed volume
(Weir, orifice, current meter, etc.)

Static Groundwater Level 152.5 ft. Drawdown 1.5' ft.

Total Pumping Lift 154 ft. Drawdown _____ lbs
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

2/26/89 19
DATE

Robert D. Jackson
Signature B-J Drilling Company, Inc.

P.O. Box 815
Address

Benson, AZ 85602
City State Zip

RECEIVED MAR 2 1989 DEPT OF WATER RESOURCES

DWR-55-7-3/84

ENTERED MAR 07 1989

MONITOR/PIEZOMETER WELL

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL
MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

TM-13

RECEIVED OCT 18 1988 ARIZONA DEPARTMENT OF WATER RESOURCES

Section 45-596, Arizona Revised Statutes and Rule R12-15-817 provide: Prior to drilling a monitor or piezometer well, the well owner or lessee shall file a Notice of Intention to Drill on a form provided by the Department.

WELL/LAND LOCATION

1. Township 24 N/S
Range 24 E/W
Section 8
List 10-acre subdivision
SW ¼, SW ¼, NW ¼

2. County Cochise

3. Applicant:
Phelps Dodge Corp.
Name
Copper Queen Brnach
Address
Bisbee, AZ 85603
City State Zip

4. Lance Pape
NAME OF CONTACT PERSON
Phone: 602-432-5342
Agency: Phelps Dodge Corp.

5. Owner of well:
Phelps Dodge Corp.
Name
Copper Queen Branch
Address
Bisbee, AZ 85603
City State Zip

6. Purpose of well drilled pursuant to this Notice:
Monitor X
Piezometer

7. Owner of land:
Charles R. Miller
Name
P.O. Box 613
Address
Naco, AZ 85620
City State Zip
Telephone number

8. Construction will start:
October 1988
Month Day Year

9. Period well will remain in use: indef. months/years

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. D(24-24)8bcc
Filed 10-18-88 By [illegible]
Input ENTERED OCT 25 1988 By
Duplicate Mailed 10-21-88 By [illegible]
Registration No. 55-522688
AMA/INA —
W/S 14 S/B

10. For monitoring wells, is pump equipment to be installed? Yes

(a) If so, what will be the design pump capacity?
10 gallons per minute

(b) Type of pump (submersible, turbine, etc.)
Submersible

(c) What use will be made of the water?
Sampling only

11. Proposed method of abandonment of well after project is completed:
Fill to total depth with cement grout after PVC removal

12. Drilling firm:
BJ Drilling Co., Inc.
Name
P.O. Box 815
Address
Benson, Az 85602
City State Zip
DWR #25 A-1
DWR License Number

(continued on reverse)

OCT 1988 HYDROLOGY APPROVED

GENERAL INSTRUCTIONS

ill out this form in duplicate and mail to Department of Water Resources, Suite 400, 99 East irginia, Phoenix, Arizona 85004. Filing fee must accompany Notice.

state that this Notice is filed in compliance with Rule R12-15-809 and is complete and orrect to the best of my knowledge and belief and that I understand the conditions set forth n the reverse side of this form.

ATE 10/14/88

Donald A. Stallwell
Signature of Applicant

13. Is this well to monitor existing contamination? Yes Potential contamination? ____
Please explain SO_4 and TDS in Bisbee-Naco area

14. If construction plans have been coordinated with Az. Dept. Health Services, Environmental Health Division, who is the agency contact? None
If construction plans have been coordinated with Az. Dept. Water Resources, Hydrology/ Remedial Action Division, who is the division contact? None

15. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air rotary

b) Borehole diameters:
10 inches from 0 feet to 20 feet
6 inches from 20 feet to 200 feet
____ inches from ____ feet to ____ feet

c) Casing materials (PVC, steel, stainless steel, etc.):
material Steel diameter 6 inches from 0 feet to 20 feet
material PVC diameter 4 inches from 0 feet to 200 feet
material ____ diameter ____ inches from ____ feet to ____ feet

d.) Method of sealing at reductions ____

e) Annular seal materials (cement, grout, etc.) and method of placement(tremied,circulated:)
material Grout method Poured from 0 feet to 20 feet
material ____ method ____ from ____ feet to ____ feet
material ____ method ____ from ____ feet to ____ feet

f) Gravel packs (state material, and whether natural or artificial):
material None from ____ feet to ____ feet
material ____ from ____ feet to ____ feet

g) Perforations (if pre-manufactured, please give specs of perforations or screens):
type Factory slotted PVC from 150 feet to 200 feet
type ____ from ____ feet to ____ feet

h) Method of well development (bail, air lift, surge) Air lift

i) Will surface or conductor casing extending above grade be used to protect the aquifer from additional surface contaminants during drilling and construction? Yes

16. Include detailed construction diagram, if available.

7. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes__ No X
If yes, a request for a variance must accompany this application pursuant to R12-15-820.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with DWR rules R12-15-811 and R12-15-816.
II. Drilling of the well shall be completed within one (1) year after the date of Notice.
III. A Well Driller Report, DWR-55-6-5/83, is required within 30 days of completion of drilling. A Completion Report, DWR-55-7-3/83, is required to be filed with the Department within 10 days after installation of pump equipment for monitor wells.
IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the minimum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual amount of 10 acre feet total.
V. Special construction standards required pursuant to R12-15-821: ____

PHELPS DODGE CORP
P O BOX 50427
TUCSON AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	522693
	THRU
55	~~8888~~ 5227000

PAID
OCT 21 1988
PAID

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEES FOR NOTICES OF INTENTION TO	10.00	80.00
					DRILL WELLS		
					FILE# REGISTRATION#		
					D(24-24)2bcc 55-522693		
					D(24-24)21aab 55-522694		
					D(24-24)14bca 55-522695		
					D(24-24)5bdc 55-522696		
					D(24-24)20bab 55-522697		
					D(24-24)8bcc 55-522698		
					D(24-24)6bcc 55-522699		
					D(24-24)16aca 55-522700		

TOTAL $ 80.00

10/21/88/ek
CK#1330

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner *Phelps Dodge Corporation* (Name)
   Copper Queen Branch, Bisbee, AZ 85603 (Mailing Address)
2. Driller *B-I Drilling Company, Inc.* (Name)
   P.O. Box 815, Benson, AZ 85602 (Mailing Address)
3. Location of well: *Twp 24S, Rge 24E, Section 20: NW¼, NE¼, NW¼*
4. Permit No. (if issued) *55-522697*

DESCRIPTION OF WELL

5. Total depth of hole *175* ft.
6. Type of casing *Steel & Plastic*
7. Diameter and length of casing *6* in. from *+1'* to *19'*, *4* in from *+1'* to *171'*.
8. Method of sealing at reduction points *Cemented*
9. Perforated from *121'* to *171'*, from _____ to _____, from _____ to _____.
10. Size of cuts *.125 x 1¼"* Number of cuts per foot *160*
11. If screen was installed: Length _____ ft. Diam _____ in. Type _____
12. Method of construction *Drilled* (drilled, dug, driven, bored, jetted, etc.)
13. Date started *1/12/89* (Month Day Year)
14. Date completed *1/12/89* (Month Day Year)
15. Depth to water *128.5 static* ft. (If flowing well, so state.)
16. Describe point from which depth measurements were made, and give sea-level elevation if available *top of casing*
17. If flowing well, state method of flow regulation: _____
18. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
REG. NO. 55-522697
File No. D(24-24)20bab
Entered ENTERED MAR 07 1989

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	60	Interlayered gravel with caliche and red-brown silt/clay.
		Alluvium
60	175	Alluvial gravel with caliche and minor silt/clay.

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Robert D. Jackson
Name

B-J Drilling Company, Inc.
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

Date 2/24/89

DEPARTMENT OF WATER RESOURCES
15 South 15th Ave., Phoenix, AZ 85007

Registration No. 55-522697

D(24-24)20bab

File No. _____

COMPLETION REPORT TM-12

1. Per A.R.S. §45-600, the Completion Report to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24S	24E	20	NW NE NW
Township	Range	Section	¼ ¼ ¼

EQUIPMENT INSTALLED:

Kind of pump *Submersible*
Turbine, centrifugal, etc.

Kind of power *Electric* H.P. Rating of Motor *3/4 HP*
Electric, natural gas, gasoline, etc.

Pumping Capacity _____ Date installed *2/05/89*
Gallons per minute

WELL TEST:

Test pumping capacity *12.7 GPM* Date Well Tested *2/05/89*
Gallons per minute

Method of Discharge Measurement *timed volume*
Weir, orifice, current meter, etc.

Static Groundwater Level *128.5* ft. Drawdown *1* ft.

Total Pumping Lift *129.5* ft. Drawdown _____ lbs
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

2/26/89, 19__
DATE

Robert L. Jackson
Signature *B-J Drilling Company, Inc.*
P.O. Box 815
Address
Benson, AZ 85602
City State Zip

RECEIVED MAR 2 1989 DEPT OF WATER RESOURCES

DWR-55-7-3/84

ENTERED MAR 07 1989

MONITOR/PIEZOMETER WELL

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL
MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

TM-12

RECEIVED OCT 18 1988 WATER RESOURCES

Section 45-596, Arizona Revised Statutes and Rule R12-15-817 provide: Prior to drilling a monitor or piezometer well, the well owner or lessee shall file a Notice of Intention to Drill on a form provided by the Department.

WELL/LAND LOCATION

1. Township 24 ~~N~~/S
   Range 24 E/~~W~~
   Section 20
   List 10-acre subdivision
   ~~NW~~ SE ¼, NE ¼, NW ¼

2. County Cochise

3. Applicant:
   Phelps Dodge Corp.
   Name
   Copper Queen Branch
   Address
   Bisbee, AZ 85603
   City State Zip
   Lance Pape
   NAME OF CONTACT PERSON
   Phone: 602-432-5342
   Agency: Phelps Dodge Corp.

4. Owner of well:
   Phelps Dodge Corp.
   Name
   Copper Queen Branch
   Address
   Bisbee, AZ 85603
   City State Zip

5. Purpose of well drilled pursuant to this Notice:
   Monitor X
   Piezometer

7. Owner of land:
   Charles R. Miller
   Name
   P.O. Box 613
   Address
   Naco, AZ 85620
   City State Zip
   Telephone number

8. Construction will start:
   October 1988
   Month Day Year

9. Period well will remain in use: indef. months/years

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

File No. D(24-24)20 bad

Filed 10-18-88 By sk

Input ENTERED OCT 25 1988 By

Duplicate Mailed 10-21-88 By sk

Registration No. 55-522697

AMA/INA —

W/S 14 S/B

10. For monitoring wells, is pump equipment to be installed? Yes

(a) If so, what will be the design pump capacity?
10 gallons per minute

(b) Type of pump (submersible, turbine, etc.)
Submersible

(c) What use will be made of the water?
Sampling only

11. Proposed method of abandonment of well after project is completed:
Fill to total depth with cement grout after PVC removal

12. Drilling firm:
BJ Drilling Co., Inc.
Name
P.O. Box 815
Address
Benson, AZ 85602
City State Zip
DWR #25 A-4
DWR License Number

(continued on reverse)

OCT 1988 HYDROLOGY APPROVED

GENERAL INSTRUCTIONS

ill out this form in duplicate and mail to Department of Water Resources, Suite 100, 99 East irginia, Phoenix, Arizona 85004. Filing fee must accompany Notice.

state that this Notice is filed in compliance with Rule R12-15-809 and is complete and orrect to the best of my knowledge and belief and that I understand the conditions set forth n the reverse side of this form.

ATE 10/14/88

Donald A. Stallwell
Signature of Applicant

13. Is this well to monitor existing contamination? Yes Potential contamination? ___
Please explain SO4 and TDS in Bisbee-Naco area

14. If construction plans have been coordinated with Az. Dept. Health Services, Environmental Health Division, who is the agency contact? None
If construction plans have been coordinated with Az. Dept. Water Resources, Hydrology/ Remedial Action Division, who is the division contact? None

15. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air rotary

b) Borehole diameters:
10 inches from 0 feet to 20 feet
6 inches from 20 feet to 190 feet
___ inches from ___ feet to ___ feet

c) Casing materials (PVC, steel, stainless steel, etc.):
material Steel diameter 6 inches from 0 feet to 20 feet
material PVC diameter 4 inches from 0 feet to 190 feet
material ___ diameter ___ inches from ___ feet to ___ feet

d) Method of sealing at reductions None

e) Annular seal materials (cement, grout, etc.) and method of placement(tremied,circulated:)
material Grout method Poured from 0 feet to 20 feet
material ___ method ___ from ___ feet to ___ feet
material ___ method ___ from ___ feet to ___ feet

f) Gravel packs (state material, and whether natural or artificial):
material None from ___ feet to ___ feet
material ___ from ___ feet to ___ feet

g) Perforations (if pre-manufactured, please give specs of perforations or screens):
type Factory slotted PVC from 140 feet to 190 feet
type ___ from ___ feet to ___ feet

h) Method of well development (bail, air lift, surge) Air lift

i) Will surface or conductor casing extending above grade be used to protect the aquifer from additional surface contaminants during drilling and construction? Yes

16. Include detailed construction diagram, if available. NO

17. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes__ No X
If yes, a request for a variance must accompany this application pursuant to R12-15-820.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with DWR rules R12-15-811 and R12-15-816.
II. Drilling of the well shall be completed within one (1) year after the date of Notice.
III. A Well Driller Report, DWR-55-6-5/83, is required within 30 days of completion of drilling. A Completion Report, DWR-55-7-3/83, is required to be filed with the Department within 10 days after installation of pump equipment for monitor wells.
IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the minimum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual amount of 10 acre feet total.
V. Special construction standards required pursuant to R12-15-821: ___

PHELPS DODGE CORP
P O BOX 50427
TUCSON AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	522693
	THRU
55	~~8888~~ 5227000

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEES FOR NOTICES OF INTENTION TO DRILL WELLS	10.00	80.00
					FILE# REGISTRATION#		
					D(24-24)2bcc 55-522693		
					D(24-24)21aab 55-522694		
					D(24-24)14bca 55-522695		
					D(24-24)5bdc 55-522696		
					D(24-24)20bab 55-522697		
					D(24-24)8bcc 55-522698		
					D(24-24)6bcc 55-522699		
					D(24-24)16aca 55-522700		

PAID OCT 21 1988

TOTAL $ 80.00

10/21/88/ek
CK#1330

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division
15 South 15th Avenue
Phoenix, Arizona 85007

NOV - 6 1989

CHANGE OF WELL INFORMATION

Well Reg. No. 55-522697

File (location) No. D(24-24)20 bab

I/We request the following well information be changed:

Resurveyed location is: T24S, R24E, Sec. 20 SE.NE.NW

Amend file number

Date: November 2, 1989

for: Phelps Dodge Corporation
Signature of current Well Owner

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, _____ (please print), state that I am (no longer) the (new) owner of the well described below:

Township _____ Range _____ Section _____; _____ ¼ _____ ¼ _____ ¼

Well Registration No. _____ File (location) No. _____

Previous Owner

PRINT New Owner's Name

Address

Signature of New Owner

City State Zip

Address

ENTERED NOV 15 1989

DATED:

City State Zip

NOTE: A.R.S. §45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER, PRIOR TO DRILLING THE WELL, IN ADDITION TO AMENDING INFORMATION PREVIOUSLY FILED.

* * * * *

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner PHELPS DODGE CORPORATION
   Name
   COPPER QUEEN BRANCH, BISBEE, AZ 85603
   Mailing Address
2. Driller B-J DRILLING COMPANY, INC.
   Name
   P.O. BOX 815, BENSON, AZ 85602
   Mailing Address
3. Location of well: TWP. 24S, RGE 24E, Section 18: NW¼, NE¼, NE¼
4. Permit No. (if issued) 55-522815

DESCRIPTION OF WELL

5. Total depth of hole 160' ft.
6. Type of casing Steel & Plastic
7. Diameter and length of casing 6" in. from +1' to 20', 4 in from +10" to 159'.
8. Method of sealing at reduction points Cemented
9. Perforated from 99' to 159', from _____ to _____, from _____ to _____.
10. Size of cuts .050 x 1¼" Number of cuts per foot 160
11. If screen was installed: Length _____ ft. Diam _____ in. Type _____
12. Method of construction Drilled
    drilled, dug, driven, bored, jetted, etc.
13. Date started 11/17/88
    Month Day Year
14. Date completed 11/18/88
    Month Day Year
15. Depth to water 108.4 static ft. (If flowing well, so state.)
16. Describe point from which depth measurements were made, and give sea-level elevation if available top of casing
17. If flowing well, state method of flow regulation: _____
18. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

REG. NO. 55-522815

File No. D(24-24) 18aab

Entered ENTERED MAR 07 1989

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	160	Interlayered gravel & light brown to red-brown silt/clay

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Robert D. Jackson
Name

B-J Drilling Company, Inc
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

Date 2/24/89

DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

Registration No. 55-522815

File No. D(24-24)18aab

COMPLETION REPORT TM-11

1. Per **A.R.S. §45-600**, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24S	24E	18	NW NE NE
Township	Range	Section	¼ ¼ ¼

EQUIPMENT INSTALLED:

Kind of pump Submersible
Turbine, centrifugal, etc.

Kind of power Electric H.P. Rating of Motor 3/4 HP
Electric, natural gas, gasoline, etc.

Pumping Capacity _____ Date pump installed: 1/11/89
Gallons per minute

WELL TEST:

Test pumping capacity 19.9 GPM Date Well Tested: 1/11/89
Gallons per minute

Method of Discharge Measurement timed volume
Weir, orifice, current meter, etc.

Static Groundwater Level 108.4 ft. Drawdown 26.6' ft.

Total Pumping Lift 135 ft. Drawdown _____ lbs.
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Phelps Dodge Corporation
Print Well Owner's Name

Robert A. Jackson
Signature of Well Owner or Agent

2/26/89, 19
Date

B-J Drilling Company, Inc.
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

RECEIVED MAR 2 1989 DEPT OF WATER RESOURCES

DWR-55-7-11/88

ENTERED MAR 07 1989

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
Phone (602) 417-2470

RECEIVED
MAR - 3 1999
RECORDS MGT

REQUEST FORM TO CHANGE WELL INFORMATION
OWNERSHIP * DRILLER * VARIANCE

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-0458 or hand deliver to the above address with applicable fee. NOTE: A.R.S. §45-593.C requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)

NOTE: If the location of the proposed well changes after drilling authority has been issued, attach a $10.00 reissue fee for each well.

WELL REGISTRATION NO. 55-_____ FILE NO:_____

If known, I/We request the following well information be changed:_____

_____

Date_____ Signature of Current Well Owner_____

2. STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, LOREN F. BREWER, state that I am the Previous/New Owner of the well described below:

N 1/2¼ (10 Acre) NE ¼ (40 Acre) NE ¼ (160 Acre) of Section 18 Township 24 S Range 24E

Assessor's tax parcel number of the parcel on which the well is located: Book 102 Map 56 Parcel 038E.

Well Registration No. 55-422815 File No._____(if known)

LOREN F. BREWER PRINT Previous Owner's Name	DAVID WILLIAM ANDERSON, JR. PRINT New Owner's Name
P.O. BOX 1324 Mailing Address	3272 S. Naco Hwy Mailing Address
Douglas, AZ 85608 City State Zip	Bisbee, AZ 85603 City State Zip
_____ Telephone Number	_____ Telephone Number

Signature of Previous/New Well Owner X Loren F Brewer **Date**_____

DWR 55-71 (Rev 8/89)

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
Phone (602) 417-2470

3. REQUEST TO CHANGE WELL DRILLER $10.00 FEE REQUIRED FOR EACH WELL

This request must be received by this Department and the Drill Card issued to the new drilling firm prior to the drilling or completion of the well listed below.

Well Registration No. 55-_____ File No._____

Original Well Driller	New Well Driller
Mailing Address	Mailing Address
City State Zip	City State Zip
Telephone Number	Telephone Number
ADWR License Number	ADWR License Number ROC License Categpry
Typed or Printed Name of Well Owner	Signature of Well Owner Date

The fee charge for well ownership and reissue of drill card is authorized by R12-15-151, effective June 30, 1994.

4. REISSUE OF DRILLING AUTHORITY FOR VARIANCE REQUEST: ($10.00 EACH WELL)

NOTE: If extraordinary or unusual conditions exist, after the initial drilling authority has been issued, the well owner or well driller may request a variance from the provisions of R12-15-811.

WELL REGISTRATION NO. 55-_____ FILE NO: _____

I/WE REQUEST THE FOLLOWING WELL DRILLING AUTHORITY BE REISSUED PER THE ATTACHED VARIANCE REQUEST:

_____

Signature of Well Owner/Well Driller_____ Date_____

DWR 55-71 (Rev 8/98)

MONITOR/PIEZOMETER WELL

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL
MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

RECEIVED OCT 28 1988 DEPT. OF WATER RESOURCES

RECEIVED OCT 31 1988 HYDROLOGY DIV.

Section 45-596, Arizona Revised Statutes and Rule R12-15-817 provide: Prior to drilling a monitor or piezometer well, the well owner or lessee shall file a Notice of Intention to Drill on a form provided by the Department.

WELL/LAND LOCATION

1. Township 24 N/S
   Range 24 E/W
   Section 18
   List 10-acre subdivision
   NW ¼, NE ¼, NE ¼

2. County Cochise

3. Applicant:
   Phelps Dodge Corp.
   Name
   Copper Queen ~~Corp.~~ Branch
   Address
   Bisbee, AZ 85603
   City State Zip

4. Lance Pape
   NAME OF CONTACT PERSON
   Phone: 602-432-5342
   Agency: Phelps Dodge Corp.

5. Owner of well:
   Phelps Dodge Corp.
   Name
   Copper Queen Branch
   Address
   Bisbee, AZ 85603
   City State Zip

6. Purpose of well drilled pursuant to this Notice:
   Monitor X
   Piezometer

7. Owner of land:
   Caroline Rita Shamrell
   Name
   Box 4055
   Address
   Bisbee, AZ 85603
   City State Zip
   602-432-5288
   Telephone number

8. Construction will start:
   October 1988
   Month Day Year

9. Period well will remain in use: indef. months/years

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

File No. D(24-24)18 aab

Filed 10-28-88 By

Input ENTERED NOV 07 1988 By

Duplicate Mailed 11-7-88 By

Registration No 55-522815

AMA/INA —

W/S 11 S/B —

10. For monitoring wells, is pump equipment to be installed? Yes

(a) If so, what will be the design pump capacity?
10 gallons per minute

(b) Type of pump (submersible, turbine, etc.)
Submersible

(c) What use will be made of the water?
Sampling only

11. Proposed method of abandonment of well after project is completed:
Fill to total depth with cement grout after PVC removal

12. Drilling firm:
BJ Drilling, Co., Inc.
Name
P.O. Box 815
Address
Benson, AZ 85602
City State Zip
DWR #25 A-4
DWR License Number

(continued on reverse)

GENERAL INSTRUCTIONS

Fill out this form in duplicate and mail to Department of Water Resources, Suite 100, 99 East Virginia, Phoenix, Arizona 85004. Filing fee must accompany Notice.

I state that this Notice is filed in compliance with Rule R12-15-809 and is complete and correct to the best of my knowledge and belief and that I understand the conditions set forth on the reverse side of this form.

DATE 10/24/88

Donald A. Stallwell
Signature of Applicant

NOV 1988 HYDROLOGY APPROVED

DWR 55-82-8/86 (Revised)

13. Is this well to monitor existing contamination? Yes Potential contamination? ____
Please explain SO_4 and TDS in Bisbee-Naco area

14. If construction plans have been coordinated with Az. Dept. Health Services, Environmental Health Division, who is the agency contact? R. Kennett, Jim DuBois
If construction plans have been coordinated with Az. Dept. Water Resources, Hydrology/ Remedial Action Division, who is the division contact? None

15. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air rotary

b) Borehole diameters:
10 inches from 0 feet to 20 feet
6 inches from 20 feet to 160 feet
____ inches from ____ feet to ____ feet

c) Casing materials (PVC, steel, stainless steel, etc.):
material Steel diameter 6 inches from 0 feet to 20 feet
material PVC diameter 4 inches from 0 feet to 120 feet
material ____ diameter ____ inches from ____ feet to ____ feet

d) Method of sealing at reductions None

e) Annular seal materials (cement, grout, etc.) and method of placement(tremied,circulated:)
material Grout method Poured from 0 feet to 20 feet
material ____ method ____ from ____ feet to ____ feet
material ____ method ____ from ____ feet to ____ feet

f) Gravel packs (state material, and whether natural or artificial):
material None from ____ feet to ____ feet
material ____ from ____ feet to ____ feet

g) Perforations (if pre-manufactured, please give specs of perforations or screens):
type Factory slotted PVC from 110 feet to 160 feet
type ____ from ____ feet to ____ feet

h) Method of well development (bail, air lift, surge) Air lift

i) Will surface or conductor casing extending above grade be used to protect the aquifer from additional surface contaminants during drilling and construction? Yes

16. Include detailed construction diagram, if available.

17. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes__ No X
If yes, a request for a variance must accompany this application pursuant to R12-15-820.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with DWR rules R12-15-811 and R12-15-816.
II. Drilling of the well shall be completed within one (1) year after the date of Notice.
III. A Well Driller Report, DWR-55-6-5/83, is required within 30 days of completion of drilling. A Completion Report, DWR-55-7-3/83, is required to be filed with the Department within 10 days after installation of pump equipment for monitor wells.
IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the minimum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual amount of 10 acre feet total.
V. Special construction standards required pursuant to R12-15-821: ____

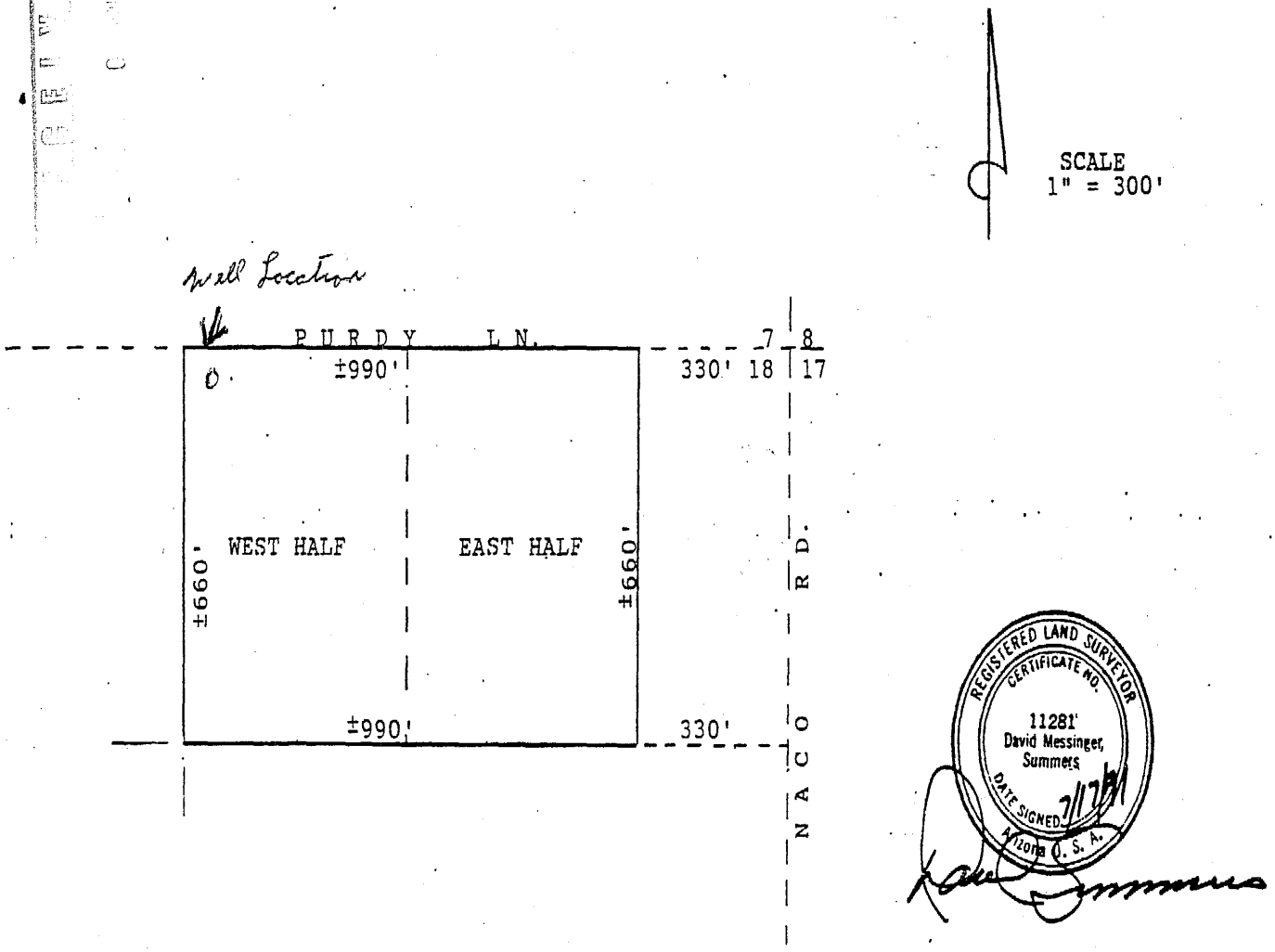


EXHIBIT "A"

SKETCH OF A PORTION OF THE NORTHEAST ¼, NORTHEAST¼, SECT. 18, T24S, R24E, G & SRB & M, COCHISE COUNTY, ARIZONA.

Bisbee Engineering

P.O. Box 1555 • Bisbee, Arizona 85603

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

January 27, 1997

Jim Pionke
218 6th Street
Racine, WI 53403

RE: Well Registration No. 55-522815
Well File No. D(24-24)18AAB

Dear Mr. Poinke:

After our phone conversation of this morning, I was able to have the file sent up from records and I have reviewed it. The file is complete, to include its transfer from Phelps Dodge to Loren F. Brewer in 1991.

From the file, I am including copies of the well driller's log, the completion report and the change of ownership. If you purchase the property, it will be necessary for you to complete the change of well information and the change of ownership portions of the enclosed form and return it, along with your check for $10.00 to get the well records into your name and reflect your current address. To complete the change of well information portion, you are requesting that the purpose of the well be changed from Monitoring to Domestic.

To accomplish that, you must file a notice of intention (form enclosed) and have the Cochise County Environmental Health Department sign off on a site plan of the location of the well and any septic system, or other hazardous item on your property or adjacent property.

Sincerely,

Lawrence A. Ramsey
Manager
GW MGT SPT

Encl as

PHELPS DODGE CORP
P O BOX 50427
TUCSON AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	522815
	THRU
55	522817

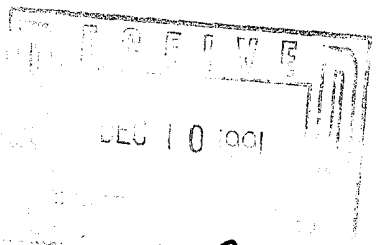
ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEES FOR NOTICES OF INTENTION TO	10.00	30.00
					DRILL WELLS		
					FILE# REGISTRATION#		
					D(24-24)18aab 55-522815		
					D(24-24)7bbc 55-522816		
					D(24-24)1ccc 55-522817		

RECEIVED
NOV 7 1988
PHELPS

11/7/88/ek
CK#1333

TOTAL $ 30.00

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007



CHANGE OF WELL INFORMATION

Well Registration No. 55- ~~613588~~ 522815 File No. D(24-24)18AAB
(location)

I/We request the following well information be changed: _____

Date: 11-3-91 Signature of Current Well Owner Phelps Dodge

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, PHELPS DODGE, state that I am (no longer) the (new)
(please print)
owner of the well described below:

____ ¼ ____ ¼ ____ ¼; Section 18 Township 24 Range 24 EAST
10 acre 40 acre 160 acre

Well Registration No.55- 522 815 File No. _____

(location)

PHELPS DODGE CORP. LOREN F BREWER
PRINT Previous Owner's Name **PRINT** New Owner's Name

Address Address

BISBEE | AZ | 85603 DOUGLAS | AZ | 85607
City State Zip City State Zip

Dated: 11-3-91 Signature of New Owner Loren F Brewer

NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

ENTERED DEC 12 1991

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

DWR-55-71-11/90

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner PHELPS DODGE CORPORATION
Name
COPPER QUEEN BRANCH, BISBEE, AZ 85603
Mailing Address

2. Driller B-J DRILLING COMPANY, INC.
Name
P.O. BOX 815, BENSON, AZ 85602
Mailing Address

3. Location of well: Twp 24S, Rge 24E, Section 5: SW¼,NE¼,NW¼

4. Permit No. 55-522696 (if issued)

DESCRIPTION OF WELL

5. Total depth of hole 290' ft.

6. Type of casing Steel & Plastic

7. Diameter and length of casing 6 in. from +1' to 20', 4 in from +1' to 290'.

8. Method of sealing at reduction points Cemented

9. Perforated from 240' to 290', from _____ to _____, from _____ to _____.

10. Size of cuts .050 x 1¼" Number of cuts per foot 160

11. If screen was installed: Length _____ ft. Diam _____ in. Type _____

12. Method of construction Drilled
drilled, dug, driven, bored, jetted, etc.

13. Date started 11/07/88
Month Day Year

14. Date completed 11/08/88
Month Day Year

15. Depth to water 249' static ft. (If flowing well, so state.)

16. Describe point from which depth measurements were made, and give sea-level elevation if available Top of casing

17. If flowing well, state method of flow regulation: _____

18. Remarks: _____

JAN 1989 DEPARTMENT OF WATER RESOURCES

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
REG. NO. 55-522696
File No. D(24-24)5bdc
Entered ENTERED JAN 25 1989 By

DWR-55-6-Rev. 8/8

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	65	Interlayered gravel & light brown silt/clay with interbedded limestone pebble cliche.
65	185	Interlayered gravel-light brown silt/clay
185	225	Light red-brown poorly-sorted to quartzitic sandstone
225	245	Red-brown siltstone
245	290	Red-brown to choc. silty sandstone to shale

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Robert D. Jackson
Name

B-J Drilling Company, Inc.
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

Date 12/29/88

DEPARTMENT OF WATER RESOURCES
15 South 15th Ave., Phoenix, AZ 85007

RECEIVED JUN 7 1989 DEPT OF WATER RESOURCES

Registration No. 55-522696 *

File No. D(24-24)5bdc

COMPLETION REPORT TM-10

1. Per A.R.S. §45-600, the Completion Report to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

RECEIVED MAY 30 1989 WA.

LOCATION OF THE WELL:

24S	24E	5	SW NE NW
Township	Range	Section	¼ ¼ ¼

EQUIPMENT INSTALLED:

Kind of pump *submersible*
Turbine, centrifugal, etc.

Kind of power *electric* H.P. Rating of Motor *1 HP*
Electric, natural gas, gasoline, etc.

Pumping Capacity *12 GPM* Date installed *12/13/88*
Gallons per minute

WELL TEST:

Test pumping capacity *12 GPM* Date Well Tested *12/13/88*
Gallons per minute

Method of Discharge Measurement *timed volume*
Weir, orifice, current meter, etc.

Static Groundwater Level *249'* ft. Drawdown *41'* ft.

Total Pumping Lift *290'* ft. Drawdown _____ lbs
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

2/25/89 19__
DATE

RECEIVED MAR 2 1989 DEPT OF WATER RESOURCES

Robert L. Jackson
Signature

B-3 Drilling Company, Inc.
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

DWR-55-7-3/84

ENTERED JUN 12 1989

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

CHANGE OF WELL INFORMATION

Well Registration No. 55- 522696 File No. D(24-24)5 bac (location)

I/We request the following well information be changed:

Well Owner

RECEIVED
OCT 19 1992
OPERATIONS DIV.

Date: _____ Signature of Current Well Owner _____

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, Phelps Dodge Corporation (please print), state that I am (no longer) the ~~(new)~~ owner of the well described below:

Township 24S Range 24E Section 5 ; SW ¼ NE ¼ NW ¼

Well Registration No.55- 522696 File No. D(24-24)5 bac (location)

Phelps Dodge Corporation	Daniel R + Nancy C Davies
PRINT Previous Owner's Name	PRINT New Owner's Name
Copper Queen Branch Hwy 92	P.O. Box 757
Address	Address
Bisbee | AZ | 85603	Naco | Az | 85620
City State Zip	City State Zip

Dated: 10/12/92 Signature of New Owner Daniel R Davies
Nancy C. Davies

ENTERED OCT 19 1992

NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

DWR-55-71-3/90

...OR/PIEZOMETER WELL

...ILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL
MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

TM-10

RECEIVED OCT 18 1988 DEPT. OF WATER RESOURCES

Section 45-596, Arizona Revised Statutes and Rule R12-15-817 provide: Prior to drilling a monitor or piezometer well, the well owner or lessee shall file a Notice of Intention to Drill on a form provided by the Department.

WELL/LAND LOCATION

1. Township 24 N/S
   Range 24 E/W
   Section 5
   List 10-acre subdivision
   SW ¼, NE ¼, NW ¼

2. County Cochise

3. Applicant:
   Phelps Dodge Corp.
   Name
   Copper Queen Branch
   Address
   Bisbee, AZ 85603
   City State Zip

4. Lance Pape
   NAME OF CONTACT PERSON
   Phone: 602-432-5342
   Agency: Phelps Dodge Corp.

5. Owner of well:
   Phelps Dodge Corp.
   Name
   Copper Queen Branch
   Address
   Bisbee, AZ 85603
   City State Zip

6. Purpose of well drilled pursuant to this Notice:
   Monitor X
   Piezometer

7. Owner of land:
   Daniel R. & Nancy C. Davies
   Name
   614 D Street
   Address
   Naco, AZ 85620
   City State Zip
   Telephone number

8. Construction will start:
   October 1988
   Month Day Year

9. Period well will remain in use: indef. months/years

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

File No. D(24-24)5 bac

Filed 10-18-88 By ek

Input ENTERED OCT 25 1988

Duplicate Mailed 10-21-88 By ek

Registration No. 55-522696

AMA/INA —

W/S 14 S/B

10. For monitoring wells, is pump equipment to be installed? Yes

(a) If so, what will be the design pump capacity?
10 gallons per minute

(b) Type of pump (submersible, turbine, etc.)
Submersible

(c) What use will be made of the water?
Sampling only

11. Proposed method of abandonment of well after project is completed:
Fill to total depth with cement grout after PVC removal.

12. Drilling firm:
BJ Drilling Co., Inc.
Name
P.O. Box 815
Address
Benson, AZ 85602
City State Zip
A4
DWR #25
DWR License Number

(continued on reverse)

OCT 1988 HYDROLOGY APPROVED

GENERAL INSTRUCTIONS

Fill out this form in duplicate and mail to Department of Water Resources, Suite 100, 99 East Virginia, Phoenix, Arizona 85004. Filing fee must accompany Notice.

I state that this Notice is filed in compliance with Rule R12-15-809 and is complete and correct to the best of my knowledge and belief and that I understand the conditions set forth on the reverse side of this form.

DATE 10/19/88

Donald A. Stallwell
Signature of Applicant

13. Is this well to monitor existing contamination? Yes Potential contamination? ___
Please explain SO_4 and TDS in Bisbee-Naco area

14. If construction plans have been coordinated with Az. Dept. Health Services, Environmental Health Division, who is the agency contact? R. Kennett and J. DuBois
If construction plans have been coordinated with Az. Dept. Water Resources, Hydrology/ Remedial Action Division, who is the division contact? None

15. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air rotary

b) Borehole diameters:

10 inches from 0 feet to 20 feet
6 inches from 20 feet to 270 feet
___ inches from ___ feet to ___ feet

c) Casing materials (PVC, steel, stainless steel, etc.):

material Steel diameter 6 inches from 0 feet to 20 feet
material PVC diameter 4 inches from 0 feet to 270 feet
material ___ diameter ___ inches from ___ feet to ___ feet

d) Method of sealing at reductions ___

e) Annular seal materials (cement, grout, etc.) and method of placement(tremied,circulated:)

material Grout method Poured from 0 feet to 20 feet
material ___ method ___ from ___ feet to ___ feet
material ___ method ___ from ___ feet to ___ feet

f) Gravel packs (state material, and whether natural or artificial):

material None from ___ feet to ___ feet
material ___ from ___ feet to ___ feet

g) Perforations (if pre-manufactured, please give specs of perforations or screens):

type Factory slotted PVC from 220 feet to 270 feet
type ___ from ___ feet to ___ feet

h) Method of well development (bail, air lift, surge) Air lift

i) Will surface or conductor casing extending above grade be used to protect the aquifer from additional surface contaminants during drilling and construction? Yes

16. Include detailed construction diagram, if available.

17. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes__ No X
If yes, a request for a variance must accompany this application pursuant to R12-15-820.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with DWR rules R12-15-811 and R12-15-816.
II. Drilling of the well shall be completed within one (1) year after the date of Notice.
III. A Well Driller Report, DWR-55-6-5/83, is required within 30 days of completion of drilling. A Completion Report, DWR-55-7-3/83, is required to be filed with the Department within 10 days after installation of pump equipment for monitor wells.
IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the minimum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual amount of 10 acre feet total.
V. Special construction standards required pursuant to R12-15-821: ___

PHELPS DODGE CORP
P O BOX 50427
TUCSON AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	522693
	THRU
55	~~XXXX~~ 5227000

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEES FOR NOTICES OF INTENTION TO DRILL WELLS	10.00	80.00
					FILE# REGISTRATION#		
					D(24-24)2bcc 55-522693		
					D(24-24)21aab 55-522694		
					D(24-24)14bca 55-522695		
					D(24-24)5bdc 55-522696		
					D(24-24)20bab 55-522697		
					D(24-24)8bcc 55-522698		
					D(24-24)6bcc 55-522699		
					D(24-24)16aca 55-522700		

PAID OCT 21 1988

PAID

TOTAL $ 80.00

10/21/88/ek
CK#1330

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division
15 South 15th Avenue
Phoenix, Arizona 85007

CHANGE OF WELL INFORMATION

NOV 6 1989

Well Reg. No. 55-522696

File (location) No. D(24-24)5 bdc

I/We request the following well information be changed:

Location is: T24S, R24E, Sec. 5, SW,NE,NW

FILE NO. should be: D(24-24)5 bac

Date: November 2, 19 89

Phelps Dodge Corporation
Signature of current Well Owner

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, _____ (please print), state that I am (no longer) the (new) owner of the well described below:

Township _____ Range _____ Section _____; _____ ¼ _____ ¼ _____ ¼

Well Registration No. _____ File (location) No. _____

Previous Owner

Address

City State Zip

DATED:

PRINT New Owner's Name

Signature of New Owner

Address

City State Zip

ENTERED NOV 15 1989

NOTE: A.R.S. §45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER, PRIOR TO DRILLING THE WELL, IN ADDITION TO AMENDING INFORMATION PREVIOUSLY FILED.

* * * * *

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner *Phelps Dodge Corporation*
   Name
   Copper Queen Branch, Bisbee, AZ 85603
   Mailing Address

2. Driller *B-J Drilling Company, Inc.*
   Name
   P.O. Box 815, Benson, AZ 85602
   Mailing Address

3. Location of well: *Twp 24S, Rge 24E, Section 1: SW¼, SW¼, SW¼*

4. Permit No. (if issued) *55-522817*

DESCRIPTION OF WELL

5. Total depth of hole *817'* ft.

6. Type of casing *Steel & plastic*

7. Diameter and length of casing *6"* in. from *+1'* to *20'*, *4" steel* from *0* to *411' & 4" Plastic from 411' to 817'.*

8. Method of sealing at reduction points *Cemented*

9. Perforated from *757'* to *817'*, from _____ to _____, from _____ to _____.

10. Size of cuts *.125 x 1¼"* Number of cuts per foot *160*

11. If screen was installed: Length _____ ft. Diam _____ in. Type _____

12. Method of construction *Drilled*
    drilled, dug, driven, bored, jetted, etc.

13. Date started *1/17/89*
    Month Day Year

14. Date completed *1/20/89*
    Month Day Year

15. Depth to water *625' static* ft. (If flowing well, so state.)

16. Describe point from which depth measurements were made, and give sea-level elevation if available *top of casing*

17. If flowing well, state method of flow regulation: _____

18. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

REG. NO. 55-522817

File No. D(24-24)1ccc

Entered ENTERED MAR 07 1989

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	80	Interlayered gravel and brown silt/clay, alluvium of Glance Conglomerate
80	815	Grey-maroon schist conglomerate. Glance conglomerate

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Robert D. Jackson
Name

B-J Drilling Company, Inc.
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

Date 2/24/89

DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

Registration No. 55-52281.7

File No. D(24-24)1ccc

TM-8

COMPLETION REPORT

1. Per **A.R.S. §45-600**, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24S	24E	1	SW SW SW
Township	Range	Section	¼ ¼ ¼

EQUIPMENT INSTALLED:

Kind of pump: Submersible
(Turbine, centrifugal, etc.)

Kind of power: Electric (Electric, natural gas, gasoline, etc.) H.P. Rating of Motor: 3 HP

Pumping Capacity: 7 (Gallons per minute) Date pump installed: 1/20/89

WELL TEST:

Test pumping capacity: 7* (Gallons per minute) Date Well Tested: 2/18/89

* Broke suction after 20 minutes.

Method of Discharge Measurement: Timed volume
(Weir, orifice, current meter, etc.)

Static Groundwater Level 591 ft. Drawdown 207 ft.

Total Pumping Lift 798 ft. Drawdown _____ lbs. (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

3/01/89
Date

RECEIVED
MAR 2 1989
DEPT. OF WATER RESOURCES

Phelps Dodge Corporation
Print Well Owner's Name

Robert A. Jackson
Signature of Well Owner or Agent

B-J Drilling Company, Inc.
P.O. Box 813
Address

Benson, AZ 85602
City State

ENTERED MAR 16 1989

DWR-55-7-11/88

MONITOR/PIEZOMETER WELL

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL
MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

RECEIVED OCT 28 1988 DEPT OF WATER RESOURCES

RECEIVED OCT 31 1988 HYDROLOGY DIV.

Section 45-596, Arizona Revised Statutes and Rule R12-15-809 provide: Prior to drilling a monitor or piezometer well, the well owner or lessee shall file a Notice of Intention to Drill on a form provided by the Department.

WELL/LAND LOCATION

1. Township 24 N/S
   Range 24 E/W
   Section 1
   List 10-acre subdivision
   SW ¼, SW ¼, SW ¼

2. County Cochise

3. Applicant:
   Phelps Dodge Corp.
   Name
   Copper Queen Branch
   Address
   Bisbee, AZ 85603
   City State Zip

4. Lance Pape
   NAME OF CONTACT PERSON
   Phone: 602-432-5342
   Agency: Phelps Dodge Corp.

5. Owner of well:
   Phelps Dodge Corp.
   Name
   Copper Queen Branch
   Address
   Bisbee, AZ 85603
   City State Zip

6. Purpose of well drilled pursuant to this Notice:
   Monitor X
   Piezometer

7. Owner of land:
   Horacio OreGiron
   Name
   245 N. Stewart
   Address
   Tucson, AZ 85716
   City State Zip
   Telephone number

8. Construction will start:
   October 1988
   Month Day Year

9. Period well will remain in use: indef. months/years

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

File No. D(24-24)1ccc

Filed 10-28-88 By

Input ENTERED NOV 07 1988 By

Duplicate Mailed 11-7-88 By

Registration No. 55-522817

AMA/INA

W/S 14 S/B

10. For monitoring wells, is pump equipment to be installed? Yes

(a) If so, what will be the design pump capacity?
10 gallons per minute

(b) Type of pump (submersible, turbine, etc.)
Submersible

(c) What use will be made of the water?
Sampling only

11. Proposed method of abandonment of well after project is completed:
Fill to total depth with cement grout after PVC removal

12. Drilling firm:
BJ Drilling Co., Inc.
Name
P.O. Box 815
Address
Benson, AZ 85602
City State Zip
DWR #25 A-4
DWR License Number

(continued on reverse)

GENERAL INSTRUCTIONS

Fill out this form in duplicate and mail to Department of Water Resources, Suite 100, 99 East Virginia, Phoenix, Arizona 85004. Filing fee must accompany Notice.

I state that this Notice is filed in compliance with Rule R12-15-809 and is complete and correct to the best of my knowledge and belief and that I understand the conditions set forth on the reverse side of this form.

DATE 10/24/88

Donald A. Stallwell
Signature of Applicant

NOV 1988 HYDROLOGY APPROVED

13. Is this well to monitor existing contamination? Yes Potential contamination? ___
Please explain SO_4 and TDS in Bisbee-Naco area

14. If construction plans have been coordinated with Az. Dept. Health Services, Environmental Health Division, who is the agency contact? None
If construction plans have been coordinated with Az. Dept. Water Resources, Hydrology/ Remedial Action Division, who is the division contact? None

15. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air rotary

b) Borehole diameters:
10 inches from 0 feet to 20 feet
6 inches from 20 feet to 100 feet
___ inches from ___ feet to ___ feet

c) Casing materials (PVC, steel, stainless steel, etc.):
material Steel diameter 6 inches from 0 feet to 20 feet
material PVC diameter 4 inches from 0 feet to 100 feet
material ___ diameter ___ inches from ___ feet to ___ feet

d) Method of sealing at reductions None

e) Annular seal materials (cement, grout, etc.) and method of placement(tremied,circulated:)
material Grout method Poured from 0 feet to 20 feet
material ___ method ___ from ___ feet to ___ feet
material ___ method ___ from ___ feet to ___ feet

f) Gravel packs (state material, and whether natural or artificial):
material None from ___ feet to ___ feet
material ___ from ___ feet to ___ feet

g) Perforations (if pre-manufactured, please give specs of perforations or screens):
type Factory slotted PVC from 50 feet to 100 feet
type ___ from ___ feet to ___ feet

h) Method of well development (bail, air lift, surge) Air lift

i) Will surface or conductor casing extending above grade be used to protect the aquifer from additional surface contaminants during drilling and construction? Yes

16. Include detailed construction diagram, if available.

7. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes__ No X
If yes, a request for a variance must accompany this application pursuant to R12-15-820.

CONDITIONS

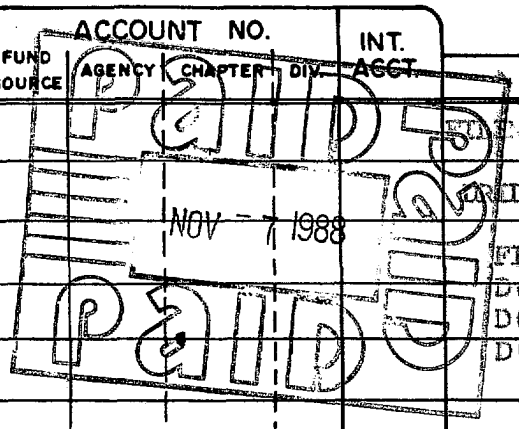
I. Construction and abandonment standards for all wells shall be in accordance with DWR rules R12-15-811 and R12-15-816.
II. Drilling of the well shall be completed within one (1) year after the date of Notice.
III. A Well Driller Report, DWR-55-6-5/83, is required within 30 days of completion of drilling. A Completion Report, DWR-55-7-3/83, is required to be filed with the Department within 10 days after installation of pump equipment for monitor wells.
IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the minimum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual amount of 10 acre feet total.
V. Special construction standards required pursuant to R12-15-821: ___

PHELPS DODGE CORP
P O BOX 50427
TUCSON AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	522815
	THRU
55	522817

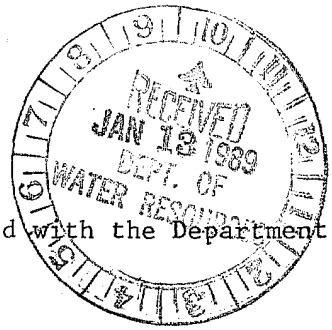


ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEES FOR NOTICES OF INTENTION TO DRILL WELLS	10.00	30.00
					FILE# REGISTRATION#		
					~~D(24-24) 18aab 55-522815~~		
					D(24-24) 7bbc 55-522816		
					D(24-24) 1ccc 55-522817		

11/7/88/ek
CK#1333

TOTAL $ 30.00

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007



WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner PHELPS DODGE CORPORATION
   Name
   COPPER QUEEN BRANCH, BISBEE, AZ 85603
   Mailing Address
2. Driller B-J DRILLING COMPANY, INC.
   Name
   P.O. BOX 815, BENSON, AZ 85602
   Mailing Address
3. Location of well: Twp 24S, Rge 24E, Section 4: NE¼,SW¼,NW¼
4. Permit No. (if issued) 55-522576

DESCRIPTION OF WELL

5. Total depth of hole 350' ft.
6. Type of casing Steel & Plastic
7. Diameter and length of casing 6 in. from +1' to 20', 4 in from +1' to 350'.
8. Method of sealing at reduction points Cemented
9. Perforated from ____ to 259', from 349' to ____, from ____ to ____.
10. Size of cuts .050 x 1¼" Number of cuts per foot 160
11. If screen was installed: Length ____ ft. Diam ____ in. Type ____
12. Method of construction Drilled
    drilled, dug, driven, bored, jetted, etc.
13. Date started 11/03/88
    Month Day Year
14. Date completed 11/04/88
    Month Day Year
15. Depth to water 275' static ft. (If flowing well, so state.)
16. Describe point from which depth measurements were made, and give sea-level elevation if available Top of casing
17. If flowing well, state method of flow regulation: ____
18. Remarks: ____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
REG. NO. 55-522576
File No. D(24-24)4bca
Entered ENTERED JAN 25 By ____

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	84	Interlayered gravel & red-brown silt/clay with interbedded limestone pebble caliche.
84	195	Interlayered gravel & red-brown silt/clay
195	350	Red-brown arkosic to quartzitic siltstone & shale

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Robert D. Jackson
Name

B-J Drilling Company, Inc.
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

Date 12/29/88

DEPARTMENT OF WATER RESOURCES
15 South 15th Ave., Phoenix, AZ 85007

RECEIVED JUN 7 1989 WATER RESOURCES

Registration No. 55-522576

File No. D(24-24) 4bca

TM-7

COMPLETION REPORT

1. Per A.R.S. §45-600, the Completion Report to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the surface.

RECEIVED MAY 30 1989 WATER RESOURCES

LOCATION OF THE WELL:

24S	24E	4	NE SW NW
Township	Range	Section	¼ ¼ ¼

EQUIPMENT INSTALLED:

Kind of pump: Submersible (Turbine, centrifugal, etc.)

Kind of power: Electric (Electric, natural gas, gasoline, etc.) H.P. Rating of Motor: 1½ HP

Pumping Capacity: 12 GPM (Gallons per minute) Date installed: 12/01/88

WELL TEST:

Test pumping capacity: 12 GPM (Gallons per minute) Date Well Tested: 12/01/88

Method of Discharge Measurement: Timed volume (Weir, orifice, current meter, etc.)

Static Groundwater Level: 275 ft. Drawdown: 65' ft.

Total Pumping Lift: 340 ft. Drawdown: _____ lbs (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

2/25/89
DATE

RECEIVED MAR 2 1989 DEPT. OF WATER RESOURCES

Robert A. Jackson
Signature

B-J Drilling Company, Inc.
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

DWR-55-7-3/84

ENTERED JUN 12 1989

MONITOR/PIEZOMETER WELL

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL
MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

TM-7

Section 45-596, Arizona Revised Statutes and Rule R12-15-817 provide: Prior to drilling a monitor or piezometer well, the well owner or lessee shall file a Notice of Intention to Drill on a form provided by the Department.

WELL/LAND LOCATION

1. Township 24 N/S
   Range 24 E/W
   Section 4
   List 10-acre subdivision
   NE ¼, SE ¼, SW ¼, NW ¼

2. County Cochise

3. Applicant:

Phelps Dodge Corp.
Name

Copper Queen Branch
Address

Bisbee, AZ 85603
City State Zip

Lance Pape
NAME OF CONTACT PERSON

Phone: 602-432-5342

Agency: Phelps Dodge Corp.

4. Owner of well:

Phelps Dodge Corp.
Name

Copper Queen Branch
Address

Bisbee, AZ 85603
City State Zip

Purpose of well drilled pursuant to this Notice:

Monitor X

Piezometer

7. Owner of land:

Phelps Dodge Corp.
Name

Copper Queen Branch
Address

Bisbee, AZ 85603
City State Zip

602-432-5342
Telephone number

8. Construction will start:

October 1988
Month Day Year

9. Period well will remain in use: indef. months/years

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

File No. D(24-24)4 bbd

Filed 10-5-88 By sk

Input ENTERED OCT 11 1988 By

Duplicate Mailed 10-7-88 By sk

Registration No. 55-522576

AMA/INA —

W/S 14 S/B

10. For monitoring wells, is pump equipment to be installed? Yes

(a) If so, what will be the design pump capacity?
10 gallons per minute

(b) Type of pump (submersible, turbine, etc.)

Submersible

(c) What use will be made of the water?

Sampling only

11. Proposed method of abandonment of well after project is completed:

Fill to total depth with cement grout after PVC removal

12. Drilling firm:

BJ Drilling Co., Inc.
Name

P.O. Box 815
Address

Benson, AZ 85602
City State Zip

DWR #25
DWR License Number

(Continued on reverse)

RECEIVED OCT 5 1988 WATER RESOURCES

GENERAL INSTRUCTIONS

ll out this form in duplicate and mail to Department of Water Resources, Suite 100, 99 East rginia, Phoenix, Arizona 85004. Filing fee must accompany Notice.

state that this Notice is filed in compliance with Rule R12-15-809 and is complete and rrect to the best of my knowledge and belief and that I understand the conditions set forth the reverse side of this form.

TE 10/4/88

OCT 1988 HYDROLOGY APPROVED

Donald A. Stallwell
Signature of Applicant

13. Is this well to monitor existing contamination? Yes Potential contamination? ____
Please explain SO_4 and TDS in Bisbee-Naco area

14. If construction plans have been coordinated with Az. Dept. Health Services, Environmental Health Division, who is the agency contact? N/A
If construction plans have been coordinated with Az. Dept. Water Resources, Hydrology/ Remedial Action Division, who is the division contact? N/A

15. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air rotary

b) Borehole diameters:
10 inches from 0 feet to 20 feet
6 inches from 20 feet to 320 feet
____ inches from ____ feet to ____ feet

c) Casing materials (PVC, steel, stainless steel, etc.):
material Steel diameter 6 inches from 0 feet to 20 feet
material PVC diameter 4 inches from 0 feet to 320 feet
material ____ diameter ____ inches from ____ feet to ____ feet

d) Method of sealing at reductions None

e) Annular seal materials (cement, grout, etc.) and method of placement(tremied,circulated:)
material Grout method Poured from 0 feet to 20 feet
material ____ method ____ from ____ feet to ____ feet
material ____ method ____ from ____ feet to ____ feet

f) Gravel packs (state material, and whether natural or artificial):
material None from ____ feet to ____ feet
material ____ from ____ feet to ____ feet

g) Perforations (if pre-manufactured, please give specs of perforations or screens):
type Factory slotted PVC from 270 feet to 320 feet
type ____ from ____ feet to ____ feet

h) Method of well development (bail, air lift, surge) Air lift

i) Will surface or conductor casing extending above grade be used to protect the aquifer from additional surface contaminants during drilling and construction? Yes

16. Include detailed construction diagram, if available.

Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes__ No X
If yes, a request for a variance must accompany this application pursuant to R12-15-820.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with DWR rules R12-15-811 and R12-15-816.
II. Drilling of the well shall be completed within one (1) year after the date of Notice.
III. A Well Driller Report, DWR-55-6-5/83, is required within 30 days of completion of drilling. A Completion Report, DWR-55-7-3/83, is required to be filed with the Department within 10 days after installation of pump equipment for monitor wells.
IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the minimum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual amount of 10 acre feet total.
V. Special construction standards required pursuant to R12-15-821: ____

PHELPS DODGE CORP
P O BOX 50427
TUCSON AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	522569
	THRU
55	522580

FUND SOURCE	ACCOUNT NO. AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEES FOR NOTICES OF INTENTION TO	10.00	100.00
					DRILL WELLS		
					FILE# REGISTRATION#		
					D(24-24)9aab 55-522569		
					D(24-24)4aac 55-522573		
					~~D(24-24)4aac 55-522574~~		
					D(23-24)35bba 55-522575		
					~~D(24-24)4bea 55-522576~~		
					D(23-24)33bca 55-522577		
					~~D(24-24)10dba 55-522578~~		
					D(23-24)21cdd 55-522579		
					D(24-24)8ddc 55-522580		
					D(24-24)8ddc 55-522581		
					10/7/88/ek		
					CK#1324		

OCT - 7 1988

PAID

PAID

TOTAL $ 100.00

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division
15 South 15th Avenue
Phoenix, Arizona 85007

CHANGE OF WELL INFORMATION

NOV - 6 1989

Well Reg. No. 55-522576

File (location) No. D(24-24)4 bca

I/We request the following well information be changed:

Resurveyed location is: T24S, R24E, Sec. 4 SE,NW,NW

Amend file number

Date: November 2, 19 89

M Pope for: Phelps Dodge Corporation
Signature of current Well Owner

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, _____, state that I am (no longer) the (new)
(please print)
owner of the well described below:

Township _____ Range _____ Section _____; _____ ¼ _____ ¼ _____ ¼

Well Registration No. _____ File (location) No. _____

Previous Owner

Address

City State Zip

DATED:

PRINT New Owner's Name

Signature of New Owner

ENTERED NOV 15 1989

Address

City State Zip

NOTE: A.R.S. §45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER, PRIOR TO DRILLING THE WELL, IN ADDITION TO AMENDING INFORMATION PREVIOUSLY FILED.

* * * * *

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner *Phelps Dodge Corporation*
   Name
   Copper Queen Branch, Bisbee, AZ 85603
   Mailing Address
2. Driller *B-J Drilling Company, Inc.*
   Name
   P.O. Box 815, Benson, AZ 85602
   Mailing Address
3. Location of well: *Twp 24S, Rge 24E, Section 14: NE¼, SW¼, NW¼*
4. Permit No. (if issued) *55-522695*

DESCRIPTION OF WELL

5. Total depth of hole *200'* ft.
6. Type of casing *Steel & Plastic*
7. Diameter and length of casing *6"* in. from *+1'* to *20'*, *4* in from *+1'* to *200'*.
8. Method of sealing at reduction points *Cemented*
9. Perforated from *150'* to *200'*, from _____ to _____, from _____ to _____.
10. Size of cuts *.125 x 1¼"* Number of cuts per foot *160*
11. If screen was installed: Length _____ ft. Diam _____ in. Type _____
12. Method of construction *Drilled*
    drilled, dug, driven, bored, jetted, etc.
13. Date started *1/23/89*
    Month Day Year
14. Date completed *1/24/89*
    Month Day Year
15. Depth to water *157.5 static* ft. (If flowing well, so state.)
16. Describe point from which depth measurements were made, and give sea-level elevation if available *top of casing*
17. If flowing well, state method of flow regulation: _____
18. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
REG. NO. 55-522695
File No. D(24-24)14bca
Entered ENTERED MAR 07 1989 By

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	15	Sand/clay and caliche alluvium.
15	58	Tan clayey fine-grained quartz sandstone
58	85	Green, brick-red and grey-maroon mudstone.
85	137	Grey-maroon, light grey-green and tan fine-grained sandstone
137	172	Light blue-grey mudstone
172	200	Various light maroon, tan and grey silty mudstone to fine sandstone . Morita fm.

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Robert D. Jackson
Name

B-J Drilling Company, Inc.
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

Date 2/24/89

DEPARTMENT OF WATER RESOURCES
15 South 15th Ave., Phoenix, AZ 85007

Registration No. 55-522695

File No. D(24-24) 14bca

COMPLETION REPORT TM-6

1. Per A.R.S. §45-600, the Completion Report to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24S	24E	14	NE ¼ SW ¼ NW ¼
Township	Range	Section	

EQUIPMENT INSTALLED:

Kind of pump submersible
Turbine, centrifugal, etc.

Kind of power electric H.P. Rating of Motor 3/4 HP
Electric, natural gas, gasoline, etc.

Pumping Capacity _____ Date installed 1/24/89
Gallons per minute

WELL TEST:

Test pumping capacity 10 GPM Date Well Tested 2/12/89
Gallons per minute

Method of Discharge Measurement Timed volume
Weir, orifice, current meter, etc.

Static Groundwater Level 157.5 ft. Drawdown 7.5' ft.

Total Pumping Lift 165 ft. Drawdown _____ lbs
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

2/26/89
DATE

Robert A. Jackson
Signature B-J Drilling Company, Inc.
P.O. Box 815
Address
Benson, AZ 85602
City State Zip

RECEIVED MAR 2 1989 DEPT OF WATER RESOURCES

ENTERED MAR 07 1989

DWR-55-7-3/84

MONITOR/PIEZOMETER WELL

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL
MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

TM-6

RECEIVED OCT 18 1988 DEPT. WATER RESOURCES

Section 45-596, Arizona Revised Statutes and Rule R12-15-817 provide: Prior to drilling a monitor or piezometer well, the well owner or lessee shall file a Notice of Intention to Drill on a form provided by the Department.

WELL/LAND LOCATION

1. Township 24 ~~N~~/S
   Range 24 E/~~W~~
   Section 14
   List 10-acre subdivision
   ~~NE~~ SW ¼, ~~SW~~ SW ¼, ~~NW~~ NW ¼

2. County Cochise

3. Applicant:

   Phelps Dodge Corp.
   Name

   Copper Queen Branch
   Address

   Bisbee, AZ 85603
   City State Zip

4. Lance Pape
   NAME OF CONTACT PERSON

   Phone: 602-432-5342

   Agency: Phelps Dodge Corp.

5. Owner of well:

   Phelps Dodge Corp.
   Name

   Copper Queen Branch
   Address

   Bisbee, AZ 85603
   City State Zip

6. Purpose of well drilled pursuant to this Notice:
   Monitor X
   Piezometer

7. Owner of land:

   Charles R. Miller
   Name

   P.O. Box 613
   Address

   Naco, AZ 85620
   City State Zip

   Telephone number

8. Construction will start:

   October 1988
   Month Day Year

9. Period well will remain in use: indef. months/years

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

File No. D(24-24)14 bcc

Filed 10-18-88 By ek

Input ENTERED OCT 25 1988

Duplicate Mailed 10-21-88 By ek

Registration No. 55-522695

AMA/INA —

W/S 14 S/B

10. For monitoring wells, is pump equipment to be installed? Yes

    (a) If so, what will be the design pump capacity?
    10 gallons per minute

    (b) Type of pump (submersible, turbine, etc.)

    ~~Submersible~~

    (c) What use will be made of the water?
    Sampling only

11. Proposed method of abandonment of well after project is completed:

    Fill to total depth with cement grout after PVC removal

12. Drilling firm:

    BJ Drilling Co., Inc.
    Name

    P.O. Box 815
    Address

    Benson, AZ 85602
    City State Zip

    DWR #25 A-4
    DWR License Number

(continued on reverse)

OCT 1988 HYDROLOGY APPROVED

GENERAL INSTRUCTIONS

ill out this form in duplicate and mail to Department of Water Resources, Suite 100, 99 East irginia, Phoenix, Arizona 85004. Filing fee must accompany Notice.

state that this Notice is filed in compliance with Rule R12-15-809 and is complete and orrect to the best of my knowledge and belief and that I understand the conditions set forth n the reverse side of this form.

ATE 10/14/88

Donald A. Stallwell
Signature of Applicant

13. Is this well to monitor existing contamination? Yes Potential contamination? ___
Please explain SO_4 and TDS in Bisbee-Naco area

14. If construction plans have been coordinated with Az. Dept. Health Services, Environmental Health Division, who is the agency contact? R. Kennett, J. DuBois
If construction plans have been coordinated with Az. Dept. Water Resources, Hydrology/ Remedial Action Division, who is the division contact? None

15. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air rotary

b) Borehole diameters:
10 inches from 0 feet to 20 feet
6 inches from 20 feet to 200 feet
___ inches from ___ feet to ___ feet

c) Casing materials (PVC, steel, stainless steel, etc.):
material Steel diameter 6 inches from 0 feet to 20 feet
material PVC diameter 4 inches from 20 feet to 200 feet
material ___ diameter ___ inches from ___ feet to ___ feet

d) Method of sealing at reductions None

e) Annular seal materials (cement, grout, etc.) and method of placement(tremied,circulated:)
material Grout method Poured from 0 feet to 20 feet
material ___ method ___ from ___ feet to ___ feet
material ___ method ___ from ___ feet to ___ feet

f) Gravel packs (state material, and whether natural or artificial):
material None from ___ feet to ___ feet
material ___ from ___ feet to ___ feet

g) Perforations (if pre-manufactured, please give specs of perforations or screens):
type Factory slotted PVC from 150 feet to 200 feet
type ___ from ___ feet to ___ feet

h) Method of well development (bail, air lift, surge) Air lift

i) Will surface or conductor casing extending above grade be used to protect the aquifer from additional surface contaminants during drilling and construction? Yes

16. Include detailed construction diagram, if available.

17. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes__ No X
If yes, a request for a variance must accompany this application pursuant to R12-15-820.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with DWR rules R12-15-811 and R12-15-816.
II. Drilling of the well shall be completed within one (1) year after the date of Notice.
III. A Well Driller Report, DWR-55-6-5/83, is required within 30 days of completion of drilling. A Completion Report, DWR-55-7-3/83, is required to be filed with the Department within 10 days after installation of pump equipment for monitor wells.
IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the minimum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual amount of 10 acre feet total.
V. Special construction standards required pursuant to R12-15-821: ___

PHELPS DODGE CORP
P O BOX 50427
TUCSON AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	522693
	THRU
55	~~XXXX~~ 5227000

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEES FOR NOTICES OF INTENTION TO	10.00	80.00
					DRILL WELLS		
					FILE# REGISTRATION#		
					D(24-24)2bcc 55-522693		
					D(24-24)21aab 55-522694		
					D(24-24)14bca 55-522695		
					D(24-24)5bdc 55-522696		
					D(24-24)20bab 55-522697		
					D(24-24)8bcc 55-522698		
					D(24-24)6bcc 55-522699		
					D(24-24)16aca 55-522700		

PAID
OCT 21 1988
PAID

TOTAL $ 80.00

10/21/88/ek
CK#1330

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division
15 South 15th Avenue
Phoenix, Arizona 85007

NOV 6 1989

CHANGE OF WELL INFORMATION

Well Reg. No. 55-522695

File (location) No. D(24-24)14 bca

I/We request the following well information be changed:

Resurveyed location is: T24S, R24E, Sec. 14 SW,SW,NW

Amend file number

Date: November 2, 19 89

Phelps Dodge Corporation
for:
Signature of current Well Owner

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, _____ (please print), state that I am (no longer) the (new) owner of the well described below:

Township _____ Range _____ Section _____; _____ ¼ _____ ¼ _____ ¼

Well Registration No. _____ File (location) No. _____

Previous Owner

Address

City State Zip

DATED:

PRINT New Owner's Name

Signature of New Owner

Address

City State Zip

ENTERED NOV 15 1989

NOTE: A.R.S. §45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER, PRIOR TO DRILLING THE WELL, IN ADDITION TO AMENDING INFORMATION PREVIOUSLY FILED.

* * * * *

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner *Phelps Dodge Corporation*
   Name
   Copper Queen Branch, Bisbee, AZ 85603
   Mailing Address
2. Driller *B-J Drilling Company, Inc.*
   Name
   P.O. Box 815, Benson, AZ 85602
   Mailing Address
3. Location of well: *Twp 24S, Rge 24E, Section 21: NW¼, NE¼, NE¼*
4. Permit No. (if issued) *55-522694*

DESCRIPTION OF WELL

5. Total depth of hole *160'* ft.
6. Type of casing *Steel & Plastic*
7. Diameter and length of casing *6"* in. from *+1'* to *20'*, *4* in from *+1'* to *160'*.
8. Method of sealing at reduction points *Cemented*
9. Perforated from *120'* to *160'*, from _____ to _____, from _____ to _____.
10. Size of cuts *.125 x 1¼"* Number of cuts per foot *160*
11. If screen was installed: Length _____ ft. Diam _____ in. Type _____
12. Method of construction *Drilled*
    drilled, dug, driven, bored, jetted, etc.
13. Date started *1/12/89*
    Month Day Year
14. Date completed *1/13/89*
    Month Day Year
15. Depth to water *131.3* ft. (If flowing well, so state.)
16. Describe point from which depth measurements were made, and give sea-level elevation if available *Top of casing*
17. If flowing well, state method of flow regulation: _____
18. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
REG. NO. 55-522694
File No. D(24-24)21aab
Entered ENTERED MAR 07 1989

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	160	Interlayered gravel with cliche and brown silt/clay. Alluvium

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Robert D. Jackson
Name

B-J Drilling Company, Inc.
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

Date 2/24/89

DEPARTMENT OF WATER RESOURCES
15 South 15th Ave., Phoenix, AZ. 85007

Registration No. 55-522694

File No. D(24-24)21aab

COMPLETION REPORT TM-S

1. Per A.R.S. §45-600, the Completion Report to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24S	24E	21	NW NE NE
Township	Range	Section	¼ ¼ ¼

EQUIPMENT INSTALLED:

Kind of pump Submersible
(Turbine, centrifugal, etc.)

Kind of power Electric (Electric, natural gas, gasoline, etc.) H.P. Rating of Motor 1/2 HP

Pumping Capacity _____ (Gallons per minute) Date installed 1/13/89

WELL TEST:

Test pumping capacity 7 GPM (Gallons per minute) Date Well Tested 2/04/89

Method of Discharge Measurement Timed volume
(Weir, orifice, current meter, etc.)

Static Groundwater Level 131.3 ft. Drawdown 18.7 ' ft.

Total Pumping Lift 150 ft. Drawdown _____ lbs (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

2/26/89
DATE

Robert D. Jackson
Signature B-J Drilling Company, Inc.

P.O. Box 815
Address

Benson, AZ 85602
City State Zip

RECEIVED MAR 2 1989 DEPT OF WATER RESOURCES

ENTERED MAR 07 1989

DWR-55-7-3/84

MONITOR/PIEZOMETER WELL

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL
MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

TM-5

RECEIVED OCT 18 1988 DEPT. OF WATER RESOURCES

Section 45-596, Arizona Revised Statutes and Rule R12-15-817 provide: Prior to drilling a monitor or piezometer well, the well owner or lessee shall file a Notice of Intention to Drill on a form provided by the Department.

WELL/LAND LOCATION

1. Township 24 ~~N~~/S
Range 24 E/~~W~~
Section 21
List 10-acre subdivision
NW ¼, NE ¼, NE ¼

2. County COCHISE

3. Applicant:
Phelps Dodge Corp.
Name
Copper Queen Branch
Address
Bisbee, AZ 85603
City State Zip

4. Lance Pape
NAME OF CONTACT PERSON
Phone: 602-432-5342
Agency: Phelps Dodge Corp.

5. Owner of well:
Phelps Dodge Corp.
Name
Copper Queen Branch
Address
Bisbee, AZ 85603
City State Zip

6. Purpose of well drilled pursuant to this Notice:
Monitor X
Piezometer

7. Owner of land:
Charles R. Miller
Name
P.O. Box 613
Address
Naco, AZ 85620
City State Zip
Telephone number

8. Construction will start:
October 1988
Month Day Year

9. Period well will remain in use: indef. months/years

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. D(24-24) 21abd
Filed 10-18-88 By ek
Input ENTERED OCT 25 1988 By
Duplicate Mailed 10-21-88 By ek
Registration No. 55-522694
AMA/INA —
W/S 14 S/B

10. For monitoring wells, is pump equipment to be installed? Yes

(a) If so, what will be the design pump capacity?
10 gallons per minute

(b) Type of pump (submersible, turbine, etc.)
Submersible

(c) What use will be made of the water?
Sampling only

11. Proposed method of abandonment of well after project is completed:
Fill to total depth with cement grout after PVC removal

12. Drilling firm:
BJ Drilling Co., Inc.
Name
P.O. Box 815
Address
Benson, AZ 85602
City State Zip
A-4
DWR #25
DWR License Number

(continued on reverse)

OCT 1988 HYDROLOGY APPROVED

GENERAL INSTRUCTIONS

ill out this form in duplicate and mail to Department of Water Resources, Suite 1099 East irginia, Phoenix, Arizona 85004. Filing fee must accompany Notice.

state that this Notice is filed in compliance with Rule R12-15-809 and is complete and orrect to the best of my knowledge and belief and that I understand the conditions set forth n the reverse side of this form.

ATE 10/14/88

Donald A. Stillwell
Signature of Applicant

13. Is this well to monitor existing contamination? Yes Potential contamination? ____
Please explain SO_4 and TDS in Bisbee-Naco area

14. If construction plans have been coordinated with Az. Dept. Health Services, Environmental Health Division, who is the agency contact? None
If construction plans have been coordinated with Az. Dept. Water Resources, Hydrology/ Remedial Action Division, who is the division contact? None

15. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air rotary

b) Borehole diameters:
10 inches from 0 feet to 20 feet
6 inches from 20 feet to 185 feet
____ inches from ____ feet to ____ feet

c) Casing materials (PVC, steel, stainless steel, etc.):
material Steel diameter 6 inches from 0 feet to 20 feet
material PVC diameter 4 inches from 0 feet to 185 feet
material ____ diameter ____ inches from ____ feet to ____ feet

d) Method of sealing at reductions None

e) Annular seal materials (cement, grout, etc.) and method of placement(tremied,circulated:)
material Grout method Poured from 0 feet to 20 feet
material ____ method ____ from ____ feet to ____ feet
material ____ method ____ from ____ feet to ____ feet

f) Gravel packs (state material, and whether natural or artificial):
material None from ____ feet to ____ feet
material ____ from ____ feet to ____ feet

g) Perforations (if pre-manufactured, please give specs of perforations or screens):
type Factory slotted PVC from 135 feet to 185 feet
type ____ from ____ feet to ____ feet

h) Method of well development (bail, air lift, surge) Air lift

i) Will surface or conductor casing extending above grade be used to protect the aquifer from additional surface contaminants during drilling and construction? Yes

16. Include detailed construction diagram, if available.

7. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes__ No X
If yes, a request for a variance must accompany this application pursuant to R12-15-820.

CONDITIONS

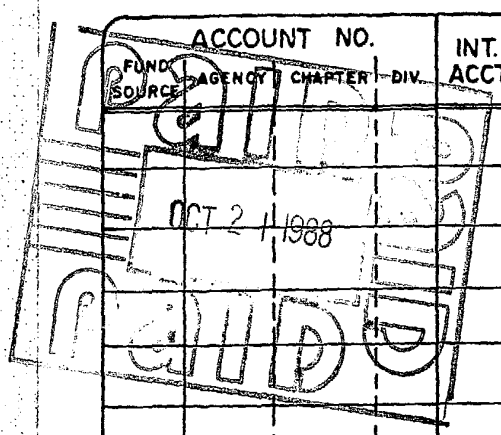
I. Construction and abandonment standards for all wells shall be in accordance with DWR rules R12-15-811 and R12-15-816.
II. Drilling of the well shall be completed within one (1) year after the date of Notice.
III. A Well Driller Report, DWR-55-6-5/83, is required within 30 days of completion of drilling. A Completion Report, DWR-55-7-3/83, is required to be filed with the Department within 10 days after installation of pump equipment for monitor wells.
IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the minimum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual amount of 10 acre feet total.
V. Special construction standards required pursuant to R12-15-821: ____

PHELPS DODGE CORP
P O BOX 50427
TUCSON AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	522693
	THRU
55	~~8888~~ 5227000



ITEM DESCRIPTION	RATE	$ AMOUNT
FILING FEES FOR NOTICES OF INTENTION TO	10.00	80.00
DRILL WELLS		
FILE# REGISTRATION#		
D(24-24)2bcc 55-522693		
D(24-24)21aab 55-522694		
D(24-24)14bca 55-522695		
D(24-24)5bdc 55-522696		
D(24-24)20bab 55-522697		
D(24-24)8bcc 55-522698		
D(24-24)6bcc 55-522699		
D(24-24)16aca 55-522700		

TOTAL $ 80.00

10/21/88/ek
CK#1330

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division
15 South 15th Avenue
Phoenix, Arizona 85007

NOV 15 1989

CHANGE OF WELL INFORMATION

Well Reg. No. 55-522694

File (location) No. D(24-24)21aab

I/We request the following well information be changed:

Resurveyed location is: T24S, R24E, Sec. 21, SE.NW.NE

Amend file number

Date: November 2, 19 89

Phelps Dodge Corporation
Signature of current Well Owner

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, _____ (please print), state that I am (no longer) the (new) owner of the well described below:

Township _____ Range _____ Section _____; _____ ¼ _____ ¼ _____ ¼

Well Registration No. _____ File (location) No. _____

Previous Owner

PRINT New Owner's Name

Address

Signature of New Owner

City State Zip

Address

ENTERED NOV 15 1989

DATED:

City State Zip

NOTE: A.R.S. §45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER, PRIOR TO DRILLING THE WELL, IN ADDITION TO AMENDING INFORMATION PREVIOUSLY FILED.

* * * * *

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner *Phelps Dodge Corporation*
   Name
   Copper Queen Branch, Bisbee, AZ 85603
   Mailing Address

2. Driller *B-J Drilling Company, Inc.*
   Name
   P.O. Box 815, Benson, AZ 85602
   Mailing Address

3. Location of well: *Twp 23S, Rge 24E, Section 35: NE¼,NW¼,NW¼*

4. Permit No. (if issued) *55-522575*

DESCRIPTION OF WELL

5. Total depth of hole *200'* ft.
6. Type of casing *Steel & plastic*
7. Diameter and length of casing *6* in. from *+1'* to *111.2*, *4* in from *+1'* to *200'*.
8. Method of sealing at reduction points *cemented*
9. Perforated from *150'* to *200'*, from _____ to _____, from _____ to _____.
10. Size of cuts *.125 x 1¼"* Number of cuts per foot *160*
11. If screen was installed: Length _____ ft. Diam _____ in. Type _____
12. Method of construction *Drilled*
    drilled, dug, driven, bored, jetted, etc.
13. Date started *12/15/88*
    Month Day Year
14. Date completed *12/16/88*
    Month Day Year
15. Depth to water *116.2 static* ft. (If flowing well, so state.)
16. Describe point from which depth measurements were made, and give sea-level elevation if available *Top of casing*
17. If flowing well, state method of flow regulation: _____
18. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

REG. NO. 55-522575

File No. D(23-24)35bba

Entered ENTERED MAR 07 1989 By

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	21	Interlayered gravel and red-brown silt/clay. alluvium
21	32	Interlayered gravel and red-brown silt/clay with interbedded limestone pebble caliche.
32	200	Grey-maroon to choc. red-brown schist conglomerate.

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Robert D. Jackson
Name

B-J Drilling Company, Inc.
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

Date 2/24/89

DEPARTMENT OF WATER RESOURCES
15 South 15th Ave., Phoenix, AZ 85007

Registration No. 55-522575

File No. D(23-24)35bba

COMPLETION REPORT TM-3

1. Per A.R.S. §45-600, the Completion Report to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

23S	24E	35	NE NW NW
Township	Range	Section	¼ ¼ ¼

EQUIPMENT INSTALLED:

Kind of pump Submersible
Turbine, centrifugal, etc.

Kind of power Electric H.P. Rating of Motor 3/4 HP
Electric, natural gas, gasoline, etc.

Pumping Capacity _____ Date installed 1/09/89
Gallons per minute

WELL TEST:

Test pumping capacity 10 GPM Date Well Tested 1/09/89
Gallons per minute

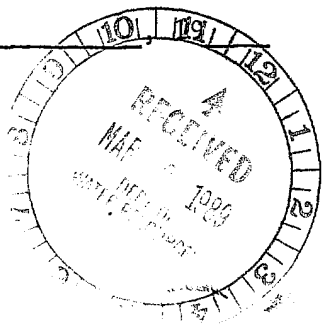
Method of Discharge Measurement Timed volume
Weir, orifice, current meter, etc.

Static Groundwater Level 116 ft. Drawdown 74 ft.

Total Pumping Lift 190 ft. Drawdown _____ lbs
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

2/26/89
DATE



Robert D. Jackson
Signature B-J Drilling Company, Inc.

P.O. Box 815
Address

Benson, AZ 85602
City State Zip

DWR-55-7-3/84

ENTERED MAR 07 1989

MONITOR/PIEZOMETER WELL

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL
MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

TM-3

Section 45-596, Arizona Revised Statutes and Rule R12-15-817 provide: Prior to drilling a monitor or piezometer well, the well owner or lessee shall file a Notice of Intention to Drill on a form provided by the Department.

WELL/LAND LOCATION

1. Township 23 N/S
   Range 24 E/W
   Section 35
   List 10-acre subdivision
   NE ¼, NW ¼, NW ¼

2. County Cochise

3. Applicant:
   Phelps Dodge Corp.
   Name
   Copper Queen Branch
   Address
   Bisbee, AZ 85603
   City State Zip

4. Lance Pape
   NAME OF CONTACT PERSON
   Phone: 602-432-5342
   Agency: Phelps Dodge Corp.

5. Owner of well:
   Phelps Dodge Corp.
   Name
   Copper Queen Branch
   Address
   Bisbee, AZ 85603
   City State Zip

   Purpose of well drilled pursuant to this Notice:
   Monitor X
   Piezometer

7. Owner of land:
   Phelps Dodge Corp.
   Name
   Copper Queen Branch
   Address
   Bisbee, AZ 85603
   City State Zip
   602-432-5342
   Telephone number

8. Construction will start:
   October 1988
   Month Day Year

9. Period well will remain in use: indef. months/years

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

File No. D(23-24)35 bba

Filed 10-5-88 By sk

Input ENTERED OCT 11 1988

Duplicate Mailed 10-7-88 By sk

Registration No. 55-522575

AMA/INA —

W/S 14 S/B

10. For monitoring wells, is pump equipment to be installed? Yes

    (a) If so, what will be the design pump capacity?
    10 gallons per minute

    (b) Type of pump (submersible, turbine, etc.)
    Submersible

    (c) What use will be made of the water?
    Sampling only

11. Proposed method of abandonment of well after project is completed:
    Fill to total depth with cement grout after PVC removal

12. Drilling firm:
    BJ Drilling Co., Inc.
    Name
    P.O. Box 815
    Address
    Benson, AZ 85602
    City State Zip
    DWR #25
    DWR License Number

(continued on reverse)

GENERAL INSTRUCTIONS

ll out this form in duplicate and mail to Department of Water Resources, Suite 1000, 99 East rginia, Phoenix, Arizona 85004. Filing fee must accompany Notice.

state that this Notice is filed in compliance with Rule R12-15-809 and is complete and rrect to the best of my knowledge and belief and that I understand the conditions set forth the reverse side of this form.

RECEIVED OCT 5 1988 WATER RESOURCES HYDROLOGY DIV.

OCT 1988 HYDROLOGY APPROVED

TE 10/4/88

Donald A. Stallwell
Signature of Applicant

13. Is this well to monitor existing contamination? Yes Potential contamination? ___
Please explain SO_4 and TDS in Bisbee-Naco area

14. If construction plans have been coordinated with Az. Dept. Health Services, Environmental Health Division, who is the agency contact? R. Kennett, J. DuBois
If construction plans have been coordinated with Az. Dept. Water Resources, Hydrology/ Remedial Action Division, who is the division contact? N/A

15. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air rotary

b) Borehole diameters:

14	inches from	0	feet to	20	feet
10	inches from	20	feet to	250	feet
6	inches from	250	feet to	300	feet

c) Casing materials (PVC, steel, stainless steel, etc.):

material Steel	diameter	10	inches from	0	feet to	20	feet
material Steel	diameter	6	inches from	0	feet to	250	feet
material PVC	diameter	4	inches from	0	feet to	300	feet

d) Method of sealing at reductions Welded steel ring

e) Annular seal materials (cement, grout, etc.) and method of placement(tremied,circulated:)

material Grout	method Poured	from	0	feet to	20 feet
material Grout	method Circulated	from	0	feet to	250 feet
material	method	from		feet to	feet

f) Gravel packs (state material, and whether natural or artificial):

material None	from		feet to	feet
material	from		feet to	feet

g) Perforations (if pre-manufactured, please give specs of perforations or screens):

type Factory slotted PVC	from	250	feet to	300 feet
type	from		feet to	feet

h) Method of well development (bail, air lift, surge) Air lift

i) Will surface or conductor casing extending above grade be used to protect the aquifer from additional surface contaminants during drilling and construction? Yes

16. Include detailed construction diagram, if available.

Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes__ No X
If yes, a request for a variance must accompany this application pursuant to R12-15-820.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with DWR rules R12-15-811 and R12-15-816.
II. Drilling of the well shall be completed within one (1) year after the date of Notice.
III. A Well Driller Report, DWR-55-6-5/83, is required within 30 days of completion of drilling. A Completion Report, DWR-55-7-3/83, is required to be filed with the Department within 10 days after installation of pump equipment for monitor wells.
IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the minimum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual amount of 10 acre feet total.
V. Special construction standards required pursuant to R12-15-821: ___

PHELPS DODGE CORP
P O BOX 50427
TUCSON AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	522569
	THRU
55	522580

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEES FOR NOTICES OF INTENTION TO	10.00	100.00
					DRILL WELLS		
					FILE# REGISTRATION#		
					~~D(24-24)9aab 55-522569~~		
					D(24-24)4aac 55-522573		
					~~D(24-24)4aac 55-522574~~		
					D(23-24)35bba 55-522575		
					~~D(24-24)4bca 55-522576~~		
					D(23-24)33bca 55-522577		
					~~D(24-24)10dba 55-522578~~		
					D(23-24)21cdd 55-522579		
					D(24-24)8ddc 55-522580	TOTAL	$ 100.00
					D(24-24)8ddc 55-522581		
					10/7/88/ek		
					CK#1324		

RECEIPT OCT - 7 1988

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner *Phelps Dodge Corporation*
Name
Copper Queen Branch, Bisbee, AZ 85603
Mailing Address

2. Driller *B-J Drilling Company, Inc.*
Name
P.O. Box 815, Benson AZ 85602
Mailing Address

3. Location of well: *Twp 24S, Rge 24E, Section 4: SW¼, NE¼, NE¼*

4. Permit No. (if issued) *55-522574*

DESCRIPTION OF WELL

5. Total depth of hole *925'* ft.

6. Type of casing *Steel & Plastic*

7. Diameter and length of casing *10"* in. from *+1'* to *20'*, *6"* in from *+1'* to *636'*, *4" from +1' to 925'*

8. Method of sealing at reduction points *Cemented*

9. Perforated from *825'* to *925'*, from _____ to _____, from _____ to _____.

10. Size of cuts *.125 x 1¼"* Number of cuts per foot *160*

11. If screen was installed: Length _____ ft. Diam _____ in. Type _____

12. Method of construction *Drilled*
drilled, dug, driven, bored, jetted, etc.

13. Date started *1/30/89*
Month Day Year

14. Date completed *2/10/89*
Month Day Year

15. Depth to water *319.2 static* ft. (If flowing well, so state.)

16. Describe point from which depth measurements were made, and give sea-level elevation if available *Top of casing*

17. If flowing well, state method of flow regulation: _____

18. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
REG. NO. 55-522574
D(24-24) 4aac
File No. _____
Entered ENTERED MAR 07 1989 By _____

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	65	Limestone pebble caliche with minor interbedded red-brown silt-clay. Alluvium.
65	345	Interlayered gravel and red-brown silt-clay
345	365	red-brown to grey fine grained arkosic sandstone/sands
365	435	Grey-maroon arkosic to quartzitic siltstone and shale
435	530	Brick red arkosic to quartzitic siltstone and shale
530	640	Grey-maroon arkosic to quartzitic siltstone and shale
640	925	Glance conglomerate

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Robert B. Jackson
Name

B-J Drilling Comapny, Inc.
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

Date 2/24/89

DEPARTMENT OF WATER RESOURCES
15 South 15th Ave., Phoenix, AZ 85007

Registration No. 55-522574

File No. D(24-24)4aac-1

TM-2A deep

COMPLETION REPORT

1. Per A.R.S. §45-600, the Completion Report to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24S	24E	4	SW NE NE
Township	Range	Section	¼ ¼ ¼

EQUIPMENT INSTALLED:

Kind of pump Submersible
(Turbine, centrifugal, etc.)

Kind of power Electric (Electric, natural gas, gasoline, etc.) H.P. Rating of Motor 3 HP

Pumping Capacity _____ (Gallons per minute) Date installed _____

WELL TEST:

Test pumping capacity 7.5 GPM (Gallons per minute) Date Well Tested 2/18/89

Method of Discharge Measurement timed volume
(Weir, orifice, current meter, etc.)

Static Groundwater Level 319.2 ft. Drawdown 583.8 ft.

Total Pumping Lift 903 ft. Drawdown _____ lbs (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

2/25/89
DATE

RECEIVED MAR 2 1989 DEPT OF WATER RESOURCES

Robert L. Jackson
Signature

B-J Drilling Company, Inc.
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

ENTERED MAR 07 1989

DWR-55-7-3/84

MONITOR/PIEZOMETER WELL

FILING FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL
MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

TM-2A

Section 45-596, Arizona Revised Statutes and Rule R12-15-817 provide: Prior to drilling a monitor or piezometer well, the well owner or lessee shall file a Notice of Intention to Drill on a form provided by the Department.

WELL/LAND LOCATION

1. Township 24 ~~N~~/S
   Range 24 E/~~W~~
   Section 4
   ist 10-acre subdivision
   SW ¼, NE ¼, NE ¼
2. County Cochise
3. Applicant:

Phelps Dodge Corp.
ame

Copper Queen Branch
ddress

Bisbee, AZ 85603
ity State Zip

Lance Pape
NAME OF CONTACT PERSON

one: 602-432-5342

ency: Phelps Dodge Corp.

Owner of well:

Phelps Dodge Corp.
me

Copper Queen Branch
dress

Bisbee, Az 85603
ty State Zip

Purpose of well drilled pursuant to this Notice:

Monitor X

Piezometer

7. Owner of land:

Phelps Dodge Corp.
Name

Copper Queen Branch
Address

Bisbee, Az 85603
City State Zip

602-432-5342
Telephone number

8. Construction will start:

October 1988
Month Day Year

9. Period well will remain in use: indef. months/years

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

File No. D(24-24) 4aac

Filed 10-5-88 By ek

Input ENTERED OCT 11 1988 By

Duplicate Mailed 10-7-88 By ek

Registration No. 55-522574

AMA/INA —

W/S 14 S/B

10. For monitoring wells, is pump equipment to be installed? Yes

(a) If so, what will be the design pump capacity?
10 gallons per minute

(b) Type of pump (submersible, turbine, etc.)

Submersible

(c) What use will be made of the water?

Sampling only

11. Proposed method of abandonment of well after project is completed:

Fill to total depth

with cement grout

after PVC removal

12. Drilling firm:

BJ Drilling, Co., Inc.
Name

P.O. Box 815
Address

Benson, Az 85602
City State Zip

DWR #25
DWR License Number

(continued on reverse)

GENERAL INSTRUCTIONS

ll out this form in duplicate and mail to Department of Water Resources, Suite 100, 99 East rginia, Phoenix, Arizona 85004. Filing fee must accompany Notice.

tate that this Notice is filed in compliance with Rule R12-15-809 and is complete and rect to the best of my knowledge and belief and that I understand the conditions set forth the reverse side of this form.

E 10/4/88

Donald A. Stallwell
Signature of Applicant

OCT 1988 HYDROLOGY APPROVED mal

RECEIVED OCT 5 1988 DEPT. OF WATER RESOURCES

13. Is this well to monitor existing contamination?_____ Potential contamination?____
Please explain Deep geologic observation well

14. If construction plans have been coordinated with Az. Dept. Health Services, Environmental Health Division, who is the agency contact? R. Kennett, J. DuBois
If construction plans have been coordinated with Az. Dept. Water Resources, Hydrology/ Remedial Action Division, who is the division contact? None

15. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air rotary

b) Borehole diameters:

10 inches from 0 feet to 20 feet
6 inches from 20 feet to 700 feet
_____ inches from _____ feet to _____ feet

c) Casing materials (PVC, steel, stainless steel, etc.):

material Steel diameter 6 inches from 0 feet to 20 feet
material Steel diameter 4 inches from 20 feet to 300 feet
material PVC diameter 4 inches from 300 feet to 700 feet

d) Method of sealing at reductions Welded

e) Annular seal materials (cement, grout, etc.) and method of placement(tremied,circulated:)

material Grout method Poured from 0 feet to 20 feet
material _____ method _____ from _____ feet to _____ feet
material _____ method _____ from _____ feet to _____ feet

f) Gravel packs (state material, and whether natural or artificial):

material None from _____ feet to _____ feet
material _____ from _____ feet to _____ feet

g) Perforations (if pre-manufactured, please give specs of perforations or screens):

type Factory slotted PVC from 650 feet to 700 feet
type _____ from _____ feet to _____ feet

h) Method of well development (bail, air lift, surge) Air lift

i) Will surface or conductor casing extending above grade be used to protect the aquifer from additional surface contaminants during drilling and construction? Yes

16. Include detailed construction diagram, if available.

/. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes__ No__X
If yes, a request for a variance must accompany this application pursuant to R12-15-820.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with DWR rules R12-15-811 and R12-15-816.
II. Drilling of the well shall be completed within one (1) year after the date of Notice.
III. A Well Driller Report, DWR-55-6-5/83, is required within 30 days of completion of drilling. A Completion Report, DWR-55-7-3/83, is required to be filed with the Department within 10 days after installation of pump equipment for monitor wells.
IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the minimum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual amount of 10 acre feet total.
V. Special construction standards required pursuant to R12-15-821:_____

PHELPS DODGE CORP
P O BOX 50427
TUCSON AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	522569
	THRU
55	522580

FUND SOURCE	ACCOUNT NO. AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEES FOR NOTICES OF INTENTION TO	10.00	100.00
					DRILL WELLS		
					FILE# REGISTRATION#		
					~~D(24-24)9aab 55-522569~~		
					D(24-24)4aac 55-522573		
					~~D(24-24)4aae 55-522574~~		
					D(23-24)35bba 55-522575		
					~~D(24-24)4bea 55-522576~~		
					D(23-24)33bca 55-522577		
					~~D(24-24)10dba 55-522578~~		
					D(23-24)21cdd 55-522579		
					D(24-24)8ddc 55-522580		
					D(24-24)8ddc 55-522581		
					10/7/88/ek		
					CK#1324		

RECEIVED
OCT - 7 1988
PAID

TOTAL $ 100.00

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner *Phelps Dodge Corporation*
   Name
   Copper Queen Branch, Bisbee, AZ 85603
   Mailing Address
2. Driller *B-J Drilling Company, Inc.*
   Name
   P.O. Box 815, Benson, AZ 85602
   Mailing Address
3. Location of well: *Twp 24S, Rge 24E, Section 4: SW¼, NE¼, NE¼*
4. Permit No. (if issued) *55-522573*

DESCRIPTION OF WELL

5. Total depth of hole *640* ft.
6. Type of casing *Steel & Plastic*
7. Diameter and length of casing *10* in. from *+6"* to *19.5 '*, *4* in from *+1'* to *360'*.
8. Method of sealing at reduction points *Cemented*
9. Perforated from *280'* to *360'*, from _____ to _____, from _____ to _____.
10. Size of cuts *.125 x 1¼"* Number of cuts per foot *160*
11. If screen was installed: Length _____ ft. Diam _____ in. Type _____
12. Method of construction *Drilled*
    drilled, dug, driven, bored, jetted, etc.
13. Date started *11/28/88*
    Month Day Year
14. Date completed *12/14/88*
    Month Day Year
15. Depth to water *287' static* ft. (If flowing well, so state.)
16. Describe point from which depth measurements were made, and give sea-level elevation if available *top of casing*
17. If flowing well, state method of flow regulation: _____
18. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
REG. NO. 55-522573
File No. D(24-24) 4aac
Entered ENTERED MAR 07 1989 By _____

DWR-55-6-Rev. 8/85

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	65	Limestone pebble caliche with minor interbedded red-brown silt-clay. Alluvium
65	345	Interlayered gravel and red-brown silt-clay
345	365	Red-brown to grey fine grained arkosic to quartzitic sandstone/ sands
365	435	Grey-maroon arkosic to quartzitic siltstone and shale
435	530	Brick red arkosic to quartzitic siltstone and shale
530	640	Grey-maroon arkosic to quartzitic siltstone and shale

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Robert D. Jackson
Name

B-J Drilling Company, Inc.
P.O. Box 815
Address

Benson, AZ 85602
City State Zip

Date 2/24/89

DEPARTMENT OF WATER RESOURCES
15 South 15th Ave., Phoenix, AZ 85007

Registration No. 55-522573

File No. D(24-24)4aac -2

COMPLETION REPORT TM-2 monitor

1. Per A.R.S. §45-600, the Completion Report to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24S	24E	4	SW NE NE
Township	Range	Section	¼ ¼ ¼

EQUIPMENT INSTALLED:

Kind of pump: Submersible (Turbine, centrifugal, etc.)

Kind of power: electric (Electric, natural gas, gasoline, etc.) H.P. Rating of Motor: 1½ HP

Pumping Capacity: _____ (Gallons per minute) Date installed: 1/11/89

WELL TEST:

Test pumping capacity: 13 GPM (Gallons per minute) Date Well Tested: 1/11/89

Method of Discharge Measurement: timed volume (Weir, orifice, current meter, etc.)

Static Groundwater Level: 287.5 ft. Drawdown: 12.5' ft.

Total Pumping Lift: 300 ft. Drawdown: _____ lbs (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

2/25/89, 19__
DATE

RECEIVED MAR 2 1989 DEPT. OF WATER RESOURCES

Robert A. Jackson
Signature

B-J Drilling Company, Inc.
P.O. Box 815
Address
Benson, AZ 85602
City State Zip

ENTERED MAR 07 1989

DWR-55-7-3/84

./PIEZOMETER WELL

C FEE $10.00

DEPARTMENT OF WATER RESOURCES (DWR)
NOTICE OF INTENTION TO DRILL
MONITOR/PIEZOMETER WELL

MONITOR/PIEZOMETER WELL

TM-2

.tion 45-596, Arizona Revised Statutes and Rule R12-15-817 provide: Prior to drilling a onitor or piezometer well, the well owner or lessee shall file a Notice of Intention to Drill on a form provided by the Department.

WELL/LAND LOCATION

1. Township 24 ~~N~~/S
Range 24 E~~/W~~
Section 4
ist 10-acre subdivision
SW ¼, NE ¼, NE ¼
. County Cochise

. Applicant:
Phelps Dodge Corp.
ame
Copper Queen Branch
ldress
Bisbee, AZ 85603
ty State Zip

Lance Pape
NAME OF CONTACT PERSON
one: 602-432-5342
ency: ~~Phelps Dodge Corp.~~

Owner of well:
Phelps Dodge Corp.
me
Copper Queen Branch
ldress
Bisbee, AZ 85603
y State Zip

Purpose of well drilled pursuant to this Notice:
Monitor X
Piezometer

7. Owner of land:
Phelps Dodge Corp.
Name
Copper Queen Branch
Address
Bisbee, AZ 85603
City State Zip
602-432-5342
Telephone number

8. Construction will start:
October 1988
Month Day Year

9. Period well will remain in use: indef. months/years

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. D(24-24)4aac
Filed 10-5-88 By
ENTERED OCT 11 1988
Input By
Duplicate Mailed 10-7-88 By
Registration No. 55-522573
AMA/INA —
W/S 14 S/B

10. For monitoring wells, is pump equipment to be installed? Yes

(a) If so, what will be the design pump capacity?
10 gallons per minute

(b) Type of pump (submersible, turbine, etc.)
Submersible

(c) What use will be made of the water?
Sampling only

11. Proposed method of abandonment of well after project is completed:
Fill to total depth with cement grout after PVC casing is removed

12. Drilling firm:
BJ Drilling Co., Inc.
Name
P.O. Box 815
Address
Benson, AZ 85602
City State Zip
DWR #25
DWR License Number

(continued on reverse)

GENERAL INSTRUCTIONS

l out this form in duplicate and mail to Department of Water Resources, Suite 1004, 99 East ginia, Phoenix, Arizona 85004. Filing fee must accompany Notice.

tate that this Notice is filed in compliance with Rule R12-15-809 and is complete and rect to the best of my knowledge and belief and that I understand the conditions set forth the reverse side of this form.

E 10/4/88 Donald A. Stallwell

RECEIVED OCT 5 1988 WATER RESOURCES

OCT 1988 HYDROLOGY APPROVED

13. Is this well to monitor existing contamination? Yes Potential contamination? ____
Please explain Sulfate and TDS in Bisbee-Naco area

14. If construction plans have been coordinated with Az. Dept. Health Services, Environmental Health Division, who is the agency contact? N/A
If construction plans have been coordinated with Az. Dept. Water Resources, Hydrology/ Remedial Action Division, who is the division contact? N/A

15. WELL CONSTRUCTION PLAN

a) Drilling method (mud rotary, hollow-stem auger, etc.) Air rotary

b) Borehole diameters:
14 inches from 0 feet to 20 feet
10 inches from 20 feet to 225 feet
6 inches from 225 feet to 275 feet

c) Casing materials (PVC, steel, stainless steel, etc.):
material Steel diameter 10 inches from 0 feet to 20 feet
material Steel diameter 6 inches from 0 feet to 225 feet
material PVC diameter 4 inches from 0 feet to 275 feet

d) Method of sealing at reductions Welded steel ring

e) Annular seal materials (cement, grout, etc.) and method of placement(tremied,circulated:)
material Grout method Poured from 0 feet to 20 feet
material Grout method Circulated from 0 feet to 225 feet
material ____ method ____ from ____ feet to ____ feet

f) Gravel packs (state material, and whether natural or artificial):
material None from ____ feet to ____ feet
material ____ from ____ feet to ____ feet

g) Perforations (if pre-manufactured, please give specs of perforations or screens):
type Factory slotted PVC from 225 feet to 275 feet
type ____ from ____ feet to ____ feet

h) Method of well development (bail, air lift, surge) Air lift

i) Will surface or conductor casing extending above grade be used to protect the aquifer from additional surface contaminants during drilling and construction? Yes

6. Include detailed construction diagram, if available.

. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility or storage area of hazardous materials? Yes__ No X
If yes, a request for a variance must accompany this application pursuant to R12-15-820.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with DWR rules R12-15-811 and R12-15-816.
II. Drilling of the well shall be completed within one (1) year after the date of Notice.
III. A Well Driller Report, DWR-55-6-5/83, is required within 30 days of completion of drilling. A Completion Report, DWR-55-7-3/83, is required to be filed with the Department within 10 days after installation of pump equipment for monitor wells.
IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited to the minimum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual amount of 10 acre feet total.
V. Special construction standards required pursuant to R12-15-821: ____

PHELPS DODGE CORP
P O BOX 50427
TUCSON AZ 85703

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	522569
	THRU
55	522580

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					FILING FEES FOR NOTICES OF INTENTION TO	10.00	100.00
					DRILL WELLS		
					FILE# REGISTRATION#		
					~~D(24-24)9aab 55-522569~~		
					D(24-24)4aac 55-522573		
					~~D(24-24)4aae 55-522574~~		
					D(23-24)35bba 55-522575		
					~~D(24-24)4bea 55-522576~~		
					D(23-24)33bca 55-522577		
					~~D(24-24)10dba 55-522578~~		
					D(23-24)21cdd 55-522579		
					D(24-24)8ddc 55-522580	TOTAL	$ 100.00
					D(24-24)8ddc 55-522581		
					10/7/88/ek		
					CK#1324		

PAID
OCT - 7 1988
PAID

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

WELL DRILLER REPORT

35201108
TM-46

RECEIVED
DEC 31 1997
RECORDS MGT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. LANG EXPLORATORY DRILLING
   2286 W 1500 SOUTH
   SALT LAKE CITY UT 84104

2. Owner Name: PHELPS DODGE MINING COMPANY
   Address: 36 WEST HIGHWAY 92, BISBEE, AZ 85603
   City State Zip

3. Location: 23 N(S) 24 (E)W 27 ¼ SW ¼ NW ¼ NW
   Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55- 564727 (Required)

5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 1080 ft.
7. Type of casing 5" FIBERGLASS
8. Diameter and length of casing 5 in. from 0 to 940 , 5 in from 1040 to 1060
9. Method of sealing at reduction points _____
10. Perforated from _____ to _____ , from _____ to _____ from _____ to _____
11. Size of cuts _____ Number of cuts per foot _____
12. If screen was installed: Length 100 ft. Diam 5 in. Type SLOT .040
13. Method of construction DRILLED
    (drilled, dug, driven, bored, jetted, etc)
14. Date started 12-01-97
    Month Day Year
15. Date completed 12-12-97
    Month Day Year
16. Depth to water 870 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
    GROUND LEVEL
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DWR-55-55-7/95 (Rev.)

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-564727
File No. D(23-24)27 BBC
Received _____ By _____
Entered _____ By _____
ENTERED JAN - 9 1998

35201108
TM-46

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	2	SAND & GRAVEL
2	1080	LIMESTONE/SANDSTONE
		FIRST WATER 960-970 - WATER ROSE TO 870

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: ALAN LANG

2745 WEST CALIFORNIA AVENUE
Street

SALT LAKE CITY, UTAH 84104-4579 801-973-6667
City State Zip Phone No.

Alan Lang 12-23-97
Signature of Driller Date

D(23-24)27 BBC 46

STATE OF ARIZONA
ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street, Phoenix, Arizona 85004-3903
Phone (602)417-2470

RECEIVED
MAR 18 1998
RECORDS MGT

COMPLETION REPORT
(Pump Installation Report)

1. Per A.R.S. § 45-600, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.

2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.

3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.

4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

REGISTRATION NO: 55- 564727 **FILE NO:** D(23-24)27 bbc

LOCATION OF THE WELL:

23	24	27	¼ SW	¼ NW	¼ NW
Township	Range	Section	10-acre	40-acre	160-acre

EQUIPMENT INSTALLED:

Kind of pump: Submersible
(Turbine, submersible, centrifugal, etc.)

Kind of power: Electric (Electric, natural gas, gasoline, etc.) H.P. Rating of Motor: 3

Pumping Capacity: 2.8 Date Pump Installed: 2/16/98

WELL TEST:

Test pumping capacity: 2.8 Gallons per minute Date Well Tested: 2/30/98

Method of Discharge Measurement: Flow determined by filling Measured Container
(Weir, orifice, current meter, etc.)

Static Groundwater Level _____ ft. Drawdown: 105 ft.

Total Pumping Lift: 1055 ft. Drawdown _____ lbs.
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Phelps Dodge Corp	36 W. Hwy. 92	Bisbee	Ariz.	85603
Print Well Owner's Name	Address	City	State	Zip

Bob A Bullard (Agent) (520) 432-3591
Signature of Well Owner Phone Number

DWR 55-56 (Rev 10/95)

ENTERED MAR 20 1998

55-564727

Richard N. (Rick) Mohr
Manager Environmental Services
Arizona Operations

phelps dodge Mining Company
Arizona Operations

orenci, Arizona 85540-9795 • (520) 865-4521

4521 U.S. Highway 191, Morenci, AZ 85540
(520) 865-4521, Ext. 6207
Fax: (520) 865-3861

Ms. Carol Norton
Arizona Department of Water Resources
500 North 3rd Street
Phoenix, Arizona 85004

Subject: Addendum to NOI Application

Dear Ms. Norton:

As a follow-up to your request, we have revised our response to item 15 of the Notice of Intent to Drill (NOI) to read *pursuant to Rule R12-15-816*, for the following Registration Numbers.

CTSA Monitor Wells	*	55-564726
	*	55-564727 D (23-24) 27 BBC
	*	55-564728
	*	55-564729
	*	55-564730
DRW Monitor Wells	*	55-564697
	*	55-564698
	*	55-564699
	*	55-564700

If you have any questions, please call.

Very truly yours,

Richard N. Mohr

Mr. Richard N. Mohr
Manager Environmental Services,
Arizona Operations

cc: Mr. Stephen D. Noel, Southwest Ground-water Consultants, Inc.

RECEIVED
6 1997

DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 NORTH THIRD STREET, PHOENIX, ARIZONA 85004-3903
PHONE (602) 417-2470 FAX (602) 417-2422

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SEP 17 1997
GROUNDWATER MGT

NOTICE OF INTENTION TO DRILL MONITOR/PIEZOMETER WELL

Section §45-596, Arizona Revised Statutes provide: Prior to drilling a monitor or piezometer well, a Notice of Intention to Drill shall be filed with the Departm

1. **Well/land Location:**
   T 23 S (Township) R 24 E (Range) 27 (Section)
   SW ¼ (10 Acre) NW ¼ (40 Acre) NW ¼ (160 Acre)

2. **Position location of the well on the land:**
   Latitude 31 o 24 ' 53 "
   Longitude 109 o 54 ' 05 "

3. **County:** Cohise

4. **Owner of the land of wellsite:**
   Phelps Dodge Mining Co.
   Name
   36 West Highway 92
   Address
   Bisbee AZ 85603
   City State Zip
   Phone Number 520 432 3621

5. **Lessee of the land of wellsite:**
   Name
   Address
   City State Zip
   Phone Number

6. **Owner of well:**
   Phelps Dodge Mining Co.
   Name
   36 West Highway 92
   Address
   Bisbee AZ 85603
   City State Zip
   Phone Number 520 432 3621

7. **Consulting firm:**
   Southwest Ground-water Consult.
   Name
   Stephen Noel, P.G.
   Contact Person
   602 955 5547
   Phone Number

8. **Purpose of well drilled pursuant to this notice:**
   Monitor X
   Piezometer

9. **If for deepening or modifying, list well registration number:**
   55-

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No D(23-24)28 bbc
Filed 9-19-97 By SW
Input By
NOV 12 1997
DUPLICATE
Mailed By
Registration 55-
AMA/INA
W/S 13 S/B

10. **Construction will start:**
    October 1 1997
    Month Day Ye

11. **Period well will remain in use:**
    Indefinate Months/Years

12. **For monitoring wells, is pump equipment to be installed?**
    Yes X No
    (a). If yes, design pump capacity:
    <35 gpm
    (b). What use will be made of the water sample only

13. **Drilling Firm:**
    Lang Exploratory Drilling
    Name
    2286 W. 1500 South
    Address
    Salt Lake City, UT 84104
    City State Z
    801 973 9572
    Phone Number
    468
    DWR License Number
    C-53
    ROC License Category

14. **Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area hazardous material or petroleum storage areas and tanks?** Yes ____ No X

15. **Proposed method of abandonment of well after project is completed:** Abandonment not anticipated, if well is abandoned it will be per ADWR rules

16. **Is this well to monitor existing contamination?** ____ **Potential contamination** X **. Please explain:** Well located in in vicinity of tailings impoundment

GENERAL INSTRUCTIONS

1. Fill out this form in DUPLICATE AND SEND WITH $10.00 FEE to 500 North Third Street, Phoenix, Arizona 85004-3903.
2. For specific instructions, limitations and conditions, see the reverse side of this form.

I state that this Notice is filed in compliance with Rule A.A.C. R12-15-809 and R12-15-816(F), and is complete and correct to the best of knowledge and belief and that I understand the limitations and conditions set forth on the reverse side of this form.

Richard N. Mohr — Richard N Mohr — 9-18-97

Typed or Printed Name — Signature [X] Land Owner [ ] Lessee of Wellsite — Date

CONDITIONS

17. If construction plans have been coordinated with Arizona Department of Environmental Quality, who is the agency contact? *N/A*

If construction plans have been coordinated with Arizona Department of Water Resources, who is the agency contact? *N/A*

18. **WELL CONSTRUCTION PLAN:**

a) Drilling method (mud rotary, hollow-stem auger, etc.) *Air Rotary*

b) Borehole diameters: *14.75* inches from *0* feet to *20* feet.
7.875 inches rom *20* feet to *1030* feet.

c) Casing materials (PVC), steel, hollow-stem auger, etc.)

material *Low Carbon Steel* diameter *10* inches from *0* feet to *20* fe
material *Fiberglass* diameter *4* inches from *0* feet to *1030* fe

d) Method of sealing at reductions *N/A*

e) Annular seal materials (cement, grout, etc.,); method of placement (tremied, circulated):

material *Cement Grout* method *Tremie* from *0* feet to *20* fe
material *Bentonite Seal* method *Tremie* from *20* feet to *925* fe

f) Filter packs (state material):

material *8 - 12 Mesh Silica Sand* from *925* feet to *1030* fe
material from feet to fe

g) Perforations or screen specifications:

Type *4-inch fiberglass wire wrap, 0.040-inch slots* from *930* feet to *1010* fe
Type from feet to fe

h) Method of well development (bail, air lift, surge) *Air Lift, Surge*

i) Will surface or conductor casing extend above grade? Yes *X* No

19. Include detailed construction diagram showing expected water depth in feet below land surface, and details of vault, if specified.

CONDITIONS

I. Construction and abandonment standards for all wells shall be in accordance with A.A.C. R12-15-811 and R12-15-816.

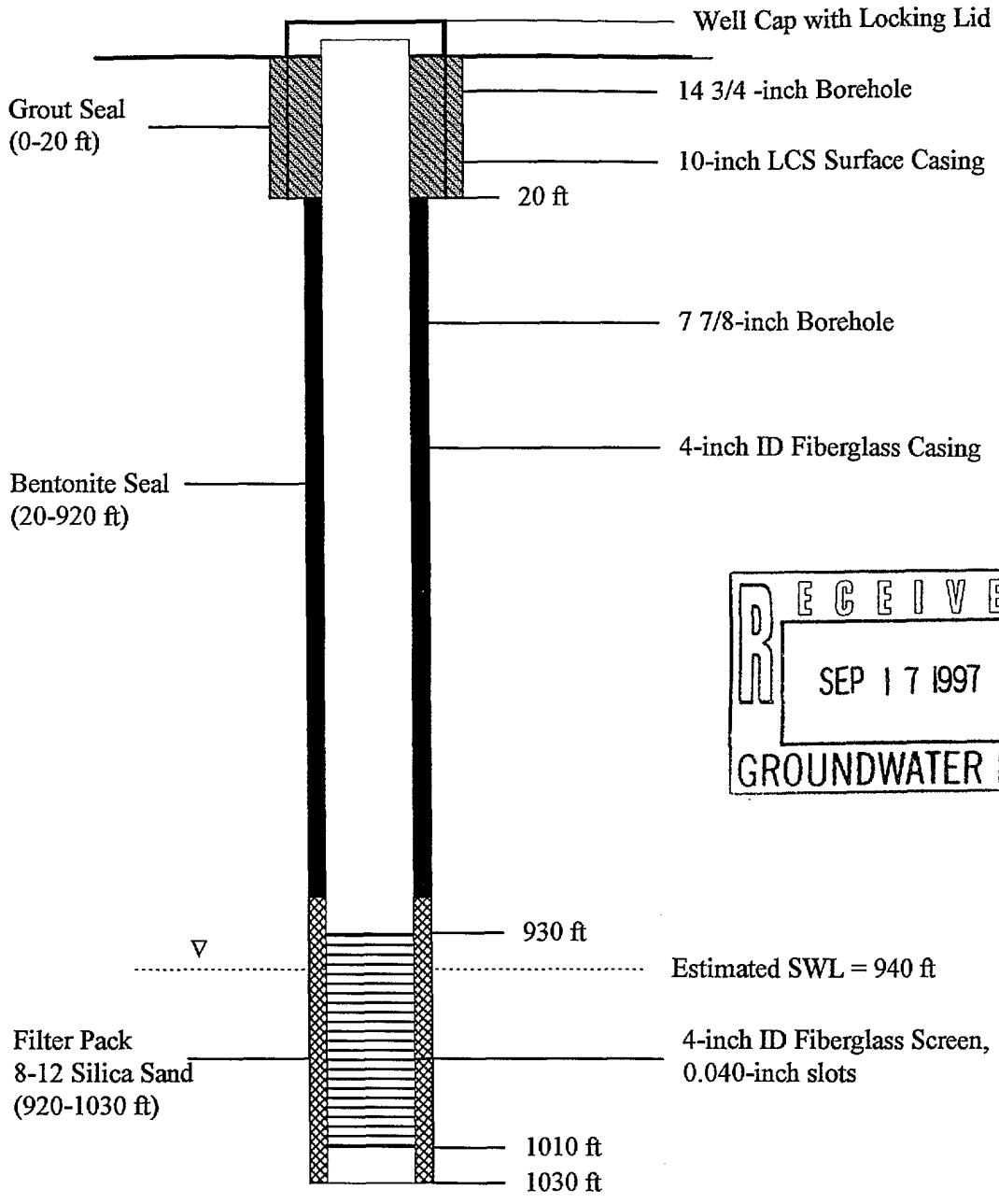
II. Drilling of the well shall be completed within one year after the date of Notice.

III. A Well Driller Report is required within thirty days of completion of drilling. A Completion Report is required to be filed with th Department within thirty days after installation of pump equipment for monitor wells.

IV. Pump equipment may not be installed on a well drilled for piezometer purposes. If a monitor well is pumped, pumping is limited the maximum amount required for monitor purposes, but in no case may exceed 35 gallons per minute and an annual volume of 1 acre feet total.

V. A.A.C. Rule R12-15-811.H.2, requires that: "A monitor well shall be identified as such on the vault cover or at the top of the steel casin Identification information will include well registration number."

VI. Special construction standards required pursuant to A.A.C. Rule R12-15-821:



RECEIVED
SEP 17 1997
GROUNDWATER MGT

-NOT TO SCALE

- CASING CENTALIZERS EVERY 100 FEET

Southwest Ground-water Consultants, Inc. **Project B.248 September 12, 1997**	**TM-43, TM-44, TM-45, and TM-46 Preliminary Design** **Phelps Dodge Corporation**	**Figure 1**

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

October 20, 1997

JANE DEE HULL
Governor

RITA P. PEARSON
Director

PHELPS DODGE MINING COMPANY
36 WEST HIGHWAY 92
BISBEE AZ 85603

RE: Registration No. 55-564726 THRU 55-564730
File No. VARIOUS

Dear Well Owner:

Enclosed for your records is an annotated copy of the Notice of Intention to Drill a well. This is returned to you as evidence of compliance with A.R.S. §45-596. A drilling card has been mailed to your designated driller. Prior to drilling he must have it in his possession.

Since this well is being drilled as a Monitor well, or for Cathodic Protection, Grounding, Geotechnical or Piezometer purposes, our standard driller report form is also being furnished to the driller. He is required to complete it and return it to the Department within 30 days after the completion of the well. A Completion Report form is being furnished for monitor wells where pump installation is authorized. This must be completed within thirty days of installation as required by A.R.S. §45-600.

A Change of Well Information form is enclosed for your future use . If you deem it necessary to change the location of the proposed well, please notify the Department on the enclosed form. A properly amended Drilling Card will then be issued and must be in possession of the driller before drilling begins. During the drilling of a new well, if it is determined that it must be abandoned, then a Well Abandonment Completion Report must be submitted per R12-15-816.F.

Per A.R.S. §45-593, the person to whom a well is registered shall notify this Department of a change of ownership of the well and/or information pertaining to the physical characteristics of the well, in order to keep the well registration file current and accurate.

Sincerely,

Sylvia Valdez
Water Resource Technician
Groundwater Management Support Section

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-564727

AUTHORIZED DRILLER: LANG EXPLORATORY DRILLING LICENSE NO: 468

NOTICE OF INTENTION TO DRILL A MONITOR WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

CONSULTANT: SOUTHWEST GROUND-WATER CONSULTANT

WELL OWNER: PHELPS DODGE MINING COMPANY 36 WEST HIGHWAY 92 BISBEE AZ 85603

The well(s) is/are to be located in the:

SW 1/4 of the NW 1/4 of the NW 1/4 Section 27 Township 23 SOUTH Range 24 EAST

No. of Wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 16TH DAY OF SEPTEMBER, 1998

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

SV

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

RECEIVED
AUG - 4 1999
RECORDS MGT

1. WEBER DRILLING
ROUTE 1 BOX 276B
SAINT DAVID, AZ 85630-9721

2. Owner Name: PETER J LAWSON
Address: NACO (City) AZ (State) 85620 (Zip)

3. Location: 24 N/S 24 E/W 18 (Section) ¼ NE (10-acre) ¼ SW (40-acre) ¼ NE (160-acre)
(Township) (Range)

4. Well Registration No. 55- **568875** (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 330 ft.
7. Type of casing STEEL
8. Diameter and length of casing 8 in. from 0 to ~~330~~ 206 in from 0 to 330
9. Method of sealing at reduction points WELDED
10. Perforated from 166 to 320, from _____ to _____ from _____ to _____
11. Size of cuts 1/8 x 8 Number of cuts per foot 4
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started JUNE (Month) ~~13~~ 13 (Day) 1998 (Year)
15. Date completed JUNE (Month) ~~14~~ 14 (Day) 1998 (Year)
16. Depth to water 140 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
GROUND LEVEL
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-568875
File No. D(24-24) 18 ACA
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

ANSWERED AUG 4 1999

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	140	CALICHE
140	320	VOLCANIC CONGLOMORET
320	330	CLAY
		FIRST WATER 140'
		STATIC 120'

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: WEBER DRILLING

ROUTE 1 BOX 276B
Street

SAINT DAVID, AZ 85630-9721 520-720-4800
City State Zip Phone No.

X Signature of Driller 8-2-99
Date

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

MAIL TO: P. O. BOX 458 - PHOENIX ARIZONA 85001-0458
Phone (602) 417-2470

RECEIVED
AUG 13 1998
RECORDS MGT

COMPLETION REPORT
(Pump Installation Report)

1. Per A.R.S. § 45-6000, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operations. For a flowing well the shut-in pressure should be measured in feet above the land surface or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well be measuring the natural flow at the land surface.

REGISTRATION NO: 55- 568875 FILE NO: D(24-24)18 ACA

LOCATION OF THE WELL:

24 N/S	24 E/W	18	¼ NE	¼ SW	¼ NE
Township	Range	Section	10-acre	40-acre	160-acre

EQUIPMENT INSTALLED:

Kind of pump Sub. (Turbine, Submersible, Centrifugal, etc.) Kind of power Elect (Electric, natural gas, gasoline, etc.)

H.P. Rating of Motor 75 Pumping Capacity 500 gpm Date Pump Installed 6-24-98

WELL TEST:

Test pumping capacity 500 Gallons per minute Date Well Tested 6-21-98

Method of Discharge Measurement _____ (Weir, orifice, current meter, etc.)

Static Groundwater Level _____ ft. Drawdown _____ ft.

Total Pumping Lift _____ ft. Drawdown _____ lbs (Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Peter J Lawson	1791 West Newell Rd	Naco	Az	85620
Print Well Owner's Name	Address	City	State	Zip

Signature of Well Owner — 520-432-3025 (Phone Number) — Date

DWR 55-56 (Rev 11/97)

ANSWERED SEP 0 4 1998

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street - Phoenix, Arizona 85004-3903
Phone (602) 417-2470

JUN - 2 1998

NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE READ SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS ON REVERSE SIDE OF THIS FORM BEFORE COMPLETING.

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES.

Peter J. Lawson — P.O.Box 727 — Naco — Az. — 85620-0727
Land Owner's Name — Current Mailing Address — City — State — Zip

1791 Newell Road

Telephone No. 529-432-3025

COUNTY ASSESSOR'S PARCEL ID INFORMATION: county could not (verbal given) verify (8 numbers) JB

Well Located In Cochise County — 9805 (BOOK) — MAP — PARCEL — 80 (# of Acres) — page 151-43

OFFICIAL SEAL OR STAMP

Well/Land Location (must be completed as requested): Recording date 5/20/98

NE ¼ SW ¼ NE ¼ of Section 18 Township 24S N/S Range 24E E/W
10AC 40AC 160AC

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

Check one:
Recommend Approval____; Insufficient Information to Make Determination___; Variance Required____(Explanation attached)

DATE_____ AUTHORIZED SIGNATURE_____ TITLE_____

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH ADWR

1. Section §45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section §45-596(d) provides that the Department has 15 days after the receipt of a complete and correct notice of intention to record the notice and mail duplicate to owner. Drill card will be mailed directly to drilling firm as stated in item #14.
3. Please mail two original notices with original signatures, a site plan in DUPLICATE, and a check or money order (no cash) in the amount of $10.00 to P.O. Box 458, Phoenix, Arizona 85001-0458 or hand deliver to 500 North Third Street, Phoenix, Arizona 85004-3903. USE BLACK OR BLUE INK.
4. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
5. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. Owner of well: Turquoise Valley Inc
Peter J. Lawson
Name
P.O.Box 727
Current Mailing Address
Naco, AZ. 85620-0727
City State Zip
Telephone No. 520-432-3025

2. Action requested: Drill New Well ____; Deepen____ Modify____ Replace X
For a replacement well provide: Maximum capacity of the original well 100 gallons per minute; distance from the original well 10 feet.
Well Registration No.55- 567713

3. Construction will start about:
Month June Year 1998

4. Description of proposed well:
Diameter 12" inches
Depth 300 feet
Type of Casing Steel

5. Design pump capacity:
500 gallons per minute

6. Lessee of land of wellsite:
Peter J. Lawson
Name
P.O.Box 727
Current Mailing Address
Naco AZ 85620-0727
City State Zip
Telephone No. 520-432-3025

7. Principal Use of Water; (be specific):
Golf Course

8. Other uses of Water; (be specific):
IFrrigation

9. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated; 80

FOR DEPARTMENT USE ONLY
File No. D(24-24)18ACA
Filed 6-2-98 By KM
Input _____ By ____
DUPLICATE MAILED
Date 6-19-98 KM
Registration 55- 568875
AMA/INA —
W/S 11 S/B —

10. Place of Use (Legal Description of Land): NE ¼ SW ¼ NE ¼ Section 18
10 AC 40AC 160AC
Township 24S N/S Range 24E E/W

11. Type of Well (Check One):
Exempt X Non-Exempt ✓ JB

12. Check One:
Residential____ Commercial X

13. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous materials or petroleum storage areas and tanks? Yes____ No X

14. Drilling Firm:
Weber Drilling
Name
Rt 1 Box 276B
Mailing Address
St. David, AZ 85630
City State Zip
520-720-4800
Telephone No.
272
DWR License Number
A4
ROC License Category

I State that this Notice is filed in compliance with A.R.S. §§45-595 and 45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations and conditions set forth on the reverse side of this form.

Peter Lawson / President — [signature] — 6-1-98
Typed or Printed Name and Title — Signature [ ] Land Owner [ ] Lessee of Wellsite, Title — Date

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Pursuant to Section §45-596, Arizona Revised Statutes, provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department.

2. If any water from a proposed well on a parcel of land of twenty or fewer acres will be used for domestic purposes, as defined in §45-454, the applicant shall submit a site plan to scale of the property with the county assessor's parcel identification number. The site plan:

   a. Will be on a 8½"x11" piece of plain paper with representation of the locations of all structures, septic tank or sewer systems and proximity of adjacent lot lines to scale.

   b. Must show the proposed well location and the location of any septic or sewer system that is either located on the property or within one hundred feet of the proposed well site.

   c. Shall demonstrate to the Director's satisfaction that the well will not be drilled within one hundred feet of any septic or sewer system.

   d. Must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Before approval, the health authority shall review the plan and determine whether the proposed well location complies with applicable state and local laws regarding the placement of wells. If so, the health authority shall endorse the site plan and the proposed well placement.

3. Endorsement by the county/local authority is based on the best available judgement that this well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. Information brought to light at a future date may render this determination invalid.

4. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use and is later proposed to be converted to use for domestic purposes, as defined in section §45-454, the well owner shall file a notice of intention to drill and comply with the requirements prescribed pursuant to this section before the well is converted and any water from that well used for domestic purposes.

5. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

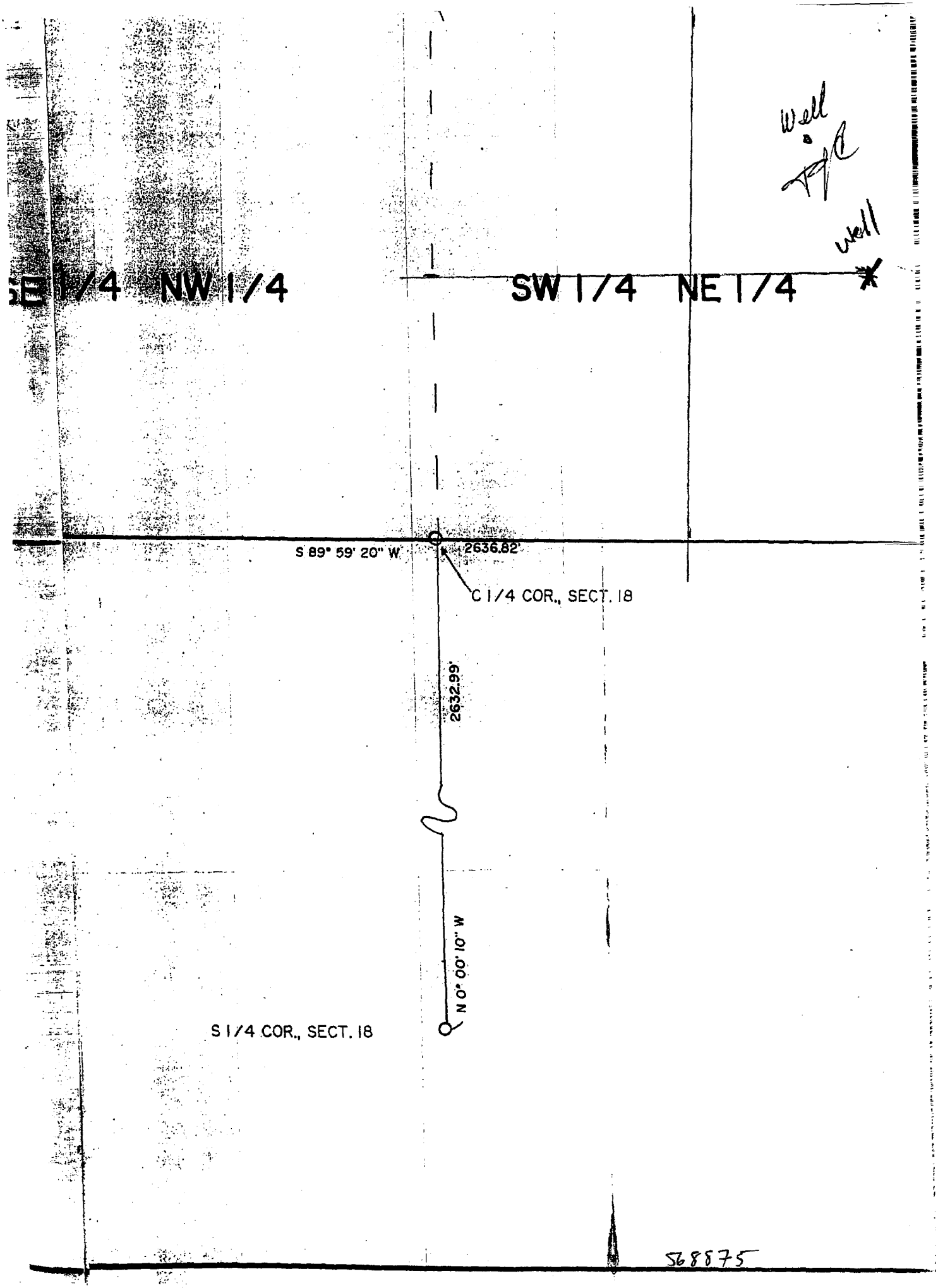
6. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an Irrigation Non-Expansion Area or Active Management Area to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

7. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of the notice (§45-596.E.).

8. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this notice.

9. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

10. If an individual other than the land owner or lessee signs this Notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific Notice on their behalf, shall accompany the Notice.



568875

BOOK PAGE

GROUNDWATER MANAGEMENT SUPPORT SECTION

VERBAL AUTHORIZATION TO DRILL

IN ACCORDANCE WITH A.A.C. R12-15-810.C.

DRILLING FIRM: Weber Drilling #272

WELL OWNER: Peter J. Lawson

TYPE OF WELL: ~~Non~~ Exempt - Commercial (Golf Course)

LEGAL DESCRIPTION: NE, SW, NE, Sect 18, T24S, R24E

IF FOR DEEPENING OR REPLACEMENT OF AN EXISTING WELL, LIST THE ADWR REGISTRATION NUMBER 55- 567713

IN AN ACTIVE MANAGEMENT AREA (AMA) OR IRRIGATION NON-EXPANSION AREA (INA), SAME OWNER, SAME LEGAL DESCRIPTION, MORE THAN ONE WELL, REQUIRES A DIFFERENT PURPOSE FOR THE PROPOSED REPLACEMENT WELL. LIST THE DIFFERENT WELL USE: _____

NOTICE OF INTENT FILED IN ACCORDANCE WITH A.R.S. §45-596.F. & G.? N/A **YES**_____ **NO**

WELL DRILLED WITHIN 100 FEET OF SEPTIC SYSTEM OR HAZARDOUS WASTE SITE?_____ **YES** X **NO**

DATE OF VERBAL AUTHORIZATION: June 3, 1998 **TIME:** 3:00 p.m.

BY: Al Ramsey **TO:** Don Weber

REASON FOR VERBAL AUTHORIZATION: Original well was not drilled deep enough and cased deep enough. Hole to be replaced. May Abandon the old hole.

Turquoise Valley, Inc.

1791 Newell Road
P.O.Box 727
Naco, Az. 85620-0727
520-432-3025 office
520-432-7233 fax

DATE: 6-3-98 # OF PAGES 2
COMPANY: Az Dept of WATER Resources

ATTEN: Tim Casey
FAX: 602-417-2422 PHONE:
FROM:

SUBJECT: New Well

We made a mistake on the legal Description of LAND

NE ¼ of SW ¼ of NE ¼ - Sec 18 Twn 24S - R24E

instead of SW ¼ SW ¼ NW ¼ Sec 18 Twn 24S R24E

Thank you for bring this to our Attention





Recording Requested by:
FIRST AMERICAN TITLE

When recorded mail to:

TURQUOISE VALLEY, INC.
PETER LAWSON, PRESIDENT
1791 Newell Rd., P.O. Box 727
Naco, AZ 85620

FEE # 980515143
OFFICIAL RECORDS
COCHISE COUNTY
DATE HOUR
5/20/98 11
REQUEST OF
PIONEER TITLE AGENCY
CHRISTINE RHODES-RECORDER
FEE : 12.00 PAGES : 2

CORPORATION
WARRANTY DEED

Escrow No. 281-196-302288
Title No. 00717451

KNOW ALL MEN BY THESE PRESENTS: THAT

ROSEMEAD PROPERTIES, INC., a Nevada corporation

for the consideration of TEN AND NO/100 DOLLARS, and other valuable considerations, the GRANTOR herein does hereby convey to

TURQUOISE VALLEY, INC., an Arizona Corporation

the GRANTEE.

the following described real property situate in Cochise County, Arizona:

PARCEL I:
The Southeast quarter of the Northwest quarter; and the Southwest quarter of the Northeast quarter of Section 18, Township 24 South, Range 24 East of the Gila and Salt River Base and Meridian, Cochise County, Arizona.
PARCEL II:
An easement for ingress and egress to the real property described in Parcel I above, described as follows: The East 20.00 feet of the Northwest quarter of the Northeast quarter of Section 18, Township 24 South, Range 24 East of the Gila and Salt River Base and Meridian, Cochise County, Arizona. Grantee covenants and agrees, upon request by Grantor, to quitclaim this easement to Grantor, Rosemead Properties, Inc., provided Grantor grants to Grantee an alternative easement without additional cost to Grantee.

The real property described herein shall be used exclusively as a golf course and no improvements of any kind shall be constructed or maintained thereon except such improvements as may be directly and solely used for golf course purposes. Grantee further agrees that should the real property be used other than exclusively for golf course purposes or if improvements of any kind other than directly and solely for golf course purposes are constructed or maintained thereon, title to the real property shall, at Grantor's option, revert to Grantor or its successors, assigns, or transferees.

Grantor and Grantee agree that the foregoing covenants, restrictions, and reversion shall be covenants running with the land and shall be binding on Grantee and its successors, assigns, or transferees with respect to the real property or any part thereof, and such covenants shall inure to the benefit of and shall be enforceable by Grantor and its successors, assigns, or transferees.

SUBJECT TO: Existing taxes, assessments, liens, encumbrances, covenants, conditions, restrictions, rights of way and easements of record.

And the GRANTOR does warrant the title against all persons whomsoever, subject to the matters above set forth.

IN WITNESS WHEREOF, the GRANTOR has caused its corporate name to be signed by the undersigned officers.

DATED: 5-5-98

ROSEMEAD PROPERTIES, INC., a Nevada corporation

M. L. Whitehead

By: M. L. Whitehead
As Its: Vice President

T. J. Ryan

By: T. J. Ryan
As Its: Secretary

Run Date: 06/03/1998

WELL REGISTRY REPORT - WELLS55

Location D 24 0 24 0 18 B C C **WR** 567713 **AMA** NOT WITHIN ANY AMA OR INA

Name TURQUOISE VALLEY INC
PO BOX 727

NACO AZ 85620

File Type NEW WELLS (INTENTS OR APPLICATIONS)
Application/Issue Date 03/11/1998

Owner OWNER
Driller Nbr 613
Driller Name ARIZONA DRILLING LLP
Driller Phone 520-456-2355
County COCHISE
GPM

Well Type NON-EXEMPT
SubBasin NO SUBBASIN
Watershed SAN PEDRO RIVER
Water Uses DOMESTIC
Well Uses WATER PRODUCTION
Discharge Method NO DISCHARGE METHOD LISTED
Power NO POWER CODE LISTED

Well Depth	200.00	**Case Diam**	10.00	**Tested Cap**	0.00
Pump Cap.	0.00	**Case Depth**	144.00	**CRT**	I
Draw Down	0.00	**Water Level**	100.00	**Log**	X
Completed		**Acres Irrig**	0.00	**Finish**	NO CASING CODE LISTED

Comments

Current Action

04/24/1998	750	WELL LOG RECEIVED

Action History

04/14/1998	755	WELL CONSTRUCTION COMPLETED
03/27/1998	550	DRILLING AUTHORITY ISSUED
03/11/1998	150	NOI RECEIVED FOR A NEW PRODUCTION WELL

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

JANE DEE HULL
Governor

RITA P. PEARSON
Director

June 19, 1998

PETER J LAWSON
P O BOX 727
NACO, AZ 85620

Registration No. 55-568875
File No.D(24-24) 18 ACA

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to replace a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Kay McNeely
Water Resource Technician
Groundwater Management Support Section

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-568875

AUTHORIZED DRILLER: WEBER DRILLING **LICENSE NO: 272**

NOTICE OF INTENTION TO REPLACE A NON-EXEMPT WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: PETER J LAWSON P O BOX 727 NACO, AZ 85620

The well(s) is/are to be located in the:

NE 1/4 of the SW 1/4 of the NE 1/4 Section 18 Township 24 SOUTH Range 24 EAST

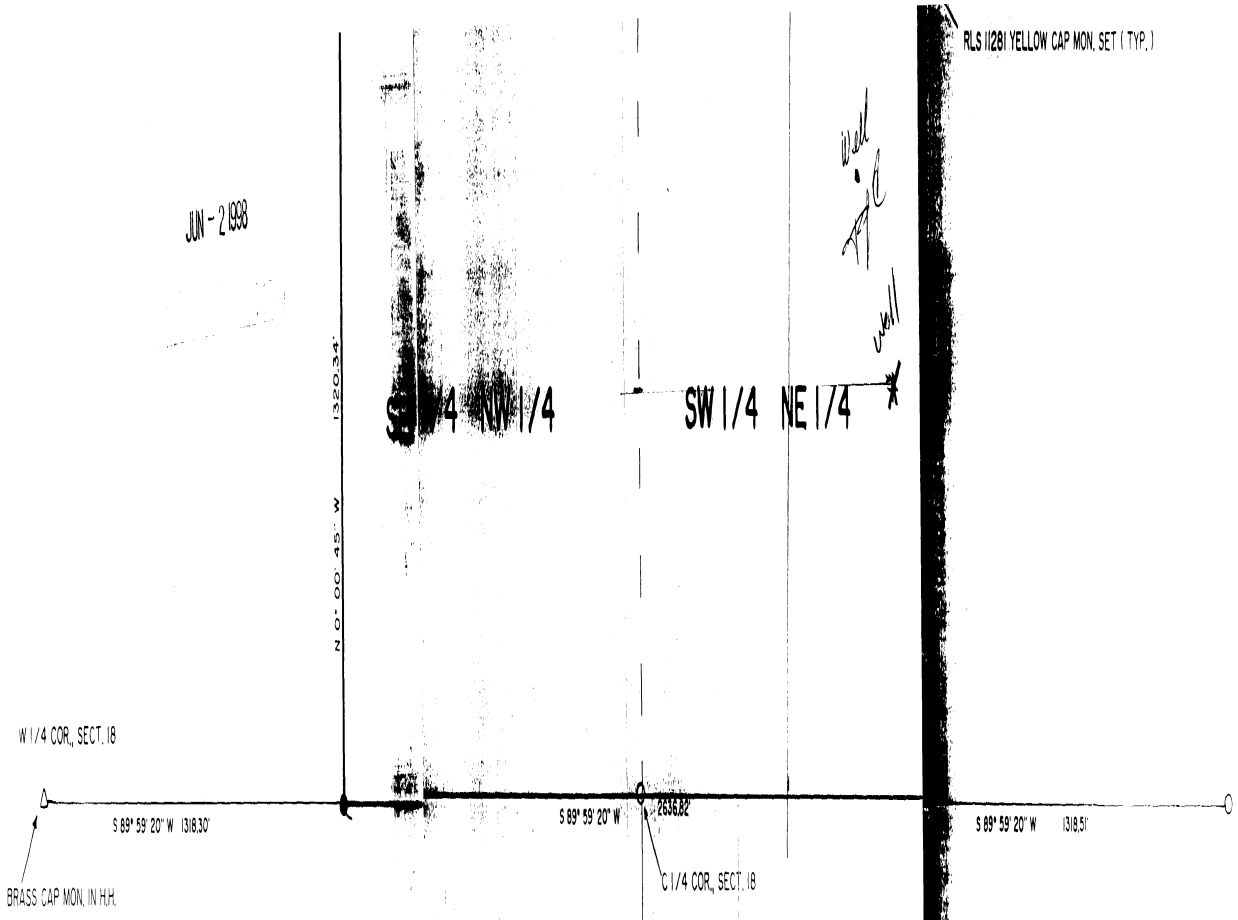
No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 1ST DAY OF JUNE, 1999.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912



RECORDATION

THIS PLAT WAS RECORDED AT THE REQUEST OF BISBEE ENGINEERING ON THIS__DAY OF____199__IN BOOK__OF SURVEYS AT PAGE___ THEREIN.

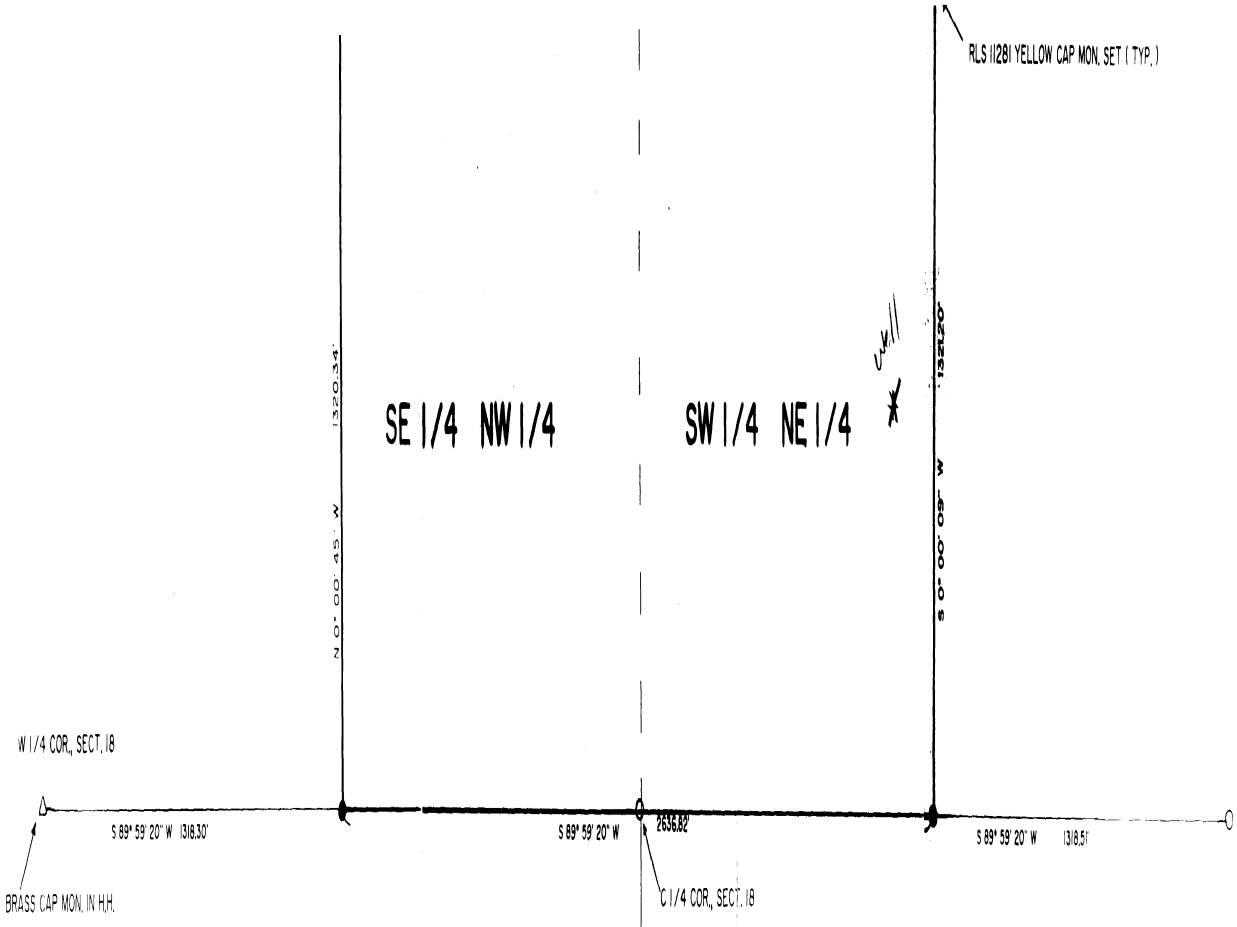
CHRISTINE RHODES, COCHISE COUNTY RECORDER

FEE#_____

BOUNDARY SURVEY OF SW 1/4, NE AND SE 1/4, NW 1/4, SECTION 18, T 24 S, R 24 E, G & SRB & M, CO CO., AZ.

Bisbee Engineer
P.O. Box 1555, Bisbee, AZ
(520) 432-4800

BOOK PAGE



RECORDATION

THIS PLAT WAS RECORDED AT THE REQUEST OF BISBEE ENGINEERING ON THIS__DAY OF____199__IN BOOK__OF SURVEYS AT PAGE___ THEREIN.

_____

CHRISTINE RHODES, COCHISE COUNTY RECORDER

FEE# _____

BOUNDARY SURVEY OF SW 1/4, NE AND SE 1/4, NW 1/4, SECTION 1[illegible], T 24 S, R 24 E, G 8 SRB 8 M, COC[illegible] CO., AZ.

12/8/97

Bisbee Enginee[illegible]
P.O. Box 1555, Bisbee, AZ
(520) 432-4800

568875

BOOK PAGE

D(24-24) 18 BCC

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street
Phoenix, Arizona 85004

WELL DRILLER REPORT

RECEIVED
APR 16 1998
RECORDS MGT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. ARIZONA DRILLING LLP
501 PATTON STREET
HUACHUCA CITY, AZ 85616

2. Owner Name: TURQUOISE VALLEY INC.
Address: NACO (City) AZ (State) 85620 (Zip)

3. Location: 24 N(S) 24 E(W) 18 ¼ SW ¼ SW ¼ NW
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55- **567713** (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 200 ft.
7. Type of casing STEEL
8. Diameter and length of casing 10 in. from 0 to 22 , 8 in from 0 to 144
9. Method of sealing at reduction points —
10. Perforated from 80 to 144 ,from — to _____ from _____ to _____
11. Size of cuts 1/4 Number of cuts per foot 3
12. If screen was installed: Length — ft. Diam _____ in. Type _____
13. Method of construction DRILLED
(drilled, dug, driven, bored, jetted, etc)
14. Date started April (Month) 9 (Day) 98 (Year)
15. Date completed April (Month) ~~8~~ 14 (Day) 98 (Year)
16. Depth to water 100 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
STATIC
18. If flowing well, state method of flow regulation: —

19. Remarks: —

ENTERED APR 24 1998

DWR-55-55-7/95 (Rev.)

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-567713
File No. D(24-24) 18 BCC
Received _____ By _____
Entered _____ By _____

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	12	Top Soil (Sandy)
12	20	Gravel & Clay
20	35	Clay
35	40	Gravel & Clay
40	130	Sandy Clay
130	142	Gravel
142	160	Cemented Conglomerate
160	200	Gravel & Conglomerate

I hereby certify that this well was drilled by me(or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: ARIZONA DRILLING LLP

501 PATTON STREET
Street

HUACHUCA CITY, AZ 85616 456-2355
City State Zip Phone No.

Van Michael 4-15-98
Signature of Driller Date

ARIZONA DEPARTMENT OF WATER RESOURCES

NO FEE REQUIRED

GROUNDWATER MANAGEMENT SUPPORT SECTION
P O BOX 458, PHOENIX, ARIZONA 85001-0458
(602) 417-2470

NO FEE REQUIRED
JUN 17 1998

NOTICE OF INTENT TO ABANDON A WELL

A.R.S. §45-594, R12-15-816: Well abandonment shall be performed only by a licensed well drilling contractor or single well licensee. The owner of a well shall file a Notice of Intent to Abandon the well prior to abandonment.

1. Well Location:

24	24	18
Township	Range	Section
S.W. ¼	S.W. ¼	N.W. ¼
10 Acre	40 Acre	160 Acre

2. Position Location of the Well on the Land:
Latitude 31 ° 20 ' 50 " N
Longitude 109 ° 56 ' 15 " W

3. County: Cochise

County Assessor's ID: 102 (Book) 36 (Map) 002A (Parcel)

4. Well Registration Number:
55- 567713

5. Well Owner: Turquoise Valley Inc.
Name
Box 727
Current Mailing Address
NACO AZ. 85620
City State Zip
520 432 3025.
Telephone

FOR DEPARTMENT USE ONLY
File No. _____
Registration No: 55- _____
Filed _____ By _____ Mailed _____ By _____
AMA/INA _____ W/S _____ S/B _____

6. Owner of the Land: Turquoise Valley Inc.
Name
Box 727
Current Mailing Address
NACO AZ. 85620
City State Zip
520 432 3025
Telephone

7. Type of Well being Abandoned:
(Examples: Domestic, Stock, Irrigation, Municipal, Monitor, Geotechnical, Mineral Exploration, etc.)
Please state: Irrigation

DESCRIPTION OF WELL TO BE ABANDONED:

8. Well Diameter 10, 8, 6" inches
9. Well Depth 200 feet
10. Type of Casing STEEL
11. Abandonment will begin: Month 06 Year 98
12. Reason for abandonment: Poorly Drilled / Insufficient H_2O & Diameter.
13. Materials and methods to be used to abandon the well: Cement, pursuant to R-12-15-816.

14. To your knowledge, is there any information that exists which indicates that the water in this well may be or is contaminated?
Yes _____ No ✓. If yes, explain on an attached sheet.

15. Licensed Driller performing abandonment: Firm Name: WEBER DRILLING CO. License No. 272
Address RTE 1 BOX 276 B City ST. DAVID State AZ. Zip 85630-9721

GENERAL INSTRUCTIONS

1. This form is to be used to obtain authority to abandon a well.
2. If this well has just been discovered pursuant to A.R.S. §45-593.D., and has not been registered, this form will serve to register the well when properly abandoned and reported.
3. Fill out this form in DUPLICATE and send to P O Box 458, Phoenix, Arizona, 85001-0458
4. Construction standards for abandonment shall be in accordance with Department Rules and Regulations.

I state that this Notice is filed in compliance with A.R.S. §45-594 and A.A.C. R12-15-816 and is complete and correct to the best of my knowledge and belief.

16. Signature of Well Owner: [signature] Date 6-9-98

DWR 55-38 (Rev 4/98)

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

June 19, 1998

JANE DEE HULL
Governor

RITA P. PEARSON
Director

TURQUOISE VALLEY INC
PO BOX 727
NACO, AZ 85620

Registration No. 55-567713
File No.D(24-24) 18 BCC

Dear Applicant:

Enclosed is a copy of the Notice of Intent (NOI) to Abandon a Well. This NOI, which was recently filed with this Department is being returned to you as evidence of your compliance with ARS §45-594; R12-15-816. The enclosed Well Owners Notification of Abandonment is to be submitted when the well has been properly abandoned. The Well Abandonment Card and Abandonment Completion Report forms have been sent to your driller. He may not begin abandonment until he has received the Well Abandonment Card. If you change drillers, you must supply this Department with the new driller's identity. Well abandonments shall be performed only by a licensed well drilling contractor or single well licensee.

ARS §45-594; R12-15-816(K) requires the registered well owner to submit a Well Owners Notification of Abandonment form within thirty (30) days after the abandonment of the well. It also requires the driller to furnish this Department a complete and accurate Well Abandonment Report within thirty (30) days after completion of abandonment. You should insist, and ensure, that both of these are done.

Sincerely,

Kay McNeely
Water Resource Technician
Groundwater Management Support Section

Enclosures

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
500 North Third Street - Phoenix, Arizona 85004-3903
Phone (602) 417-2470

RECEIVED MAR 11 1998

NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

PLEASE READ SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS ON REVERSE SIDE OF THIS FORM BEFORE COMPLETING.

PLEASE COMPLETE ALL ITEMS IN THE BOX BELOW DOWN TO COUNTY OR LOCAL AUTHORITY ENDORSEMENT. IF ANY WATER FROM THE PROPOSED WELL (LISTED BELOW) WILL BE USED FOR DOMESTIC PURPOSES ON A PARCEL OF LAND 20 OR FEWER ACRES, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES.

Land Owner's Name	Current Mailing Address	City	State	Zip
TURQUOISE VALLEY INC.	Box 727	NACO	AZ	85620

Telephone No. 432-3025

COUNTY ASSESSOR'S PARCEL ID INFORMATION:

Well Located in COCHISE County

BOOK	MAP	PARCEL	# of Acres
102	36	002A	80

OFFICIAL SEAL OR STAMP

Well/Land Location (must be completed as requested):

SW ¼ (10AC) SW ¼ (40AC) NW ¼ (160AC) of Section 18 Township 24 N(S) Range 24 E(W)

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

Check one:

Recommend Approval____; Insufficient Information to Make Determination___; Variance Required____(Explanation attached)

DATE_____ AUTHORIZED SIGNATURE_____ TITLE_____

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH ADWR

1. Section §45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section §45-596(d) provides that the Department has 15 days after the receipt of a complete and correct notice of intention to record the notice and mail duplicate to owner. Drill card will be mailed directly to drilling firm as stated in item #14.
3. Please mail two original notices with original signatures, a site plan in DUPLICATE, and a check or money order (no cash) in the amount of $10.00 to P.O. Box 458, Phoenix, Arizona 85001-0458 or hand deliver to 500 North Third Street, Phoenix, Arizona 85004-3903. USE BLACK OR BLUE INK.
4. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
5. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. Owner of well:
   TURQUOISE VALLEY INC.
   Name
   Box 727
   Current Mailing Address
   NACO AZ 85620
   City State Zip
   Telephone No. 432-3025

2. Action requested: Drill New Well X; Deepen____ Modify____ Replace____.
   For a replacement well provide: Maximum capacity of the original well _____ gallons per minute; distance from the original well_____ feet.
   Well Registration No.55-_____

3. Construction will start about:
   Month MAY Year 98

4. Description of proposed well:
   Diameter 8 inches
   Depth 200 feet
   Type of Casing STEEL

5. Design pump capacity:
   100 gallons per minute

6. Lessee of land of wellsite:
   N/A
   Name
   _____
   Current Mailing Address
   _____
   City State Zip
   Telephone No._____

7. Principal Use of Water; (be specific):
   GOLF COURSE

8. Other uses of Water; (be specific):
   N/A

9. If use includes irrigation, state to nearest tenth, the number of acres to be irrigated;_____

FOR DEPARTMENT USE ONLY

File No. D(24-24)18BCC
Filed 03/11/98 By BJS
Input_____ By___
DUPLICATE MAILED
Date 03/26/98
Registration 55-567713
AMA/INA_____
W/S 11 S/B___

10. Place of Use (Legal Description of Land):
    SW ¼ (10 AC) SW ¼ (40AC) NW ¼ (160AC) Section 18
    Township 24 N(S) Range 24 E(W)

11. Type of Well (Check One):
    Exempt____ Non-Exempt X

12. Check One:
    Residential____ Commercial X

13. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous materials or petroleum storage areas and tanks? Yes____ No X

14. Drilling Firm:
    Arizona Drilling LLP
    Name
    501 Patton St.
    Mailing Address
    Huachuca City, Az. 85616
    City State Zip
    (520) - 456-2355
    Telephone No.
    613
    DWR License Number
    C-53
    ROC License Category

I State that this Notice is filed in compliance with A.R.S. §§45-595 and 45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations and conditions set forth on the reverse side of this form.

PETER LAWSON / PRESIDENT — Typed or Printed Name and Title

Signature [ ] Land Owner [ ] Lessee of Wellsite, Title

MAR. 6/98. — Date

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Pursuant to Section §45-596, Arizona Revised Statutes, provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department.

2. If any water from a proposed well on a parcel of land of twenty or fewer acres will be used for domestic purposes, as defined in §45-454, the applicant shall submit a site plan to scale of the property with the county assessor's parcel identification number. The site plan:

   a. Will be on a 8½"x11" piece of plain paper with representation of the locations of all structures, septic tank or sewer systems and proximity of adjacent lot lines to scale.

   b. Must show the proposed well location and the location of any septic or sewer system that is either located on the property or within one hundred feet of the proposed well site.

   c. Shall demonstrate to the Director's satisfaction that the well will not be drilled within one hundred feet of any septic or sewer system.

   d. Must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Before approval, the health authority shall review the plan and determine whether the proposed well location complies with applicable state and local laws regarding the placement of wells. If so, the health authority shall endorse the site plan and the proposed well placement.

3. Endorsement by the county/local authority is based on the best available judgement that this well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. Information brought to light at a future date may render this determination invalid.

4. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use and is later proposed to be converted to use for domestic purposes, as defined in section §45-454, the well owner shall file a notice of intention to drill and comply with the requirements prescribed pursuant to this section before the well is converted and any water from that well used for domestic purposes.

5. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

6. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an Irrigation Non-Expansion Area or Active Management Area to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

7. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of the notice (§45-596.E.).

8. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this notice.

9. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

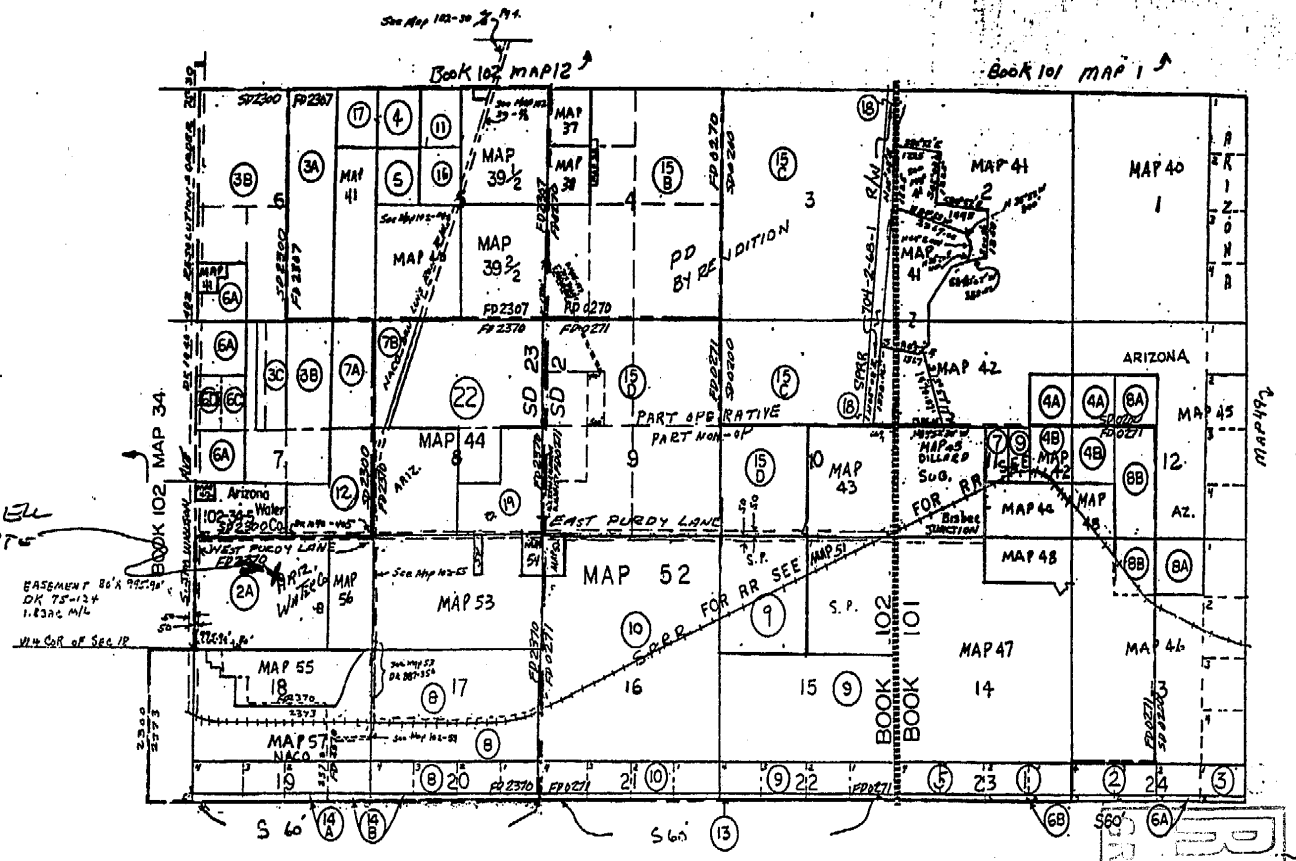
10. If an individual other than the land owner or lessee signs this Notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific Notice on their behalf, shall accompany the Notice.

TRW-REDI
1-800-345-7334

SCALE IN 1/10 OF AN INCH

TWP 24 RGE 24

BOOK 102-BOOK 101
MAP 36 MAP 39



REPUBLIC OF MEXICO

RECEIVED
MAR 11 1998
GROUNDWATER

THIS DESCRIPTION IS FROM OUR WORKING RECORDS AND DOES NOT CONSTITUTE A SURVEY

SCALE 1"=2640'

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

JANE DEE HULL
Governor

RITA P. PEARSON
Director

March 26, 1998

TURQUOISE VALLEY INC
PO BOX 727
NACO, AZ 85620

Registration No. 55-567713
File No.D(24-24) 18 BCC

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Sylvia Valdez
Water Resource Technician
Groundwater Management Support Section

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-567713

AUTHORIZED DRILLER: ARIZONA DRILLING LLP LICENSE NO: 613

NOTICE OF INTENTION TO DRILL A NON-EXEMPT WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: TURQUOISE VALLEY INC PO BOX 727 NACO, AZ 85620

The well(s) is/are to be located in the:

SW 1/4 of the SW 1/4 of the NW 1/4 Section 18 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 10TH DAY OF MARCH, 1999.

for CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

ABANDON

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL ABANDON OPERATIONS

WELL REGISTRATION NO: 55-567713

AUTHORIZED DRILLER: WEBER DRILLING LICENSE NO: 272

NOTICE OF INTENTION TO ABANDON A NON-EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: TURQUOISE VALLEY INC PO BOX 727 NACO, AZ 85620

The well(s) is/are to be located in the:

SW 1/4 of the SW 1/4 of the NW 1/4 Section 18 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 16TH DAY OF JUNE, 1999.

for CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A WELL ABANDONMENT COMPLETION REPORT WITHIN 30 DAYS OF COMPLETION OF ABANDONMENT

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS - 500 NORTH 3RD. STREET
PHOENIX, AZ 85004 (602)417-2470

RECEIVED
AUG 1 1996
GROUNDWATER MGT

NOTICE OF INTENTION TO DRILL, DEEPEN, REPLACE OR MODIFY A WELL

Section § 45-596, A.R.S., provides: a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department.

IF PARCEL IS 20 ACRES OR LESS, THE APPLICABLE COUNTY OR LOCAL HEALTH AUTHORITY MUST ENDORSE ALL ITEMS IN THE BOX BELOW, BEFORE SUBMITTING TO THE DEPARTMENT OF WATER RESOURCES.

TURQUOISE VALLEY INC (Land Owner's Name) | BOX 4279 (Address) | BISBEE (City) | AZ (State) | 85603 (Zip)

Telephone 520 432 7233 (verified 9/10/96)

COUNTY ASSESSOR'S PARCEL ID INFORMATION:

County: COCHISE | 102 (BOOK) - 57 (MAP) 221-7 (PARCEL) | 5 (No. of Acres of Parcel)

Well/Land Location: SE (10AC) 1/4 SW NW (40ac) 1/4 24-20 (160ac) 1/4 of Section 24 & 18 Township 24 S N/S Range 24 E/W

OFFICIAL SEAL
C.C.H.S.S.
1415 W. Melody Lane, Bldg. A
Bisbee, Arizona 85603-3090

COUNTY OR LOCAL AUTHORITY ENDORSEMENT

Check one:
Recommend Approval X; Insufficient information to make determination ____; Variance required ____ (Explanation attached).

DATE 7-26-96 AUTHORIZED SIGNATURE Steven Kuberi

GENERAL INSTRUCTIONS FOR FILING NOTICE WITH

1. Section § 45-596(D) provides that the Director shall determine that all information required on this form has been submitted. If not, the person filing will be notified, and the drilling, deepening or modification of the well may not proceed.
2. Section § 45-596(D), provides that the Department has **15 days after** the receipt of a **complete and correct** notice of intention to record the notice and mail the duplicate to the owner.
3. Fill out this form and site plan in **DUPLICATE** and send **WITH $10.00 FEE** to 15 South 15th Ave., Phoenix, AZ 85007. **USE BLACK OR BLUE INK.**
4. For specific instructions, limitations and conditions, see the reverse side of this form.
5. If the well is a replacement, deepening or modification of an existing well, provide the registration number of the existing well in item 2.
6. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.

1. **Owner of well:**
TURQUOISE VALLEY INC (Name)
BOX 4279 (Mailing Address)
BISBEE AZ 85603 (City State Zip)
Telephone: 520-432 7233

2. **Action requested:** Drill New Well X; Deepen____ Modify____ Replace____
For a replacement well provide: Maximum capacity of the original well____ gallons per minute; distance from the original well____ feet.
Well Registration No. 55-____

3. **Construction will start about:**
Month X Year____

4. **DESCRIPTION OF PROPOSED WELL:**
Diameter 8 inches
Depth 250 feet
Type of Casing 8"

5. **Design Pump Capacity:**
10 GPM gallons per minute

6. **Lessee of Land of wellsite:**
____ (Name)
A A. (Mailing Address)
____ (City State Zip)
Telephone:____

7. **Principal use of water:**(be specific)
RV PARK

8. **Other uses of water:**(be specific)
____

9. If use includes **irrigation**, state to nearest tenth, the number of acres to be irrigated:____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
File No. 024-24 18BCD By MB
Filed 8-21-96 By MB
Input____ By____
DUPLICATE MAILED
Date 9-10-96 By MB
Registration 55- 550161
AMA/INA
W/S II S/B

ENTERED SEP 17 1996

10. **PLACE OF USE** (Legal Description of Land):
Township 24 N/S Range 24 E/W
Section 24 & 18 1/4 SE 1/4 SW 1/4 NW

11. **Type of well:** Exempt X Non-Exempt____
Residential____ Commercial X

12. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks? YES X NO

13. **DRILLING FIRM:**
L-B DRILLING (Firm Name)
PO BOX 4166 (Mailing Address)
HUACHUCA CITY AZ 85616 (City State Zip)
344 (DWR License)
A-53 & B-53 (ROC License Classification)

RECEIVED
AUG 21 1996
GROUNDWATER MGT

July 25 1996 (DATE)

TURQUOISE VALLEY INC (Typed or Printed Name of Owner or Lessee)
Loren F Brewer (Signature | Land Owner | Lessee of Wellsite)

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. If any water from a proposed well on a parcel of land of twenty or fewer acres will be used for domestic purposes, as defined in § 45-454, the applicant shall submit a site plan to scale of the property with the county assessor's parcel identification number. The site plan:

   a. Will be on a 8½"x11" piece of plain paper with representation of the locations of all structures, septic tank or sewer systems and proximity of adjacent lot lines to scale.
   b. Must show the proposed well location and the location of any septic or sewer system that is either located on the property or within one hundred feet of the proposed well site.
   c. Shall demonstrate to the director's satisfaction that the well will not be drilled within one hundred feet of any septic or sewer system.
   d. Must be approved by the county health authority, or by a local health authority in areas where the county health authority has delegated authority to approve septic or sewer systems. Before approval, the health authority shall review the plan and determine whether the proposed well location complies with applicable state and local laws regarding the placement of wells. If so, the health authority shall endorse the site plan and the proposed well placement.

2. Endorsement by the county/local authority is based solely on the best available judgement that this well, as shown on the site plan submitted, is 100 feet or more from all known and visually identifiable sewage treatment systems. It is not a representation that a well placed at this site will be guaranteed as to quantity or quality. Information brought to light at a future date may render this determination invalid.

3. If a well which was originally drilled as an exploration well, a monitor well, a piezometer well or for any use other than domestic use and is later proposed to be converted to use for domestic purposes, as defined in § 45-454, the well owner shall file a notice of intention to drill and comply with the requirements prescribed pursuant to this section before the well is converted and any water from that well used for domestic purposes.

4. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

5. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an Irrigation Non-Expansion Area or Active Management Area to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

6. The drilling, deepening, or modification of this well shall be completed within one (1) year of the date of the notice (§ 45-596.E.).

7. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this notice.

8. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

9. If an individual other than the land owner or lessee signs this Notice, an original letter of authorization from the land owner/lessee, stating that the individual has permission to sign this specific notice on their behalf, shall accompany the Notice.

TURQUOISE VALLEY

Turquoise Valley, Inc.
Golf Course & RV Park
P.O. Box 727
Naco, Arizona 85620-0727

TUCSON AZ 857
PM
06 NOV
1997

USA 32

Arizona Dept. Of Water Resources
Records Management
500 North Third Street
Phoenix, AZ 85004

85004-3903 21

DEPT. OF WATER RESOURCES-RECORDS MGMT.
500 North Third Street
Phoenix, AZ 85004-3903
(602) 417-2405
Fax: (602) 417-2421

RECEIVED
NOV - 7 1997
RECORDS MGT

October 31, 1997

TURQUOISE VALLEY, INC.
PETER LAWSON
P O BOX 727
NACO, AZ 85620

CANCELLED

RE: Well Registration 55-556161
File No. D (24-24) 18 BCD

We are in receipt of the Completion Report (not completed) from you for the above well (copy enclosed). I am enclosing a "Change of Well Ownership" form for your use, as you will note that the WELL OWNER OF RECORD IS "TURQUOISE VALLEY INC". Please note that the "Change of Ownership" requires a $10.00 fee accompanying the completed form.

PLEASE submit the completed "Change of Ownership" form with the appropriate fee. If the well has not and will not be drilled, please return the "Completion Report" (form enclosed) indicating such on the form. If the well will be drilled, please submit the "Completion Report" (form enclosed) when done. We have not received a "Well Driller Log" from L-B Drilling (driller of record per the Notice of Intent to Drill dated 7-25-96 (8-21-96).

If you have any questions, please feel free to contact me.

Sincerely,

BECCA KENDRICK
Water Resources Technician

BAK
Enclosures

ENTERED FEB 2 6 1998

Please Advise
Please
Well Never Dug

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

RECEIVED
SEP 24 1997

JANE DEE HULL
Governor

RITA P. PEARSON
Director

D 240 240 18 B C D WR 556161 BOTH
TURQUOISE VALLEY INC 12
BOX 4279
BISBEE AZ 85603 344

September 15, 1997

P O BOX 727
NACO, AZ 85620 ← Address Changed

Dear Well Owner:

The Department of Water Resources issued drilling authority one year ago for the well referenced by the file and registration number as indicated on the above label. To date, our records show that this well has not been drilled.

The registered well owner must submit a **Completion Report** which specifies the data relating to the pump equipment, within thirty (30) days of installation. There is no time limit by which you must install any pump equipment, but the **Completion Report** (form enclosed) must be submitted within thirty (30) days of installation.

If your well has been drilled, your file needs the above mentioned report to bring the well into compliance with the law, and you should ensure that this is done.

If you have not drilled your well, but it is your intention to do so in the future, this is to advise you that you must refile a **Notice of Intent to Drill** in order to obtain authority to commence drilling.

Your immediate assistance is appreciated. If you have any questions, or need further information, please contact Records Management Section at (602) 417-2405.

RECEIVED
NOV - 7 1997
RECORDS MGT

Sincerely,

Creola Lasky

Creola Lasky
Supervisor, Records Management Section

DWR-55-60B-05/96(Rev.)
12-month letter

Well Driller never show = CALL = or drill the well
Now Owner May 28, 97
Peter HAWSON

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

JANE DEE HULL
Governor

RITA P. PEARSON
Director

RECEIVED
SEP 24 1997
RECORDS

D 240 240 18 B C D WR 556161 BOTH
TURQUOISE VALLEY INC 12
BOX 4279
BISBEE AZ 85603 344

September 15, 1997

P O BOX 727
NACO, AZ 85620 ← Address Changed

Dear Well Owner:

ENTERED OCT 30 1997

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If your well has been drilled, your file needs the above mentioned report to bring the well into compliance with the law, and you should ensure that this is done.

If you have not drilled your well, but it is your intention to do so in the future, this is to advise you that you must refile a **Notice of Intent to Drill** in order to obtain authority to commence drilling.

Your immediate assistance is appreciated. If you have any questions, or need further information, please contact Records Management Section at (602) 417-2405.

Sincerely,

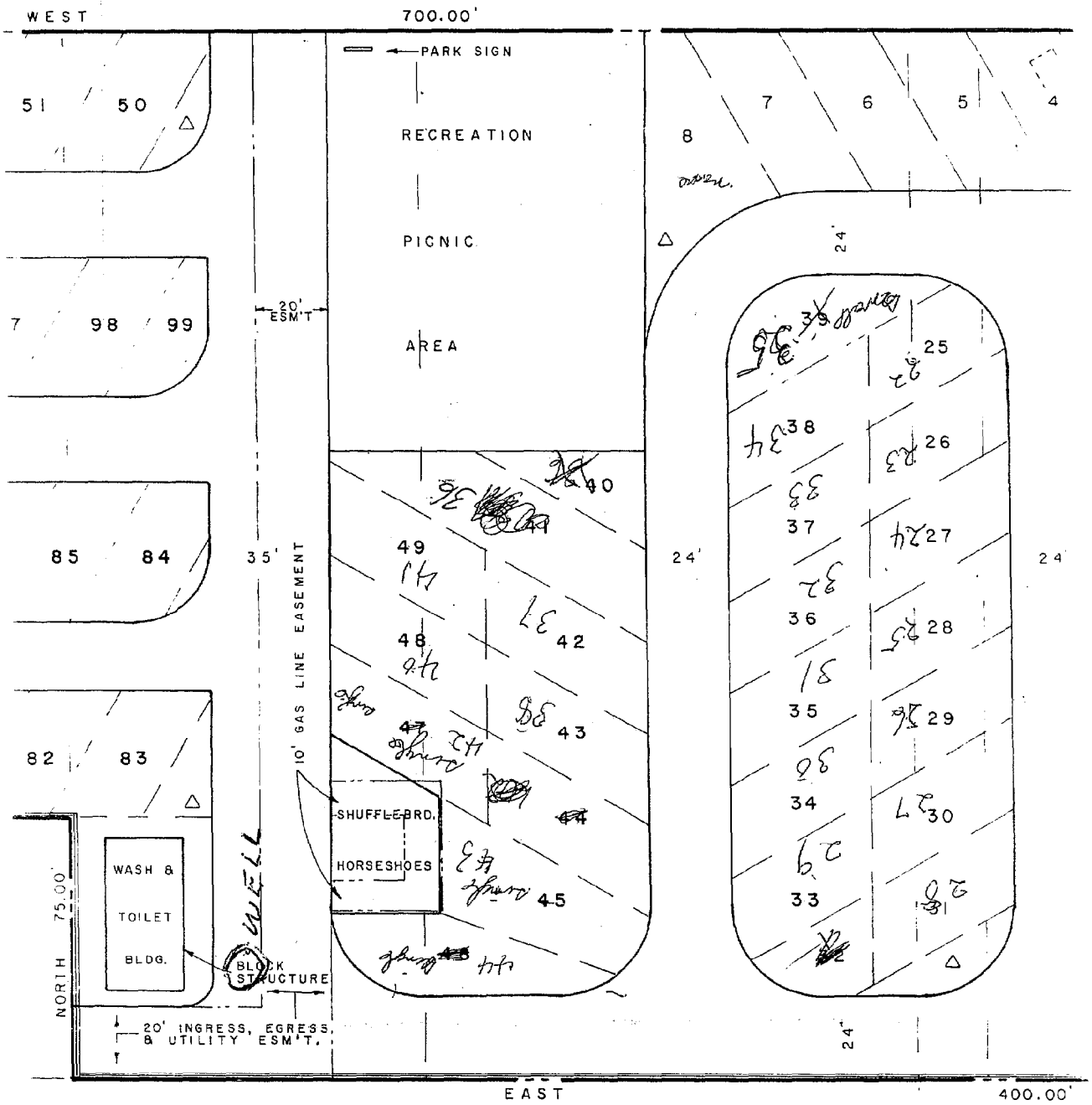
Creola Lasky

Creola Lasky
Supervisor, Records Management Section

DWR-55-60B-05/96(Rev.)
12-month letter

Well Driller never show = Call = or drill the well
New Owner MAY 28, 97
Peter LAWSON

ENTERED OCT 31 1997



S.P. RAILROAD

RESIDENTIAL ZONED TR-9, III

RECEIVED
AUG 1 1996
GROUNDWATER MGT

RECEIVED
AUG 2 1 1996
GROUNDWATER MGT

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2401

August 2, 1996

RECEIVED
AUG 21 1996
GROUNDWATER MGT

TURQUOISE VALLEY, INC.
BOX 4279
BISBEE, AZ 85603

Dear Applicant:

We are recently in receipt of your filing an (NOI) to drill/deepen/replace/modify a well. However, our review indicates that the filing(s) is incomplete under the Groundwater Management Act for the following reason(s):

> Item #12 is to be completed as requested. Your site plan should include the location of the well and the distance from the well to the septic system.

Upon clarification, or correction, no further action can be taken by this Department pending receipt of information that completes the application, as indicated above.

Sincerely,

Toni Bergeman

Toni Bergeman
Water Resources Technician
Groundwater Section

hs
Enclosures

Dear Sirs
There is no septic system, all of the Park is on City sewer, the Health man checked well site and there is no septic system anywhere close Thankyou / Loren & Brenda

ARIZONA DEPARTMENT OF WATER RESOURCES

500 North Third Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

September 10, 1996

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

Turquoise Valley Inc.
Box 4279
Bisbee, AZ 85603

Registration No. 55-556161
File No. D(24-24)18 BCD

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to drill/deepen/modify a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Toni M. Bergeman

Toni M. Bergeman
Water Resource Technician

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004-3903

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-556161

AUTHORIZED DRILLER: L.B. DRILLING LICENSE NO: 344

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: TURQUOISE VALLEY INC.

The well(s) is/are to be located in the:

SE 1/4 of the SW 1/4 of the NW 1/4 Section 18 Township 24 SOUTH Range 24 EAST

No. of Wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 20TH DAY OF AUGUST, 1997.

CHIEF, GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL
WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED FEB 28 1985 DEPT. OF WATER RESOURCES

RECEIVED JAN 17 1985 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
~~EXEMPT WELL (NO CHARGE)~~	☐
NON-EXEMPT WELL — $10.00	☑

LATE FEE $10.00 ☑

FOR OFFICE USE ONLY

REGISTRATION NO. 55- 802236-2
FILE NO. D(24-24)18 db
FILED 4-26-85 (DATE) AT am (TIME)
INA —
AMA —

1. Name of Registrant:
City of Bisbee ATTN: Nellie Hodges, City Clerk/Treasurer
118 Arizona Street (Address) Bisbee (City) AZ (State) 85603 (Zip)

2. File and/or Control Number under previous groundwater law: Information unavailable
(File Number) 35- None on file (Control Number)

3. a. The well is located within the NW ¼ SE ¼ ¼, Section 18, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision N/A, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Golf Course Irrigation.

5. If for irrigation use, number of acres irrigated from well 80.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)

RECEIVED APR 26 1985 DEPT OF WATER RESOURCES

a. Depth of Well 222' feet
b. Diameter of casing 10 3/4" O.D. inches
c. Depth of casing 222' feet
d. Type of casing Steel.
e. Maximum pump capacity 600 gallons, approximately gallons per minute
f. Depth to water 90' to 100' feet below land surface
g. Date well completed Feb. (Month) 14 (Day) 1934 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 1/9/85 SIGNATURE OF REGISTRANT Nellie Hodges

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

CITY OF BISBEE
118 ARIZONA ST
BISBEE AZ 85603

ATTN: NELLIE HODGES

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
XX	
	THRU
55	802237-L

ACCOUNT NO. FUND SOURCE	AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					LATE FEE	10.00	20.00
					EXISTING WELL REGISTRATION FEE	10.00	20.00
					2 NON-EXEMPT WELLS		
					FILE NO. D(23-24)8 bba		
					D(24-24)18 db		
					CHECK NO. 009446 4/29/85 kg		

WATER PAYMENT
GUESTS 1
CHK NO 9446
55-I 40.00
TAX 0.00
TOTL 40.00
GEN.CHEK 40.00

~~W 6793 A 11429~~

TOTAL $ 40.00

MICROFILMED

D(24-24)10 DDD

Arizona Department of Water Resources
Records Management Section
500 N. 3rd Street • Phoenix, Arizona 85004
(602) 417-2405 • (800) 352-8488
www.water.az.gov

Notice of Well Capping

NO FEE

RECEIVED
APR 22 2005

- Review instructions prior to completing form in black or blue ink.
- Within five (5) days after capping an open well, the owner of the well shall file this Notice.

FILE NUMBER

WELL REGISTRATION NUMBER
55 -626702, 55-627685

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Type

CHECK ONE

- ☐ Domestic
- ☐ Stock
- ☐ Irrigation
- ☐ Municipal
- ☐ Monitor / Piezometer
- ☐ Geotechnical
- ☐ Mineral Exploration
- ☐ Other (*please specify*):

Location of Well

WELL LOCATION ADDRESS (IF ANY)
Bisbee Jct.

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
T24S	R24E	10	SE ¼	SE ¼	SE ¼

LATITUDE			LONGITUDE		
31 ° Degrees	21 ' Minutes	4.9 "N Seconds	109 ° Degrees	53 ' Minutes	14.6 "W Seconds

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL

COUNTY WHERE WELL IS LOCATED
Cochise

SECTION 2. OWNER AND FIRM INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
Union Pacific Railroad Company

MAILING ADDRESS
1400 Douglas Street, Stop 1030

CITY / STATE / ZIP CODE
Omaha, NE 68179

CONTACT PERSON NAME AND TITLE
Jim Gorley, Sr. Engineer, Cameron-Cole, LLC

TELEPHONE NUMBER	FAX
402-778-4600	402-778-4600

Person or Firm Installing the Cap

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
Layne Christensen Company

MAILING ADDRESS
12030 E. Riggs Road

CITY / STATE / ZIP CODE
Chandler, AZ 85249

SEP 19 2005

CONTACT PERSON NAME AND TITLE
Jim Hausladen, District Manager

TELEPHONE NUMBER	FAX
480-895-9404	480-895-8699

SECTION 3. CASING AND CAPPING INFORMATION

DATE WELL WAS CAPPED
3/29/05

Surface Casing

OUTER DIAMETER (inches)	MATERIAL (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE

TYPE OF CAP
5/8" Steel Plate

MANUFACTURER OF CAP, IF ANY

REMARKS

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

SIGNATURE OF WELL OWNER
James Gorley, Cameron-Cole, LLC

DATE
4/7/05

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 14 1982 BISBEE JCT.

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL – $10.00	☒

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 626702
FILE NO. D(24-24)10ddd
FILED 6-14-82 (DATE) AT 3 (TIME)
INA
AMA

1. Name of Registrant:
Southern Pacific Transportation Co. Leased to: Naco Water Co.
400 E. Toole Ave., Tucson, AZ 85701 (DA-121422) P.O. Box 307 Naco, Arizona 85620
(Address) XXXX XXXX XXX

2. File and/or Control Number under previous groundwater law:
N/A (File Number) 35- (Control Number)

3. a. The well is located within the SE ¼ SE ¼ SE ¼, Section 10, of Township 24S N/S, Range 24E E/W, G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Municipal

5. If for irrigation use, number of acres irrigated from well N/A.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
N/A
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 379 feet
b. Diameter of casing 16 inches
c. Depth of casing 379 feet
d. Type of casing Stove Pipe.
e. Maximum pump capacity 175 gallons per minute.
f. Depth to water 216.4 feet below land surface.
g. Date well completed 1 (Month) (Day) 1918 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒. N/A
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6/10/82 SIGNATURE OF REGISTRANT _____
Area Engineer

MICROFILMED

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001- 0458
FOR INFORMATION: CALL MONICA ORTIZ AT (602)417-2470

RECEIVED
DEC 10 1999
GROUNDWATER MGT

REQUEST FORM TO CHANGE WELL INFORMATION OWNERSHIP * DRILLER

Please complete the appropriate section of this request form and return to P.O. Box 458, Phoenix, Arizona 85001-045. In accordance with A.R.S. § 45-113, please submit the applicable fee. NOTE: A.R.S. §45-593 (C) requires that the Department be notified of change of well ownership and that the new owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

1. CHANGE OF WELL INFORMATION: (NO FEE REQUIRED)

NOTE: If the location of the proposed well changes after drilling authority has been issued, **attach a $10.00 reissue fee for each** of the drilling authorities to be changed.

WELL REGISTRATION NO. 55-_____ **FILE NO:**_____

I/We request the following well information be changed: _____

_____

Date_____ Signature of Current Well Owner_____

***Note: This information is on your copy of the Notice of Intent to Drill.**

2. STATEMENT OF CHANGE OF WELL OWNERSHIP: ($10.00 FEE REQUIRED)

NOTE: If this change consists of more than one well and the names are common: attach a $10.00 fee. Otherwise, each well requires a separate fee of $10.00.

I, G.L. PINKER, state that ~~I am~~ the ~~Previous~~/New Owner of the well described below: UNION PACIFIC RAILROAD COMPANY IS

SE ¼ SE ¼ SE ¼ of Section 10 Township 24 N/S Range 24 E/W
10 Acre 40 Acre 160 Acre

Assessor's tax parcel number of the parcel on which the well is located: Book_____ Map_____ Parcel_____.

Well Registration No. 55- 626702 File No. D(24-24) 10 DDD (if known)

SOUTHERN PACIFIC TRN
PRINT Previous Owner's Name

400 E TOOLE AVE
Mailing Address

TUCSON AZ 85701
City State Zip

_____
Telephone Number

UNION PACIFIC RAILROAD CO.
1416 DODGE ST WP001
OMAHA NE 68179
(402) 997 – 3593 (MARK SCHULTE)

_____
Telephone Number

Signature of ~~Previous~~/New Well Owner _____ **Date** 11/24/99

ANSWERED DEC 10 1999

ARIZONA DEPARTMENT OF WATER RESOURCES
GROUNDWATER MANAGEMENT SUPPORT SECTION
MAIL TO: P.O. BOX 458 - PHOENIX, ARIZONA 85001-0458
FOR INFORMATION: CALL MONICA ORTIZ AT (602)417-2470

3. REQUEST TO CHANGE WELL DRILLER $10.00 FEE REQUIRED FOR EACH WELL

This request must be received by this Department and the Drill Authorization issued to the new drilling firm prior to the start of drilling or the completion of the well listed below.

Well Registration No. 55- _____ **File No.** _____

Original Well Driller	**New Well Driller**
Mailing Address	**Mailing Address**
City State Zip	**City State Zip**
Telephone Number	**Telephone Number**
ADWR License Number	**ADWR License Number ROC License Category**
Typed or Printed Name of Well Owner	**Signature of Well Owner Date**

The fee charged for a change of well ownership and/or reissue of a drill card is authorized by R12-15-151, effective June 30, 1994.

WELL FILE UPDATE

9/6/95

D 240 240 10 (DD) WR 626702 FILE TYPE: REGISTRATION WELL TYPE: NON-EXEMPT
DATE ISSUED: 06 14 982 PLANNED PUMP CAP:

NAME: SOUTHERN PACIFIC TRN IN CARE OF: ~~DA 121422~~ DUPLICATE OF 55-627685
400 E TOOLE AVE
TUCSON AZ 85701

ACCURACY: NOT VERIFIED WATER USES: MUNICIPAL
AREA: OUTSIDE
SUB-BASIN:
WATERSHED: SAN PEDRO RIVER WELL USES: WATER PRODUCTION
COUNTY: COCHISE
OWNER: CORPORATION DRILLER:

WELL DPTH: 379 FT CASE DIAM: 16 IN CASE DPTH: 379 FT METH DET:
PUMP CAP: 175 GPM FINISH: STEEL ACRES IRR: YIELD: 175 GPM
DRAW DOWN: WATER LVL: 216 FT LIFT: POWER:
DATE COMPLETED: 01 00 918
POU #1: POU #2:

STATUS: DATA OWN LOG N CRT N PQ NBR: IPQ STATUS:

ENTER - READ NEXT RECORD CLEAR TO RETURN TO SELECTION CRITERIA

ACCORDING TO DON WEBER OF WEBER DRILLING # 272, WELL REGISTRATION NO.S 55-626702 & 55-627685 ARE ONE AND THE SAME. ON OR ABOUT AUGUST 10, 1995, MR WEBER DRILLED A REPLACEMENT WELL AT THE ABOVE LOCATION. HE WAS ASKED TO VERIFY THE EXISTANCE OF WELLS ON THIS PROPERTY AND TO EVALUATE THEIR SIZE AND DEPTH. ON SEPT. 6, 1995 MR WEBER REPORTED ~~THAT~~ ONLY ONE WELL EXISTS.

ENTERED SEP 14 1995

M. Ball

Southern Pacific Transportation Co.
400 E. Toole Avenue
Tucson, AZ 85701

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
WATER RIGHTS ADMINISTRATION
99 EAST VIRGINIA
PHOENIX, ARIZONA 85004

RECEIPT

KIND ENTRY	FILE REFERENCE NO.
55	626698
	THRU
55	626711

FUND SOURCE	ACCOUNT NO. AGENCY	CHAPTER	DIV.	INT. ACCT.	ITEM DESCRIPTION	RATE	$ AMOUNT
					Filing Fee for Registration of	10.00	
					Existing Wells (14 wells)		140.00
							WATER PAYMENT
					File No.		QUESTS 14
	D(6-30) 3bbb				D(12-12)5cbb		CHK NO 55870
	D(31)14aab				D(10-10) 4cdb		55-I 140.00
	D(20-13) 7aca				D(4-3) 25aaa		TAX 0.00
	D(28-27)13bac				C(5-5)31dbc		TOTL 140.00
	D(24-24)10dd				C(6-9) 32ca		GEN.CHEK 140.00
	D(13-31)30ca				C(9-18) 5bbd		
	D(17-19)6ac						
	D(20-20)31cdc						

4353 A 15:55

Check # 4010055870
11-12-82 vf

TOTAL $ 140.00

MICROFILMED

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004



REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☒
NON-EXEMPT WELL — $10.00	☐

11

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 645050
FILE NO. D(24-24)18
FILED 6-10-82 (DATE) AT 11A (TIME)
INA
AMA ✓

1. Name of Registrant:
GUSTAVO E. VALENZUELA
P.O. BOX 14 (Address) NACO (City), AZ (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35- _____ (Control Number)

3. a. The well is located within the ____¼ ____¼ ____¼, Section 18, of Township NACO 24 ~~N~~S, Range 24 ~~E~~W, G & SRB & M, in the County of COCHISE.
b. If in a subdivision: Name of subdivision NACO, ARIZONA, Lot No. 507, Address BLOCK 7 —

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
DOMESTIC.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____
_____ (Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 167 feet
b. Diameter of casing 6 inches
c. Depth of casing 150 feet
d. Type of casing STEEL.
e. Maximum pump capacity — gallons per minute.
f. Depth to water 115 feet below land surface.
g. Date well completed _____ (Month) _____ (Day) 1947 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
____¼ ____¼ ____¼, Section ____ Township ____ Range ____
Attach additional sheet if necessary.

9. DATE 6/8/82 SIGNATURE OF REGISTRANT Gustavo E Valenzuela

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

ARIZONA DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

DEPARTMENT OF WR
AUG 3 - 1994
OPERATIONS DIV.

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Name: M. Rozzano and P. WEED
   Address: 1443 W. Hull Ranch Rd. (Street) Bisbee (City) / Az. (State) 85603 (Zip)
2. Driller Name: L.B. Drilling
   Address: Box 4166 (Street) Huachuca City (City) / Az. (State) 85616 (Zip)
3. Location: 24 N/S (Township) 24 E/W (Range) 5 (Section) SW 1/4 (10-acre) SW1/4 (40-acre) SW 1/4 (160-acre)
4. Well Registration No. 55- 544535 (Required)
5. Permit No. _____ (If issued)

DESCRIPTION OF WELL

6. Total depth of hole 320 ft.
7. Type of casing pvc
8. Diameter and length of casing 6 in. from 0 to 320, _____ in from _____ to _____.
9. Method of sealing at reduction points _____
10. Perforated from 320 to 280, from _____ to _____, from _____ to _____.
11. Size of cuts 1/8 Number of cuts per foot three
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction drilled a'n
    (drilled, dug, driven, bored, jetted, etc)
14. Date started July (Month) 8 (Day) 1994 (Year)
15. Date completed July (Month) 9 (Day) 1994 (Year)
16. Depth to water 226 ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea-level elevation if available
    ground level
18. If flowing well, state method of flow regulation: N/A
19. Remarks: blew 30 gpm.

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Registration No. 55-544535
File No. D(24-24)5ccc
Received _____ By _____
Entered ENTERED AUG 8 1994

DWR-55-55-7/91 (Rev.)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encounterd, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	9	grey black Top soil
9	65	redish brown gravelly clay
65	165	light grey sandy clay
165	210	redish brown gravelly clay 170 - 210 rocks
210	270	brown gravelly rocks clay
270	317	cemented grey sand gravel Rocks 1st water
317	320	redish brown Conglomerate

I hereby certify that this well was drilled by me (or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: [signature]

L. B. DRILLING

Street Box 4166

Huachuca City, AZ 85616

City State Zip

Date 7-30-94

ARIZONA DEPARTMENT OF WATER RESOURCES

DEPARTMENT OF WR
AUG 1 - 1994
OPERATIONS DIV.

15 South 15th Avenue
Phoenix, Arizona 85007

Registration No. 55-544535

File No.

COMPLETION REPORT

1. Per **A.R.S. § 45-600**, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

24 N/S	24 E/W	5	SW 1/4	SW 1/4	SW 1/4
Township	Range	Section	10-acre	40-acre	160-acre

EQUIPMENT INSTALLED:

Kind of pump: Submersible
Turbine, centrifugal, etc.

Kind of power: Electric — H.P. Rating of Motor: 3 Hp.
Electric, natural gas, gasoline, etc.

Pumping Capacity: 20 Gallons per minute — Date pump installed: 7-8-94

WELL TEST:

Test pumping capacity: 24 Gallons per minute — Date Well Tested: 7-8-94

Method of Discharge Measurement: Orifice
Weir, orifice, current meter, etc.

Static Groundwater Level: 225' ft. Drawdown: 15' ft.

Total Pumping Lift: ft. Drawdown: lbs.
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Peggy A. WEED
MARY E. ROZZANO
Print Well Owner's Name

Mary E. Rozzano
Signature of Well Owner or Agent

1443 W. Hull Ranch Rd.
Address

Bisbee AZ 85603
City State Zip

Mary E. Rozzano, 1994 AUG 8
Date

ENTERED AUG 8 1994

DWR-55-56-7/91 (Rev.)

FILING FEE $10.00

ARIZONA DEPARTMENT OF WATER RESOURCES
Operations Division
15 South 15th Avenue
Phoenix, Arizona 85007

DEPARTMENT COPY

JUN 28 1994 MR

OPERATIONS DIV

NOTICE OF INTENTION TO DRILL A WELL OUTSIDE OF AN ACTIVE MANAGEMENT AREA

Section §45-596, Arizona Revised Statutes, provides: In an area not subject to Active Management, a person may not drill, deepen, or modify any well, without first filing a Notice of Intention to Drill with the Department.

WELL/LAND LOCATION:

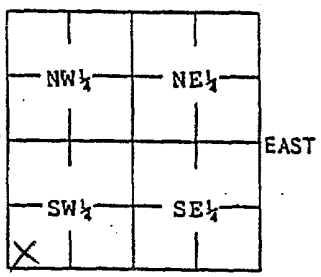
1. Township 24 N/S | 2. Range 24 E/W | 3. Section 5

4. SW 1/4 (10 Acre) SW 1/4 (40 Acre) SW 1/4 (160 Acre)

5. County Assessor's I.D.
102 (Book) | 40 (Map) | 0028 (Parcel)

6. County Cochise

NORTH



SOUTH

INDICATE WELL LOCATION BY X
(Above diagram represents one 640 acre section)

7. Type of well:
Exempt X Non-exempt ____

8. Action Requested:
Drill New Well X ; or Deepen ____
Replace ____ Modify ____
Well No. 55-____

9. Is the proposed wellsite within 100 feet of a septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks?
Yes ____ No X

10. Will this proposed well pump Colorado River Water? Yes ____ No X
(See item 10 on reverse side)

11. Applicant: Owner X Lessee ____
Name: Mary Rozzano & Peggy Weed
Mailing Address: 1443 W Hull Ranch Rd
City: Bisbee State: Az Zip: 85603
Telephone: 602-432-4889

12. Owner or Lessee of Land at wellsite:
Name: Same
Mailing Address: ____
City ____ State ____ Zip ____
Telephone: ____

13. Owner of well:
Name: Same
Mailing Address: ____
City ____ State ____ Zip ____
Telephone: ____

DO NOT WRITE IN THIS SPACE
Office Record
File No. D(24-24)5CCC
Filed 6-28-94 By sh
Input ENTERED JUL - 7 1994 By ____
Mailed 7-6-94 By sk
Registration No. 55-544535
INA ____
W/S 13 S/B ____

PLACE OF USE:
14. Township 24 N/S
Range 24 E/W
15. Section 5
16. Legal description of land:
SW 1/4 (10 Acre) SW 1/4 (40 Acre) SW 1/4 (160 Acre)

DESCRIPTION OF PROPOSED WELL:
17. Diameter 6 inches
Depth 300 feet
Type of Casing PVC
Design Pump Capacity: 25 gallons per minute
18. Estimate of total annual pumping: 1.8 acre feet
19. Principal use of water: (be specific) domestic
20. Other uses intended: (be specific) livestock
21. Number of Multiple Drinking Water connections, if any: None
(See item 5 on reverse side)
22. If use includes irrigation, state to nearest tenth the number of acres to be irrigated: N/A
23. Construction will start about: ____ Month ____ Year

DRILLING FIRM:
24. ____
Firm: L. B. DRILLING
Mailing Address: BOX 4166 HUACHUCA CITY, AZ 85616
City ____ State ____ Zip ____
D. W. R. LIC. #344
R. O. C. LIC #076141-005(A44 #058233-006(C-53
DWR License Number ____
ROC License classification ____

GENERAL INSTRUCTIONS

1. Fill out this form in DUPLICATE and send WITH $10.00 FEE to 15 South 15th Avenue, Phoenix, AZ 85007.
2. For specific instructions, limitations and conditions, see the reverse side of this form.
3. This form is to be used to drill, deepen, replace or modify a well outside of an Active Management Area.
4. If the well is a replacement, deepening or modification of an existing well, provide the registation number of the existing well in Item 8.
5. Construction standards for wells, including abandonment, shall be in accordance with Department Rules.
6. Section §45-596(D), provides that the Director shall determine that all information required on form has been submitted. If not, the person filing will be notified, and the drilling, deepening, or modification of the well may not proceed.

I state that this Notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief and that I understand the limitations under which I must operate this well as set forth on the reverse side of this form.

Mary E Rozzano & Peggy Weed — Typed or printed name

Mary E. Rozzano — Signature [ ] Land Owner [ ] Lessee of wellsite

Peggy A. Weed

June 26, 1994 — Date

DWR-55-40 9/92 (Rev.)

SPECIFIC INSTRUCTIONS, LIMITATIONS AND CONDITIONS

1. Receipt of this annotated Notice constitutes authorization to proceed in drilling, deepening, or modifying the well as set forth on this Notice.

2. Only a well driller licensed in the State of Arizona is authorized to drill, deepen or modify a well. A well driller may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site, issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.

3. An exempt well means a well having a pump with a maximum capacity of not more than thirty-five (35) gallons per minute and may include the application of water to less than two (2) acres of land in an INA or AMA to produce plants or parts of plants for sale, human consumption or for use as feed for livestock, range livestock or poultry.

4. A non-exempt well is any well which exceeds the limitations, as indicated in paragraph 3 above. However, water from a non-exempt well located in an Irrigation Non-Expansion Area, may not be withdrawn to irrigate any acres which are not eligible to be irrigated pursuant to A.R.S. §45-434 or §45-437. Also, owners of non-exempt wells located in Irrigation Non-Expansion Areas, are subject to the measuring device and annual report requirements of A.R.S. §45-437.

5. Multiple Drinking Water Connections mean other parcels of land being served by your well that are not owned by you. Each separate parcel is considered one connection.

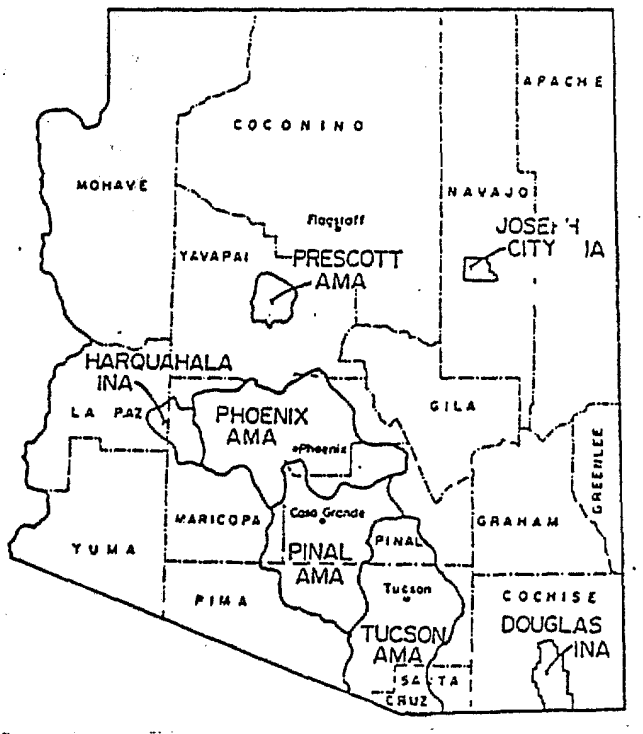
6. The drilling, deepening, or modification of this well shall be completed within one (1) year of the issuance of the drilling authority.

7. Within thirty (30) days after the installation of pumping equipment on this well, the registered well owner shall file the prescribed Completion Report. A form for this purpose will be furnished to the registered owner with the return of an annotated copy of this Notice.

8. The person to whom a well is registered shall notify the Department of a change in ownership or a change in data relating to this well. The prescribed form for these purposes will be furnished to the registered owner with the return of an annotated copy of this Notice.

9. A sketch map showing the general boundaries of the Active Management Areas and Irrigation Non-Expansion Areas is shown at the right. Maps of greater detail are available on request.

10. If the proposed well is a non-exempt well and is located near the Colorado River and if the proposed well may pump Colorado River Water, proof must be submitted with this notice that the applicant has the legal right to use Colorado River Water. Alternately, evidence needs to be submitted that supports the contention that Colorado River water will not be withdrawn by the well. Persons near the Colorado River may wish to contact the Colorado River Management Division, Department of Water Resources at (602) 542-1960 to determine those Townships and Ranges which will be affected by these requirements or with questions regarding the proof of right.



ARIZONA DEPARTMENT OF WATER RESOURCES

15 South 15th Avenue, Phoenix, Arizona 85007
Telephone (602) 542-1581
Fax (602) 542-3383

July 5, 1994

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

M. ROZZANO & P.WOOD
1443 W. HULL RANCH RD.
BISBEE, AZ. 85603

Registration No. 55-544535
File No. D(24-24)5CCC

Dear Applicant:

Enclosed is a copy of the Notice of Intention (NOI) to drill/deepen or replace a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Completion Report is to be submitted when pump equipment is installed. The Drilling Card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the Drilling Card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended Drilling Card must be in the possession of the driller before drilling commences at a different location than originally authorized. **In no case may the replacement well be more than 660 feet from the well it is replacing.**

ARS §45-600 requires the registered well owner to submit a completion report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate log of the well within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593, the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed

a Change of Well Information Form should it be needed in the future.

If, in the future, it is determined that water from your well is supplied from the Colorado River and you do not have a perfected water right to Colorado River water established prior to 1929, the U.S. Bureau of Reclamation may require you to cease pumping or enter into a contract for use of Colorado River water.

Sincerely,

Ellen Kane

Ellen Kane
Water Resource Tech I

ek
Enclosures

RECEIPT

13162

L B DRILLING
P O BOX 4166
HUACHUCA CITY, AZ. 85616

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007
(602) 542-1581

ENTRY CODE 55

FILE NO. D(24-24)5ccc 544535 **THRU**

ITEM DESCRIPTION	RATE	AMOUNT
FILI'G FEE FOR NOI TO DRILL WELL		$10.00
7/5/94/ek CK# #4062		$10.00

PAID
5 1994
PAID

CHECK NO. _____ FEE ACCOUNT NO. _____ TOTAL $ _____

CHIT NO. _____ RECEIVED BY _____ DATE _____

IPS 1821 – Rev. 4/91

ARIZONA DEPARTMENT OF WATER RESOURCES

OPERATIONS DIVISION

15 South 15th Avenue
Phoenix, Arizona 85007-3223
Phone (602) 542-1581

DUPLICATE

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO. 55-544535

AUTHORIZED DRILLER: L B DRILLING LICENSE NO. 344

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL HAS BEEN FILED WITH THE DEPARTMENT BY:

Owner of Well(s)
M. ROZZANO & P. WEED 1443 W. HULL RANCH RD. BISBEE AZ 85603

The well(s) is/are to be located in:

SW 1/4	SW1/4	SW 1/4	Section	5	Township	24.0 SOUTH	Range	24.0 EAST
10 acre	40 acre	160 acre						

NUMBER OF WELLS IN PROJECT: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON JUL 6TH, 1995

THE DRILLER SHALL FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING.

CHIEF, OPERATIONS DIVISION

DRLCRD-0993

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Pump Installation Completion Report

RECEIVED
NOV 17 2003
Information Management

- Review instructions prior to completing form
- The registered well owner should file this report with the Department within 60 days following installation of pump equipment

** PLEASE PRINT CLEARLY **

FILE NUMBER: D(24-24) 14 DDA
WELL REGISTRATION NUMBER: 55- 200393

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: JAMES & MARY WALKER

MAILING ADDRESS: 3350 S MESQUITE RIDGE

CITY / STATE / ZIP: BISBEE, AZ 85603

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER: 520-432-5037

FAX:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	14	SE 1/4	SE 1/4	NE 1/4

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
101	48	003

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 2. EQUIPMENT INSTALLED

DATE PUMP INSTALLED:

Pump Type

CHECK ONE

- ☐ Air Lift
- ☐ Bucket
- ☐ Centrifugal
- ☐ Jet
- ☐ Piston
- ☐ Rotary
- ☒ Submersible
- ☐ Turbine
- ☐ Other (please specify)

Power Type

CHECK ONE

- ☐ Diesel Engine
- ☒ Electric Motor
- ☐ Gasoline Engine
- ☐ Hand
- ☐ Natural Gas
- ☐ Windmill
- ☐ Other (please specify)

RATED PUMP CAPACITY: Gallons Per Minute

HORSE POWER RATING OF MOTOR:

SECTION 3. WELL TEST

Pump Test Data

DATE WELL TESTED: 11-14-03

STATIC WATER LEVEL (A): 38' Feet Below Land Surface

PUMPING WATER LEVEL (B): 50' Feet Below Land Surface

DRAWDOWN [(B) - (A)]: 12'

TEST PUMPING RATE: 15 GPM Gallons Per Minute

DURATION OF PUMP TEST (Minimum 4 Hours): 2 hrs Hours

TOTAL PUMPING LIFT: 50' Feet

FOR FLOWING WELL, MEASURED SHUT IN HEAD ☐ FT ☐ PSI

Method of Discharge Measurement

CHECK ONE

- ☐ Bailer
- ☐ Bucket - Barrel - Stopwatch
- ☐ Current
- ☐ Estimated - Air Lift
- ☐ Gauge
- ☐ Meter
- ☐ Orifice
- ☐ Volume
- ☐ Weir - Flume
- ☒ Other (please specify)

Method of Measuring Water Level

CHECK ONE

- ☐ Air Line
- ☒ Electric Measuring Line (Sounder)
- ☐ Steel Tape
- ☐ Other (please specify)

I HEREBY CERTIFY *that the above statements are true to the best of my knowledge and belief according to* A.R.S § 45-600(B)

SIGNATURE OF WELL OWNER: James E Walker or Mary Alice Walker DATE: 11-14-03

DWR-55-56 (Rev. 10/11/01)

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

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Information Management

Well Driller Report and Well Log

- Review instructions prior to completing form
- This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

FILE NUMBER: D(24-24) 14 DDA
WELL REGISTRATION NUMBER: 55- 200393
PERMIT NUMBER (IF ISSUED):

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: JAMES & MARY WALKER
MAILING ADDRESS: 3350 S MESQUITE RIDGE
CITY / STATE / ZIP: BISBEE, AZ 85603
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-432-5037
FAX:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN): 3350 S. Mesquite Ridge

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	14	SE 1/4	SE 1/4	NE 1/4

LATITUDE: ° , "N
LONGITUDE: ° , "W
LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level
METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☐ Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ GPS : ☐ Survey-Grade
COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 101 | MAP 48 | PARCEL 003
COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME: ALLEN WELL SERVICE
DWR LICENSE NUMBER: 14
TELEPHONE NUMBER: 520-642-3775
FAX:

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED: 11-10-03
DATE WELL CONSTRUCTION COMPLETED: 11-12-03
IF FLOWING WELL, METHOD OF FLOW REGULATION: ☐ Valve ☐ Other

Drill Method

CHECK ONE
- ☒ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development

CHECK ONE
- ☒ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Method of Sealing at Reduction Points

CHECK ONE
- ☒ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☐ Other (please specify)

Water Level Information

STATIC WATER LEVEL: 38 Feet Below Land Surface
DATE MEASURED: 11-14-03

ANSWERED DEC 1 , 2003

DWR-55-55-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 200393

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Borehole			Installed Casing														
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (X)				PERFORATION TYPE (X)						
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	19	12	0	19	8¼	X										
19	100	7"	0	100	5½"		X									
100	120	6"	100	120	NO CASING											
			80 -	100										X		1/8"

Installed Annular Material												
DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (X)								FILTER PACK		
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	19			X								

DEPTH OF BORING: 120 Feet Below Land Surface

DEPTH OF COMPLETED WELL: 120 Feet Below Land Surface

DWR-55-55B-10/01 (Rev.)

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 200393

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	18	SAND Soil with SMALL Rocks	
18	60	Brown shale rock	
60	62	GRAVEL	X
62	116	BROWN shale rock (solid rock)	
116	120	Sandy - gravel	X

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 200393

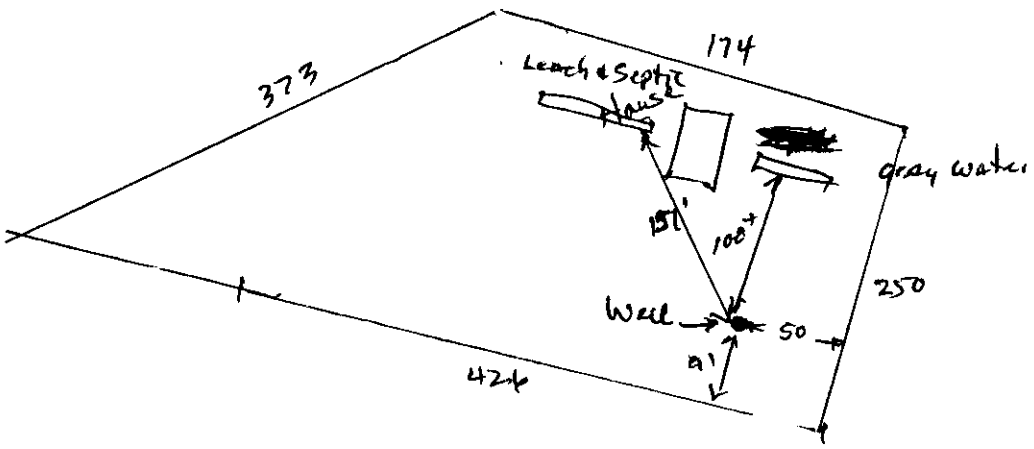
SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER BOOK	MAP	PARCEL
JAMES & MARY WALKER	101	48	003

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.

N
W E
S

1" = _____ ft



I state that this notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
Allen Well Service		11-17-03

DWR-55-55 (Rev. 10/11/01)

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

September 18, 2003

Janet Napolitano
Governor

Herb Guenther
Director

JAMES & MARY WALKER
3350 S MESQUITE RIDGE
BISBEE, AZ 85603

Registration No. 55- 200393
File No. D(24-24) 14 DDA

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well. This NOI, which was recently filed with this Department, is being returned to you as evidence of your compliance with ARS §45-596. The enclosed Pump Installation Completion Report is to be submitted when pump equipment is installed. The drilling card and Well Drilling Report form have been sent to your driller. He may not begin drilling until he has received the drilling card and it must be displayed on the rig during drilling. If you change drillers, you must supply this Department with the new driller's identity. Please ensure that the driller you select is licensed to drill the type of well you require. All well drillers must pass an examination proving they understand the drilling methods for that particular license, and are familiar with the laws and regulations which govern well construction in Arizona.

If it is necessary to change the location of the proposed well, immediately contact the Department of Water Resources to obtain written permission before proceeding with the drilling. A properly signed, amended drilling card must be in the possession of the driller before drilling commences at a different location than originally authorized.

ARS §45-600 requires the registered well owner to submit a Pump Installation Completion Report within thirty (30) days after the installation of pumping equipment. It also requires the driller to furnish this Department a complete and accurate Well Drillers Report and Well Log within thirty (30) days after completion of drilling. You should insist, and ensure, that both of these are done.

If in the course of drilling a new well, it is determined that the new well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the new well must be properly abandoned and a Well Abandonment Completion Report submitted per R12-15-816.F.

Per ARS §45-593 (C), the person to whom a well is registered shall notify this Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. We have enclosed a Change of Well Information Form should it be needed in the future.

Sincerely,

Craig Bell

CRAIG BELL
NOI Unit
Water Management Support Section

Enclosures

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-200393

AUTHORIZED DRILLER: ALLEN WELL SERVICE LICENSE NO: 14

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: JAMES & MARY WALKER 3350 S MESQUITE RIDGE BISBEE, AZ 85603

The well(s) is/are to be located in the:

NE ¼ of the SE ¼ of the SE ¼ Section 14 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 15TH DAY OF SEPTEMBER, 2004

Shannon L Ray

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $50 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $50.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA		B	SB 35
RECEIVED DATE	9-16-03	WS	13
ISSUED DATE	9-18-03	WQARF	CERCLA

FILE NUMBER: D(24-24)14 DDA
WELL REGISTRATION NUMBER: 55-200393

RECEIVED SEP 16 2003

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY ENDORSEMENT (If applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 before submission to the Department of Water Resources. You must also attach a site plan (see instructions).

CHECK ONE

- ☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
  - ☐ Field Inspection Performed
  - ☒ Site Plan Review Only
- ☐ Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: Carla Diaz Env Hlth Spec I

TELEPHONE NUMBER: 520 432-9440

DATE: Sept 9, 2003

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE Sept 9 2003
BY Carla Diaz

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carla Diaz

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

- ☒ Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)
- ☐ Non-Exempt (Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 15 Gallons Per Minute

Proposed Action

CHECK ONE

- ☒ Drill New Well
- ☐ Deepen
- ☐ Replace
- ☐ Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 -

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	14	SE ¼	SE ¼	NE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
101	48	003	1.95

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
			¼	¼	¼

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: James & Mary Walker

MAILING ADDRESS: 3350 S Mesquite Rdg.

CITY / STATE / ZIP CODE: Bisbee, Ariz. 85603

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER: 432-5037

FAX:

Landowner (If different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL:

MAILING ADDRESS:

CITY / STATE / ZIP CODE:

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER:

FAX:

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 200393

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: Allen Well Service

DWR LICENSE NUMBER: 14

ROC LICENSE CATEGORY: C-53

TELEPHONE NUMBER: 520-642-3775

FAX: 520 642 3221

MAILING ADDRESS: 5509 W Gleeson Rd

CITY / STATE / ZIP CODE: Elfrida Az 85610

SECTION 6. WATER / SITE INFORMATION

Principal Use of Water (CHECK ONE)	*Other Uses* of Water (CHECK ALL THAT APPLY)
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☒ Domestic	☒ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify):*	☐ Other *(please specify):*

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

DATE CONSTRUCTION IS TO BEGIN: Sept 03

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	19	12"
19	200	7"

Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	19	8 3/8	X*										Cement
0	200	6		X									

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SEP 16 2003
WATER DIVISION

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: JAMES & MARY WALKER

SIGNATURE OF WELL OWNER OR LANDOWNER: James Walker

DATE: Aug 23, 2003

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE: Sept 9 2003

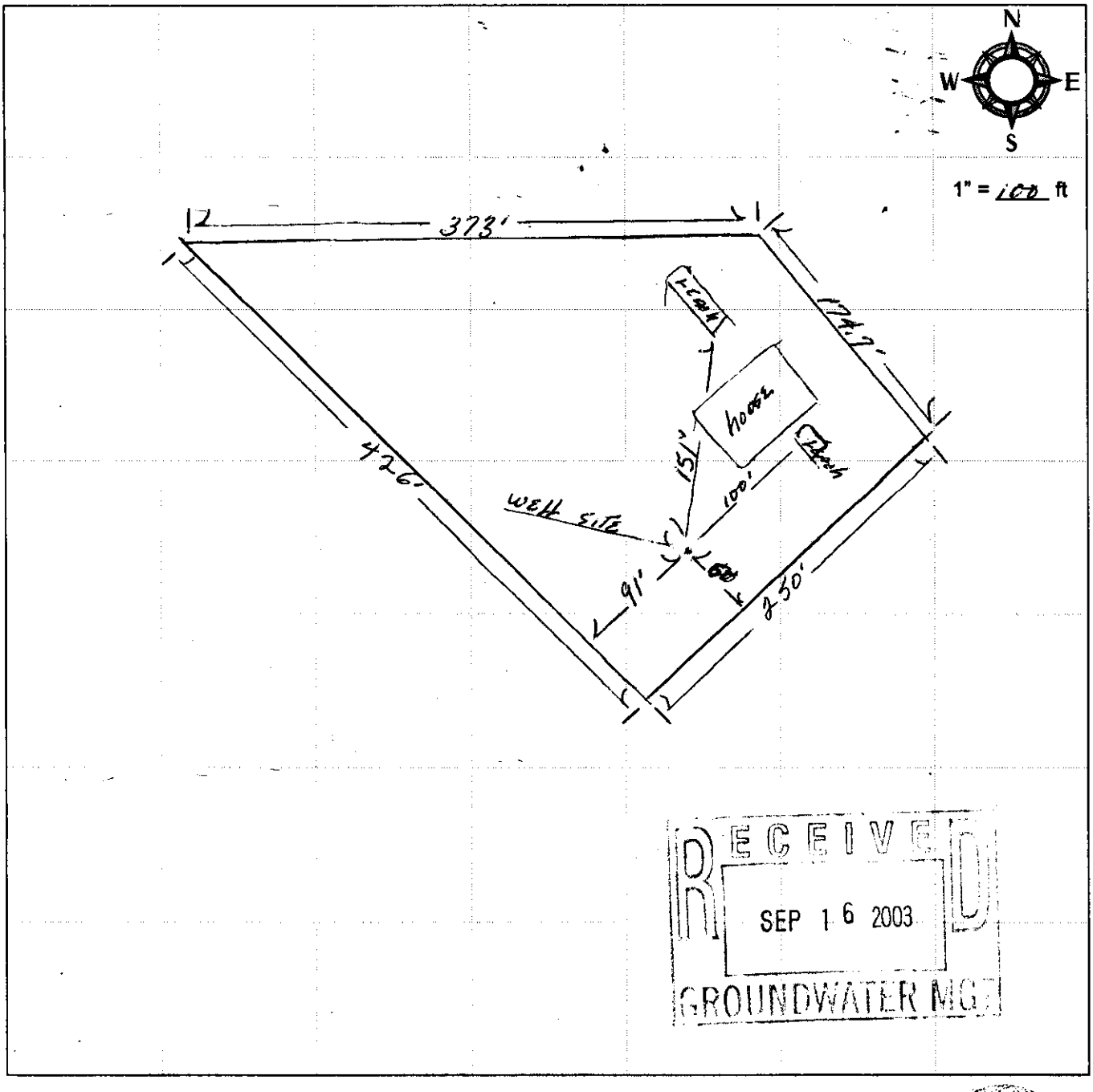
Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 200393

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
James + Mary Walker	BOOK	MAP	PARCEL
	101	48	003

- If this well will be a domestic well on 20 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



RECEIVED
SEP 16 2003
GROUNDWATER MGT

COUNTY OR LOCAL AUTHORITY NAME AND TITLE	Official County or Local Seal or Stamp
Cochise County	APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
COUNTY OR LOCAL AUTHORITY SIGNATURE	DATE Sept 9 2003
Lalo Diaz	BY Lalo Diaz
TELEPHONE NUMBER: 520-432-9440	DATE: Sept 9 2003

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $50 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $50.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA	B	SB
		35
RECEIVED DATE	WS	
9-16-03		13
ISSUED DATE	WQARF	CERCLA

SEP 16 2003

FILE NUMBER
D(24-24)14 DDA
WELL REGISTRATION NUMBER
55-200393

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY ENDORSEMENT (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 before submission to the Department of Water Resources. You must also attach a site plan (see instructions).

CHECK ONE

- [X] County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
  - [ ] Field Inspection Performed
  - [X] Site Plan Review Only
- [ ] Insufficient Information to Make a Determination

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE Sept 9 2003
BY Carla Diaz

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: Carla Diaz Env Hlth Spec I

TELEPHONE NUMBER: 520-432-9440

DATE: Sept 9, 2003

COUNTY OR LOCAL AUTHORITY SIGNATURE: Carla Diaz

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

- [X] Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)
- [ ] Non-Exempt (Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 15 Gallons Per Minute

Proposed Action

CHECK ONE

- [X] Drill New Well
- [ ] Deepen
- [ ] Replace
- [ ] Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55-

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	14	SE ¼	SE ¼	NE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
101	48	003	1.95

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	14	¼	¼	¼

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: James & Mary Walker

MAILING ADDRESS: 3350 S Mesquite Rdg.

CITY / STATE / ZIP CODE: Bisbee, Ariz. 85603

CONTACT PERSON NAME AND TITLE:

TELEPHONE NUMBER: 432-5037

FAX:

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL

MAILING ADDRESS

CITY / STATE / ZIP CODE

CONTACT PERSON NAME AND TITLE

TELEPHONE NUMBER

FAX

riance (A.A.C. R12-15-818).

Active Management Area, you must
n 55-40A.

James E. Walker
Mary Alice Walker
432-5037
3350 S. Mesquite Ridge
Bisbee, AZ 85603

91-532/1221

DATE Aug 26, 2003 2711

PAY TO THE ORDER OF Ariz. Dept. of Water Resources | $ 50.00

Fifty dollars & no/100 DOLLARS

Contains Security Features. Details on Back

NATIONAL BANK OF ARIZONA
BISBEE, AZ 85603

#3 WELL

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED APR 28 1982 DEPT OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55-641802
FILE NO. D(24-24)18aad
FILED 4-28-82 (DATE) AT 11A (TIME)
INA
AMA

1. Name of Registrant: MILTON K. LUNA
P.O. Box 265 (Address) NACO (City) Az. (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
N/A (File Number) 35- N/A (Control Number)

3. a. The well is located within the SE ¼ NE ¼ NE¼, Section 18NE, of Township 24S N.(S.) Range 24E (E.)W., G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - (domestic) - municipal - industrial)
Domestic.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☐
_____
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 200' feet
b. Diameter of casing 6" inches
c. Depth of casing 200' feet
d. Type of casing 3/8" wall - steel .
e. Maximum pump capacity 25 gallons per minute.
f. Depth to water NA feet below land surface.
g. Date well completed Prior to (Month) (Day) 1960 (Year).

Well #3 See Accomp. Map.

8. The place(s) of use of water. If same as Item 3, check this box ☒
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
Attach additional sheet if necessary.

9. DATE 4-26-82 SIGNATURE OF REGISTRANT Milton K. Luna

MICROFILMED

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
15 SOUTH 15TH AVENUE
PHOENIX, ARIZONA 85007

RECEIVED
AUG 14 1995
GROUNDWATER MGT

CHANGE OF WELL INFORMATION

Well Registration No. 55- 641802 File No. D(24-24)18AAD (location)

I/~~We~~ request the following well information be changed:

THE WELL IS LOCATED WITHIN THE SE 1/4, NE 1/4, NE 4 SECTION 18 NE OF TOWNSHIP 24 S S, RANGE 24 E, G+ SRB.+M, IN COCHISE COUNTY.

- NEW OWNERSHIP -

Date: 9 AUG. 95 Signature of Current Well Owner Peter T. Grout

(DO NOT CUT THIS FORM IN HALF)

STATEMENT OF CHANGE OF WELL OWNERSHIP

I, PETER T. GROUT (please print), state that I am (~~no longer~~) the (new) owner of the well described below:

SE 1/4 NE 1/4 NE 1/4: Section 18NE Township 24S Range 24E
10 acre 40 acre 160 acre

Well Registration No.55- 641802 File No. D(24-24)18AAD (location)

James H. & Ann Babbe
PRINT Previous Owner's Name
JAMES H AND ANN BABBE
P.O. Box 212 Bisbee, AZ 85603
Address
City State Zip

PETER T. GROUT
PRINT New Owner's Name
PETER GROUT
3316 Naco Hwy, Bisbee, AZ 85603
Address
City State Zip

Dated: 9 AUG. 95 Signature of New Owner Peter T. Grout

ENTERED SEP 13 1995

NOTE: A.R.S.§45-593.C. requires that the Department be notified of change of well ownership and that the well owner is required to keep the Department's Well Registration records current and accurate. Well data and ownership changes must be submitted within thirty (30) days after changes take place.

SAVE THIS FORM TO REPORT FUTURE CHANGES IN OWNERSHIP, CHANGES IN ADDRESS, OR CHANGE IN WELL DATA SUCH AS PUMP CAPACITY, CORRECTION OF LEGAL DESCRIPTION, CHANGE OF WELL DRILLER AND AMENDING INFORMATION PREVIOUSLY FILED.

RECEIVED
AUG 29 1995
GROUNDWATER MGT

DWR-55-71-11/90

RECEIPT № 22619

Peter Grout
3316 Naco Highway
Bisbee, AZ 85603

Seller/Buyer: Babbe/Grout

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
500 NORTH THIRD STREET
PHOENIX, ARIZONA 85004
(602) 417-2405

ENTRY CODE 55

FILE NO. THRU

ITEM DESCRIPTION	RATE	AMOUNT
Filing fee for Change of Well Ownership		10.00
Reg. No. 55-641802 D(24-24)18 AAD		

PAID

CHECK NO. 156 FEE ACCOUNT NO. _____ TOTAL $ 10.00

CHIT NO. _____ RECEIVED BY Liz DATE 8-31-95

IPS 1821 – Rev. 4/91

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED JUN 14 1982 DEP'T. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)
EXEMPT WELL (NO CHARGE) ☐
NON-EXEMPT WELL — $10.00 ☐

RECEIVED JUN 14 DEP'T. OF WATER RESOURCES

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 648361
FILE NO. D(24-24)17
FILED 6-14-82 (DATE) AT 4 P (TIME)
INA —
AMA —

1. Name of Registrant:
Thomas James Willson
Box 425 (Address) Naco (City) Ariz (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35- _____ (Control Number)

3. a. The well is located within the ____ ¼ ____ ¼ ____ ¼, Section 17, of Township ~~Naco~~ 24 N/S, Range 24 E/W, G & SRB & M, in the County of Cochise.
b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Domestic.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
_____ (Address) _____ (City) _____ (State) _____ (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 1607 ft feet
b. Diameter of casing 6 in inches
c. Depth of casing 1607 ft feet
d. Type of casing _____.
e. Maximum pump capacity _____ gallons per minute.
f. Depth to water _____ feet below land surface.
g. Date well completed _____ (Month) _____ (Day) 1929 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____
____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____

Attach additional sheet if necessary.

9. DATE June 12-82 SIGNATURE OF REGISTRANT Thomas James Willson

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

3. No registration fee is required for Exempt Wells. A $10.00 registration fee must accompany registration forms for all Non-Exempt Wells.

4. An "Exempt Well" means a well having a pump with a maximum capacity of not more than 35 gallons per minute which is used to withdraw groundwater. An Exempt Well may include the non-commercial irrigation of not more than 1 acre of land.

5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED
JUN 14 1982
DEP'T. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL — $10.00	☐

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 648362
FILE NO. D(24-24)17bbb
FILED 6-14-82 (DATE) AT 4p (TIME)
INA —
AMA —

1. Name of Registrant:
Thomas James Willson
Box 426 (Address) Mesa (City) Ariz (State) 85620 (Zip)

2. File and/or Control Number under previous groundwater law:
_____ (File Number) 35- _____ (Control Number)

3. a. The well is located within the NW ¼ NW ¼ NW ¼, Section 17, of Township ~~Mesa~~ 24 N.(S.) Range 24 E.(W.), G & SRB & M, in the County of Cochise.

b. If in a subdivision: Name of subdivision Chase L Purdy, Lot No. 10, Address Purdy Lane 102-53.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Stockwater.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☐
_____ (Address) _____ (City) _____ (State) _____ (Zip)

7. Well data (If data not available, write N/A)
a. Depth of Well 180 FT feet
b. Diameter of casing 6 in inches
c. Depth of casing 180 FT feet
d. Type of casing _____.
e. Maximum pump capacity _____ gallons per minute.
f. Depth to water _____ feet below land surface.
g. Date well completed _____ (Month) _____ (Day) 1947 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☒.
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
_____¼ _____¼ _____¼, Section _____ Township _____ Range _____
Attach additional sheet if necessary.

9. DATE Jun 12-82 SIGNATURE OF REGISTRANT Thomas James Willson

MICROFILMED

INSTRUCTIONS FOR COMPLETING REGISTRATION FORM

General Instructions

1. A person who owns an "Existing Well" shall register the well, pursuant to A.R.S. 45-593, by filing this form **in duplicate** with the Department of Water Resources not later than midnight June 14, 1982. The form must be completed and signed. Failure to do so will constitute a violation of A.R.S. 45-593, and may subject the well owner to injunction and/or civil penalties, pursuant to A.R.S. Title 45, Article 12.

2. An "Existing Well" means, (1) a well which was drilled on or before June 12, 1980 and which is not abandoned or sealed, or (2) a well which was not completed on or before June 12, 1980, but for which a Notice of Intention to Drill was on file with the Arizona Water Commission on or before June 12, 1980.

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5. A "Non-Exempt Well" means a well that is not an "Exempt Well".

INSTRUCTIONS FOR REGISTRATION QUESTIONS

1. The Registrant must be the owner of the well and may be an individual, public or private corporation, company, partnership, firm, association, society, estate, trust, any other private organization or enterprise, the United States, any state, territory or country or a governmental entity, political subdivision or municipal corporation organized under or subject to the constitution and laws of this State.

2. If you own an existing irrigation well drilled at any time, or any other type of well drilled on or after June 20, 1968, you should have an assigned control and/or file number. Write these numbers in item 2. If you do not know the number, please explain the reason on the form or on an attached sheet.

3. a. Fill in the Section, Township and Range in all cases if it is available.
   b. If the well is in a subdivision and you have this information, give the subdivision name, Lot Number, and Address.

4. Show all purposes for which the water is used.

5. If the well is used for irrigation, give the number of acres irrigated in 1980 from the well.

6. If the owner of the land is an individual, give the last name, first name, middle initial. If the owner of the land is a corporation, partnership, firm, etc., fill in the appropriate title.

7. Complete the section on Well Data with the most accurate information available to you. If the data is not available, write N/A in the blanks.

8. Give the legal description of the place of use of the water. If place of use is in a subdivision and legal description is not available, give the subdivision name, Lot Number and/or address on the blank line.

9. The person in whose name a well is registered shall notify the Department of any change in ownership and shall keep all information on the registration record current and accurate. A form entitled "Change of Well Information/Ownership" is available for this purpose. A blank form will be furnished with the returned duplicate copy of the registration form.

Arizona Department of Water Resources
Records Management Section
500 N. 3rd Street • Phoenix, Arizona 85004
(602) 417-2405 • (800) 352-8488
www.water.az.gov

Pump Installation Completion Report

D(24-24)18 CBB

RECEIVED
APR 22 2005
Information Management

- Review instructions prior to completing form in black or blue ink.
- The registered well owner should file this report with the Department within 30 days following installation of pump equipment.

FILE NUMBER

WELL REGISTRATION NUMBER
55 - 205126

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
PAUL CHARLES & ARDIS H. ZANDER

MAILING ADDRESS
P.O. Box 222

CITY / STATE / ZIP CODE
NACO, AZ. 85620-0222

CONTACT PERSON NAME AND TITLE

TELEPHONE NUMBER
520-432-6149

FAX

Location of Well

WELL LOCATION ADDRESS (IF ANY)
3535 METZLER

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24S	24E	18	SW¼	NW¼	NW¼

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
102	57	309-0

COUNTY WHERE WELL IS LOCATED
COCHISE

SECTION 2. EQUIPMENT INSTALLED

ANSWERED APR 28 2005

DATE PUMP INSTALLED
2-25-05

Pump Type
CHECK ONE

- ☐ Air Lift
- ☐ Bucket
- ☐ Centrifugal
- ☐ Jet
- ☐ Piston
- ☐ Rotary
- ☒ Submersible
- ☐ Turbine
- ☐ Other (*please specify*):

Power Type
CHECK ONE

- ☐ Diesel Engine
- ☒ Electric Motor
- ☐ Gasoline Engine
- ☐ Hand
- ☐ Natural Gas
- ☐ Windmill
- ☐ Other (*please specify*):

RATED PUMP CAPACITY
106 GPM Gallons Per Minute

HORSE POWER RATING OF MOTOR
1 HP

SECTION 3. PUMP TEST

Pump Test Data

DATE WELL TESTED
2-14-05

STATIC WATER LEVEL (A)
95 Feet Below Land Surface

PUMPING WATER LEVEL (B)
240 Feet Below Land Surface

DRAWDOWN [(B) – (A)]
145 Feet Below Land Surface

TEST PUMPING RATE
106 GPM Gallons Per Minute

DURATION OF PUMP TEST (Minimum 4 Hours)
4 hrs Hours

TOTAL PUMPING LIFT
240 Feet

FOR FLOWING WELL, MEASURED SHUT IN HEAD ☐ FT ☐ PSI

Method of Discharge Measurement
CHECK ONE

- ☐ Bailer
- ☒ Bucket – Barrel – Stopwatch
- ☐ Current
- ☐ Estimated – Air Lift
- ☐ Gauge
- ☐ Meter
- ☐ Orifice
- ☐ Volume
- ☐ Weir – Flume
- ☐ Other (*please specify*):

Method of Measuring Water Level
CHECK ONE

- ☐ Air Line
- ☒ Electric Measuring Line (Sounder)
- ☐ Steel Tape
- ☐ Other (*please specify*):

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief according to A.R.S. § 45-600(B).

SIGNATURE OF WELL OWNER
Paul Zander

DATE
4-1-05

ARIZONA DEPARTMENT OF WATER RESOURCES
Records Management Section
500 N. 3rd Street * Phoenix, Arizona 85004
(602) 417-2405 * (800) 352-8488
www.water.az.gov

Well Driller Report and Well Log

FILE NUMBER: D(24-24) 18 CBB
WELL REGISTRATION NUMBER: 55- 205126
PERMIT NUMBER (IF ISSUED)

This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.

** PLEASE PRINT CLEARLY **

RECEIVED MAR 28 2005
Information Management

SECTION 1. DRILLING AUTHORIZATION

Drilling Firm

NAME	DWR LICENSE NUMBER
BRADLY DRILLING	736
ADDRESS	TELEPHONE NUMBER
403 N. HUACHUCA BLVD	520-456-2355
CITY/STATE/ZIP	FAX
HUACHUCA CITY, AZ 85616	520 456 2355

SECTION 2. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION OR INDIVIDUAL: M/M ZANDER
MAILING ADDRESS: PO BOX 222
CITY / STATE / ZIP: NACO, AZ 85620
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 520-432-6149
FAX:
WELL NAME:

Location of Well

WELL LOCATION ADDRESS (IF KNOWN):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE 1/4	40 ACRE 1/4	10 ACRE 1/4

LATITUDE: 31° 20. 52 "N
LONGITUDE: 109° 57. 31 "W
LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level
METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☐ Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ GPS : ☐ Survey-Grade
COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK 102 MAP 57 PARCEL 309
COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. WELL CONSTRUCTION DETAILS

Drill Method (CHECK ONE)

- ☐ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☒ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other (please specify)

Method of Well Development (CHECK ONE)

- ☒ Airlift
- ☐ Bail
- ☐ Surge Back
- ☐ Surge Pump
- ☐ Other (please specify)

Condition of Well (CHECK ONE)

- ☐ Capped
- ☒ Pump Installed

Method of Sealing at Reduction Points (CHECK ONE)

- ☒ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☐ Other (please specify)

NATIVE

Condition of Well

DATE WELL CONSTRUCTION STARTED: 2-7-05
DATE WELL CONSTRUCTION COMPLETED: 2-10-05

I state that this notice is filed in compliance with A.R.S. §45-596 and is complete and correct to the best of my knowledge and belief.

DRILLING FIRM	SIGNATURE OF QUALIFYING PARTY	DATE
Bradly Drilling		2/25/05

DWR-55-55-10/01 (Rev.)

ENTERED MAR 29 2005

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 205126

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

DEPTH OF BORING	DEPTH OF COMPLETED WELL
280' Feet Below Land Surface	280' Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
165 Feet Below Land Surface	2-15-05	NOON	☐ Valve ☐ Other:

Borehole / Installed Casing

Borehole: DEPTH FROM SURFACE FROM (feet)	Borehole: DEPTH FROM SURFACE TO (feet)	Borehole: BOREHOLE DIAMETER (inches)	Installed Casing: DEPTH FROM SURFACE FROM (feet)	Installed Casing: DEPTH FROM SURFACE TO (feet)	Installed Casing: OUTER DIAMETER (inches)	MATERIAL TYPE (X): STEEL	MATERIAL TYPE (X): PVC	MATERIAL TYPE (X): ABS	MATERIAL TYPE (X): IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (X): BLANK OR NONE	PERFORATION TYPE (X): WIRE WRAP	PERFORATION TYPE (X): SHUTTER SCREEN	PERFORATION TYPE (X): MILLS KNIFE	PERFORATION TYPE (X): SLOTTED	PERFORATION TYPE (X): IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	20	8 5/8	0	20	8 5/8	X				X						
20	280	8"	10	220	6"		X			X						
			220	260	6"		X							X		1/8"

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (X): NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE: GROUT	BENTONITE: CHIPS	BENTONITE: PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK: SAND	FILTER PACK: GRAVEL	FILTER PACK: SIZE
0	20		X									
20	240	X							NATIVE			

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 205126

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	DESCRIPTION Describe material, grain size, color, etc.	Check (X) every interval where water was encountered
0	6	Top Soil	
6	55	Sand & Gravel	
55	145	Sand Gravel & Clay	
145	280	Layer Sand Gravels & Clays	X

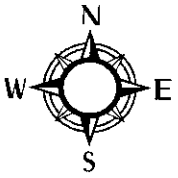
Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55- 205126

SECTION 6. WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
M/M ZANDER	102	57	309

- Please draw the following: (1) the boundaries of property on which the well was located; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well.
- Please indicate the distance between the well location and any septic tank system or sewer system.



1" = _____ ft

Notice of Intent to Drill, Deepen, Replace or Modify a Well

SEP - 9 2004

WELL REGISTRATION NUMBER
55 - 205126

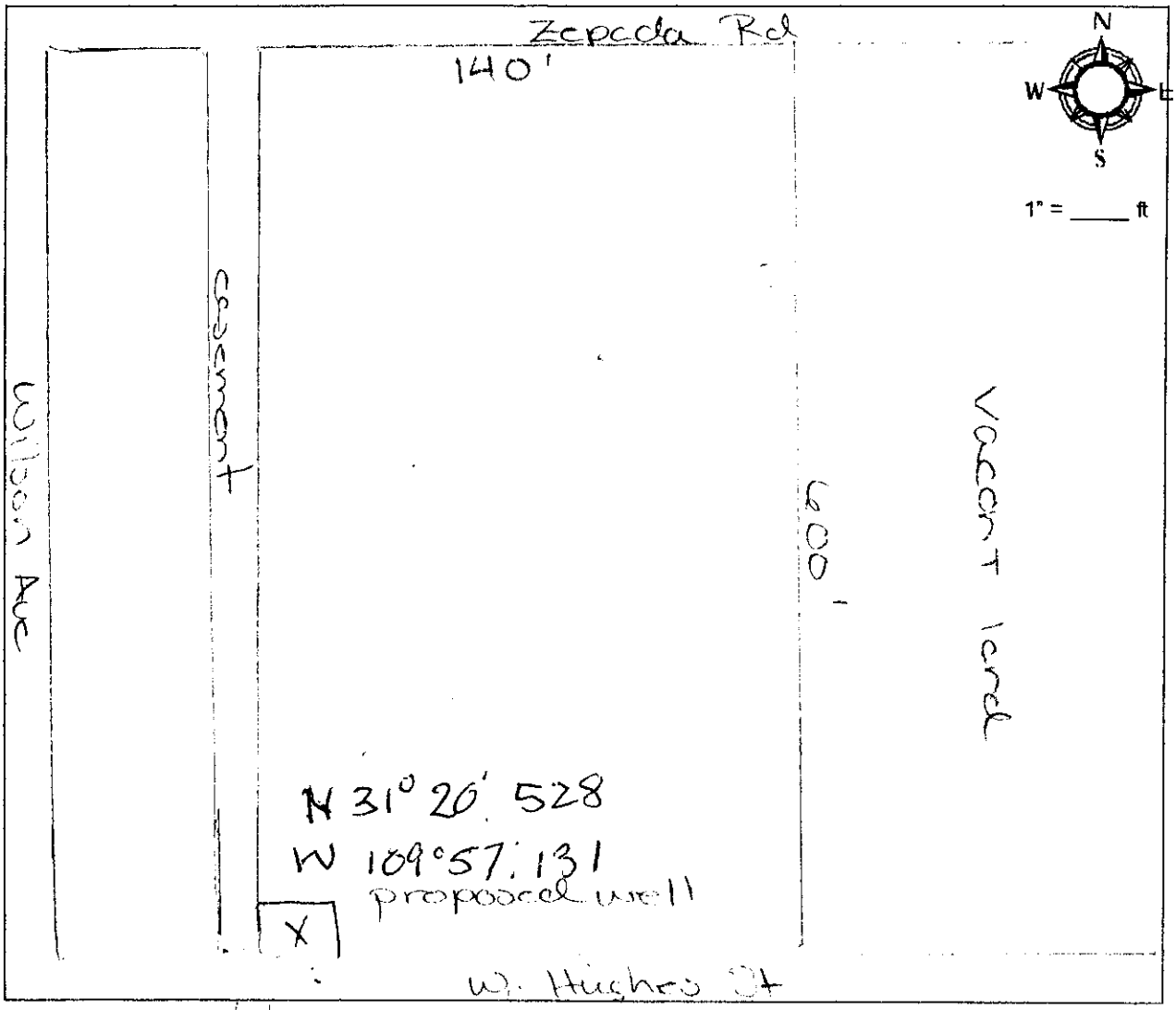
CHECK ONE: ☒ FILING MANUALLY
☐ FILING ELECTRONICALLY* *DRILLER'S E-MAIL ADDRESS:

*COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL CODE	COUNTY APPROVAL CODE
If applicant is filing this NOI electronically via the ADWR website and County approval is required, please indicate approval by providing a County Approval Code	

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
M M Zercher	102	57	309 - 0

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE	Official County or Local Seal or Stamp
COUNTY OR LOCAL AUTHORITY SIGNATURE	APPROVED BY THE COUNTY ENVIRONMENTAL HEALTH
TELEPHONE NUMBER: 520-432-9442 / DATE: Sept 8, 2004	DATE: Sept 8, 2004

DWR 55-40 (REVISED 07/07/04) Page 3 of 3

ARIZONA DEPARTMENT OF WATER RESOURCES

GROUNDWATER MANAGEMENT SUPPORT SECTION

500 North Third Street
Phoenix, Arizona 85004

THIS AUTHORIZATION SHALL BE IN POSSESSION OF THE DRILLER DURING ALL DRILL OPERATIONS

WELL REGISTRATION NO: 55-205126

AUTHORIZED DRILLER: BRADLY DRILLING LICENSE NO: 736

NOTICE OF INTENTION TO DRILL AN EXEMPT WELL(S) HAS BEEN FILED WITH THE DEPARTMENT BY:

WELL OWNER: M/M ZANDER PO BOX 222 NACO, AZ 85620

The well(s) is/are to be located in the:

NW ¼ of the NW ¼ of the SW ¼ Section 18 Township 24 SOUTH Range 24 EAST

No. of wells in this project: 1 Assessor Parcel No: 102-57-309

THIS AUTHORIZATION EXPIRES AT MIDNIGHT ON THE 8TH DAY OF SEPTEMBER, 2005

Shannon L Rey

GROUNDWATER MANAGEMENT SUPPORT

THE DRILLER MUST FILE A LOG OF THE WELL WITHIN 30 DAYS OF COMPLETION OF DRILLING

GREAT SEAL OF THE STATE OF ARIZONA
DITAT DEUS
1912

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax www.water.az.gov

SEP – 9 2004

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $75 FEE

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $75.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA	B	SB
		76
RECEIVED DATE	WS	
9-9-04		11
ISSUED DATE	WQARF	CERCLA
9-13-04		

FILE NUMBER: D24-24 18 CBB
WELL REGISTRATION NUMBER: 55 - 205126

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☐ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE: Cater Diaz R.S.

TELEPHONE NUMBER: 520 432 9442

DATE: Sept 8, 2004

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY ENVIRONMENTAL HEALTH DIVISION
DATE Sept 8 2004
BY Cater Diaz R.S.

COUNTY OR LOCAL AUTHORITY SIGNATURE: Cater Diaz R.S.

SECTION 2. REGISTRY INFORMATION

Well Type

CHECK ONE

☒ Exempt (Pump has a maximum capacity of not more than 35 gpm and water is not used for irrigation purposes inside an AMA.) (*See instructions.*)

☐ Non-Exempt (Pump has a maximum capacity of more than 35 gpm or water is used for irrigation purposes inside an AMA.) (*See instructions.*)

DESIGN PUMP CAPACITY: 20 Gallons Per Minute

Proposed Action

CHECK ONE

☒ Drill New Well
☐ Deepen
☐ Replace
☐ Modify

If Deepening, Replacing or Modifying:

ORIGINAL WELL REGISTRATION NUMBER: 55 -

MAXIMUM CAPACITY OF ORIGINAL WELL: Gallons Per Minute

DISTANCE & DIRECTION FROM ORIGINAL WELL: Feet

Location of Well

WELL LOCATION ADDRESS (IF ANY)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	18	SW ¼	NW ¼	NW ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	# OF ACRES
102	57	309-0	4.29

PLACE OF WATER USE (ONLY IF DIFFERENT FROM LOCATION OF WELL)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
24	24	18	SW ¼	NW ¼	NW ¼

COUNTY WHERE WELL IS LOCATED: Cochise

SECTION 3. OWNER INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: m/m Zander
MAILING ADDRESS: P.O. Box 222
CITY / STATE / ZIP CODE: Naco, Az. 85620-0222
CONTACT PERSON NAME AND TITLE: Paul Zander
TELEPHONE NUMBER: (520) 432-6149
FAX:

Landowner (if different from Well Owner)

FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL:
MAILING ADDRESS:
CITY / STATE / ZIP CODE:
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER:
FAX:

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

Notice of Intent to Drill, Deepen, Replace or Modify a Well

WELL REGISTRATION NUMBER
55 - 205126

SECTION 5. DRILLING AUTHORIZATION

Drilling Firm

NAME: Bradly Drilling, Inc

DWR LICENSE NUMBER: #736

ROC LICENSE CATEGORY: C53 184176 A4 #184175

TELEPHONE NUMBER: (520) 456-2355

FAX:

MAILING ADDRESS: 403 N. Hyschuca Blvd

CITY / STATE / ZIP CODE: Huachuca City AZ 85616

SEP - 9 2004

SECTION 6. WATER / SITE INFORMATION

Principal Use **of Water** (CHECK ONE)	***Other Uses*** **of Water** (CHECK ALL THAT APPLY)
☐ Irrigation	☐ Irrigation
☐ Utility	☐ Utility
☐ Commercial	☐ Commercial
☑ Domestic	☐ Domestic
☐ Municipal	☐ Municipal
☐ Industrial	☐ Industrial
☐ Mining	☐ Mining
☐ Stock	☐ Stock
☐ Recharge	☐ Recharge
☐ Dewatering	☐ Dewatering
☐ Other *(please specify):*	☐ Other *(please specify):*

SECTION 7. PROPOSED WELL CONSTRUCTION DESIGN (attach separate sheet if needed)

DATE CONSTRUCTION IS TO BEGIN: 9/15/04

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	10"
20	200	8"

Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T): STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T): BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	GROUTING MATERIAL
0	20'	6 5/8"	X*										Cement
20	160	6 5/8"		X									
160	200	6 5/8"		X									

* ADWR well construction standards require a surface seal consisting of a minimum of 20 feet of steel casing. Cement grout must be used to fill the annular space between the surface casing and the borehole. (A.A.C. R12-15-811(B))

The Department's issuance of an authorization to drill a well is not a determination of whether water withdrawn from the well is legally surface water or groundwater. The legal nature of the water withdrawn from the well may be the subject of court action in the future as part of a determination of surface water rights in your area. If there are court proceedings that could affect your well, you will be notified and be given the opportunity to participate. If you have questions regarding the legal nature of the water to be withdrawn from your proposed well, please consult with an experienced civil engineer, hydrologist or water rights attorney.

For the purposes of determining appropriate fees outside AMAs or INAs, "domestic purposes" is defined as "uses related to the supply, service and activities of households and private residences and includes the application of water to less than 2 acres of land to produce plants or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock or poultry, as such terms are defined in A.R.S. § 3-1201."

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

TYPE OR PRINT NAME AND TITLE: PAUL C. ZANDER

SIGNATURE OF WELL OWNER: Paul C. Zander — DATE: 8-19-04

SIGNATURE OF LANDOWNER, IF APPLICABLE (SEE INSTRUCTIONS) — DATE

Notice of Intent to Drill, Deepen, Replace or Modify a Well

SEP - 9 2004

WELL REGISTRATION NUMBER
55 - 205126

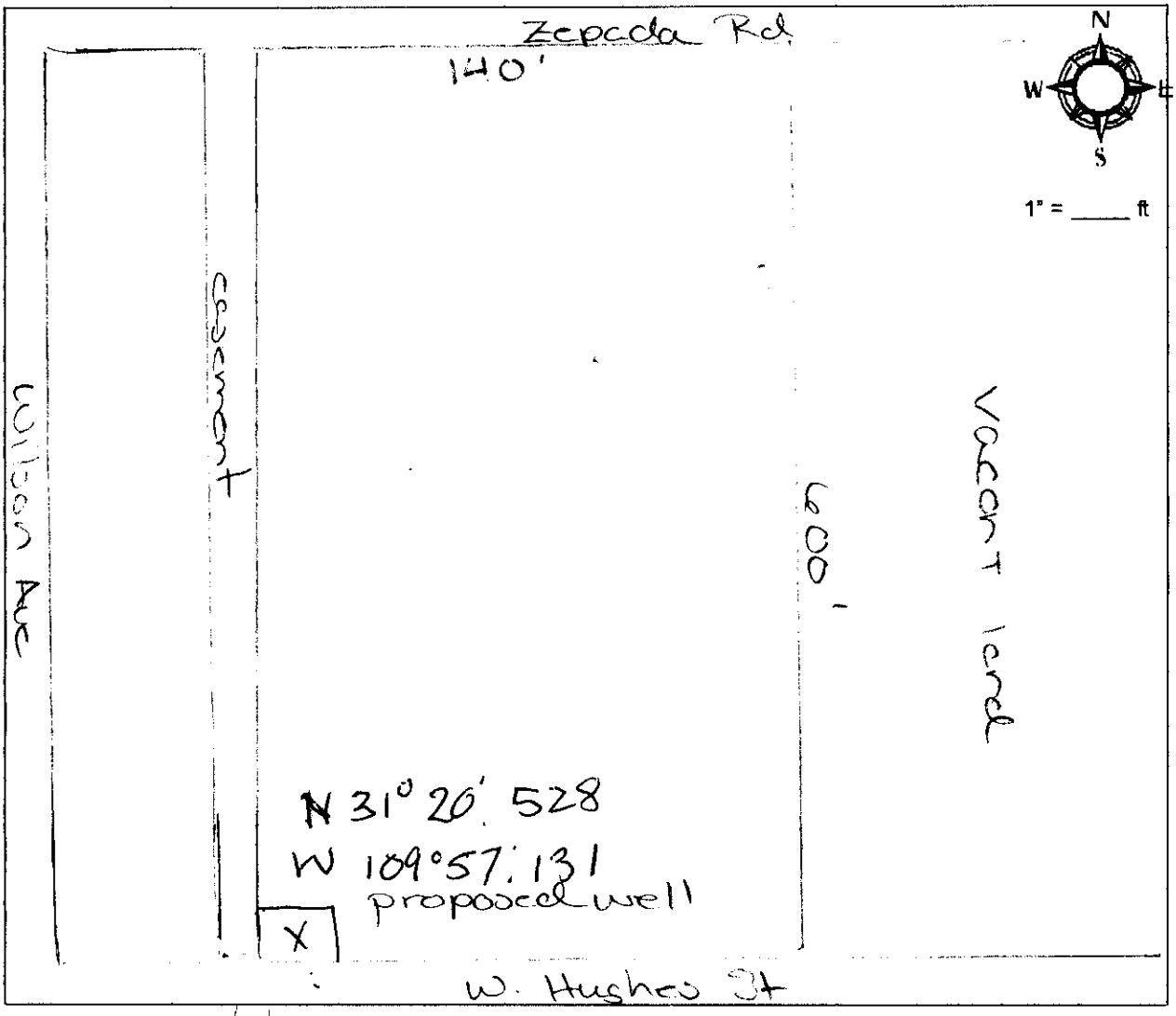
CHECK ONE: ☒ FILING MANUALLY
☐ FILING ELECTRONICALLY* *DRILLER'S E-MAIL ADDRESS:

*COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL CODE	COUNTY APPROVAL CODE
If applicant is filing this NOI electronically via the ADWR website and County approval is required, please indicate approval by providing a County Approval Code	

WELL SITE PLAN

NAME OF WELL OWNER	COUNTY ASSESSOR'S PARCEL ID NUMBER		
	BOOK	MAP	PARCEL
M M Zepeda	102	57	309-0

- If this well will be a domestic well on 5 acres or less, please draw the following: (1) the boundaries of your property; (2) the proposed well location; (3) the locations of all septic tank systems and sewer systems on the property or within 100 feet of the well location, even if on neighboring properties; and (4) any permanent structures on the property that may aid in locating the well. If the parcel is vacant land or lacks a septic tank or sewer system, please indicate this.
- Indicate the distance between the proposed well location and any septic tank system or sewer system.



COUNTY OR LOCAL AUTHORITY NAME AND TITLE	Official County or Local Seal or Stamp
COUNTY OR LOCAL AUTHORITY SIGNATURE	APPROVED BY THE COCHISE ... ENVIRONMENTAL HEALTH
TELEPHONE NUMBER: 520-432-9442 / DATE: Sept 8, 2004	DATE: Sept 8, 2004

DWR 55-40 (REVISED 07/07/04) Page 3 of 3

ARIZONA DEPARTMENT OF WATER RESOURCES
WATER MANAGEMENT SUPPORT SECTION - NOI UNIT
500 North Third Street, Phoenix, Arizona 85004
Telephone 602 417-2470
Fax 602 417-2422

JANET NAPOLITANO
Governor

HERB GUENTHER
Director

October 12, 2004

PAUL & ARDIS ZANDER
PO BOX 222
NACO AZ 85620-0222

Re: NOI to Drill 55-205126

Dear Applicant:

Enclosed please find a refund check in the amount of seventy-five dollars ($75.00). The Department is refunding a portion of the NOI filing fees because of overpayment on your part. The appropriate filing fee for a well not located within an AMA or INA, is $75 if the well will be used solely for domestic purposes and will have a pump with a maximum capacity of not more than 35 gallons per minute.

If you have any questions about the refund, please contact Jeannie Aguilar of the Water Management Support Section at 602-417-2470.

Sincerely,

Jeannie Aguilar

Jeannie Aguilar
NOI Unit

Enclosures

ARIZONA DEPARTMENT OF WATER RESOURCES
WATER MANAGEMENT SUPPORT SECTION –
NOI UNIT

MEMORANDUM

DATE: October 12, 2004

TO: **LIHUA LI, FINANCIAL SERVICES**

FROM: **JEANNIE AGUILAR, WATER MANAGEMENT SUPPORT SECTION**

RE: **REFUND**

APPLICATION: **WELL REGISTRATION NUMBER 55-205126**

DUE TO OVERPAYMENT OF $75.00, PLEASE PREPARE A REFUND CHECK MADE PAYABLE TO:

PAUL & ARDIS ZANDER
PO BOX 222
NACO AZ 85620-0222

ENCLOSED ARE COPIES OF THE NOI AND CHECK #1001 IN THE AMOUNT OF $150.00. PLEASE PROVIDE ME WITH A COPY OF THE REFUND CHECK FOR FUTURE REFERENCE.

CC: FILE

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street, Phoenix, Arizona 85004
Telephone (602) 417-2470
Fax (602) 417-2422

September 13, 2004

Janet Napolitano
Governor

Herb Guenther
Director

M/M ZANDER
PO BOX 222
NACO, AZ 85620 - 0222

Registration No. 55- 205126
File No. D(24-24) 18 CBB

Dear Well Owner:

Enclosed is a copy of the Notice of Intention (NOI) to Drill a well that you recently filed with this Department pursuant to A.R.S. § 45-596. This is to inform you that the Department has approved the NOI and has mailed or otherwise provided a drilling card authorizing the drilling of the well to the well driller identified in the NOI. The driller may not begin drilling until he has received the drilling card, which must be displayed on the drill rig during drilling.

Well drilling activities must be completed within one year after the date the NOI was filed with the Department. If drilling is not completed within one year, you must file a new NOI before proceeding with further drilling. If in the course of drilling the well, it is determined that the well cannot be successfully completed as initially intended (dry hole, cave in, lost tools, etc.), the well must be properly abandoned and a Well Abandonment Completion Report must be filed as required by A.A.C. R12-15-816(F).

If you change drillers, you must notify the Department of the new driller's identity. Please ensure that the new driller is licensed by the Department to drill the type of well you require. A new driller may not begin drilling until he receives a new drilling card from the Department. If you are drilling a new or replacement well and it is necessary to change the location of the proposed well, you may not proceed with drilling until you file an amended NOI with the Department and the Department issues an amended drilling card to the driller. If county approval was required for the original well site plan (this applies to domestic wells on parcels that are five acres or less), you must submit a new well site plan with the new well location to your local county health authority for approval prior to filing the amended NOI with the Department.

A.R.S. § 45-600 requires the registered well owner to complete and file a Pump Installation Completion Report form (DWR form 55-56) within 30 days after the installation of pumping equipment. A form is enclosed for your use. Also enclosed is a well owner's guide that provides useful information and advice concerning your upcoming well construction project. A.R.S.§ 45-600 also requires the driller to file a complete and accurate Well Drillers Report and Well Log (DWR form 55-55) within 30 days after completion of drilling. That form was mailed to your driller with the drilling card. You should insist and ensure that all of the required forms are accurately completed and timely filed with the Department.

Please be advised that A.R.S. § 45-593(C) requires the person to whom a well is registered to notify the Department of a change in ownership of the well and/or information pertaining to the physical characteristics of the well in order to keep this well registration file current and accurate. Any change in well information or a request to change well driller must be filed on a Request to Change Well Information form (DWR form 55-71A) that may be downloaded from the ADWR Internet website at <http://www.water.az.gov/adwr/content/forms/default.htm#NOI>.

Sincerely,

Jeannie Aguilar

Jeannie Aguilar
NOI Unit
Water Management Support Section

Enclosures

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 417-2470 • (800) 352-8488
(602) 417-2422 fax www.water.az.gov

Notice of Intent to Drill, Deepen, Replace or Modify a Well

(except a Non-Exempt Well in an Active Management Area)

$150 or $75 FEE

- ❖ Review instructions prior to completing form in black or blue ink.
- ❖ You must include with your Notice:
- Check or money order in the amount of the appropriate filing fee. For a well located within an AMA or INA, the fee is $150.00. For a well not located within an AMA or INA, the fee is $75.00 if the well will be used solely for domestic purposes (see page 2 and instructions) and will have a pump with a maximum capacity of not more than 35 gallons per minute. Otherwise, the fee is $150.00.
- ❖ Authority for fee: A.R.S. § 45-596.

** PLEASE PRINT CLEARLY **

AMA / INA		6	SB
RECEIVED	DATE	WS	
ISSUED	DATE	WQARF	CERCLA

FILE NUMBER

WELL REGISTRATION NUMBER

55 - 205126

SECTION 1. COUNTY OR LOCAL HEALTH AUTHORITY APPROVAL (if applicable)

SEP - 8 2004

If water from the proposed well will be used for domestic purposes on a parcel of land of 5 or fewer acres, the applicable county or local health authority must endorse all items in Section 1 within one year before submission to the Department of Water Resources. You must also attach a site plan (pg. 3).

CHECK ONE

☒ County or Local Health Authority Recommends Approval (pursuant to A.R.S. § 45-596 (G) and (F))
- ☐ Field Inspection Performed
- ☐ Site Plan Review Only

☐ Insufficient Information to Make a Determination

COUNTY OR LOCAL AUTHORITY NAME AND TITLE
Mike Dunn R.S.

Official County or Local Seal or Stamp

APPROVED BY THE COCHISE COUNTY
ENVIRONMENTAL HEALTH DIVISION
DATE Sept 8 2004
BY Mike Dunn R.S.

SIGNATURE Dunn R.S.

PAUL ZANDER
ARDIS ZANDER
P.O. BOX 222
NACO, AZ 85620-0222

[redacted] 1001

Date 9/8/04

Pay to the Order of ADWR $ 150 00/xx

One hundred fifty & no/xx Dollars

WELLS FARGO
Wells Fargo Bank, N.A.
2187 El Mercado Loop
Sierra Vista, AZ 85635
wellsfargo.com

Memo [redacted] MP

60 ACRE	40 ACRE	10 ACRE
¼	¼	¼

R
ARCEL B09-0 # OF ACRES

NT FROM LOCATION OF WELL)

60 ACRE	40 ACRE	10 ACRE
SW ¼	NW ¼	NW ¼

SECTION 3. OWNER INFORMATION

Well Owner	**Landowner** (if different from Well Owner)
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL M/M Zander	FULL NAME OF COMPANY, GOVERNMENT AGENCY, OR INDIVIDUAL
MAILING ADDRESS P.O. Box 222	MAILING ADDRESS
CITY / STATE / ZIP CODE Naco, AZ 85620-0222	CITY / STATE / ZIP CODE
CONTACT PERSON NAME AND TITLE	CONTACT PERSON NAME AND TITLE
TELEPHONE NUMBER (520) 432-6149 / FAX	TELEPHONE NUMBER / FAX

SECTION 4.

Questions	Yes	No	If Yes:
1. Is the proposed well site within 100 feet of a septic tank system, sewer disposal area, landfill, hazardous materials or petroleum storage area or tank?		X	You must also request a variance (A.A.C. R12-15-818).
2. Is there another well name or identification number associated with this well?		X	PLEASE STATE
3. Is the proposed well the second exempt well on this parcel for the same use?		X	If the proposed well is in an Active Management Area, you must also file a supplemental form 55-40A.

APPENDIX E

RESULTS OF HISTORICAL HYDRAULIC TESTING

TABLE OF CONTENTS

APPENDICES

APPENDIX E.1

Table E.1 Drawdown Values for AWC-05 Test
Figure E.1 Measured Drawdown Profile for AWC-05

APPENDIX E.2

E.2 Tables Prepared by Errol L Montgomery and Associates for Aquifer Tests Conducted in 1989 as Reported by Steffen, Robertson and Kirsten (SRK) (1997)

APPENDIX E.3

E.3 Aquifer Properties Reported by SRK (1997)

APPENDIX E.1

DRAWDOWN VALUES AND MEASURED DRAWDOWN PROFILE FOR AWC-05

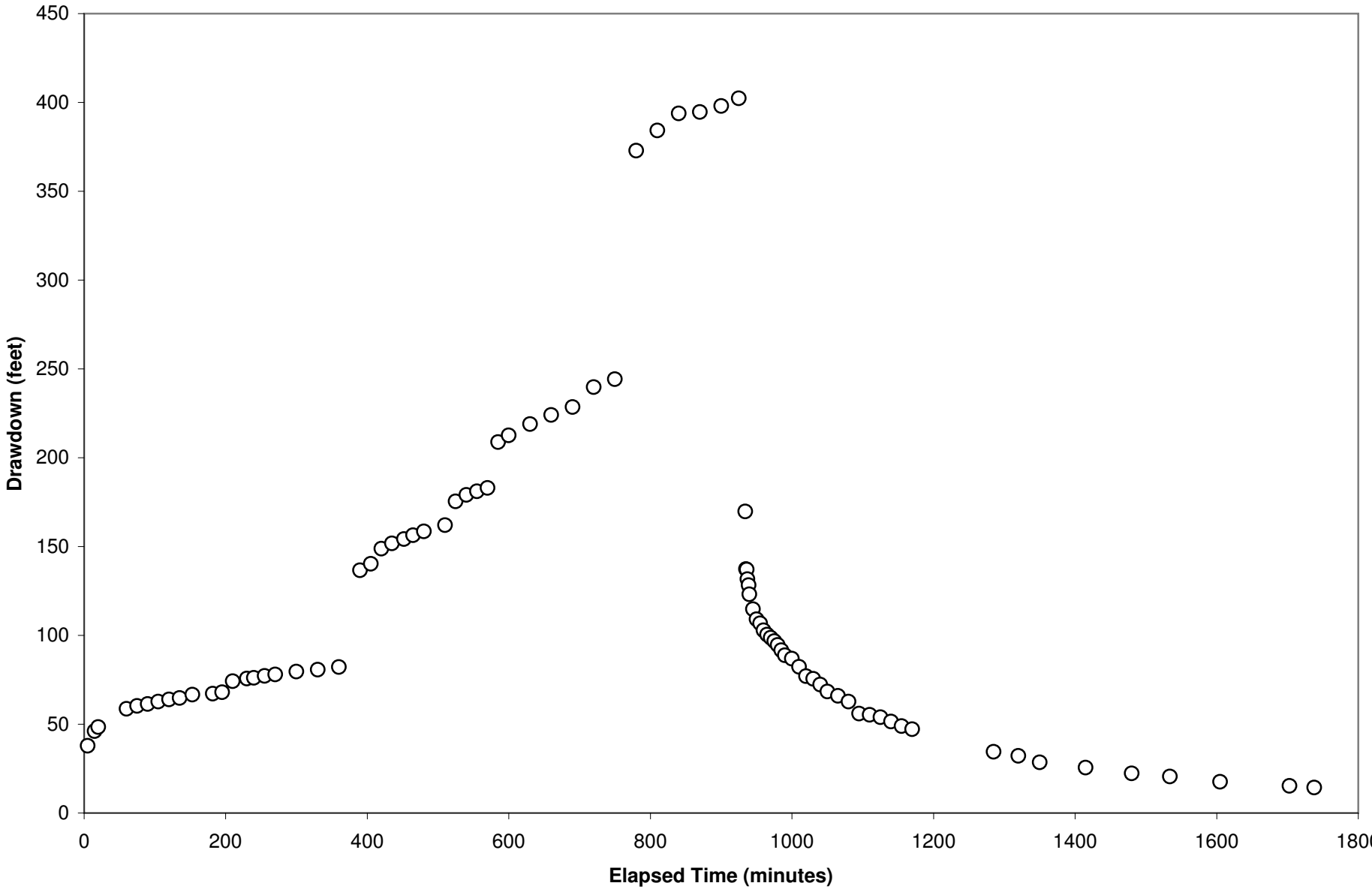
(Table E.1 and Figure E.1)

TABLE E.1
AWC-05 Pumping Test Data

Elapsed Time (min)	Pumping Rate (gpm)	Drawdown (ft)
5	507	37.80
15	526	46.03
20	507	48.41
60	507	58.71
75	487	60.23
90	497	61.40
105	493	62.76
120	507	63.93
135	507	64.71
153	507	66.60
182	507	67.21
195	497	68.04
210	497	74.16
230	493	75.68
240	487	76.12
255	487	77.16
270	482	77.94
300	482	79.53
330	512	80.66
360	507	82.15
390	507	136.59
405	507	140.27
420	507	148.76
435	502	151.81
452	497	154.21
465	493	156.40
480	493	158.50
510	751	162.03
525	744	175.34
540	738	178.99
555	755	181.06
570	751	183.04
585	748	208.81
600	744	212.59
630	744	218.91
660	738	224.00
690	731	228.57
720	771	239.71
750	767	244.14
780	764	372.88
810	764	384.22
840	764	393.82

Elapsed Time (min)	Pumping Rate (gpm)	Drawdown (ft)
870	850	394.64
900	850	397.93
925	850	402.28
934	844	169.71
935	838	137.33
936	832	137.01
937	832	131.62
939	826	128.24
940	1108	123.11
945	1108	114.71
950	1108	109.09
955	1108	106.71
960	1108	102.89
965	1108	100.46
970	1108	98.61
975	0	96.76
980	0	94.61
985	0	91.61
990	0	88.84
1000	0	86.88
1010	0	82.34
1020	0	77.05
1030	0	75.50
1040	0	72.26
1050	0	68.42
1065	0	65.94
1080	0	62.74
1095	0	55.89
1110	0	55.21
1125	0	53.89
1140	0	51.49
1155	0	48.92
1170	0	47.20
1285	0	34.46
1320	0	32.13
1350	0	28.54
1415	0	25.54
1480	0	22.29
1534	0	20.54
1605	0	17.63
1703	0	15.21
1738	0	14.29

Notes:
ft = feet
gpm = gallons per minute
min = minute



HYDRO GEO CHEM, INC.

MEASURED DRAWDOWN PROFILE FOR AWC-05

Approved	Date	Author	Date	File Name	Figure
NWH	11/13/08	NWH	11/13/08	FD1 AWC5	E.1

H:\872000\Task 2.1 Data Compilation\Task 2.1 Report\Task 2.1 Tables Figs 20090218.xls: FE1 AWC5

APPENDIX E.2

TABLES PREPARED BY ERROL L MONTGOMERY AND ASSOCIATES FOR AQUIFER TESTS CONDUCTED IN 1989 AS REPORTED BY STEFFEN, ROBERTSON AND KIRSTEN (SRK) (1997)

Appendix D.2

TABLE 3. SUMMARY OF HYDROLOGIC DATA FROM PUMPING TESTS FOR PHASE I AND PHASE II MONITOR WELLS
COPPER QUEEN PROJECT, COCHISE COUNTY, ARIZONA

WELL NUMBER	DATE PUMPING TEST STARTED	PUMPING PERIOD (hours)	AVERAGE PUMPING RATE (gpm)[a]	PRE-PUMPING WATER LEVEL (feet below measuring point)	MAXIMUM WATER LEVEL DRAWDOWN DURING PUMPING PERIOD (feet)	SPECIFIC CAPACITY (gpm/ft)[b]	AVERAGE TEMPERATURE OF PUMPED WATER (°C)[c]	AVERAGE SPECIFIC ELECTRICAL CONDUCTANCE (µmho/cm)[d]	AVERAGE pH OF PUMPED WATER
BASIN-FILL DEPOSITS									
(D-24-24)18aab[TH-11]	08-16-89	12	15	111.39	17.63	0.9	21	380	8.0
(D-24-24)8bcc[TH-13]	08-19-89	12	32	155.53	4.15	7.7	21	990	7.4
BASIN-FILL DEPOSITS AND MORITA FORMATION									
(D-24-24)9aab1[TH-1]	10-09-89	48	20	226.57	9.10	2.2	19	2,300	6.9
(D-24-24)3caa[TH-29]	08-28-89	48	20	92.10	18.33	1.1	20	5,200	6.4
MORITA FORMATION									
(D-24-24)10acd[TH-16]	08-22-89	8	21	85.27	10.42	2.0	21	1,200	7.2
(D-24-24)8dad[TH-30]	10-17-89	120	59	162.37	158.29	0.4	23	510	7.6
(D-24-24)9caa[TH-38]	11-01-89	24	95	187.48	7.36	12.9	22	1,400	7.3
MORITA FORMATION AND GLANCE CONGLOMERATE									
(D-24-24)9bbc[TH-37]	11-05-89	24	59	191.76	162.41	0.4	23	420	7.6

[a] gpm - Gallons per minute

[b] gpm/ft - Gallons per minute per foot of drawdown

[c] °C - Degrees Celsius

[d] µmho/cm - Micromhos per centimeter

TABLE 4. SUMMARY OF AQUIFER PARAMETERS FROM PUMPING TESTS FOR PHASE I AND PHASE II MONITOR AND PIEZOMETER WELLS COPPER QUEEN PROJECT, COCHISE COUNTY, ARIZONA

	DRAWDOWN PERIOD				RECOVERY PERIOD
	SEMI-LOG .....GRAPHICAL PROCEDURE.....		LOG-LOG .....GRAPHICAL PROCEDURE.....		SEMI-LOG GRAPHICAL PROCEDURE
WELL NUMBER	TRANSMISSIVITY[a]	STORAGE COEFFICIENT[b]	TRANSMISSIVITY[a]	STORAGE COEFFICIENT[b]	TRANSMISSIVITY[a]
BASIN-FILL DEPOSITS					
(D-24-24)18aab[TH-11]	13,000	---	---	---	15,000
(D-24-24)8bcc[TH-13]	14,000	---	13,000	---	21,000
BASIN-FILL DEPOSITS AND HORITA FORMATION					
(D-24-24)9aab1[TH-1]	3,100	---	4,900	---	11,000 6,700
(D-24-24)9aab2[TH-1A]	3,200	0.09	3,000	0.01	21,000 8,400
(D-24-24)9aab3[TH-1B][c]	---	---	---	---	---
(D-24-24)3caa[TH-29]	2,100 800	--- ---	900 1,600	--- ---	2,300
(D-24-24)3cab1[TH-29A]	2,100 700	0.02×10^{-4} 5×10^{-4}	1,000 1,800	0.3×10^{-4} 0.05×10^{-4}	2,400
(D-24-24)3cab2[TH-29B]	2,500 700	0.03×10^{-4} 5×10^{-4}	1,500 2,300	1×10^{-4} 0.06×10^{-4}	2,200
HORITA FORMATION					
(D-24-24)10acd[TH-16]	---	---	---	---	400
(D-24-24)8dad[TH-30]	---	---	---	---	13,000
(D-24-24)8dac2[TH-30A]	1,100 1,000	10×10^{-4} 20×10^{-4}	4,200 1,300 1,100	0.01 0.01 0.01	1,000

TABLE 4. SUMMARY OF AQUIFER PARAMETERS FROM PUMPING TESTS FOR PHASE I AND PHASE II MONITOR AND PIEZOMETER WELLS COPPER QUEEN PROJECT, COCHISE COUNTY, ARIZONA

	DRAWDOWN PERIOD				RECOVERY PERIOD
	SEMI-LOG .....GRAPHICAL PROCEDURE.....		LOG-LOG .....GRAPHICAL PROCEDURE.....		SEMI-LOG GRAPHICAL PROCEDURE
WELL NUMBER	TRANSMISSIVITY[a]	STORAGE COEFFICIENT[b]	TRANSMISSIVITY[a]	STORAGE COEFFICIENT[b]	TRANSMISSIVITY[a]
(D-24-24)8ddc1[TH-19A]	9,100 18,000	0.7×10^{-4} 0.02×10^{-4}	7,800	1×10^{-4}	9,900
(D-24-24)8dac1[TH-30B][c]	---	---	---	---	---
(D-24-24)8ddc2[TH-19][c]	---	---	---	---	---
(D-24-24)9caa[TH-38]	16,000	---	18,000 21,000	---	18,000 60,000 75,000
MORITA FORMATION AND GLANCE CONGLOMERATE					
(D-24-24)9bbc[TH-37]	---	---	---	---	8,500 36,000

[a] Gallons per day per foot width of aquifer at 1:1 hydraulic gradient.

[b] Dimensionless; ratio of volume of water released per unit surface area of aquifer per unit decline in head.

[c] Water level response not sufficient for determination of aquifer parameters.

TABLE 5. SUMMARY OF REPRESENTATIVE TRANSMISSIVITY AND AVERAGE HYDRAULIC CONDUCTIVITY FROM PUMPING TESTS FOR PHASE I AND PHASE II MONITOR AND PIEZOMETER WELLS COPPER QUEEN PROJECT, COCHISE COUNTY, ARIZONA

WELL NUMBER	REPRESENTATIVE TRANSMISSIVITY[a]	PERFORATED SATURATED THICKNESS[b]	REPRESENTATIVE AVERAGE HYDRAULIC CONDUCTIVITY[c]
BASIN-FILL DEPOSITS			
(D-24-24)18aab[TM-11]	15,000	51	290
(D-24-24)8bcc[TM-13]	21,000	48	440
BASIN-FILL DEPOSITS AND MORITA FORMATION			
(D-24-24)9aab1[TM-1]	6,700	41	160
(D-24-24)9aab2[TM-1A]	8,400	41	200
(D-24-24)9aab3[TM-1B][d]	---	---	---
(D-24-24)3caa[TM-29]	2,300	49	50
(D-24-24)3cab1[TM-29A]	2,400	75	30
(D-24-24)3cab2[TM-29B]	2,200	75	30
MORITA FORMATION			
(D-24-24)10acd[TM-16]	400	32	10
(D-24-24)8dad[TM-30]	13,000	145	90
(D-24-24)8dac2[TM-30A]	1,000	145	10
(D-24-24)8ddc1[TM-19A]	9,900	110	90
(D-24-24)8dac1[TM-30B][d]	---	---	---
(D-24-24)8ddc2[TM-19][d]	---	---	---
(D-24-24)9caa[TM-38]	18,000	190	90
MORITA FORMATION AND GLANCE CONGLOMERATE			
(D-24-24)9bbc[TM-37]	8,500	220	40

[a] Gallons per day per foot width of aquifer at 1:1 hydraulic gradient.

[b] Feet

[c] Gallons per day per square foot of aquifer at 1:1 hydraulic gradient.

[d] Water level response not sufficient for determination of aquifer parameters.

APPENDIX E.3

AQUIFER PROPERTIES REPORTED BY SRK (1997)

Appendix D.3

Calculated By: C.B Date: 7/8/97
Checked By: DB Date: 7/8/97

TABLE 1
Comparison of Aquifer Test Data Completed by Montgomery/SGC and SRK

	Montgomery/SGC				SRK		
	Transmissivity (T)	Saturated Thickness	Hydraulic Conductivity (K)		Saturated Thickness	Hydraulic Conductivity (K)	
Well Number	(gallons/day/foot)	(feet)	(gallons/day/ft^2)	(feet/day)	(feet)	(gallons/day/ft^2)	(feet/day)
BASIN FILL DEPOSITS							
TM-11	15,000	51	290	39	285	9	1.2
TM-13	21,000	48	440	59	175	143	19.1
BASIN-FILL/MORITA FORMATION:							
TM-1	6,700	41	160	21.4	41	87	11
TM-1A	8,400	41	200	26.8	--	--	--
TM-29	2,300	49	50	6.7	100	--	--
TM-29A	2,400	75	30	4.0	--	10	1.3
TM-29B	2,200	75	30	4.0	--	13	1.8
MORITA FORMATION - WEST OF FAULT:							
TM-30	13,000	145	90	12.0	200	--	--
TM-30A	1,000	145	10	1.3	--	--	--
TM-19A	9,900	110	90	12.0	--	43	5.8
TM-38	18,000	190	90	12.0	--	--	--
MORITA FORMATION - EAST OF FAULT:							
TM-16	400	32	10	1.3	100	16	2.2

APPENDIX F

HISTORICAL GROUNDWATER LEVELS

TABLE OF CONTENTS

TABLE

F.1 Historical Groundwater Levels

TABLE

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
AWC-02	55-616586	4530	01/21/57	85	4445
AWC-02	55-616586	4530	09/01/77	90.5	4439.5
AWC-02	55-616586	4540	11/21/85	91.6	4448.4
AWC-02	55-616586	4530	12/04/90	90.1	4439.9
AWC-02	55-616586		10/01/95	109.14	
AWC-02	55-616586		04/01/96	111.14	
AWC-02	55-616586		10/01/96	110.14	
AWC-02	55-616586		04/01/97	112.4	
AWC-02	55-616586		10/01/97	113	
AWC-02	55-616586	4530	01/28/98	99.2	4430.8
AWC-02	55-616586		04/01/98	92.5	
AWC-02	55-616586		10/01/98	113	
AWC-02	55-616586		04/01/99	125	
AWC-02	55-616586		10/01/99	93	
AWC-02	55-616586	4530	12/15/99	104	4426
AWC-02	55-616586		04/01/00	97	
AWC-02	55-616586		10/01/00	111	
AWC-02	55-616586		04/01/01	121	
AWC-02	55-616586		10/01/01	116	
AWC-02	55-616586	4530	12/04/01	115.3	4414.7
AWC-02	55-616586		04/01/02	112.5	
AWC-02	55-616586		10/01/02	116	
AWC-02	55-616586		04/01/03	124	
AWC-02	55-616586		10/01/03	128	
AWC-02	55-616586		04/01/04	117.5	
AWC-02	55-616586		10/01/04	129	
AWC-02	55-616586		04/01/05	122.5	
AWC-02	55-616586		10/01/05	123.5	
AWC-02	55-616586		04/01/06	120	
AWC-02	55-616586		10/01/06	120	
AWC-02	55-616586		04/01/07	123	
AWC-02	55-616586		10/01/07	117	
AWC-03	55-616585	4540	03/20/68	90.4	4449.6
AWC-03	55-616585	4540	02/19/86	89.8	4450.2
AWC-03	55-616585		05/18/88		4437
AWC-03	55-616585		04/01/93	82.02	
AWC-03	55-616585		04/01/94	99.02	
AWC-03	55-616585		10/01/94	104.02	
AWC-03	55-616585		04/01/95	95.02	
AWC-03	55-616585		10/01/95	128.02	
AWC-03	55-616585		04/01/96	107.52	
AWC-03	55-616585		10/01/96	108.52	
AWC-03	55-616585		04/01/97	110.5	
AWC-03	55-616585		10/01/97	109	
AWC-03	55-616585		04/01/98	110	
AWC-03	55-616585		10/01/98	111	
AWC-03	55-616585		04/01/99	104	
AWC-03	55-616585		10/01/99	97	
AWC-03	55-616585	4540	12/15/99	112.7	4427.3
AWC-03	55-616585		04/01/00	88	
AWC-03	55-616585		10/01/00	88	
AWC-03	55-616585	4540	02/26/01	100.4	4439.6
AWC-03	55-616585		04/01/01	105	
AWC-03	55-616585		10/01/01	110	
AWC-03	55-616585		04/01/02	110	
AWC-03	55-616585		10/01/02	116	
AWC-03	55-616585		04/01/03	116.5	

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
AWC-03	55-616585		10/01/03	118.5	
AWC-03	55-616585		04/01/04	118	
AWC-03	55-616585		10/01/04	121	
AWC-03	55-616585		04/01/05	119	
AWC-03	55-616585		10/01/05	121	
AWC-03	55-616585		04/01/06	120	
AWC-03	55-616585		10/01/06	121.5	
AWC-03	55-616585		04/01/07	111	
AWC-03	55-616585		10/01/07	116	
AWC-04	55-616584		09/22/77		
AWC-04	55-616584	4520	02/19/86	85.2	4435
AWC-04	55-616584	4540	12/04/90	95.1	4444.9
AWC-04	55-616584		04/01/93	70.98	
AWC-04	55-616584		04/01/94	96.98	
AWC-04	55-616584		10/01/94	99.48	
AWC-04	55-616584		04/01/95	138.98	
AWC-04	55-616584		10/01/95	102.48	
AWC-04	55-616584		04/01/96	105.48	
AWC-04	55-616584		10/01/96	107.48	
AWC-04	55-616584		04/01/97	118.4	
AWC-04	55-616584		10/01/97	108.6	
AWC-04	55-616584	4540	01/28/98	103.9	4436.1
AWC-04	55-616584		04/01/98	107.5	
AWC-04	55-616584		10/01/98	112	
AWC-04	55-616584		04/01/99	100	
AWC-04	55-616584		10/01/99	85	
AWC-04	55-616584	4540	12/15/99	107.2	4432.8
AWC-04	55-616584		04/01/00	98	
AWC-04	55-616584		10/01/00	108	
AWC-04	55-616584		04/01/01	125	
AWC-04	55-616584		10/01/01	126	
AWC-04	55-616584	4540	12/04/01	115.5	4424.5
AWC-04	55-616584		04/01/02	119	
AWC-04	55-616584		10/01/02	119	
AWC-04	55-616584		04/01/03	116.75	
AWC-04	55-616584		10/01/03	126	
AWC-04	55-616584		04/01/04	114.5	
AWC-04	55-616584		10/01/04	114.5	
AWC-04	55-616584		04/01/05	113	
AWC-04	55-616584		10/01/05	116	
AWC-04	55-616584		04/01/06	114	
AWC-04	55-616584		10/01/06	115.5	
AWC-04	55-616584		04/01/07	124	
AWC-04	55-616584		10/01/07	108	
AWC-05	55-590620		10/01/02	111	
AWC-05	55-590620		04/01/03	117	
AWC-05	55-590620		10/01/03	116.5	
AWC-05	55-590620		04/01/04	121	
AWC-05	55-590620		10/01/04	137.5	
AWC-05	55-590620		04/01/05	119	
AWC-05	55-590620		10/01/05	127	
AWC-05	55-590620		04/01/06	114	
AWC-05	55-590620		10/01/06	128	
AWC-05	55-590620		04/01/07	116.5	
AWC-05	55-590620		10/01/07	269	
BF-01	55-539783	4820.754	09/16/93		4482.30
BF-01	55-539783	4820.754	10/06/93		4481.30

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
BF-01	55-539783	4820.754	11/23/93		4482.00
BF-01	55-539783	4820.754	01/04/94		4481.90
BF-01	55-539783	4820.754	06/25/96		4473.90
BF-01	55-539783	4820.754	08/22/96		4473.40
BF-01	55-539783	4820.754	09/25/96		4473.20
BF-01	55-539783	4820.754	10/29/96		4473.15
BF-01	55-539783	4820.754	12/19/96		4473.00
BF-01	55-539783	4820.754	01/29/97		4472.70
BF-01	55-539783	4820.754	02/27/97		4472.75
BF-01	55-539783	4820.754	04/16/97		4472.35
BF-01	55-539783	4820.754	10/10/97		4479.05
BF-01	55-539783	4820.754	01/05/98		4473.80
BF-01	55-539783	4820.754	06/01/99	344.05	4476.70
BF-01	55-539783	4820.754	03/01/00	345.7	4475.05
BF-01	55-539783	4820.754	06/01/00	346.55	4474.20
BF-01	55-539783	4820.754	09/01/00	347.2	4473.55
BF-01	55-539783	4820.754	12/01/00	348.1	4472.65
BF-01	55-539783	4820.754	02/01/01	348.2	4472.55
BF-01	55-539783	4820.754	06/01/01	348.25	4472.50
BF-01	55-539783	4820.754	10/01/01	348.3	4472.45
BF-01	55-539783	4820.754	02/01/02	348.35	4472.40
BF-01	55-539783	4820.754	06/01/02	348.2	4472.55
BF-01	55-539783	4820.754	09/01/02	348.25	4472.50
BF-01	55-539783	4820.754	11/01/02	348.3	4472.45
BF-01	55-539783	4820.754	01/01/03	348.1	4472.65
BF-01	55-539783	4820.754	05/01/03	347.8	4472.95
BF-01	55-539783	4820.754	08/01/03	347.4	4473.35
BF-01	55-539783	4820.754	12/01/03	347.3	4473.45
BF-01	55-539783	4820.754	02/01/04	347.3	4473.45
BF-01	55-539783	4820.754	05/01/04	347.35	4473.40
BF-01	55-539783	4820.754	08/01/04	347.3	4473.45
BF-01	55-539783	4820.754	11/01/04	347.3	4473.45
BF-01	55-539783	4820.754	02/01/05	347.6	4473.15
BF-01	55-539783	4820.754	06/01/05	347.65	4473.10
BF-01	55-539783	4820.754	09/01/05	347.8	4472.95
BF-01	55-539783	4820.754	11/01/05	348	4472.75
BF-01	55-539783	4820.754	02/01/06	348.1	4472.65
BF-01	55-539783	4820.754	05/01/06	348.2	4472.55
BF-01	55-539783	4820.754	08/01/06	348.3	4472.45
BF-01	55-539783	4820.754	11/01/06	348.45	4472.30
BF-01	55-539783	4820.754	02/01/07	348.6	4472.15
BF-01	55-539783	4820.754	06/01/07	348.7	4472.05
BF-01	55-539783	4820.754	09/28/07	348.6	4472.15
BF-01	55-539783		12/18/07	348.9	
BF-02	55-539786	4750.37	09/16/93		4458.00
BF-02	55-539786	4750.37	10/06/93		4469.00
BF-02	55-539786	4750.37	11/23/93		4468.40
BF-02	55-539786	4750.37	01/04/94		4468.00
BF-02	55-539786	4750.37	06/25/96		4467.50
BF-02	55-539786	4750.37	08/22/96		4459.00
BF-02	55-539786	4750.37	09/25/96		4458.45
BF-02	55-539786	4750.37	10/29/96		4457.90
BF-02	55-539786	4750.37	12/19/96		4457.35
BF-02	55-539786	4750.37	01/29/97		4457.05
BF-02	55-539786	4750.37	02/27/97		4456.90
BF-02	55-539786	4750.37	04/16/97		4456.35
BF-02	55-539786	4750.37	10/10/97		4456.70

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
BF-02	55-539786	4750.37	01/05/98		4456.10
BF-02	55-539786	4750.37	06/01/99	DRY	
BF-02	55-539786	4750.37	03/01/00	DRY	
BF-02	55-539786	4750.37	06/01/00	DRY	
BF-02	55-539786	4750.37	09/01/00	DRY	
BF-02	55-539786	4750.37	12/01/00	DRY	
BF-02	55-539786	4750.37	02/01/01	DRY	
BF-02	55-539786	4750.37	06/01/01	DRY	
BF-02	55-539786	4750.37	10/01/01	DRY	
BF-02	55-539786	4750.37	02/01/02	DRY	
BF-02	55-539786	4750.37	06/01/02	DRY	
BF-02	55-539786	4750.37	09/01/02	DRY	
BF-02	55-539786	4750.37	11/01/02	DRY	
BF-02	55-539786	4750.37	01/01/03	DRY	
BF-02	55-539786	4750.37	05/01/03	DRY	
BF-02	55-539786	4750.37	08/01/03	DRY	
BF-02	55-539786	4750.37	12/01/03	DRY	
BF-02	55-539786	4750.37	02/01/04	DRY	
BF-02	55-539786	4750.37	05/01/04	DRY	
BF-02	55-539786	4750.37	08/01/04	DRY	
BF-02	55-539786	4750.37	11/01/04	DRY	
BF-02	55-539786	4750.37	02/01/05	DRY	
BF-02	55-539786	4750.37	06/01/05	DRY	
BLOMMER	55-633472		06/02/88		4486.71
BRINDLEY	55-86775		06/21/88		4493.21
BULLARD	55-602134		06/16/88		4479.49
BULLARD	55-602134		06/22/88		4791.96
COB MW-1	55-903992	4703	08/01/06	240	4463
COB MW-2	55-903984		05/01/07	123	
COB MW-2	55-903984		06/01/07	123	
COB MW-2	55-903984		12/01/07	39	
COB MW-3	55-906823		08/01/07	123	
COB MW-3	55-906823		12/01/07	115	
DODSON	55-644927	4680	11/19/85	133	4547
DODSON	55-644927	4670	06/22/88	133.05	4546.95
GARNER 557	55-558557	4628.011	01/29/97	172.4	4457.6
GARNER 557	55-558557	4628.011	04/16/97	172.9	4457.1
GARNER 557	55-558557	4628.011	07/01/97	173.7	4456.3
GARNER 557	55-558557	4628.011	10/10/97	174.25	4455.75
GARNER 557	55-558557	4628.011	01/21/98	174.9	4455.1
GARNER 557	55-558557	4628.011	05/06/98	175.4	4454.6
GARNER 557	55-558557	4628.011	01/25/99	172.2	4457.8
GARNER 557	55-558557	4628.011	06/01/99	178.2	4449.81
GARNER 557	55-558557	4628.011	03/01/00	178.7	4449.31
GARNER 557	55-558557	4628.011	06/01/00	179.9	4448.11
GARNER 557	55-558557	4628.011	09/01/00	180.5	4447.51
GARNER 557	55-558557	4628.011	12/01/00	181	4447.01
GARNER 557	55-558557	4628.011	02/01/02	182.75	4445.26
GARNER 557	55-558557	4628.011	06/01/02	183.2	4444.81
GARNER 557	55-558557	4628.011	09/01/02	183.8	4444.21
GARNER 557	55-558557	4628.011	11/01/02	184.05	4443.96
GARNER 557	55-558557	4628.011	01/01/03	184.3	4443.71
GARNER 557	55-558557	4628.011	05/01/03	185.3	4442.71
GARNER 557	55-558557	4628.011	12/01/03	185.7	4442.31
GARNER 557	55-558557	4628.011	02/01/04	186.02	4441.99
GARNER 557	55-558557	4628.011	08/01/04	186.9	4441.11
GARNER 557	55-558557	4628.011	11/01/04	187	4441.01

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
GARNER 557	55-558557	4628.011	02/01/05	187.2	4440.81
GARNER 557	55-558557	4628.011	06/01/05	187.8	4440.21
GARNER 557	55-558557	4628.011	09/01/05	187.05	4440.96
GARNER 557	55-558557	4628.011	11/01/05	188.3	4439.71
GARNER 557	55-558557	4628.011	05/01/06	188.9	4439.11
GARNER 557	55-558557	4628.011	08/01/06	189.4	4438.61
GARNER 635	55-587635	4627.413	02/01/02	184.65	4442.76
GARNER 635	55-587635	4627.413	06/01/02	185.3	4442.11
GARNER 635	55-587635	4627.413	09/01/02	186	4441.41
GARNER 635	55-587635	4627.413	11/01/02	186.5	4440.91
GARNER 635	55-587635	4627.413	01/01/03	186.3	4441.11
GARNER 635	55-587635	4627.413	05/01/03	187.5	4439.91
GARNER 635	55-587635	4627.413	12/01/03	187.7	4439.71
GARNER 635	55-587635	4627.413	02/01/04	188.02	4439.39
GARNER 635	55-587635	4627.413	08/01/04	188.9	4438.51
GARNER 635	55-587635	4627.413	11/01/04	189.15	4438.26
GARNER 635	55-587635	4627.413	02/01/05	189.1	4438.31
GARNER 635	55-587635	4627.413	06/01/05	194.3	4433.11
GARNER 635	55-587635	4627.413	09/01/05	189.35	4438.06
GARNER 635	55-587635	4627.413	11/01/05	189.75	4437.66
GARNER 635	55-587635	4627.413	05/01/06	190.6	4436.81
GARNER 635	55-587635	4627.413	08/01/06	193	4434.41
GGOOSE 546	55-628546	4720	11/19/85	79.8	4640.2
GGOOSE 546	55-628546		05/10/88		4594.95
GGOOSE 547	55-628547	4720	11/19/85	87.6	4640.2
GGOOSE 547	55-628547		05/10/88		4596.38
GL-01	55-539785		09/16/93		4128.32
GL-01	55-539785		10/06/93		4135.32
GL-01	55-539785		11/23/93		4133.32
GL-01	55-539785		01/04/94		4134.22
GL-01	55-539785		04/24/94		4134
GL-03	55-539782	4909.115	09/16/93		4132.08
GL-03	55-539782	4909.115	10/06/93		4132.98
GL-03	55-539782	4909.115	11/23/93		4134.38
GL-03	55-539782	4909.115	01/04/94		4135.28
GL-03	55-539782	4909.115	04/29/94		4136
GL-03	55-539782	4909.115	06/25/96	748.7	4151.3
GL-03	55-539782	4909.115	08/22/96	745	4155
GL-03	55-539782	4909.115	09/25/96	743.7	4156.3
GL-03	55-539782	4909.115	10/29/96	742.7	4157.3
GL-03	55-539782	4909.115	12/19/96	741.3	4158.7
GL-03	55-539782	4909.115	10/10/97	731.95	4168.05
GL-03	55-539782	4909.115	01/21/98	731.3	4168.7
GL-03	55-539782	4909.115	05/06/98	727.6	4180.08
GL-03	55-539782	4909.115	10/01/98	723.8	4183.88
GL-03	55-539782	4909.115	01/25/99	720.8	4186.88
GL-03	55-539782	4909.115	06/01/99	718.5	4190.62
GL-03	55-539782	4909.115	03/01/00	714.7	4194.42
GL-03	55-539782	4909.115	06/01/00	711.35	4197.77
GL-03	55-539782	4909.115	09/01/00	707.8	4201.32
GL-03	55-539782	4909.115	12/01/00	703.05	4206.07
GL-03	55-539782	4909.115	02/01/01	700	4209.12
GL-03	55-539782	4909.115	06/01/01	697.5	4211.62
GL-03	55-539782	4909.115	10/01/01	693.2	4215.92
GL-03	55-539782	4909.115	02/01/02	690.1	4219.02
GL-03	55-539782	4909.115	06/01/02	687.1	4222.02
GL-03	55-539782	4909.115	09/01/02	705.55	4203.57

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
GL-03	55-539782	4909.115	11/01/02	712.2	4196.92
GL-03	55-539782	4909.115	01/01/03	683.4	4225.72
GL-03	55-539782	4909.115	05/01/03	681.55	4227.57
GL-03	55-539782	4909.115	08/01/03	680.9	4228.22
GL-03	55-539782	4909.115	12/01/03	679.2	4229.92
GL-03	55-539782	4909.115	02/01/04	679	4230.12
GL-03	55-539782	4909.115	05/01/04	678.6	4230.52
GL-03	55-539782	4909.115	08/01/04	676.25	4232.87
GL-03	55-539782	4909.115	11/01/04	675.7	4233.42
GL-03	55-539782	4909.115	02/01/05	674.5	4234.62
GL-03	55-539782	4909.115	06/01/05	674.2	4234.92
GL-03	55-539782	4909.115	09/01/05	673.95	4235.17
GL-03	55-539782	4909.115	11/01/05	672.1	4237.02
GL-03	55-539782	4909.115	02/01/06	671.7	4237.42
GL-03	55-539782	4909.115	05/01/06	670.2	4238.92
GL-03	55-539782	4909.115	08/01/06	669	4240.12
GL-03	55-539782	4909.115	11/01/06	668.4	4240.72
GL-03	55-539782	4909.115	02/01/07	666.45	4242.67
GL-03	55-539782	4909.115	06/01/07	665.5	4243.62
GL-03	55-539782	4909.115	09/28/07	683.5	4225.62
GOAR 686	55-610686		06/15/88		4474.4
GOAR 686	55-610689		06/15/88		4474.4
GREGG	55-630852	4660	11/19/85	36.4	4623.6
GREGG	55-630852	4670	07/13/88		4589.63
GREGG	55-630852	4670	09/02/88		4611.43
HAUBERT	55-801607		05/17/88		4467.95
HULL 854	55-606854		08/19/88		4483.77
MILLER 342	55-641342		06/01/88		4494.54
MINOR 316	55-633316		06/23/88		4464.1
NWC-01	55-627682		01/01/51	140	
NWC-01	55-627682	4600	11/20/85	138	4462
NWC-01	55-627682		05/19/88		4457.25
NWC-01	55-627682		05/01/95	152	
NWC-01	55-627682		05/01/96	155	
NWC-01	55-627682		01/01/97	152	
NWC-02	55-562944		04/01/04	150	
NWC-02 CAP	55-627683		01/01/97	150	
NWC-02 CAP	55-627683		06/01/97	150	
NWC-03 CAP	55-627684		01/01/30	94	
NWC-03 CAP	55-627684		01/01/60	95	
NWC-03 CAP	55-627684	4560	03/20/68	91	4469
NWC-03 CAP	55-627684	4560	09/22/77	96	4464
NWC-03 CAP	55-627684		05/18/88		4466.22
NWC-03 CAP	55-627684		03/01/04	121	
NWC-03 CAP	55-627684		04/01/04	121	
NWC-03 CAP	55-627684		06/01/04	140	
NWC-04	55-551849		10/01/05	140	
NWC-04	55-551849		12/01/05	344	
NWC-04 CAP	55-627685	4685	03/21/69	180.5	4504.5
NWC-04 CAP	55-627685	4685	09/22/77	216.4	4468.6
NWC-04 CAP	55-627685	4685	12/05/90	197	4488
NWC-04 CAP	55-627685		01/01/97	450	
NWC-04 CAP	55-627685		08/01/00	305	
NWC-04 CAP	55-627685		10/01/00	290	
NWC-04 CAP	55-627685		02/01/01	315	
NWC-04 CAP	55-627685		04/01/04	315	
NWC-04 CAP	55-627685	4685	09/20/04	173	4512

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
NWC-04 CAP	55-627685		12/01/04	384	
NWC-05	55-627696		05/01/60	104	
NWC-05	55-627696	4680	11/19/85	170	4510
NWC-05	55-627696		05/18/88		4586.04
NWC-06	55-575700		01/01/30	94	
NWC-06	55-575700		01/01/60	95	
NWC-06	55-575700		03/01/04	121	
NWC-06	55-575700		04/01/04	121	
NWC-06	55-575700		06/01/04	140	
OSBORN	55-643436	4710	11/20/85	14.3	4695.7
OSBORN	55-643436	4670	06/27/88	61.35	4648.65
POOL	55-509518		06/23/88		4448.99
CAMPBELL	55-643481	4694.29	08/05/00		4694.29
TM-01	55-522569		10/18/88		4492.95
TM-01	55-522569		02/01/89		4490.57
TM-01	55-522569		03/02/89		4489.8
TM-01	55-522569		04/17/89		4488.9
TM-01	55-522569		05/17/89		4488.95
TM-01	55-522569		06/23/89		4487.6
TM-01	55-522569		07/19/89		4487.2
TM-01	55-522569		09/06/89		4486.35
TM-01	55-522569		10/22/89		4487.95
TM-01	55-522569		11/06/89	226.55	4487.95
TM-01	55-522569		12/01/89	226.55	4487.95
TM-01	55-522569		01/01/90	227.6	4486.9
TM-01	55-522569		02/01/90	228.2	4486.3
TM-01	55-522569		03/01/90	228.65	4485.85
TM-01A	55-525557		11/06/89	225.07	4487.36
TM-01B	55-525556		11/06/89	221.55	4489.23
TM-02	55-522573		10/18/88		4502.54
TM-02	55-522573		01/27/89		4502.39
TM-02	55-522573		02/27/89		4501.49
TM-02	55-522573		04/06/89		4500.64
TM-02	55-522573		05/01/89		4500.99
TM-02	55-522573		06/08/89		4499.14
TM-02	55-522573		07/13/89		4498.44
TM-02	55-522573		09/06/89		4497.44
TM-02	55-522573		10/22/89		4498.04
TM-02	55-522573	4791.72	11/06/89	294	4497.72
TM-02	55-522573		01/01/90	294.7	4497.02
TM-02	55-522573		02/01/90	295.55	4496.17
TM-02	55-522573		03/01/90	295.77	4495.95
TM-02	55-522573		11/23/93		4474.74
TM-02	55-522573		01/04/94		4474.14
TM-02	55-522573		06/25/96		4464.9
TM-02	55-522573		08/22/96		4464.45
TM-02	55-522573		09/25/96		4464.15
TM-02	55-522573		10/29/96		4464
TM-02	55-522573		12/19/96		4463.6
TM-02	55-522573		01/29/97		4463.2
TM-02	55-522573		02/27/97		4463.1
TM-02	55-522573		04/16/97		4462.55
TM-02	55-522573		07/01/97		4461.75
TM-02	55-522573		10/10/97		4461.3
TM-02	55-522573		11/06/97		4461.1
TM-02	55-522573		01/05/98		4460.8
TM-02	55-522573		05/06/98	330	4460

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
TM-02	55-522573		10/01/98	330.5	4459.5
TM-02	55-522573		01/25/99	331.7	4458.3
TM-02	55-522573	4794.891	06/01/99	332.55	4462.34
TM-02	55-522573	4794.891	03/01/00	332.8	4462.09
TM-02	55-522573	4794.891	06/01/00	333.2	4461.69
TM-02	55-522573	4794.891	09/01/00	333.45	4461.44
TM-02	55-522573	4794.891	12/01/00	333.75	4461.14
TM-02	55-522573	4794.891	02/01/01	333.9	4460.99
TM-02	55-522573	4794.891	06/01/01	334.15	4460.74
TM-02	55-522573	4794.891	10/01/01	334.4	4460.49
TM-02	55-522573	4794.891	02/01/02	334.5	4460.39
TM-02	55-522573	4794.891	06/01/02	334.7	4460.19
TM-02	55-522573	4794.891	09/01/02	334.85	4460.04
TM-02	55-522573	4794.891	11/01/02	335	4459.89
TM-02	55-522573	4794.891	01/01/03	335.05	4459.84
TM-02	55-522573	4794.891	05/01/03	335.2	4459.69
TM-02	55-522573	4794.891	08/01/03	335.35	4459.54
TM-02	55-522573	4794.891	12/01/03	335.5	4459.39
TM-02	55-522573	4794.891	02/01/04	335.7	4459.19
TM-02	55-522573	4794.891	05/01/04	335.85	4459.04
TM-02	55-522573	4794.891	08/01/04	335.95	4458.94
TM-02	55-522573	4794.891	11/01/04	336.1	4458.79
TM-02	55-522573	4794.891	02/01/05	336.45	4458.44
TM-02	55-522573	4794.891	06/01/05	336.8	4458.09
TM-02	55-522573	4794.891	09/01/05	337	4457.89
TM-02	55-522573	4794.891	11/01/05	337.15	4457.74
TM-02	55-522573	4794.891	02/01/06	337.6	4457.29
TM-02	55-522573	4794.891	05/01/06	338	4456.89
TM-02	55-522573	4794.891	08/01/06	338.5	4456.39
TM-02A	55-522574		02/24/89		4470.84
TM-02A	55-522574		03/03/89		4471.04
TM-02A	55-522574		10/22/89		4471.04
TM-02A	55-522574	4790.95	11/30/89	312.9	4478.05
TM-02A	55-522574		12/01/89	312	4478.95
TM-02A	55-522574		01/01/90	309	4481.95
TM-02A	55-522574		02/01/90	306.1	4484.85
TM-02A	55-522574		03/01/90	311.55	4479.4
TM-02A	55-522574		04/01/90	312.7	4478.25
TM-02A	55-522574		11/23/93		4443.6
TM-02A	55-522574		01/04/94		4466.3
TM-02A	55-522574		06/25/96		4468.15
TM-02A	55-522574		08/22/96		4460.35
TM-02A	55-522574		09/25/96		4461
TM-02A	55-522574		10/29/96		4462.3
TM-02A	55-522574		12/19/96		4463.25
TM-02A	55-522574		01/29/97		4463.25
TM-02A	55-522574		02/27/97		4463
TM-02A	55-522574		04/16/97		4462.3
TM-02A	55-522574		10/10/97		4460.7
TM-02A	55-522574		01/05/98		4460.2
TM-02A	55-522574		05/06/98	331.15	4458.85
TM-02A	55-522574		10/01/98	332.25	4457.75
TM-02A	55-522574		01/25/99	334.6	4455.4
TM-02A	55-522574	4794.132	06/01/99	334.8	4459.33
TM-02A	55-522574	4794.132	03/01/00	335.5	4458.63
TM-02A	55-522574	4794.132	06/01/00	335.2	4458.93
TM-02A	55-522574	4794.132	09/01/00	335	4459.13

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
TM-02A	55-522574	4794.132	12/01/00	334.85	4459.28
TM-02A	55-522574	4794.132	02/01/01	334.8	4459.33
TM-02A	55-522574	4794.132	06/01/01	334.8	4459.33
TM-02A	55-522574	4794.132	10/01/01	334.85	4459.28
TM-02A	55-522574	4794.132	02/01/02	334.8	4459.33
TM-02A	55-522574	4794.132	06/01/02	334.95	4459.18
TM-02A	55-522574	4794.132	09/01/02	335.2	4458.93
TM-02A	55-522574	4794.132	11/01/02	335.6	4458.53
TM-02A	55-522574	4794.132	01/01/03	335.6	4458.53
TM-02A	55-522574	4794.132	05/01/03	336.15	4457.98
TM-02A	55-522574	4794.132	08/01/03	337	4457.13
TM-02A	55-522574	4794.132	12/01/03	338.1	4456.03
TM-02A	55-522574	4794.132	02/01/04	338.5	4455.63
TM-02A	55-522574	4794.132	05/01/04	338.95	4455.18
TM-02A	55-522574	4794.132	08/01/04	339.55	4454.58
TM-02A	55-522574	4794.132	11/01/04	340.8	4453.33
TM-02A	55-522574	4794.132	02/01/05	341.05	4453.08
TM-02A	55-522574	4794.132	06/01/05	342.4	4451.73
TM-02A	55-522574	4794.132	09/01/05	343.1	4451.03
TM-02A	55-522574	4794.132	11/01/05	343.3	4450.83
TM-02A	55-522574	4794.132	02/01/06	343.3	4450.83
TM-02A	55-522574	4794.132	05/01/06	343.3	4450.83
TM-02A	55-522574	4794.132	08/01/06	344.1	4450.03
TM-02A	55-522574	4794.132	11/01/06	344.85	4449.28
TM-02A	55-522574	4794.132	02/01/07	345	4449.13
TM-02A	55-522574	4794.132	06/01/07	345.9	4448.23
TM-02A	55-522574	4794.132	09/28/07	346.1	4448.03
TM-02A	55-522574		12/18/07	346.2	
TM-03	55-522575		10/18/88		4762.79
TM-03	55-522575		01/27/89		4762.65
TM-03	55-522575		03/01/89		4762.19
TM-03	55-522575		04/06/89		4761.94
TM-03	55-522575		05/02/89		4761.64
TM-03	55-522575		06/01/89		4761.54
TM-03	55-522575		07/13/89		4761.19
TM-03	55-522575		09/06/89	114	4766.58
TM-03	55-522575		10/22/89		4760.79
TM-03	55-522575		11/06/89		4765.93
TM-03	55-522575		12/01/89	113.85	4764.95
TM-03	55-522575		01/01/90	113.8	4765
TM-03	55-522575		02/01/90	113.4	4765.4
TM-03	55-522575		03/01/90	113.97	4764.83
TM-03	55-522575		04/01/90	114.3	4764.5
TM-03	55-522575		01/05/94		4771.29
TM-03	55-522575		06/25/96		4759.95
TM-03	55-522575		06/27/96		4760.1
TM-03	55-522575		08/22/96		4760.05
TM-03	55-522575		09/25/96		4760.1
TM-03	55-522575		10/29/96		4760.35
TM-03	55-522575		12/19/96		4760.1
TM-03	55-522575		01/29/97		4759.6
TM-03	55-522575		02/27/97		4759.4
TM-03	55-522575		04/16/97		4758.8
TM-03	55-522575		10/10/97		4647.7
TM-03	55-522575		01/05/98		4647.4
TM-03	55-522575		05/06/98	120.7	4758.1
TM-03	55-522575		10/01/98	120	4758.8

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
TM-03	55-522575		01/25/99	119.6	4759.2
TM-03	55-522575	4883.688	06/01/99	121.45	4762.24
TM-03	55-522575	4883.688	03/01/00	118.9	4764.79
TM-03	55-522575	4883.688	06/01/00	118.4	4765.29
TM-03	55-522575	4883.688	09/01/00	117.95	4765.74
TM-03	55-522575	4883.688	12/01/00	117.6	4766.09
TM-03	55-522575	4883.688	02/01/01	118	4765.69
TM-03	55-522575	4883.688	06/01/01	118.35	4765.34
TM-03	55-522575	4883.688	10/01/01	118.7	4764.99
TM-03	55-522575	4883.688	02/01/02	119.1	4764.59
TM-03	55-522575	4883.688	06/01/02	120.8	4762.89
TM-03	55-522575	4883.688	09/01/02	121.8	4761.89
TM-03	55-522575	4883.688	11/01/02	122.2	4761.49
TM-03	55-522575	4883.688	01/01/03	122.6	4761.09
TM-03	55-522575	4883.688	05/01/03	122.85	4760.84
TM-03	55-522575	4883.688	08/01/03	123	4760.69
TM-03	55-522575	4883.688	12/01/03	123.65	4760.04
TM-03	55-522575	4883.688	02/01/04	123	4760.69
TM-03	55-522575	4883.688	05/01/04	123	4760.69
TM-03	55-522575	4883.688	08/01/04	122.85	4760.84
TM-03	55-522575	4883.688	11/01/04	122.5	4761.19
TM-03	55-522575	4883.688	02/01/05	122.6	4761.09
TM-03	55-522575	4883.688	06/01/05	122.9	4760.79
TM-03	55-522575	4883.688	09/01/05	122.8	4760.89
TM-03	55-522575	4883.688	11/01/05	122.4	4761.29
TM-03	55-522575	4883.688	02/01/06	122.45	4761.24
TM-03	55-522575	4883.688	05/01/06	122.5	4761.19
TM-03	55-522575	4883.688	08/01/06	123.9	4759.79
TM-03	55-522575	4883.688	11/01/06	124.55	4759.14
TM-03	55-522575	4883.688	02/01/07	125.1	4758.59
TM-03	55-522575	4883.688	06/01/07	126.3	4757.39
TM-03	55-522575	4883.688	09/28/07	127	4756.69
TM-03	55-522575		12/18/07	127	
TM-04	55-522693		10/18/88		4680
TM-04	55-522693		03/10/89		4678.8
TM-04	55-522693		03/13/89		4678.8
TM-04	55-522693		04/20/89		4678.37
TM-04	55-522693		05/23/89		4678.12
TM-04	55-522693		06/23/89		4677.7
TM-04	55-522693		07/24/89		4677.32
TM-04	55-522693		09/06/89		4679
TM-04	55-522693		10/22/89		4677
TM-04	55-522693		11/06/89	89.3	4681.08
TM-04	55-522693		11/06/89		4680.88
TM-04	55-522693		12/01/89	89.3	4681.08
TM-04	55-522693		01/01/90	90.55	4679.83
TM-04	55-522693		02/01/90	90.6	4679.78
TM-04	55-522693		03/01/90	91.2	4679.18
TM-05 MILLER	55-522694		10/18/88		4465.32
TM-05 MILLER	55-522694		02/08/89		4465.26
TM-05 MILLER	55-522694		03/09/89		4465.17
TM-05 MILLER	55-522694		04/18/89		4465.1
TM-05 MILLER	55-522694		05/18/89		4465.11
TM-05 MILLER	55-522694		06/22/89		4464.99
TM-05 MILLER	55-522694		07/19/89		4464.82
TM-05 MILLER	55-522694		09/06/89		4464.27
TM-05 MILLER	55-522694		10/22/89		4464.62

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
TM-05 MILLER	55-522694	4598.06	11/06/89	132.85	4465.21
TM-05 MILLER	55-522694		11/06/89		4464.42
TM-05 MILLER	55-522694		12/01/89	133.2	4464.86
TM-05 MILLER	55-522694		04/01/90	133.9	4464.16
TM-05 MILLER	55-522694		06/25/96		4449.65
TM-05 MILLER	55-522694		08/22/96		4449.2
TM-05 MILLER	55-522694		09/25/96		4448.95
TM-05 MILLER	55-522694		10/29/96		4448.7
TM-05 MILLER	55-522694		12/19/96		4448.35
TM-05 MILLER	55-522694		01/29/97		4448.2
TM-05 MILLER	55-522694		02/27/97		4448.2
TM-05 MILLER	55-522694		04/16/97		4447.85
TM-05 MILLER	55-522694		10/10/97		4446.7
TM-05 MILLER	55-522694		01/05/98		4446.45
TM-05 MILLER	55-522694		05/06/98	150.6	4446
TM-05 MILLER	55-522694		10/01/98	151.35	4445.25
TM-05 MILLER	55-522694		01/25/99	152.25	4444.35
TM-05 MILLER	55-522694	4604.463	06/01/99	153.05	4451.41
TM-05 MILLER	55-522694	4604.463	03/01/00	153.65	4450.81
TM-05 MILLER	55-522694	4604.463	06/01/00	156.25	4448.21
TM-05 MILLER	55-522694	4604.463	09/01/00	157	4447.46
TM-05 MILLER	55-522694	4604.463	12/01/00		
TM-05 MILLER	55-522694	4604.463	02/01/05		
TM-05 MILLER	55-522694	4604.463	06/01/05		
TM-05 MILLER	55-522694	4604.463	09/01/05		
TM-06 MILLER	55-522695		10/18/88		4531.8
TM-06 MILLER	55-522695		03/13/89		4531.7
TM-06 MILLER	55-522695		04/20/89		4531.7
TM-06 MILLER	55-522695		05/23/89		4531.64
TM-06 MILLER	55-522695		06/23/89		4531.65
TM-06 MILLER	55-522695		07/24/89		4531.7
TM-06 MILLER	55-522695		09/06/89		4531.65
TM-06 MILLER	55-522695		10/22/89		4531.7
TM-06 MILLER	55-522695	4690.22	11/06/89	157.7	4532.52
TM-06 MILLER	55-522695		11/06/89		4531.3
TM-06 MILLER	55-522695		01/01/90	157.55	4532.67
TM-06 MILLER	55-522695		04/01/90	157.65	4532.57
TM-06 MILLER	55-522695		06/25/96		4531
TM-06 MILLER	55-522695		08/22/96		4531
TM-06 MILLER	55-522695		09/25/96		4530.95
TM-06 MILLER	55-522695		10/29/96		4530.95
TM-06 MILLER	55-522695		12/19/96		4530.9
TM-06 MILLER	55-522695		01/29/97		4530.9
TM-06 MILLER	55-522695		02/27/97		4530.95
TM-06 MILLER	55-522695		04/16/97		4530.95
TM-06 MILLER	55-522695		10/10/97		4530.9
TM-06 MILLER	55-522695		01/05/98		4531.05
TM-06 MILLER	55-522695		05/06/98	158.4	4530.9
TM-06 MILLER	55-522695		10/01/98	158.4	4530.9
TM-06 MILLER	55-522695		01/25/99	158.4	4530.9
TM-06 MILLER	55-522695	4695.852	06/01/99	158.4	4537.45
TM-06 MILLER	55-522695	4695.852	03/01/00	158.2	4537.65
TM-06 MILLER	55-522695	4695.852	06/01/00	158.3	4537.55
TM-06 MILLER	55-522695	4695.852	09/01/00	158.4	4537.45
TM-06 MILLER	55-522695	4695.852	12/01/00	158.4	4537.45
TM-06 MILLER	55-522695	4695.852	02/01/01	158.3	4537.55
TM-06 MILLER	55-522695	4695.852	06/01/01	158.3	4537.55

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
TM-06 MILLER	55-522695	4695.852	10/01/01	158.25	4537.60
TM-06 MILLER	55-522695	4695.852	02/01/02	158.2	4537.65
TM-06 MILLER	55-522695	4695.852	06/01/02	158.3	4537.55
TM-06 MILLER	55-522695	4695.852	09/01/02	158.3	4537.55
TM-06 MILLER	55-522695	4695.852	11/01/02	158.25	4537.60
TM-06 MILLER	55-522695	4695.852	01/01/03	158.25	4537.60
TM-06 MILLER	55-522695	4695.852	05/01/03	158.3	4537.55
TM-06 MILLER	55-522695	4695.852	08/01/03	158.35	4537.50
TM-06 MILLER	55-522695	4695.852	12/01/03	158.4	4537.45
TM-06 MILLER	55-522695	4695.852	02/01/05		
TM-06 MILLER	55-522695	4695.852	06/01/05		
TM-06 MILLER	55-522695	4695.852	09/01/05	158.7	4537.15
TM-06 MILLER	55-522695	4695.852	11/01/05	158.5	4537.35
TM-06 MILLER	55-522695	4695.852	05/01/06	158.7	4537.15
TM-06 MILLER	55-522695	4695.852	08/01/06	158.7	4537.15
TM-06 MILLER	55-522695	4695.852	11/01/06	158.8	4537.05
TM-06 MILLER	55-522695	4695.852	02/01/07	158.8	4537.05
TM-06 MILLER	55-522695	4695.852	06/01/07	158.8	4537.05
TM-06 MILLER	55-522695		12/17/07	158.7	
TM-07	55-522576		10/18/88		4489.49
TM-07	55-522576		01/24/89		4493.89
TM-07	55-522576		02/27/89		4492.89
TM-07	55-522576		04/04/89		4492.16
TM-07	55-522576		05/01/89		4492.34
TM-07	55-522576		06/06/89		4490.89
TM-07	55-522576		07/12/89		4490.39
TM-07	55-522576		09/06/89		4489.39
TM-07	55-522576		10/22/89		4490.39
TM-07	55-522576	4766.15	11/06/89	276.18	4489.97
TM-07	55-522576		12/01/89	276.53	4489.62
TM-07	55-522576		01/01/90	277.3	4488.85
TM-07	55-522576		02/01/90	277.8	4488.35
TM-07	55-522576		03/01/90	278.1	4488.05
TM-07	55-522576		04/01/90	278.65	4487.5
TM-07	55-522576		07/10/90		4484.4
TM-07	55-522576		10/11/90		4483.1
TM-07	55-522576		12/04/90		4491
TM-07	55-522576		01/28/91		4481.55
TM-07	55-522576		04/16/91		4480.4
TM-07	55-522576		07/15/91		4479.2
TM-07	55-522576		10/15/91		4477.85
TM-07	55-522576		01/15/92		4476.68
TM-07	55-522576		04/06/92		4475.7
TM-07	55-522576		07/20/92		4474.5
TM-07	55-522576		10/20/92		4473.3
TM-07	55-522576		04/19/93		4471.25
TM-07	55-522576		07/19/93		4470.25
TM-07	55-522576		08/19/93		4470
TM-07	55-522576		10/19/93		4469
TM-07	55-522576		01/24/94		4468.45
TM-07	55-522576		04/12/94		4467.6
TM-07	55-522576		07/19/94		4466.7
TM-07	55-522576		10/18/94		4465.7
TM-07	55-522576		01/17/95		4464.95
TM-07	55-522576		04/18/95		4464.15
TM-07	55-522576		07/27/95		4463
TM-07	55-522576		10/17/95		4462.45

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
TM-07	55-522576		06/25/96		4460.1
TM-07	55-522576		08/22/96		4459.5
TM-07	55-522576		10/29/96		4459.1
TM-07	55-522576		12/19/96		4458.55
TM-07	55-522576		01/29/97		4458.2
TM-07	55-522576		02/27/97		4458.1
TM-07	55-522576		04/16/97		4457.55
TM-07	55-522576		07/01/97		4456.8
TM-07	55-522576		10/10/97		4456.35
TM-07	55-522576		01/05/98		4455.9
TM-07	55-522576		05/06/98	309.75	4454.75
TM-07	55-522576		10/01/98	310.15	4454.35
TM-07	55-522576		01/25/99	311.7	4452.8
TM-07	55-522576	4768.927	06/01/99	312.85	4456.08
TM-07	55-522576	4768.927	03/01/00	313.5	4455.43
TM-07	55-522576	4768.927	06/01/00	314	4454.93
TM-07	55-522576	4768.927	09/01/00	314.8	4454.13
TM-07	55-522576	4768.927	12/01/00	315.8	4453.13
TM-07	55-522576	4768.927	02/01/01	315.95	4452.98
TM-07	55-522576	4768.927	06/01/01	316.7	4452.23
TM-07	55-522576	4768.927	10/01/01	317.25	4451.68
TM-07	55-522576	4768.927	02/01/02	318.4	4450.53
TM-07	55-522576	4768.927	06/01/02	319.3	4449.63
TM-07	55-522576	4768.927	09/01/02	319.7	4449.23
TM-07	55-522576	4768.927	11/01/02	319.9	4449.03
TM-07	55-522576	4768.927	02/01/05		
TM-07	55-522576	4768.927	06/01/05		
TM-08 SWAN	55-522817		03/01/89	654.65	4055.84
TM-08 SWAN	55-522817		04/01/89	591.28	4119.21
TM-08 SWAN	55-522817		05/01/89	592	4118.49
TM-08 SWAN	55-522817		06/01/89	592.37	4118.12
TM-08 SWAN	55-522817		07/01/89	592.75	4117.74
TM-08 SWAN	55-522817		08/01/89	591.35	4119.14
TM-08 SWAN	55-522817		09/01/89	591.5	4118.99
TM-08 SWAN	55-522817		11/01/89	591.4	4119.09
TM-08 SWAN	55-522817		11/06/89	591.45	4119.04
TM-08 SWAN	55-522817		04/01/90	592.23	4118.26
TM-09	55-522577	4889.12	03/01/89	766.1	4123.02
TM-09	55-522577	4889.12	03/14/89	766.1	4123.02
TM-09	55-522577	4889.12	04/01/90	772.4	4116.72
TM-10 USBP	55-522696		10/18/88		4492.22
TM-10 USBP	55-522696		01/30/89		4482.67
TM-10 USBP	55-522696		03/02/89		4482.42
TM-10 USBP	55-522696		04/07/89		4482.22
TM-10 USBP	55-522696		05/02/89		4482.72
TM-10 USBP	55-522696		06/07/89		4481.77
TM-10 USBP	55-522696		07/14/89		4481.31
TM-10 USBP	55-522696		09/06/89		4481.22
TM-10 USBP	55-522696		10/22/89		4481.22
TM-10 USBP	55-522696		11/06/89		4481.42
TM-10 USBP	55-522696		12/01/89	260.5	4480.68
TM-10 USBP	55-522696		01/01/90	261.5	4479.68
TM-10 USBP	55-522696		02/01/90	261	4480.18
TM-10 USBP	55-522696		03/01/90	260.95	4480.23
TM-10 USBP	55-522696		04/01/90	263.5	4479.83
TM-10 USBP	55-522696		01/25/94		4471.02
TM-10 USBP	55-522696		06/20/96		4465.12

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
TM-11 PIONKE	55-522815		10/18/88		4461.04
TM-11 PIONKE	55-522815		01/24/89		4460.69
TM-11 PIONKE	55-522815		02/27/89		4460.34
TM-11 PIONKE	55-522815		04/04/89		4459.79
TM-11 PIONKE	55-522815		05/01/89		4459.29
TM-11 PIONKE	55-522815		06/06/89		4458.92
TM-11 PIONKE	55-522815		07/12/89		4458.14
TM-11 PIONKE	55-522815		09/06/89		4457.84
TM-11 PIONKE	55-522815		10/22/89		4458.44
TM-11 PIONKE	55-522815		11/06/89		4459.69
TM-11 PIONKE	55-522815	4573.1	12/01/89	112.4	4460.7
TM-11 PIONKE	55-522815	4573.1	01/01/90	112.65	4460.45
TM-11 PIONKE	55-522815	4573.1	02/01/90	112.75	4460.35
TM-11 PIONKE	55-522815	4573.1	03/01/90	112.95	4460.15
TM-11 PIONKE	55-522815	4573.1	04/01/90	113.45	4459.65
TM-12 MILLER	55-522697		10/18/88		4461.99
TM-12 MILLER	55-522697		02/08/89		4462.19
TM-12 MILLER	55-522697		03/16/89		4461.79
TM-12 MILLER	55-522697		04/18/89		4461.49
TM-12 MILLER	55-522697		05/18/89		4461.69
TM-12 MILLER	55-522697		06/22/89		4460.42
TM-12 MILLER	55-522697		07/19/89		4459.84
TM-12 MILLER	55-522697		09/06/89		4459.29
TM-12 MILLER	55-522697		10/22/89		4459.49
TM-12 MILLER	55-522697		11/06/89		4459.06
TM-12 MILLER	55-522697		01/01/90	130.65	4458.79
TM-12 MILLER	55-522697		04/01/90	132.25	4457.19
TM-12 MILLER	55-522697		06/25/96		4443.3
TM-12 MILLER	55-522697		08/22/96		4443.15
TM-12 MILLER	55-522697		09/25/96		4443.2
TM-12 MILLER	55-522697		10/29/96		4442.9
TM-12 MILLER	55-522697		12/19/96		4443.05
TM-12 MILLER	55-522697		01/29/97		4443.3
TM-12 MILLER	55-522697		02/27/97		4443.2
TM-12 MILLER	55-522697		04/16/97		4442.6
TM-12 MILLER	55-522697		10/10/97		4440.7
TM-12 MILLER	55-522697		01/05/98		4441.1
TM-12 MILLER	55-522697		05/06/98	149	4441.5
TM-13 MILLER	55-522698		10/18/88		4461.43
TM-13 MILLER	55-522698		02/01/89		4461.38
TM-13 MILLER	55-522698		03/02/89		4460.93
TM-13 MILLER	55-522698		04/17/89		4460.53
TM-13 MILLER	55-522698		05/17/89		4460.63
TM-13 MILLER	55-522698		06/19/89		4459.73
TM-13 MILLER	55-522698		07/18/89		4459.33
TM-13 MILLER	55-522698		09/06/89		4458.58
TM-13 MILLER	55-522698		10/22/89		4458.93
TM-13 MILLER	55-522698		11/06/89	155.7	4461.59
TM-13 MILLER	55-522698		01/01/90	156.43	4460.86
TM-13 MILLER	55-522698		04/01/90	157.27	4460.02
TM-13 MILLER	55-522698		01/26/94		4445.73
TM-13 MILLER	55-522698		11/29/01		4447.3
TM-14 NELSON	55-522816		10/18/88		4454.26
TM-14 NELSON	55-522816		03/10/89		4453.71
TM-14 NELSON	55-522816		04/18/89		4453.36
TM-14 NELSON	55-522816		05/18/89		4453.61
TM-14 NELSON	55-522816		06/19/89		4452.58

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
TM-14 NELSON	55-522816		07/18/89		4452.21
TM-14 NELSON	55-522816		09/06/89		4452.01
TM-14 NELSON	55-522816		10/22/89		4452.51
TM-14 NELSON	55-522816		11/06/89	180.65	4448.52
TM-14 NELSON	55-522816		01/01/90	180.95	4445.28
TM-14 NELSON	55-522816		04/01/90	181.55	4444.68
TM-15 MILLER	55-522699		10/18/88		4443.9
TM-15 MILLER	55-522699		02/08/89		4443.65
TM-15 MILLER	55-522699		03/09/89		4443.4
TM-15 MILLER	55-522699		04/18/89		4443.35
TM-15 MILLER	55-522699		05/19/89		4443.32
TM-15 MILLER	55-522699		06/19/89		4442.97
TM-15 MILLER	55-522699		07/20/89		4442.7
TM-15 MILLER	55-522699		09/06/89		4442.25
TM-15 MILLER	55-522699		10/22/89		4442.9
TM-15 MILLER	55-522699		11/06/89	268.23	4443.42
TM-15 MILLER	55-522699		12/01/89	267.03	4441.87
TM-15 MILLER	55-522699		02/01/90	267.25	4441.65
TM-15 MILLER	55-522699		04/01/90	267.7	4441.2
TM-15 MILLER	55-522699		06/25/96		4429.3
TM-15 MILLER	55-522699		10/29/96		4428.65
TM-15 MILLER	55-522699	4712.787	06/01/99	284.9	4427.89
TM-15 MILLER	55-522699	4712.787	03/01/00	285.5	4427.29
TM-15 MILLER	55-522699	4712.787	06/01/00	286	4426.79
TM-15 MILLER	55-522699	4712.787	09/01/00	286.4	4426.39
TM-15 MILLER	55-522699	4712.787	12/01/00	286.9	4425.89
TM-15 MILLER	55-522699	4712.787	02/01/01	287.15	4425.64
TM-15 MILLER	55-522699	4712.787	06/01/01	287.6	4425.19
TM-15 MILLER	55-522699	4712.787	10/01/01	288.2	4424.59
TM-15 MILLER	55-522699	4712.787	02/01/02	288.8	4423.99
TM-15 MILLER	55-522699	4712.787	06/01/02	289.2	4423.59
TM-15 MILLER	55-522699	4712.787	09/01/02	289.4	4423.39
TM-15 MILLER	55-522699	4712.787	11/01/02	289.6	4423.19
TM-15 MILLER	55-522699	4712.787	02/01/05		
TM-15 MILLER	55-522699	4712.787	06/01/05		
TM-15 MILLER	55-522699	4712.787	05/01/06	294.7	4418.09
TM-15 MILLER	55-522699	4712.787	08/01/06	295	4417.79
TM-15 MILLER	55-522699	4712.787	11/01/06	295	4417.79
TM-15 MILLER	55-522699	4712.787	02/01/07	295	4417.79
TM-15 MILLER	55-522699	4712.787	06/01/07	295	4417.79
TM-15 MILLER	55-522699		12/17/07	295	
TM-16	55-522578		10/18/88		4620.44
TM-16	55-522578		01/27/89		4620.39
TM-16	55-522578		03/01/89		4624.3
TM-16	55-522578		04/06/89		4624.1
TM-16	55-522578		05/03/89		4624
TM-16	55-522578		06/01/89		4623.9
TM-16	55-522578		07/13/89		4623.67
TM-16	55-522578		08/08/89		4623.5
TM-16	55-522578		09/08/89		4621.25
TM-16	55-522578		10/11/89		4621.6
TM-16	55-522578		10/22/89		4624.04
TM-16	55-522578		11/06/89		4621.52
TM-16	55-522578		11/09/89		4622.7
TM-16	55-522578		11/13/89		4621.52
TM-16	55-522578		12/07/89		4621.5
TM-16	55-522578		01/04/90		4621.4

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
TM-16	55-522578		02/07/90		4621.3
TM-16	55-522578		03/07/90		4621.2
TM-16	55-522578		04/03/90		4621.1
TM-16	55-522578		07/11/90		4620.75
TM-16	55-522578		10/17/90		4620.4
TM-16	55-522578		01/29/91		4620.1
TM-16	55-522578		04/16/91		4620.8
TM-16	55-522578		07/16/91		4619.4
TM-16	55-522578		10/14/91		4620.5
TM-16	55-522578		01/15/92		4618.8
TM-16	55-522578		04/06/92		4618.45
TM-16	55-522578		01/11/93		4617.4
TM-16	55-522578		04/19/93		4617
TM-16	55-522578		07/21/93		4616.7
TM-16	55-522578		10/19/93		4616.1
TM-16	55-522578		01/05/94		4616.1
TM-16	55-522578		01/24/94		4615.9
TM-16	55-522578		04/12/94		4615.7
TM-16	55-522578		07/19/94		4615.3
TM-16	55-522578		01/17/95		4615
TM-16	55-522578		04/18/95		4615.5
TM-16	55-522578		07/27/95		4615.4
TM-16	55-522578		10/17/95		4615.3
TM-16	55-522578		06/25/96		4615
TM-16	55-522578		08/22/96		4615
TM-16	55-522578		09/25/96		4615.4
TM-16	55-522578		10/29/96		4615.65
TM-16	55-522578		12/19/96		4616
TM-16	55-522578		01/29/97		4616.1
TM-16	55-522578		02/27/97		4616.15
TM-16	55-522578		04/16/97		4616.05
TM-16	55-522578		07/01/97		4615.9
TM-16	55-522578		10/10/97		4615.65
TM-16	55-522578		11/06/97		4615.6
TM-16	55-522578		01/05/98		4615.8
TM-16	55-522578		05/06/98	82.3	4616.7
TM-16	55-522578		10/01/98	81.5	4617.5
TM-16	55-522578		01/25/99	80.65	4618.35
TM-16	55-522578	4705.54	06/01/99	80.8	4624.74
TM-16	55-522578	4705.54	03/01/00	79.25	4626.29
TM-16	55-522578	4705.54	06/01/00	78.55	4626.99
TM-16	55-522578	4705.54	09/01/00	77.65	4627.89
TM-16	55-522578	4705.54	12/01/00	77.1	4628.44
TM-16	55-522578	4705.54	02/01/01	76.95	4628.59
TM-16	55-522578	4705.54	06/01/01	76.55	4629.09
TM-16	55-522578	4705.54	10/01/01	76.2	4629.34
TM-16	55-522578	4705.54	02/01/02	76	4629.54
TM-16	55-522578	4705.54	06/01/02	76.45	4629.09
TM-16	55-522578	4705.54	09/01/02	76.5	4629.04
TM-16	55-522578	4705.54	11/01/02	76.6	4628.94
TM-16	55-522578	4705.54	01/01/03	76.6	4628.94
TM-16	55-522578	4705.54	05/01/03	77.3	4628.24
TM-16	55-522578	4705.54	08/01/03	77.85	4627.69
TM-16	55-522578	4705.54	12/01/03	78.1	4627.44
TM-16	55-522578	4705.54	02/01/04	78.45	4627.09
TM-16	55-522578	4705.54	05/01/04	78.8	4626.74
TM-16	55-522578	4705.54	08/01/04	79	4626.54

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
TM-16	55-522578	4705.54	11/01/04	79.3	4626.24
TM-16	55-522578	4705.54	02/01/05	79.5	4626.04
TM-16	55-522578	4705.54	06/01/05	79.8	4625.74
TM-16	55-522578	4705.54	09/01/05	79.75	4621.37
TM-16	55-522578	4705.54	11/01/05	79.75	4621.37
TM-16	55-522578	4705.54	02/01/06	79.9	4621.22
TM-16	55-522578	4705.54	05/01/06	80.3	4625.24
TM-16	55-522578	4705.54	08/01/06	77.85	4623.27
TM-16	55-522578	4705.54	11/01/06	80.8	4620.32
TM-16	55-522578	4705.54	02/01/07	80.75	4620.37
TM-16	55-522578	4705.54	06/01/07	80.8	4620.32
TM-16	55-522578	4705.54	09/28/07	80.9	4620.22
TM-16	55-522578		12/18/07	80.9	
TM-17	55-522700		10/18/88		4468.37
TM-17	55-522700		02/06/89		4468.17
TM-17	55-522700		03/08/89		4467.87
TM-17	55-522700		04/17/89		4467.63
TM-17	55-522700		05/17/89		4467.67
TM-17	55-522700		06/22/89		4467.22
TM-17	55-522700		07/19/89		4467.02
TM-17	55-522700		09/06/89		4466.72
TM-17	55-522700		10/22/89		4466.57
TM-17	55-522700		11/06/89		4467.54
TM-17	55-522700		01/01/90	162.15	4468.85
TM-17	55-522700		04/01/90	162.8	4468.2
TM-17	55-522700		01/26/94		4455.07
TM-18	55-522579		02/01/89	653.7	4486.87
TM-18	55-522579		03/01/89	654.65	4485.92
TM-18	55-522579		04/01/89	655.25	4485.32
TM-18	55-522579		05/01/89	655.3	4485.27
TM-18	55-522579		06/01/89	655.83	4484.74
TM-18	55-522579		07/01/89	656.32	4484.25
TM-18	55-522579		08/01/89	656.22	4484.35
TM-18	55-522579		09/01/89	657	4483.57
TM-18	55-522579		10/01/89	657.9	4482.67
TM-18	55-522579		11/06/89	658.1	4482.47
TM-18	55-522579		12/01/89	656.05	4484.52
TM-18	55-522579		04/01/90	655.45	4485.12
TM-19	55-522581		10/18/88		4473.04
TM-19	55-522581		01/30/89		4471.99
TM-19	55-522581		03/01/89		4471.44
TM-19	55-522581		04/07/89		4471.29
TM-19	55-522581		05/02/89		4471.04
TM-19	55-522581		06/09/89		4470.44
TM-19	55-522581		07/13/89		4469.89
TM-19	55-522581		09/06/89		4469.19
TM-19	55-522581		10/22/89		4470.04
TM-19	55-522581		11/06/89	157.5	4469.36
TM-19	55-522581		12/01/89	157.6	4469.26
TM-19	55-522581		01/01/90	157.3	4469.56
TM-19	55-522581		02/01/90	157.4	4469.46
TM-19	55-522581		03/08/90		4467.15
TM-19	55-522581		04/04/90		4466.8
TM-19	55-522581		07/30/90		4465.34
TM-19	55-522581		10/19/90		4464.55
TM-19	55-522581		01/31/91		4463.6
TM-19	55-522581		04/16/91		4463

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
TM-19	55-522581		06/24/91		4462.25
TM-19	55-522581		06/27/91		4462.25
TM-19	55-522581		07/16/91		4462
TM-19	55-522581		10/14/91		4461
TM-19	55-522581		01/15/92		4460.2
TM-19	55-522581		04/06/92		4459.6
TM-19	55-522581		01/11/93		4457.35
TM-19	55-522581		01/24/93		4454.55
TM-19	55-522581		04/19/93		4456.75
TM-19	55-522581		07/21/93		4456
TM-19	55-522581		10/19/93		4455.1
TM-19	55-522581		11/23/93		4455
TM-19	55-522581		01/04/94		4454.7
TM-19	55-522581		01/24/94		4454.6
TM-19	55-522581		04/12/94		4454.1
TM-19	55-522581		07/19/94		4453.3
TM-19	55-522581		10/18/94		4452.55
TM-19	55-522581		01/17/95		4452
TM-19	55-522581		10/17/95		4450
TM-19	55-522581		06/25/96		4448.1
TM-19	55-522581		08/22/96		4448.05
TM-19	55-522581		09/25/96		4447.2
TM-19	55-522581		10/29/96		4447.15
TM-19A	55-522580		01/30/89		4472.34
TM-19A	55-522580		03/01/89		4471.94
TM-19A	55-522580		04/07/89		4471.49
TM-19A	55-522580		05/02/89		4471.14
TM-19A	55-522580		06/09/89		4470.74
TM-19A	55-522580		07/13/89		4470.24
TM-19A	55-522580		09/06/89		4469.54
TM-19A	55-522580		10/22/89		4470.04
TM-19A	55-522580		11/06/89	157.25	4470.07
TM-19A	55-522580		12/01/89	157.25	4470.07
TM-19A	55-522580		01/01/90	158	4469.32
TM-19A	55-522580		02/01/90	157.9	4469.42
TM-19A	55-522580		03/01/90	158.7	4468.62
TM-19A	55-522580		04/01/90	158.7	4468.62
TM-19A	55-522580		12/04/90		4482
TM-19A	55-522580		01/04/94		4454.6
TM-19A	55-522580		06/25/96		4447.93
TM-19A	55-522580		08/22/96		4447.4
TM-19A	55-522580		09/25/96		4447
TM-19A	55-522580		10/29/96		4447
TM-19A	55-522580		12/19/96		4446.5
TM-19A	55-522580		01/29/97		4446.4
TM-19A	55-522580		02/27/97		4446.3
TM-19A	55-522580		04/16/97		4445.8
TM-19A	55-522580		10/10/97		4444.5
TM-19A	55-522580		01/05/98		4443.9
TM-19A	55-522580		05/06/98	182.6	4443.4
TM-19A	55-522580		10/01/98	183.55	4442.45
TM-19A	55-522580		01/25/99	184.6	4441.4
TM-19A	55-522580	4632.45	06/01/99	185.45	4446.98
TM-19A	55-522580	4632.45	03/01/00	186.2	4446.25
TM-19A	55-522580	4632.45	06/01/00	186.95	4445.5
TM-19A	55-522580	4632.45	09/01/00	187.6	4444.85
TM-19A	55-522580	4632.45	12/01/00	188	4444.45

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
TM-19A	55-522580	4632.45	02/01/01	188.4	4444.05
TM-19A	55-522580	4632.45	06/01/01	188.95	4443.5
TM-19A	55-522580	4632.45	10/01/01	189.55	4442.9
TM-19A	55-522580	4632.45	02/01/02	190.25	4442.2
TM-19A	55-522580	4632.45	06/01/02	191.3	4441.15
TM-19A	55-522580	4632.45	09/01/02	191.5	4440.95
TM-19A	55-522580	4632.45	11/01/02	191.9	4440.55
TM-19A	55-522580	4632.45	01/01/03	192	4440.45
TM-19A	55-522580	4632.45	05/01/03	192.4	4440.05
TM-19A	55-522580	4632.45	08/01/03	192.85	4439.6
TM-19A	55-522580	4632.45	12/01/03	193.2	4439.25
TM-19A	55-522580	4632.45	02/01/04	193.8	4438.65
TM-19A	55-522580	4632.45	05/01/04	194.05	4438.4
TM-19A	55-522580	4632.45	08/01/04	194.8	4437.65
TM-19A	55-522580	4632.45	11/01/04	195.7	4436.75
TM-19A	55-522580	4632.45	02/01/05	195.9	4436.55
TM-19A	55-522580	4632.45	06/01/05	196.2	4436.25
TM-19A	55-522580	4632.45	09/01/05	196.95	4435.5
TM-19A	55-522580	4632.45	11/01/05	198.3	4434.15
TM-19A	55-522580	4632.45	02/01/06	197	4435
TM-19A	55-522580	4632.45	05/01/06	196.4	4436.05
TM-19A	55-522580	4632.45	08/01/06	197	4435
TM-19A	55-522580	4632.45	11/01/06	197.7	4434.75
TM-19A	55-522580	4632.45	02/01/07	198	4434
TM-19A	55-522580	4632.45	06/01/07	198.5	4433.95
TM-19A	55-522580	4632.45	09/28/07	199.5	4432.95
TM-19A	55-522580		12/17/07	198.6	
TM-21	55-525148		11/06/89	333.08	4820.28
TM-22	55-525146		11/07/89	924.12	4152.96
TM-22	55-525146		12/01/89	930.65	4146.43
TM-22	55-525146		03/01/90	944.66	4132.42
TM-23	55-525555		10/01/89	160.75	4800.75
TM-23	55-525555		11/07/89	160.65	4800.85
TM-23	55-525555		12/01/89	160.65	4800.85
TM-23	55-525555		01/01/90	160.65	4800.85
TM-23	55-525555		02/01/90	160.7	4800.8
TM-23	55-525555		04/01/90	160.7	4800.8
TM-24	55-525547		10/01/89	56.95	4852.9
TM-24	55-525547		11/07/89	56.61	4853.24
TM-24	55-525547		12/01/89	56.3	4853.55
TM-24	55-525547		01/01/90	56.95	4852.9
TM-24	55-525547		02/01/90	57.3	4852.55
TM-24	55-525547		04/01/90	57.7	4852.15
TM-27	55-525143		10/01/89	302.15	4538.51
TM-27	55-525143		10/22/89		4533.16
TM-27	55-525143		11/07/89		4535.28
TM-27	55-525143		11/07/89	304.49	4536.17
TM-27	55-525143		01/01/90	304.4	4536.26
TM-27	55-525143		04/01/90	305	4535.66
TM-28	55-525142		09/06/89		4748.7
TM-28	55-525142		10/22/89		4751.12
TM-28	55-525142		11/06/89		4748.89
TM-28	55-525142		11/06/89	62.68	4750.59
TM-28	55-525142		01/01/90	63.4	4749.87
TM-28	55-525142		04/01/90	64.65	4748.62
TM-29	55-525141		09/06/89		4667.43
TM-29	55-525141		10/22/89		4667.28

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
TM-29	55-525141		11/06/89		4671.6
TM-29	55-525141		11/06/89	87.05	4672.58
TM-29	55-525141		12/01/89	87.6	4672.03
TM-29	55-525141		01/01/90	88.7	4670.93
TM-29	55-525141		02/01/90	89.75	4669.88
TM-29	55-525141		03/01/90	90.65	4668.98
TM-29	55-525141		04/01/90	91.65	4667.98
TM-29A	55-525137		11/06/89	86.12	4671.96
TM-29B	55-525136		11/06/89	85.65	4671.96
TM-30	55-525548		10/22/89		4478
TM-30	55-525548		11/06/89		4474.39
TM-30	55-525548		11/07/89	162.82	4473.07
TM-30A	55-525558		10/01/89	162	4474.92
TM-30A	55-525558		11/01/89	160.2	4476.72
TM-30A	55-525558		11/07/89	160.37	4476.55
TM-30A	55-525558		04/01/90	161.3	4475.62
TM-30B	55-525559		11/07/89	164.57	4472.17
TM-30B	55-525559		12/01/89	165	4471.74
TM-30B	55-525559		03/01/90	166.11	4470.63
TM-33	55-525140		11/07/89	488.22	4415.25
TM-35	55-525139		09/06/89	260.99	4637.89
TM-35	55-525139		10/22/89		4638.48
TM-35	55-525139		11/06/89		4638.79
TM-35	55-525139		01/01/90	260.65	4638.23
TM-35	55-525139		04/01/90	260.55	4638.33
TM-37	55-525552		10/22/89		4472.18
TM-37	55-525552		11/07/89		4474.26
TM-37	55-525552		11/07/89	191.9	4478.96
TM-37	55-525552		02/01/90	192.25	4478.61
TM-38	55-525553		10/22/89		4477.45
TM-38	55-525553		11/06/89	187.2	4480.77
TM-38	55-525553		11/06/89		4479.04
TM-38	55-525553		02/01/90	188.75	4479.22
TM-39	55-525554		11/06/89	157.19	4514.32
TM-39	55-525554		12/01/89	157.7	4513.81
TM-39	55-525554		03/01/90	158.87	4512.64
TM-41	55-562555		07/01/97	156.95	4603.05
TM-41	55-562555		10/10/97	161.8	4598.2
TM-41	55-562555		11/06/97	161.7	4598.3
TM-41	55-562555		01/05/98	163.1	4596.9
TM-41	55-562555		05/06/98	165.2	4594.8
TM-41	55-562555		10/01/98	166.65	4593.35
TM-41	55-562555		01/25/99	167.9	4592.1
TM-41	55-562555	4760.958	06/01/99	170.4	4590.56
TM-41	55-562555	4760.958	03/01/00	171.5	4589.46
TM-41	55-562555	4760.958	06/01/00	170.5	4590.46
TM-41	55-562555	4760.958	09/01/00	169.1	4591.86
TM-41	55-562555	4760.958	12/01/00	167	4593.96
TM-41	55-562555	4760.958	02/01/01	165.2	4595.76
TM-41	55-562555	4760.958	06/01/01	164.55	4596.41
TM-41	55-562555	4760.958	10/01/01	163.75	4597.21
TM-41	55-562555	4760.958	02/01/02	162.45	4598.51
TM-41	55-562555	4760.958	06/01/02	165	4595.96
TM-41	55-562555	4760.958	09/01/02	167.4	4593.56
TM-41	55-562555	4760.958	11/01/02	168.2	4592.76
TM-41	55-562555	4760.958	01/01/03	169.8	4591.16
TM-41	55-562555	4760.958	05/01/03	171.6	4589.36

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
TM-41	55-562555	4760.958	08/01/03	173.05	4587.91
TM-41	55-562555	4760.958	12/01/03	177.9	4583.06
TM-41	55-562555	4760.958	02/01/04	179.9	4581.06
TM-41	55-562555	4760.958	05/01/04	182.7	4578.26
TM-41	55-562555	4760.958	08/01/04	185.2	4575.76
TM-41	55-562555	4760.958	11/01/04	188.1	4572.86
TM-41	55-562555	4760.958	02/01/05	188.4	4572.56
TM-41	55-562555	4760.958	06/01/05	188.75	4572.21
TM-41	55-562555	4760.958	09/01/05	188.85	4572.11
TM-41	55-562555	4760.958	11/01/05	189.2	4571.76
TM-41	55-562555	4760.958	02/01/06	190.15	4570.81
TM-41	55-562555	4760.958	05/01/06	193.1	4567.86
TM-41	55-562555	4760.958	08/01/06		
TM-42	55-562554		07/01/97	194.933	4459.1
TM-42	55-562554		10/10/97	190.42	4469.58
TM-42	55-562554		11/06/97	196.783	4457.25
TM-42	55-562554		01/05/98	196.983	4457.05
TM-42	55-562554		05/06/98	191.95	4468.05
TM-42	55-562554		10/10/98	196.403	4457.63
TM-42	55-562554		01/25/99	193.5	4466.5
TM-42	55-562554	4654.033	06/01/99	196.3	4457.73
TM-42	55-562554	4654.033	03/01/00	197.1	4456.93
TM-42	55-562554	4654.033	06/01/00	198.1	4455.93
TM-42	55-562554	4654.033	09/01/00	198.65	4455.38
TM-42	55-562554	4654.033	12/01/00	199	4455.03
TM-42	55-562554	4654.033	02/01/01	199.3	4454.73
TM-42	55-562554	4654.033	06/01/01	199.95	4454.08
TM-42	55-562554	4654.033	10/01/01	200.85	4453.18
TM-42	55-562554	4654.033	02/01/02	201.45	4452.58
TM-42	55-562554	4654.033	06/01/02	202.35	4451.68
TM-42	55-562554	4654.033	09/01/02	202.8	4451.23
TM-42	55-562554	4654.033	11/01/02	203	4451.03
TM-42	55-562554	4654.033	01/01/03	203.1	4450.93
TM-42	55-562554	4654.033	05/01/03	203.7	4450.33
TM-42	55-562554	4654.033	08/01/03	204.1	4449.93
TM-42	55-562554	4654.033	12/01/03	204.8	4449.23
TM-42	55-562554	4654.033	02/01/04	205.1	4448.93
TM-42	55-562554	4654.033	05/01/04	205.6	4448.43
TM-42	55-562554	4654.033	08/01/04	205.95	4448.08
TM-42	55-562554	4654.033	11/01/04	206.15	4447.83
TM-42	55-562554	4654.033	02/01/05	206.3	4447.73
TM-42	55-562554	4654.033	06/01/05	206.7	4447.33
TM-42	55-562554	4654.033	09/01/05	207	4447.03
TM-42	55-562554	4654.033	11/01/05	207.6	4446.43
TM-42	55-562554	4654.033	02/01/06	208	4446.03
TM-42	55-562554	4654.033	05/01/06	208.4	4445.63
TM-42	55-562554	4654.033	08/01/06	208.9	4445.13
TM-42	55-562554	4654.033	11/01/06	209.35	4444.68
TM-42	55-562554	4654.033	02/01/07	209.6	4444.43
TM-42	55-562554	4654.033	06/01/07	209.9	4444.13
TM-42	55-562554	4654.033	09/28/07	210.25	4443.78
TM-42	55-562554		12/17/07	210.65	
TM-43	55-564729		01/05/98	147.05	4806.6
TM-43	55-564729		01/26/98	147.2	4806.45
TM-43	55-564729		05/06/98	148.65	4805
TM-43	55-564729		10/01/98	148	4805.65
TM-43	55-564729		01/25/99	147.5	4806.15

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
TM-43	55-564729	4956.436	06/01/99	147.3	4809.14
TM-43	55-564729	4956.436	03/01/00	147.55	4808.89
TM-43	55-564729	4956.436	06/01/00	147.55	4808.89
TM-43	55-564729	4956.436	09/01/00	147.55	4808.89
TM-43	55-564729	4956.436	12/01/00	147.55	4808.89
TM-43	55-564729	4956.436	02/01/01	147.55	4808.89
TM-43	55-564729	4956.436	06/01/01	147.5	4808.94
TM-43	55-564729	4956.436	10/01/01	147.45	4808.99
TM-43	55-564729	4956.436	02/01/02	147.3	4809.14
TM-43	55-564729	4956.436	06/01/02	147.6	4808.84
TM-43	55-564729	4956.436	09/01/02	147.75	4808.69
TM-43	55-564729	4956.436	11/01/02	147.9	4808.54
TM-43	55-564729	4956.436	01/01/03	148.1	4808.34
TM-43	55-564729	4956.436	05/01/03	148.2	4808.24
TM-43	55-564729	4956.436	08/01/03	148.3	4808.14
TM-43	55-564729	4956.436	12/01/03	148.7	4807.74
TM-43	55-564729	4956.436	02/01/04	148.85	4807.59
TM-43	55-564729	4956.436	05/01/04	148.9	4807.54
TM-43	55-564729	4956.436	08/01/04	149.05	4807.39
TM-43	55-564729	4956.436	11/01/04	149.3	4807.14
TM-43	55-564729	4956.436	02/01/05	149.45	4806.99
TM-43	55-564729	4956.436	06/01/05	149.7	4806.74
TM-43	55-564729	4956.436	09/01/05	149.8	4806.64
TM-43	55-564729	4956.436	11/01/05	149.9	4806.54
TM-43	55-564729	4956.436	02/01/06	149.7	4806.74
TM-43	55-564729	4956.436	05/01/06	149.8	4806.64
TM-43	55-564729	4956.436	08/01/06	149.8	4806.64
TM-43	55-564729	4956.436	11/01/06	149.5	4806.94
TM-43	55-564729	4956.436	02/01/07	149.55	4806.89
TM-43	55-564729	4956.436	06/01/07	149.4	4807.04
TM-43	55-564729	4956.436	09/28/07	149.3	4807.14
TM-43	55-564729		12/18/07	149.2	
TM-43A	55-564726		01/05/98	133	4819.03
TM-43A	55-564726		01/26/98	133.1	4818.93
TM-43A	55-564726		05/06/98	133	4819.03
TM-43A	55-564726		10/01/98	133.85	4818.18
TM-43A	55-564726		01/25/99	132.7	4819.33
TM-43A	55-564726	4954.672	06/01/99	132.95	4821.72
TM-43A	55-564726	4954.672	03/01/00	132.8	4821.87
TM-43A	55-564726	4954.672	06/01/00	132.7	4821.97
TM-43A	55-564726	4954.672	09/01/00	132.65	4822.02
TM-43A	55-564726	4954.672	12/01/00	132.65	4822.02
TM-43A	55-564726	4954.672	02/01/01	132.5	4822.17
TM-43A	55-564726	4954.672	06/01/01	132.35	4822.32
TM-43A	55-564726	4954.672	10/01/01	132.2	4822.47
TM-43A	55-564726	4954.672	02/01/02	132.1	4822.57
TM-43A	55-564726	4954.672	06/01/02	132.2	4822.47
TM-43A	55-564726	4954.672	09/01/02	132.4	4822.27
TM-43A	55-564726	4954.672	11/01/02	132.7	4821.97
TM-43A	55-564726	4954.672	01/01/03	132.7	4821.97
TM-43A	55-564726	4954.672	05/01/03	132.75	4821.92
TM-43A	55-564726	4954.672	08/01/03	133	4821.67
TM-43A	55-564726	4954.672	12/01/03	133.4	4821.27
TM-43A	55-564726	4954.672	02/01/04	134.4	4820.27
TM-43A	55-564726	4954.672	05/01/04	136.25	4818.42
TM-43A	55-564726	4954.672	08/01/04	139.55	4815.12
TM-43A	55-564726	4954.672	11/01/04	143	4811.67

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
TM-43A	55-564726	4954.672	02/01/05	143.1	4811.57
TM-43A	55-564726	4954.672	06/01/05	143	4811.67
TM-43A	55-564726	4954.672	09/01/05	134.3	4820.37
TM-43A	55-564726	4954.672	11/01/05	134.3	4820.37
TM-43A	55-564726	4954.672	02/01/06	134.5	4820.17
TM-43A	55-564726	4954.672	05/01/06	134.25	4820.42
TM-43A	55-564726	4954.672	08/01/06	134.3	4820.38
TM-43A	55-564726	4954.672	11/01/06	134.2	4820.47
TM-43A	55-564726	4954.672	02/01/07	134.15	4820.52
TM-43A	55-564726	4954.672	06/01/07	134	4820.67
TM-43A	55-564726	4954.672	09/28/07	134	4820.67
TM-43A	55-564726		12/18/07	133.6	
TM-43B	55-565004		01/05/98	61.55	4842.38
TM-43B	55-565004		01/29/98	68.8	4835.13
TM-43B	55-565004		05/06/98	62.3	4841.63
TM-43B	55-565004		10/01/98	61.9	4842.03
TM-43B	55-565004		01/25/99	61.8	4842.13
TM-43B	55-565004	4907.293	06/01/99	62.6	4844.69
TM-43B	55-565004	4907.293	03/01/00	61.2	4846.09
TM-43B	55-565004	4907.293	06/01/00	61.95	4845.34
TM-43B	55-565004	4907.293	09/01/00	62.3	4844.99
TM-43B	55-565004	4907.293	12/01/00	62.6	4844.69
TM-43B	55-565004	4907.293	02/01/01	62.4	4844.89
TM-43B	55-565004	4907.293	06/01/01	61.85	4845.44
TM-43B	55-565004	4907.293	10/01/01	60.95	4846.34
TM-43B	55-565004	4907.293	02/01/02	59.45	4847.84
TM-43B	55-565004	4907.293	06/01/02	60.3	4846.99
TM-43B	55-565004	4907.293	09/01/02	60.95	4846.34
TM-43B	55-565004	4907.293	11/01/02	61.35	4845.94
TM-43B	55-565004	4907.293	01/01/03	61.75	4845.54
TM-43B	55-565004	4907.293	01/01/03	61.75	4845.54
TM-43B	55-565004	4907.293	05/01/03	62.6	4844.69
TM-43B	55-565004	4907.293	08/01/03	63.2	4844.09
TM-43B	55-565004	4907.293	12/01/03	61.35	4845.94
TM-43B	55-565004	4907.293	02/01/04	65.05	4842.24
TM-43B	55-565004	4907.293	05/01/04	65.9	4841.39
TM-43B	55-565004	4907.293	08/01/04	66.4	4840.89
TM-43B	55-565004	4907.293	11/01/04	67.8	4839.49
TM-43B	55-565004	4907.293	02/01/05	67.85	4839.44
TM-43B	55-565004	4907.293	06/01/05	67.95	4839.34
TM-43B	55-565004	4907.293	09/01/05	68.1	4839.19
TM-43B	55-565004	4907.293	11/01/05	68.8	4838.49
TM-43B	55-565004	4907.293	02/01/06	68.7	4838.59
TM-43B	55-565004	4907.293	05/01/06	68.7	4838.59
TM-43B	55-565004	4907.293	08/01/06	69.4	4837.89
TM-43B	55-565004	4907.293	11/01/06	68.65	4838.64
TM-43B	55-565004	4907.293	02/01/07	67.7	4839.59
TM-43B	55-565004	4907.293	06/01/07	67.1	4840.19
TM-43B	55-565004	4907.293	09/28/07	66.2	4841.09
TM-43B	55-565004		12/18/07	64.1	
TM-43C	55-565005		01/05/98	72.6	4865.26
TM-43C	55-565005		01/29/98	72.7	4865.16
TM-43C	55-565005		05/06/98	73.25	4864.61
TM-43C	55-565005		10/01/98	73.2	4864.66
TM-43C	55-565005		01/25/99	73.1	4864.76
TM-43C	55-565005	4940.878	06/01/99	72.55	4868.33
TM-43C	55-565005	4940.878	03/01/00	73.9	4866.98

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
TM-43C	55-565005	4940.878	06/01/00	73.55	4867.33
TM-43C	55-565005	4940.878	09/01/00	73.3	4867.58
TM-43C	55-565005	4940.878	12/01/00	73.2	4867.68
TM-43C	55-565005	4940.878	02/01/01	73.1	4867.78
TM-43C	55-565005	4940.878	06/01/01	73.05	4867.83
TM-43C	55-565005	4940.878	10/01/01	72.85	4868.03
TM-43C	55-565005	4940.878	02/01/02	72.55	4868.33
TM-43C	55-565005	4940.878	06/01/02	72.45	4868.43
TM-43C	55-565005	4940.878	09/01/02	72.6	4868.28
TM-43C	55-565005	4940.878	11/01/02	72.8	4868.08
TM-43C	55-565005	4940.878	01/01/03	72.75	4868.13
TM-43C	55-565005	4940.878	05/01/03	72.9	4867.98
TM-43C	55-565005	4940.878	08/01/03	73	4867.88
TM-43C	55-565005	4940.878	12/01/03	73.2	4867.68
TM-43C	55-565005	4940.878	02/01/04	73.2	4867.68
TM-43C	55-565005	4940.878	05/01/04	73.25	4867.63
TM-43C	55-565005	4940.878	08/01/04	73.3	4867.58
TM-43C	55-565005	4940.878	11/01/04	73.3	4867.58
TM-43C	55-565005	4940.878	02/01/05	73.3	4867.58
TM-43C	55-565005	4940.878	06/01/05	73.35	4867.53
TM-43C	55-565005	4940.878	09/01/05	73.35	4867.53
TM-43C	55-565005	4940.878	11/01/05	73.35	4867.53
TM-43C	55-565005	4940.878	02/01/06	73.4	4867.48
TM-43C	55-565005	4940.878	05/01/06	73.6	4867.28
TM-43C	55-565005	4940.878	08/01/06	73.6	4867.28
TM-43C	55-565005	4940.878	11/01/06	73.6	4867.28
TM-43C	55-565005	4940.878	02/01/07	73.5	4867.38
TM-43C	55-565005	4940.878	06/01/07	73.5	4867.38
TM-43C	55-565005	4940.878	09/28/07	73.5	4867.38
TM-43C	55-565005		12/18/07	73.6	
TM-44	55-564730		01/05/98	865.2	4178.53
TM-44	55-564730		05/06/98	861.7	4182.03
TM-44	55-564730		10/01/98	857.75	4185.98
TM-44	55-564730		01/25/99	854.9	4188.83
TM-44	55-564730	5045.6	06/01/99	851.7	4193.9
TM-44	55-564730	5045.6	03/01/00	843.7	4201.9
TM-44	55-564730	5045.6	06/01/00	834.6	4211
TM-44	55-564730	5045.6	09/01/00	829.65	4215.95
TM-44	55-564730	5045.6	12/01/00	824	4221.6
TM-44	55-564730	5045.6	02/01/01	821.75	4223.85
TM-44	55-564730	5045.6	06/01/01	818.6	4227
TM-44	55-564730	5045.6	10/01/01	815.4	4230.2
TM-44	55-564730	5045.6	02/01/02	812.3	4233.3
TM-44	55-564730	5045.6	06/01/02	812.15	4233.45
TM-44	55-564730	5045.6	09/01/02	810.3	4235.3
TM-44	55-564730	5045.6	11/01/02	808.35	4237.25
TM-44	55-564730	5045.6	01/01/03	808.45	4237.15
TM-44	55-564730	5045.6	05/01/03	808.5	4237.1
TM-44	55-564730	5045.6	08/01/03	808.55	4237.05
TM-44	55-564730	5045.6	12/01/03	808.55	4237.05
TM-44	55-564730	5045.6	02/01/04	808.85	4236.75
TM-44	55-564730	5045.6	05/01/04	809.1	4236.5
TM-44	55-564730	5045.6	08/01/04	809.3	4236.3
TM-44	55-564730	5045.6	11/01/04	809.55	4236.05
TM-44	55-564730	5045.6	02/01/05	809.55	4236.05
TM-44	55-564730	5045.6	06/01/05	806.6	4239
TM-44	55-564730	5045.6	09/01/05	805.75	4239.85

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
TM-44	55-564730	5045.6	11/01/05	800.1	4245.5
TM-44	55-564730	5045.6	02/01/06	800.35	4245.25
TM-44	55-564730	5045.6	05/01/06	800.9	4244.7
TM-44	55-564730	5045.6	08/01/06	800.15	4245.45
TM-44	55-564730	5045.6	11/01/06	799.6	4246
TM-44	55-564730	5045.6	02/01/07	798.1	4247.5
TM-44	55-564730	5045.6	06/01/07	796.7	4248.9
TM-44	55-564730	5045.6	09/28/07	812.4	4233.2
TM-45	55-564728		01/05/96	872.75	4178.19
TM-45	55-564728		01/05/98	466.1	4529.76
TM-45	55-564728		05/06/98	869.85	4181.09
TM-45	55-564728		05/06/98	472.35	4523.51
TM-45	55-564728		10/01/98	478.65	4517.21
TM-45	55-564728		01/25/99	484.9	4510.96
TM-45	55-564728	4998.252	06/01/99	484.7	4513.55
TM-45	55-564728	4998.252	03/01/00	485.2	4513.05
TM-45	55-564728	4998.252	06/01/00	484.95	4513.30
TM-45	55-564728	4998.252	09/01/00	484.8	4513.45
TM-45	55-564728	4998.252	12/01/00	484.7	4513.55
TM-45	55-564728	4998.252	02/01/01	485	4513.25
TM-45	55-564728	4998.252	06/01/01	485.45	4512.80
TM-45	55-564728	4998.252	10/01/01	485.95	4512.30
TM-45	55-564728	4998.252	02/01/02	486.5	4511.75
TM-45	55-564728	4998.252	06/01/02	486.8	4511.45
TM-45	55-564728	4998.252	09/01/02	487	4511.25
TM-45	55-564728	4998.252	11/01/02	487.2	4511.05
TM-45	55-564728	4998.252	01/01/03	487.3	4510.95
TM-45	55-564728	4998.252	05/01/03	487.9	4510.35
TM-45	55-564728	4998.252	08/01/03	488.15	4510.10
TM-45	55-564728	4998.252	12/01/03	488.8	4509.45
TM-45	55-564728	4998.252	02/01/04		
TM-45	55-564728	4998.252	05/01/04		
TM-45	55-564728	4998.252	08/01/04		
TM-45	55-564728	4998.252	11/01/04		
TM-45	55-564728	4998.252	02/01/05		
TM-45	55-564728	4998.252	06/01/05		
TM-45	55-564728	4998.252	09/01/05		
TM-45	55-564728	4998.252	11/01/05		
TM-45	55-564728	4998.252	02/01/06		
TM-45	55-564728	4998.252	05/01/06		
TM-45	55-564728	4998.252	08/01/06		
TM-45	55-564728	4998.252	11/01/06		
TM-45	55-564728	4998.252	02/01/07		
TM-45	55-564728	4998.252	06/01/07		
TM-46	55-564727	5052.694	01/05/98	874.504	4178.19
TM-46	55-564727	5052.694	05/06/98	871.604	4181.09
TM-46	55-564727	5052.694	12/01/00	833	4219.69
TM-46	55-564727	5052.694	08/01/04		
TM-46	55-564727	5052.694	08/01/04		
TM-46	55-564727	5052.694	11/01/04		
TM-46	55-564727	5052.694	11/01/04		
TM-46	55-564727	5052.694	02/01/05		
TM-46	55-564727	5052.694	06/01/05		
TM-46	55-564727	5052.694	09/01/05		
TM-46	55-564727	5052.694	11/01/05		
TM-46	55-564727	5052.694	02/01/06		
TM-46	55-564727	5052.694	05/01/06		

TABLE F.1
Historical Groundwater Levels[1]

Well Name	ADWR 55 Registry No.	Measuring Point Elevation (ft amsl)	Measurement Date	Depth to Water (ft)	Water Elevation (ft amsl)
TM-46	55-564727	5052.694	08/01/06		
TM-46	55-564727	5052.694	11/01/06		
TM-46	55-564727	5052.694	02/01/07		
TM-46	55-564727	5052.694	06/01/07		
TVI 236	55-802236		05/06/88		4449.96
TVI 236	55-802236	4562	12/06/90	90.6	4471
TVI 236	55-802236	4562	12/15/99	110.2	4452

Notes:

ft = feet

amsl = above mean sea level

[1] *Water level data have been compiled from a variety of sources and are reported in the format received (e.g., as depth to water, water elevation, or both; with or without a measuring point elevation). The measuring point, depth to water, and groundwater elevations have not been modified from the original reports to account for the differing measuring point elevations used overtime at certain wells.*

APPENDIX G

HISTORICAL GROUNDWATER QUALITY

TABLE OF CONTENTS

TABLE

G.1 Historical Groundwater Quality

TABLE

TABLE G.1
Historical Groundwater Quality

Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Sulfate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Nitrate as N (mg/L)	Nitrate/ Nitrite as N (mg/L)	Nitrite as N (mg/L)	Alkalinity as CaCO3 (mg/L)
AWC-02	55-616586	03/27/95		15.1										
AWC-02	55-616586	08/06/96	7.58	19.4	17.4	0.29	61.3	8.1	8.27	20.2	2.16		< 0.1	166
AWC-02	55-616586	03/30/00		< 5.0	< 5.0						1.1	1.1	< 0.1	
AWC-02	55-616586	04/13/00		6.6	7.4						1.5	1.5	< 0.1	
AWC-02	55-616586	04/27/00		7.1	8						2.1	2.1	< 0.1	
AWC-02	55-616586	05/04/00		6	7.1						1.6		< 0.1	
AWC-02	55-616586	05/11/00		6	7						1.4	1.4	< 0.1	
AWC-02	55-616586	07/05/00		7.2		0.4								
AWC-02	55-616586	03/05/01		7	7.5						1.3	1.3	< 0.1	
AWC-02	55-616586	08/06/01		< 5.0	6.6						1	1	< 0.1	
AWC-02	55-616586	09/10/01		7.3	7.4						1.6	1.6	< 0.1	
AWC-02	55-616586	12/03/01		6.8	7						1.2	1.2	< 0.1	
AWC-02	55-616586	02/13/02		7.2	7.7						1.5	1.5	< 0.1	
AWC-02	55-616586	04/01/02		5.7	7.9							1.5	< 0.1	
AWC-02	55-616586	08/02/02											< 0.1	
AWC-02	55-616586	08/06/02		7.3	6.9						1.2	1.2		
AWC-02	55-616586	10/07/02		6.8	8						1.4	1.4	< 0.1	
AWC-02	55-616586	12/12/02		7.4	7.6						1.5	1.5	< 0.1	
AWC-02	55-616586	02/03/03		7	7.9						1.6	1.6	< 0.1	
AWC-02	55-616586	04/07/03		6.7	7.7						1.4	1.4	< 0.1	
AWC-02	55-616586	07/07/03		7.6	7.5						1.4	1.4	< 0.1	
AWC-02	55-616586	09/08/03		7.2	7.4						1.6	1.6	< 0.1	
AWC-02	55-616586	11/03/03		7.5	7.8						1.6	1.6	< 0.1	
AWC-02	55-616586	12/01/03		8	9.3						2	2	< 0.1	
AWC-02	55-616586	06/07/04		7.3	8.6						1.7	1.7	< 0.1	
AWC-02	55-616586	07/12/04		7.7	8						1.6	1.6		
AWC-02	55-616586	09/21/04		7.8	31.9						1.6	1.6	< 0.1	
AWC-02	55-616586	11/01/04		9.1	9.3						1.6	1.6	< 0.1	
AWC-02	55-616586	03/07/05		15.6	9.6						1.7	1.7	< 0.1	
AWC-02	55-616586	05/02/05		9.3	10.6						1.98	1.98	< 0.1	
AWC-02	55-616586	07/11/05		12	12.3						1.9	1.9	< 0.1	
AWC-02	55-616586	09/12/05		12.6	14.5						2.07			
AWC-02	55-616586	09/26/05		12.5	14.8						1.9			
AWC-02	55-616586	11/08/05		14	14.8						1.83	1.83	< 0.1	
AWC-02	55-616586	01/09/06		14	23						2.22	2.22	< 0.1	
AWC-02	55-616586	05/02/06		13	17						2.11	2.11	< 0.1	
AWC-02	55-616586	07/11/06		11.4	15.9						1.66		< 0.1	
AWC-02	55-616586	08/11/06										1.66		
AWC-02	55-616586	09/11/06		12.4	16						2.18	2.18	< 0.1	
AWC-02	55-616586	11/06/06		12.8	21						1.99	1.99	< 0.1	
AWC-02	55-616586	01/24/07		13.1	18.9						2.58	2.58	< 0.1	
AWC-02	55-616586	03/05/07		13.5	19.9						2.17	2.17	< 0.1	
AWC-02	55-616586	05/07/07		7.8	8.9						1.87	1.87	< 0.1	

TABLE G.1
Historical Groundwater Quality

Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Sulfate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Nitrate as N (mg/L)	Nitrate/ Nitrite as N (mg/L)	Nitrite as N (mg/L)	Alkalinity as CaCO3 (mg/L)
AWC-02	55-616586	07/09/07		7.3	7.4						< 0.5	< 0.5	< 0.1	
AWC-02	55-616586	09/10/07		10	8.3						2.14	2.14	< 0.1	
AWC-02	55-616586	09/17/07		10	8.8						2.39	2.39	< 0.1	
AWC-02	55-616586	11/05/07		11	9						2.16	2.16	< 0.1	
AWC-03	55-616585	01/06/94		22.5										
AWC-03	55-616585	08/06/96	7.56	<10	8	0.33	60.4	7.6	2.27	15.7	1.61		< 0.1	179
AWC-03	55-616585	01/24/00		22.6	17.1						2.1	2.1	< 0.1	
AWC-03	55-616585	02/17/00		21	8						2.3	2.3	< 0.1	
AWC-03	55-616585	02/24/00		26	19						2.8	2.8	< 0.1	
AWC-03	55-616585	03/09/00		24	18						2.1	2.1	< 0.1	
AWC-03	55-616585	03/23/00		26.1	16.2						2.2	2.2	< 0.1	
AWC-03	55-616585	03/30/00		< 5.0	16.9						2	2	< 0.1	
AWC-03	55-616585	04/13/00		21.6	19.6						2.3	2.3	< 0.1	
AWC-03	55-616585	04/27/00		23.1	17.4						2	2	< 0.1	
AWC-03	55-616585	05/04/00		21.7	16.4						2.2		< 0.1	
AWC-03	55-616585	05/11/00		26.8	14.4						2	2	< 0.1	
AWC-03	55-616585	07/05/00		27.3		0.4								
AWC-03	55-616585	12/12/00		17.4	20						2.4		< 0.1	
AWC-03	55-616585	02/05/01		13.5	20.3						2.5	2.5	< 0.1	
AWC-03	55-616585	05/01/01		25	20.2						2	2	< 0.1	
AWC-03	55-616585	06/01/01										2.1		
AWC-03	55-616585	06/04/01		21.1	17.9						2.1		< 0.1	
AWC-03	55-616585	08/04/01			17.4									
AWC-03	55-616585	08/06/01		20.8							2.1	2.1	< 0.1	
AWC-03	55-616585	11/05/01		21.6	18.8						2.4	2.4	< 0.1	
AWC-03	55-616585	12/07/01		23.3										
AWC-03	55-616585	01/07/02		23.2	18.6						2.4	2.4		
AWC-03	55-616585	02/07/02											< 0.1	
AWC-03	55-616585	03/18/02		22.9	17.1						2.2	2.2	< 0.1	
AWC-03	55-616585	05/06/02		24.3	19						2.2	2.2	< 0.1	
AWC-03	55-616585	08/05/02		23.5	22.8						1.7	1.7	< 0.1	
AWC-03	55-616585	09/09/02		23.8	17.8						2.1	2.1	< 0.1	
AWC-03	55-616585	11/04/02		23.3	19						1.9	1.9	< 0.1	
AWC-03	55-616585	01/06/03		23.9	18.2						2.2	2.2	< 0.1	
AWC-03	55-616585	03/03/03		34.4	16.7						1.5	1.5	< 0.1	
AWC-03	55-616585	05/05/03		24.9	19.8						2.5	2.5	< 0.1	
AWC-03	55-616585	08/04/03		28.2	18.3						2.3	2.3	< 0.1	
AWC-03	55-616585	10/06/03		26.3	16.5						2.3	2.3	< 0.1	
AWC-03	55-616585	01/05/04		26.9	20.5						2.3		< 0.1	
AWC-03	55-616585	02/02/04		34.3	16.4						2.4	2.4	< 0.1	
AWC-03	55-616585	03/01/04		29.4	19.3						2.3	2.3	< 0.1	
AWC-03	55-616585	04/05/04		29.1	18.6						2.5	2.5	< 0.1	
AWC-03	55-616585	05/03/04		28.8	16.8						2.5	2.5	< 0.1	

TABLE G.1
Historical Groundwater Quality

Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Sulfate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Nitrate as N (mg/L)	Nitrate/ Nitrite as N (mg/L)	Nitrite as N (mg/L)	Alkalinity as CaCO3 (mg/L)
AWC-03	55-616585	06/07/04		30.6	17.5						2.3	2.3	< 0.1	
AWC-03	55-616585	08/16/04		30.4	16.9						2.4	2.4	< 0.1	
AWC-03	55-616585	10/04/04		30.6	19						2.1	2.1	< 0.1	
AWC-03	55-616585	12/06/04		32.2	19.7						2.2	2.2	< 0.1	
AWC-03	55-616585	03/07/05		28.3	17.6						2.53	2.53	< 0.1	
AWC-03	55-616585	05/02/05		28.8	12.9						2.4	2.4	< 0.1	
AWC-03	55-616585	07/11/05		35.4	17.4						2.4	2.4	< 0.1	
AWC-03	55-616585	09/12/05		35.8	18.7						2.34			
AWC-03	55-616585	09/26/05		36.5	18.7						2.16			
AWC-03	55-616585	11/08/05		38.4	16.1						2.14	2.14	< 0.1	
AWC-03	55-616585	01/09/06		36	17						2.4	2.4	< 0.1	
AWC-03	55-616585	05/02/06		36	17						2.28	2.28	< 0.1	
AWC-03	55-616585	07/11/06		36.7	16.6							1.59	< 0.1	
AWC-03	55-616585	09/11/06		36.7	15.9						2.2	2.2	< 0.1	
AWC-03	55-616585	11/06/06		37.2	16.7						2.05	2.05	< 0.1	
AWC-03	55-616585	01/24/07		38.3	16.4						2.14	2.14	< 0.1	
AWC-03	55-616585	03/05/07		50.6	15.7						1.96	1.96	< 0.1	
AWC-03	55-616585	04/02/07		55.9	14						1.72	1.72	< 0.1	
AWC-03	55-616585	05/07/07		36.9	17.2						1.94	1.94	< 0.1	
AWC-03	55-616585	07/09/07		36	15						< 0.5	< 0.5	< 0.1	
AWC-03	55-616585	09/10/07		35	14						2.02	2.02	< 0.1	
AWC-03	55-616585	09/17/07		38	13						2.06	2.06	< 0.1	
AWC-03	55-616585	11/05/07		34	13						2.23	2.23	< 0.1	
AWC-04	55-616584	06/01/91		20										
AWC-04	55-616584	02/12/97				0.5								
AWC-04	55-616584	05/04/97		19	16								2.2	
AWC-04	55-616584	01/11/99		18	22						0.45		< 0.01	
AWC-04	55-616584	01/18/99									2.4			
AWC-04	55-616584	04/20/99		20	18	0.9					1.9			
AWC-04	55-616584	01/17/00		19	21						2.4	2.4	< 0.1	
AWC-04	55-616584	01/25/00		17.8	21.6						2.5	2.5	< 0.1	
AWC-04	55-616584	02/17/00		18	18						2.1	2.1	< 0.1	
AWC-04	55-616584	02/24/00		21	18						2.8	2.8	< 0.1	
AWC-04	55-616584	03/09/00		20	22						2.1	2.1	< 0.1	
AWC-04	55-616584	03/23/00		20.8	17						2.1	2.1	< 0.1	
AWC-04	55-616584	03/30/00		< 5.0	18.1						1.9	1.9	< 0.1	
AWC-04	55-616584	04/13/00		18.7	18.9						2.2	2.2	< 0.1	
AWC-04	55-616584	04/27/00		20.4	21.5						2.1	2.1	< 0.1	
AWC-04	55-616584	05/04/00		18.1	18.9						2.2		< 0.1	
AWC-04	55-616584	05/11/00		19.3	20.5						2.3	2.3	< 0.1	
AWC-04	55-616584	07/05/00		23.1		0.4								
AWC-04	55-616584	08/08/00		30.3	22.2						2	2	< 0.1	
AWC-04	55-616584	08/21/00		23.8	18.9						2.1	2.1	< 0.1	

TABLE G.1
Historical Groundwater Quality

Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Sulfate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Nitrate as N (mg/L)	Nitrate/ Nitrite as N (mg/L)	Nitrite as N (mg/L)	Alkalinity as CaCO3 (mg/L)
AWC-04	55-616584	08/28/00		26.5	22						2	2	< 0.1	
AWC-04	55-616584	09/05/00		27.7	16.8						1.8			
AWC-04	55-616584	11/06/00		23.8	20.5						2			
AWC-04	55-616584	12/04/00		24.6	20.9						1.9	1.9	< 0.1	
AWC-04	55-616584	02/05/01		24	19.1						2.2	2.2	< 0.1	
AWC-04	55-616584	03/05/01		24	20.4						2.1	2.1	< 0.1	
AWC-04	55-616584	04/02/01		24.8	18.4						1.9	1.9	< 0.1	
AWC-04	55-616584	05/01/01		17.8	19.6						2.2	2.2	< 0.1	
AWC-04	55-616584	06/04/01		26.7	19.2						1.9	1.9	< 0.1	
AWC-04	55-616584	09/10/01		23.9	18.6						2.1	2.1	< 0.1	
AWC-04	55-616584	11/05/01		22.5	20.8						2.1	2.1	< 0.1	
AWC-04	55-616584	12/03/01		22.7	22.8						2	2	< 0.1	
AWC-04	55-616584	01/07/02		24.1	22						2	2	< 0.1	
AWC-04	55-616584	02/13/02		22.7	15.8						1.4	1.4	< 0.1	
AWC-04	55-616584	03/18/02		20.5	19.3						2	2	< 0.1	
AWC-04	55-616584	04/01/02		19.3	18.5						2	2	< 0.1	
AWC-04	55-616584	05/06/02		23.4	20.2						2	2	< 0.1	
AWC-04	55-616584	08/05/02		26.6	22.8						1.5	1.5	< 0.1	
AWC-04	55-616584	09/09/02		29	19.8						1.7	1.7	< 0.1	
AWC-04	55-616584	10/07/02		33.6	14						1.6	1.6	< 0.1	
AWC-04	55-616584	11/04/02		26.1	24.6						1.6	1.6	< 0.1	
AWC-04	55-616584	12/12/02		30.9	18						1.5	1.5	< 0.1	
AWC-04	55-616584	01/06/03		26.2	29						1.6	1.6	< 0.1	
AWC-04	55-616584	02/03/03		24.8	27.4						1.9	1.9	< 0.1	
AWC-04	55-616584	03/03/03		33	22.3						1.4	1.4	< 0.1	
AWC-04	55-616584	04/07/03		23.9	24.2						1.7	1.7	< 0.1	
AWC-04	55-616584	05/05/03		28.1	19.3						1.9	1.9	< 0.1	
AWC-04	55-616584	07/07/03		27.4	23						2	2	< 0.1	
AWC-04	55-616584	08/04/03		30	24.8						2	2	< 0.1	
AWC-04	55-616584	09/08/03		29.9	30.2						2	2	< 0.1	
AWC-04	55-616584	10/06/03		26.5	22						2.1	2.1	< 0.1	
AWC-04	55-616584	11/03/03		27	24						1.9	1.9	< 0.1	
AWC-04	55-616584	12/01/03		31	26.8						2.3	2.3	< 0.1	
AWC-04	55-616584	01/05/04		< 5.0	31.4						2	2	< 0.1	
AWC-04	55-616584	03/01/04		23.6	41.4						1.9	1.9	< 0.1	
AWC-04	55-616584	04/05/04		22.6	70						2.1	2.1	< 0.1	
AWC-04	55-616584	06/07/04		21.8	31.6						2.5	2.5	< 0.1	
AWC-04	55-616584	08/09/04		19.2	32.2						2.1	2.1	< 0.1	
AWC-04	55-616584	10/04/04		20.8	43.9						2.1	2.1	< 0.1	
AWC-04	55-616584	12/06/04		18.7	32.1						1.9	1.9	< 0.1	
AWC-04	55-616584	02/07/05		10.8	22.1						2.81			
AWC-04	55-616584	04/04/05		19.5	27.7						2.25	2.25	< 0.1	
AWC-04	55-616584	06/06/05		14.2	26.6						2.23	2.23	< 0.1	

TABLE G.1
Historical Groundwater Quality

Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Sulfate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Nitrate as N (mg/L)	Nitrate/ Nitrite as N (mg/L)	Nitrite as N (mg/L)	Alkalinity as CaCO3 (mg/L)
AWC-04	55-616584	08/01/05		18.7	29.2						1.85		< 0.1	
AWC-04	55-616584	10/03/05		19.6	33						2.36		< 0.1	
AWC-04	55-616584	12/05/05		19							2.45	2.45	< 0.1	
AWC-04	55-616584	02/06/06		18	27						2.54	2.54	< 0.1	
AWC-04	55-616584	04/03/06		18	26						2.14	2.14		
AWC-04	55-616584	06/05/06		17.4	< 5.0						2.45	2.45	< 0.1	
AWC-04	55-616584	08/07/06		17.6	42.2						1.91	1.91	< 0.1	
AWC-04	55-616584	10/02/06		17.1	32.7						2.24	2.24	< 0.1	
AWC-04	55-616584	12/05/06		16										
AWC-04	55-616584	02/05/07			33.8						2.62	2.62	< 0.1	
AWC-04	55-616584	04/02/07		19.9	32.8						2.35	2.35	< 0.1	
AWC-04	55-616584	06/04/07		28.8	26.9						1.91	1.91	< 0.1	
AWC-04	55-616584	08/06/07		5.6	8.3						< 0.5	< 0.5	< 0.1	
AWC-04	55-616584	12/04/07		16	34						2.08	2.08	< 0.1	
AWC-05	55-590620	08/05/02		9.6		< 0.4					1.7	1.7	< 0.2	
AWC-05	55-590620	02/02/04		10	19.7						2.8	2.8	< 0.1	
AWC-05	55-590620	04/12/04											< 0.1	
AWC-05	55-590620	05/03/04		10.5	18.5						2.6	2.6	< 0.1	
AWC-05	55-590620	06/12/04			18.9									
AWC-05	55-590620	07/12/04		11.8							2.2	2.2		
AWC-05	55-590620	09/21/04		10.5	22							2.5	< 0.1	
AWC-05	55-590620	11/01/04		10.4							2	2	< 0.1	
AWC-05	55-590620	02/07/05		19.5	26.2						2.37			
AWC-05	55-590620	04/04/05		12.2	19.7						2.38	2.38	< 0.1	
AWC-05	55-590620	06/06/05		10.1	19.6						2.25	2.25	< 0.1	
AWC-05	55-590620	08/01/05		9.8	20.5						2.5		< 0.1	
AWC-05	55-590620	10/03/05		11.7	21						2.71		< 0.1	
AWC-05	55-590620	12/05/05		36	18						2.59			
AWC-05	55-590620	02/06/06		11	22						2.77	2.77	< 0.1	
AWC-05	55-590620	04/03/06		12	19						1.98	1.98		
AWC-05	55-590620	06/05/06		12.5	17.5						2.06	2.06	< 0.1	
AWC-05	55-590620	08/07/06		10.4	23.4						2.22	2.22	< 0.1	
AWC-05	55-590620	10/02/06		11.6	19.7						2.09	2.09	< 0.1	
AWC-05	55-590620	12/04/06		9	23.9						2.63	2.63	< 0.1	
AWC-05	55-590620	02/05/07		11.6	20.1						2.29	2.29	< 0.1	
AWC-05	55-590620	04/02/07		10.5	21.7						2.38	2.38	< 0.1	
AWC-05	55-590620	06/04/07		29.1	27						2.1	2.1	< 0.1	
AWC-05	55-590620	08/06/07		14	15						< 0.5	< 0.5	< 0.1	
AWC-05	55-590620	12/04/07		41	13						1.83	1.83	< 0.1	
BANKS 987	55-647987	08/16/05	7.3	77.2	142		115	40	8	79				222
BARTON 919	55-644919	08/16/05	7.2	285	179		204	41	9	37				151

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Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Sulfate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Nitrate as N (mg/L)	Nitrate/ Nitrite as N (mg/L)	Nitrite as N (mg/L)	Alkalinity as CaCO3 (mg/L)
BF-01	55-539783	10/06/93	6.7	1400	30	0.06	686	110		61	1.33			710
BF-01	55-539783	11/24/93	6.8	1500	30	0.06	693	109		63.4	1.25			706
BF-01	55-539783	06/25/96	6.4	1400	30	ND	752	102	3.3	54.6	0.98			737
BF-01	55-539783	10/23/05		1410										
BF-02	55-539786	10/06/93	6.4	1900	33	0.06	864	199		41.7	1.99			964
BF-02	55-539786	11/23/93	6.9	1900	34	0.08	854	196		35.1	2.02			955
BF-02	55-539786	06/25/96	6.3	2000	33	<0.05	958	206	4.1	30.1	2.20			987
BF-02	55-539786	08/06/96	6.1	1280	35.8	<1.0	864	208	5	23.1	2.30			
BF-02	55-539786	08/06/96	6.37	1880	33	<0.2	913	209	4.60	25.3	2.17	2.17	< 0.10	939
BF-02	55-539786	10/23/05		1410										
BIMA	55-577927	08/18/05	6.8	223	119		197	38	15.2	64				396
BLOMMER	55-633472	08/05/96	7.34	308	24.1	ND	159	39.6	3.58	26.5	3.6		< 0.1	219
BLOMMER	55-633472	08/06/96	7.27	276	23	ND	149	38.5	3.22	26.3	3.5		< 0.1	221
BLOMMER	55-633472	08/16/05	6.9	238	26		127	32	3.68	27				186
BLOMMER DUP	55-633472	08/16/05	6.9	248	28		79	10	3	24				188
BULLARD	55-602134	06/27/96	7.3	440	26	0.17	152	52	6.5	32.5	2.3			246
BULLARD	55-602134	08/17/05	7.3	261	20		146	28	8.33	35				155
COB MW-1	55-903992	03/30/06		1260	23.3	<0.10	459	106	13.4	78.2		2.40		354
COB MW-1	55-903992	04/12/06		1400	22.4	0.2	412	101	12.3	73.1		2.45		346
COB MW-2	55-903984	03/30/06		51.8	16	0.150	66.7	9.05	2.31	29.8		6.78		164
COB MW-3	55-906823	07/31/07		70.8	17.7	0.402	55.0	7.88	2.05	25.2		1.86		158
COB MW-3	55-906823	10/25/07		63.7	15.5	0.350	62.2	8.99	2.60	23.9		2.14		162
COB WL	55-593116	11/08/07		103	121	0.26	130	37.6	9.53	61.7		3.71		288
COOPER C	55-637069	08/06/96	7.32	687	21.7	0.22	294	40.7	4.69	34.4	2.43		<0.1	169
COOPER C	55-637069	08/06/96	7.36	734	21.3	0.21	326	44.3	5.2	37.6	2.45		<0.1	173
COOPER C	55-637069	08/16/05	7.00	683	24		298	42	6	44				200
EAST	55-599796	08/17/05	7.5	19.6	41		59	23	2.64	28				208
EPPELE 641	55-805641	08/23/05	7.7	27	18		73	22	6.47	19				230
FRANCO	55-500101	08/17/05	7.2	700	23		283	31	5.61	51				156
GARNER 557	55-558557	06/27/96	7.2	1100	21	0.14	422	45.6	3.7	41.1	3.2			
DUP	55-558557	06/27/96	7.2	1100	21	0.14	422	46.6	3.7	41.1	3.2			219
GARNER 557	55-558557	01/23/97	6.95	777	21.5	<0.5	356	42	6	41.3	3.1			238
GARNER 635	55-587635	09/30/01	8.2	632	23	0.2	236	29	5.0	75		<1.0		212
GARNER 635	55-587635	08/16/05	7.8	38.7	15		38	8	2.77	55				167
GGOOSE 547	55-628547	06/01/96	7.7	340	58	0.26	114	45.6	8.1	52.6	6.2			220
GL-01	55-539785	01/23/93	7.4	310	21	0.24	209	56		20.3	1.4			442
GL-01	55-539785	06/20/96	7.1	200	18	0.2	185	49.5	2.8	20.1	2.8			472
GL-03	55-539782	11/24/93	7.4	34	21	0.23	68.1	31.9		16.4	<0.06			358
GL-03	55-539782	06/25/96	7.6	< 5	24	0.4	36.1	21	2.2	224	<0.06			201
GL-03	55-539782	10/23/05		36.4										
GOAR 687	55-610687	06/04/97	7.72	25.3	26	0.3	66	8.7	<5	23	4			170

TABLE G.1
Historical Groundwater Quality

Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Sulfate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Nitrate as N (mg/L)	Nitrate/ Nitrite as N (mg/L)	Nitrite as N (mg/L)	Alkalinity as CaCO3 (mg/L)
GOAR	55-610694	08/24/05	7	962	22		383	49	6.62	58				181
GOAR DUP	55-610694	08/24/05	7	956	22		379	49	6.57	57				189
GOAR RANCH	55-610695	08/24/05	7.4	796	23		318	35	5.45	54				152
DUP	55-610695	08/24/08	7.4	776	23		314	35	5.43	54				155
HOBAN	55-805290	08/18/05	7.3	402	20		172	28	5.23	39				190
HOWARD	NR	08/17/05	7.3	622	33		262	34	5.96	37				177
265	55-539265	08/16/05	7	712	24		331	48	7	47				274
NSD-01	55-522823	10/21/97		14	15						2.1			
NSD-01	55-522823	10/04/01		12.5										
NSD-01	55-522823	01/29/03		11.6	29.8	< 0.2					2.39		< 0.1	
NSD-01	55-522823	04/06/04		26	47	0.2					4.45		< 0.5	
NSD-01	55-522823	10/27/04									2.28		0.01	
NSD-01	55-522823	02/08/05		14	19	0.31					2.33		< 0.05	
NSD-01	55-522823	05/19/05										2.09		
NSD-01	55-522823	07/07/05		15	66.5	0.4					3.15		0.112	
NSD-01	55-522823	07/21/05										1.89		
NSD-01	55-522823	11/10/05		14	18	0.3					1.62		< 0.01	
NSD-01	55-522823	02/14/06		9	14	0.36						1.93		
NSD-01	55-522823	06/13/06										1.82		
NSD-01	55-522823	02/19/07		17.1	64.8	0.32						5.13		
NSD-01	55-522823	05/15/07									1.72	1.72		
NSD-01	55-522823	08/13/07		18.4	70	0.188					4.84		< 0.01	
NSD-01	55-522823	10/30/07									5.2		< 0.01	
NSD-02	55-527587	10/21/97		25	51						5.3			
NSD-02	55-527587	10/04/01		18.2										
NSD-02	55-527587	01/29/03		34.2	34.2	< 0.2					3.02		< 0.1	
NSD-02	55-527587	04/06/04		16	28	0.26					2.54		< 0.05	
NSD-02	55-527587	10/27/04									3.51		0.03	
NSD-02	55-527587	02/08/05		43	21	0.26					3.23		< 0.05	
NSD-02	55-527587	05/19/05										2.66		
NSD-02	55-527587	07/07/05		44	42	0.431					0.0641		0.007	
NSD-02	55-527587	07/21/05										1.4		
NSD-02	55-527587	11/10/05		48	25	0.23					2.71		< 0.01	
NSD-02	55-527587	02/14/06		73	12	0.17						2.08		
NSD-02	55-527587	06/13/06										2.93		
NSD-02	55-527587	02/19/07		54	9.94	0.26						1.61		
NSD-02	55-527587	05/15/07									2.37	2.37		
NSD-02	55-527587	08/13/07		67.3	22	0.196					2.17		< 0.01	
NSD-02	55-527587	10/30/07									0.72		< 0.01	

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NSD-03	55-527586	10/21/97		122	5						1.5			
NSD-03	55-527586	04/05/01		109										
NSD-03	55-527586	04/06/04		94	12	0.13					1.64		< 0.05	
NSD-03	55-527586	10/27/04									2		< 0.01	
NSD-03	55-527586	02/08/05		85	5	0.14					< 0.05		< 0.05	
NSD-03	55-527586	05/19/05										1.24		
NSD-03	55-527586	07/07/05		58.9	11.6	0.41					3.2		0.011	
NSD-03	55-527586	07/21/05										1.84		
NSD-03	55-527586	11/10/05		80	18	0.14					1.8		< 0.01	
NSD-03	55-527586	02/14/06		39	19	0.25						3.19		
NSD-03	55-527586	06/13/06										1.93		
NSD-03	55-527586	02/19/07		76	12	0.27						3.71		
NSD-03	55-527586	05/15/07									3.76	3.76		
NSD-03	55-527586	08/13/07		104	11.6	0.137					3.41		< 0.01	
NSD-03	55-527586	10/30/07									3.4		< 0.1	
NWC-01	55-627682	05/03/95									2.87		< 0.02	
NWC-01	55-627682	12/21/95				0.19					2.75		< 0.1	
NWC-01	55-627682	04/29/96				< 0.05		7.9		11.7			< 0.1	
NWC-01	55-627682	08/14/96		7.3										
NWC-01	55-627682	04/08/97									1.9			
NWC-01	55-627682	06/09/97									2			
NWC-01	55-627682	08/14/97								18				
NWC-01	55-627682	09/02/97				2								
NWC-01	55-627682	11/17/99									2.1			
NWC-02	55-562944	06/09/97									2.7			
NWC-02	55-562944	08/14/97								19				
NWC-02	55-562944	09/02/97				< 1.0								
NWC-02	55-562944	11/17/99									2.7			
NWC-02	55-562944	11/21/00									2.5			
NWC-02	55-562944	07/31/01				0.21								
NWC-02	55-562944	10/20/01									2.7			
NWC-02	55-562944	10/08/02									2.4			
NWC-02	55-562944	10/14/03									2.5			
NWC-02	55-562944	01/20/04				0.18				27			< 0.1	
NWC-02	55-562944	10/07/04									2.3			
NWC-02	55-562944	10/14/05									2.2		< 0.1	
NWC-02	55-562944	03/08/06									2.2			
NWC-02	55-562944	04/12/07				< 0.5				40	1.6		< 0.01	

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NWC-02 CAP	55-627683	05/03/95									3.84		< 0.02	
NWC-02 CAP	55-627683	12/21/95				0.2								
NWC-02 CAP	55-627683	05/31/96				< 0.5		8.4		12.4	3.5		< 0.1	
NWC-02 CAP	55-627683	08/14/96		7.8										
NWC-02 CAP	55-627683	04/08/97									3.4			
NWC-03	55-203321	07/30/04									2.8			
NWC-03	55-203321	02/17/05									2.6			
NWC-03	55-203321	05/06/05									2.7			
NWC-03	55-203321	07/20/05									2.6		< 0.1	
NWC-03	55-203321	10/10/05		460										
NWC-03	55-203321	11/08/05		390										
NWC-03	55-203321	01/17/06									2.5			
NWC-03	55-203321	11/29/06		360										
NWC-03	55-203321	04/08/07									4.1			
NWC-03	55-203321	10/07/07									2.6			
NWC-03	55-203321	10/10/07									4			
NWC-03 CAP	55-627684	1/8/1986		71										
NWC-03 CAP	55-627684	05/03/95									4.92		< 0.02	
NWC-03 CAP	55-627684	11/02/95		219	48.5	0.34	91.82	37.86		42.6	5.6			185
NWC-03 CAP	55-627684	12/21/95				0.24					6.88		< 0.1	
NWC-03 CAP	55-627684	05/03/96				< 0.5		13		19.8	5.2		< 0.1	
NWC-03 CAP	55-627684	05/31/96				< 0.5		39.1		29.1	6.7		< 0.1	
NWC-03 CAP	55-627684	08/07/96	7.45	109	23.3	<1.0	109	13.4	<5	21.8	5.2			
NWC-03 CAP	55-627684	08/07/96	7.45	129	21.7	0.27	116	14.6	3.2	27.5	5.19	5.19	< 0.10	153
NWC-03 CAP	55-627684	08/14/96									5.6			
NWC-03 CAP	55-627684	10/03/96									5.6			
NWC-03 CAP	55-627684	02/27/97									5.4			
NWC-03 CAP	55-627684	04/08/97									5.3			
NWC-03 CAP	55-627684	08/18/97									5.2			
NWC-03 CAP	55-627684	10/20/97									5.1			
NWC-03 CAP	55-627684	11/05/97	7.05	148		0.3	100	14	<5	30.0	5.1	5.10	< 0.1	150
NWC-03 CAP	55-627684	03/11/97									4.9			
NWC-03 CAP	55-627684	06/09/97									5.1			
NWC-03 CAP	55-627684	08/04/97									5.1			
NWC-03 CAP	55-627684	08/18/97									6.6			
NWC-03 CAP	55-627684	10/12/97									4.4			
NWC-03 CAP	55-627684	10/30/97				0.28								
NWC-03 CAP	55-627684	01/20/99									5.2			
NWC-03 CAP	55-627684	04/13/99									4.8			
NWC-03 CAP	55-627684	09/23/99									4.8			
NWC-03 CAP	55-627684	11/17/99									4.9			
NWC-03 CAP	55-627684	03/22/00									4.4			
NWC-03 CAP	55-627684	05/31/00									4.3			

TABLE G.1
Historical Groundwater Quality

Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Sulfate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Nitrate as N (mg/L)	Nitrate/ Nitrite as N (mg/L)	Nitrite as N (mg/L)	Alkalinity as CaCO3 (mg/L)
NWC-03 CAP	55-627684	09/26/00									4.2			
NWC-03 CAP	55-627684	11/21/00									4.3			
NWC-03 CAP	55-627684	03/21/01									7.2			
NWC-03 CAP	55-627684	03/28/01									4.5			
NWC-03 CAP	55-627684	05/09/01									4.6			
NWC-03 CAP	55-627684	07/31/01				0.35								
NWC-03 CAP	55-627684	08/22/01									4.4			
NWC-03 CAP	55-627684	10/20/01									4.6			
NWC-03 CAP	55-627684	05/01/02									6			
NWC-03 CAP	55-627684	06/06/02									6.3			
NWC-03 CAP	55-627684	06/08/02									4.3			
NWC-03 CAP	55-627684	07/16/02									4.1			
NWC-03 CAP	55-627684	10/25/02									3.9			
NWC-03 CAP	55-627684	12/03/02	7.7	215	19	0.2	113	16	3	30		3.8		158
NWC-03 CAP	55-627684	02/13/03									4.4			
NWC-03 CAP	55-627684	04/08/03									4.4			
NWC-03 CAP	55-627684	08/05/03									4.5			
NWC-03 CAP	55-627684	10/14/03									4.4			
NWC-03 CAP	55-627684	02/04/04									4.2			
NWC-03 CAP	55-627684	04/06/04									7.6			
NWC-03 CAP	55-627684	04/27/04				0.18				28			< 0.1	
NWC-04	55-551849	07/30/04									8.3			
NWC-04	55-551849	10/07/04									6.6			
NWC-04	55-551849	02/17/05									7.6			
NWC-04	55-551849	05/06/05									6.3			
NWC-04	55-551849	07/20/05									6		< 0.1	
NWC-04	55-551849	10/10/05		220							5.7		< 0.1	
NWC-04	55-551849	11/08/05		200							5.9			
NWC-04	55-551849	01/17/06									6			
NWC-04	55-551849	04/12/06									5.9			
NWC-04	55-551849	07/06/06									6		< 0.1	
NWC-04	55-551849	10/09/06									6.3			
NWC-04	55-551849	11/30/06		210										
NWC-04	55-551849	01/03/07									5.7			
NWC-04	55-551849	04/14/07				< 0.5				40	6.3		0.045	
NWC-04	55-551849	05/08/07									5.7			
NWC-04	55-551849	07/16/07									5.8			
NWC-04	55-551849	10/01/07									5.6			

TABLE G.1
Historical Groundwater Quality

Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Sulfate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Nitrate as N (mg/L)	Nitrate/ Nitrite as N (mg/L)	Nitrite as N (mg/L)	Alkalinity as CaCO3 (mg/L)
NWC-04 CAP	55-627685	08/07/96	7.41	248	45.4	<1.0	118	40	7	30.2	6.10			192
NWC-04 CAP	55-627685	08/07/96	7.40	263	40.9	0.34	123	43.3	6.89	38.1	6.20	6.20	< 0.10	184
NWC-04 CAP	55-627685	11/06/97	6.90	314		0.30	130	50.0	10.00	38.0	6.30	6.30	< 0.10	180
NWC-04 CAP	55-627685	08/04/00		280										
NWC-04 CAP	55-627685	12/03/02	7.60	255	60	0.3	109	44	8	40				187
NWC-05	55-627696	05/03/95									1			
NWC-05	55-627696	12/21/95				0.25					20.46			
NWC-05	55-627696	05/03/96				< 0.5		30		22.2	9.8			
NWC-05	55-627696	05/30/96									26.7			
NWC-05	55-627696	08/07/96	7.38	78.9	180	0.33	158	33	4.56	25.8	26.5		< 0.1	126
NWC-06	55-575700	12/02/99		8.1		0.23	120			29				160
NWC-06	55-575700	11/21/00									1.7			
NWC-06	55-575700	07/31/01				0.2								
NWC-06	55-575700	10/20/01									2.2			
NWC-06	55-575700	10/08/02									1.9			
NWC-06	55-575700	10/14/03									1.9			
NWC-06	55-575700	01/20/04				0.21				40				
NWC-06	55-575700	10/07/04									1.9			
NWC-06	55-575700	10/14/05									1.8		< 0.1	
NWC-06	55-575700	11/08/05									1.8			
NWC-06	55-575700	03/08/06									1.7			
NWC-06	55-575700	04/14/07				< 0.5				40	3.6		< 0.1	
OSBORN	55-643436	08/18/05	7.2	25.7	24		76	15	5.1	25				238
OSBORN DUP	55-643436	08/18/05	7.2	27.7	24		75	15	5.09	25				238
PANAGAKOS	35-076413	12/09/85	7.2	710	30	0.3	230	77	19	0.6				
PANAGAKOS	35-076413	01/23/97	7.52	130	65.8	<0.6	132	40	16	22.2	5			
PARRA	55-576415	08/23/05	6.8	427	38		185	51	5.4	33				220
PARRA DUP	55-576415	08/23/05	6.8	444	40		185	51	5.28	33				220
PIONKE	55-613395	08/23/05	7.5	333	15		166	25	4.34	30				166
ROGERS 596	55-573596	08/17/05	7.2	299	18		141	19	4.87	35				141
ROGERS 801	55-641801	08/17/05	7.2	12.7	70		82	11	3	23				138
ROGERS 803	55-641803	08/17/05	7.4	98.9	16		79	10	3.44	24				148
RUIZ	55-531770	08/23/05	6.9	310	33		162	38	3.07	24				193
STEPHENS	55-808560	08/18/05	7.3	25.4	105		91	37	5.36	36				225
SUNNYSIDE	55-588270	08/17/05	7.1	712	24		289	39	6.33	51				186

TABLE G.1
Historical Groundwater Quality

Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Sulfate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Nitrate as N (mg/L)	Nitrate/ Nitrite as N (mg/L)	Nitrite as N (mg/L)	Alkalinity as CaCO3 (mg/L)
TM-01	55-522569	02/01/89		1650										
TM-01	55-522569	03/02/89		1630										
TM-01	55-522569	04/17/89		1660										
TM-01	55-522569	05/17/89		1450										
TM-01	55-522569	06/23/89		1460										
TM-01	55-522569	07/01/89		1600										
TM-01	55-522569	08/01/89		1620										
TM-01	55-522569	09/01/89		1520										
TM-01	55-522569	10/01/89		1600										
TM-01	55-522569	12/01/89		1500										
TM-01	55-522569	01/08/90		1480										
TM-02	55-522573	01/27/89	6.7	2600	23	0.07	878	394	7	31	0.2			
TM-02	55-522573	02/27/89	6.5	2500	26.6	ND	831	391	6	33	0.2			
TM-02	55-522573	04/06/89	6.4	2700	37.2	0.06	800	480	5.5	30	0.2			
TM-02	55-522573	05/01/89	6.7	2890	29.7	0.08	893	433	4.8	30	0.2			
TM-02	55-522573	06/08/89	6.8	2900	26.6	0.06	820	490	5.7	31	0.2			
TM-02	55-522573	07/13/89	6.3	2640	29.7	ND	760	466	5.4	30	0.2			
TM-02	55-522573	08/02/89	6.6	2950	33.3	ND	800	537	5.3	27	0.1			
TM-02	55-522573	09/12/89	6.7	2700	28.3	ND	820	467	6.1	31	0.2			
TM-02	55-522573	10/16/89	6.5	2800	26.9	ND	820	479	5.2	27	0.2			
TM-02	55-522573	11/13/89	6.8	2840	30.8	0.08	823	471	5.4	30	0.2			
TM-02	55-522573	12/11/89	6.7	2700	28.7	0.05	784	494	5.4	28	0.2			
TM-02	55-522573	01/04/90	6.6	2800	29.7	0.05	800	500	5.4	31	0.2			
TM-02	55-522573	11/23/93	6.6	2200	30	0.06	706	322		26.3	1.01			895
TM-02	55-522573	06/20/96	6.4	1200	28	0.09	628	147	4.9	35.6	1.7			750
TM-02	55-522573	07/18/96	7.35	1156	26.1	ND	584	142	4.8	32	0.84		< 0.1	687
TM-02	55-522573	08/06/96	6.12	523	31.5	<1.0	569	140	5	27.8	1.7			
TM-02	55-522573	08/06/96	6.30	1300	27.9	<0.2	603	134	7.82	31.1	1.56	1.56		678
TM-02	55-522573	07/30/97	6.1	1290	24	ND	530		8	38	1.5		< 0.1	606
TM-02	55-522573	11/06/97	6	1210		ND	530	14	7.5	35	1.3		< 0.1	670
TM-02	55-522573	11/20/02	6.5	1320	35	ND	580		6					
TM-02	55-522573	10/21/05		1280										
TM-02A	55-522574	02/24/89	8.1	640	18	0.19	184	85	10	62	1.3			
TM-02A	55-522574	03/03/89	9.1	26	9.6	0.42	8.4	4.7	8.3	68	1.5			
TM-02A	55-522574	04/06/89	9	27	10.6	0.56	9.2	5.2	5.6	62	< 0.1			
TM-02A	55-522574	05/01/89	8.8	29	9.6	0.43	8	4.5	3.7	63	0.2			
TM-02A	55-522574	06/08/89	9	27	7.1	0.49	7.6	5.3	4.1	64	0.2			
TM-02A	55-522574	07/13/89	8.9	24	12.4	0.45	7	5.4	3.7	66	0.1			
TM-02A	55-522574	08/07/89	9	27	8.1	0.4	7.9	6	3.3	66	0.2			
TM-02A	55-522574	09/12/89	8.9	26	8.1	0.42	7.7	5.5	4	68	0.1			
TM-02A	55-522574	10/16/89	8.6	26	8.1	0.43	9.8	6.6	3.5	64	0.1			
TM-02A	55-522574	11/13/89	8.7	27	12.4	0.39	9	6.3	3.4	69	0.2			
TM-02A	55-522574	12/11/89	8.8	26	9.6	0.28	9	6	3.4	66	0.2			

TABLE G.1
Historical Groundwater Quality

Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Sulfate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Nitrate as N (mg/L)	Nitrate/ Nitrite as N (mg/L)	Nitrite as N (mg/L)	Alkalinity as CaCO3 (mg/L)
TM-02A	55-522574	01/04/90	8.7	27	9.2	0.28	9.4	6.1	3.6	67	0.2			
TM-02A	55-522574	11/23/93	8.2	20	9.3	0.34	19.4	7.4		59.3	1.76			169
TM-02A	55-522574	06/24/96	8.1	15	8.7	0.28	15.2	6.2	2.4	59.3	0.41			173
TM-02A	55-522574	10/22/05		58.9										
TM-03	55-522575	01/27/89	8.1	155	35	0.26	86	34	3.5	30	3.5			
TM-03	55-522575	03/01/89	7.9	149	30.4	0.29	83	32	3.4	29	3.7			
TM-03	55-522575	04/06/89	8	153	35.4	0.34	90	35	3.2	28	3.9			
TM-03	55-522575	05/02/89	7	158	34	0.27	94	33	2	28	3.6			
TM-03	55-522575	06/01/89	8.1	162	32.2	0.29	92	32	3.5	26	3.8			
TM-03	55-522575	07/13/89	7.8	152	34.3	0.3	86	34	3.3	27	3.7			
TM-03	55-522575	08/08/89	8	154	31.5	0.26	85	32	3.2	29	3.8			
TM-03	55-522575	09/08/89	8.1	150	34	0.31	88	32	3.9	29	3.5			
TM-03	55-522575	10/11/89	7.8	146	31.9	0.35	83	34	3.2	26	3.5			
TM-03	55-522575	11/13/89	8	147	31.9	0.25	87	33	3.2	25	4.1			
TM-03	55-522575	12/07/89	8.3	154	33.6	0.3	93	33	3.4	26	4			
TM-03	55-522575	01/04/90	8.1	150	34.3	0.26	87	34	3.5	29	4.3			
TM-03	55-522575	11/07/02	7.8	121	36	0.3	86	32	3	30				
TM-05 MILLER	55-522694	06/26/96	7.8	10	24	0.34	50.5	5.6	1.6	19.8	2.1			147
TM-06 MILLER	55-522695	06/26/96	7.9	29	18	0.82	36.1	18.2	1.5	54	0.83			225
TM-06 MILLER	55-522695	08/23/05	7.8	27.2	19		39	19	1.9	52				185
TM-07	55-522576	01/24/89	7.9	365	23	0.1	144	52	2.9	28	2.5			
TM-07	55-522576	02/27/89	7.4	485	22.7	0.12	180	55	2.8	34	2.4			
TM-07	55-522576	04/04/89	7.4	525	31.9	0.15	196	62	2.8	30	3			
TM-07	55-522576	05/01/89	7.2	520	26.2	0.18	184	64	1.6	30	2.6			
TM-07	55-522576	06/06/89	7.8	510	24.1	0.06	175	66	2.9	31	2.8			
TM-07	55-522576	07/12/89	7.4	450	25.5	0.09	160	66	2.8	31	2.7			
TM-07	55-522576	08/07/89	7.5	475	23.4	0.05	179	62	2.7	30	2.8			
TM-07	55-522576	09/07/89	7.8	480	25.1	0.11	180	62	3.2	31	2.5			
TM-07	55-522576	10/10/89	7.4	450	21.2	0.06	161	61	2.8	29	2.1			
TM-07	55-522576	11/08/89	7.5	340	28.7	0.09	134	48	2.6	28	2.9			
TM-07	55-522576	12/04/89	8	460	25.5	0.16	174	57	2.8	28	2.9			
TM-07	55-522576	01/03/90	7.7	456	22.7	0.07	165	60	3	31	3.1			
TM-07	55-522576	10/20/92	7.4	313										
TM-07	55-522576	01/11/93	7.4	323										
TM-07	55-522576	04/19/93	7.6	311										
TM-07	55-522576	06/24/96	7.7	310	17	0.17	122	41.1	2.3	25.4	2.2			185
TM-07	55-522576	08/06/96	7.25	315	17.9	<1.0	129	41.7	<5	20.7	2.1			
TM-07	55-522576	08/06/96	7.30	311	16.4	0.24	136	43.5	2.45	23.6	2.05	2.05	< 0.10	173
TM-07	55-522576	01/23/97	7.21	311										
TM-07	55-522576	07/29/97	7	271	17	0.2	120	42	< 0.05	28	2.1		< 0.10	178
TM-07	55-522576	11/06/97	6.87	300		0.2	120	41	< 0.05	25	2			172
TM-07	55-522576	12/10/02	7.6	219	15	0.2	94	30	2	23				170

TABLE G.1
Historical Groundwater Quality

Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Sulfate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Nitrate as N (mg/L)	Nitrate/ Nitrite as N (mg/L)	Nitrite as N (mg/L)	Alkalinity as CaCO3 (mg/L)
TM-10 USBP	55-522696	01/30/89	8.1	16	8.1		29	20	2.1	27	2.1			
TM-10 USBP	55-522696	03/02/89	8	16	4.2		28	18	1.9	27	1.5			
TM-10 USBP	55-522696	04/07/89	8.1	16	7.4		29	18	1.9	27	2.3			
TM-10 USBP	55-522696	05/02/89	7.9	12	< 1.8		25	18	1	26	2.7			
TM-10 USBP	55-522696	06/07/89	8.1	17	3.5		28	19	2	27	2.2			
TM-10 USBP	55-522696	07/14/89	8	18	8.1		28	20	1.9	26	2.5			
TM-10 USBP	55-522696	08/10/89	8.1	14	5.7		28	19	1.9	27	2.7			
TM-10 USBP	55-522696	09/07/89	8.4	15	6.4		30	18.6	2	26	3			
TM-10 USBP	55-522696	10/10/89	7.9	15	5.3		28	19	1.8	26	2			
TM-10 USBP	55-522696	11/14/89	8.4	15	5.3		28	20	1.9	25	3			
TM-10 USBP	55-522696	12/04/89	8.2	15	7.4		28	20	1.9	26	3.4			
TM-10 USBP	55-522696	01/03/90	8.3	17	6		28	19	1.9	28	3.9			
TM-11 PIONKE	55-522815	01/24/89	8	9	16.6	0.25	51	8.2	2.4	13	1.9			
TM-11 PIONKE	55-522815	02/27/89	7.9	10	14.2	0.3	53	7.4	2.2	13	2.2			
TM-11 PIONKE	55-522815	04/04/89	7.8	9	18	0.24	54	8	2.1	13	2.5			
TM-11 PIONKE	55-522815	05/01/89	7.5	10	17.4	0.31	50	7	1	12	2.1			
TM-11 PIONKE	55-522815	06/06/89	8.1	11	14.5	0.3	50	8.2	2.2	12	2.3			
TM-11 PIONKE	55-522815	07/12/89	7.7	8	15.6	0.3	50	7.3	2	11	2.3			
TM-11 PIONKE	55-522815	08/07/89	7.9	7	15.2	0.28	50	7.3	2.1	12	2.3			
TM-11 PIONKE	55-522815	09/07/89	8.1	16	13.8	0.32	51	7.8	2.4	14	2.2			
TM-11 PIONKE	55-522815	10/10/89	7.7	9	16.3	0.35	51	8.9	2	12	1.7			
TM-11 PIONKE	55-522815	11/08/89	8	9	16.3	0.27	50	7.3	2.1	13	2.6			
TM-11 PIONKE	55-522815	12/04/89	8	9	91.1	0.3	47	7.7	2.1	13	2.5			
TM-11 PIONKE	55-522815	01/03/90	8	9	18.8	0.32	51	7.5	2.1	12	2.7			
TM-12 MILLER	55-522697	01/12/89	175											
TM-12 MILLER	55-522697	06/26/96	7.7	7	25	0.22	57.7	7.5	1.8	23.3	2.7			181
TM-13	55-522698	02/01/89		430										
TM-13	55-522698	03/02/89		460										
TM-13	55-522698	04/17/89		415										
TM-13	55-522698	05/17/89		380										
TM-13	55-522698	06/19/89		416										
TM-13	55-522698	07/18/89		430										
TM-13	55-522698	08/22/89		440										
TM-13	55-522698	09/12/89		146										
TM-13	55-522698	10/25/89		396										
TM-13	55-522698	01/17/90		450										

TABLE G.1
Historical Groundwater Quality

Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Sulfate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Nitrate as N (mg/L)	Nitrate/ Nitrite as N (mg/L)	Nitrite as N (mg/L)	Alkalinity as CaCO3 (mg/L)
TM-14 NELSON	55-522816	03/10/89		16										
TM-14 NELSON	55-522816	04/18/89		18										
TM-14 NELSON	55-522816	05/18/89		19										
TM-14 NELSON	55-522816	06/19/89		17										
TM-14 NELSON	55-522816	07/18/89		19										
TM-14 NELSON	55-522816	08/22/89		19										
TM-14 NELSON	55-522816	09/12/89		18										
TM-14 NELSON	55-522816	10/25/89		17										
TM-14 NELSON	55-522816	01/05/90		20										
TM-15 MILLER	55-522699	06/27/96	7.9	14	7.2	0.39	26	16.4	1.9	30.3	1.28			187
TM-15 MILLER	55-522699	08/23/05		15.4										
TM-15 MILLER	55-522699	10/23/05		22.6										
TM-16	55-522578	01/27/89	7.8	510	30.8	0.03	215	49	13	32	7.4			
TM-16	55-522578	03/01/89	7.5	560	27.3	0.07	220	48	11	40	10			
TM-16	55-522578	04/06/89	7.4	555	36.5	0.16	220	53	12	30	7.6			
TM-16	55-522578	05/03/89	7.5	535	31.9	0.2	217	48	12.4	29	7.6			
TM-16	55-522578	06/01/89	7.7	560	29.4	0.05	239	46	12	31	8.2			
TM-16	55-522578	07/13/89	7.4	540	30.4	0.16	225	52	12	31	8.2			
TM-16	55-522578	08/08/89	7.3	508	28	0.16	218	48	12	29	8			
TM-16	55-522578	09/08/89	7.7	510	30.8	0.1	217	50	12.9	28	6.8			
TM-16	55-522578	10/11/89	7.5	500	28.7	0.05	213	52	12	30	18.2			
TM-16	55-522578	11/13/89	7.8	500	31.9	0.18	207	47	12	33	8.2			
TM-16	55-522578	12/07/89	7.9	520	30.1	0.16	220	47	12	29	8			
TM-16	55-522578	01/04/90	7.6	520	30.1	ND	209	50	12	32	7.7			
TM-16	55-522578	06/27/96	7.4	500	28	0.17	200	44.1	11.1	28.2	7.1			206
TM-16	55-522578	08/06/96	7.07	470	30.5	<1.0	221	47.3	13	24.7	7			
TM-16	55-522578	08/06/96	7.24	553	29.2	0.21	223	49.4	10.7	28.6	7.23	7.23	< 0.10	194
TM-16	55-522578	01/23/97	7.10	484										
TM-16	55-522578	07/29/97	6.90	500	31	0.2	220	49	15	34	7.4		< 0.1	192
TM-16	55-522578	11/06/97	6.88	506		0.2	200	45	13	27	7.1		< 0.1	188
TM-16	55-522578	08/23/05	7.5	528	32		215	45	12.3	34				169
TM-16	55-522578	10/23/05		619										
TM-19	55-522581	01/30/89	7.6	1100	20.9	0.16	449	56	5.2	45	2.3			
TM-19	55-522581	03/01/89	7.2	1100	16.6	ND	432	56	5.1	44	3.4			
TM-19	55-522581	04/07/89	7.2	1180	26.2	0.13	464	57	5	43	2.4			
TM-19	55-522581	05/02/89	7.1	1125	13.8	0.17	451	56	4	42	2.4			
TM-19	55-522581	06/09/89	7.5	1070	16.6	0.14	420	56	5	44	2.4			
TM-19	55-522581	07/13/89	7.1	1120	21.2	0.15	430	57	4.9	44	2.7			
TM-19	55-522581	08/08/89	7.2	1110	19.1	0.15	454	56	4.9	41	2.5			
TM-19	55-522581	09/08/89	7.5	1080	18.8	0.14	437	55	5.6	40	2.3			
TM-19	55-522581	10/13/89	7.2	1200	18.4	0.15	468	57	4.8	43	2.4			
TM-19	55-522581	11/14/89	7.8	1100	23	0.15	430	55	4.7	43	2.6			
TM-19	55-522581	12/07/89	7.5	1120	19.8	0.14	448	55	4.6	41	2.5			

TABLE G.1
Historical Groundwater Quality

Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Sulfate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Nitrate as N (mg/L)	Nitrate/ Nitrite as N (mg/L)	Nitrite as N (mg/L)	Alkalinity as CaCO3 (mg/L)
TM-19	55-522581	01/04/90	7.4	1120	19.8	0.15	448	56	4.9	45	2.7			
TM-19	55-522581	11/23/93	7.3	1100	20	0.15	419	50.2		40.9	1.93			197
TM-19	55-522581	06/20/96	7.2	1100	19	0.16	427	55.6	4.3	41.3	1.8			207
TM-19	55-522581	08/06/96	6.81	1120	19.1	<1.0	475	58.4	7	88.9	1.8			
TM-19	55-522581	08/06/96	7.13	1200	18.6	<0.20	496	61.0	4.67	43.5	1.84	1.84	<0.1	194
TM-19	55-522581	01/23/97	6.88	1140										
TM-19A	55-522580	01/30/89	8	50	14.9	0.22	39	9	2.7	59	1.7			
TM-19A	55-522580	03/01/89	8	54	11.7	0.29	35	8	2.6	58	1.8			
TM-19A	55-522580	04/07/89	7.9	55	15.2	0.27	43	9.5	2.5	55	1.8			
TM-19A	55-522580	05/02/89	7.7	50	9.2	0.23	41	9.1	1.5	54	1.8			
TM-19A	55-522580	06/09/89	8.1	55	11.3	0.27	40	9.8	2.6	56	1.8			
TM-19A	55-522580	07/13/89	7.6	55	14.2	0.25	40	10	2.6	57	1.8			
TM-19A	55-522580	08/08/89	7.8	53	12.7	0.23	41	9.2	2.6	56	1.9			
TM-19A	55-522580	09/11/89	7.3	58	13.4	0.27	42	9.5	2.9	56	1.7			
TM-19A	55-522580	10/13/89	7.2	58	12	0.25	42	16	2.5	43	1.8			
TM-19A	55-522580	11/14/89	8.4	58	12.4	0.25	43	10	2.6	55	2			
TM-19A	55-522580	12/07/89	8.4	58	13.8	0.23	42	9.5	2.8	53	2			
TM-19A	55-522580	01/04/90	8.1	62	14.2	0.23	40	9.5	2.7	57	1.7			
TM-19A	55-522580	11/23/93	8.2	63	15	0.26	42.7	9.9		56.1	1.81			172
TM-19A	55-522580	06/25/96	7.8	56	14	0.21	43.8	10.2	2.5	58.6	1.7			195
TM-19A	55-522580	10/23/05		62.5										
TM-41	55-562555	07/30/97	6.2	1940	22	0.2	620	250	28	47	2		< 0.1	800
TM-41	55-562555	11/06/97	6.08	1900		0.2	640	250	17	43	1.8		< 0.1	740
TM-42	55-562554	07/30/97	6.9	985	28	0.3	290	95	18	50	4.1		< 0.1	188
TM-42	55-562554	11/06/97	6.8	958		0.3	290	93	14	49	4.2		< 0.1	182
TM-42	55-562554	10/22/05		656										
TM-43	55-564729	04/27/89		26										
TM-43A	55-564729	04/27/89		1700										
TM-43B	55-564729	04/27/89		28										
TM-43C	55-564729	04/27/89		200										
TM-44	55-564730	10/22/05		43.1										
TM-46	55-564727	10/23/05		42.4										
TVI 875	55-568875	08/23/05	7.7	33.4	29		71	9	2.17	26				180
WALKER	55-200393	08/16/05	7.1	38.7	40		75	26	3	28				232
WEED	55-544535	08/17/05	7.6	13.7	11		34	13	2.26	27				161
WEISKOPF	55-641802	08/17/05	7.1	590	33		251	33	6.23	41				147
WEISKOPF DUP	55-641802	08/17/05	7.1	584	32		251	32	6.17	41				148

Notes:

All results reported in milligrams per liter (mg/L), except pH which is reported in Standard Units

ADWR = Arizona Department of Water Resources

mg/L = milligrams per liter

APPENDIX H

HISTORICAL GROUNDWATER PUMPING

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TABLES

TABLE H.1
Water Supply Wells in the Bisbee-Naco Area

Well Name[1]	ADWR 55 Registry No.	UTM E 83	UTM N 83	Water Use	Date Installed	Reported Pumping Rate[2] (gpm)	Status in 2008
85343	55-85343	606721	3469338	DOMESTIC	Not Installed	NA	Cancelled
500431	55-500431	600096	3467864	DOMESTIC	Not Installed	NA	Cancelled
500881	55-500881	599896	3468063	DOMESTIC	Not Installed	NA	Cancelled
ACKER	55-214612	598847	3472874	DOMESTIC	6/8/2007		No Response
ALVAREZ	55-650255	601096	3467466	IRRIGATION	1938		Cancelled
ANDERSON	55-613396	601135	3468816.1	DOMESTIC	1954		Operational
ANDERSON M	55-616775	600793	3468573	DOMESTIC/IRRIGATION			Declined participation in monitoring program
ANDERSON M	55-616776	599996	3467763	DOMESTIC	1916		Declined participation in monitoring program
ASLD (M-02)	55-616436	601488	3469690	STOCK	7/15/1920		Dry
AWC-02	55-616586	598891	3468565.9	MUNICIPAL	1955		Operational
AWC-03	55-616585	599016	3468659.6	MUNICIPAL	7/20/1956	850	Operational
AWC-04	55-616584	599000	3468695.2	MUNICIPAL	1959	1,400	Operational
AWC-05	55-590620	599278	3468526.3	MUNICIPAL	6/24/2002		Operational
BANKS 986	55-647986	606723	3469137	DOMESTIC	6/23/1980	10	Operational
BANKS 987 (BJ-6)	55-647987	606982	3469206.2	DOMESTIC	< 1982	10	Not Operational
BARTON 010	55-85010	606201	3469047.5	DOMESTIC	1981	13	Not Operational
BARTON 919	55-644919	606244	3469076.7	DOMESTIC	< 1982	15	Not Operational
BERNAL	55-648363	600796	3467767	DOMESTIC	< 1948		Not Operational
BIMA	55-577927	606001	3471852.8	DOMESTIC	3/3/2000		Operational, deepened
BINYON	55-594938	608545	3468542	DOMESTIC	12/5/2002	5	Operational
BLOMMER	55-645536	Duplicate registration of BLOMMER 633472					
BLOMMER (SJ-6)	55-633472	601376	3470798	DOMESTIC	11/13/1978	35	Not Operational; declined participation Q1 09
BRINDLEY (SJ-5)	55-86775	601263	3472095	DOMESTIC	4/30/1981	10	Not Located
BULLARD (SJ-9)	55-602134	602079	3470901	DOMESTIC	9/6/1974	12	Not Operational
BURKE	55-212268	602230	3473029.8	DOMESTIC	10/11/2006		Capped
BURKE 236	55-207236	602261	3473107	DOMESTIC			Not Operational
BUSK	55-581107	605515	3469127	DOMESTIC	Not Installed	NA	Cancelled - not installed
CAMPBELL	55-643481	606519	3469336	DOMESTIC	1996		Operational
CHAMBERS	55-629807	600097	3467462	DOMESTIC	1977	26	Operational
CHASE	55-648359	599695	3468062	DOMESTIC	1970	15	Operational
COLLINS (ENGLUND)	55-565260	602551	3471341.3	DOMESTIC	12/16/1997	10	Operational
CONNOR	55-516399	600251	3472677.7	DOMESTIC	1/20/1987		Abandoned
COOPER	55-623564	602668	3472105	DOMESTIC/IRRIGATION	12/20/1979	30	Operational
COOPER C (HUTSON)	55-637069	601350	3468913	DOMESTIC	7/29/1966	35	Operational
COTA	55-651116	600197	3467563	DOMESTIC	< 1962	30	Not Located
CROWLEY	55-510298	602461	3473109	DOMESTIC	4/19/1985	NA	Dry at installation
DODSON (BJ-1)	55-644927	605595	3469063.8	DOMESTIC	10/1/1959	15	Operational
DOUGLASS 791	55-592791	607633	3470222.7	DOMESTIC	9/21/2002	20	Not Operational
DOUGLASS 792	55-592792	607608	3469829.1	DOMESTIC	9/19/2002	20	Not Operational
DURAZO	NR	602041	3471284	DOMESTIC	10/24/2003	15	Operational
EAST	55-599796	607076	3468712.2	DOMESTIC	10/24/2003	15	Operational
EBERWEIN	55-641726			DOMESTIC	1976	30	Not Operational
EN-01	NA (Mexico)	601753	3464463	IRRIGATION			Not Operational
EN-02	NA (Mexico)	601886	3465282	IRRIGATION	1962 - 1975		Operational
EN-03	NA (Mexico)	602356	3465212	IRRIGATION	1962 - 1975		Operational

TABLE H.1
Water Supply Wells in the Bisbee-Naco Area

Well Name[1]	ADWR 55 Registry No.	UTM E 83	UTM N 83	Water Use	Date Installed	Reported Pumping Rate[2] (gpm)	Status in 2008
EN-05	NA (Mexico)	602140	3466051	IRRIGATION			Operational
EN-06	NA (Mexico)	601962	3466114	IRRIGATION			Operational
EPPELE 641	55-805641	607165	3469229.9	DOMESTIC/IRRIGATION		6	Operational
EPPELE 642	55-805642	607126	3469140	DOMESTIC/IRRIGATION	early 1900s	5	Not Operational
EPPELE 643	55-805643	607126	3469140	DOMESTIC		25	Not Operational
FLEMING	55-218386	605567	3469335	DOMESTIC	2/1/2009	35	Not Operational - never used
FRANCO	55-500101	602850	3468835.7	DOMESTIC	7/1/1981	25	Operational
FULTZ	55-212447	606924	3469139	DOMESTIC	6/23/2006	25	Operational
GALLANT	55-502527	607770	3468524.4	DOMESTIC	4/26/1982	35	Operational
GARNER 557	55-558557	602659	3468962.4	DOMESTIC	9/4/1996	16	Not Operational
GARNER 635 (GW-47)	55-587635	602665	3468967.9	DOMESTIC	10/12/2001	20	Operational
GGOOSE 546 (BJ-3)	55-628546	606115	3469534	DOMESTIC/IRRIGATION	2/11/1963	100	Not Operational
GGOOSE 547 (BJ-4)	55-628547	606257	3469820.3	DOMESTIC/IRRIGATION	8/18/1961	100	Not Operational
GOAR	55-610688	602406	3468588	IRRIGATION	late 1940s or early 1950s	60	Dry
GOAR	55-610690	601596	3468580	STOCK/DOMESTIC	late 1940s or early 1950s	60	Dry
GOAR	55-610692	602406	3468588	STOCK/DOMESTIC	late 1940s or early 1950s	Windmill	Dry
GOAR	55-610694	602217	3468916.3	DOMESTIC	late 1940s or early 1950s	15	Not Operational since 1995
GOAR	55-610691	602406	3468588	DOMESTIC	late 1940s or early 1950s	60	Dry
GOAR	55-610693	602406	3468588	DOMESTIC	late 1940s or early 1950s	15	Dry
GOAR (G-2)	55-610686	602406	3468588	IRRIGATION	late 1940s or early 1950s	60	Dry
GOAR (G-4)	55-610687	602406	3468588	IRRIGATION	late 1940s or early 1950s	60	Dry
GOAR (G-7)	55-610689	602406	3468588	IRRIGATION	late 1940s or early 1950s	60	Dry
GOAR RANCH	55-610695	602455	3468892.5	DOMESTIC	late 1940s or early 1950s	15	Not Operational since 1995
GREGG (BJ-5)	55-630852	607024	3469240	DOMESTIC	< 1982		Dry
HAUBERT (SJ-16)	55-801607	601596	3468580	DOMESTIC/IRRIGATION	~ 1955	60	Declined participation in monitoring program
HECK	55-507823	602077	3471101	DOMESTIC	5/4/1984		Not Operational
HOBAN	55-805290	601706	3468880.3	DOMESTIC	3/2/1964	15	Operational
HULL 854 (SJ-7)	55-606854	601475	3470899	IRRIGATION	< 1915		Not Located
HULL 855	55-606855	601467	3471697	DOMESTIC	< 1915	35	Not Located
HUMPHREY	55-649153	600395	3468167	DOMESTIC	1938		Declined participation in monitoring program
IRONS	55-632924	602204	3468788	DOMESTIC/IRRIGATION	12/12/1955	200	Declined participation in monitoring program
JACKSON	55-506034	602479	3471103	DOMESTIC	8/16/1983	35	No Response
JALYN	55-209737	601496	3468680	DOMESTIC	11/16/2005	25	Not Operational
KEEFER	55-209744	599879	3468119	DOMESTIC	11/15/2005	25	Operational
KENNEDY	55-647003	Duplicate registration of ASLD 616436					
LESNICK	55-587749	607516	3470145	DOMESTIC	5/4/2002	25	Not Located
LUCERO	55-618175	601293	3468274	DOMESTIC	6/26/1972	100	No Response
MCCONNELL 265	55-539265	601463	3468840.1	DOMESTIC	7/6/1993	20	Operational
MCCONNELL 386	55-590386	601438	3468845.8	DOMESTIC	2002	0	Well Installed; Not Operational
MENDEZ	55-650256	601096	3467466	IRRIGATION	1938		Dry
METZLER	35-71891	602091	3471381.2	DOMESTIC	4/10/1979		Operational
MILLER 340	55-641340	600090	3469474	STOCK/DOMESTIC	1940	10	Dry
MILLER 341 (M-03)	55-641341	601699	3467875	STOCK	1920	10	Dry
MILLER 342 (M-04)	55-641342	604520	3467499	STOCK	1957	10	Dry
MINNERLY	55-650662	607223	3469441	DOMESTIC			Not Located

TABLE H.1
Water Supply Wells in the Bisbee-Naco Area

Well Name[1]	ADWR 55 Registry No.	UTM E 83	UTM N 83	Water Use	Date Installed	Reported Pumping Rate[2] (gpm)	Status in 2008
MINOR 316 (SJ-13)	55-633316	601173	3468486.6	DOMESTIC	1955	35	Declined participation Q2 08
MINOR 317	55-633317	601172	3468568	DOMESTIC	1956	35	Operational, declined participation Q2 08
MOORE	55-538847	599495	3468060	DOMESTIC	4/24/1993	10	Operational
MOROYOQUI	55-647847	600395	3468167	DOMESTIC	6/18/1969	25	Dry
NESS	55-509127	607912	3471347	DOMESTIC	1/30/1985	6	Operational
NOBLE	55-618611	602608	3468792	DOMESTIC			Not Located
NOTEMAN	55-212483	606054	3471576.4	DOMESTIC	5/9/2006		Operational
NSD-02	55-527587	598884	3468847	MUNICIPAL			Operational
NSD-03	55-527586	598077	3468637	MUNICIPAL			Operational
NWC-01	55-627682	600144	3467140	MUNICIPAL	9/24/1951	75	Sold by NWC
NWC-02	55-562944	600348	3467817	MUNICIPAL	6/11/1997		Operational
NWC-02 CAPPED	55-627683	600183	3467457.3	MUNICIPAL	8/2/1959	175	Not Operational, replaced by 562944
NWC-03	55-203321	601149	3468343	MUNICIPAL			Operational
NWC-03 CAPPED	55-627684	601148	3468343	MUNICIPAL	1930	35	Not Operational, replaced by 203321
NWC-04	55-551849	605837	3469074.7	MUNICIPAL	8/24/1995		Operational, deepened
NWC-04 CAPPED	55-627685	605915	3469113.4	MUNICIPAL	12/31/1926	180	Capped 3/29/2005, replaced by 551849
NWC-05	55-627696	606980	3469445.6	MUNICIPAL	1960	< 35	Sold by NWC
NWC-06	55-575700	599826	3467741.7	MUNICIPAL	9/15/1999	130	Operational
OSBORN (BJ-2)	55-643436	607032	3470270.5	DOMESTIC	8/5/1993	20	Operational
PALMER 819	55-578819	607724	3469545	DOMESTIC	1/10/2000	25	Operational
PALMER 937	55-642937			STOCK	prior to 1925	20	Not Operational
PANAGAKOS	35-76143	605312	3469321	DOMESTIC	7/1/1957		Operational
PARRA	55-576415	602171	3471263.5	DOMESTIC	10/6/1999	25	Operational
PATSIS	55-544685	602673	3471705	DOMESTIC	Not Installed	NA	Not Installed
PAVLOVICH	55-502193	601238	3474910	DOMESTIC	4/1/1982	35	
PIONKE	55-613395	600936	3468836.6	IRRIGATION	1964	200	Operational
POOL (SJ-10)	55-509518	599684	3470013.8	DOMESTIC	12/12/1984	30	Operational
POWER (SJ-3)	55-624535	608379	3472738.9	STOCK/DOMESTIC	1967	15	Operational
RAMIREZ	55-216425	599696	3467661	DOMESTIC			Operational
RAY	55-803772	607083	3469195.1	DOMESTIC		< 35	Operational
RICHARDS	55-531595	608716	3471353	DOMESTIC	5/3/1991		Operational
RODRIGUEZ	55-648360	600697	3467464	DOMESTIC	~ 1930		Dry
ROGERS 596	55-573596	600894	3468271	DOMESTIC	9/16/1999	20	Not Operational
ROGERS 801	55-641801	601092	3468676	DOMESTIC	1960	20	Not Operational
ROGERS 803	55-641803	600978	3468417.4	DOMESTIC	1960	20	Operational
ROGERS E	55-216018	599895	3468264	DOMESTIC	9/10/2007	20	Operational
ROLLINS	55-641750	601096	3467667	DOMESTIC			Not Operational
ROSS	55-516398	600052	3472887	DOMESTIC	1/21/1987		Cancelled - never used
ROSS	55-513351	600254	3472688	DOMESTIC	2/8/1986	500	Capped - never used
ROSS	55-517525	599654	3472078	DOMESTIC	4/17/1987		Dry at installation
ROSS	55-517526	599666	3471480	DOMESTIC	4/16/1987	35	No Response
RUIZ	55-531770	602857	3471424.2	DOMESTIC	5/29/1991	10	Operational
SCHWARTZ	55-210865	600812	3468268.1	DOMESTIC		16	Operational
SHAFER	55-649994	600497	3467463	DOMESTIC	7/15/1966	30	Bulldozed
SILVESTRI	55-557742	600251	3473493	DOMESTIC	7/10/1996	28	Well is located about 7 miles northwest of Naco

TABLE H.1
Water Supply Wells in the Bisbee-Naco Area

Well Name[1]	ADWR 55 Registry No.	UTM E 83	UTM N 83	Water Use	Date Installed	Reported Pumping Rate[2] (gpm)	Status in 2008
SRC	55-211345	599722	3472503.3	DOMESTIC	2/6/2007		Capped - never used
STARK-CAMPBELL	55-215509	606421	3469320.3	DOMESTIC	4/11/2007		Not Operational
STEPHENS	55-808560	606982	3469072.8	DOMESTIC			Not Operational
SUNBELT	55-201531	605998	3471735.1	DOMESTIC	1/15/2004	25	Dry 2008
SUNNYSIDE	55-588270	601293	3468476	DOMESTIC	8/28/2001	10	Not Operational
TVI 161	55-556161	599895	3468264	DOMESTIC	Not Installed	NA	Cancelled, never installed
TVI 236 (SJ-17)[3]	55-802236	600552	3467978.4	IRRIGATION	2/14/1934	600	Operational
TVI 713[3]	55-567713	600729	3468412.9	IRRIGATION	4/14/1998		Capped - never used
TVI 875[3]	55-568875	600694	3468471	IRRIGATION	6/14/1998	500	Operational
TVI Southside 2[3,4]		600052	3467988	IRRIGATION	~1970	400	Operational
UN-01	NA (Mexico)	600000	3466343	MUNICIPAL	1962 - 1975		Not Operational
UN-02	NA (Mexico)	600013	3465397	MUNICIPAL	before 1993		Operational
UN-03	NA (Mexico)	599949	3465797	MUNICIPAL	1962 - 1975		Operational
UN-04	NA (Mexico)	601213	3466298	MUNICIPAL	1996 - 1998		Operational
UN-05	NA (Mexico)	600743	3464444	MUNICIPAL	~ 2005		Operational
UNION PACIFIC RR	55-626702	605916	3469131	MUNICIPAL	1/31/1918	175	Capped 2005
VALENZUELA	55-645050	600395	3468167	DOMESTIC	1947		Declined participation in monitoring program
WALKER	55-200393	607565	3468577.5	DOMESTIC	11/12/2003		Operational
WEED	55-544535	601276	3470699	DOMESTIC	7/9/1994	25	Operational
WEISKOPF (GROUT)	55-641802	601155	3468658.9	DOMESTIC	< 1960	25	Operational
WILSON 361	55-648361	602002	3468181	STOCK	1929		No Data
WILSON 362	55-648362	601293	3468879	STOCK	1947		No Data
ZANDER	55-205126	599679	3467998.5	DOMESTIC	2/10/2005	10	Operational

Notes:

[1] Well name in parenthesis are those used in SET (1998c)

[2] The pumping rates listed represent maximum pumping rates. Information obtained from ADWR Image Records for wells in the United States. Data for Mexico wells from personal communication with well operators.

[3] from HGC (2008c)

[4] Location, installation year, and pumping rate are approximate

gpm = gallons per minute
ft bgs = feet below ground surface
ft amsl = feet above mean seal level
NA = not applicable
NR = no record
EN = Ejido Naco
UN = Urbano Naco

TABLE H.2
Arizona Water Company Annual Production Totals

Year	Total Production[1] (Mgal)	Average Production Rate (gpm)
1998	359.4302	684
1999	363.9655	692
2000	394.7041	749
2001	370.3547	705
2002	398.1624	758
2003	391.8667	746
2004	385.4388	731
2005	377.2140	718
2006	368.2015	701
2007	356.5457	678

Notes:

[1] from AWC (2008)

Mgal = Mega-gallons (10^6 gallons)

gpm = gallons per minute

TABLE H.3
Monthly Production from Arizona Water Company Wells

Month-Year	Production[1, 2] (Mgal)		
	AWC-02	AWC-03	AWC-04
Jan-1998	0.0	22.3	0.0
Feb-1998	0.2	19.4	0.8
Mar-1998	0.3	25.1	0.6
Apr-1998	1.3	23.9	3.1
May-1998	2.6	25.5	6.5
Jun-1998	3.9	31.7	12.9
Jul-1998	1.0	26.5	5.2
Aug-1998	0.6	26.2	3.6
Sep-1998	1.9	26.7	4.8
Oct-1998	1.6	25.5	3.6
Nov-1998	0.5	26.8	1.0
Dec-1998	0.2	23.3	0.3
Average Annual Rate (gpm)	**27**	**576**	**81**
Jan-1999	0.3	25.4	0.5
Feb-1999	1.3	21.2	2.3
Mar-1999	2.1	22.8	3.9
Apr-1999	2.1	26.7	5.2
May-1999	3.6	29.0	10.4
Jun-1999	2.3	25.4	13.3
Jul-1999	0.7	23.1	4.6
Aug-1999	0.1	26.4	1.0
Sep-1999	0.8	18.6	4.9
Oct-1999	0.8	27.7	3.9
Nov-1999	0.7	24.7	1.6
Dec-1999	0.7	24.4	1.8
Average Annual Rate (gpm)	**29**	**562**	**102**
Jan-2000	0.3	28.1	2.0
Feb-2000	0.0	26.8	4.8
Mar-2000	1.6	27.2	4.8
Apr-2000	3.2	27.8	8.4
May-2000	2.6	21.0	19.7
Jun-2000	2.3	12.0	23.1
Jul-2000	2.3	11.0	17.9
Aug-2000	1.6	12.0	17.8
Sep-2000	1.9	6.8	22.8
Oct-2000	1.9	9.1	20.0
Nov-2000	2.3	2.9	20.7
Dec-2000	2.1	4.2	17.8
Average Annual Rate (gpm)	**42**	**358**	**341**
Jan-2001	1.8	1.3	23.1
Feb-2001	1.9	1.9	18.8
Mar-2001	2.4	5.8	21.1
Apr-2001	0.0	17.5	14.9
May-2001	0.0	14.6	23.4
Jun-2001	0.3	20.8	19.3
Jul-2001	1.3	25.8	5.2

TABLE H.3
Monthly Production from Arizona Water Company Wells

Month-Year	Production[1, 2] (Mgal)		
	AWC-02	AWC-03	AWC-04
Aug-2001	1.5	23.7	5.8
Sep-2001	1.9	24.7	4.2
Oct-2001	1.6	25.3	6.2
Nov-2001	1.5	22.9	3.6
Dec-2001	0.6	20.8	4.4
Average Annual Rate (gpm)	**28**	**391**	**286**
Jan-2002	0.3	22.8	4.1
Feb-2002	0.0	23.2	1.6
Mar-2002	0.0	28.7	4.1
Apr-2002	2.1	25.4	7.8
May-2002	2.9	28.5	10.8
Jun-2002	3.1	29.3	18.9
Jul-2002	2.6	23.2	12.4
Aug-2002	1.6	17.9	11.4
Sep-2002	2.3	23.2	9.1
Oct-2002	2.8	25.4	1.6
Average Annual Rate (gpm)	**89**	**1254**	**708**
Nov-2002	1.3	17.3	5.2
Dec-2002	1.8	24.9	0.3
Jan-2003	1.4	22.8	1.0
Feb-2003	1.3	15.6	5.7
Mar-2003	1.1	21.3	5.7
Apr-2003	2.3	24.8	6.2
May-2003	0.7	25.1	4.9
Jun-2003	2.3	11.1	17.9
Jul-2003	3.1	26.4	14.3
Aug-2003	3.7	27.4	6.2
Sep-2003	3.3	23.5	5.9
Oct-2003	3.3	23.3	5.2
Nov-2003	3.3	21.8	1.6
Dec-2003	0.1	21.8	1.1
Average Annual Rate (gpm)	**49**	**504**	**144**
Jan-2004	0.0	22.0	1.3
Feb-2004	0.0	23.0	0.1
Mar-2004	0.0	25.1	0.1
Apr-2004	0.0	22.8	0.3
May-2004	2.8	27.0	0.0
Jun-2004	2.9	27.4	5.2
Jul-2004	2.9	23.1	1.0
Aug-2004	2.1	19.2	2.0
Sep-2004	0.0	21.2	0.7
Oct-2004	3.6	21.3	0.5
Nov-2004	3.1	19.4	0.0
Dec-2004	2.9	18.9	0.2
Average Annual Rate (gpm)	**39**	**513**	**22**

TABLE H.3
Monthly Production from Arizona Water Company Wells

Month-Year	Production[1, 2] (Mgal)		
	AWC-02	AWC-03	AWC-04
Jan-2005	3.1	19.6	0.0
Feb-2005	3.1	16.6	0.7
Mar-2005	3.3	21.8	0.0
Apr-2005	3.5	23.1	0.3
May-2005	4.1	25.4	0.3
Jun-2005	3.9	23.1	2.3
Jul-2005	3.9	24.4	5.2
Aug-2005	3.3	19.7	0.0
Sep-2005	3.4	20.5	0.0
Oct-2005	3.4	20.4	0.2
Nov-2005	3.3	19.9	0.0
Dec-2005	3.3	19.6	0.1
Average Annual Rate (gpm)	**79**	**484**	**17**

Notes:

[1] from GEOSCIENCE (2006). Data read from histograms; values are approximate

[2] Data for AWC-05 not included in GEOSCIENCE (2005). AWC-05 was installed on 6/24/2002.

Mgal = Mega-gallons (10^6 gallons)

gpm = gallons per minute

TABLE H.4
Monthly Production Totals from Naco Water Company Wells for the Year 2006

Month-Year	Production[1] (Mgal)		
	NWC-02/ NWC-06[2]	NWC-03	NWC-04
Jan-2006	1.909	0.585	0.047
Feb-2006	1.663	0.407	0.036
Mar-2006	1.739	0.349	0.035
Apr-2006	2.258	0.430	0.045
May-2006	2.784	0.582	0.068
Jun-2006	3.337	0.597	0.065
Jul-2006	2.765	0.452	0.054
Aug-2006	2.720	0.489	0.051
Sep-2006	2.405	0.388	0.044
Oct-2006	1.98	0.398	0.038
Nov-2006	1.606	0.343	0.035
Dec-2006	1.796	0.385	0.039
Total	**26.962**	**5.405**	**0.557**
Average Annual Rate (gpm)	**51**	**10**	**1.06**

Notes:

[1] from ACC (2007)

[2] Individual totals for NWC-02 and NWC-06 not reported

Mgal = Mega-gallons (10^6 gallons)

gpm = gallons per minute

TABLE H.5
Pumping Information for Naco-Sonora Wells

City of Naco-Sonora[1]		
Well	**Average Rate (gpm)**	**Notes**
UN-01	0	Abandoned; Pumping rate reported as 127 gpm in 1997[2]
UN-02	412	More than 15 years old
UN-03	143	More than 15 years old; only pumps between April and October. Pumping rate reported as 127 gpm in 1997[2]
UN-04	190	Installed between 1996 and 1998
UN-05	285	installed ~2005; greater than 100m deep and deepest well
Total[3]	**1,030**	
Ejido Naco (El Oasis) Irrigation[4]		
Well	**Average Rate (gpm)**	**Notes**
EN-01	0	Well not in Service
EN-02	873	
EN-03	1587	
EN-05	873	
EN-06	ND	

Notes:

[1] from HGC (2008a) - personnel Communication with Naco-Sonora Public Works operator

[2] from SAIC (1997)

[3] Total disagrees with operator's estimate of a total pumping rate of 635 gpm

[4] from HGC (2008b) -personnel Communication with Ejido Naco representative

gpm = gallons per minute

ND = no data

TABLE H.6
Pumping Rates Used in the SET (1998c) Numerical Model

Well (Alias)[1]	Use	Pumping Rate During Period[2] (gpm)						
		1905-1930	1931-1954	1955-1961	1962-1975	1976-1987	1988-1997	1998-2098[3]
- (BJ-7)	Domestic	-	-	0.4	0.4	0.4	-	-
- (L-3)	Domestic	-	-	-	-	0.4	-	-
Banks 987 (BJ-6)	Domestic	-	-	-	-	0.4	-	-
Blommer (SJ-6)	Domestic	-	-	-	-	0.4	-	-
Bullard (SJ-9)	Domestic	-	-	-	-	0.4	-	-
Dodson (BJ-1)	Domestic	-	-	-	0.4	0.4	-	-
Gregg (BJ-5)	Domestic	-	-	0.4	0.4	0.4	-	-
Minor 316 (SJ-13)	Domestic	-	-	0.4	0.4	0.4	-	-
Osborn (BJ-2)	Domestic	-	-	-	0.4	0.4	-	-
Pool (SJ-10)	Domestic	-	-	-	-	0.4	-	-
Power (SJ-3)	Domestic	-	-	-	1.8	0.4	-	-
- (L-1)	Stock	-	-	1.8	1.8	1.8	1.8	1.8
- (L-2)	Stock	-	-	1.8	1.8	1.8	1.8	1.8
- (M-1)	Stock	-	-	1.8	1.8	1.8	1.8	1.8
ASLD (M-2)	Stock	-	1.8	1.8	1.8	1.8	1.8	1.8
Brindley (SJ-5)	Stock	-	-	-	-	1.8	1.8	1.8
Hull 584 (SJ-7)	Stock	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Miller 341 (M-3)	Stock	-	1.8	1.8	1.8	1.8	1.8	1.8
Miller 342 (M-4)	Stock	-	1.8	1.8	0.4	1.8	-	-
AWC-03	Municipal	-	-	340.5	340.5	340.5	366.9	450.4
AWC-04	Municipal	-	-	-	340.5	340.5	366.9	450.4
NS-01	Municipal	-	-	-	182.7	244.7	365.2	547.8
NS-03	Municipal	-	-	-	63.5	85.4	126.9	190.4
NWC-01	Municipal	-	-	50.1	50.1	50.1	62.4	73.4
NWC-03	Municipal	-	22.0	22.0	32.1	50.1	50.1	55.0
NWC-05	Municipal	-	5.1	13.8	9.2	9.2	9.2	13.8
EN-02 (PZ-2)	Irrigation	-	-	495.3	697.1	697.1	697.1	697.1
EN-03 (PZ-3)	Irrigation	-	-	495.3	697.1	697.1	697.1	697.1
GGoose 546 (BJ-3)	Irrigation	-	-	-	76.9	100.0	-	-
GGoose 547 (BJ-4)	Irrigation	-	-	-	76.9	100.0	-	-
Goar 686 (G-2)	Irrigation	-	-	100.0	100.0	100.0	18.3	1.8
Goar 687 (G-4)	Irrigation	-	-	100.0	100.0	100.0	18.3	1.8
Goar 689 (G-7)	Irrigation	-	-	100.0	100.0	100.0	18.3	1.8
Haubert (SJ-16)	Irrigation	-	-	100.0	100.0	100.0	1.8	1.8
TVI 236 (SJ-17)	Irrigation	-	300.3	300.3	300.3	200.0	137.6	200.0

Notes:

[1] SET (1998c) identifies wells using alias. Alias identifiers from Littin (1987)

[2] Pumping rates are constant during periods indicated

[3] Predicted rates

gpm = gallons per minute

APPENDIX I

DOWNHOLE LOGGING FOR BMO-2008-8M AND BMO-2008-13M

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	BISBEE
WELL ID	BMO-2008-8M
FIELD	BISBEE
COUNTY	COCHISE
STATE	ARIZONA

TYPE OF LOGS: 3-ARM CALIPER
MORE: NAT. GAMMA

OTHER SERVICES
VIDEO

LOCATION
Lat:31,22,12
Lon: 109,54,16

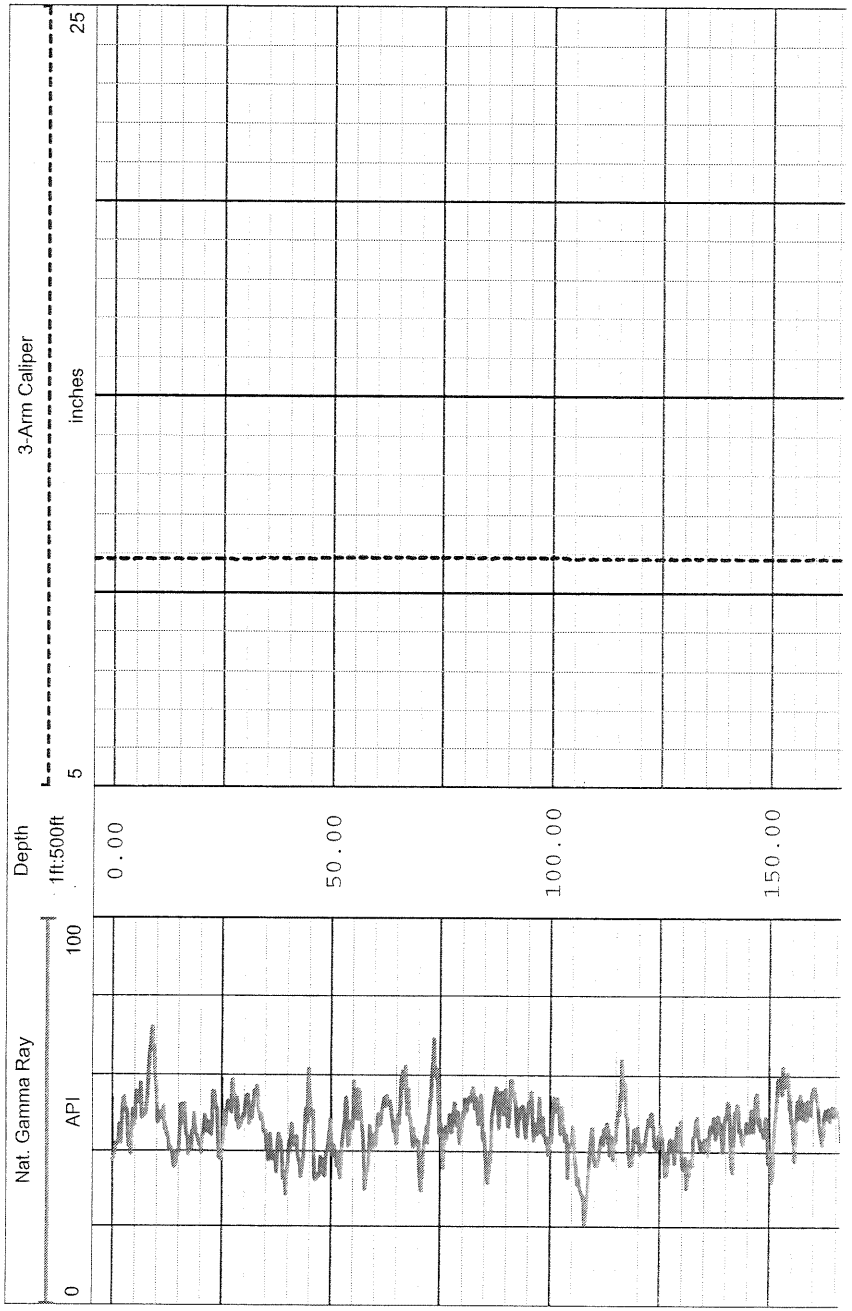
SEC 4 TWP 24S RGE 24E

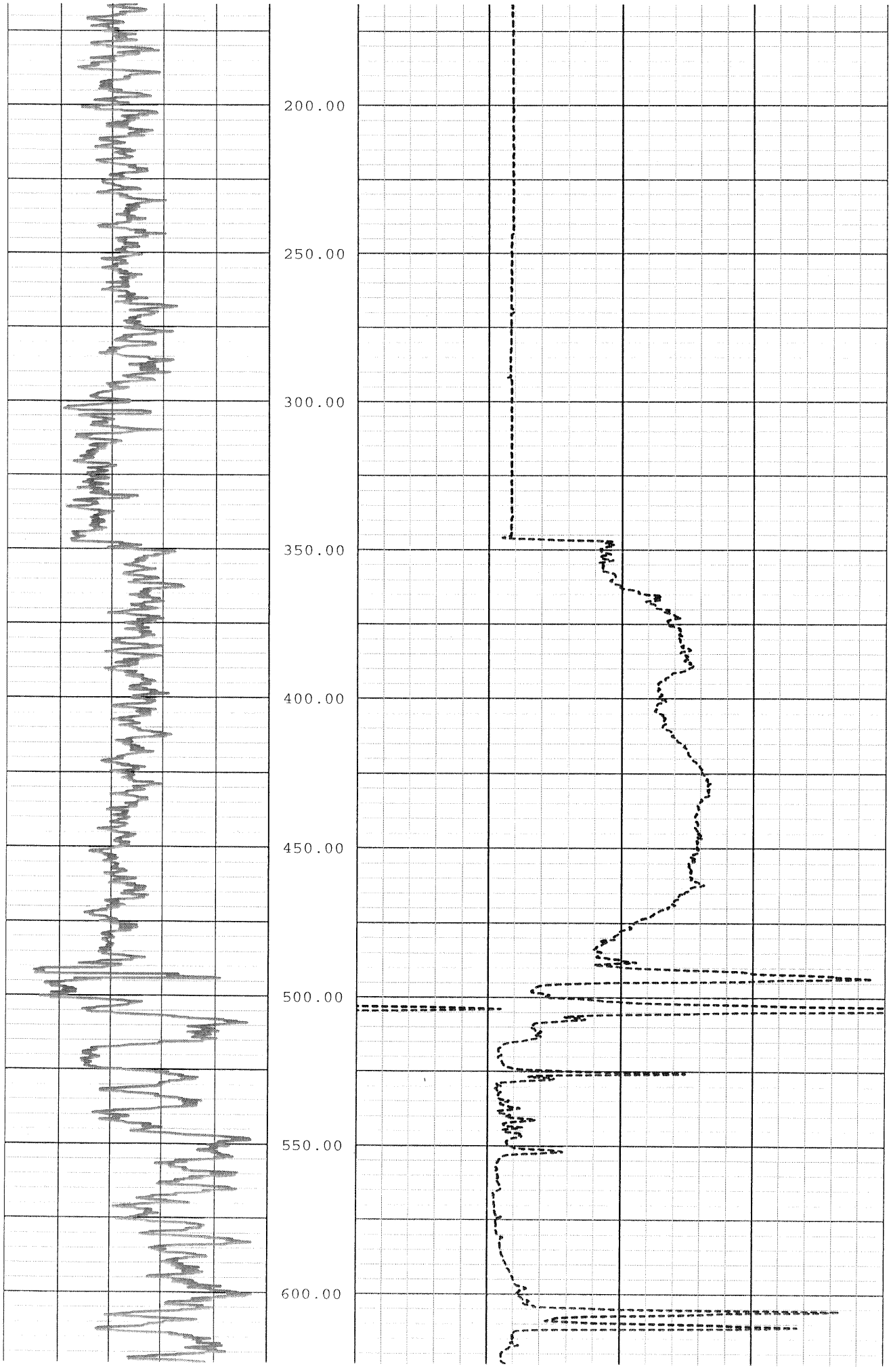
PERMANENT DATUM	ELEVATION	K.B.
LOG MEAS. FROM GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM		G.L.

DATE	10-30-08	TYPE FLUID IN HOLE	FRESH WATER
RUN No	1	SALINITY	
TYPE LOG	CALIPER-GAMMA	DENSITY	
DEPTH-DRILLER	1220 FT	LEVEL	203 FT
DEPTH-LOGGER	1216.3 FT	MAX. REC. TEMP.	N/A
BTM LOGGED INTERVAL	1216.3	IMAGE ORIENTED TO:	N/A
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	.2 FT
DRILLER / RIG#	WDC	LOGGING TRUCK	TRUCK # 689
RECORDED BY / Logging Eng.	K. MITCHELL	TOOL STRING/SN	2PCA-2PGA
WITNESSED BY	HydroGeo Chem - Rick Z.	LOG TIME:ON SITE/OFF SITE	1:00 PM AM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	10"	SURFACE	20 FT	10 3/4"		SURFACE	239 FT
2	9 7/8"	SURFACE	TOTAL DEPTH				

COMMENTS:

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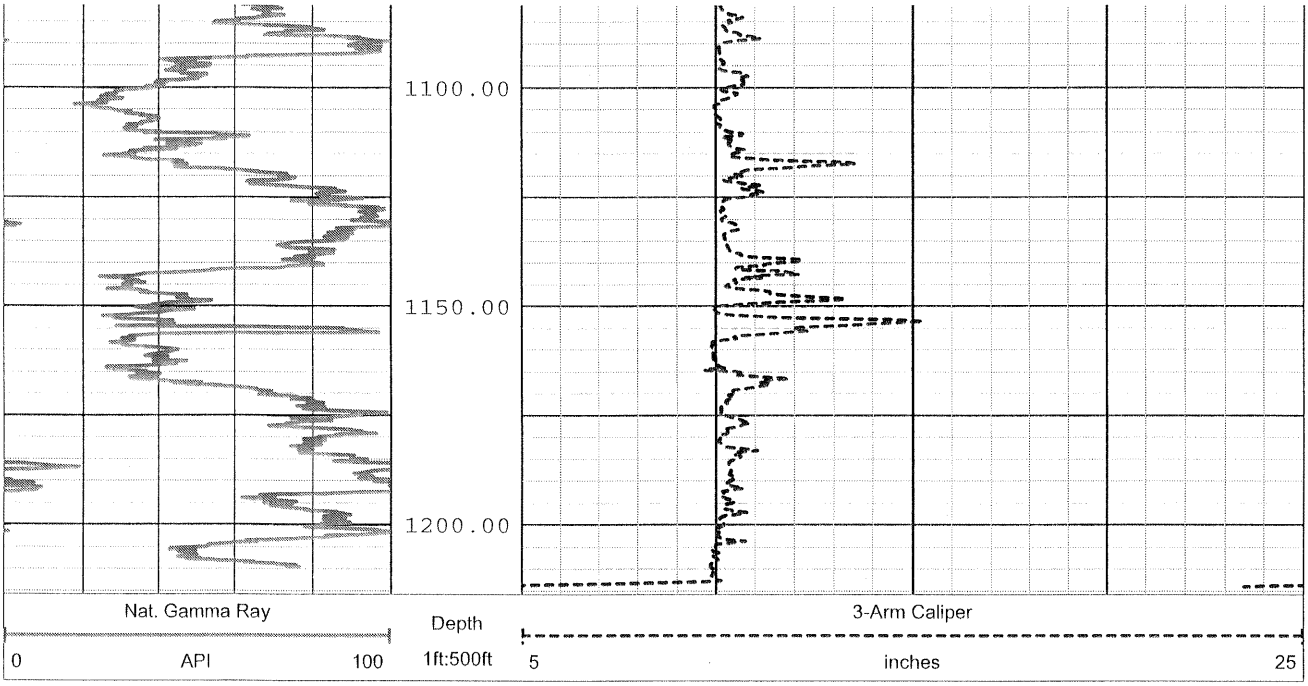
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3-Arm Caliper
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inches
25

Southwest Exploration Services, LLC
borehole geophysics & video services

Wellbore Video Report

Southwest Exploration Services, LLC

1730 W Sunrise Blvd Suite B-104 Gilbert, AZ. 85233

Phone: (480) 926-4558 Fax: (480) 926-4579 Web: www.swexp.com

Client: **Hydro Geo Chem - Freeport McMoran Inc.** Invoice: Run: **1**

Address: **51 W. Wetmore Suite 101** Well Name: **BMO-2008-8M**

City: **Tucson** State: **AZ** Zip: **85705** Survey Date: **October 30, 2008**

Requested By: **Rick Zimmerman** P.O.: **N/A** Well Owner: **Freeport McMoran Inc**

Copy To: **Freeport McMoran Inc.** Camera: **CCV BT-9600**

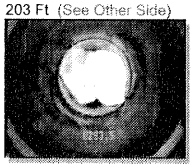
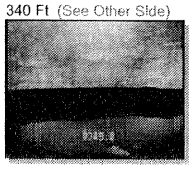
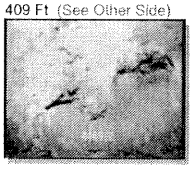
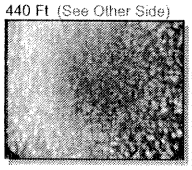
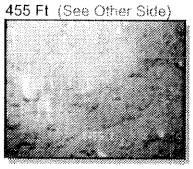
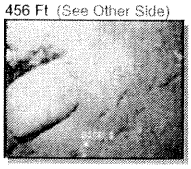
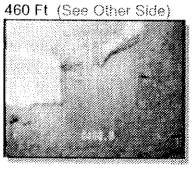
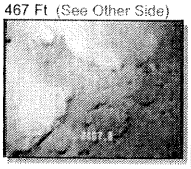
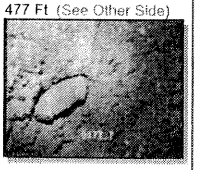
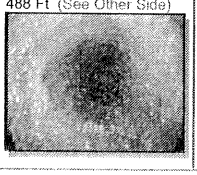
Reason For Survey: **General Inspection** Zero Datum: **Ground Level**

Location: **Concentrator Tailings Storage Area** Depth: **1220 Ft** Vehicle: **689**

Csg. I.D.@ Surface **11 In.** I.D. Reference: **Measured** Casing Buildup: **None**

Operator: **Kevin Mitchell** Lat.: **31° 22' 12.0"** Long.: **109° 54' 16.0"** Sec: **4** Twp: **24S** Rge: **24E**

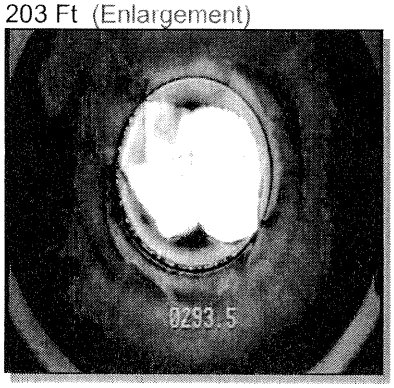
(NOTE: Latitude and Longitude values determined using a recreational GPS accurate to about +/- 45'. SEC, TWP and RGE then determined using the TRS conversion program, accuracy not guaranteed.)

Wellbore Snapshots	True Depths: (SideScan-Feet)	WELLBORE / CASING INFORMATION
203 Ft (See Other Side)  340 Ft (See Other Side) 	0'-349'	11" SURFACE CASING
	204'	Fluid Level - TOWEL ON TOP OF FLUID
	360'-388'	ROUGH HOLE - ALLUVIUM - CLOUDY
	340'7"'	ROUGH HOLE - ALLUVIUM -CLOUDY - LARGE COBBLES SEEN
409 Ft (See Other Side)  440 Ft (See Other Side) 	488'	POSSIBLE LITH CONTACT WITH LMST - LOSS OF COBBLES AND ENCOUNTERING
	488'	SOLID BEDROCK WITH LARGE FRACTURES - BROKEN OUT BY DRILLING? ROUGH
	488'	HOLE
455 Ft (See Other Side)  456 Ft (See Other Side) 	497'7"	BOTTOM OF VIDEO SURVEY DUE TO DEVIATED HOLE
460 Ft (See Other Side)  467 Ft (See Other Side) 		
476 Ft (See Other Side)  477 Ft (See Other Side) 		
483 Ft (See Other Side)  488 Ft (See Other Side) 		

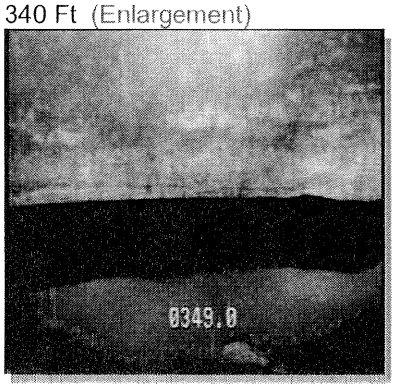
Notes: Total logged depth = 497.7 ft.

12 WELLBORE SHAPSHOTS

203 Ft (Enlargement)



340 Ft (Enlargement)



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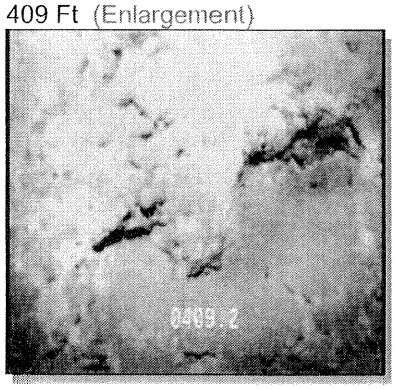

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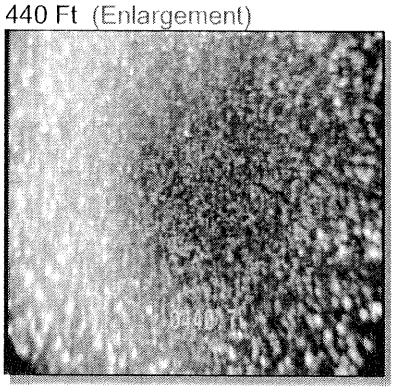

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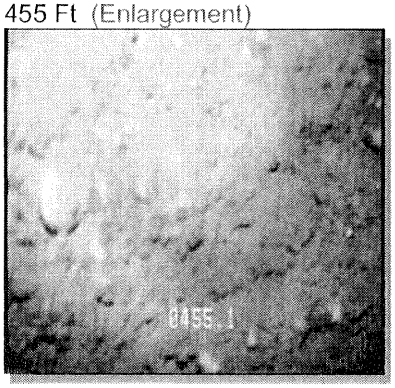

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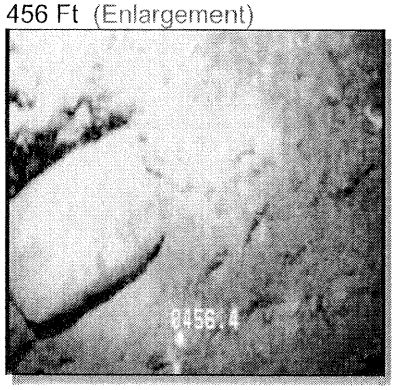

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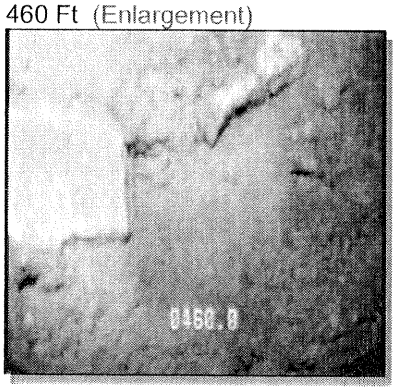

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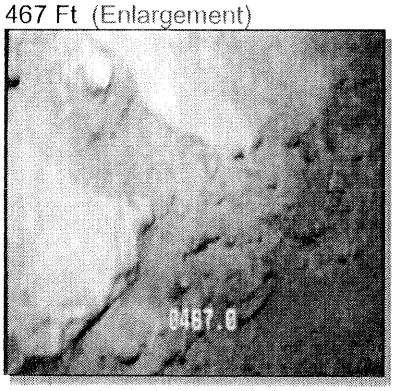

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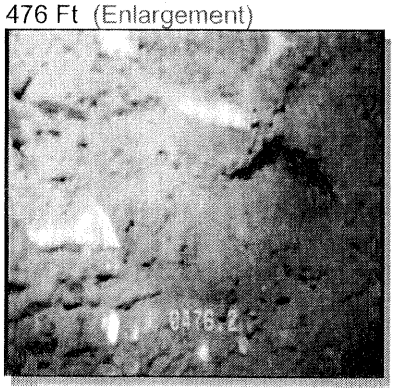
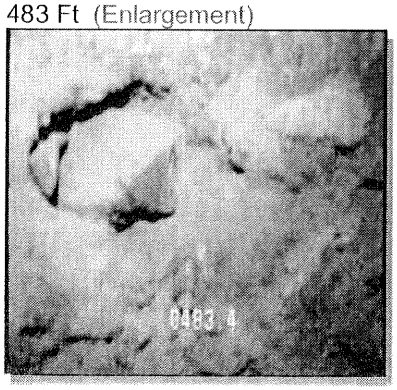


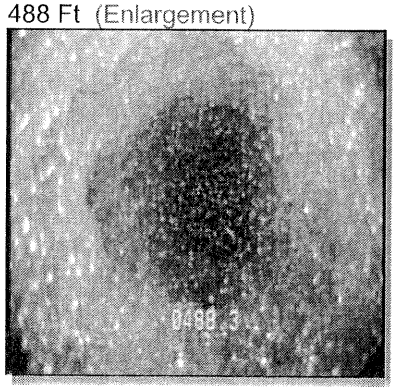
477 Ft (Enlargement)



483 Ft (Enlargement)



488 Ft (Enlargement)



Southwest Exploration Services, LLC
borehole geophysics & video services

Wellbore Video Report

Southwest Exploration Services, LLC

1730 W Sunrise Blvd Suite B-104 Gilbert, AZ. 85233

Phone: (480) 926-4558 Fax: (480) 926-4579 Web: www.swexp.com

Client: **Hydro Geo Chem - Freeport McMoran Inc.** Invoice: Run: **1**

Address: **51 W. Wetmore Suite 101** Well Name: **BMO-2008-8M**

City: **Tucson** State: **AZ** Zip: **85705** Survey Date: **October 30, 2008**

Requested By: **Rick Zimmerman** P.O.: **N/A** Well Owner: **Freeport McMoran Inc**

Copy To: **Freeport McMoran Inc.** Camera: **CCV BT-9600**

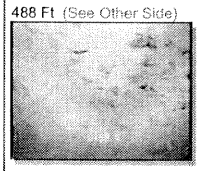
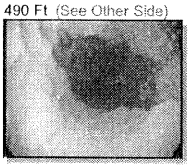
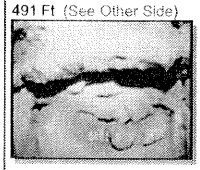
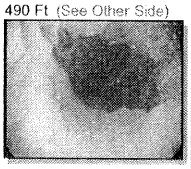
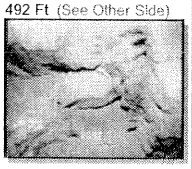
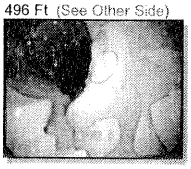
Reason For Survey: **General Inspection** Zero Datum: **Ground Level**

Location: **Concentrator Tailings Storage Area** Depth: **1220 Ft** Vehicle: **689**

Csg. I.D.@ Surface **11 In.** I.D. Reference: **Measured** Casing Buildup: **None**

Operator: **Kevin Mitchell** Lat.: **31° 22' 12.0"** Long.: **109° 54' 16.0"** Sec: **4** Twp: **24S** Rge: **24E**

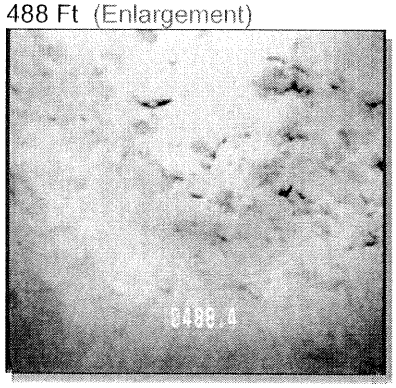
(NOTE: Latitude and Longitude values determined using a recreational GPS accurate to about +/- 45'. SEC, TWP and RGE then determined using the TRS conversion program, accuracy not guaranteed.)

Wellbore Snapshots	True Depths: (SideScan-Feet)	WELLBORE / CASING INFORMATION
488 Ft (See Other Side)  490 Ft (See Other Side) 	488'	Bedrock contact area
	490'	Large vertical fracture
491 Ft (See Other Side)  490 Ft (See Other Side) 	491'	Side-scan of 491 ft
	490'	Sidescan of bedrock
497 Ft (See Other Side)  492 Ft (See Other Side) 	497'	wide open hole - rough - Cloudy
	492'	Side-scan of bedrock
493 Ft (See Other Side)  496 Ft (See Other Side) 	493'	View of rock jetting out into hole
	496'	Nearing bottom of well - O-ring visible on ledge
497 Ft (See Other Side) 	497'	Bottom of video survey due to hole deviation Could not get past with camera.

Notes: Total logged depth = 497.7 ft.

9 WELLBORE SHAPSHOTS

488 Ft (Enlargement)



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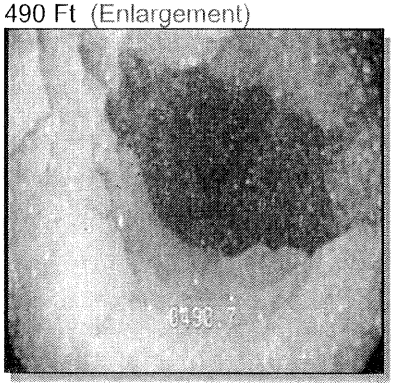
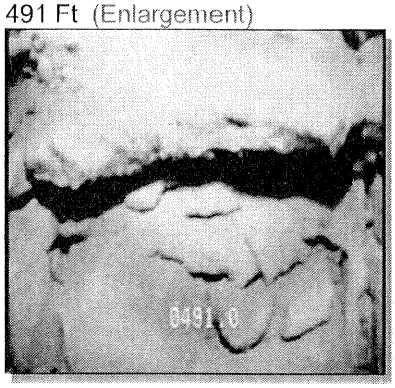


491 Ft (Enlargement)



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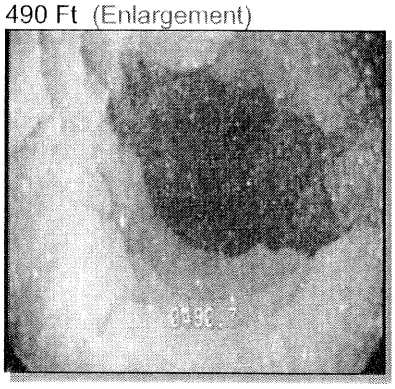
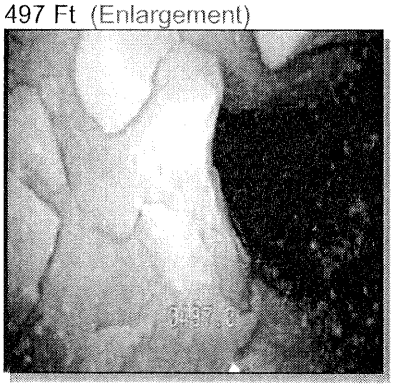


497 Ft (Enlargement)



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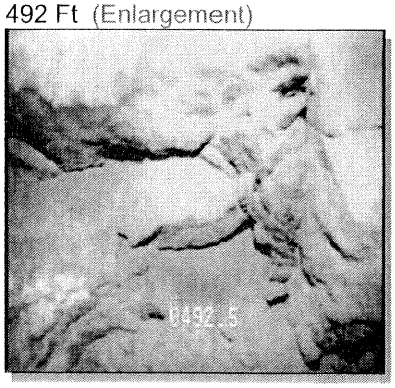

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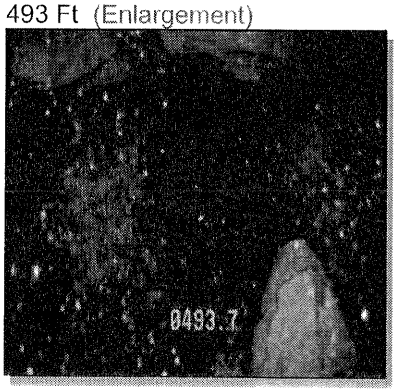

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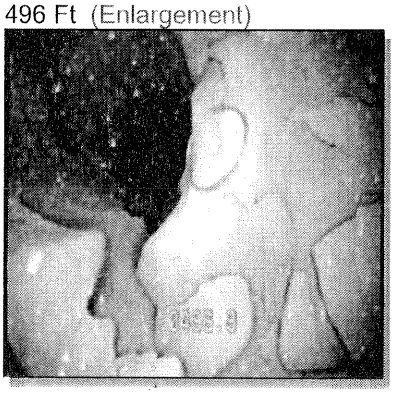
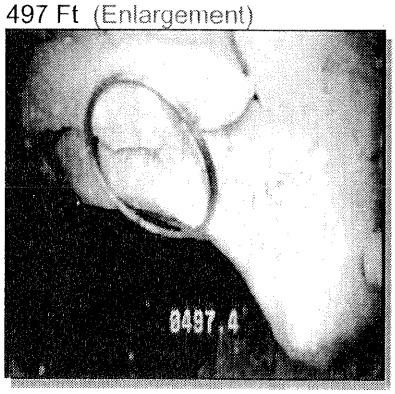


497 Ft (Enlargement)



Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	BISBEE
WELL ID	BMO-2008-13M
FIELD	BISBEE
COUNTY	COCHISE
STATE	ARIZONA

TYPE OF LOGS: 3-ARM CALIPER
MORE: NAT. GAMMA

LOCATION
Lat: 31,21,49
Lon:109,55,44

SEC 8 TWP 24S RGE 24E

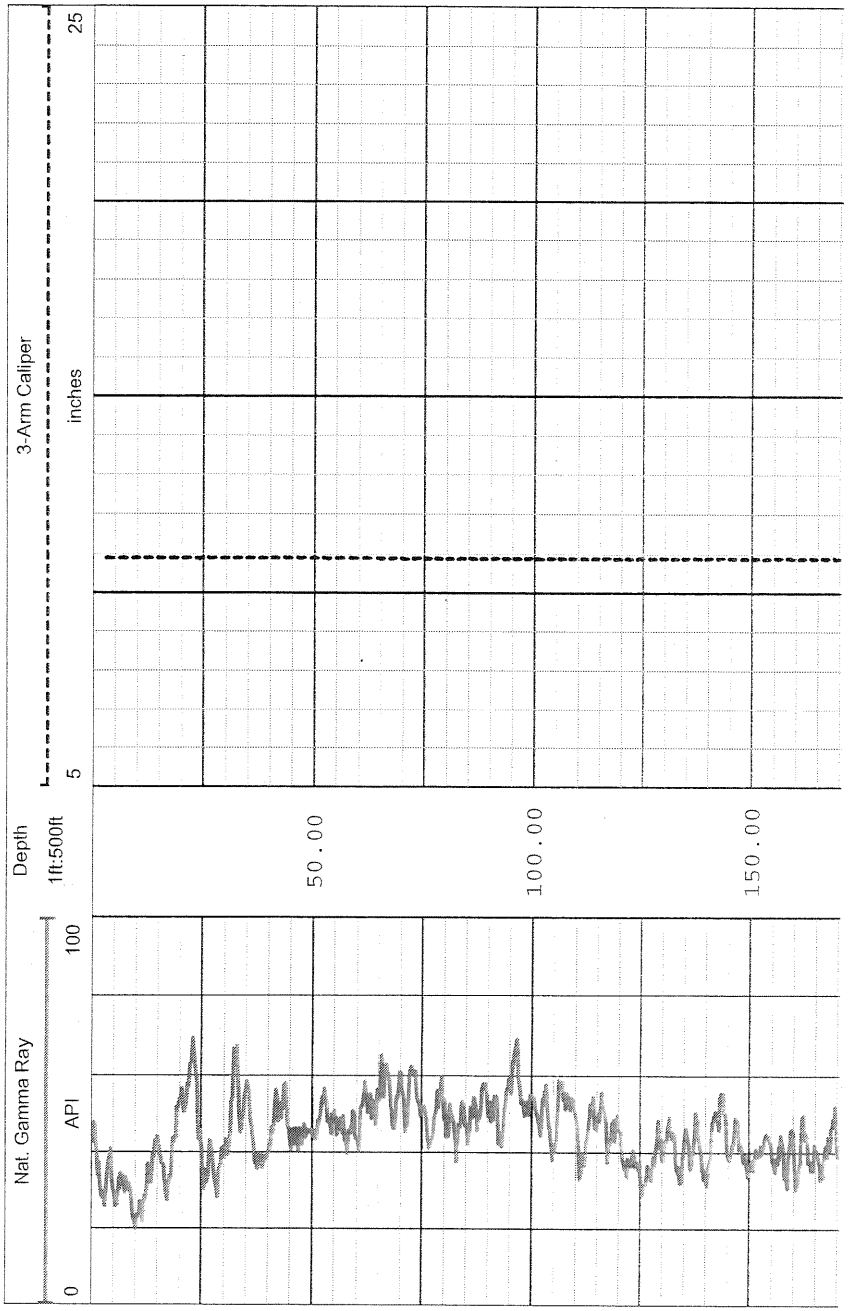
OTHER SERVICES
VIDEO

PERMANENT DATUM	ELEVATION	K.B.
LOG MEAS. FROM GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM		G.L.

DATE	10-30-08	TYPE FLUID IN HOLE	FRESH WATER
RUN No	1	SALINITY	
TYPE LOG	CALIPER-GAMMA	DENSITY	
DEPTH-DRILLER	995 FT	LEVEL	203 FT
DEPTH-LOGGER	761.2 FT	MAX. REC. TEMP.	N/A
BTM LOGGED INTERVAL	761.2	IMAGE ORIENTED TO:	N/A
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	.2 FT
DRILLER / RIG#	WDC	LOGGING TRUCK	TRUCK # 689
RECORDED BY / Logging Eng.	K. MITCHELL	TOOL STRING/SN	2PCA-2PGA
WITNESSED BY	HydroGeo Chem - Rick Z.	LOG TIME:ON SITE/OFF SITE	1:00 PM AM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	10"	SURFACE	20 FT	10 3/4"		SURFACE	239 FT
2	9 7/8"	SURFACE	TOTAL DEPTH				
3							

COMMENTS:



600.00
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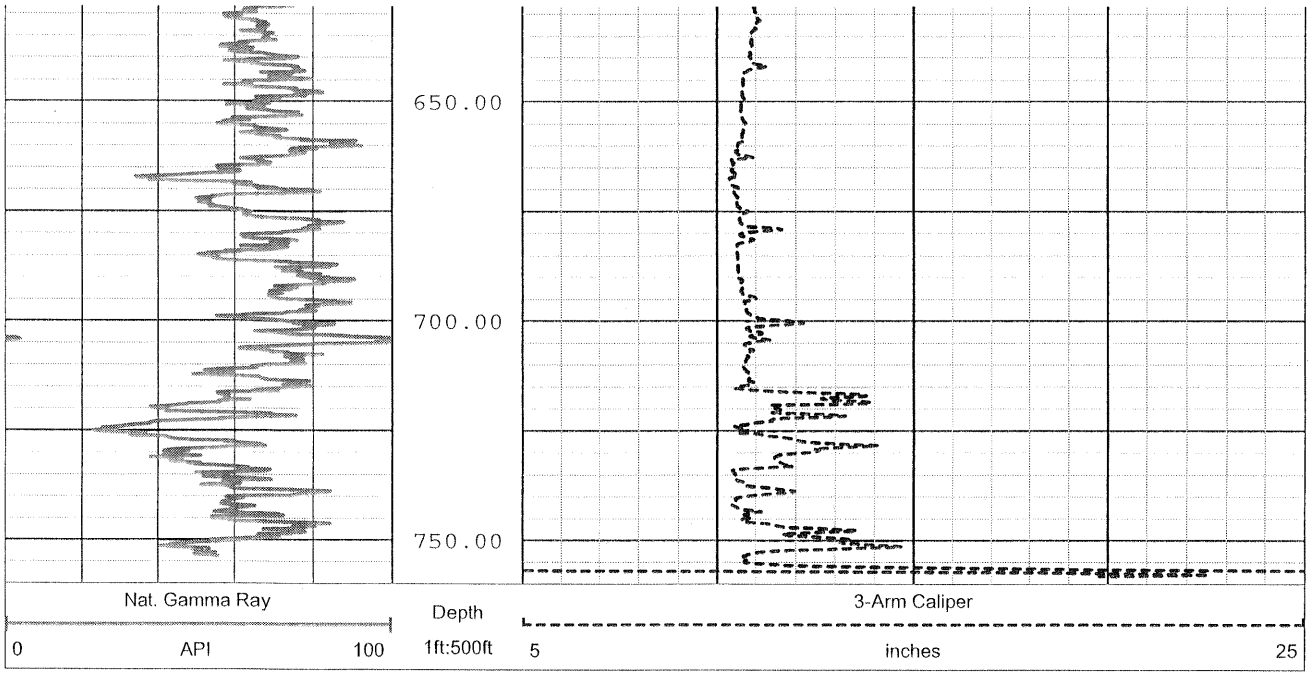
500.00
450.00
400.00
350.00
300.00
250.00
200.00


650.00
700.00
750.00
Nat. Gamma Ray
0
API
100
Depth
1ft:500ft
3-Arm Caliper
5
inches
25

Southwest Exploration Services, LLC
borehole geophysics & video services

Wellbore Video Report

Southwest Exploration Services, LLC

1730 W Sunrise Blvd Suite B-104 Gilbert, AZ. 85233

Phone: (480) 926-4558 Fax: (480) 926-4579 Web: www.swexp.com

Client: **Hydro Geo Chem - Freeport McMoran Inc.** Invoice: Run: **1**

Address: **51 W. Wetmore Suite 101** Well Name: **BMO-2008-13B**

City: **Tucson** State: **AZ** Zip: **85705** Survey Date: **October 30, 2008**

Requested By: **Rick Zimmerman - HGC** P.O.: Well Owner: **Freeport McMoran Inc.**

Copy To: **Freeport McMoran Inc.** Camera: **CCV BT-9600**

Reason For Survey: **General Inspection** Zero Datum: **Ground Level**

Location: **Concentrator Tailings Storage Area** Depth: **761.6 Ft** Vehicle: **689**

Csg. I.D.@ Surface **11 In.** I.D. Reference: **Measured** Casing Buildup: **None**

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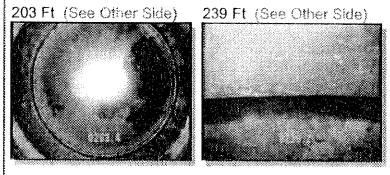
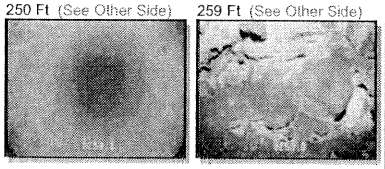
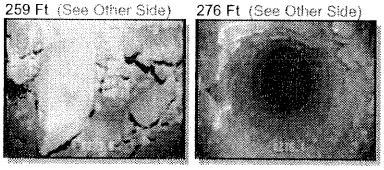
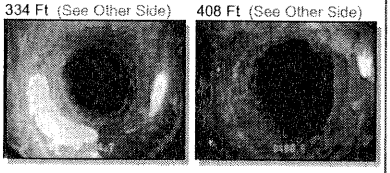
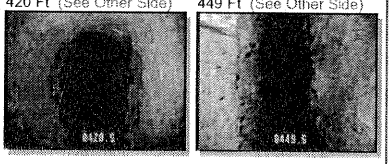
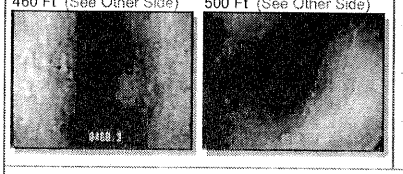
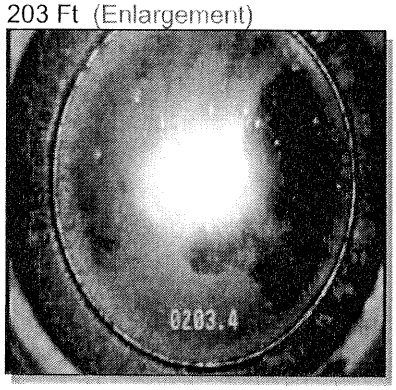
Wellbore Snapshots	True Depths: (SideScan-Feet)	WELLBORE / CASING INFORMATION
203 Ft (See Other Side) 239 Ft (See Other Side) 	0'-239'2"	11 in casing
	203'-4"	Fluid level
	239'	Aluvium reasonably good hole
	334'-408'	Aluvium - Lg cobbles seen
250 Ft (See Other Side) 259 Ft (See Other Side) 	408'	top of key-way feature
	408'-517'	Bottom of key-way feature
	416'	key-way feature well developed
	449'	key-way feature well developed
259 Ft (See Other Side) 276 Ft (See Other Side) 	517'	bottom of key-way feature and possible top of Lmst
	523'	Solid Lmst
	550'-563'	Large fractures and high angle features
334 Ft (See Other Side) 408 Ft (See Other Side) 	563'-596'	A few horizontal fractures
	620'	Formation contact with lower Lmst member
	645'	1st few light vein filling fracture material (calcite?)
	650'-700'	Large fractures vertical and horizontal
420 Ft (See Other Side) 449 Ft (See Other Side) 	700'	Large blocky fractures - Cloudy
	720'	Camera hung up on side wall due to deviation - Cloudy
	740'	Large fractures - Rough hole
460 Ft (See Other Side) 500 Ft (See Other Side) 	761'6"	Hole collapsed? Large fractured rock in btm of hole

Notes:

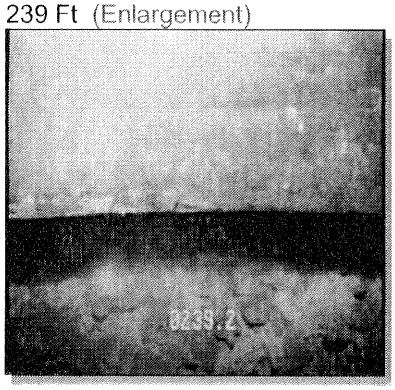
Page Number: 1

12 WELLBORE SHAPSHOTS

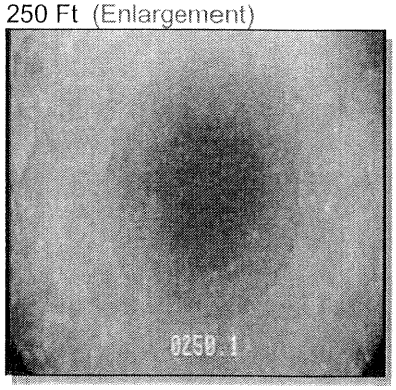
203 Ft (Enlargement)



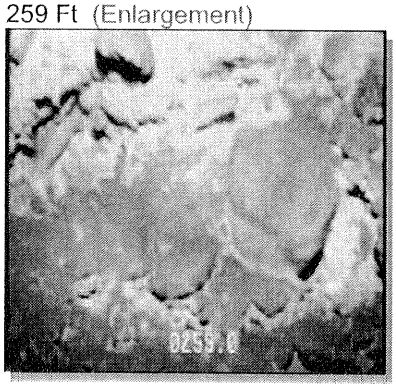
239 Ft (Enlargement)



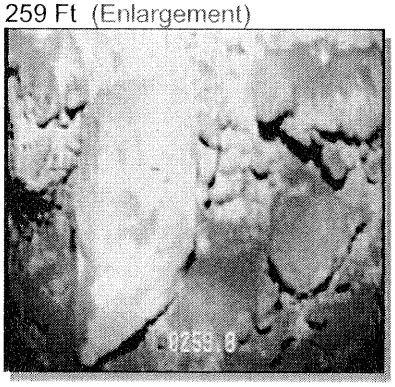
250 Ft (Enlargement)



259 Ft (Enlargement)



259 Ft (Enlargement)



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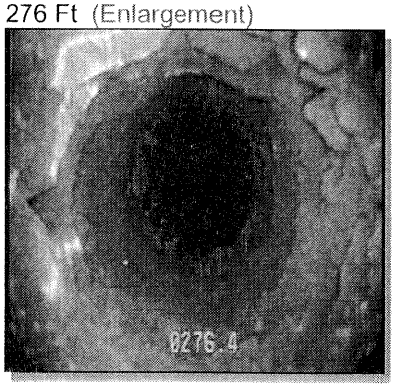
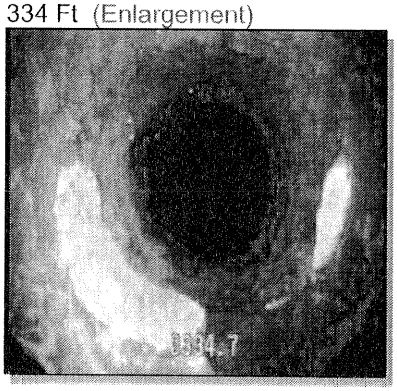
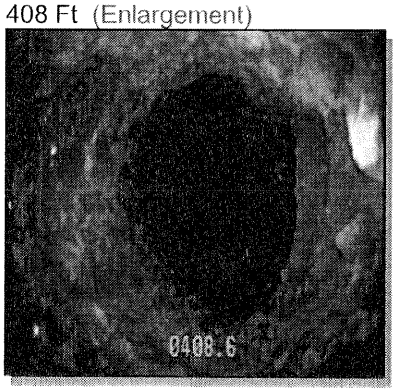


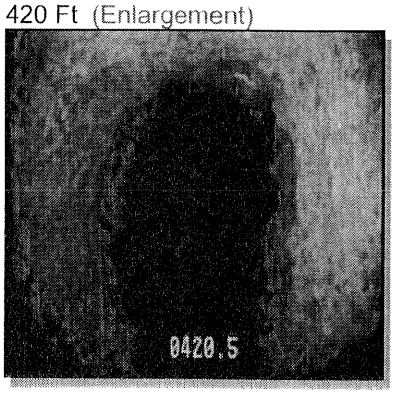
334 Ft (Enlargement)



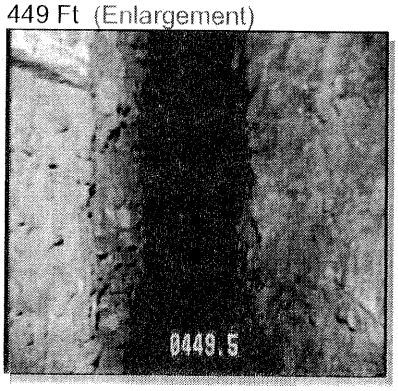
408 Ft (Enlargement)



420 Ft (Enlargement)



449 Ft (Enlargement)



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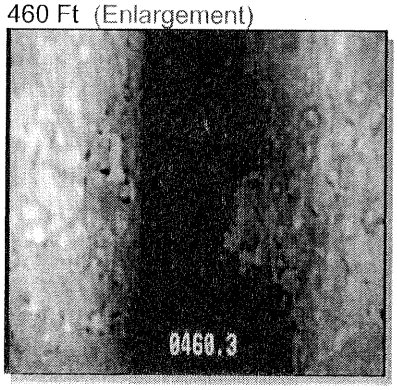
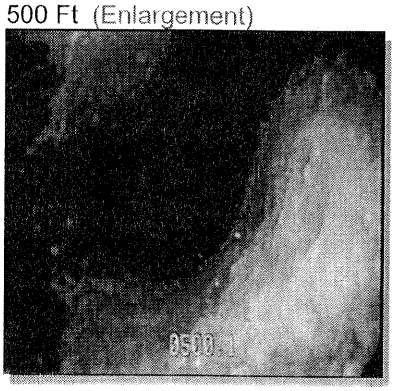


500 Ft (Enlargement)



Southwest Exploration Services, LLC
borehole geophysics & video services

Wellbore Video Report

Southwest Exploration Services, LLC

1730 W Sunrise Blvd Suite B-104 Gilbert, AZ. 85233

Phone: (480) 926-4558 Fax: (480) 926-4579 Web: www.swexp.com

Client: **Hydro Geo Chem - Freeport McMoran Inc.** Invoice: Run: **1**

Address: **51 W. Wetmore Suite 101** Well Name: **BMO-2008-13B**

City: **Tucson** State: **AZ** Zip: **85705** Survey Date: **October 30, 2008**

Requested By: **Rick Zimmerman - HGC** P.O.: Well Owner: **Freeport McMoran Inc.**

Copy To: **Freeport McMoran Inc.** Camera: **CCV BT-9600**

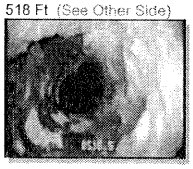
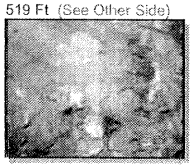
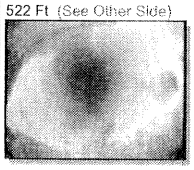
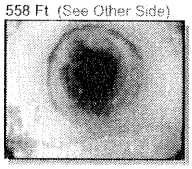
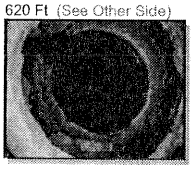
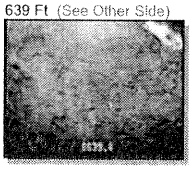
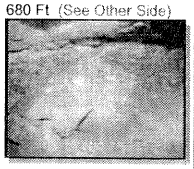
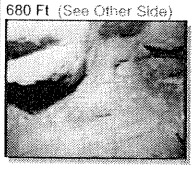
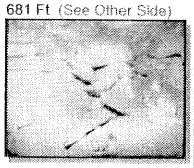
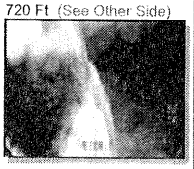
Reason For Survey: **General Inspection** Zero Datum: **Ground Level**

Location: **Concentrator Tailings Storage Area** Depth: **761.6 Ft** Vehicle: **689**

Csg. I.D.@ Surface **11 In.** I.D. Reference: **Measured** Casing Buildup: **None**

Operator: **Kevin Mitchell** Lat.: **31° 21' 49.0"** Long.: **109° 54' 16.0"** Sec: **9** Twp: **24S** Rge: **24E**

(NOTE: Latitude and Longitude values determined using a recreational GPS accurate to about +/- 45'. SEC, TWP and RGE then determined using the TRS conversion program, accuracy not guaranteed.)

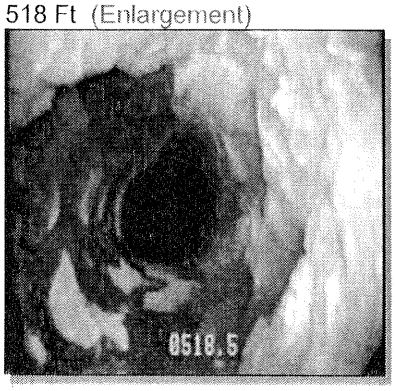
Wellbore Snapshots	True Depths: (SideScan-Feet)	WELLBORE / CASING INFORMATION
518 Ft (See Other Side)  519 Ft (See Other Side) 	518'	Beginning of Key-way
	518'-	Side scan of 518'
522 Ft (See Other Side)  558 Ft (See Other Side) 	522'	Solid Limestone
620 Ft (See Other Side)  639 Ft (See Other Side) 	558'	Fractured Lmst
	620'	Formation contact? Lower unit?
664 Ft (See Other Side)  680 Ft (See Other Side) 	639'	Sidescan of 639'
680 Ft (See Other Side)  681 Ft (See Other Side) 	664'	Very large fracture
	680'	Very large fracture
700 Ft (See Other Side)  720 Ft (See Other Side) 	680'	Very large fracture

Notes:

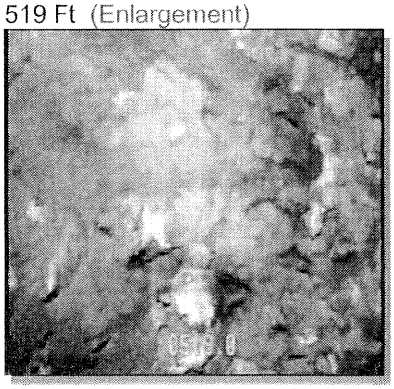
Page Number: 3

12 WELLBORE SHAPSHOTS

518 Ft (Enlargement)



519 Ft (Enlargement)



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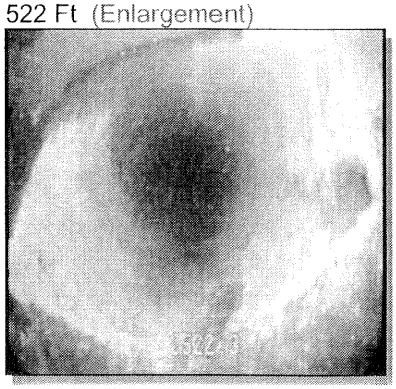

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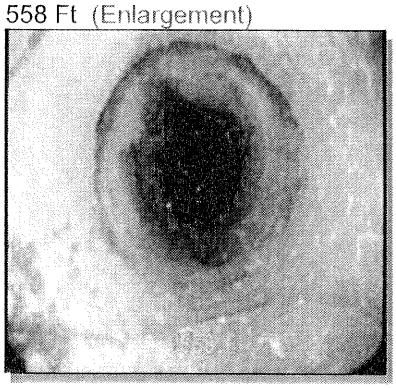
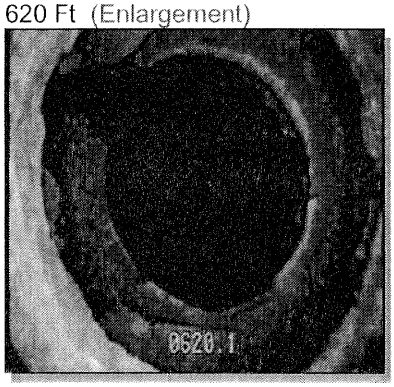


620 Ft (Enlargement)



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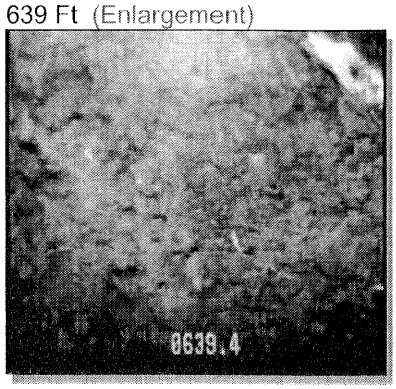

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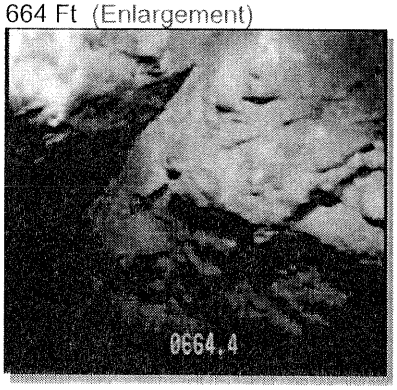

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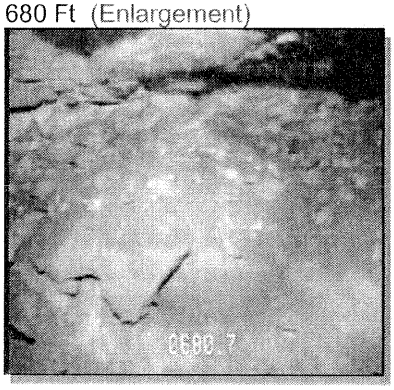

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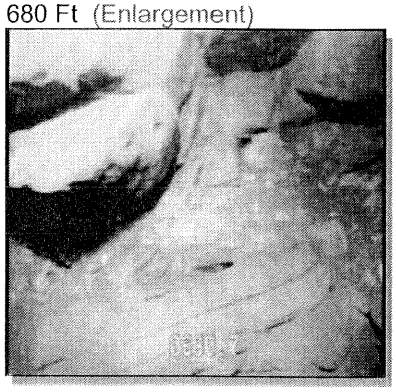

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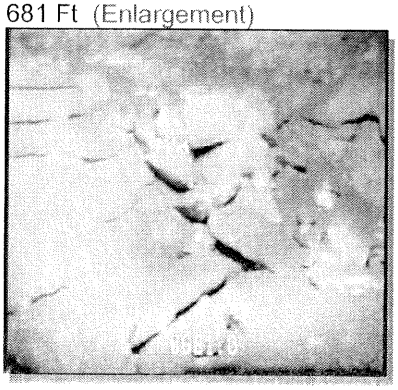

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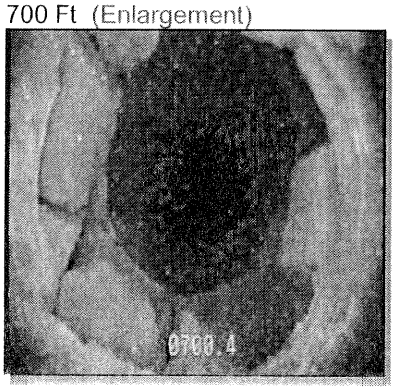
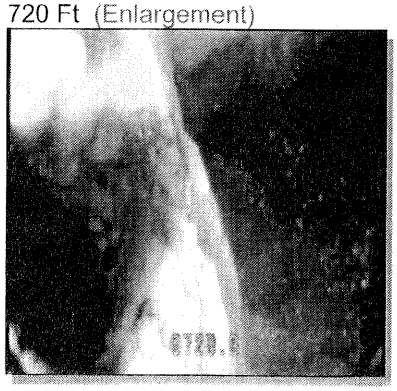


720 Ft (Enlargement)



Southwest Exploration Services, LLC
borehole geophysics & video services

Wellbore Video Report

Southwest Exploration Services, LLC

1730 W Sunrise Blvd Suite B-104 Gilbert, AZ. 85233

Phone: (480) 926-4558 Fax: (480) 926-4579 Web: www.swexp.com

Client: **Hydro Geo Chem - Freeport McMoran Inc.** Invoice: Run: **1**

Address: **51 W. Wetmore Suite 101** Well Name: **BMO-2008-13B**

City: **Tucson** State: **AZ** Zip: **85705** Survey Date: **October 30, 2008**

Requested By: **Rick Zimmerman - HGC** P.O.: Well Owner: **Freeport McMoran Inc.**

Copy To: **Freeport McMoran Inc.** Camera: **CCV BT-9600**

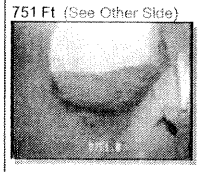
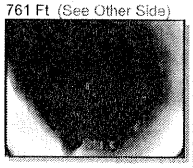
Reason For Survey: **General Inspection** Zero Datum: **Ground Level**

Location: **Concentrator Tailings Storage Area** Depth: **761.6 Ft** Vehicle: **689**

Csg. I.D.@ Surface **11 In.** I.D. Reference: **Measured** Casing Buildup: **None**

Operator: **Kevin Mitchell** Lat.: **31° 21' 49.0"** Long.: **109° 54' 16.0"** Sec: **9** Twp: **24S** Rge: **24E**

(NOTE: Latitude and Longitude values determined using a recreational GPS accurate to about +/- 45'. SEC, TWP and RGE then determined using the TRS conversion program, accuracy not guaranteed.)

Wellbore Snapshots	True Depths: (SideScan-Feet)	WELLBORE / CASING INFORMATION
751 Ft (See Other Side)  761 Ft (See Other Side) 	751'	Large rock fragment
	761'	Bottom of video survey = 761.6 '

Notes:

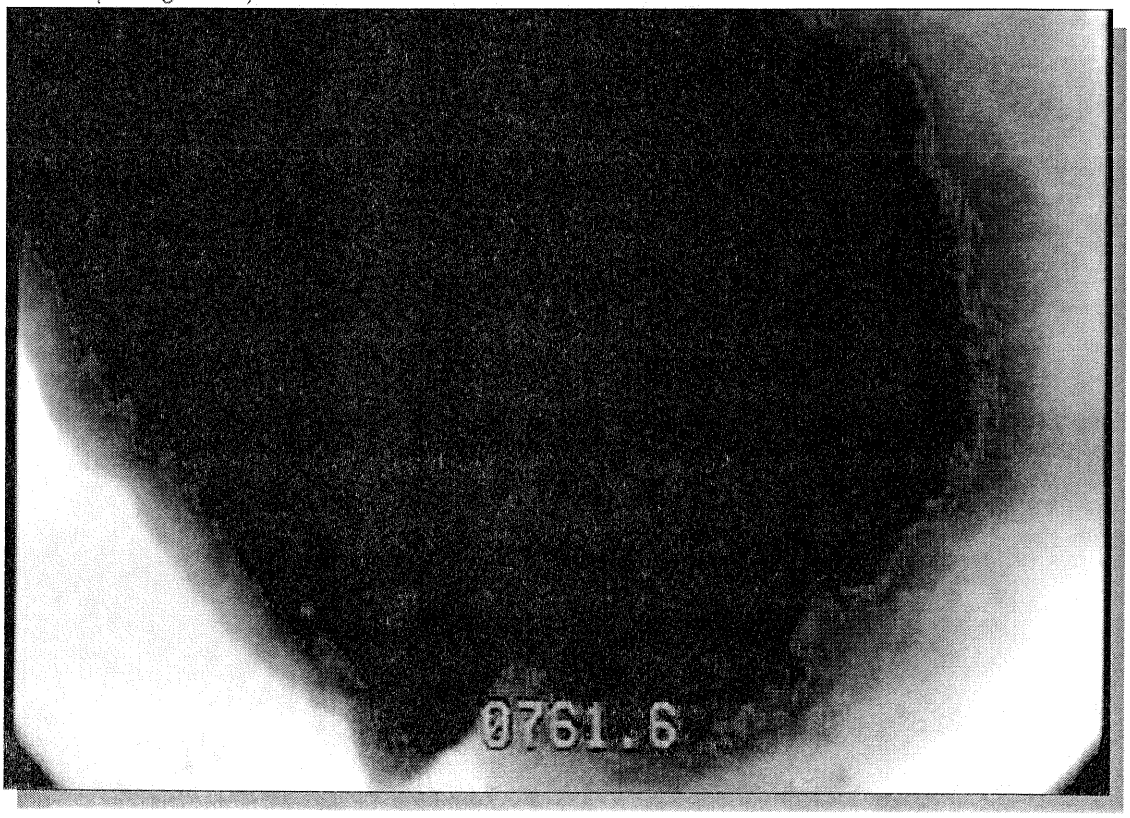
Page Number: 5

2 WELLBORE SHAPSHOTS

751 Ft (Enlargement)



761 Ft (Enlargement)



APPENDIX J

GEOLOGIC LOGS FOR MONITORING WELLS INSTALLED IN 2008

HYDRO GEO CHEM, INC.

Geologic Boring Log

		Boring No.:	**BMO-2008-1G**
Project Name:	**Bisbee Mitigation Order**		Project No.: 872000
Drilling Company:	WDC Exploration and Wells, Inc.	Driller:	Billy Berg
Site Plan at Boring Location:		ADWR Registration No.:	**55-909474**
		Drilling Equipment:	GEFCO-Speedstar 50K
		Drilling Method:	Stratex; tricone
		Bit Type/Size:	12"; 8.5"
		Total Borehole Depth:	320 ft bls
		Casing Depth:	310 ft bls
		Screened Interval:	180-300 ft bls
		Screen slot size:	0.125", vertical slots
		Filter pack type:	#8 Tacna gravel
		Top of Casing Elevation:	4805.10
		Land surface Elevation:	4804.60 (pad)
		Date/Time Started:	7/29/08 10:08
		Date/Time Completed:	7/31/08 12:59
Township, Range, Section: T 24 S, R 24 E Sec. 2 CAA		Logged by:	K. Wilson
UTM: 3471723.644 N, 606467.681 E, NAD 83		Checked by:	R. Zimmerman

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
10	Basin Fill	15	55	30	SC	2.5YR 5/4	S	Reddish brown clayey sand with gravel, well cemented with caliche. Gravel fraction includes clasts of gray phyllite, quartz, brown fine-grained sandstone, gray limestone, silicified limestone, and caliche chunks; most clasts angular to subangular. Sand-sized particles include caliche chips, angular to subrounded quartz, and lithic grains.
20		30	40	30	SC	2.5YR 6/3	S	Light reddish brown clayey sand with gravel, well-cemented with caliche. Gravel clasts include phyllite, quartz, brown sandstone, green quartzite and siltstone, and gray limestone; clasts are mostly angular to subangular. Gravel-sized caliche chunks are also present in the sample. Sand is fine to coarse-grained. Clay occurs as balls and as a component of the caliche cement.
30		60	25	15	GM	2.5YR 6/2 - 2.5YR 7/2	S	Pale red silty gravel with sand. Gravel clasts and sand-sized lithic grains are primarily brown, gray, white, and green fine-grained quartz sandstones, with lesser amounts of phyllite, quartz, and limestone. Caliche cement.
40		65	30	5	GP	2.5YR 5/3	M	Reddish brown gravel with sand. Silty sandstone fragments and caliche chips. Material appears to be caliche-cemented sandstone rubble.
50	Morita Formation				bedrock	2.5YR 4/6	S	Red calcareous mudstone. Rock is composed of lithified mixture of clay, silt, and small amounts of fine-grained sand. Top of bedrock; Morita Formation.
60						10R 6/1-6/2	S	Reddish gray to pale red calcareous clayey siltstone. Few small (< 1 mm) white bleached spots; fissile, moderately laminated; Morita Formation. Note: Water level rose to 61 ft bls 24 hours, after intercepting first formation water (other than dampness) during drilling at 210 ft bls.
70						10R 5/3	N	Weak red sandy siltstone with few pebbly layers. Pebbles are primarily phyllite derived from the Pinal Schist. Lower portion of the Morita Formation. Damp.
80						2.5YR 5/3	N	Reddish brown sandy to pebbly siltstone. Siltstone contains pebbles derived mostly from the Pinal Schist. Morita Formation. Dry.

Project Name: **Bisbee Mitigation Order** Boring No.: **BMO-2008-1G**

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
90	Morita Formation					10R 5/3	W	Weak red sandy siltstone. Sand in the siltstone is fine-grained. Few tiny (<0.5 mm) cream-colored bleached spots; slightly calcareous. Morita Formation. Dry.
100						2.5YR 5/6	N	Red clayey siltstone with few coarse sand-sized to fine gravel-sized pebbles of phyllite. Material is very broken. Morita Formation. Wet.
110						2.5YR 5/4 to 4/4	N	Reddish brown clayey siltstone, locally bleached along fractures. Material is highly fractured and powdery. Morita Formation. Damp.
120						2.5YR 5/4	W	Reddish brown fine sandy siltstone. Few very fine opaque grains that appear to be specularite. Locally bleached along fractures; few small (< 1 mm) reduction (bleached) spots along bedding laminae. Morita Formation. Slightly damp.
130						2.5YR 5/6 to 4/4	W	Red to reddish brown fine sandy siltstone with localized bleaching along fractures; < 1 % disseminated fine-grained gray opaques. Morita Formation. Damp.
140						5YR 5/3	W-N	Reddish brown fine sandy siltstone. Uniform color and texture. Slight HCL reactivity is observed only in a portion of the fines. Hue is more yellowish than previous intervals. Morita Formation. Damp.
150						5YR 5/3	N	Reddish brown sandy siltstone with scattered reddish gray phyllite and few quartzite pebbles and coarse sand-sized lithic grains. Morita Formation. Damp.
160						2.5YR 5/4	N	Reddish brown sandy and pebbly siltstone with few light colored reduction spots. Pebbles are phyllite and quartz derived from the Pinal Schist. Hue less yellow than above. Sample is approximately 90% siltstone and 10% gravel clasts; transitional contact zone between the Morita Formation and the underlying Glance Conglomerate. Wet.
170	Glance Conglomerate					2.5YR 5/4	N	Reddish brown conglomerate. Pinal Schist clasts (phyllite and metamorphic quartz) in sandy siltstone matrix. Glance Conglomerate. Damp.
180						2.5YR 5/4	N	Reddish brown conglomeratic sandy siltstone. Material is about 65% sandy siltstone and 35% phyllite pebbles derived from the Pinal Schist. Glance Conglomerate. Damp.
190						2.5YR 5/4	N	Reddish brown fine sandy clayey siltstone. < 1 % fine gray metallic opaques (probably specularite); few small cream-colored reduction spots. Approximately 5% of the sample is small pebble to sand-sized phyllite and quartz clasts. Sample sticky and clayey. Damp.
200						2.5YR 5/4	M	Reddish brown silty sandstone. Sandstone is composed of poorly sorted quartz grains with approximately 1% gray opaques. Sandstone bed in the Glance Conglomerate. Damp.

Project Name: **Bisbee Mitigation Order** Boring No.: **BMO-2008-1G**

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
210	Glance Conglomerate					2.5YR 5/4	N	Reddish brown conglomerate. 50% phyllite and quartz clasts in silty sandstone matrix. Several clay balls. Glance Conglomerate. First water; formation is producing a small amount of water.
220						2.5YR 5/4	N	Reddish brown fine sandy siltstone. Trace amount of coarse sand-sized lithic grains of phyllite and quartz. Few clay balls. Sandy siltstone bed in the Glance Conglomerate.
230						2.5YR 5/3	N	Reddish brown silty fine-grained sandstone. < 1 % black opaques, including magnetite, and possibly some fine-grained specularite. Silty sandstone bed in the Glance Conglomerate. Changed drilling method from Stratex system to reverse circulation with a 10.5" tricone bit at 230 ft bls.
240						2.5YR 5/3	N	Reddish brown conglomerate. Pinal Schist gravel clasts (phyllite and milky quartz) in a silty, well indurated matrix. Tricone bit grinds sample to a greater degree than the Stratex. Glance Conglomerate.
250						2.5YR 4/3	N	Reddish brown siltstone. Uniform texture and color other than few scattered small cream-colored reduction spots. Siltstone bed in the Glance Conglomerate.
260						2.5YR 5/3	N	Reddish brown arkosic silty fine-grained sandstone. Sand grains are poorly sorted, mostly quartz with some fine lithic grains, and about 1% black and gray opaques, including magnetite and specularite. Silty sandstone bed in the Glance Conglomerate.
270						2.5YR 5/3 to 5/2	N	Reddish brown conglomerate. Reddish gray phyllite and white quartz clasts derived from the Pinal Schist in a reddish brown silty sandstone indurated matrix. Glance Conglomerate.
280						2.5YR 5/3	N	Reddish brown pebbly silty sandstone. Sandstone contains approximately 10% phyllite and metamorphic quartz pebbles derived from the Pinal Schist. Glance Conglomerate.
290						2.5YR 5/3	N	Reddish brown conglomerate. Phyllite and metamorphic quartz clasts derived from the Pinal Schist in an indurated silty sandstone matrix. Glance Conglomerate.
300						2.5YR 5/3	N	Reddish brown conglomerate. Reddish gray Pinal Schist clasts in reddish brown, indurated sandy siltstone matrix. Glance Conglomerate.
310						2.5YR 5/3	N	Reddish brown conglomerate. Reddish gray Pinal Schist clasts in reddish brown, indurated sandy siltstone matrix. Glance Conglomerate.
320						2.5YR 4/2 to 4/3	W	Weak red to reddish brown silty fine-grained sandstone. Few fine gravel to sand-sized Pinal Schist (phyllite and metamorphic quartz) clasts. Glance Conglomerate. T.D. = 320 ft bls at 12:59 on 7/31/2008

HYDRO GEO CHEM, INC.

Geologic Boring Log

	Boring No.: **BMO-2008-3B**
Project Name: **Bisbee Mitigation Order**	Project No.: 872000
Drilling Company: WDC Exploration and Wells, Inc.	Driller: Mike Thomas
Site Plan at Boring Location:	ADWR Registration No.: **55-909147**
	Drilling Equipment: GEFCO Speedstar 50K
	Drilling Method: Stratex, Air Rotary
	Bit Type/Size: 12" to 190 ft bls; 8.5" to 590 ft bls
	Total Borehole Depth: 590 ft bls
	Casing Depth: 260 ft bls
	Screened Interval: 150-250 ft bls
	Screen slot size: 0.125", vertical slots
	Filter pack type: #8 Tacna
	Top of Casing Elevation: 4583.97 ft
	Land surface Elevation: 4583.47 ft
	Date/Time Started: 6/1/08 14:02
	Date/Time Completed: 6/11/08 17:05
Township, Range, Section: T 24 S, R 24 E, Sec. 17 CAA	Logged by: W. Thompson, K. Wilson
UTM: 3467919.582 N, 602012.923 E, NAD 83	Checked by: K. Wilson and R. Zimmerman

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
0	Basin Fill			100	ML	2.5YR 5/6	N	Red silt. Powdery, loose, dry, no reaction to HCl.
10				100	ML	2.5YR 5/4	M	Reddish brown silt. Powdery, flour-like texture, dry; moderate reaction to HCl. Few caliche chips and chunks.
20		5	5	90	ML	2.5YR 5/4	S	Reddish brown silt. Small amount of gravel and sand. Gravel clasts are up to 1/2" diameter, subangular to rounded, composed of crystalline limestone, fine-grained sandstone, and phyllite and metamorphic quartz derived from the Pinal Schist. Few chunks of caliche. Sand is coarse through very fine-grained. Silt is dry, loose, powdery; very strong reaction to HCl.
30		tr	tr	100	ML	2.5YR 5/4	S	Reddish brown silt. Soft, powdery, flour-like texture, dry, strong reaction to HCl. Some clayey caliche chips. Few fine gravel to coarse sand-sized phyllite clasts with caliche surface coatings.
40		20	55	25	SM	5YR 6/3	S	Light reddish brown silty sand with gravel. Gravel clasts are up to 1" in diameter, angular to rounded, composed primarily of limestone, with few carbonate cemented fine-grained sandstones, phyllite and quartz derived from the Pinal Schist, quartzite, and rare feldspar porphyry. Sand fraction is coarse through very fine-grained, but primarily fine-grained, and composed of quartz, lithic grains, and a small amount of magnetite. Few caliche chunks. Loose dry mix; strong reaction to HCl.
50		25	60	15	SM	5 YR 6/3	S	Reddish brown silty sand with gravel. As above, with decreased fines. Gravel composition is as above with trace volcanic clasts in addition. Little caliche.
60		35	50	15	SM	5 YR 7/3	S	Pink silty sand with gravel. Gravel clasts are up to 1" in diameter, subangular to rounded, composed of primarily dark through light gray crystalline limestone, reddish brown very fine-grained sandstone, and arkosic silty sandstone, with few Pinal Schist, and trace fine volcanic porphyry and tuff clasts. Sand fraction is coarse through very fine-grained, moderately well-graded through to silt. Loose, dry, very strong reaction to HCl.

Project Name: **Bisbee Mitigation Order** Boring No.: **BMO-2008-3B**

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
70	Basin Fill		40	60	ML	2.5YR 6/3	S	Light reddish brown sandy silt. Sand fraction is fine to very fine-grained; loose, powdery mix, dry, very strong reaction to HCl.
80		30	50	20	SM	2.5YR 5/3	S	Light reddish brown silty sand with gravel. Gravel clasts are up to 1/2" in diameter, angular to rounded, composed primarily of limestones, quartzite, brick red very fine-grained sandstone, phyllite, white tuff, and trace feldspar porphyry. Few calcareous clay coatings on clasts. Sand fraction is coarse through very fine-grained but primarily fine-grained. Loose, dry, strong reaction to HCl.
90		30	50	20	SM	2.5YR 5/3	S	Reddish brown silty sand with gravel. As above, but gravel fraction has lesser amount of limestone compared to previous intervals, and has abundant phyllite and quartz derived from the Pinal Schist, arkosic sandstone, siltstone, and trace feldspar porphyry. Some calcareous clay coatings on clasts. Sand fraction as above.
100		30	50	20	SM	2.5YR 5/3	S	Reddish brown silty sand with gravel. As above; gravel is comprised of abundant reddish brown sandstone, siltstone, phyllite, and quartz with lesser limestone and trace amounts of feldspar porphyry and white tuff. Few calcareous coatings on weathered surfaces.
110		25	50	25	SM	2.5YR 5/3	S	Reddish brown silty sand with gravel. As above.
120			60	40	SM	2.5YR 6/3	S	Light reddish brown silty sand. Sand fraction is fine to very fine-grained, powdery, loose, dry; composed of quartz and lithic grains and approximately 1% magnetite. Very strong reaction to HCl.
130		20	70	10	SW-SM	7.5YR 7/2	S	Pinkish gray sand with silt and gravel. Gravel clasts are up to 1" in diameter; subangular to well-rounded, composed of dark through very light gray limestone, reddish brown silty sandstone, fine-grained quartz sandstone, phyllite, and trace amounts of fine-grained volcanics and feldspar porphyry. Loose, dry, strong reaction to HCl.
140		80	10	10	GW-GM	7.5YR 7/3	S	Pink gravel with silt. Gravel clasts are up to 1" diameter; subangular to well-rounded, primarily gray to white and pinkish limestone, with some fine-grained sandstone, siltstone, quartzite, phyllite, and white tuff. Few calcite coatings on pebbles. Loose, dry, strong reaction to HCl.
150		80	10	10	GW-GM	5YR6/3	S	Pink gravel with silt. As above except that gravel is fine, up to 1/2" maximum diameter and contains some an angular material.
156								First water. Free water is discharging from cyclone.
160		70	20	10	GW-GM	2.5YR 6/3	S	Light reddish brown gravel with silt and sand. Gravel clasts are up to 1" maximum diameter, angular to well-rounded, primarily reddish brown fine-grained sandstone with calcareous cement, arkosic sandstone, and phyllite, with lesser amounts of light to dark gray limestone, and a small amount of white tuff. Sand fraction is coarse through fine-grained with much coarse-grained; loose, saturated, strong reaction to HCl.

Project Name: **Bisbee Mitigation Order** Boring No.: **BMO-2008-3B**

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
170		70	20	10	GW-GM	2.5YR 6/3	M	Light reddish brown gravel with silt and sand. As above; a large component of the gravel is a reddish brown fine-grained sandstone with calcite cement and arkosic sandstone; other clasts include greenish sandstone, crystalline limestone, and white aphanitic to fine porphyritic volcanic tuff. Some calcareous silty sand cement coatings on pebbles. Moderate reaction to HCl.
180		65	30	5	GW	2.5YR 5/3	M	Reddish brown gravel with sand. Gravel clasts are up to 2" in diameter; angular to subrounded, composed of abundant arkosic sandstone and phyllite, with lesser limestone, white tuff, and trace feldspar porphyry. Few thin calcite-clay-silt cement coatings on weathered pebble surfaces. Sand is coarse to very fine-grained, composed of angular to subangular lithic grains of same composition as the gravel fraction. Moderate reaction to HCl.
190		65	30	5	GW	2.5YR 5/3	M	Reddish brown gravel with sand. As above, with abundant phyllite and arkosic sandstone with lesser reddish brown siltstone; increased amount of white tuff, with only trace amount of limestone in gravel fraction; some calcite-silt-sand coatings. Sand fraction contains abundant lithic grains of same composition; grains are angular to subangular, coarse to fine-grained.
200		65	30	5	GW	2.5YR 5/3	M	Reddish brown gravel with sand. As above, with abundant phyllite, white tuff, and sandstone, lesser amount of siltstone and quartz, and trace chert and limestone in the gravel fraction; few fine sandy calcite coatings. Sand fraction is as above.
210								Missed sample.
220	Basin Fill	40	60	tr	SW	2.5YR 5/3	W	Reddish brown sand with gravel. Sample is ground up (due to drilling). Gravel clasts are mostly subrounded phyllite, quartz, white tuff, siltstone, arkosic sandstone, and trace limestone. Calcareous clay-silt-fine sand coatings on some clasts. Sand fraction is almost entirely lithic grains, coarse to fine-grained, but mostly angular coarse-grained. Weak to moderate reaction to HCl.
230		40	55	5	SW	2.5YR 5/3	W	Reddish brown sand with gravel. As above except that 60% of gravel clasts are white tuff, with lesser phyllite and quartz derived from the Pinal Schist, fine-grained sandstone, and siltstone. Clasts are up to 2" in diameter. Sand fraction is as above. HCl reactivity restricted to calcite-silt-sand cement coatings on clasts.
240		50	40	10	GW-GM	2.5YR 5/3	M	Reddish brown gravel with sand. Gravel ground during drilling process. Gravel clasts include white tuff (approximately 50%), reddish brown fine grained calcareous sandstone and siltstone, chert, pink quartzite, Pinal Schist phyllite and quartz, and trace gray limestone. Moderate reaction to HCl.
250		50	40	10	GW-GM	2.5YR 5/3	M	Reddish brown gravel with silt and sand. Gravel is comprised of approximately 35% white tuff, 35% Pinal Schist phyllite and metamorphic quartz, and 30% clastics including reddish brown and a little green sandstone, siltstone and arkosic sandstone.
260		55	35	10	GW-GM	2.5YR5/2 mottled	M	Weak red gravel with silt and sand. Gravel fraction contains approximately 40% Pinal Schist phyllite and metamorphic quartz, 30% reddish brown siltstone and sandstone, 10% greenish gray claystone, siltstone and fine grained sandstone, 15% white volcanic tuff, and 5% gray and trace yellow limestone. Calcite-sand coatings on some clasts.
270		15	75	5	SW	2.5YR5/1	M	Reddish gray sand with gravel. Sample is largely angular coarse sand-sized particles, probably developed during drilling of coarser material. Composition as above.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-3B**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
280	Basin Fill	55	40	5	GW	2.5YR5/2	W-M	Weak red gravel with silt and sand. Gravel composition differs from previous intervals in that the gravel clasts are mostly clastic sediments including reddish brown, greenish gray, and pale yellow sandstones, arkosic sandstone, and siltstones, accompanied by much lesser amounts of phyllite, tuff and limestone.
290		65	30	5	GW	2.5YR6/3 mottled	W-M	Light reddish brown gravel with sand. Gravel is angular to subrounded, but mostly angular; composed primarily of multi-colored clastic sedimentary lithologies as described in previous interval, with few Pinal Schist and volcanic tuff clasts. Sand is coarse to fine-grained, composed mostly of coarse lithic grains.
300		65	30	5	GW	2.5YR5/2	W	Weak red gravel with sand. Gravel clasts are up to 1/2' in diameter; mostly angular to subangular; composed of reddish brown siltstone, white quartz sandstone, greenish gray arkosic sandstone, pink sandstone, phyllite, quartz, white tuff, gray chert, and trace gray limestone. Clastic sedimentary clasts are most abundant with lesser phyllite and quartz, and little tuff. Calcite and rarely silica cement coatings are present on some clast surfaces. Sand is mostly coarse-grained with little medium and fine-grained material, poorly graded, composed mostly of lithic grains.
310		65	30	5	GW	2.5YR5/2	M	Weak red gravel with sand. As above.
320		75	20	5	GW	2.5YR 5/3	M	Reddish brown gravel with sand. Ground up (due to drilling action) mix of primarily reddish brown calcareous sandstone, light colored whitish and light through dark gray limestone, red, white and greenish colored, quartz sandstones, and dolomitic limestone.
330		75	20	5	GW	2.5YR 5/3	M	Reddish brown gravel with sand. As above; gravel clasts include angular to subrounded, up to 1" diameter reddish brown to gray siltstone and arkosic sandstone, gray to white fine-grained quartz sandstone, and trace amounts of phyllite, limestone, and tuff. Sand is mostly angular to subrounded coarse lithic grains with some quartz. Calcite-fine sand cement coatings are common.
340		75	20	5	GW	2.5YR 5/3	M	Reddish brown gravel with sand. As above; clasts are dominantly clastic sedimentary lithologies with about 30% derived from the Pinal Schist. White to pinkish calcite-sand cement coatings.
350		60	30	10	GW-GM	2.5YR 5/3	M	Reddish brown gravel with silt and sand. As above; gravel fraction contains approximately 50% Pinal Schist, abundant reddish brown fine-grained sandstone, siltstone, and arkose, with trace amounts of limestone and chert; lacks tuff seen in previous intervals. White calcite cement coatings common.
360		70	25	5	GW	2.5YR 5/3	M	Reddish brown gravel with sand. As above, with approximately 60% sedimentary and 40% Pinal Schist lithologies in the gravel fraction. Gravel is mostly angular with little subangular to subrounded material. Sand is poorly graded, mostly coarse-grained, but some medium and fine-grained material; composed mostly of lithic grains with lesser quartz. Some calcite cement coatings
370		70	25	5	GW	2.5YR 5/3	M	Reddish brown gravel with sand. As above.
380		60	30	10	GW-GM	2.5 YR 5/3	M	Reddish brown gravel with silt and sand. Lithologies in the gravel fraction include abundant reddish brown sandstone, quartzite, siltstone, and arkose, some yellow sandy limestone with small fossil shell fragments, and small amount of phyllite. Some calcite cement coatings.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-3B**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
390	Basin Fill	40	50	10	SW-SM	2.5YR 4/2	M	Weak red sand with silt and gravel. Gravel fraction is as above, with increased amount of Pinal Schist to approximately 40%. Sand is coarse to fine-grained, but mostly coarse-grained, moderately well-graded, and composed almost entirely of lithic grains.
400		25	55	20	SC	2.5YR 7/2	M-S	Pale red clayey sand with gravel. Gravel is composed of white tuff, Pinal Schist, and sandstone clasts. Sand fraction is as above. Clay is sticky, cohesive, plastic.
401		75	25		GP	2.5YR 5/2	S	Weak red gravel with sand. Gravel is angular to subrounded, clasts are primarily reddish fine-grained sandstone with calcareous cement, some white limestone, and quartz.
410		30	60	10	SW-SM	5YR6/2	M	Pinkish gray sand with silt and gravel. Gravel clasts are up to 1/2" in diameter; subangular to subrounded; composed of 60% pink, brown, gray and white sandstone, arkosic sandstone, and siltstones, 30% white tuff, 10% phyllite, and trace gray limestone. Sand is mostly coarse lithic grains with smaller amount of medium to fine grains; fine-grained sand is mostly quartz.
418		15	15	70	CL	2.5YR 4/3	M	Reddish brown sandy clay with gravel. Gravel fraction is as above, with few light colored subrounded volcanics; sand fraction is coarse though fine-grained, clay is very soft, sticky, cohesive, plastic. Moderate reaction to HCl.
420		10	15	75	CL	2.5YR4/3	W	Reddish brown clay with sand. Small gravel fraction is composed of phyllite, white tuff, and clastic sedimentary clasts in approximately equal proportions. Weak reaction to HCl.
430		15	15	70	CL	2.5YR 4/3	M	Reddish brown clay with sand and gravel. Gravel and sand fraction are primarily broken up soft claystone, with some reddish fine- grained calcareous cemented sandstone, few quartz, and whitish limestone clasts. Clay is soft, sticky, cohesive, plastic. Moderate reaction to HCl.
440		25	35	40	CL	2.5YR 4/2	W-M	Weak red sandy clay with gravel. Gravel fraction contains 65% weak red mudstone, 30% Pinal Schist, and 5% white tuff. Clay comes out as balls during drilling and as a mix with sand and gravel-sized material. May be clayey rubble near the base of the basin fill.
445			10	90	CL	2.5YR 4/3	M	Reddish brown claystone fragments. Claystone is soft, slightly to moderately laminated, calcareous; about 25% of sample is as clay, soft, sticky, moderately plastic (appears to be derived from broken up claystone). Moderate reaction to HCl. Interpreted to be rubbly zone above the bedrock contact.
450		25	50	25	SC	2.5YR4/3	M	Reddish brown silty claystone fragments 75%; 25% other gravel clasts including tuff, phyllite, and sandstone. Claystone-rich rubble zone above the bedrock contact. Moderate reaction to HCl.
460		25	50	25	SC	2.5YR 4/3 2.5YR 4/4	M	Reddish brown silty claystone fragments with 25% other lithologies, as above. Claystone-rich rubble zone above the bedrock contact.
470	Cintura/ Morita				bedrock	2.5YR 6/3	M	Light reddish brown clay and claystone with some sand. Trace amount of gravel sized material is as fragments of claystone, siltstone, fine-grained sandstone, calcareous cemented claystone. Tabular, slightly laminated, fairly soft overall; clay is very soft, sticky, cohesive, moderately plastic; moderate reaction to HCl.

Project Name: **Bisbee Mitigation Order** Boring No.: **BMO-2008-3B**

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
480	Cintura/Morita Formation					2.5YR 6/3	M	Weak red claystone. Moderate reaction to HCl.
490						2.5YR 4/2 2.5YR5/2	M	Weak red silty claystone and clay, claystone is moderately indurated, slightly laminated; clay is very soft, sticky, cohesive; moderate reaction to HCl.
500						2.5YR 5/2	W-M	Weak red claystone, moderately indurated, very weakly laminated, slightly platy; small amount of free clay. Material is broken up during drilling due to its softness; weak to moderate reaction to HCl.
510						2.5YR 5/2	M	Weak red claystone. As above, with trace weak red clayey limestone.
520						2.5Y 7/2	S	Light gray mudstone. Abrupt color change to yellow hue; fairly soft, small amount of orangish brown limonite stain; strong reaction to HCl.
530						10 YR 5/2 7.5YR 5/3	M	Grayish brown sandstone and reddish brown mudstone. Mostly fine-grained, calcareous cemented sandstone, moderately hard; with smaller amount of reddish brown soft, slightly platy, calcareous mudstone. Moderate reaction to HCl.
540						10YR6/1	M	Gray mudstone, composed of indurated clay, silt and fine-grained sand. Moderate reaction to HCl.
550						2.5Y 7/3	M	Pale yellow mudstone and clay. Clay may be derived from grinding of the claystone during drilling; no recognizable bedding or laminations. Moderate reaction to HCl.
560						2.5Y 6/4	M	Light yellowish brown sandstone. Sandstone is fine-grained with calcareous cement; platy, weakly laminated, hard. Some softer reddish brown non-laminated mudstone, easily broken by hand, is also present in the sample. Moderate reaction to HCl.
570						2.5YR 5/2	M	Weak red claystone and clay; fairly soft. Clay is sticky, cohesive, plastic and constitutes approximately 50% of the sample. Moderate reaction to HCl.
580						10YR6/1	M	Gray mudstone, composed of very fine-grained sand, silt and clay; calcareous, fairly soft, slightly platy, weak laminations. Moderate reaction to HCl.
590						10 YR 6/4 2.5YR5/2	S	Light yellowish brown, silty to fine sandy limestone, with few shell fragments. Sample also contains approximately 20% reddish brown mudstone. Strong reaction to HCl. TD = 590 ft bls at 17:05 on 6/11/2008

HYDRO GEO CHEM, INC.

Geologic Boring Log

		Boring No.:	**BMO-2008-4B**
Project Name:	**Bisbee Mitigation Order**		Project No: 872000
Drilling Company:	WDC Exploration and Wells	Driller:	Billy Berg
Site Plan at Boring Location:		ADWR Registration No.:	**55-910096**
		Drilling Equipment:	GEFCO 50K CH
		Drilling Method:	Stratex, Air-rotary RC
		Bit Type/Size:	11 3/4" Stratex, 9 7/8" tricone
		Total Borehole Depth:	660 ft bls
		Casing Depth:	610 ft bls
		Screened Interval:	500-600 ft bls
		Screen slot size:	0.125 inch, vertical slots
		Filter pack type:	#8 Tacna gravel
		Top of Casing Elevation:	4573.17 ft
		Land surface Elevation:	4572.67 ft
		Date/Time Started:	11/19/08 11:49
		Date/Time Completed:	12/2/08 13:40
Township, Range, Section: T 24 S, R 24 E, Sec. 18 ADA		Logged by:	W. Thompson and K. Wilson
UTM: 3468383.430 N, 601099.405 E, NAD 83		Checked by:	K. Wilson and R. Zimmerman

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
0-10	Basin Fill	20	60	20	SM	5YR 6/4	W	Light reddish brown silty sand with gravel. Gravel clasts are up to 1/2" maximum diameter, subangular to well-rounded, composed of numerous quartzite, dark gray fine-grained sandstone, and volcanics. Sand fraction is coarse through very fine-grained, moderately well-graded through to silt. Loose, dry mix, very weak reaction to HCl.
20		80	10	10	GW-GM	5YR 6/4	S	Light reddish brown gravel with silt. Gravel clasts are angular to rounded, up to 1.5" diameter, primarily quartz, dark brown chert, pink sandstone and siltstone, and gray limestone. Many of the gravel clasts have calcareous coatings. Sand fraction is coarse through very fine-grained. Silt fraction is calcareous. Some caliche cement. Loose, dry mix, very strong reaction to HCl.
30			15	85	ML	5YR 6/4	S	Light reddish brown silt with sand, soft flour-like texture; sand fraction is fine to very fine-grained. Trace gravel is pale green feldspar porphyry, limestone, chert, and quartzite. Very strong reaction to HCl.
40		10	40	50	ML	7.5YR 4/4	S	Brown sandy silt. Gravel fraction is primarily light through dark gray limestone, with some white fine-grained sandstone. Sand fraction is medium through fine-grained but primarily fine-grained; silt fraction is calcareous. Small amount of caliche. Loose mix, very strong reaction to HCl
50		10	40	50	ML	7.5YR 4/4	S	Brown sandy silt. As described above. Gravel clasts include feldspar porphyry, phyllite, greenish to yellowish sandstone, limestone, and reddish brown quartzite. Little caliche.
60		20	50	30	SM	7.5YR 5/4	S	Brown silty sand with gravel. Gravel clasts are up to 1.5" diameter, subangular to well-rounded, composed primarily of dark through light gray limestone, arkose, sandstone, chert. Sand fraction is coarse through very fine-grained, moderately well-graded through to silt; silt fraction is calcareous. Loose, mix, very strong reaction to HCl.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-4B**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
70	Basin Fill	80	10	10	GW-GM	7.5YR 5/4	S	Brown gravel with silt. Gravel clasts are up to 2" in diameter, subangular to rounded, primarily quartz, phyllite, quartzite, limestone, with some coarse to fine-grained calcareous sandstone. Sand fraction is very fine-grained; silt fraction is calcareous. Some caliche. Loose; strong reaction to HCl.
80		10	30	60	ML	5YR 6/4	S	Light reddish brown sandy, clayey silt. Gravel clasts are up to 1" in diameter, composed of mostly quartz, phyllite, volcanics, limestone, and fine-grained sandstone. Sand fraction is coarse through fine-grained; silt and clay fraction is soft, plastic, cohesive, calcareous. Moderate reaction to HCl.
90		10	30	60	ML	5YR 6/4	M	Light reddish brown sandy, clayey silt. As above.
100		10	40	50	ML	5YR 6/4	M	Light reddish brown sandy, clayey silt. As above, except that sand fraction has increased and gravel fraction is much finer, with a 1/2" maximum diameter.
110		50	30	20	GM	5YR 6/4	M	Light reddish brown silty gravel with sand. Gravel clasts are up to 1" maximum diameter, angular to rounded, composed of abundant white tuff, phyllite, quartz, limestones, and fine-grained sandstones. Sand fraction is coarse through very fine-grained, calcareous silt fraction contains some clay; loose mix; moderate reaction to HCl.
120		80	10	10	GW-GM	5 YR 6/4	S	Light reddish brown gravel with silt. Gravel clasts are up to 2" maximum diameter, subangular to well-rounded, composed primarily of white tuff, phyllite, limestone, fine-grained sandstones, and dark gray silicates. Sand fraction is medium through very fine-grained. Silt is calcareous; loose; strong reaction to HCl.
130		25	45	30	SM	5YR 6/4	S	Light reddish brown silty sand with gravel. Gravel fraction is as above. Sand fraction is coarse through fine-grained but is mostly coarse-grained; silt fraction is calcareous. Strong reaction to HCl.
140		50	25	25	GM	5YR 6/4	S	Light reddish brown silty gravel with sand. Gravel clasts are up to 1" maximum diameter, angular to subrounded, composed of abundant quartz, phyllite, medium and fine-grained sandstone with siliceous cement, fine-grained calcareous cemented sandstone; some sandstone clasts exhibit laminar structure. Sand fraction is coarse through fine-grained, moderately well-graded through to silt. Strong reaction to HCl.
150		40	35	25	GM	5YR 6/4	S	Light reddish brown silty gravel with sand; as above. Gravel clasts include abundant reddish brown siltstone, with lesser tuff, phyllite, quartz, and little limestone.
160		30	50	20	SM	5YR 6/4	M	Light reddish brown silty sand with gravel. Gravel fraction is fine, clasts are up to 3/4" maximum diameter, angular to subrounded, numerous quartz, phyllite, quartzite, medium to very fine-grained sandstones with calcareous and siliceous cement, some limestone, only trace tuff. Sand fraction is coarse through very fine-grained; silt fraction is calcareous. Moderate reaction to HCl.

Project Name:		**Bisbee Mitigation Order**						Boring No.: **BMO-2008-4B**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**Fl**				
165	Basin Fill	10	70	20	SM	5YR 6/4	M	First water at 165 ft bls. Light reddish brown silty sand; 10% gravel. Gravel fraction is as above. Sand fraction is very coarse through very fine-grained, well-graded through to silt; calcareous, moderate reaction to HCl.
170		60	20	20	GM	5YR 6/4	M	Light reddish brown silty gravel with sand. Gravel clasts are up to 2" maximum diameter, angular to subrounded, primarily phyllite and reddish brown siltstone, medium to fine-grained sandstone, many coated with caliche; some very weak laminations within the sandstones; numerous quartz and some dark through light gray limestone clasts. Sand fraction is very coarse through very fine-grained, well-graded through to silt. Moderate reaction to HCl.
180		60	20	20	GM	5YR 6/4	M	Light reddish brown silty gravel with sand, as above. Some calcite coatings on gravel clasts.
190		65	30	5	GW-GM	2.5YR 5/3	M-S	Reddish brown gravel with sand. Gravel clasts are subangular to subrounded, = 2 cm diameter, polymictic composed of phyllite, metamorphic quartz, greenish gray fine grained quartz sandstone, dark reddish gray siltstone, white quartz sandstone with few opaques, green arkose, white tuff, gray limestone and chert. Sand is mostly coarse lithic grains. Calcite-clay-fine sand cement coatings on some clasts. Fines estimated, are washing out.
200		75	15	10	GW-GM	2.5YR 6/3	M	Reddish brown gravel with silt and sand. Clasts are 1/2 - 4 cm, occasionally coarser; mostly subangular with some subrounded; composed primarily of phyllite and quartz derived from the Pinal Schist, light colored sandstones, and dark siltstones, with lesser limestone, calcite-fine sand-clay cement coatings are common.
210		75	15	10	GW-GM	2.5YR 6/3	M	Light reddish brown gravel with silt and sand. As above, dominantly Pinal Schist and sandstone with lesser limestone, calcite-sand cement.
220		25	65	10	SW-SC	2.5YR 5/3	W	Reddish brown sand with clay and gravel. Sand is coarse to fine-grained, composed of lithic grains and quartz. Coarse sand is mostly lithic grains; fine sand is mostly quartz. Gravel is subangular to rounded; = 1 cm, phyllite, quartz, sandstone, siltstone, and little limestone.
230		70	20	10	GW-GM	2.5YR 5/3	W	Reddish brown gravel with clay and sand. Gravel is primarily Pinal Schist phyllite and quartz, sandstone, and little limestone. Few calcite-sand cement coatings. Gravel clasts are up to 4 cm on long side. Sand is mostly coarse lithic grains.
240		80	20	tr	GW	2.5YR 5/2	W	Weak red gravel with sand. Gravel clasts are angular to subrounded, up to 4 cm, composed of phyllite and quartz derived from the Pinal Schist, sandstones, reddish brown siltstone, and trace pink feldspar porphyry. Moderate calcite-clay-sand cement coatings. Sand is mostly lithic grains.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-4B**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**Fl**				
250	Basin Fill	55	40	5	GW	2.5YR 5/3	W	Reddish brown gravel with sand. Gravel clasts are angular to subrounded, up to 3 cm, composed of Pinal Schist, arkosic sandstone, greenish fine-grained quartzite, little limestone and trace volcanics. Sand is coarse to fine-grained, composed of lithic grains, quartz, and trace magnetite.
260		70	25	5	GW	2.5YR 5/3	W	Reddish brown gravel with sand. Gravel clasts are angular to rounded, up to 3 cm, composed primarily of Pinal Schist (phyllite, schist, metamorphic quartz), various sandstones and siltstone with little limestone. Cement coatings composed of clayey carbonate and sand. Sand as above.
270		55	40	5	GW	2.5YR 5/3	W	Reddish brown gravel with sand. Gravel clasts are up to 3 cm, angular to subangular, few small subrounded; composed of mostly Pinal Schist with lesser green, white and gray sandstone and trace limestone and white aphanitic volcanic. Sand is coarse to fine grained, largely lithic grains. Intergrown calcite, clay, and sand cement.
280		88	10	2	GW	2.5YR 5/2	W	Weak red gravel. Gravel clasts include gray and yellow limestone, Pinal Schist (phyllite, schist, metamorphic quartz) and fine-grained sandstones and quartzite in approximately equal proportions. Calcite-sand, clay cement coatings are common. Clasts are angular to subrounded, up to 4 cm. Fines washed out; well making 7,300 gpm.
290		83	15	2	GW	2.5YR 5/3	W	Reddish brown gravel with sand. Clasts include Pinal Schist, green fine-grained quartzite, gray sandstone, with trace limestone and white aphanitic volcanic. Clasts are angular to subrounded, up to 2.5 cm; moderate amount of calcite-fine sand cement. Sand is poorly graded, mostly fine and coarse-grained, composed of lithic grains and quartz.
300		55	45	tr	GW	2.5YR 5/2	W	Weak red gravel with sand. Gravel is angular to rounded, mostly = 1 cm diameter, with sandy calcite cement coatings; composed of mostly Pinal Schist and white feldspathic sandstone, with little green quartzite yellow limestone and trace volcanic and siltstone. Sand is coarse to fine, mostly lithic grains. Calcite-sand coatings.
310		55	45	tr	GW	2.5YR 5/3	W	Reddish brown gravel with sand. Gravel is mostly angular and subangular with some subrounded, = 1.5 cm diameter, mostly Pinal Schist with lesser clasts and little limestone. Sand is fine to coarse, composed mostly of lithic grains; some generated by drilling process.
320		5	85	10	SW-SM	2.5YR 6/2	M	Pale red sand with silt. Sand is coarse to very fine-grained, composed of lithic grains are Pinal Schist and clasts primarily. Changed from Stratex system to reverse circulation drilling with 9 7/8" tricone due to higher volume of water.
330		55	45	tr	GW	2.5YR 5/2	M	Weak red gravel with sand. Gravel is angular to rounded =1 cm diameter, composed of Pinal Schist, gray sandstones and trace siltstone; few calcite-sand cement coatings. Sand is medium to coarse-grained, mostly lithic grains.
340		65	35	tr	GW	2.5YR 5/3	W-M	Reddish brown gravel with sand. Clasts are angular to subrounded, up to 2 cm; composed of Pinal Schist and sandstones with lesser limestone (gray and yellow) and trace tan feldspar porphyry. Sand is medium to coarse, mostly lithic grains calcite-sand coatings on gravel clasts.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-4B**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
350	Basin Fill	55	40	5	GW	10 R 5/3	M	Weak red gravel with sand. Gravel clasts are =1 cm diameter, angular to subangular, 50/50 Pinal Schist/sandstone; few calcite-sand coatings. Sand is coarse to fine-grained, composed of lithic grains in the coarse fraction and mostly quartz in the fine fraction.
360		60	35	5	GW	10YR 5/2	M	Weak red gravel with sand. Gravel clasts are up to 1.5 cm, angular to subrounded, mostly Pinal Schist and green and gray sandstones with little limestone and siltstone; weak calcite cement coatings. Sand as above.
370		55	40	5	GW	10YR 5/3	M	Weak red gravel with sand. As above.
380		55	40	5	GW	10YR 5/3	M	Weak red gravel with sand. As above. At least some coarse sand is probably being created during drilling process, as much of the sand sized particles are fresh-surfaced angular lithic grains.
390		60	35	5	GW	10YR 5/2	W	Weak red gravel with sand. Gravel is angular to subrounded, up to 2 cm, primarily sandstones and Pinal Schist with little gray limestone and siltstone. Few calcite and calcite-sand cement coatings. Sand as above.
400		40	55	5	SW	10YR 5/2	M	Weak red sand with gravel. Gravel composition as above. Sand is coarse thru very fine-grained composed of lithic grains and quartz; some of the sand sized particle are probably generated during drilling. Original gravel content maybe higher. Few calcite-sand cement coatings.
410		40	55	5	SW	10YR 5/2	M	Weak red sand with gravel. As above, same lithologic composition; weak calcite-sand cement coatings on few clasts.
420		40	55	5	SW	10YR 5/2	W	Weak red sand with gravel; as above.
430		40	55	5	SW	5YR 5/3	W-M	Reddish brown sand with gravel. Fines are reddish brown; sand is mottled with abundant weak red tones. Gravel consists of green quartz sandstone, white sandstone, Pinal Schist, buff oolitic shelly limestone, trace red chert. Sand is fine to coarse-grained lithic grains and quartz; some is probably ground-up gravel clasts.
440		30	65	5	SW	2.5YR 5/3	W	Weak red sand with gravel. Gravel clasts include Pinal Schist (phyllite and metamorphic quartz), gray limestone, reddish brown arkose and sandstone. Sand is fine to coarse-grained with abundant coarse angular to subrounded lithic grains. Fine sand and fines wash out of samples.
450		45	50	5	SW	2.5YR 5/2	W-M	Weak red sand with gravel. Gravel clasts are up to 2 cm; angular to subangular, composed primarily of Pinal Schist with lesser sandstones and trace limestone. Sand is fine to coarse-grained, with abundant lithic grains.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-4B**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
460	Basin Fill	15	80	5	SW	2.5YR 5/2	W	Weak red sand with gravel. Gravel clasts are up to 1.5 cm, angular to subrounded sandstone, quartzite arkose with lesser phyllite. Sand is fine to coarse quartz and lithic grains.
470		15	75	10	SW-SM	2.5YR 5/2	W	Weak red sand with silt and gravel. Gravel clasts are subangular, = 1 cm, composed of Pinal Schist, oolitic shelly limestone, sandstone and arkose. Sand is fine to coarse, composed of lithic grains and quartz. Trace calcite cement.
480		30	60	10	SW-SM	2.5YR 5/2	W-M	Weak red sand with silt and gravel. Gravel clasts are up to 2 cm, angular to subrounded, composed of abundant light colored sandstones with lesser Pinal Schist and little limestone. San as above. Trace calcite cement coatings.
490		55	40	5	SW	2.5YR 5/2	W	Weak red gravel with sand. Gravel clasts are up to 2 cm, angular to subangular, composed of phyllite to quartz derived from the Pinal Schist, light colored sandstones and gray chert. Sand is fine to coarse with abundant lithic grains and quartz. Few calcite cement coatings.
500		25	65	10	SW-SM	2.5YR 5/2	W	Weak red sand with silt and gravel. Gravel clasts are up to 1.5 cm, angular to subrounded, composed mostly of light colored sandstones with little quartzite and Pinal Schist. Sand is mostly lithic grains and quartz, fine to coarse grained. Trace calcite cement coatings.
510		25	65	10	SW-SM	2.5YR 5/2	M	Weak red sand with silt and gravel. Gravel clasts are up to 2 cm, angular to subrounded, composed of phyllite, quartz from Pinal Schist, gray limestone, arkose, quartzite, and siltstone. Sand as above. Trace calcite cement coatings.
520		45	50	5	SW	2.5YR 5/2	M	Weak red sand with gravel. Gravel clasts are angular to subrounded, = 2 cm, composed of sandstone, arkose quartzite, with lesser phyllite, gray limestone, and chert. Sand is fine to coarse-grained, with abundant coarse lithic grains. Few calcite cement coatings.
530		25	70	5	SW	10 R 5/2	W-M	Weak red sand with gravel. Gravel clasts are = 2cm, grading to coarse sand; angular to subrounded, composed primarily of phyllite and quartz derived from the Pinal Schist with little sandstone and red siltstone. Few calcite coatings. Sand as above.
540		20	75	5	SW	10 R 5/2	W	Weak red sand with gravel. Gravel clasts are = 2 cm, angular to subangular composed mostly of quartz and phyllite from the Pinal Schist with lesser sandstone, quartzite and red siltstone. Sand is coarse to fine-grained well-graded through to silt, composed of quartz and lithic grains. Few calcite coatings.
550		20	75	5	SW	10 R 5/2	W	Weak red sand with gravel. Gravel clasts are = 2 cm, angular to subrounded, composed of Pinal Schist material, sandstone and little gray chert. Sand as above. Few calcite-sand cement coatings.
560		30	65	5	SW	6 R 5/2	W	Weak red sand with gravel. Gravel is fine, = 2 cm clasts, Pinal Schist-derived material, quartzite, and sandstone. Sand is fine to coarse-grained, well graded, composed of lithic grains and quartz.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-4B**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**Fl**				
570	Basin Fill	15	75	10	SW-SM	2.5YR 5/3	W	Reddish brown sand with silt and gravel. Gravel is fine = 1 cm in diameter, composed of phyllite and quartz derived from the Pinal Schist, reddish brown siltstone and sandstone, and little gray sandstone. Sand is coarse to fine-grained, well-graded through to silt, mostly lithic grains with some quartz. Few calcite coatings on gravel clasts.
580		25	65	10	SW-SM	2.5YR 5/3	W	Reddish brown sand with silt and gravel. Gravel fraction is mostly = 1 cm with few coarser clasts, angular to subangular composed primarily of phyllite and abundant quartz derived from the Pinal Schist with lesser reddish brown sandstone and siltstone. Sand is coarse to fine-grained composed largely of lithic grains with some quartz; well-graded through silt. Few calcite coatings.
590		20	80		SW	2.5YR 5/3	W	Reddish brown sand with gravel. Gravel fraction to 1" max diameter, angular to subangular; quartz, phyllite, medium to fine-grained sandstone with calcareous cement, quartzite, small amount of dark gray schist, trace limestone. Sand fraction is very coarse through medium-grained but is primarily coarse-grained, some may be ground up gravels due to drilling action as the grains are very angular and appear to be fresh; sand is primarily quartz and sandstone fragments, some schistose material, weak reaction with HCl; saturated.
600		20	80		SW	2.5YR 5/3	W	As above.
610		20	80		SW	2.5YR 5/3	W	As described above, identical in appearance. Gravel clasts are quartz, phyllite, quartzite, sandstone, and trace limestone.
620		20	80		SW	2.5YR 5/3	W	As above.
630		20	80		SW	2.5YR 5/3	W	As above.
636	Mural Limestone				bedrock	2.5Y 7/2	S	Light gray limestone, (probably Cretaceous Mural Limestone) moderately laminated, platy, fairly hard, small amount of a fine grained reddish brown sandstone, calcareous cemented, strong reaction to HCl, saturated conditions.
640						2.5Y 7/2	S	As above.
650						10YR 7/1	S	Light gray limestone, slightly platy, fairly hard, few reddish brown sandstone inclusions within limestone. Very strong reaction to HCl, saturated conditions.
660						10YR 7/1	S	As above. TD = 660 ft bls at 13:40 on 12/2/2008

HYDRO GEO CHEM, INC.

Geologic Boring Log

		Boring No.:	**BMO-2008-5M**
Project Name:	**Bisbee Mitigation Order**	Project No.:	872000
Drilling Company:	WDC Exploration and Wells	Driller:	Mike Thomas
Site Plan at Boring Location:		ADWR Registration No.:	**55-909552**
		Drilling Equipment:	Gefco Speedstar 50K-CH
		Drilling Method:	ARCH-11 3/4"
		Bit Type/Size:	9 7/8" Tricone
		Total Borehole Depth:	460 ft bls
		Casing Depth:	450 ft bls
		Screened Interval:	340 - 440 ft bls
		Screen slot size:	0.125', vertical slots
		Filter pack type:	No. 8 Tacna gravel
		Top of Casing Elevation:	4585.02 ft
		Land surface Elevation:	4584.59 ft
		Date/Time Started:	8/10/08 10:15
		Date/Time Completed:	8/20/08 9:00
Township, Range, Section: T 24 S, R 24 E, Sec. 7 DCC		Logged by:	W. Thompson
UTM: 3,468,993.961 N, 600,445.302 E, NAD 83		Checked by:	K. Wilson and R. Zimmerman

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
0	Basin Fill	5	10	85	ML	7.5YR 4/4	S	Brown silt, with 10% sand and trace gravel. Gravel is composed of quartz and dark through light gray limestones. Sand fraction is very fine-grained. Material is soft, powdery, loose; strong reaction to HCL.
10		5	10	85	ML-CL	7.5YR 6/4	S	Light brown caliche. Gravel and sand fractions are as described above; with calcareous caliche cement, fairly soft material, dry, very strong reaction to HCL.
20		5	20	75	ML-CL	7.5YR 6/4	S	Light brown caliche. Sand fraction is medium to very fine-grained, calcareous caliche cement; fairly soft, ground to a flour-like powdery texture during drilling. Trace gravel is sandstone and quartz; material is dry; very strong reaction to HCL.
30			25	75	ML-CL	7.5YR 7/3	S	Pink silt with sand, caliche. Soft, homogenous, ground to a gritty powdery texture during drilling; dry, very strong reactions to HCL.
40		5	45	50	CL	7.5YR 7/3	S	Pink sandy silt, caliche. As above; trace gravel. Sand is composed of quartz and limestone lithic grains.
50			25	75	CL	7.5YR 7/3	S	Pink silt with sand, caliche. As above.
60			25	75	ML	7.5YR 6/4	S	Light brown silt with sand, caliche. Sand fraction is coarse through very fine- grained; material is fairly soft, dry; very strong reaction to HCL.
70		15	15	70	ML	7.5YR 5/3	S	Brown sandy silt with gravel. Gravel is composed of angular to subrounded gray limestone with trace quartzite and arkosic sandstone. Sand fraction is fine to very fine-grained, silt is slightly indurated, soft, dry, strong reaction to HCL.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-5M**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
80		30	20	50	ML	7.5YR 6/3	S	Light brown gravelly silt with sand. Gravel fraction to 1/2" max. diameter, angular to subrounded, primarily quartz, reddish fine-grained sandstone, and dark through light gray sandstone; sand fraction is coarse through fine-grained, loose mix, dry, strong reaction to HCL.
90			40	60	ML	2.5YR 5/3	S	Reddish brown sandy silt. Sand fraction is coarse through very fine-grained, fairly well-graded through to silt fraction, powdery, loose mix, very strong reaction to HCL.
100		75	15	10	GP-GM	2.5YR 5/3	S	Reddish brown gravel with silt and sand. Gravel clasts are up to 2" max. diameter, angular to subrounded, primarily a mix of quartz, gray limestones, medium to very fine-grained sandstone with calcareous cement, sandy siltstone and siltstone; mottled coloration includes reds, whites, and various shades of gray; sand fraction is coarse through fine-grained but primarily coarse-grained, dry loose mix, strong reaction to HCL.
110		2	48	50	ML	2.5YR 5/3	S	Reddish-brown sandy silt with trace gravel. Gravel fraction is as described above; sand is medium through very fine-grained but is primarily fine to very fine-grained; loose dry mix, very strong reaction to HCL.
120	Basin Fill	20	40	40	SM	2.5YR 5/3	S	Reddish-brown silty sand with gravel. Gravel clasts are up to 3/4" max. diameter, angular to subrounded, mostly reddish fine-grained sandstone with siliceous cement, some calcareous sandstone, gray limestone, silty sandstones and quartz; loose mix, dry; strong reaction to HCL.
130		10	30	60	ML	2.5 YR 5/3	S	Reddish brown sandy silt; 10% gravel. Gravel fraction is as above; sand fraction is fine to very fine-grained, powdery, loose, dry; strong reaction to HCL.
140		30	30	40	ML	2.5YR 5/3	S	Reddish brown sandy silt with gravel. Gravel clasts are up to 1" diameter, angular to rounded, a mix of quartz, sandstones, silty medium to fine-grained sandstone, and gray limestone; some gravel clasts have calcite coatings. Sand fraction is very coarse through very fine-grained, moderately well-graded through to silt; loose mix, dry, strong reaction to HCL.
150			40	60	ML	2.5YR 5/3	S	Reddish brown sandy silt. Sand fraction is medium to very fine-grained but mostly fine-grained. Silt has powdery texture, dry; strong reaction to HCL.
160		30	30	40	ML	2.5YR 5/3	S	Reddish brown sandy silt with gravel. Gravel clasts are up to 3/4" max. diameter, angular to subrounded, mix of schist, fine and medium-grained siliceous-cemented sandstones, some limestones, and quartz. Sand fraction is coarse through very fine-grained but is primarily finer grained material, loose mix, slightly wet, strong reaction to HCL.
Water								Intercepted first water at 160 ft bls.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-5M**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
170	Basin Fill	75	15	10	GP-GM	Mottled	M	Mottled gravel with silt and sand. Coloration includes grays, reds, whites, greens; gravel clasts are mostly very fine through medium-grained sandstone with some schist and quartz, up to 3/4" in diameter, angular to subrounded. Sand fraction is coarse through fine-grained but primarily coarse-grained; material is loose, saturated. Moderate reaction to HCL.
180		30	55	15	SM	2.5YR 5/4	M	Reddish brown silty sand with gravel. As above except that gravel fraction has decreased and sand fraction has increased, sand is primarily coarse-grained, loose, moderate reaction to HCL.
190		70	25	5	GP	Mottled	M/S	Mottled gravel with sand. Coloration includes reds, grays, whites, light green; gravel clasts are up to 2" max. diameter, primarily dark through light gray, white, and pale green limestones, reddish medium through fine-grained sandstone, quartz, and few schist clasts; subangular to rounded. Sand fraction is coarse through fine-grained, moderately well-graded through silt fraction, fairly clean, loose, moderate reaction to HCL.
200		70	25	5	GP	Mottled	M/S	Mottled gravel with sand. As above; colors are mostly reddish brown, light reddish brown and grays. Calcite-sand cement coatings. Moderate reaction to HCl
210		70	25	5	GP	Mottled	M	Mottled gravel with sand. As above. Calcite-fine sand cement coatings on few clasts. Moderate reaction to HCl.
220		70	25	5	GP	Mottled	M	Mottled gravel with sand. As above. Gravel is angular to rounded with few calcite-sand cement coatings. Moderate reaction to HCl.
230		70	25	5	GP	Mottled	M	Mottled gravel with sand. As above; few calcite-sand cement coatings. Moderate reaction to HCl.
240		80	20		GP	Mottled	M	Mottled gravel with sand. Coloration includes reds, whites, grays, pale green; gravel to 3" max diameter, angular to rounded, primarily limestones, sandstones (with calcareous and siliceous cement, medium to fine-grained, hard), few quartz. Sand fraction is coarse through fine-grained but primarily coarse-grained, loose mix, moderate reaction to HCL.
250		60	40		GP	Mottled	M	Mottled gravel with sand as described above except that gravel fraction is not as coarse with clasts to 1.5" max. diameter, but mostly less that 1/2" in diameter. Rounded surfaces on pebbles. Sand fraction has increased slightly, mostly coarse to very coarse-grained, clean. Moderate reaction to HCL.
260			90	10	SP-SM	5YR 5/3	S	Reddish brown sand with silt. Sand fraction is very coarse through medium-grained but is primarily coarse-grained, loose, fairly clean; strong reaction to HCL.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-5M**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
270	Basin Fill	10	85	5	SP	7.5YR 7/3	S	Pink sand; 10% gravel. Gravel clasts are up to 1/2" max. diameter, composed of limestone with lesser amounts of reddish siltstone and sandstone with calcareous cement, phyllite and quartz. Sand fraction is primarily angular to subrounded, very coarse-grained with some finer material, composed of abundant quartz and lithic grains; loose, clean, very little fines. Strong reaction to HCL.
280		10	85	5	SP	7.5 YR 6/3	S	Light brown sand. As above except that material is finer grained overall, but still mostly coarse sand. Some yellowish limestone clasts are present as well as the lithologies listed above. Strong reaction to HCL.
290	Morita Formation				bedrock	5YR 5/4	S	Light reddish brown sandstone with yellowish fine-grained sandstone and limestone. Sandstone is silty, fine-grained, moderately soft, with calcareous cement. Limestone is pale yellow, crystalline. Strong reaction to HCL. Bedrock, Morita Formation.
300						2.5YR 5/4	S	Reddish brown sandy siltstone. Calcareous cement, fairly soft, some chips are platy. Strong reaction to HCL. Morita Formation.
310						2.5Y 7/3	M	Pale yellow sandstone, siltstone, clay stone with some clay. Distinct color change from above unit. Sandstone is very fine-grained with calcareous cement, moderately hard; siltstones and claystones are calcareous and fairly soft; small amount of soft, plastic, calcareous clay. Moderate reaction to HCL.
320						5Y 7/2	W	Light gray clay and sandstone. Sandstone is fine-grained, with calcareous cement, platy, friable, very weakly laminated. Clay is plastic, cohesive, sticky; sandstone and clay are probably as interbedded material. Weak reaction to HCL.
330						5Y7/2	W	Light gray sandstone; fine-grained, calcareous cement, slightly platy, fairly hard but can be broken with fingers; few black flecks, few shell fragments, moderate reaction to HCL.
340						5YR 7/2	W	Light gray clay and clayey sandstone, probably interbedded; as described for the 320' depth.
350						2.5Y 6/3	M	Light yellowish brown sandstone; fine-grained, calcareous cement, slightly platy, hard. Trace disseminated small black spots. Moderate reaction to HCL.
360						2.5Y 5/3	M	Light olive brown silty sandstone and siltstone; fine-grained, slightly platy, calcareous cement, fairly hard. Trace fossil shell fragments, few calcite veinlets and dendrites. Moderate reaction to HCL.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-5M**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
370	Morita Formation					2.5Y 6/3	M	Light yellowish brown clay and claystone. Clay is soft, plastic, sticky, cohesive, calcareous; claystone is platy, very weakly laminated, moderately soft, easily broken by fingers, moderate reaction to HCL.
380						2.5Y 5/3	M	Light olive brown sandstone; fine-grained with calcareous cement, slightly platy, hard. Small amount of pale yellow sandy limestone and pinkish gray calcareous sandstone are also present. Moderate reaction to HCL.
390						2.5Y 5/3	M	Light olive brown sandstone; fine-grained with calcareous cement, slightly platy, hard. Moderate reaction to HCL.
400						2.5Y 6/3	M	Light yellowish brown clayey siltstone. Very fine-grained, silty sandstone with interbeds of clay and claystones, siltstones, and silty fine-grained sandstones. Claystones are very weak, laminated, fairly soft; silty sandstone are moderately hard, slightly platy; clay fraction is plastic cohesive sticky, soft; all are calcareous, and react moderately to HCL.
410						2.5Y 6/3	M	Light yellowish brown clay, claystone, and mudstone. Mudstone is composed of lithified clay, silt, and fine sand, and is weakly laminated, fairly soft, calcareous. Clay is plastic, cohesive, soft, calcareous. Moderate reaction to HCL.
420						2.5Y 6/3	M	Light yellowish brown sandstone; fine-grained, calcareous cement, slightly platy, fairly hard; few black flecks maybe free carbon. Weak orange-brown limonite stain on few fractures. Moderate reaction to HCL.
430						10 YR 7/6	M	Yellow silty sandstone, claystone, and clay interbeds as above; all are calcareous. Silty sandstone and claystone are soft, weakly laminated; clay is soft, moderately plastic. Few limonitic fractures; moderate reaction to HCL.
440						2.5Y 6/3	M	Light yellowish brown, fine-grained sandstone. Platy, calcareous cement; hard. Moderate reaction to HCL.
450						5Y 7/3	M	Pale yellow clay with small amount of fragmented sandstone; clay is plastic, cohesive, sticky, soft, calcareous. Moderate reaction to HCL.
460						5Y 7/3	M	60% pale yellow silty sandstone and claystone and 40% pink fine-grained sandstone with calcareous cement. Claystone is fairly soft, very weakly laminated; clay fraction is as described above. Moderate reaction to HCL.
								TD = 460 ft bls at 9:00 on 8/20/2008

HYDRO GEO CHEM, INC.

Geologic Boring Log

		Boring No.:	**BMO-2008-6M**
Project Name:	**Bisbee Mitigation Order**		Project No: 872000
Drilling Company:	WDC Exploration and Wells	Driller:	Arnold Lamon
Site Plan at Boring Location:		ADWR Registration No.:	**55-909019**
		Drilling Equipment:	Gefco Speedstar 50K CH
		Drilling Method:	Stratex, ARCH, RC
		Bit Type/Size:	Stratex 12", 10"; Tricone 8.5"
		Total Borehole Depth:	460 ft bls
		Casing Depth:	450 ft bls
		Screened Interval:	340 - 440 ft bls
		Screen slot size:	0.125 inch, vertical slots
		Filter pack type:	No. 8 Tacna gravel
		Top of Casing Elevation:	4626.90 ft
		Land surface Elevation:	4626.40 ft
		Date/Time Started:	5/17/08 8:28
		Date/Time Completed:	5/20/08 15:40
Township, Range, Section: D T24S, R24E, Sec. 6 acc		Logged by:	W. Thompson
UTM: 3469813.885 N, 600367.943 E, NAD 83		Checked by:	K. Wilson and R. Zimmerman

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
0	Basin Fill		10	90	ML	7.5YR6/4	S	Light brown silt. Sand fraction is very fine-grained, loose, powdery, dry.
10		trace	15	85	ML	7.5YR6/4	S	Light brown silt with sand. Sand fraction is coarse to very fine-grained, composed of angular to subrounded quartz and lithic limestone and sandstone grains. Few gravel-sized clasts are caliche chunks and gray limestone.
15		trace	10	90	ML	5YR7/3	S	Pink silt. Sand fraction is very fine-grained, loose.
20		trace	10	90	ML	5YR6/4	S	Light reddish brown silt. Sand is coarse to very fine-grained quartz and lithic grains. Trace amount of gravel-sized material is composed of milky quartz clasts and caliche chunks.
27			20	80	ML	5YR7/3	S	Pink silt with sand; caliche cement. Very soft material. Sand fraction is coarse through very fine-grained.
30		trace	25	75	ML	7.5YR7/3	S	Pink silt with sand. Sand is angular to subangular limestone, jasperoid, and sandstone lithic grains and quartz grains. Few gravel-sized particles are limestone and chunks of caliche.
40			20	80	ML	5YR5/3	S	Reddish brown silt with sand; caliche cement, moderately soft. Sand is medium to fine-grained, composed of quartz grains and lithic sandstone and limestone grains.
50			15	85	ML	5YR6/3	S	Light reddish brown silt with sand; caliche cement. Mixed soft and slightly harder caliche layers. Harder layers break into lenticular pieces. Sand is medium to very fine-grained.

Project Name: **Bisbee Mitigation Order** Boring No.: **BMO-2008-6M**

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
60	Basin Fill	trace	10	90	ML	7.5YR6/3	S	Light brown silt with sand; caliche cement; soft, loose, powdery material. Sand fraction is fine-grained, composed of free quartz grains, few sandstone and other lithic grains. Trace amount of gravel-sized particles are hard angular chunks of caliche and soft claystone.
70		trace	15	85	ML	7.5YR6/3	S	Light brown silty sand; caliche cement. Trace amount of gravel-sized particles are angular to subangular caliche chunks generated by drilling, gray sandstone, and gray limestone clasts.
75		5	45	50	ML	5YR6/2	S	Pinkish gray sandy silt; trace amount of gravel. Gravel is up to one inch in diameter, angular to subrounded, composed of dark gray schist and light gray to buff limestone. Sand fraction is fine to very fine-grained, weakly cemented.
80		10	60	30	SM	7.5YR6/3	S	Light brown silty sand. Gravel is composed of angular to subrounded clasts of medium to coarse-grained pink sandstone, white quartzite, fine-grained tan sandstone, gray limestone, and trace jasperoid; few clasts have with calcite and/or caliche coatings. Sand is angular to subrounded, coarse through very fine-grained, composed of abundant lithic grains and quartz.
90		5	10	85	ML	5YR6/3	S	Pinkish gray silt with sand; caliche cement. Small gravel fraction; gravel clasts are primarily limestone with some schist, quartzite, granitoids, and arkosic sandstone. Few partial calcite coatings on clasts. Material is fairly soft.
100		15	65	20	SM	5YR6/4	S	Light reddish brown silty sand with gravel. Gravel is up to 1/2" diameter, subangular to rounded, clasts are primarily dark to light gray limestone with lesser amount of gray sandstone and caliche chunks. Sand fraction is medium through very fine-grained, but mostly fine-grained, loose.
110		50	25	25	GM	5YR6/4	S	Light reddish brown silty gravel with sand. Gravel is primarily angular to subrounded, composed of light to dark gray limestone with lesser amount of gray sandstone, and trace granite clasts; few white calcite surface coatings. Sand is medium to very fine-grained but mostly fine-grained, loose.
120		25	50	25	SM	5YR6/3	S	Light reddish brown silty sand with gravel. Gravel is angular to subrounded, primarily dark to light gray limestone with little silicified limestone and phyllite; few calcite surface coatings. Sand fraction is medium through very fine-grained, but mostly fine-grained, moderately well-graded through to silt; loose.
130		10	50	40	SM	5YR6/3	S	Light reddish brown silty sand; 10% gravel. Gravel is composed of gray limestone, chert, arkose, phyllite, granitoid, fine-grained sandstone and siltstone. Sand is fine to very fine-grained. Material is loose, powdery.
140		25	45	30	SM	5YR6/3	S	Light reddish brown calcareous silty sand with gravel. Gravel is primarily dark to light gray limestone with some silicification, fine-grained maroon and gray sandstone, and trace granite. Sand is medium to very fine-grained, but mostly fine-grained.

Project Name: **Bisbee Mitigation Order** Boring No.: **BMO-2008-6M**

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
150	Basin Fill	25	45	30	SM	5YR6/3	S	Light reddish brown calcareous silty sand with gravel. Gravel is composed of sandstone, gray limestone, silicified limestone, and small amounts of granitoid and phyllite; clasts are up to 1 cm diameter commonly with calicite-sand coatings. Sand is medium to very-fine grained, but mostly fine-grained.
160		25	45	30	SM	5YR6/3	S	Light reddish brown calcareous silty sand with gravel. As above.
170		25	45	30	SM	5YR6/3	S	Light reddish brown calcareous silty sand with gravel. Gravel is primarily silicified limestone, with gray limestone, pinkish stained phyllite, and fine-grained pink and gray sandstone; most clasts are subangular, some have calcite-sand coatings. Sand is medium to very-fine grained, but mostly fine-grained, composed of quartz and lithic grains.
180		25	45	30	SM	5YR6/3	S	Light reddish brown silty sand with gravel. Gravel clasts are angular to subangular, up to 3/4" diameter, composed of gray limestone with some silicification, maroon sandstone, and caliche chunks. Sand is medium to fine-grained, but mostly fine-grained, composed mostly of quartz with lesser amount of lithic grains. Medium sand grains are angular to subrounded; fine grains are subrounded to rounded.
190		25	45	30	SM	5YR6/3	S	Light reddish brown silty sand with gravel. Gravel fraction contains abundant clasts of pink, gray, green and brown sandstone with little gray limestone and quartzite. Calcite coatings on some clasts. Sand is coarse to very fine-grained, but mostly fine-grained. Coarser sand is dominantly lithic grains; finer sand is mostly quartz.
200		80	15	5	GW	Mottled	S	Mottled gravel with sand. Colors are dark through light grays, pinks, reds, and whites. Clasts are up to 1.5", subangular to rounded, primarily limestone with some sandstone, arkose, phyllite, and quartz, in matrix of calcareous sand and silt. Approximately 15% have thin white calcite surface coatings. First water, saturated.
220		70	10	20	GC	7.5YR6/3	S	Light brown clayey gravel. Gravel is composed of limestone, sandstone, a few jasperoid and quartzite clasts, and caliche chunks. Small sand fraction is coarse through very fine-grained. Fines are primarily clay; very soft, sticky, cohesive, and plastic.
230			20	80	CL	7.5YR6/3	S	Light brown clay and silt with sand. Sand is medium to very fine-grained; fines are a soft, sticky, cohesive clay and silt mix.
240	Morita Formation					10YR7/4 to 2.5Y7/4	S	Very pale brown to pale yellow fine-grained calcareous fossiliferous sandstone and little siltstone. Small amount of silt and clay.
250						2.5Y7/4	S	Pale yellow fine-grained arkosic sandstone and fossiliferous limestone.

Project Name: **Bisbee Mitigation Order** Boring No.: **BMO-2008-6M**

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
260	Morita Formation					2.5Y7/4	S	Very pale brown, pale yellow, reddish brown and gray fine-grained arkosic sandstone with a few gray mudstone chips. Rare < 1mm calcite-hematite microfracture fillings.
270						2.5Y8/3	M	Pale yellow, fine-grained, well-sorted arkosic sandstone with calcareous cement. Sand grains are mostly clear quartz with scattered white, red, and black grains. Few fine black oxide spots on partings. Morita Formation
280						2.5Y8/3	M	Pale yellow sandstone, as above.
290						2.5Y8/3	M	Pale yellow sandstone, as above. Few radial black manganese oxide dendrites.
300						2.5Y5/2	M	Pale yellow and reddish brown fine-grained, sandstone with calcareous cement.
307						2.5Y6/4	M	Light yellowish brown claystone. Soft, platy, weakly laminated.
308						2.5Y7/4	M	Pale yellow sandstone, fine-grained calcareous cement.
310						2.5Y7/3	M	Pale yellow arkosic sandstone with siltstone interbeds.
320						2.5Y7/4	M	Pale yellow silty sandstone, fine-grained calcareous cement.
330						2.5Y7/4	M	Pale yellow sandstone, fine-grained calcareous cement.
340						2.5Y7/4	M	Pale yellow with some light reddish brown fine-grained sandstone with calcareous cement. Reddish tones are imparted by weak hematite stain. Trace calcite veinlets. Formation is making approximately 250 gpm water.

Project Name: **Bisbee Mitigation Order** Boring No.: **BMO-2008-6M**

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
350	Morita Formation					2.5Y7/4	M	Pale yellow with some light reddish brown fine-grained sandstone with calcareous cement. Approximately 15% is reddish brown (5YR6/3) due to weak hematite stain. Trace amounts of hematite in tiny voids; small black oxide spots locally.
360						2.5Y7/4	M	Pale yellow and some light reddish brown fine-grained sandstone with calcareous cement, as above.
370						2.5Y7/2	M	Light gray sandstone, mudstone, and claystone. 70% fine-grained sandstone; 30% fine mudstone and claystone, probably as interbeds; fine sediments are weakly laminated, platy, soft.
380						2.5Y7/2	M	Light gray siltstone, sandstone, and claystone. 70% siltstone and mudstone, 30% very fine-grained sandstone; all calcareous. Fine sediments are weakly laminated, platy, soft.
390						2.5Y7/4	M	Pale yellow fine grained sandstone, moderately hard, calcareous cement. Localized pink hematite and gold limonitic stain; rare black oxide spots partings.
400						2.5Y7/4	M	Pale yellow fine-grained sandstone, moderately hard, calcareous cement, with minor amount of fairly soft, weakly laminated, light greenish gray claystone. Trace fine-grained disseminated black oxide and oxidized cubic pyrite; weak hematite stain on some fractures.
410						2.5Y7/4	M	Pale yellow fine-grained calcareous silty sandstone, gray to light greenish gray calcareous siltstone and claystone. Fine sediments are fairly soft, platy, weakly laminated, moderately soft.
420						10YR6/2	M	Light brownish gray fine-grained sandstone, calcareous cement, homogeneous. Weak limonitic stain on some fractures.
430						2.5Y6/2	M	Light brownish gray fine-grained sandstone, calcareous cement, homogeneous. Rare small dendritic manganese oxides.
440						10YR6/6	S	Brownish yellow crystalline limestone, locally silty and sandy; less than one foot thick bed; fairly hard. Moderate limonite stain, few black manganese oxide spots.
441						2.5Y6/2	M	Light brownish gray fine-grained sandstone, calcareous cement, homogeneous.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-6M**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
450	Morita Formation					2.5Y6/2	M	Light brownish gray fine-grained sandstone, calcareous cement, homogeneous; few calcite-limonite microfracture fillings.
460						2.5Y6/2	M	Light brownish gray fine-grained sandstone, calcareous cement, homogeneous. Rare oxidized disseminated pyrite. TD = 460 ft bls at 15:40 on 5/20/2008

HYDRO GEO CHEM, INC.

Geologic Boring Log

	Boring No.: **BMO-2008-7M**
Project Name: **Bisbee Mitigation Order**	Project No.: 872000
Drilling Company: WDC Wells and Exploration	Driller: Arnold Lamon
Site Plan at Boring Location:	ADWR Registration No.: **55-908794**
	Drilling Equipment: GEFCO Speedstar 50K
	Drilling Method: ARCH, Stratex, RD
	Bit Type/Size: 12" Stratex; 10" Stratex; 8"tricone
	Total Borehole Depth: 750 ft bls
	Casing Depth: 670 ft bls
	Screened Interval: 560 - 660 ft bls
	Screen slot size: 0.125 inch, vertical slots
	Filter pack type: #8 Tacna gravel
	Top of Casing Elevation: 4688.33 ft
	Land surface Elevation: 4687.86 ft
	Date/Time Started: 4/3/08 15:27
	Date/Time Completed: 5/14/08 14:06
Township, Range, Section: T 24 S, R 24 E, Sec. 9 BCA	Logged By: Kim Wilson and Warren Thompson
UTM: 3470029.283 N, 603099.165 E, NAD 83	Checked By: K. Wilson and R. Zimmerman

Depth (Ft)	Graphic Log	Estimated %			USCS Symbol	Munsell Color	HCl Rxn	Sample Description
		GR	SA	FI				
10	Basin Fill	50	30	20	GM	2.5YR7/3	S	Light reddish brown silty gravel with sand. Gravel fraction is composed of angular to subangular clasts and clast fragments, composed mostly of gray to grayish brown limestone, and white to gray phyllite with pinkish surface stain, pink to white quartz sandstone, and few silicified limestone, chert, and quartz clasts. Phyllite and some quartz clasts appear to be Pinal Schist. Sand fraction is primarily angular to subrounded, coarse to fine-grained, well-graded through to silt; composed of lithic grains, quartz, and trace fine magnetite. Moderately well-cemented with caliche.
20		15	45	40	SM	2.5YR6/4	S	Light reddish brown silty sand with gravel, moderately well-cemented with caliche. Gravel fraction is angular to subangular, comprised of abundant chunks of caliche generated during drilling. Gravel is composed of phyllite, pale colored sandstones, and limestone with some silicification. Sand fraction is as above.
30		65	15	20	GC	2.5YR8/3	S	Pink clayey gravel with sand, well-cemented with caliche. Material is hard, posing penetration difficulties for the ARCH method of drilling. Gravel and sand as above with abundant chips of caliche. Higher ratio of clay to silt in the fines fraction than above.
40		55	25	20	GC	2.5YR8/3	S	Pink clayey gravel with sand, as above. Material is sufficiently hard that ARCH drilling will be discontinued at this interval, and open hole tricone drilling will proceed until the caliche is fully penetrated.
50			75	25	SM	2.5YR5/4	S	Reddish brown silty sand, caliche cement. Sand is medium to fine-grained but mostly fine-grained, moderately well-graded through to silt; little clay, mostly silt in the fines fraction. Sand grains are angular to subrounded quartz and lithic grains. Material is hard due to caliche cement.
60		60	20	15	GC	2.5YR8/3	S	Pink clayey gravel with sand. Gravel is mostly angular to subangular clasts of gray, reddish, to white sandstone; also rare green sandstone with epidote matrix; some variably colored siltstones; and few gray limestone clasts. Sand fraction is coarse to fine grained, composed mostly of lithic grains with some quartz grains. Moderately to strongly cemented with caliche.
70		15	70	15	SM	2.5YR7/3	S	Light reddish brown silty sand with gravel. Gravel to 1 cm; coarse is angular; fine angular to subrounded; red, gray, and brown fine-grained sandstone and siltstone; rare angular silica and vein quartz. Sand coarse to fine, composed of lithic grains, quartz, and caliche. Moderate to strongly cemented.

Project Name: **Bisbee Mitigation** Boring No.**: BMO-2008-7M**

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
80	Basin Fill	5	70	25	SC	2.5YR6/3	S	Light reddish brown clayey and silty sand. Sand fraction mostly fine with few coarse grains, poorly graded, composed of lithic grains, quartz, and caliche chips. Gravel pink, brown, gray to greenish fine-grained sandstone, red siltstone, rare green and yellowish brown siltstone, and few angular vein quartz chips. Moderate cementation.
90		5	55	40	SC	2.5YR6/3	S	Light reddish brown clayey sand. Rare gravel mostly angular to subrounded pink, brown, gray, and greenish fine-grained sandstone; little gray limestone, and rare brick red sandstone. Sand is multi-colored sandstone lithic grains with same composition as the gravel.
100		5	70	25	SC	2.5YR6/3	S	Light reddish brown clayey sand. Rare gravel is angular to subrounded, multi-colored sandstones, little gray limestone, rare brick red sandstone, trace phyllite and caliche. Sand fine to medium with rare coarse grains, poorly graded; lithic grains and quartz. Trace blue copper oxide chips. Few sandy clay balls.
110		15	60	25	SC	2.5YR6/3	M	Light reddish brown clayey sand with gravel. Gravel inferred and quantity estimated by drill rig performance. Gravel and coarse sand are angular to subangular and subrounded brown, gray, reddish and greenish fine-grained sandstone with a little siltstone and trace phyllite. Sand quartz and lithic grains of same composition.
120		15	60	25	SC	2.5YR7/3	S	Light reddish brown clayey sand with gravel, as above. Gray, brown, green, and white sandstone and siltstone with a little brownish gray limestone comprise gravel and coarse sand fraction.
130		15	45	40	SC	2.5YR7/3	S	Light reddish brown clayey sand with gravel. Gravel inferred and quantity estimated by drill rig performance. Gravel and coarse sand are mostly angular brown, gray, pink, and some white sandstone with minor siltstone, limestone and rare quartz-limonite vein fragments. Sand fine to coarse, mostly fine, moderately well-graded, composed mostly of lithic grains and chips of same composition as the gravel fraction.
140		tr	30	70	CL	2.5YR7/2	S	Pale red sandy clay. Sand is coarse to fine-grained, moderately well-graded through to silt. Few gravel-sized particles and most of the sand-sized particles are brown, gray, and white sandstone; reddish brown and green siltstone; trace amount of phyllite, and vein quartz. Few clay balls; clay is sticky, cohesive.
150		5	35	60	CL	2.5YR7/2	S	Pale red sandy clay. As above, with a few chloritic siltstone and epidotized green sandstone grains in addition.
160			20	80	CL	2.5YR7/2	S	Pale red clay with sand. Clay is sticky and cohesive. Sand fraction is mostly fine-grained; well-graded through to silt; composed of quartz, lithic grains, and trace magnetite.
170			40	60	CL	2.5YR6/3	S	Light reddish brown sandy clay, as above but with higher percentage of sand.
180			15	85	CL	2.5YR6/3	S	Light reddish brown clay with sand, as above with smaller sand to fines ratio.
190			30	70	CL	2.5YR6/3	S	Light reddish brown sandy clay. Sand is composed of fine-grained quartz, lithic grains, and trace magnetite.

Project Name: **Bisbee Mitigation**								Boring No.**: BMO-2008-7M**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
200	Basin Fill		30	70	CL	2.5YR6/3	S	Light reddish brown sandy clay, as above.
210		80	10	10	GW-GC	2.5YR6/3	S	Light reddish brown gravel with clay. Gravel angular to subangular gray, brown, and locally greenish phyllite (Pinal Schist) with few sandstone and quartz clasts. Hard caliche surface coatings are present on some clasts. Sand is quartz and sand-sized sandstone and phyllite lithic grains; poorly graded; mostly coarse and very fine-grained.
216		80	10	10	GW-GC	2.5YR6/3	S	Light reddish brown gravel with clay, as above. Few caliche chips and coatings on gravel clasts. Material is damp, trace amount of water.
220		80	10	10	GW-GC	2.5YR6/3	S	Light reddish brown gravel with clay. Gravel clasts are angular to subrounded pinkish brown to greenish fine-grained sandstone, gray phyllite, milky to nearly clear quartz, small amount of gray limestone, siltstone, and arkose. Sand fraction is poorly graded, composed of coarse angular lithic grains and fine-grained quartz and lithic grains. Some silt as well as clay is present in fine fraction.
230		75	20	5	GW	2.5YR6/3	S	Light reddish brown gravel with sand. Color logged is that of the fines coating the gravel; gravel clasts themselves are darker and multicolored. Gravel is comprised of gray to brown sandstone, siltstone, and phyllite clasts. Sand is primarily lithic grains of same composition as gravel with some quartz grains. Formation began making water at approximately 235' bls.
240		85	10	5	GW	2.5YR6/3	S	Light reddish brown gravel. Coarse gravel zone. Gravel clasts are angular broken chunks to subangular clasts up to 3cm on the long side composed of green to brown fine-grained sandstone, phyllite and metamorphic quartz derived from the Pinal Schist, with few siltstone clasts. Few clasts have caliche and/or calcite surface coatings.
250		50	45	5	GW	2.5YR7/3	S	Light reddish brown gravel with sand. Gravel is as described in the previous interval. Sand is mostly coarse-grained lithic fragments and grains of the same composition as the gravel. HCl reactivity is restricted to the fine fraction and carbonate coatings.
260		60	35	5	GW	2.5YR7/2	M	Pale red gravel with sand. Gravel is angular to subrounded; gravel and most sand-sized particles are mostly brownish with a little greenish sandstone, grayish brown phyllite, and quartz. Sand is largely coarse grained. Caliche cement coatings are present on a few clasts. HCl reactivity restricted to fine fraction and the caliche.
270		75	20	5	GW	2.5YR6/3	M	Light reddish brown gravel with sand, as above. Sand is comprised mostly of coarse sand-sized lithic fragments and grains of the same composition as the gravel.
280		25	65	10	SW-SM	2.5YR6/3	S	Light reddish brown sand with silt and gravel. Gravel is as above with a few clasts of siltstone in addition. Sand is mostly medium to coarse-grained, composed of lithic grains and quartz. A few grains have caliche coatings.
290		65	30	5	GW	2.5YR6/3	S	Light reddish brown gravel with sand. Gravel is comprised of gray, brown, greenish sandstone, siltstone, and phyllite (Pinal Schist) clasts. Sand is coarse to fine-grained, composed of lithic and quartz grains.
300		75	20	5	GW	2.5YR5/2	M	Weak red gravel with sand. Gravel is angular to subangular, composed of gray to grayish brown sandstone and siltstone, with some green siltstone, grayish brown phyllite, and metamorphic quartz clasts. Sand is poorly graded, comprised mostly of coarse sand-sized lithic grains, with trace magnetite. Approximately 20% of the gravel clasts have crystalline calcite cement coatings. HCl reaction is confined to the fine fraction and calcite cement.

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Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
310	Basin Fill	70	20	10	GW-GM	2.5YR5/2	M	Weak red gravel with silt and sand. As above, with slight increase in fines.
320		70	25	5	GW	2.5YR5/2	W	Weak red gravel with sand. Gravel is angular to subangular, coarse to 3 cm; gray, brown, greenish and white fine to medium grained sandstone and siltstone, with grayish brown phyllite, and quartz, brown siltstone, and rare oolitic limestone clasts, 20% have calcite-fine sand surface coatings. Sand well-graded, coarse to fine, lithic grains and quartz.
330		30	65	5	SW	2.5YR5/2	W	Weak red sand with gravel. Gravel is angular to subrounded, to 1 cm in; phyllite, schist and metamorphic quartz clasts with light to dark gray, brown, and dull green sandstone and siltstone. Limonite and manganese oxides on microfractures in sandstone clasts. Sand well-graded, fine to coarse; lithic grains, quartz, and trace magnetite.
340		30	65	5	SW	2.5YR5/2	W	Weak red sand with gravel. Gravel angular to subangular; phyllite, metamorphic quartz, with light to dark gray, brown, and dull green sandstone, greenish siltstone, trace gray chert or jasperoid. Sand well-graded, coarse to fine, subrounded lithic and quartz grains with trace fine-grained magnetite.
350		65	30	5	GW	2.5YR5/1	W	Reddish gray gravel with sand. Gravel and coarse sand-sized particles are primarily schist, phyllite, and metamorphic quartz with lesser amount of gray, brown, and dull green sandstone and little brown calcareous siltstone clasts with surface coatings of calcite and fine sand. Sand fraction well-graded; coarse to medium, lithic grains, quartz and trace magnetite.
360		70	25	5	GW	2.5YR6/1	M	Reddish gray gravel with sand. Gravel subangular to angular, to 1 cm phyllite, schist, and metamorphic quartz, with gray, pinkish brown, white, and dull green fine to medium-grained sandstone; brown calcareous siltstone; and calcite-limonite altered silty limestone. Sand coarse to fine, angular to subrounded, well-graded; coarse mostly lithic, fine mostly quartz with trace magnetite.
370		55	30	15	GC	2.5YR6/2	M	Pale red clayey gravel with sand. Gravel clasts are dominantly Pinal Schist as above, with lesser clastics. Sand is as above. HCl reaction is confined to the fines fraction, calcite coatings on clasts, and the few calcareous sandstone and siltstone clasts.
380		35	55	10	SW-SM	2.5YR6/3	M	Light reddish brown sand with silt and gravel. Gravel clasts are angular to subangular, dominantly Pinal Schist as above with lesser amount of sandstone clasts. Sand fraction is coarse to fine-grained, well-graded. Coarse sand-sized particles are mostly lithic grains; finer sand is quartz with trace magnetite.
390		50	40	10	GW-GM	2.5YR6/3	M	Light reddish brown gravel with silt and sand. Gravel is angular to subangular, composed almost entirely of Pinal Schist clasts (phyllite, schist and metamorphic quartz) with little sandstone; few calcite surface coatings. Sand fraction as above.
400		40	55	5	SW	2.5YR5/2	M	Weak red sand with gravel. As above but with fewer fines and increased sand fraction.
410		20	75	5	SW	2.5YR5/3	W	Reddish brown sand with gravel. Gravel continues to be largely composed of Pinal Schist with lesser sandstone, as above. Sand is coarse to fine-grained, moderately well-graded, composed of angular to subrounded quartz and lithic grains with trace magnetite.
420		65	30	5	GW	2.5YR5/2	W	Weak red gravel with sand. Gravel angular to subangular, to 2 cm, schist, phyllite, and metamorphic quartz with pinkish brown fine-grained sandstone, and few green siltstone clasts. Some caliche surface coatings. Sand coarse to fine, well-graded, quartz, lithic grains, and trace magnetite.

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Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
430	Basin Fill	40	55	5	SW	2.5YR5/3	M	Reddish brown sand with gravel. Gravel is as above. Sand is coarse to fine-grained, but mostly medium-grained, well-graded, composed mostly of subangular to subrounded quartz with some lithic grains.
440		70	25	5	GW	2.5YR5/3	W	Reddish brown gravel with sand. Gravel is up to 2 cm on a long side, angular to subangular, mostly pinkish brown to gray Pinal Schist clasts, with lesser amounts of light pink to light gray sandstone. Sand is coarse to fine-grained but mostly subangular coarse lithic grains with lesser quartz. Calcite cement with fine sand coatings are present on some gravel clasts.
450		55	40	5	GW	2.5YR5/3	W	Reddish brown gravel with sand. Gravel angular to subangular, primarily pinkish brown to gray Pinal Schist with light pink to light gray sandstone, and trace granite. Sand coarse to fine but mostly medium, subangular to subrounded, quartz with lithic grains and trace magnetite.
460		30	65	5	SW	7.5YR5/2	W	Brown sand with gravel. As above with greater sand to gravel ratio. Color change from reddish brown to brown.
470		55	35	10	GW-GM	7.5YR6/3	M	Light brown gravel with silt and sand. Gravel pea-sized (< 1 cm), angular to subrounded; clasts of Pinal Schist with fine-grained arkose, quartz sandstone, little siltstone, and trace rhyolite. Sand well-graded, coarse to fine, coarse sand is subangular lithic grains, medium subrounded quartz and lithic grains grading to subrounded fine quartz sand.
480		40	55	5	SP	7.5YR6/3	S	Light brown sand with gravel. Gravel subangular, white, gray, and pinkish sandstone; brown, pinkish, and gray siltstone; little phyllite; and trace metamorphic quartz. Sand coarse to fine, mostly coarse, poorly graded. Coarse sand mostly lithic grains; fine sand mostly quartz with few lithic grains and trace magnetite.
490	Morita Formation					2.5YR6/1	S	Bedrock. Reddish gray calcareous clayey siltstone, Morita Formation. Fine-grained black flecks may be carbon. Trace reddish gray fine-grained arkosic sandstone present as well. Formation is soft; the ARCH casing sinking into the formation under its own weight.
500						2.5YR6/1	S	Reddish gray calcareous and carbonaceous siltstone. Local fine sedimentary rip-up textures. Few quartz microveinlets. Less clayey and more competent that interval above.
510						2.5YR6/2	S	Pale red siltstone; soft, friable, thinly laminated; drill cuttings are as lenticular chips.
520						2.5YR6/2	S	Pale red siltstone, as above, with some calcite fracture fillings.
530						2.5YR5/3	W	Reddish brown siltstone. Few small light reduction spots.
540						7.5YR6/1	W	Gray arkosic sandstone; fine-grained, well sorted grains, weakly laminated, some fine cross bedding. Siliceous cement with a small amount of calcite.

Project Name: **Bisbee Mitigation**								Boring No.**: BMO-2008-7M**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
550	Morita Formation					7.5YR7/2	N	Pinkish gray sandstone; fine-grained, few reddish and black (possibly fine carbon) flecks, moderately hard, siliceous cement.
560						2.5YR4/3	S	Reddish brown mudstone; soft, laminated, small lenses of clay locally. Few gravel sized clasts of white fine-grained limestone.
565						2.5YR4/3	S	Reddish brown mudstone to siltstone; soft, laminated, as above with some very fine-grained sand; sand content greater than previous interval.
570						5YR3/2	S	Dark reddish brown mudstone; 1% white finely vuggy cryptocrystalline quartz chips.
580								
585						5YR5/1- 5YR4/1	N-W	Gray to dark gray arkosic sandstone; very fine-grained, silty, lacks laminations; siliceous cement, moderately hard, few white CaCO3 chips, probably occurring as calcite fracture fillings.
590						2.5YR5/1	N-W	Reddish gray fine-grained arkosic siltstone; uniformly colored, slightly laminated; trace white calcite fracture fillings.
600						2.5YR5/1	W	Reddish gray calcareous siltstone to very fine-grained sandstone. Rare greenish gray small reduction spots Formation fluctuates alternately between siltstone and very fine-grained sandstone.
610						2.5YR5/1	S	Reddish gray calcareous arkosic sandstone; very fine-grained, well-sorted, slightly laminated; uniformly colored, moderately hard. Few white loose calcite chips, and calcite fillings in fine fractures.
620						2.5YR5/1	S	Reddish gray silty limestone, calcareous siltstone, to silty calcareous very fine-grained arkosic sandstone; sand grains are well-sorted quartz with few opaques and feldspars; few white calcite and silica chips.
630						2.5YR5/1- 2.5YR4/1	W-M	Reddish gray to dark reddish gray siltstone and very fine-grained silty arkosic sandstone. Few amber colored calcite-filled vugs; also has tiny (<.25 mm) angular voids, many empty, others filled with calcite and other non-HCl-reactive clear mineral, possibly selenite.
640						7.5YR5/1 - 7.5YR7/1	M	Gray to light gray fine-grained arkosic silty sandstone, well sorted. Orange calcite and white silica fill few small <1mm vugs. Small <1mm black disseminated oxide (manganese?) spots.
650						2.5YR5/3	S	Reddish brown calcareous sandy siltstone, fine sandstone, with some clay interbeds. Sandstone is hard; claystone soft friable. Locally sandstone layers contain small siltstone lithic fragments. Few small <1mm reduction spots; trace black oxide spots.
660						5YR5/2	N-W	Reddish gray siltstone with very fine-grained silty sandstone layers; few white calcite fracture coatings.

Project Name: **Bisbee Mitigation** Boring No.**: BMO-2008-7M**

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
670	Morita Formation					5YR5/3 -	M	Reddish brown to reddish gray interbedded hard siltstone, very fine-grained hard
						5YR5/2		sandstone, and soft claystone. Slightly laminated.
680						5YR5/3	M	Reddish brown moderately laminated interbedded calcareous siltstone, sandstone,
								and claystone. Sandstone is fine-grained, well-sorted, and hard; siltstone and
								claystone are moderately soft, easily broken into platy fragments.
690						5YR5/3	M	Reddish brown calcareous sandstone, siltstone and claystone, as above.
700						5YR4/2 -	S	Dark reddish gray, reddish gray, and pinkish gray very fine-grained silty arkosic
						5YR6/2		sandstone
710						5YR5/2	M	Reddish gray silty arkosic sandstone, as above.
720						5YR4/2	M-S	Dark reddish gray sandy siltstone; weakly laminated; sand grains are very fine-
								grained, well-sorted.
730						5YR4/2	M-S	Dark reddish gray fine sandy siltstone, weakly laminated; few < 1mm thick calcite
								fracture fillings.
740						5YR4/2	W-N	Dark reddish gray siltstone, locally with about 10% very fine-grained, well-sorted
								arkosic sandstone, moderately laminated, moderately soft.
750						5YR4/2	W	Dark reddish gray siltstone, locally sandy, as above.
								TD = 750 ft bls at 14:06 on 5/14/2008

HYDRO GEO CHEM, INC.

Geologic Boring Log

	Boring No.: **BMO-2008-8M**
Project Name: **Bisbee Mitigation Order**	Project No: 872000
Drilling Company: WDC Exploration and Wells	Driller: Mike Thomas
Site Plan at Boring Location:	ADWR Registration No.: **55-909711**
	Drilling Equipment: GEFCO Speedstar 50K
	Drilling Method: Stratex, air rotary RC
	Bit Type/Size: 12" Stratex, 10" tricone
	Total Borehole Depth: 1220 ft bls
	Casing Depth: 1210 ft bls
	Screened Interval: 1100 - 1200 ft bls
	Screen Slot Size: 0.125" vertical
	Filter Pack Type: #8 Tacna gravel
	Top of Casing Elevation: 4752.45 ft
	Land Surface Elevation: 4751.95 ft
	Date/Time Started: 9/2/08 15:00
	Date/Time Completed: 10/20/08 11:30
Township, Range, Section: T 23 S, R 23 E, Sec. 4 DAD	Logged by: K. Wilson, W. Thompson
UTM: 3471127.902 N, 604167.912 E, NAD 83	Checked by: K Wilson and R. Zimmerman

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
10	Basin Fill	60	25	15	GM	5YR 6/4	S	Light reddish brown silty gravel with sand. Gravel is angular to subrounded, up to 2 cm in diameter, composed primarily of Pinal Schist (phyllite and metamorphic quartz) with lesser amounts of gray limestone and gray chert, and small amounts of white fine-grained quartzite and silicified limestone with fossil fragments. Sand is fine to coarse-grained, subrounded, composed of quartz and lithic grains. Strong caliche cement.
20		55	35	10	GP-GM	5YR 8/3	S	Pink gravel with silt and sand with caliche cement. Gravel clasts are = 1 cm in diameter, comprised of subangular to subrounded caliche chunks, Pinal Schist, gray limestone, with minor greenish chert clasts. Sand is coarse to fine-grained with coarse grains most common; composed largely of quartz with some lithic grains. Fines are primarily calcareous clay.
30		35	40	25	SM	5 YR 6/4	S	Light reddish brown silty sand with gravel. Gravel clasts are angular to rounded, equidimensional to elongate up to 3 cm on long side, mostly Pinal Schist with little gray limestone and quartzite. Sand is mostly coarse and fine-grained with little medium-grained material, poorly graded, composed of quartz and lithic grains. Caliche cement.
40		60	30	10	GP-GM	5YR 6/3	S	Light reddish brown gravel with silt and sand. Gravel is mostly fine (= 1 cm in diameter), angular to rounded, primarily Pinal Schist with lesser amount of limestone and small amounts of chert and red siltstone. Sand is coarse to fine-grained, composed of quartz and lithic grains; strong caliche cement.
50		50	40	10	GP-GM	5YR 7/2	S	Pinkish gray gravel with silt and sand. As above; caliche cement.
60		65	20	15	GC	5YR 6/3	S	Light reddish brown clayey gravel with sand. Gravel is angular to subrounded, up to 4 cm in diameter, composed of gray limestone, Pinal Schist, sandstone, quartzite, and siltstone. Fewer Pinal Schist clasts than in previous intervals. Many clasts have either calcareous clay or caliche coatings. Sand is fine to coarse-grained, composed of quartz and lithic grains.
70		55	30	15	GC	5YR 7/2	S	Pinkish gray clayey gravel with sand. Gravel is angular to subrounded; mostly = 1 cm in diameter; composed of clasts of limestone, yellowish to gray sandstone, red and green siltstone, Pinal Schist (phyllite and metamorphic quartz), reddish brown sandy siltstone, and arkose. Limestone and clastic sediment clasts are more abundant than Pinal Schist clasts. Very little caliche; some calcareous clay coatings. Sand is fine to coarse-grained, composed of quartz and lithic grains.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-8M**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
80		55	30	15	GC	5YR 6/3	S	Light reddish brown clayey gravel with sand. Gravel is mostly angular and subangular with lesser subrounded clasts up to 2 cm in diameter; composed primarily of clastic sediments including reddish brown, tan and green fine-grained sandstone, red and green siltstone, with smaller amounts of phyllite, quartz and limestone. Sand is fine to coarse-grained, composed mostly of lithic grains with lesser quartz. Calcareous clay matrix coatings. Very little caliche.
90		50	35	15	GC	5YR 6/3	S	Light reddish brown clayey gravel with sand, as above. Gravel clasts are mostly clastic lithologies (various sandstones and siltstones) with lesser phyllite, quartz, limestone, and chert. Calcareous clay coatings and matrix material.
100		70	15	15	GC	5YR 6/3	S	Light reddish brown clayey gravel with sand. Gravel is angular to subrounded; finer pebbles more rounded; coarser clasts are angular to subangular. Clasts lithologies are primarily reddish brown, gray, green, and white sandstone, arkosic sandstone, and siltstone, with lesser chert, phyllite, quartz, limestone, and trace white volcanics. Gravel clasts are up to 3 cm in diameter; caliche-clay coatings are common. Few sandy clay balls.
110		45	40	15	GM	5YR 7/3	S	Pink clayey and silty gravel with sand. Gravel is mostly subangular to subrounded, = 1 cm in diameter, grading to coarse sand. Clast lithologies are primarily clastic sediments as above with lesser phyllite, limestone, and quartz. Sand is coarse to fine-grained, well-graded through to silt, composed of quartz and lithic grains. Clayey, sandy caliche occurs as coatings on gravel clasts and as chunks in the sample.
120	Basin Fill	35	45	20	SM	5YR 7/2	S	Pinkish gray silty sand with gravel. Gravel is =1 cm in diameter, grading to coarse sand; angular to subrounded; composed primarily of reddish brown, gray, green, and white sandstone and siltstone, with lesser phyllite, quartz, and limestone. Clayey carbonate coatings on some clasts; some caliche chips in the sample. Sand is fine to coarse-grained, well-graded through to silt, composed of quartz and lithic grains.
130		30	45	25	SM	5YR 7/3	S	Pink silty sand with gravel. Gravel is angular to rounded; angular freshly broken pieces are up to 2 cm in diameter; rounded to subrounded pebbles are = 1 cm in diameter. Composition of gravel is as above, however phyllite and limestone clasts have increased to about equal to the amount of clastic sedimentary clasts; few caliche chunks. Sand is as above.
140		55	30	15	GM	5 YR 6/3	S	Light reddish brown silty gravel with sand. Gravel clasts are angular to subrounded, some with mixed clay, fine sand, and carbonate coatings; composed primarily of clastic sediments including abundant greenish gray fine-grained sandstone, with lesser phyllite clasts and little limestone. Sand is as above.
150		40	30	30	GM	2.5YR 6/3	S	Light reddish brown silty gravel with sand. Gravel clasts are subangular to subrounded, composed of abundant material derived from the Pinal Schist, clastic sediments, and lesser amount of limestone; some calcite-silt-fine sand coatings are present. Sand is fine to coarse-grained, composed of lithic grains and quartz.
160		70	15	15	GM	2.5YR 6/4	S	Light reddish brown silty gravel with sand. Gravel clasts are mostly = 1 cm in diameter with few 2 cm clasts; angular to subangular with few subrounded pebbles. Gravel is composed primarily of phyllite and metamorphic quartz, some sandstone and siltstone, and trace limestone. Few carbonate coatings on clasts. Sand as above.
170		70	15	15	GM	2.5YR 6/3	S	Light reddish brown silty gravel with sand, as above. The amount of Pinal Schist (phyllite and metamorphic quartz) clasts is approximately equal to the amount of clastic sedimentary clasts, with little gray limestone. Few calcite-fine sand cement coatings. Sand as above.

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Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
173	Basin Fill	70	15	15	GM	5YR 6/2	S	Pinkish gray silty gravel with sand. Driller reports that the formation is becoming hard at this depth. Material is as above with more abundant calcite-fine sand coatings indicating a greater degree of cementation. Sand as above.
180		40	35	25	GM	2.5YR 7/2	S	Pale red silty gravel with sand. Gravel clasts are = 1 cm diameter, grading to coarse sand; angular to subrounded; composed primarily of gray, reddish brown, and green fine-grained sandstones and siltstones, with lesser phyllite, quartz and trace limestone. Sand is coarse to fine-grained, composed mostly of lithic grains. Few calcite-fine sand cement coatings.
190		20	60	20	SM	2.5YR 6/3	S	Light reddish brown silty sand with gravel. Gravel clasts are mostly subangular to subrounded, with few angular and rounded clasts. Clasts are =1 cm diameter, grading to coarse sand, composed primarily of variably colored sandstones and siltstones, with lesser phyllite. Few calcite-fine sand cement coatings. Sand is fine to coarse-grained, composed primarily of lithic grains, particularly in the coarser fraction.
200		85	10	5	GP	2.5YR 6/3 - 2.5YR 7/2	M	Light reddish brown to pale red gravel. Gravel clasts are mostly subangular to rounded, up to 2 cm but mostly =1 cm in diameter, composed primarily of reddish brown, gray, and greenish sandstone, siltstone, and arkosic sandstone, with lesser phyllite and small amount of gray silty limestone. Calcite-sand cement surface coatings are common. Few chunks of cemented silty sand are present in the sample.
210		60	25	15	GM	2.5 YR 6/3	S	Light reddish brown silty gravel with sand. Gravel clasts are = 1 cm in diameter, mostly subangular to subrounded with a few rounded pebbles. Calcite-sand cement coatings are common. Clast lithologies are as above. Sand is coarse to fine-grained, subangular to subrounded, mostly fine-grained and coarse-grained with little medium-grained, poorly graded.
220		35	45	20	SM	2.5YR 6/3	S	Light reddish brown silty sand with gravel. Gravel is fine (= 1 cm diameter) with some calcite-sand coatings; clasts are angular to subrounded, with lithic compositions as above. Sand is coarse to fine-grained, well-graded through to silt, angular to subrounded; coarse sand particles are mostly lithic grains; fine sand is mostly quartz with few lithic grains.
230		35	45	20	SM	2.5YR 6/3	S	Light reddish brown, silty sand with gravel, as above. Abundant 0.5 - 1.0 cm diameter subrounded pebbles in the gravel fraction.
240		30	55	15	SM	5YR 6/3	S	Light reddish brown silty sand with gravel. Gravel clasts are angular to subrounded, mostly subangular; = 1 cm in diameter; primarily reddish brown sandstone, with lesser amount of gray, green and white sandstone, smaller amount of phyllite, and trace limestone. Some calcite-sand coatings. Sand is mostly medium-grained with some fine and coarse grains; composed mostly of quartz with few lithic grains; loose, dry.
250		25	65	10	SW-SM	5 YR 5/3	S	Reddish brown sand with silt and gravel. Gravel clasts are angular to subrounded, =1 cm in diameter; mostly reddish brown sandstone, siltstone, and arkose, with lesser phyllite and little green siltstone. Sand is coarse to fine-grained, well-graded, loose. Coarse sand is composed of lithic grains; finer sand is mostly quartz. Calcite-sand coatings on some gravel clasts.
260		20	70	10	SW-SM	5YR 5/3	S	Reddish brown sand with silt and gravel. As above, with slightly less gravel; gravel clasts are = 1 cm in diameter, grading to coarse sand. Sand as above, loose, causing difficulty lifting cuttings.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-8M**
Depth (Ft)	**Graphic Log**	**Estimated % GR**	**SA**	**FI**	**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
270	Basin Fill	15	65	20	SM	5YR 6/3	S	Light reddish brown silty sand with gravel; some clay in finer fraction as well. Gravel clasts are angular to subangular, mostly = 1 cm in diameter, dominantly phyllite and quartz derived from Pinal Schist, with approximately 10% fine-grained sandstone and siltstone clasts; calcite-sand cement on some surfaces. Sand is well-graded, composed of fine to coarse-grained quartz and lithic grains.
280		75	10	15	GC	5YR 7/3	S	Pink clayey gravel. Gravel clasts are mostly =1 cm in diameter grading to coarse sand, composed dominantly of angular to subangular phyllite with lesser amount reddish brown fine-grained sandstone, with calcite-fine sand cement coatings. Sand is mostly coarse and fine-grained; poorly graded.
290		60	20	20	GC	5YR 7/3	S	Pink clayey gravel with sand. As above, with increased sand and fines. Partial calcite-fine sand cement coatings on most gravel clasts.
300		tr	70	30	SC	5YR 7/4	S	Pink clayey sand. Sand is coarse to fine-grained, but mostly coarse and medium-grained, moderately well-graded, grains are subangular to subrounded, composed of phyllite and quartz.
310		20	60	20	SC	5YR 6/3	S	Light reddish brown clayey sand with gravel. Some silt also present in the fines fraction. Gravel clasts are angular to subangular, =1 cm in diameter, composed primarily of phyllite; few calcite cement coatings. Sand is mostly phyllite lithic grains and quartz.
320		15	65	20	SC	5YR 6/4	S	Light reddish brown clayey sand with gravel. As above, mostly phyllite with little sandstone and siltstone in gravel fraction. Sand fraction is also mostly phyllite with fewer sandstone and siltstone lithic grains and quartz.
330		65	20	15	GM-GC	2.5YR 6/3	S	Light reddish brown clayey-silty gravel with sand. Gravel is composed of about 90% phyllite and quartz clasts derived from Pinal Schist; with 10% fine-grained sandstone and siltstone; clasts are angular to subrounded; many phyllite clasts are tabular. Few calcite coatings. Sand is fine to coarse-grained. Some clay is present as well as silt in the fines fraction.
340		65	20	15	GC	2.5YR 6/3	M	Light reddish brown clayey gravel with sand. Gravel is composed primarily of phyllite with little sandstone and siltstone clasts; clasts are angular to subrounded, =1.5 cm in diameter, grading to coarse sand. Few calcite-fine sand coatings.
350		5	90	5	SW	5YR 5/3	W	Reddish brown sand. Sand is coarse to very fine-grained, well-graded, loose; grains are subangular to subrounded, composed of quartz and phyllite lithic grains. Gravel as above with few calcite coatings; one 3 cm diameter quartzite clast. FIRST WATER @ 357ft bls
360		10	85	5	SW	5YR 5/3	W	Reddish brown sand, as above. Gravel fraction is composed of = 1 cm diameter angular to subangular phyllite clasts with calcite-sand cement coatings.
370		35	60	5	SW	5YR 5/3	M	Reddish brown sand with gravel. Sand as above. Gravel is composed of mostly subangular, tabular =1 cm phyllite clasts with calcite-sand cement coatings.
380		60	35	5	GP	2.5YR 5/3	M	Reddish brown gravel with sand. Gravel is composed of angular to subrounded, often tabular =3 cm clasts; clast lithologies are mostly phyllite with little sandstone and siltstone with calcite-sand cement coatings. Sand as above.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-8M**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
390	Basin Fill	70	25	5	GP	5YR 6/3	M	Light reddish brown gravel with sand. Gravel clasts are = 2 cm in diameter, grading to coarse sand; composed of phyllite and quartz derived from Pinal Schist, have calcite-sand cement coatings, and are equidimensional to tabular in shape. Sand as above.
400		70	25	5	GP	5YR 6/3	M	Light reddish brown gravel with sand, as above but with increased quartzite and fine-grained arkosic sandstone (possibly derived from Morita Formation) clasts; Pinal Schist continues to be the dominant clast lithology.
410		15	80	5	SW	5YR 6/3	W	Light reddish brown sand with gravel. Gravel is composed of clasts =1 cm in diameter, grading to coarse-grained sand; angular to subrounded, mostly phyllite with little sandstone and siltstone. Sand is coarse to fine-grained, well-graded, subangular to subrounded quartz and phyllite lithic grains.
420		5	90	5	SW	5YR 6/3	W	Light reddish brown sand. Sand is moderately well-graded, coarse to fine-grained, but mostly medium to fine-grained. Grains are subangular to subrounded quartz and phyllite lithic grains. Gravel is made up of =1 cm diameter phyllite clasts, few with calcite-sand cement coatings. HCl reaction is confined to cement.
430		5	90	5	SW	5YR 6/3 - 5YR 5/2	M	Light reddish brown to reddish gray sand. As above but sand is well-graded with more coarse sand. Gravel as above. Finer sand is light reddish brown; coarser is reddish gray.
440		15	80	5	SW	5YR 6/3	M	Light reddish brown sand with gravel. Sand is as above, with larger gravel fraction. Gravel clasts are up to 2 cm, angular to subrounded, composed mostly of phyllite with little fine-grained sandstone; calcite-sand cement coatings on some clasts.
450		25	70	5	SW	5YR 6/3-5/2	M	Light reddish brown to reddish gray sand with gravel, as above with larger gravel fraction.
460		25	70	5	SW	5YR 6/3	M	Light reddish brown sand with gravel, as above.
470		20	75	5	SW	5YR 6/3	M	Light reddish brown sand with gravel, as above; slight increase in the relative amount of sandstone and siltstone clasts, but Pinal Schist phyllite remains the dominate clast lithology.
480		25	70	5	SW	5YR 6/3	M	Light reddish brown sand with gravel. Gravel is composed of approximately 60% phyllite and 40% clastic sedimentary rocks (sandstone, siltstone, arkosic sandstone). Sand fraction is fine to coarse-grained with abundant lithic grains. Gravel and sand clasts are angular to subrounded; few calcite-fine sand cement coatings.
490		tr	90	10	SW	2.5YR 6/2	M	Pale red sand. Sand is coarse to fine-grained; fine sand is composed of quartz grains; medium sand is comprised of quartz sandstone and little phyllite lithic grains; coarse sand is mostly sandstone with little phyllite lithic grains.
495	**Morita Formation**				bedrock	2.5YR 8/1	W	White fine-grained quartz sandstone. Sandstone is composed of clear quartz grains with few gray opaques with white calcite cement. Few chips of reddish brown siltstone and fine-grained sandstone are present in the sample as well. Morita Formation.

Project Name: **Bisbee Mitigation Order**							Boring No.: **BMO-2008-8M**	
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
500	Morita Formation					5YR 8/2,	W	Pinkish white, light gray, to gray fine-grained quartz sandstone; white calcite cement. Morita Formation.
						7/1 to 6/1		
510						2.5YR 5/3	W	Reddish brown fine-grained sandstone and siltstone. Some white sandstone and phyllite in sample, probably washing down from the basin fill. Phyllite is probably fall down from basin fill above. Some difficulty in picking up the cuttings with the reverse circulation method of drilling at this depth.
520						2.5YR5/1	W	Reddish gray, weak red, to reddish brown siltstone and fine-grained sandstone. Sample has some phyllite and quartz contaminants from basin fill above Morita Formation contact.
						to 5/3		
525						2.5YR 6/2	W	Pale red quartz sandstone. Less basin fill contamination of sample than at 520'.
530						2.5YR 5/2,	M	Weak red siltstone, clay balls, and pale red fine-grained sandstone. Few reduction bleached spots in siltstone; little crystalline calcite in hairline fractures.
						2.5YR 6/2		
540						2.5YR 4/2	W	Weak red siltstone with ~10% white (2.5YR 8/1) sandstone.
550						2.5YR 4/2	W	Weak red siltstone with few scattered white bleached reduction spots. Few gray limestone chips.
560						2.5YR 4/2	W	Weak red siltstone with few white reduction spots.
570						2.5YR 4/3	M	Reddish brown silty sandstone, fine-grained, moderately well-sorted quartz sandstone with carbonate cement. Moderate reaction to HCl.
580						2.5YR 4/3	M	Reddish brown silty sandstone, as above; the sample also contains a trace amount of limestone chips up to 1/4" in diameter.
590						2.5YR 4/3	M	Reddish brown fine-grained, silty quartz sandstone, with few 1 mm calcite nodules.
600						2.5YR 4/3	M	Reddish brown silty, fine-grained quartz sandstone. One slickenside surface noted.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-8M**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
610	Morita Formation					2.5YR 5/3	M	Reddish brown crushed claystone and sandstone. Claystone is approximately 70% of the sample, with soft, moderately plastic, sticky, cohesive clay. Sandstone is fine-grained, fairly hard, with calcareous cement. Moderate reaction to HCl.
620						2.5YR 4/3	M	Reddish brown silty sandstone, limestone, and clay. Sandstone is as described above. Clay and limestone each comprise approximately 10% of the sample.
630						2.5YR 5/4	M	Reddish brown silty sandstone, very fine-grained, with carbonate cement. As above except that chips are slightly platy, fairly hard. Moderate reaction to HCl.
640						2.5YR 4/3	M	Reddish brown sandstone, mix of medium to fine grained sandstone, calcareous cement, hard; few pieces of quartzite. Moderate reaction to HCl.
650						2.5YR 6/2	M	Pale red arkosic sandstone and clay. Sandstone is medium to fine-grained, well-indurated, composed of quartz with 10% feldspar, few opaques and few reddish brown siltstone lithic grains with calcareous cement. Sample also contains approximately 10% soft clay that is moderately plastic, sticky, cohesive. Moderate reaction to HCl.
660						2.5YR 5/2	W-M	Weak red feldspathic sandstone. Sandstone is medium to fine-grained, carbonate cemented, hard; coloration of individual chips vary from dark through light grays of various hues. Weak to moderate reaction to HCl.
670						2.5YR 4/2	W	Weak red siltstone and fine-grained sandy siltstone. Siltstone is hard, very slightly laminated, calcareous. Few 1mm white calcite veinlets. Weak reaction to HCl.
680						2.5YR 4/3	M	Reddish brown clayey siltstone, sandstone with some clay. Siltstone is fairly hard, weakly laminated, with carbonate cement. Sandstone is fine to very fine-grained, hard, with carbonate cement. Small amount of clay (= 5%), is soft, sticky. Moderate reaction to HCl.
690						2.5YR 4/3	M	Reddish brown sandstone, medium to fine-grained, hard, carbonate cement; few small bleached spots. Some white quartzite and quartz grains, small amount of clay (= 2%). Moderate reaction to HCl.
700						2.5YR 4/3	M	Reddish brown sandy siltstone. Sand grains are fine to very fine- grained, well-indurated, with carbonate cement; slightly platy. Moderate reaction to HCl.
710						2.5YR 4/4	M	Reddish brown claystone, silty claystone, and fine-grained silty sandstone, and clay. Claystone fraction is moderately soft, slightly laminated, with calcareous cement. Silty sandstone is fine to very fine-grained, moderately hard, with calcareous cement. Clay is very soft, sticky, moderately plastic. Moderate reaction with HCl.
720						2.5YR 7/2, 2.5YR 8/2	M	Pale red to pinkish white sandstone, medium-grained, composed primarily of quartz sand with a few % feldspar; carbonate cement, moderately hard, clean (no silt). Moderate reaction to HCl.

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Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
730	Morita Formation					2.5YR 7/2	M	Pale red sandstone, as above except that drilling action has disintegrated much of the sandstone to a beach sand consistency, indicating less induration; weak laminations. Trace disseminated limonite after fine pyrite. Moderate reaction to HCl.
738						2.5YR 4/3	M	Reddish brown silty sandstone, claystone, clay mix. Claystone is fairly soft, easily broken, calcareous, weakly laminated, platy. Clay fraction is soft plastic, sticky, moderate reaction to HCl.
740						2.5YR 4/3	M	Reddish brown calcareous mudstone. Material is fairly soft, easily broken, weakly laminated, platy. Moderate reaction to HCl.
744						2.5YR 4/3	M	Reddish brown sandstone, fine to very fine-grained, carbonate cement, moderately hard, slightly platy, Moderate reaction to HCl.
750						2.5YR 4/3	M	Reddish brown silty, slightly clayey sandstone, fine to very fine-grained; carbonate cement, moderately hard, slightly platy. Moderate reaction to HCl.
760						2.5YR 5/2	M	Weak red silty sandstone. Fine-grained, carbonate cement, hard; few hairline calcite veinlets. Moderate reaction to HCl.
770						2.5YR 5/2, 10R 5/2	M	Weak red sandstone and silty sandstone. Sandstone is fine-grained, with carbonate cement, hard. Moderate reaction to HCl.
780						2.5YR 5/3	M	Reddish brown calcareous siltstone, moderately soft, platy, weakly laminated, some fine-grained sand. Moderate reaction to HCl.
790						2.5YR 5/3	M	Reddish brown sandy siltstone. Sand is fine-grained, carbonate cement, fairly hard; moderate reaction to HCl.
800						2.5YR 6/1	M	Reddish gray sandstone. Composed of medium to fine-grained primarily quartz grains with a few % feldspar grains, <1% very fine-grained black opaques, and limonite after pyrite; carbonate cement; hard. Moderate reaction to HCl.
810						2.5YR 4/3	S	Reddish brown sandy siltstone. Sand where present in the siltstone is fine-grained. Siltstone is moderately hard, with calcareous cement. Strong reaction to HCl.
820						2.5YR 5/4	W-M	Reddish brown mix of clay, claystone, and siltstone. Clay fraction is about 30%, very soft, moderately plastic, cohesive, sticky. Claystone is moderately soft, platy, very weakly laminated. Moderate reaction to HCl.

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Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
830	Morita Formation					2.5YR 5/1	W-M	Reddish gray siltstone with a small amount of limestone.
840						2.5YR 4/3	M	Reddish brown siltstone with small amount of very fine-grained sandstone, fairly hard, carbonate cement, some white calcite in fractures. Moderate reaction to HCl.
850						2.5YR 4/3	WM	Reddish brown sandy siltstone and sandstone, fairly hard, carbonate cemented. Sandstone is fine-grained, primarily a quartz sandstone with carbonate cement, hard. Contact between siltstone and sandstone is visible in larger chips. Overall moderate reaction to HCl.
						7.5YR 6/1		
860						2.5YR 4/2	WM	Weak red silty clay and claystone. Clay is soft, slightly plastic, cohesive, sticky. Moderate reaction to HCl.
870						2.5YR 4/3	S	Reddish brown claystone, soft, slightly platy, carbonate cement, strong reaction to HCl.
880						2.5YR 7/1	M	Light reddish gray sandstone; fine to medium-grained; primarily quartz with 10% feldspar and =1% speckling of black grains, carbonate cement, fairly hard, moderate reaction to HCl.
890						2.5YR 7/1	M	Light reddish gray sandstone and siltstone mix. Sandstone is as described above; siltstone is reddish brown, platy, slightly laminated, fairly soft, with carbonate cement. Reacts moderately with HCl.
						2.5YR 4/3	M	
900						2.5YR 7/1	W-M	80% light reddish gray fine-grained arkosic sandstone with 20% reddish brown siltstone, as above.
						2.5YR 4/3		
910						2.5YR 4/3	M	Reddish brown sandy siltstone. Sand is very fine-grained, carbonate cement, slightly platy, fairly hard. Moderate reaction to HCl.
920						2.5YR 7/1	M	Light reddish gray arkosic fine-grained sandstone with 25% reddish brown silty sandstone. Sand grains are primarily quartz with some rust colored staining on surfaces. Carbonate cement, fairly hard, moderate reaction to HCl.
						2.5 YR 5/3		
930						2.5YR 7/1	M	Light reddish gray arkosic sandstone. Sand grains are primarily quartz with some rust colored staining on surfaces, carbonate cement, hard. Moderate reaction to HCl.
940						2.5YR 5/2	S	Weak red silty sandstone, sand is fine to very fine-grained, fairly hard, carbonate cemented, strong reaction to HCl.

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Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
950	Morita Formation					2.5YR 5/2	M	Weak red arkosic sandstone, medium to very fine-grained, hard, carbonate cement. Moderate reaction to HCl. Few calcite fracture fillings.
960						2.5YR 7/1	M	Light reddish gray arkosic sandstone. Sandstone is medium grained, composed primarily of quartz with a few % feldspar, few reddish brown siltstone lithic grains, and few black opaque grains. Some grains exhibit rust colored staining. Few chips have calcite fracture coatings, moderate reaction to HCl.
970						2.5YR 7/1	M	As above
980						2.5YR 7/1	M	As above, very consistent, identical in appearance.
990						2.5YR 4/3	M	Reddish brown clay and claystone with some sandy siltstone. Clay fraction is about 30%, very soft, moderately plastic, sticky, cohesive. Claystone is soft, very slightly laminated, platy. Silty sandstone is very fine-grained, fairly hard, with carbonate cement. Reaction to HCl is moderate.
1000						2.5YR 4/3	M	Reddish brown clay and claystone, as described above, except that clay fraction has increased to about 40% of total sample.
1010						25 YR 7/2	M	Pale red sandstone. Medium to fine-grained quartz with a few % feldspar; carbonate cement, hard. Moderate reaction to HCl
1020						2.5 YR 6/2	M	Pale red sandstone, as above with about 30% reddish brown siltstone.
						2.5YR 4/3	M	Fairly soft, slightly platy, carbonate cement. Moderate reaction to HCl.
1030						2.5YR 6/3	M	Light reddish brown arkosic sandstone, medium to fine-grained, primarily quartz with 10% feldspar and up to 1% opaque grains, carbonate cement, fairly hard, moderate reaction to HCl.
1040						2.5YR 6/3	M	Light reddish brown, arkosic sandstone, as above.
1050						2.5YR 6/3	M	As above; with fine white calcite veinlets and limonite stain on few fractures.
1060						2.5YR 4/3	M	Reddish brown clay and claystone. Clay fraction is about 40% of sample. Soft, moderately plastic, cohesive, sticky; claystone is fairly soft, platy, very slightly laminated; reaction to HCl is moderate.

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Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
1070	Morita Formation					2.5YR 4/3	M	Reddish brown clay and claystone with small amount of limestone and trace sandstone. Claystone is fairly soft, platy, very slightly laminated, calcareous. Clay fraction comprises about 30% of sample; is soft, plastic, sticky, cohesive. Sandstone is medium to fine-grained, composed primarily of quartz with carbonate cement. Moderate reaction to HCl.
1080						2.5YR 4/3	M	Reddish brown claystone and siltstone with clay. Claystone and clay fractions are as described above except that clay comprises about 20% of the sample. Siltstone is moderately soft, slightly platy, contains some very fine-grained sand. Reacts moderately to HCl.
1090						2.5YR 4/3	M	Reddish brown siltstone and claystone, as above.
1100						2.5YR 6/3	M	Light reddish brown feldspathic sandstone. Sandstone is fine-grained, with calcareous cement, hard, composed primarily of quartz with approximately 10% feldspar and <1% black opaques. Moderate reaction to HCl.
1110						2.5YR 6/3	M	Light reddish brown feldspathic sandstone, as above.
1120						2.5YR 6/3	M	Light reddish brown feldspathic sandstone, as above.
1130						2.5YR 4/4	S	Reddish brown clay and claystone. Clay makes up about 40-50% of total sample, is soft, moderately plastic, cohesive. Claystone is slightly platy, moderately soft. Strong reaction to HCl.
1140						2.5YR 4/4	S	Reddish brown mudstone. Similar to above except that non-indurated clay content is only about 5% of sample. Mudstone is moderately well indurated, calcareous, composed of clay, silt and small amount of fine-grained sand. Strong reaction to HCl.
1150						2.5YR 6/3	M	Light reddish brown fine-grained arkose; composed of quartz, feldspar, and mudstone lithic grains in calcareous cement; hard. Moderate reaction to HCl.
1160						2.5YR 6/3	M	Light reddish brown fine-grained arkose, as above. Moderate reaction to HCl.
1170						2.5YR 6/3	M	Light reddish brown arkose and silty claystone. Arkose is as described above; silty claystone is approximately = 10% of sample; and is platy, soft, calcareous. Moderate reaction to HCl.
1180						2.5YR 4/3	M	Reddish brown claystone, silty claystone and clay. Claystone is soft platy, very slightly laminated. Calcareous silty claystone is fairly hard but can be broken by hand, calcareous cement. Clay fraction make up about 5-10% of total sample, is very soft, moderately plastic, cohesive, sticky, calcareous. Different lithologies in the sample may occur as thin interbeds. Reaction to HCl is moderate.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-8M**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
1190	Morita Formation					2.5YR 4/5	M	Red clay, claystone, silty claystone and sandstone. Clay is soft, moderate plastic, calcareous; claystone/silty claystone is poorly indurated, soft, moderate reaction to HCl.
1200						2.5YR 4/5	M	Reddish brown mudstone. Fairly soft, slightly platy, calcareous, moderate reaction to HCl, saturated.
1210						2.5YR 6/3	M	Reddish brown arkosic sandstone; fine-grained, hard, calcareous cement, quartz grains, numerous opaques and some feldspar grains; moderate reaction to HCl, saturated conditions.
1220						2.5YR 6/3	M	Reddish brown arkosic sandstone; fine-grained, hard, calcareous cement, quartz grains, numerous opaques and some feldspar grains; moderate reaction to HCl, saturated conditions. TD = 1220 ft bls at 11:30 on 10/20/2008

HYDRO GEO CHEM, INC.

Geologic Boring Log

		Boring No.:	**BMO-2008-9M**
Project Name:	**Bisbee Mitigation Order**		Project No.: 872000
Drilling Company:	WDC Exploration and Wells	Driller:	Mike Thomas
Site Plan at Boring Location:		ADWR Registration No.:	**55-909255**
		Drilling Equipment:	Gefco Speedstar 50K
		Drilling Method:	Stratex, Open hole, NC & RC
		Bit Type/Size:	Stratex, 12"; 8 1/2" tricone
		Total Borehole Depth:	785 ft bls
		Casing Depth:	775 ft bls
		Screened Interval:	665-765 ft bls
		Screen slot size:	0.125 inch vertical slots
		Filter pack type:	#8 Tacna Gravel
		Top of Casing Elevation:	4762.61 ft
		Land surface Elevation:	4762.13 ft
		Date/Time Started:	6/18/2008 13:55
		Date/Time Completed:	7/2/2008 17:00
Township, Range, Section: T 24 S, R 24 E, Sec. 3 CBD		Logged by:	W. Thompson
UTM: 3471121.675 N, 604668.669 E, NAD 83		Checked by:	K. Wilson and R. Zimmerman

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
1	Basin Fill	15	25	60	ML	2.5YR 5/6	N	Red sandy silt with gravel. Gravel clasts are up to 3" in diameter; subangular to well rounded, assortment of volcanics, light colored silicified limestone, chert; manganese oxide stain on surfaces of some clasts. Sand fraction is fine to very fine-grained, loose powdery, dry. No reaction to HCL.
10		40	40	20	SM	2.5YR 6/4	S	Light reddish brown silty sand with gravel. Gravel clasts up to 1/2"diameter, angular to rounded; primarily gray through white limestones, quartz, red fine-grained sandstone, few volcanics, some fragments of caliche. Sand fraction is coarse through very fine-grained, fairly well-graded through to silt fraction, loose dry mix, very strong reaction to HCL.
20		25	45	30	SM	2.5YR 6/4	M	Reddish brown silty sand with gravel. Gravel clasts up to 2" max diameter, angular to rounded, primarily pieces of a dark gray schist, dark through light gray limestones, quartz, chert, reddish fine-grained sandstone. Sand fraction is primarily medium through very fine-grained, loose dry mix; moderate reaction to HCL.
30		20	20	60	ML	2.5YR 5/4	S	Reddish brown sandy silt with gravel. Gravel and sand fractions as above; silt fraction has increased considerably, dry flour like texture, very strong reaction to HCL.
40		60	20	20	GM	2.5YR 6/4	S	Light reddish brown silty gravel. Gravel clasts up to 2" maximum diameter, subangular to rounded, clasts are coated with calcium carbonate, composed primarily of schists with some quartz, limestone, chert with strong caliche cement. Sand fraction is coarse though very fine-grained; loose mix, dry, strong reaction to HCL.
50		20	15	65	ML	2.5YR 6/3	S	Light reddish brown gravelly silt with sand caliche. Gravel and sand fractions as described above. Cemented together as a caliche, dry very strong reaction to HCL.
60		35	15	50	ML	2.5YR 6/3	S	Light reddish brown gravelly silt with sand. As above, except for increase in gravel fraction.
70		55	15	30	GM	2.5YR 6/3	S	Light reddish brown clayey silty gravel with sand, gravel clasts up to 2" max. diameter, subangular to rounded, mix of gray schists, limestone, quartz, and red fine-grained sandstone, medium-grained sandstone, quartz. Considerable amount of carbonate coatings on clasts. Sand fraction is coarse through fine-grained; fines are as clayey silt, that are very sticky and moderately plastic when wet; strong reaction to HCL.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-9M**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
80	Basin Fill	55	20	25	GM	2.5YR 6/3	S	Light reddish brown clayey, silty gravel with sand. As above except that fines fraction has decreased slightly.
90		60	25	15	GM	2.5YR 6/3	S	Light reddish brown silty gravel with sand. Gravel clasts are fine, up to 1/2 inch max. diameter. Subangular to fairly well rounded, composed primarily of schist, quartz, some limestone, fine-grained sandstone; loose mix, dry, very strong reaction to HCL.
100		15	35	50	ML	2.5YR 5/3	S	Reddish brown silt with gravel and sand. Gravel as described above. Sand fraction is primarily fine to very fine-grained; fines are as a calcareous silt. Dry powdery fine texture; very strong reaction to HCl.
110		70	15	15	GM	2.5YR 5/3	S	Reddish brown silty gravel. Gravel clasts to 2" max. diameter, sub-angular to rounded, composed of primarily fine-grained, calcareous cemented sandstone, reddish brown, light pale green limestone, and few schists. Sand fraction is coarse through very fine-grained; fines are as a calcareous silt; very strong reaction to HCl.
120		15	10	75	ML	2.5YR 4/3	S	Reddish brown silt with sand and gravel. Gravel fraction contains numerous reddish brown very fine-grained sandstones up to 1" diameter. Sand fraction is minor, fine-to very fine-grained; fines are a very soft silt. May contain small percentage of clay. Dry, very strong reaction to HCl.
130	Morita Formation				Bedrock	2.5YR 5/2		Reddish brown, very fine-grained silty sandstone and siltstone; dry, strong reaction to HCl. Bedrock; Morita Formation.
140						2.5YR 5/3	S	Reddish brown, slightly laminated, moderately indurated claystone. Slightly damp, very strong reaction to HCl. Morita Formation.
150						2.5YR 5/3	S	Reddish brown, very fine-grained silty arkosic sandstone with highly indurated siltstone, calcareous cement. Dry, very strong reaction to HCl. Morita Formation.
160						2.5YR 5/3	S	Reddish brown clayey and silty fine-grained sandstone and hard calcareous siltstone. Hairline calcite veinlets; dry. Very strong reaction to HCl. Morita Formation.
170						2.5YR 5/3	S	Reddish brown calcareous mudstone. Locally soft and poorly indurated. Dry, very strong reaction to HCl. Morita Formation.
180						2.5YR 5/3	S	Reddish brown, very fine-grained sandstone, siltstone and mudstone, all fairly hard, calcareous. Dry, very strong reaction to HCl. Morita Formation.
190						2.5YR 5/3	S	Reddish brown very fine-grained sandstone and mudstone. As above.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-9M**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
200	Morita Formation					7.5YR 8/2	S	Pinkish white, medium to fine-grained quartz sandstone with calcareous cement, hard. <1% dark opaques; trace very fine-grained disseminated oxidized pyrite. Very strong reaction to HCl. Morita Formation.
210						7.5YR 7/2	S	Pinkish gray sandstone. Medium to fine-grained, calcareous cement, moderately hard; very small amount of light gray and reddish brown claystone; soft, dry, strong reaction to HCl. Morita Formation.
220						2.5YR 6/2	S	Pale red silt with trace sand, soft flour like texture, calcareous; some coarse to very fine-grained sand, probably ground up during drilling; dry, very strong reaction to HCl. Morita Formation.
230						7.5YR 7/2	S	Pinkish gray sandstone, sample is almost entirely a pinkish gray medium to fine-grained, calcareous cemented, quartz sandstone; few pieces of a reddish brown mudstone; dry, very strong reaction to HCl. Morita Formation.
240						2.5YR 6/3	S	Light reddish brown, fine-grained sandstone, calcareous cement; few pieces of a white colored fine-grained, quartz sandstone with siliceous cement; sample has been ground up during drilling process. Dry, strong reaction to HCl. Morita Formation.
250						2.5YR 5/3	M	Reddish brown mudstone. Soft, poorly indurated, very slightly laminated, few bleached spots. Dry, moderate reaction to HCl. Morita Formation.
260						2.5YR 5/2	S	Weak red calcareous claystone, moderately indurated.
270						2.5YR 6/2	S	Pale red sandstone, fine-grained, hard, calcareous cement; and 10% reddish brown siltstone as above; dry, strong reaction to HCl. Morita Formation.
280						10YR 5/2	S	Weak red calcareous siltstone and very fine grained sandy siltstone.
290						10YR 5/2	M	Weak red very fine-grained calcareous silty sandstone. Very dry; drillers are injecting some water to keep dust from the cyclone down. Morita Formation.
300						10YR 5/2	M	Weak red fine-grained calcareous silty and slightly clayey sandstone, with few % gray limestone. Morita Formation.
305								First water at a 305 ft bls. Cyclone is blowing at about 15 gpm.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-9M**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
310	Morita Formation					2.5YR 4/3	S	Reddish brown siltstone, fairly well indurated, very weakly laminated, calcareous cement, with 1% gray limestone. Moderate to strong reaction to HCl. Morita Formation.
320							S	Reddish brown siltstone, fairly well indurated, very weakly laminated, calcareous cement, strong reaction to HCl. Morita Formation.
330						2.5YR 5/2	S	Weak red mudstone, weakly laminated, platy, moderately indurated, , strong reaction to HCl. Morita Formation.
340						2.5YR 4/2 7.5YR 6/1	S	Weak red sandstone. Very fine-grained, calcareous cement; some gray fine-grained sandstone also present. Strong reaction to HCl. Morita Formation.
350						2.5YR 4/2	M	Weak red mudstone and claystone. Platy, very slightly laminated, fairly soft, can be broken by hand, weak to moderate reaction to HCl. Morita Formation.
360						2.5YR 4/2	W	Weak red sandstone, very fine-grained, siliceous cement. Fairly hard, slightly platy; few white reduction spots. Very weak reaction to HCl. Morita Formation
370						2.5YR 6/1	W	Reddish gray sandstone, fine-grained quartz sandstone, siliceous cement, 1% high luster dark gray opaque grains, <1% limonite and hematite flecks; hard, homogenous, very weak reaction to HCl. Morita Formation.
380						2.5YR 4/2	M	Weak red siltstone, weakly laminated, platy. Fairly well indurated, moderate reaction to HCl. Morita Formation.
390						10R 4/2	W	Weak red fine-grained sandy mudstone. Morita Formation.
400						2.5YR 4/2	M	Weak red feldspathic silty sandstone, fine-grained, calcareous cement, platy chips, moderately soft, can easily be broken with fingers. Grains are quartz with 10% feldspar, 1% metallic gray opaques. Moderate reaction to HCl. Morita Formation.
410						2.5YR 7/2	M	Pale red sandstone, fine-to medium grained, primarily quartz, calcareous cement; hard, drilling as large 1" chips, some rust colored staining on surface of some chips, moderate reaction to HCl. Morita Formation.
420								Pale red sandstone, as above, with 1 % disseminated limonite and , 1% disseminated metallic opaques.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-9M**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
430	Morita Formation					2.5YR 7/2	M	Pale red medium-grained feldspathic sandstone with 1% disseminated limonite.
440						2.5YR 5/2 and 7.5YR 4/3	S	Weak red calcareous cemented mudstone and silty sandstone and 20% light reddish gray quartz sandstone, calcareous cement, fine-grained, fairly hard, very strong reaction to HCl. Few light gray reduction spots. Morita Formation.
450						2.5YR 4/2	W	Weak red mudstone, platy. Weakly laminated, moderately indurated, easily scratched but difficult to break in hand, weak reaction to HCl. Morita Formation.
460						2.5YR 4/2	W	Weak red mudstone, as above, with small amount (10%) of light reddish gray fine-grained quartz sandstone. Morita Formation.
470						2.5YR 4/2	M	Weak red sandstone, fine-grained, locally clayey and silty, calcareous cement, few calcite fracture fillings; no laminations observed, moderately hard, moderate reaction to HCl. Morita Formation.
480						2.5YR 6/2	M	Pale red sandstone, fine-grained. Primarily quartz, calcareous cement hard some rust stain, and few gray opaque grains. Small amount of reddish brown siltstone (<10%); moderate reaction to HCl.
490						2.5YR 6/2		Pale red sandstone, as above. 1% very fine disseminated limonite and < 1% dark fine-grained opaques.
500						2.5YR 5/2	M	Weak red siltstone, calcareous; fairly well indurated, small amount of gray limestone (<5%) saturated, moderate reaction to HCl.
510						2.5YR 5/2	M	Weak red silty sandstone, very fine-grained, calcareous cement, moderately hard, calcite filled fractures; some very light greenish gray sandstone (10%), saturated, strong reaction to HCl.
520						2.5YR 4/2	M	Weak red very fine-grained silty sandstone, as above. Few calcite veinlets.
530						2.5YR 4/2	M	Weak red calcareous mudstone.
540						2.5YR 4/2	S	Weak red fine-grained sandy arkosic mudstone. Trace amount of light brown clay that is soft, cohesive, sticky, and slightly plastic. Strong reaction to HCl.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-9M**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
550	Morita Formation					2.5YR 6/2	M	Pale red fine-grained quartz sandstone, with few % feldspar grains and disseminated limonite stain on quartz grain surfaces; moderately hard. Moderate reaction to HCl.
560						2.5YR 6/2	W/M	Pale red fine-grained sandstone, as above.
570						2.5YR 4/2	W/M	Weak red siltstone, calcareous, well-indurated, small amount of mudstone, few bleached spots. Moderate reaction to HCl.
580						2.5YR 5/2	M	Weak red sandstone, fine-grained, calcareous cement; primarily quartz with few % feldspar and dark colored mafic grains. Considerable rust colored limonite staining on grain surfaces, hard. Moderate reaction to HCl.
590						2.5YR 4/2	M	Weak red mudstone, platy, weakly laminated, moderately indurated but can easily be broke with fingers; small amount of clay (<5%) that is very soft, sticky, cohesive, plastic. Moderate reaction to HCl.
600						2.5YR 4/4	M	Reddish brown claystone with 20% clay. Claystone is finely broken up, indurated, platy. Clay is soft, sticky, cohesive, plastic; fragments of gray limestone are mixed in with the clay. Moderate reaction to HCl.
610						2.5YR 4/2	S	Weak red siltstone, fairly soft, can easily be broken with fingers, platy, poorly laminated, calcareous, rare light gray bleached patches. Strong reaction to HCl.
620						2.5YR 4/2	S	Weak red siltstone, as above.
630						2.5YR 4/2	S	Weak red siltstone, as above.
640						2.5YR 4/2	W	Weak red siltstone, as above; less calcareous.
641						2.5YR 5/4	M	Reddish brown clay, very soft, strongly cohesive, plastic, calcareous, moderate reaction to HCl (but is about 1' thick).
642						2.5YR 5/2	S	Weak red sandstone, fine-grained, calcareous, cementation primarily quartz with numerous dark mafic grains, considerable rust colored staining, fairly hard, strong reaction to HCl.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-9M**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
650	Morita Formation					5YR7/2	W	Pinkish gray fine-grained quartz sandstone.
660						2.5YR 3/3	S	Dark reddish brown mudstone (poorly sorted clayey, silty, fine-grained sandstone), well-indurated, hard, calcareous cement, platy, weakly laminated. Strong reaction to HCl.
670						2.5YR 5/2	M	Weak red sandstone, fine-grained calcareous cement, primarily quartz, numerous dark gray to black mafic grains, considerable rust colored staining, moderately hard, saturated, moderate reaction to HCl.
680						2.5YR 4/2	S	Weak red siltstone, calcareous, fairly soft, can be easily broken between fingers, slightly platy, very strong reaction to HCl. Morita Formation.
690						2.5YR 4/2	M	Weak red sand tone, fine-grained, calcareous cementation, primarily quartz with few % feldspar and dark colored mafic grains, hard, platy; moderate reaction to HCl. Morita Formation.
700						2.5YR 7/2	M	Pale red sandstone, medium grained, calcareous cement, composed primarily of quartz with 10 % orange and white feldspar grains, small amount of rust colored stain, hard. Moderate reaction to HCl. Morita Formation.
710						2.5Yr 4/2	S	Weak red silty sandstone, fine. Very fine grained, fairly soft, can easily be broken with fingers, no discernable bedding structure, strong reaction to HCl.
720						2.5YR 4/2	M	Weak red siltstone, platy, weakly laminated, calcareous, fairly soft, saturated, moderate reaction to HCl. Morita Formation.
730						2.5YR 4/2	W	Weak red fine-grained silty arkosic sandstone. Morita Formation.
740						2.5YR 4/2	W	Weak red sandy siltstone; little sand. Morita Formation.
750						2.5YR 7/2	M	Pale red feldspathic sandstone. fine-grained, calcareous cement, primarily quartz with few dark mafic grains, some rust colored staining on grain surfaces; hard. Morita Formation.
760						2.5YR 7/2	M	Pale red feldspathic sandstone, as above. Rare limonite veinlets. Morita Formation.

Project Name: **Bisbee Mitigation Order**							Boring No.: **BMO-2008-9M**	
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
770	Morita Formation					2.5YR 3/3	S	Dark reddish brown, clayey sandstone. Mix of 50% clay, 50% sandstone, Sandstone is fine-grained, calcareous, slightly platy, clay fraction is sticky, cohesive, very soft, plastic, strong reaction to HCl. Morita Formation.
780						2.5YR 7/2	M	Pale red sandstone. Medium to fine-grained calcareous cemented, primarily quartz with few % feldspar grains, few dark gray mafic grains, and few rust color silica grains. Fairly hard, moderate reaction to HCl. Morita Formation.
								TD = 780 ft bls at 17:00 on 7/2/2008

HYDRO GEO CHEM, INC.

Geologic Boring Log

		Boring No.:	**BMO-2008-10GL**
Project Name:	**Bisbee Mitigation Order**		Project No.:872000
Drilling Company:	WDC Wells & Exploration	Driller:	Billy Berg
Site Plan at Boring Location:		ADWR Registration No.:	**55-909435**
		Drilling Equipment:	GEFCO Speedstar 50K CH
		Drilling Method:	Stratex, air-rotary w/tricone
		Bit Type/Size:	Stratex 11 7/8", tricone 9 7/8"
		Total Borehole Depth:	820 ft bls
		Casing Depth:	810 ft bls
		Screened Interval:	700-800 ft bls
		Screen slot size:	0.125 inch vertical slots
		Filter pack type:	#8 Tacna gravel
		Top of Casing Elevation:	4792.21 ft
		Land surface Elevation:	4791.69 ft
		Date/Time Started:	7/9/2008 10:02
		Date/Time Completed:	7/28/2008 15:33
Township, Range, Section: T 24 S, R 24 E, Sec. 3 ABC		Logged by:	Kim Wilson
UTM: 3471702.043 N, 605264.074 E, NAD 83		Checked by:	K. Wilson and R. Zimmerman

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
10	Basin Fill	15	60	25	SM	5 YR 5/6	S	Yellowish red silty sand with gravel, cemented with caliche. Sand is mostly fine to very fine-grained with few medium and coarse grains; is mostly subrounded; composed primarily of quartz, ground caliche and lesser amount of lithic grains. Gravel clasts are subangular limestone and quartzite pebbles; sample contains gravel-sized angular chunks of caliche generated by drilling.
20		35	40	25	SM	5 YR 4/6	S	Yellowish red silty sand with gravel, cemented with caliche. Gravel clasts are mostly Pinal Schist phyllite with a little gray limestone. Sand is coarse to fine-grained composed of lithic grains, quartz, and ground up (by drilling) silty caliche. Gravel clasts are mostly angular to subangular pebbles < 1 cm in diameter.
30		30	50	20	SM	5 YR 6/3	S	Light reddish brown silty sand with gravel, strongly cemented with caliche. Finer sand and silt sized particles are mostly ground up caliche generated during drilling. Gravel-sized material includes limestone, chert, phyllite, quartzite, jasperoid, red siltstone pebbles, and caliche chunks. Sand is fine to coarse-grained subangular to subrounded quartz and lithic grains.
40		65	30	5	GP	5 YR 7/3	S	Pink gravel with sand. Polymictic gravel is composed of angular to subrounded limestone, sandstones, chert, quartz, and red siltstone pebbles up to 2 cm in diameter; few angular chunks of caliche broken up during drilling, and little quartz. Fines are caliche and clay.
50		5	20	75	CL	2.5YR 6/3	S	Light reddish brown calcareous clay with sand. Some silt and trace gravel also present. Gravel lithology as above. Sand is made up of fine-grained lithic grains and quartz. Sticky, cohesive, sandy, clayey caliche.
60		5	15	80	CL	2.5YR 5/4	S	Reddish brown clay with caliche. Sticky, cohesive, calcareous clay. Sand particles are mostly fine-grained with few medium to coarse lithic grains and quartz. Clay swells with water. Few gravel clasts include red siltstone, reddish brown sandstone; very fine-grained quartz sandstone; gray limestone, black and white silicified limestone, green arkosic sandstone, and few hard caliche chips generated by drilling.
70		5	15	80	CL	2.5YR 6/4	S	Light reddish brown clay with caliche. As above, with few more hard caliche chips. Gravel as above, mostly as fine pebbles.

Project Name: **Bisbee Mitigation Order** Boring No.: **BMO-2008-10GL**

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
80	Basin Fill	30	45	25	SM	2.5YR 7/3	S	Light reddish brown silty sand with gravel. Little clay in fine fraction. Gravel is fine, grading to coarse sand, composed of phyllite and metamorphic quartz derived from Pinal Schist, reddish brown, tan, white and green fine-grained sandstone, and a little light gray limestone. Sand is mostly lithic grains of same composition. Fines are calcareous silt with little clay.
90		15	10	75	ML	2.5YR 6/4	S	Light reddish brown silt with gravel. Calcareous silt with a little clay. Sand is fine to coarse lithic grains. Gravel is polymictic composed of lithologies listed above.
100		20	20	60	ML	2.5YR 5/4	S	Reddish brown sandy silt with gravel. Gravel and sand are mostly phyllite derived from Pinal Schist with few caliche chunks. Clasts are broken angular to subrounded, up to 2 cm diameter. Interpreted to be weathered top of Glance Conglomerate.
110	Glance Conglomerate				bedrock	2.5YR 6/4	W	Reddish brown conglomerate. Phyllite and quartz clasts derived from the Pinal Schist; angular to subrounded pebbles in silty sand, moderately well indurated matrix. Glance Conglomerate.
120						2.5YR 4/4	N	Reddish brown claystone with shaley partings; locally small < 1 mm white spots, some with tiny cubic pyrite in center. Claystone layer in Glance Conglomerate.
124						10 R 5/3	W	Weak red siltstone to sandy mudstone. Few cream colored = 2mm reduction spots and bleaching along micro fractures. One slickenside surface. Mudstone layer in the Glance Conglomerate.
130						10 R 5/2 10 R 6/2	W	Weak red to pale red conglomerate. Pinal Schist phyllite, quartz, quartzite, and reddish brown sandy siltstone. The sandy siltstone is as above, and is matrix material to the pebble clasts. One slickenside surface on siltstone cutting. Glance Conglomerate.
140						2.5YR 6/3	W	Light reddish brown conglomerate. Pinal Schist phyllite and quartz clasts up to 1 cm in sandy silt mixture. Some what soft matrix material is friable, falling apart during drilling. Fines locally reactive to HCl. Glance Conglomerate.
150						2.5YR 5/3	N	Reddish brown sandy siltstone. Well indurated; uniform color. Non-calcareous, but one calcite microfracture noted. Silty layer in Glance Conglomerate.
160						2.5YR 5/3	N	Reddish brown silty sandstone, poorly sorted, with few fine gravel sized clasts of quartz and phyllite (Pinal Schist). Sand grains are quartz and small phyllite lithic grains. Silty sandstone layer in Glance Conglomerate.
170						2.5YR 5/6	W	Red sandy siltstone. Sand grains are quartz with fewer phyllite lithic grains.
180						2.5YR 6/3	N	Light reddish brown conglomerate; Glance Conglomerate. Phyllite and metamorphic quartz clasts are angular to subangular, in a reddish brown silty sand matrix. Matrix material is adhered to phyllite and quartz clasts. Gravel clasts are up to 2 inches.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-10GL**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
190	Glance Conglomerate					2.5YR 5/3	W	Reddish brown conglomerate. As above; abundant sand-size quartz and phyllite grains as well as fine gravel-size clasts. Glance Conglomerate.
200						2.5YR 5/4	W	Reddish brown Glance Conglomerate. As above. Very weak HCl reaction only in fines of the matrix.
210						2.5YR 5/4	N	Reddish brown Glance Conglomerate. Pinal Schist-derived, angular to subangular, lensoidal shaped pebble clasts in a silty, friable matrix.
220						2.5YR 4/6	W	Red broken up clayey arkosic siltstone. Siltstone contains scattered fine to medium-grained quartz and phyllite lithic sand grains. Few tiny = .5 mm white reduction spots. HCl reaction in fines only. Siltstone bed in the Glance Conglomerate.
230						2.5YR 4/6	N	Red sandy, clayey siltstone. Scattered yellowish =3 mm reduction spots. Few fine black oxide spots. Siltstone bed in the Glance Conglomerate. Dry.
240						2.5YR 5/4	N	Reddish brown clay, silt and sand with 10% lithified chips of reddish brown clayey siltstone with few reduction spots. Sticky, cohesive, soft. Possible fault gouge, Glance Conglomerate. Dry, despite intercepting water at 225 ft bls in BMO-10GU.
250						2.5YR 6/3	N	Light reddish brown Glance Conglomerate. Angular to subrounded Pinal Schist pebbles =1 cm in diameter in sandy silty matrix. Loose, friable. Dry.
260						2.5YR 5/3	W	Reddish brown silty fine-grained sandstone. HCl reacts only with the fines. Sandstone bed in the Glance Conglomerate. Dry.
270						2.5YR 6/4	N	Light reddish brown conglomerate. Pinal Schist gravel and sand conglomerate clasts and reddish brown silty sandstone as above, with loose reddish brown sand, silt and clay. Loosely consolidated zone in Glance Conglomerate. Dry.
280						2.5YR 6/4	N	Light reddish brown conglomerate. Angular to subrounded clasts up to 2.5 cm; composed of Pinal Schist material (phyllite and metamorphic quartz) in a silty sand matrix. Glance Conglomerate. Dry.
290						2.5YR 5/4	N	Reddish brown conglomerate. Pinal Schist clasts up to 2.0 cm in clayey, sandy siltstone matrix. Glance Conglomerate. Dry
300						2.5YR 5/4	N	As above; sand, silt, and clay mudstone matrix. Dry.

Project Name: **Bisbee Mitigation Order** Boring No.: **BMO-2008-10GL**

Depth (Ft)	Graphic Log	Estimated % GR	SA	Fl	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
310	Glance Conglomerate					2.5YR 5/4	N	Reddish brown to red Glance Conglomerate Angular to subrounded Pinal Schist clasts up to 1 cm in mudstone (sandy, clayey siltstone) matrix. Dry.
						2.5YR 5/6		
320						2.5YR 6/4	N	Light reddish brown Glance Conglomerate. Angular chunks to subrounded pebbles of up to 2 c. Pinal Schist in silty sandstone matrix. Dry.
330						2.5YR 6/4	W	Light reddish brown Glance Conglomerate. As above with silty sand with little clay matrix, pebbles up to 1 cm. Matrix soft, friable. Dry.
340						2.5YR 6/4	N	Light reddish brown Glance Conglomerate, as above. Wet.
350						2.5YR 5/4	N	Reddish brown Glance Conglomerate. Angular to subrounded Pinal Schist clasts, =1 cm diameter, in mudstone matrix. Wet.
360						2.5YR 5/4	N	Reddish brown Glance Conglomerate. Pinal Schist clasts as above in mudstone matrix. Matrix soft, poorly indurated.
370						2.5YR 6/4	W	Light reddish brown Glance Conglomerate. Angular to subrounded = 1cm pebbles and coarse sand Pinal Schist clasts in soft silty sand with little clay matrix.
380						2.5YR 6/4	W	Light reddish brown Glance Conglomerate, as above. Dry.
390						2.5YR 6/4	W	Light reddish brown Glance Conglomerate. Pinal Schist phyllite and metamorphic quartz clasts (= 1 cm) and a few light greenish gray quartzite clasts in sandy siltstone matrix. Conglomerate is mostly coarse clasts with little matrix material. Formation not making water.
400						2.5YR 6/3	W	Light reddish brown Glance Conglomerate as above; abundant fine gravel and coarse sand-sized Pinal Schist clasts with small amounts of indurated sandy siltstone matrix. Reddish brown color is imparted by matrix material; the Pinal Schist clasts are reddish gray (2.5YR 5/1 to 6/1).
410						2.5 YR 5/2	N	Weak red to light reddish brown Glance Conglomerate. Abundant Pinal Schist clasts mostly = .5 cm with few up to 1 cm, angular to subrounded, in silty sandstone indurated light reddish brown matrix.
						2.5 YR 6/3		
420						2.5YR 5/2	N	Weak red to reddish brown Glance Conglomerate. Abundant Pinal Schist clasts (phyllite and metamorphic quartz) with small amounts of indurated reddish brown sandy siltstone matrix. Pinal Schist clasts are mostly fine gravel (= 1cm) and coarse sand size.
						2.5YR 5/3		

Project Name: **Bisbee Mitigation Order** Boring No.: **BMO-2008-10GL**

Depth (Ft)	Graphic Log	Estimated % GR	SA	Fl	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
430	Glance Conglomerate					2.5YR 5/2	N	Weak red to reddish brown Glance Conglomerate, as above.
						2.5YR 5/3		
440						2.5 YR 5/3	N	Reddish brown sandy siltstone with few fine gravel to coarse sand size Pinal Schist clasts. Sandy arkosic siltstone bed in the Glance Conglomerate.
450						2.5YR 5/2	W	Light reddish brown to pale red Glance Conglomerate. Abundant = 1 cm Pinal Schist gravel and coarse to medium-grained sand sized clasts in clayey siltstone soft to moderately well indurated matrix. Weak HCl reaction only in matrix.
						2.5YR 5/1		
460						2.5YR 6/4	N	Light reddish brown to pale red Glance Conglomerate. As above but without HCl reactivity. First water, first sample.
						2.5YR 6/2		
470						2.5YR 6/4	N	Light reddish brown Glance Conglomerate. Angular to subrounded Pinal Schist clasts; soft silty clay coatings and balls, and reddish brown sandy siltstone chips. Siltstone chips are probably be matrix of the conglomerate.
480						2.5YR 6/4	N	Light reddish brown Glance Conglomerate. As above. Very little water, not enough to sample.
490						2.5YR 7/4	W	Light reddish brown Glance Conglomerate. Sample is clay and silt coated Pinal Schist gravel clasts (angular to subangular, up to 4 cm) and reddish brown sandy siltstone chips. Sandy siltstone matrix can be occasionally seen adhered to small phyllite clasts.
500						2.5YR 6/4	W	Light reddish brown to pale red Glance Conglomerate. As above, very weak reaction to HCl in fines only. No water.
						2.5YR 6/2		
510						2.5YR 6/3	N	Light reddish brown to weak red Glance Conglomerate. As above, very weak reaction to HCl in fines only.
						2.5YR 5/2		
520						2.5YR 5/1	N	Reddish brown, weak red to reddish gray conglomerate. Sample is mostly = l cm chips of weak red to reddish brown sandy siltstone with lesser Pinal Schist (reddish gray phyllite and white metamorphic quartz) and trace light gray quartzite. Sandy conglomeratic siltstone layer in the Glance Conglomerate.
						2.5YR 5/2		
						2.5YR 5/3		
530						2.5YR 5/2	N	Weak red to pale red Glance Conglomerate. Abundant = 1 cm angular to subrounded lensoidal phyllite (Pinal Schist) conglomerate clasts with 15% sandy siltstone matrix.
						2.5YR 6/2		
540						2.5YR 5/2	N	Weak red to pale red Glance Conglomerate. As above
						2.5YR 6/2		
550						2.5YR 5/1	W	Reddish gray, weak red, to reddish brown Glance Conglomerate. As above. Sandy siltstone matrix occasionally can be seen adhered to Pinal Schist clasts. Trace clear calcite veinlets.
						2.5YR 5/2		
						2.5YR 5/3		

Project Name: **Bisbee Mitigation Order** Boring No.: **BMO-2008-10GL**

Depth (Ft)	Graphic Log	Estimated % GR	SA	Fl	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
560	Glance Conglomerate					2.5YR 5/3	W	Reddish brown Glance Conglomerate. Pinal Schist clasts up to l cm, with abundant coarse sand size phyllite lithic grains and about 5% white quartz in a sandy, clayey, silty mudstone matrix. Matrix is more clay-rich compared to previous (510' - 550') intervals. HCl reaction restricted to clayey matrix. Formation beginning to make water.
570						2.5YR 6/3	N	Light reddish brown silty sand. Loose fine to coarse sand with few fine gravel clasts consisting of angular to subangular phyllite and quartz grains derived from Pinal Schist. Poorly indurated sandy bed in Glance Conglomerate.
580						2.5YR 5/1 2.5YR 5/2 2.5YR 5/3	N	Reddish gray, weak red, to reddish brown conglomerate composed of e, = 1 cm of phyllite and little quartz (derived from Pinal Schist) in sandy siltstone matrix. Matrix material is moderately well indurated as in 510-550 intervals. Phyllite clasts are reddish gray to weak red; matrix is reddish brown. Glance Conglomerate.
590						2.5YR 6/3 2.5YR 6/2	W	Light reddish brown to pale red Glance Conglomerate. As above but with small amount of slightly calcareous clay. Very little water.
600						2.5YR 5/3	W	Reddish brown Glance Conglomerate. Loose silty sand with gravel composed of quartz, phyllite lithic grains and sandy siltstone particles (matrix of conglomerate). Poorly indurated and/or ground up by the drilling process.
610						2.5YR 5/3	N	Reddish brown Glance Conglomerate. Pinal Schist-derived phyllite and metamorphic quartz, and rare granular quartzite clasts in sandy siltstone matrix. Few chunks = 2 cm of Pinal Schist and matrix material; but most of sample is sand-size particles possibly due to grinding during drilling.
620						2.5YR 5/3	N	Reddish brown Glance Conglomerate. As above. Formation dry again.
630						2.5YR 6/3	N	Light reddish brown Glance Conglomerate. As above; ground up; small coarse sand-size phyllite lithic grains locally seen in sandy siltstone matrix.
640						2.5YR 5/2	N	Weak red Glance Conglomerate. As above, grayer in color; appears to be ground up from drilling.
650						2.5YR 5/2	N	Weak red Glance Conglomerate. As above.
660						2.5YR 5/2 2.5YR 5/3	N	Weak red to reddish brown Glance Conglomerate. Sample contains more gravel-size particles; appears less ground up. Sample is composed of angular to subangular Pinal Schist phyllite and metamorphic quartz pebbles, tabular to lensoidal in shape; with 5% sandy siltstone indurated matrix material.
670						2.5YR 6/3	N	Light reddish brown Glance Conglomerate. As above.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-10GL**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
680	Glance Conglomerate					2.5YR 5/2	N	Weak red to reddish brown Glance Conglomerate. Reddish gray to weak red Pinal Schist clasts in reddish brown silty-sandstone matrix, as above.
						2.5YR 5/3		
690						2.5YR 5/3	N	Reddish brown Glance Conglomerate. Mostly fine gravel and coarse sand-size Pinal Schist clasts in siltstone matrix with little clay.
700						2.5YR 5/3	N	Reddish brown Glance Conglomerate. As above.
710						2.5YR 5/3	N	Reddish brown Glance Conglomerate. As above.
720						2.5YR 5/3	N	Reddish brown Glance Conglomerate. As above.
730						2.YR 6/4	N	Light reddish brown Galnce Conglomerate. As above, but matrix material is slightly more clayey and lighter colored.
740						2.5YR 6/4	N	Light reddish brown Glance Conglomerate. As above.
750						2.5YR 6/3	N	Light reddish brown Glance Conglomerate. Sample is mostly fine gravel and sand-sized angular to subrounded phyllite and quartz clasts in clayey siltstone matrix.
760						2.5YR 6/4	N	Light reddish brown Glance Conglomerate. As above, slightly more orange in color.
770						2.5YR 6/4	N	Light reddish brown Glance Conglomerate. As above.
780						2.5YR 5/2	N	Weak red Glance Conglomerate. Fine to coarse sand and fine gravel composed of phyllite and metamorphic quartz with small amount of siltstone matrix. Water production has increased; well is now making about 2 gpm.
790						2.5YR 5/2	N	Weak red to reddish brown Glance Conglomerate. As above; well indurated siltstone matrix.
						2.5YR 5/3		

Project Name: **Bisbee Mitigation Order**							Boring No.: **BMO-2008-10GL**	
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
800	Glance Conglomerate					2.5YR 5/2	N	Weak red Glance Conglomerate. As above, formation is still producing small amount of water.
810						2.5YR 4/2	N	Weak red Glance Conglomerate. As above.
						2.5YR 5/2		
820						2.5YR 4/2	N	Weak red Glance Conglomerate. As above. Well is making approximately 2 gpm.
						2.5YR 5/2		
								TD = 820 ft bls at 15:33 on 7/23/2008

HYDRO GEO CHEM, INC.

Geologic Boring Log

	Boring No.: **BMO-2008-10GU**
Project Name: **Bisbee Mitigation Order**	
Drilling Company: WDC Exploration and Wells	Driller: Butch Eldred
Site Plan at Boring Location:	ADWR Registration No.: **55-909272**
	Drilling Equipment: Gefco Star 50K
	Drilling Method: Stratex; air rotary
	Bit Type/Size: 12" Stratex; 8.5" Tricone
	Total Borehole Depth: 700 ft bls
	Casing Depth: 449 ft bls
	Screened Interval: 239-429 ft bls
	Screen slot size: 0.125 inch vertical slots
	Filter pack type: # 8 Tacna gravel
	Top of Casing Elevation: 4793.45 ft
	Land surface Elevation: 4792.95 ft
	Date/Time Started: 6/13/2008 15:00
	Date/Time Completed: 6/29/2008 13:40
Township, Range, Section: T 24 S, R 24 E, Sec. 3 ABC	Logged by: K. Wilson
UTM: 3471731.866 N, 605267.551 E, NAD 83	Checked by: K. Wilson and R. Zimmerman

Depth (Ft)	Graphic Log	Estimated % GR	SA	Fl	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
0	Basin Fill	50	30	20	GM	2.5YR 5/6	S	Red gravel with sand, caliche cement. Gravel clasts are angular to sub-rounded, poorly sorted, composed of yellow silicified limestone, gray micritic, oolitic, and recrystallized limestone; chert, quartzite, reddish gray sandstones, vein quartz, and phyllite. Limestone clasts are most abundant, with lesser phyllite, and smaller amount of clastic sediments. Jarosite and gypsum precipitate from the former evaporation pond are also locally present as a weak cement. Sand fraction is angular to subrounded, coarse to fine-grained, poorly graded quartz and lithic grains.
1		80	15	5	GP	7.5YR 6/4 7.5YR 6/6	S	Light brown to reddish yellow gravel with sand; strong caliche cement. Gravel clasts are angular to subangular, composed of quartz, silicified limestone, fine-grained reddish gray sandstone, quartzite, and phyllite. Phyllite and some quartz is derived from the Pinal Schist; other clasts from Paleozoic and Mesozoic sedimentary formations. Black oxide coatings and jarosite stain are common. Sand grains are angular to subrounded, poorly sorted, coarse to fine-grained, but mostly coarse grained, composed mostly of light brown to reddish yellow lithic grains and quartz.
3		65	20	15	GM	7.5YR 6/3	S	Light brown silty gravel with sand, caliche cement. Gravel is subangular to angular silicified limestone, limestone, chert, phyllite, and milky massive quartz. Caliche chunks are generated by drilling. Sand is angular to subrounded, coarse to fine-grained lithic grains and quartz.
10		55	35	10	GW-GM	2.5YR 7/4	S	Light reddish brown gravel with silt and sand, caliche cement. Gravel is angular to subrounded, composed of limestone, silicified limestone, phyllite, reddish brown sandstone, and quartzite; caliche chunks generated by drilling. Sand fraction is coarse to fine-grained, well-graded, angular to subrounded quartz and lithic grains. Coarser sand fraction is dominated by lithic grains; finer sand has a greater amount of quartz grains.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-10GU**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**Fl**				
20	Basin Fill	5	70	25	SM	2.5YR 8/3	S	Pink silty sand; caliche cement. Gravel clasts are pebble sized, subangular to subrounded; composition is polymictic with lithologies as listed above. Sand is subangular to rounded lithic and quartz grains.
30		15	60	25	SM	2.5YR 7/4	S	Light reddish brown silty sand with gravel, caliche cement. Some swelling clays in the fine fraction, mixed with caliche. Sand is primarily fine-grained, well-graded through to silt.
40			35	65	ML	2.5YR 6/4	S	Light reddish brown sandy silt. Silt is calcareous. Sand fraction is mostly medium to fine-grained, mostly lithic grains with lesser quartz grains. Lithic grains include reddish brown, gray to white sandstone and siltstone, caliche particles, phyllite, quartzite and trace limestone. Most sand grains are angular to subangular.
50		tr	35	65	ML	2.5YR 7/3	S	Light reddish brown sandy silt; caliche cement. Sand is coarse to fine-grained, composed of lithic grains and quartz. Trace gravel and lithic sand grains are composed of abundant gray, pink, and reddish brown fine-grained sandstone and quartzite, with lesser amounts of phyllite and limestone. Caliche is well indurated, drilling as chunks and chips.
60		50	30	20	GC	2.5YR 6/4	S	Light reddish brown clayey gravel with sand. 20% sandy clay balls. Gravel is polymictic, composed of abundant quartzite, reddish brown fine-grained sandstone; moderate amount of phyllite, schist metamorphic quartz, with lesser gray limestone with trace oxidized pyrite, and trace amounts of reddish brown volcanic and green siltstone. Sand is composed of quartz and lithic grains. Clays swell in water. Caliche is well indurated, drilling as chunks.
70		30	40	20	SM	2.5YR 7/3	S	Light reddish brown silty sand with gravel. Sand and gravel compositions are as above with slightly more limestone and a small amount of chert in the gravel fraction. 20% sandy swelling clay balls.
75			55	45	SC	2.5YR 6/3	S	Light reddish brown clayey sand; some silt. Clays are calcareous, swelling. Sand is medium- to fine-grained, subangular to rounded, composed of quartz and lithic grains including white, reddish brown, gray, and green sandstone, siltstone, and quartzite.
77		65	30	5	GP	2.5YR 6/4	M	Light reddish brown gravel with sand. Gravel is 95% reddish brown, pink, gray, and greenish gray sandstone and siltstone. Remainder is phyllite, limestone and chert with rare reddish fine-grained volcanics. Clasts are mostly subangular with some angular material. Sand fraction is coarse- to fine-grained, but mostly coarse lithic grains. Few thin calcite and caliche coatings on clasts; caliche cement is weak.
80		65	25	10	GP-GC	2.5YR 6/4	M	Light reddish brown gravel with clay and sand. Gravel is pebble-sized, polymictic, composed of sandstone, siltstone, phyllite, with little limestone and chert. Sand is composed primarily of coarse lithic grains of same composition.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-10GU**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**Fl**				
81	Basin Fill	85	10	5	GP	mottled	M	Mottled reddish brown, gray, black, pink and white gravel. Gravel is poorly graded, mostly subangular, polymictic, composed of reddish brown and gray limestone, black chert, white to pink silicified limestone, and pinkish gray phyllite. Clasts are equidimensional to elongate up to 2 1/2" on long side. Few thin calcite coatings.
90		80	10	10	GP-GC	2.5YR 7/3	M	Light reddish brown gravel with clay. Gravel is mostly subangular with few subrounded clasts composed of reddish brown to gray sandstone, greenish gray quartzite, gray phyllite, and limestone. Clay is calcareous, sticky, cohesive.
100		20	60	20	SC	2.5YR 5/4	W	Reddish brown clayey sand with gravel. Gravel is angular to subrounded pebbles, primarily of phyllite, little quartz, silty reddish brown sand, poorly sorted. Uniform color. Sand is mostly coarse-grained, lithic grains poorly sorted, subangular.
110		25	65	10	SW-SM	2.5YR 6/6	N	Light red sand with silt and gravel. Gravel is composed of phyllite and metamorphic quartz derived from Pinal Schist, and reddish brown poorly sorted sandstone with manganese oxide spots. Sand is mostly coarse-grained, subangular, poorly graded and sorted, composed primarily of lithic grains with few quartz grains.
120		10	80	10	GP-GC	2.5YR 6/6	N	Light red gravel with clay. Gravel is angular to subrounded, composed of Pinal Schist clasts. Some silt and sand adhered to phyllite clasts. Probably rubble near the top of the Glance Conglomerate.
130	Glance Conglomerate				bedrock	2.5YR 5/4	N	Reddish brown Glance Conglomerate. Pinal Schist (phyllite and metamorphic quartz) clasts in reddish brown silty sandstone matrix. Uniform coloration.
140						2.5YR 5/3 2.5YR 5/2 2.5YR 6/1	N	Reddish brown, weak red, to reddish gray Glance Conglomerate. Gravel-sized clasts are primarily Pinal Schist with little metamorphic quartz and quartzite (possibly derived from the Bolsa Quartzite) in a silty sandstone matrix. Trace white crystalline calcite in the matrix.
150						2.5YR 5/4	N	Reddish brown Glance Conglomerate, composition as above. Conglomerate clasts are up to 2 cm in diameter, and are angular to subrounded, locally with some rounded surfaces.
160						2.5YR 5/2 2.5YR 5/4	N	Reddish brown to weak red Glance Conglomerate. Mostly pebble-size phyllite and little metamorphic quartz derived from Pinal Schist and few quartzite clasts in a sandy siltstone matrix.
170						2.5YR 5/4	N	Reddish brown to weak red Glance Conglomerate, as above; abundant Pinal Schist phyllite and quartz, with little sericitic sandstone and quartzite in reddish brown sandy siltstone matrix.
180						2.5YR 5/3	N	Reddish brown silty and clayey sandstone; sand grains are mostly fine-grained with scattered coarser clear quartzite lithic grains. Sandstone bed in the Glance Conglomerate.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-10GU**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**Fl**				
190	Glance Conglomerate					2.5YR 5/6	N	Red Glance Conglomerate. Conglomerate is composed of primarily subangular to angular phyllite and metamorphic quartz with few coarse-grained white quartzite gravel in a silty sandstone matrix.
200						2.5YR 6/3	N	Light reddish brown Glance Conglomerate, Pinal Schist pebbles and coarse sand-sized lithic grains in fine silty sandstone matrix.
210						2.5YR 4/3	N	Reddish brown silty clayey fine-grained sandstone. Mudstone layer within the Glance Conglomerate.
220						2.5YR 5/3	N	Reddish brown Glance Conglomerate, composed of up to 3 cm, phyllite, metamorphic quartz, micaceous quartzite, and rare coarse- grained arkose gravel clasts in a silty sandstone matrix.
230						2.5YR 5/4	N	Reddish brown Glance Conglomerate, as above.
240						2.5YR 5/3	N	Reddish brown Glance Conglomerate, as above with finer gravel pebbles up to 1 cm on long side.
242						2.5 YR 4/4	N	Reddish brown silty fine-grained sandstone, slightly micaceous. Sandstone layer in the Glance Conglomerate.
250						2.5YR 5/4	N	Reddish brown Glance Conglomerate; Pinal Schist phyllite and metamorphic quartz gravel in a sandy silt clayey matrix.
260						2.5YR 6/3	N	Light reddish brown Glance Conglomerate; Pinal Schist phyllite and metamorphic quartz, and few quartzite clasts in a sandy silt and clay mudstone matrix.
270						2.5YR 5/4	N	Reddish brown Glance Conglomerate. Abundant Pinal Schist (phyllite and metamorphic quartz), with little matrix material.
280						2.5YR 5/4	N	Reddish brown Glance Conglomerate. Abundant Pinal Schist and rare white quartzite pebbles in silty sandstone matrix.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-10GU**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
290	Glance Conglomerate					2.5YR 5/4	N	Reddish brown Glance Conglomerate. Pinal Schist clasts in fairly hard, poorly sorted silty sandstone matrix.
300						2.5YR 5/3	N	Reddish brown Glance Conglomerate. As above.
310						2.5YR 5/3	N	Reddish brown Glance Conglomerate, as above. Pinal Schist phyllite and metamorphic quartz clasts are angular to subangular, up to 2 cm on a long side, grading to coarse sand, in a silty sandstone matrix.
320						2.5YR 5/3	N	Reddish brown Glance Conglomerate, Pinal Schist clasts in mudstone matrix; abundant matrix material, fewer pebbles.
330						2.5YR 6/3	N	Light reddish brown Glance Conglomerate, abundant fine gravel and coarse sand-size Pinal Schist clasts in silty sandstone matrix.
340						2.5YR 6/3	N	Reddish brown Glance Conglomerate. Mostly coarse sand-sized and fine pebble-size particles of Pinal Schist in silty sandstone matrix.
350						2.5YR 6/3	N	Reddish brown Glance Conglomerate, mostly coarse sand-size Pinal Schist clast with few pebbles in silty sandstone matrix.
360						2.5YR 6/3	N	Reddish brown Glance Conglomerate. Pinal Schist clasts are mostly fine-to coarse-grained sand-sized particles with few pebbles in a silty and clayey sandstone matrix.
370						2.5YR 6/3	N	As above, abundant pebbles.
380						2.5YR 5/3	N	Reddish brown Glance Conglomerate. Sand and small pebble Pinal Schist (phyllite and metamorphic quartz) clasts in silty sandstone matrix. Abundant sandy matrix material.
390						2.5YR 5/3	N	Reddish brown Glance Conglomerate. Abundant Pinal Schist pebbles and coarse to fine sand-size lithic grains in sandy mudstone matrix.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-10GU**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**Fl**				
400	Glance Conglomerate					2.5YR 5/3	N	Reddish brown Glance Conglomerate. Angular to subrounded pebbles and sand-sized material derived from Pinal Schist in sandy siltstone matrix.
410						2.5YR 6/4	N	Light reddish brown Glance Conglomerate. Subangular to subrounded Pinal Schist clasts, mostly coarse sand-size, with some pebbles up to 1 cm diameter, in a sandy siltstone matrix.
420						2.5YR 5/3	N	Reddish brown Glance Conglomerate, as above. Rig chatter at 425' indicates presence of coarse cobble zone in the conglomerate.
430						2.5YR 5/4	N	Reddish brown Glance Conglomerate. Few angular Pinal Schist phyllite and quartz clasts up to 1cm in clayey siltstone.
440						2.5YR 6/4	N	Light reddish brown Glance Conglomerate. Silt, clay, and sand mudstone with scattered fine pebble and coarse sand-sized Pinal Schist clasts. Rig chatter at 445 ' indicates presence of a coarse cobble zone in the conglomerate.
450						2.5YR 5/3	N	Reddish brown Glance Conglomerate. Sample is largely angular to subangular Pinal Schist pebbles and coarse lithic sand grains, with about 10% sandy silt matrix material.
460						2.5YR 6/4	N	Light reddish brown Glance Conglomerate, as above with a silt, sand and clay mudstone matrix.
470						2.5YR 6/4	N	Reddish brown Glance Conglomerate. As above with clayey, silt and sand mudstone matrix.
480						2.5YR5/3	N	Reddish brown Glance Conglomerate. Sample is mostly ground up Pinal Schist phyllite and quartz, and white granular quartzite (possibly derived from the Bolsa Quartzite). Gravel and coarse sand in a fairly well-indurated sandy siltstone matrix.
490						2.5YR 4/2	N	Weak red Glance Conglomerate. Sample is mostly ground up Pinal Schist sand and pebble size fragments with little sandy siltstone matrix material.
500						2.5YR 5/3	N	Reddish brown Glance Conglomerate, as above. Attempted to changed drilling method from conventional rotary to reverse circulation with tricone; RC attempt was unsuccessful due to the low water production by the formation.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-10GU**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**Fl**				
510	Glance Conglomerate					2.5YR 5/3	N	Reddish brown Glance Conglomerate. Abundant subangular to subrounded pebble (< 2 cm) conglomerate. Pebbles are phyllite and metamorphic quartz derived from the Pinal Schist with few white granular quartzites. Little matrix material.
520						2.5YR 5/3	N	Reddish brown Glance Conglomerate, as above.
530						2.5YR 5/4 2.5YR 6/6	W	Reddish brown Glance Conglomerate; portions of fine matrix material are light red. Subangular pebble conglomerate; clasts up to 1.5cm diameter in a silt, clay, and sand mudstone matrix.
540						2.5YR 5/4	N	Reddish brown Glance Conglomerate. Sample is mostly angular to subrounded, coarse sand-size particles with few pebbles of Pinal Schist (phyllite and metamorphic quartz) and granular quartzite.
550						2.5YR 5/4	N	Reddish brown Glance Conglomerate, as above.
560						2.5YR 5/3	N	Reddish brown Glance Conglomerate. Mostly medium to coarse grained sand-sized particles with few angular to subrounded pebbles; derived from Pinal Schist.
570						2.5YR 5/4	N	Reddish brown Glance Conglomerate. Angular to subangular, coarse sand and gravel sized Pinal Schist-derived material in silty matrix..
580						2.5YR 5/4	N	Reddish brown Glance Conglomerate, as above.
590						2.5 YR 5/6	N	Red Glance Conglomerate. Pebbles and coarse sand-sized subrounded phyllite and quartz clasts derived from the Pinal Schist in a red siltstone matrix.
600						2.5YR 5/4	W	Reddish brown Glance Conglomerate. Mostly sand-sized particles with few fine pebbles derived from the Pinal Schist in a silt, sand and clay mudstone matrix. Clay is slightly calcareous.
610						10R 6/3	N	Pale red Glance Conglomerate. Sample is mostly loose fine to coarse sand with 10% subangular gravel derived from the Pinal Schist and 15% siltstone matrix material.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-10GU**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**Fl**				
620	Glance Conglomerate					10R 6/3	N	Pale red Glance Conglomerate. As above with 30% gravel-sized clasts.
630						2.5YR 7/4	W	Light reddish brown Glance Conglomerate. Mostly sand-sized Pinal Schist clasts in silty, clayey matrix. Clayey matrix slightly calcareous.
640						2.5YR 6/4	W	Light reddish brown Glance Conglomerate. Medium to coarse sand sized particles and fine angular to subrounded pebbles derived from Pinal Schist in silty clayey matrix.
650						2.5YR 6/4	W	Light reddish brown Glance Conglomerate, as above.
660						2.5YR 6/4 2.5YR 6/1	N	Light reddish brown to reddish gray Glance Conglomerate. Angular to subangular chips of Pinal Schist and rare quartz in siltstone matrix. Matrix is reddish brown, clasts are mostly reddish gray.
670						2.5YR 6/4	W	Light reddish brown Glance Conglomerate. Angular to subangular coarse sand and gravel derived from Pinal Schist in silty, slightly clayey and sand mudstone matrix. HCl, reacts with matrix material only. Clasts are reddish gray, matrix reddish brown.
680						2.5YR 6/4	W	Light reddish brown Glance Conglomerate, as above.
690						10R 6/3	W	Pale red Glance Conglomerate, as above, occasional Pinal Schist clasts up to 3 cm on long side.
700						2.5YR 6/3	W	Light reddish brown Glance Conglomerate. Angular to subangular Pinal Schist clasts up to 1 cm in reddish brown silty sandstone matrix. Formation is producing very little water. TD = 700 ft bls at 13:40 on 6/29/2008

HYDRO GEO CHEM, INC.

Geologic Boring Log

	Boring No.: **BMO-2008-11G**
Project Name: **Bisbee Mitigation Order**	Project No: 872000
Drilling Company: WDC Exploration and Wells	Driller: Mike Thomas
Site Plan at Boring Location:	ADWR Registration No.: **55-909434**
	Drilling Equipment: GEFCO Star 50K
	Drilling Method: Stratex, Air Rotary
	Bit Type/Size: Stratex 11 3/4; tricone 9 7/8
	Total Borehole Depth: 820 ft bls
	Casing Depth: 760 ft bls
	Screened Interval: 650-750 ft bls
	Screen slot size: 0.125 inch vertical slots
	Filter pack type: # 8 Tacna gravel
	Top of Casing Elevation: 4844.67 ft
	Land surface Elevation: 4844.09 ft
	Date/Time Started: 7/17/2008 11:37
	Date/Time Completed: 7/31/2008 8:41
Township, Range, Section: T 23 S, R 24 E, Sec. 33 DCA	Logged by: W. Thompson
UTM: 3472626.482 N, 603800.995 E, NAD 83	Checked by: K. Wilson and R. Zimmerman

Depth (Ft)	Graphic Log	Estimated % GR	SA	Fl	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
0	Basin Fill	20	20	60	ML	7.5YR 5/4	S	Brown sandy silt with gravel. Gravel clasts are up to 3" diameter, few cobbles to 6", angular to well-rounded; composed primarily of dark through light gray limestone, with some fine to medium-grained sandstone. Sand fraction is medium to very fine-grained. Material is loose, dry; strong reaction to HCl.
10		35	40	25	SM	7.5YR 8/1	S	White silty sand with gravel; caliche cement. Gravel clasts are up to 1" in diameter, angular to rounded, primarily composed of dark through light gray crystalline limestone, some reddish sandstone; small amount of chert. Sand fraction is coarse through fine-grained, cemented with white caliche, soft, dry; very strong reaction to HCl.
20		15	25	60	ML	7.5YR 7/2	S	Pinkish gray sandy silt with gravel; caliche cement. Gravels and sands are as described above, powdery, flour-like texture, ground up caliche, dry; very strong reaction to HCl.
30		5	25	70	ML	7.5YR 6/3	S	Light brown sandy silt; caliche cement, trace gravel. Gravel clasts are up to 1/2" diameter, composed primarily of gray limestone. Sand fraction is primarily fine to very fine-grained, powdery flour-like texture, dry; very strong reaction to HCl.
40			10	90	ML	7.5YR 7/2	S	Pinkish gray silt; caliche ground to a silt during drilling; powdery flour-like texture, dry; very strong reaction to HCl.
50		40	20	40	GM	7.5YR 7/2	S	Pinkish gray silty gravel with sand; caliche-cement. Gravel clasts are up to 2" diameter, angular to well-rounded, composed of primarily light through dark gray crystalline limestone with quartz, arkose, some reddish mudstone. Sand fraction is coarse through fine-grained; silt fraction is primarily ground up calcareous cement; dry; very strong reaction to HCl.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-11G**
Depth	**Graphic**	**Estimated %**			**USCS**	**Munsell**	**HCl**	**Sample Description**
(Ft)	**Log**	**GR**	**SA**	**FI**	**Symbol**	**Color**	**Rxn**	
60	Basin Fill	5	20	75	ML	7.5YR 6/3	S	Light brown caliche-cemented silt with sand. Gravel clasts are up to 1/2" diameter; primarily limestone. Sand fraction is mostly fine-grained. Fine fraction is ground up caliche cement, powdery, flour-like texture, dry; very strong reaction to HCl.
70		15	20	65	ML	7.5YR 6/3	S	Light brown silt with sand, caliche cement. As above, except that gravel fraction has increased.
80		30	20	45	ML	7.5YR 6/3	S	Light brown gravelly silt with sand, caliche cement.
90		25	20	55	ML	7.5YR 6/3	S	Light brown gravelly silt with sand, caliche cement.
100		35	20	45	ML	7.5YR 6/3	S	Light brown gravelly silt with sand, caliche cement. Similar to above except that gravels are large, up to 2" diameter, primarily dark through light gray limestone, some quartz, chert, and fine-grained sandstone. Dry, very strong reaction to HCl.
110		80	10	10	GW-GM	Mottled	S	Mottled gravel with silt. Light to dark gray and red; gravel to 2", angular to subrounded, gray limestone, dark red fine-grained sandstone, few cherty clasts. Few gravel clasts coated with carbonate. Loose, dry, strong reaction to HCl.
120		60	20	20	GW	7.5YR 6/3	S	Light brown silty, gravel with sand. Gravel fraction is angular to subrounded, fine-grained up to 1/2" diameter, primarily dark through light gray limestones, some quartz, chert, fine-grained sandstones. Sand fraction is coarse through fine-grained; fines are as a carbonate, dry, very strong reaction to HCl.
130		80	10	10	GW-GM	Mottled	S	Mottled gravel with silt, as described for the 110' bls depth.
140		50	25	25	GM	2.5YR 6/2	S	Pale red silty gravel with sand. Gravel to 1/2", angular to rounded; dark to light gray with whitish and reddish limestone, some quartz and fine-grained reddish sandstone with calcareous cement. Sand coarse to very fine-grained; fines are a calcareous silt; dry, very strong reaction to HCl.
150		10	50	40	SM	2.5YR 6/2	S	Pale red silty sand. Gravel clasts are up to 1/2" diameter, angular to fairly well-rounded, primarily as dark through light gray limestone, some reddish fine-grained calcareous sandstone, few quartz. Sand fraction is coarse through very fine-grained, but is primarily silty, dry, strong reaction to HCl.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-11G**
Depth	**Graphic**	**Estimated %**			**USCS**	**Munsell**	**HCl**	**Sample Description**
(Ft)	**Log**	**GR**	**SA**	**FI**	**Symbol**	**Color**	**Rxn**	
160	Basin Fill	30	40	30	SM	2.5YR 6/3	S	Light reddish brown silty sand with gravel. As described above, except for an increase in the gravel fraction and a corresponding decrease in the sand and silt fractions.
170		30	40	30	SM	2.5YR 6/3	S	Light reddish brown silty sand with gravel, as above.
180		30	40	30	SM	2.5YR 6/3	S	Light reddish brown silty sand with gravel, as above.
190		50	25	25	GM	7.5YR 5/4	S	Brown silty gravel with sand. Gravel fraction to 1", angular to rounded, dark to light gray, whitish and reddish limestones, reddish fine-grained calcareous cemented sandstones; carbonate coated clasts. Sand coarse to very fine-grained, siltly calcareous fines; dry, very strong reaction to HCl.
200		75	15	10	GW-GM	2.5YR 4/3	S	Reddish brown gravel with silt and sand, gravel fine grained, to 1"; angular to well rounded, clasts of Pinal Schist; reddish fine-grained calcareous sandstone, dark to light gray limestone, and few pale green argillite pieces. Sand coarse to very fine-grained, trace calcareous silt, dry, strong reaction to HCl.
210		15	35	50	ML	2.5YR 5/3	S	Reddish brown sandy silt with gravel. Gravel to 1/2", angular to rounded, lithology includes calcareous sandstone, siltstone, and mudstone, Pinal Schist with quartz and limestone fragments; Sand fine to very fine-grained; Silty calcareous fines; dry, strong reaction to HCl.
220		15	35	50	ML	2.5YR 5/3	S	Reddish brown sandy silt with gravel, as above. Gravel clasts are primarily Pinal Schist and limestone. Few calcite-sand cement coatings.
230		30	55	15	SM	2.5YR 6/3	S	Light reddish brown silty sand with gravel. Gravel to 1/2", angular to rounded, clasts are fine-grained sandstone with calcareous cement, quartz, and siltstone; Sand mostly coarse to fine-grained, Silty calcareous fines; dry, strong reaction to HCl.
240	Morita Formation				Bedrock	2.5YR 6/3	S	Light reddish brown arkosic sandstone, fine-grained, calcareous cement, fairly soft, platy, dry, strong reaction to HCl. Morita Formation, upper contact with basin fill.
250						2.5YR 5/4	S	Reddish brown mudstone. Platy, calcareous, fairly soft, homogenous, dry, strong reaction to HCl. Morita Formation.

Project Name: **Bisbee Mitigation Order** Boring No.: **BMO-2008-11G**

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
260	Morita Formation					2.5YR 5/3	S	Reddish brown mudstone, weakly indurated, slightly laminated, platy, soft, dry, strong reaction to HCl. Morita Formation.
270						2.5YR 5/3 2.5YR 7/1	S	Reddish brown and light reddish gray siltstone and sandstone. Siltstone is as described above except that it is considerably harder, and has few bleached spots. Sandstone is composed of light gray quartz, fine-grained with calcareous cement, fairly hard, platy, dry, strong reaction to HCl. Morita Formation.
280						2.5YR 5/3	S	Reddish brown siltstone, weakly laminated, platy, fairly soft, dry, strong reaction to HCl. Morita Formation.
290						2.5YR 5/3	M	Reddish brown silty sandstone, fine-grained, calcareous cement, slightly platy, homogenous, fairly soft, can be broken with fingers; dry, moderate reaction to HCl. Morita Formation.
300						2.5YR 5/3	M	Reddish brown fine-grained sandstone, as above.
310						2.5YR 4/2	M	Weak red fine-grained silty sandstone, as above; with few small bleached spots.
320						2.5YR 4/2	M	Weak red silty sandstone with about 15-20% gray, micritic limestone, possibly occuring as nodules. Silty sandstone is very similar to above except that it tends to be finer grained and somewhat more silty. Moderate reaction to HCl.
330						2.5YR5/3	M	Reddish brown siltstone. As above except that light greenish gray, sandstone has diminished to less than 1%.
340						2.5YR 4/3	M	Reddish brown sandstone, fine grained, calcareous cement, platy, fairly hard, small amount (<1%) of a light gray quartz sandstone; strong reaction to HCl. Driller is injecting water to wet cuttings.
350						2.5YR 4/3	S	Reddish brown siltstone, platy, very weakly laminated, fairly soft, calcareous cement; very strong reaction to HCl.

Project Name: **Bisbee Mitigation Order** Boring No.: **BMO-2008-11G**

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
360	Morita Formation					2.5YR 4/2	S	Weak red silty sandstone. Platy, calcareous cement, hard; 20% light gray limestone, possibly occuring as nodules. Strong reaction to HCl.
370						2.5YR 4/3	S	Reddish brown sandstone with 10% gray limestone.
380						2.5YR 4/3	S	As above.
390						2.5YR 4/3	S	Reddish brown silty sandstone, fine-grained, platy, calcareous cement, fairly homogenous, moderately hard; strong reaction to HCL.
400						2.5YR 4/3	S	As above.
410						2.5YR 4/2	S	Weak red silty fine-grained sandstone. Mostly quartz with a few percent feldspar grains in a calcareous matrix.
420						2.5YR 4/2	S	Weak red silty fine-grained sandstone. As above.
430						2.5YR 4/2	S	Weak red silty fine-grained sandstone. As above.
440						2.5YR 4/2	S	Weak red silty fine-grained sandstone. Mostly quartz with a few percent feldspar grains in a calcareous matrix.
450						2.5YR 4/2	M	Weak red silty, clayey fine-grained sandstone.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-11G**
Depth	**Graphic**	**Estimated %**			**USCS**	**Munsell**	**HCl**	**Sample Description**
(Ft)	**Log**	**GR**	**SA**	**FI**	**Symbol**	**Color**	**Rxn**	
460	Morita Formation					2.5YR 4/2	M	Weak red sandstone, fine-grained, calcareous cement, slightly platy, fairly hard, homogenus. Moderate reaction to HCL.
470						2.5YR 4/2	M	Weak red sandstone, fine-grained but slightly coarser than above, platy, calcareous cement, fairly hard, homogenous, moderate reaction to HCl. Morita Formation.
480						2.5YR 4/2	M	Weak red brown fine-grained sandstone, as above. Morita Formation.
490	Glance Conglomerate					2.5YR 5/4	N	Reddish brown pebbly sandstone. Mix of poorly sorted sandstone, quartz, dark gray translucent chert, and Pinal Schist. Small saturated zone from 480 - 490'. Except for a few grains of limestone, no reaction to HCl. Glance Conglomerate.
500						2.5YR 4/4	N	Reddish brown sandstone. Medium to fine-grained, poorly sorted, siliceous cement, platy, moderately hard. No reaction to HCl. Glance Conglomerate. First Water Sample.
510						2.5YR 5/4	N	Reddish brown conglomerate. Pinal Schist, quartz, chert gravel clasts in silty arkosic sandstone matrix. Sandstone matrix is medium to fine-grained, poorly sorted, with siliceous cement. No reaction to HCl. Glance Conglomerate.
520						2.5YR 4/4	N	Reddish brown sandy siltstone. Sand is mostly very fine-grained with occasional coarser quartz and lithic grains; siltstone is platy, fairly soft, can easily be broken by hand. No reaction to HCl. Glance Conglomerate.
530						2.5YR 3/4	N	Dark reddish brown sandy siltstone. As described above except not quite as platy and considerably harder. Glance Conglomerate.
540						2.5YR 3/4	N	Dark reddish brown conglomerate. Abundant phyllite, schist, and metamorphic quartz derived from the Pinal Schist in a medium to fine-grained, poorly sorted, silty sandstone matrix with siliceous cement. No reaction to HCl. Glance Conglomerate.
550						2.5YR 3/4	N	Dark reddish brown conglomerate, as described above. Glance Conglomerate.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-11G**
Depth	**Graphic**	**Estimated %**			**USCS**	**Munsell**	**HCl**	**Sample Description**
(Ft)	**Log**	**GR**	**SA**	**FI**	**Symbol**	**Color**	**Rxn**	
560	Glance Conglomerate					2.5YR 4/4	N	Reddish brown arkosic sandy siltstone. Sandy siltstone has siliceous cement; sand is mostly fine-grained quartz with few medium lithic grains; is platy, fairly soft; has few small light colored reduction spots. No reaction to HCl. Glance Conglomerate.
570						2.5YR 4/3	N	Reddish brown sandy siltstone. As above, very slight laminations detectable on larger chips. Glance Conglomerate.
580						2.5YR 4/3	N	Reddish brown sandy siltstone. As above except that few chips have a light gray soft opaque coatings on some surfaces, may be gypsum fracture fillings. Glance Conglomerate.
590						2.5YR 4/3	N	Reddish brown fine-grained silty arkosic sandstone. Glance Conglomerate.
600						2.5YR 4/3	N	Reddish brown sandy siltstone. Glance Conglomerate.
610						2.5YR 4/3	N	Reddish brown sandy siltstone. Glance Conglomerate.
620						2.5YR 3/4	N	Dark reddish brown conglomerate, mix of schist, phyllite, quartz, and chert pebble clasts in a fine-grained, poorly sorted sandstone to siltstone matrix. No reaction to HCl. Glance Conglomerate.
630						2.5YR 3/4	N	Dark reddish brown conglomerate, as above. Glance Conglomerate.
640						2.5YR 4/4	N	Reddish brown sandy siltstone. Sand is very fine-grained, siltstone has very weak laminations, is platy, fairly soft; few surfaces exhibit soft whitish gypsum coatings, siliceous cement. No reaction to HCl. Glance Conglomerate.
650						2.5YR 4/4	N	Reddish brown sandy siltstone, as above. Glance Conglomerate.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-11G**
Depth	**Graphic**	**Estimated %**			**USCS**	**Munsell**	**HCl**	**Sample Description**
(Ft)	**Log**	**GR**	**SA**	**FI**	**Symbol**	**Color**	**Rxn**	
660	Glance Conglomerate					2.5 YR 4/4	N	Reddish brown sandy siltstone, as above. Glance Conglomerate.
670						2.5YR 4/3	N	Reddish brown conglomerate. Pinal Schist (phyllite and quartz) with lesser gray chert pebbles and fragments in a poorly sorted, medium to very fine-grained silty sandstone matrix with silica cement; fairly hard. No reaction to HCl. Glance Conglomerate.
680						2.5YR 4/3	N	Reddish brown conglomerate, as described above. Glance Conglomerate.
690						2.5YR 4/3	N	Reddish brown sandstone, poorly sorted, fine to very fine-grained. Slightly platy, fairly hard, siliceous cement. No reaction to HCl. Glance Conglomerate.
700						2.5YR 4/2	N	Weak red conglomerate with sandstone matrix. Matrix is fairly well-graded, moderately hard, medium to fine-grained sandstone with siliceous cement. Conglomerate clasts are composed of numerous dark gray through white quartz, schist and phyllite, and little chert. No reaction to HCl. Glance Conglomerate.
710						2.5YR 4/3	N	Reddish brown conglomerate, as above. Glance Conglomerate.
720						2.5YR 4/4	N	Reddish brown silty arkosic sandstone. Fine to very fine-grained, fairly well-graded, platy, homogenous, fairly hard, siliceous cement. No reaction to HCl. Glance Conglomerate
730						2.5YR 4/4	N	Reddish brown sandy siltstone. Sand is very fine-grained; siltstone is platy, fairly hard but can be broken by hand, siliceous cement. No reaction to HCl. Glance Conglomerate
740						2.5YR 4/4	N	Reddish brown sandy siltstone, as above. Glance Conglomerate.
750						2.5YR 4/3	N	Reddish brown conglomerate. Quartz and schist clasts in a medium to very fine-grained, fairly well-graded sandstone matrix composed of mostly of quartz grains with few limestone lithic grains; siliceous cement. No reaction to HCl except for limestone grains. Glance Conglomerate.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-11G**
Depth	**Graphic**	**Estimated %**			**USCS**	**Munsell**	**HCl**	**Sample Description**
(Ft)	**Log**	**GR**	**SA**	**FI**	**Symbol**	**Color**	**Rxn**	
760	Glance Conglomerate					2.5YR 4/4	N	Reddish brown sandy siltstone. Sand fraction is fine to very fine-grained, platy, siliceous cement, fairly hard, does not react with HCl except for a very few individual limestone grains. Few 1 mm light colored reduction spots. Glance Conglomerate.
770						2.5YR 4/4	N	Reddish brown sandy siltstone. As above. Glance Conglomerate.
780						2.5YR 4/4	N	Reddish brown sandstone. Sandstone is fine to very fine-grained, with calcareous cement, slightly platy, moderately hard, few grayish quartzite and phyllite fragments. No reaction to HCl. Glance Conglomerate.
790						2.5YR 4/3	N	Reddish brown conglomerate. Conglomerate clasts are schist and quartz derived from the Pinal Schist, in a poorly sorted, fine to very fine-grained silty arkosic sandstone matrix; material is moderately hard. No reaction to HCl. Glance Conglomerate.
800						2.5YR 4/3	N	Reddish brown conglomerate; as above. Glance Conglomerate
810						2.5YR 5/3	N	Reddish brown conglomerate. Abundant Pinal Schist pebbles. As above, but sandy matrix is somewhat coarser grained. No reaction to HCl. Glance Conglomerate
820						2.5YR 5/3	N	Reddish brown conglomerate, as above. Glance Conglomerate.
								TD = 820 ft at 8:41 on 7/31/2008

HYDRO GEO CHEM, INC.

Geologic Boring Log

	Boring No.: **BMO-2008-13B**
Project Name: **Bisbee Mitigation Order**	Project No: 872000
Drilling Company: WDC Wells & Exploration	Driller: William Berg
Site Plan at Boring Location:	ADWR Registration No.: **55-909551**
	Drilling Equipment: GEFCO Speedstar 50K CH
	Drilling Method: Stratex; air-rotary RC
	Bit Type/Size: 11 3/4"; 9 7/8"
	Total Borehole Depth: 700 ft bls
	Casing Depth: 474 ft bls
	Screened Interval: 264 - 464 ft bls
	Screen slot size: 0.125 inch vertical slots
	Filter pack type: #8 Tacna gravel
	Top of Casing Elevation: 4649.21 ft
	Land surface Elevation: 4648.68 ft
	Date/Time Started: 8/10/2008 12:00
	Date/Time Completed: 9/16/2008 12:35
Township, Range, Section: T 24 S, R 24 E, Sec. 8 BCA	Logged by: K. Wilson
UTM: 3470076.358 N, 601657.612 E, NAD 83	Checked by: K. Wilson and R. Zimmerman

Depth (Ft)	Graphic Log	Estimated % GR	SA	Fl	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
10	Basin Fill	65	25	10	GP	2.5YR 8/3	S	Pink, strongly cemented gravel with clay and sand. Angular broken to subrounded clasts of gray limestone gray chert, pink, white to gray fine-grained sandstone, gold siltstone, sand to gravel sized, cemented with hard caliche.
20		25	55	20	SM	5YR 7/3	S	Pink, strongly cemented silty sand with gravel. Gravel and lithic sand grains are angular to subrounded, composed primarily of gray to pinkish gray limestone with a little chert, fine grained sandstone, and white quartzite clasts, cemented with caliche. Caliche is softer and more clayey than above.
30		5	50	45	SC	5YR 7/4	S	Pink, strongly cemented clayey sand. Sample is mostly moderately well indurated broken chunks (generated by drilling) of sandy clayey caliche and few limestone chips.
40		10	25	65	CL	7.5YR 5/4	S	Brown, strongly cemented sandy clay with gravel. Sample is ground up (by drilling) clayey sandy caliche with angular freshly broken gravel clasts composed of gray limestone and a small amount of chert.
50		25	33	40	SC	5YR 6/4		Reddish brown, strongly cemented clayey sand with gravel. Gravel is mostly brown gray limestone with little gray sandstone and reddish brown sandy siltstone.
60		25	40	35	SM	5YR 6/3	S	Light reddish brown, strongly cemented sand with gravel, silt and clay. Clasts are primarily gray limestone with black hairline fractures and silicified limestone, with lesser greenish gray and reddish brown fine-grained sandstone. Gravel to 3 cm, subrounded to angular. Sand coarse to fine-grained composed of quartz and lithic grains.
65		85	10	5	GP	Mottled, 5YR 6/3	M	Mottled gravel, light reddish brown caliche cement. Abundant pinkish gray sandstone with fewer gray limestone, reddish brown and greenish gray fine-grained quartzite clasts. Clasts are =3 cm diameter, subangular to subrounded with caliche coatings.

Project Name: **Bisbee Mitigation Order** Boring No.: **BMO-2008-13B**

Depth (Ft)	Graphic Log	Estimated % GR	SA	Fl	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
70	Basin Fill	tr	65	35	SC	2.5YR6/3	M	Light reddish brown, moderately cemented, clayey to silty sand. Caliche is clayey, swells and disintegrates in water. Sand is coarse to fine lithic grains of gray limestone, reddish brown siltstone, gray phyllite, fine-grained greenish gray sandstone, and white quartz. Damp.
80		15	60	25	SC	5YR 6/3	S	Light reddish brown, calcareous clayey sand with gravel. Gravel clasts to 3 cm are pink, gray and tan; primarily sandstones with lesser silty dark gray limestone. Sand as above. Damp.
90		15	60	25	SC	5YR 5/4	S	Reddish brown, calcareous clayey sand with gravel. Gravel is reddish brown, gray, green fine-grained sandstones, reddish brown siltstone, little phyllite and white quartz, trace gray limestone; mostly =1 cm diameter; caliche surface coatings. Sand is fine to coarse-grained lithic grains and quartz.
100		5	65	30	SC	5YR 6/4	S	Light reddish brown clayey sand. Sand is fine to coarse-grained, well-graded through to silt. Sticky and cohesive, swelling when wet.
110		15	65	20	SC	2.5YR 5/3	S	Reddish brown clayey sand with gravel. Gravel is variably colored fine-grained sandstones with lesser siltstone, limestone, chert, phyllite and quartz; clasts are = 1 cm pebbles. Sand is fine to coarse lithic grains and quartz. Clayey calcareous coatings.
120		70	15	15	GC	2.5YR 7/3	S	Light reddish brown clayey gravel with sand. Gravel comprises angular to subrounded = 1 cm pebbles, including green, gray, and reddish brown sandstone, reddish brown siltstone, gray limestone, chert, phyllite, and quartzite; with clayey calcite coatings. Sand is fine to coarse-grained, mostly lithic grains.
130		70	20	10	GP-GC	5YR 7/2	S	Pinkish gray gravel with clay and sand. As above; clayey calcite mixed with fine sand coatings on pebbles.
140		70	20	10	GP-GC	5YR 6/3-6/2	S	Light reddish brown to pinkish gray gravel with clay and sand; little clay. As above.
150		60	30	10	GP-GC	2.5YR 7/3	S	Light reddish brown gravel with clay and sand. Composition as above. Gravel is multicolored when washed; clay imparts overall light reddish brown color.
160		50	40	10	GP-GC	2.5YR 6/2	S	Pale red gravel with clay and sand. As above with about 10% more sand and less gravel.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-13B**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
170	Basin Fill	65	20	15	GC	2.5YR 6/3	S	Light reddish brown clayey gravel with sand. Gravel clasts are subrounded on weathered surfaces, = 2 cm diameter; lithologic composition as above; continued clayey calcite-fine sand cement coatings on some clasts.
180		15	65	20	SC	2.5YR 6/3	S	Light reddish brown clayey sand with gravel; little silt. Sand is fine to coarse-grained, well-graded, composed mostly of lithic grains with lesser quartz. Gravel composition as above with calcareous coatings on some clasts; most are pebbles = 1 cm.
190		25	65	10	SW-SM	2.5YR 5/3	S	Reddish brown sand with gravel; sand is mostly lithic grains derived from sandstone, siltstone, limestone and Pinal Schist (phyllite and quartz); gravel clasts are of same lithology. Sand is mostly subrounded to subangular; fine to coarse-grained, well-graded through to silt.
200		65	30	5	GP	5YR 7/2	S	Pinkish gray gravel with sand; little silt and clay. Gravel composition is as previous, several intervals since 120'; sand is mostly coarse grained lithic grains. Some clay, fine carbonate, fine sand mix cement coatings on gravel clasts.
210		60	35	5	GP	5YR 7/2-7/3	S	Pinkish gray to pink gravel with sand. Gravel is =1.5cm; sand is mostly coarse-grained, compositions as above with the exception of one greenish chloritic intrusive clast.
220		20	60	20	SC	2.5YR 6/3	S	Light reddish brown silty sand with gravel. Sand is mostly lithic grains, fine to coarse-grained. Gravel and lithic sand grains are green, reddish brown, gray fine-grained sandstones and siltstones with a little gray limestone, Pinal Schist (phyllite and metamorphic quartz). Caliche-like (clayey carbonate-fine sand mix) coatings on some clasts.
230		20	60	20	SC	2.5YR 6/3	S	Light reddish brown silty sand with gravel, as above.
238								**First water at 238 ft bls.**
240		35	15	50	CL	5YR 7/3	S	Pink gravelly clay with sand. Clay is sticky, cohesive, plastic. Gravel is subrounded pebbles to angular broken chips developed during drilling. Sand is mostly coarse-grained lithic grains. Gravel and lithic sand grains include sandstone siltstone, chert, limestone, phyllite, and quartz.
250		75	20	5	GP	2.5YR 7/3	S	Light reddish brown gravel with sand. Sand is fine to coarse-grained composed of lithic grains and quartz. Gravel to = 1 cm and lithic sand grains are reddish brown sandstone, reddish and greenish siltstone, gray limestone, reddish gray phyllite, variably colored chert, and white quartz.
260		40	55	5	SW	2.5YR 5/2	S	Weak red sand with gravel. Sand is mostly coarse-grained but ranges from fine to coarse. Gravel clasts are up to 3 cm, coated with calcite and sand. Clast lithologies are as above plus gray arkosic sandstone.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-13B**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
270	Basin Fill	60	35	5	GP	2.5YR 5/3	M	Reddish brown gravel with sand. Gravel mostly = 1 cm diameter, subrounded to angular freshly broken faces; lithologies as above, few CaCo3 coatings. Sand is fine to coarse, composed mostly of coarse-grained lithic grains.
280		55	40	5	GP	2.5YR 5/2	S	Weak red gravel with sand. Gravel clasts are gray limestone, reddish brown to light gray sandstone, reddish brown siltstone, phyllite, and quartz. Sand-sized particles are mostly lithic grains, many angular, probably generated during drilling. Much of the gravel is angular and freshly broken.
290		65	30	5	GP	2.5YR 5/2	S	Weak red gravel with sand, as above. Gravel composition as above with trace quartzite and green siltstone in addition. Few coarse gravel clasts up to 4 cm in diameter.
300		60	35	5	GP	3.5YR 5/2	M	Weak red polymictic gravel with sand, as above. Gravel is mostly sandstone and siltstone with lesser limestone, phyllite, quartz; with trace rhyolite and Glance Conglomerate clasts. Sand is fine to coarse-grained, mostly lithic grains. Water production is approximately 200 gpm.
310		70	25	5	GP	2.5YR 5/2	M	Weak red gravel with sand. As above; gravel clasts are sandstone, siltstone, limestone, phyllite, quartz, and little rhyolite tuff. Continuing calcite coatings on some clasts.
320		60	35	5	GP	2.5YR 5/2	M	Weak red gravel with sand, as above.
330		75	20	5	GP	2.5YR 5/2	M	Weak red gravel with sand, as above. Gravel clasts include sandstone, arkose, siltstone, gray limestone, phyllite, quartz, and rare tuff; are angular to subrounded; up to 3 cm in diameter; with few white calcite coatings on weathered surfaces.
340		80	20	tr	GP	2.5YR 5/2	M	Weak red gravel with sand; polymictic, clast lithologies as above. Very few fines; sand is mostly coarse lithic grains, well washed by continued high water production.
350		50	45	5	GP	2.5YR 5/2	M	Weak red gravel with sand, polymictic, as above. Calcite coatings on some pebbles.
360		15	85	tr	SW	2.5YR 5/3	M	Reddish brown sand with gravel. Gravel angular to subrounded, to 4 cm, most clasts = 2 cm, composed of sandstone, siltstone, limestone, phyllite, metamorphic quartz (derived from the Pinal Schist), chert, and arkose; calcite-fine sand cement coatings on some pebbles. Sand fine to coarse quartz and lithic grains.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-13B**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**Fl**				
370	Basin Fill	45	55	tr	SW	2.5 YR 5/3	M	Reddish brown sand with gravel. Gravel is mostly gray and reddish brown sandstone; arkose, and phyllite with lesser amounts of other lithologies listed above. Sand is mostly medium to coarse, angular to subangular lithic grains.
380		35	65	tr	SW	2.5 YR 5/3	M	Reddish brown sand with gravel. As above. Trace buff-colored limestone with black microfractures.
390		55	45	tr	GP	2.5YR 5/3	M	Reddish brown gravel with sand. Gravel composition as previously described at 360, clasts up to 3 cm diameter but mostly = 1 cm. Sand is fine to coarse lithic grains as above.
400		55	45	tr	GP	2.5YR 5/3	M	Reddish brown gravel with sand. Gravel is angular to subrounded, gray to reddish brown sandstone, arkose, siltstone, quartzite, phyllite, quartz, with only trace amount of limestone, less than previous intervals. Sand is fine to coarse-grained lithic grains and quartz. Fines if present are washed out.
410		75	25	tr	GP	2.5YR 5/2	M	Weak red gravel with sand. Gravel clasts are up to 2 cm, angular to subrounded Pinal Schist (phyllite & metamorphic quartz), gray limestone and chert, gray and reddish brown sandstone, siltstone, and arkose, white quartzite, and trace volcanics. Sand as above. Calcite-fine sand cement coatings on many pebbles.
420		70	25	5	GP	2.5YR 5/2	W	Weak red gravel with sand. Gravel to 2 cm, calcite +/- sand coatings on weathered surfaces; phyllite and metamorphic quartz derived from Pinal Schist clasts are most abundant with lesser amounts of arkosic fine-grained sandstone, medium to coarse-grained vitreous quartzite, little gray limestone and reddish brown siltstone; trace chert and greenish fine-grained sandstone.
430		80	20	TR	GP	2.5YR 5/2	W	Weak red gravel with sand. As above, but coarser with gravel clasts up to 3 cm; composed mostly of sandstone, arkosic sandstone, quartzite, and phyllite clasts, with trace aphanitic volcanics. Continued sandy calcite coatings on weathered pebble surfaces.
440		80	20	tr	GP	2.5YR 5/2	W	Weak red gravel with sand. As above; abundant phyllite, metamorphic quartz, gray and green quartz sandstone, few limestones; calcite-sand cement coatings. Clasts are subangular to subrounded, angular where broken. Sand is fine to coarse-grained, mostly lithic grains and quartz.
450		80	20	tr	GP	2.5YR 5/2 2.5YR 5/1	W	Weak red to reddish gray gravel with sand. Most clasts subangular, almost all are phyllite with little quartz derived from Pinal Schist; calcite-sand cement coatings common on weathered pebble surfaces. HCl reaction limited to cement.
460		80	20	tr	GP	2.5YR 5/2 2.5YR 5/1	W	Weak red to reddish gray gravel with sand, as above. Mostly Pinal Schist (phyllite and quartz) clasts with few sandstone clasts. Calcite-fine sand cement coatings.

Project Name: **Bisbee Mitigation Order** Boring No.: **BMO-2008-13B**

Depth (Ft)	Graphic Log	Estimated % GR	SA	Fl	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
470	Basin Fill	80	20	tr	GP	2.5YR 5/2 2.5YR 5/1 2.5YR 6/3	W	Weak red to reddish gray to light reddish brown gravel with sand, as above. Calcite-fine sand cement coatings.
480		75	25	tr	GP	2.5YR 5/2 2.5YR 5/1 2.5YR 6/3	M	Weak red, reddish gray to light reddish brown gravel with sand. Angular to subrounded = 1 cm Pinal Schist clasts in calcite-reddish brown fine grain sand matrix. Few granular quartzite pebbles. Sand is fine to coarse-grained.
490		80	20	tr	GP	2.5YR 5/2 2.5YR 5/1 2.5YR 5/3	W	Weak red, reddish gray to reddish brown gravel with sand. Composition as above. Most clasts = 1 cm with few oblong, up to 3 cm on long side. Continued calcite-fine sand cement coatings; HCl reaction restricted to cement.
500		75	25	tr	GP	2.5YR 6/3 2.5YR 5/1	W	Weak red to light reddish brown gravel with sand. Pinal Schist phyllite, metamorphic quartz and rare quartzite, subangular to subrounded clasts mostly = 3 cm with some calcite-sand surface coatings. Sand is fine to coarse-grained, reddish brown, composed of quartz and lithic grains.
510		50	45	5	GP	2.5YR 5/2	W	Weak red gravel with sand. Increased sand content. As above, but with a little arkosic sandstone, and quartz sandstone with cement dissolution texture. Pebbles are smaller (mostly = 1 cm, few larger) and more subrounded. 5% material is chunks of lithic sand grains cemented with calcareous reddish brown clay. Few clasts have calcite-sand coatings.
520	Upper Mural Limestone				Bedrock	5 YR 7/2 7.5YR 7/1	S	Pinkish gray limestone with few orange clayey fractures, 90%; basin fill clasts 10%. Few of the limestone chips show rounding with calcite-sand cement indicating a rubbly top of the formation. Limestone has few small shell fragments and few 1 mm spots of recrystallized sparry calcite; otherwise micritic. Few orange calcareous clay balls. Probably Upper Mural Limestone.
526						7.5YR 6/1 7.5YR 7/1		Gray to light gray limestone; few calcite microveinlets, patches of recrystallization, and fine shell fragments. Fractures have orange calcareous clay fillings which pass through cyclone as 15% orange clay balls, turning discharge water orange.
530						7.5YR 6/2	S	Pinkish gray limestone. Reddish orange hematite-limonite and calcareous clay filled microfractures, patches of fine recrystallization; few shell fragments, and discontinuous calcite microfractures. At 530 ft bls, changed from 11 7/8" stratex system to 9 7/8" reverse circulation tricone bit.
535						7.5YR 6/2	S	Pinkish gray limestone, micritic; rare small (1-2 mm) spots of sparry calcite; trace orange clayey limonite very locally in microfractures.
540						7.5YR 6/2	S	Pinkish gray limestone, faintly oolitic; few clear calcite microveinlets and hairline orange hematite microfracture fillings, occasionally with black opaque spotty oxides. Few orange clay balls.

Project Name: **Bisbee Mitigation Order**								Boring No.: **BMO-2008-13B**
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
550	Upper Mural Limestone					7.5YR 7/1	S	Light gray limestone, faint granular texture, some fine oolitic textures locally; 1% intergrown gray chert; weak limonite stain along a few microfractures. Few shell fragments and microfractures at 557'. Orange limonitic clay on fractures at 558'.
560						5YR 6/4	S	Light reddish brown limestone. Broken up, small chips, some stuck together with reddish yellow calcareous clay balls.
570						10YR 7/3	S	Very pale brown mix of limestone as above, clay and few clayey fine-grained sandstone chips. Bottom of limestone; top of claystone-siltstone sequence maybe the boundary between Upper and Lower Mural Limestone. Gougey; maybe faulting or slip along the limestone-clastic rock contact. Clay is mottled
575	Lower Mural Limestone					7.5YR 6/3	S	Light brown fine-grained silty sandstone and clay; clay may be generated from drilling or from pre-existing fracturing. Possibly Lower Mural Limestone.
580						2.5Y 6/4	S	Light yellowish brown soft calcareous clayey siltstone and mudstone; finely broken either by drilling process or tectonic activity.
590						2.5Y 7/3	S	Pale yellow calcareous clay-silt-fine sand mudstone. Broken and clayey as above.
595						2.5Y 6/3	S	Light yellowish brown mudstone (indurated clay, silt, fine-grained sand); combination of fairly hard silty sand layers and soft clay-rich layers; calcareous. Weak limonite stain on fracture surfaces indicates rock fractured prior to drilling.
600						10YR 5/1	S	Gray claystone, with few scattered yellow spots and reddish streaks. Soft and malleable like modeling clay when wet.
604						10YR 7/2	S	Light gray calcareous mudstone (clay, silt, fine-grained sand) with few limonitic microfractures and rare black fine dendrites.
610						10YR 7/2 10YR 6/4	S	Light gray calcareous clayey siltstone chips and light yellowish brown soft clay mix. May represent interbedded siltstone and softer claystone.
620						2.5Y 7/3	M	Pale yellow clayey calcareous siltstone.
630						2.5Y 7/3	M	Pale yellow clayey calcareous siltstone; as above.

Project Name: **Bisbee Mitigation Order** Boring No.: **BMO-2008-13B**

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
640	Lower Mural Limestone					2.5Y 8/2 2.5YR 7/3	M	Pale yellow clayey calcareous siltstone and mudstone. Few small =5 mm maroon spots, few small black dendrites on fractures, trace calcite veinlets.
650						10YR 6/1	S	Gray granular sandy limestone. Crystalline limestone with fine oolites; sandy limestone with quartz, red jasperoid, dark opaque, and green fine sand grains; grading to calcareous fine-grained arkose.
660						2.5YR 6/3 5YR 7/2		Light yellowish brown to brown and pale yellow clayey siltstone (80%) and pinkish gray limestone (20%). Limestone has some gray shell fragments and small patches of crystalline calcite. Limonite in microfractures are present locally in the siltstones.
670						10YR 6/1 2.5Y 7/4	M	Gray fine-grained calcareous arkose (50%) and pale yellow calcareous siltstone (50%).
672						10YR 6/1	M	Gray fine-grained calcareous arkose.
679						2.5Y 5/1	S	Gray soft claystone, forms sticky clay when ground by drilling; repeatedly plugged bit and crossover.
680						2.5Y 6/3 5 YR 6/2	S	Light yellowish brown siltstone and claystone, with a small amount of pinkish gray siltstone. Pinkish gray siltstone chips may represent pinkish patches within the more generally yellowish brown strata.
685						2.5Y 6/3 10YR 7/3	S	80% light yellowish brown calcareous siltstone and 20% very pale brown limestone. Limestone has shell fragments and local recrystallized calcite patches. Few pinkish gray siltstone chips also present in sample.
690						2.5Y 7/3	S	Pale yellow calcareous clayey siltstone.
696						2.5Y 7/3	S	Pale yellow calcareous soft, sticky claystone and pale yellow siltstone.
700						2.5Y 7/3 2.5Y 6/2	S	Pale yellow calcareous claystone and light brownish gray siltstone and very fine-grained silty sandstone. The clay/claystone is soft, sticky, and repeatedly plugged up the bit and drill pipe. **TD = 700 ft bls on 8/24/08. Hole caved, bottom 180 ft abandoned.**

HYDRO GEO CHEM, INC.

Geologic Boring Log

		Boring No.:	**BMO-2008-13M**
Project Name:	**Bisbee Mitigation Order**		Project No: 872000
Drilling Company:	WDC Exploration and Wells	Driller:	William Berg
Site Plan at Boring Location:		ADWR Registration No.:	**55-909760**
		Drilling Equipment:	GEFCO Speedstar 50K
		Drilling Method:	Stratex; Tricone air-rotary RC
		Bit Type/Size:	12" Stratex; 10" tricone
		Total Borehole Depth:	1100 ft bls
		Casing Depth:	1030 ft bls
		Screened Interval:	920 -1020 ft bls
		Screen slot size:	0.125 inch vertical slots
		Filter pack type:	#8 Tacna gravel
		Top of Casing Elevation:	4647.15 ft
		Land surface Elevation:	4646.67 ft
		Date/Time Started:	9/17/2008 14:15
		Date/Time Completed:	11/11/2008 10:00
Township, Range, Section: T 24 S, R 24 E, Sec. 8 BCA		Logged by:	K. Wilson, W. Thompson
UTM: 3470040.455 N, 601650.495 E, NAD 83		Checked by:	K. Wilson and R. Zimmerman

Depth (Ft)	Graphic Log	Estimated % GR	SA	FI	USCS Symbol	Munsell Color	HCl Rxn	Sample Description
10	Basin Fill	60	25	15	GM	7.5YR 8/2	S	Pinkish white silty gravel with sand, well-cemented with hard caliche. Gravel fraction is composed of angular clasts of gray to brownish gray micritic to granular limestone with rare chert. Gravel is in caliche matrix composed of calcium carbonate cemented sand, silt and little clay. Caliche is hard, breaking to angular chunks during drilling. Sand is fine to coarse-grained quartz and lithic grains.
20		5	10	85	CL	5 YR 6/4	S	Light reddish brown calcareous silty clay; well-compacted, passed through cyclone as cohesive chunks.
30		20	45	35	SC	5YR 8/3	S	Pink clayey sand with gravel, moderately well-cemented with caliche. Gravel is =2 cm, composed primarily of angular to subangular gray limestone clasts with few white quartzite clasts. Sand is fine to coarse-grained quartz and lithic grains. Caliche matrix varies from hard with crystalline calcite to clayey and friable.
40		50	25	25	GC	5YR 7/4	S	Pink clayey gravel with sand, moderately well-cemented with caliche. Gravel is =3 cm diameter, mostly gray micritic limestone with little oolitic limestone, with lesser amounts of reddish brown siltstone, greenish gray fine-grained sandstone, white quartzite and rare milky quartz. Sand as above; caliche as above.
50		15	50	35	SC	5 YR 8/4	S	Pink clayey and silty sand with gravel, moderately well- cemented with caliche. Gravel is subangular to subrounded limestone and clastic pebbles =1 cm diameter. Sand is fine to coarse-grained in clayey silty carbonate matrix. Caliche varies from hard crystalline calcite cement to softer friable material with swelling clays.
60		65	20	15	GM	5YR 7/2	S	Pinkish gray silty gravel with sand, moderately to well cemented by crystalline to soft clayey caliche. Gravel is angular to rounded, =2 cm diameter, primarily gray limestone, greenish gray fine grained sandstone with small amounts of quartz and siltstone. Sand is fine to coarse-grained quartz and lithic grains.
70		10	50	40	SC	5YR 6/3	S	Light reddish brown clayey sand. Gravel as above; sand is fine to coarse-grained, poorly graded quartz and lithic grains. Clay matrix is calcareous, swelling when wet. Few caliche (calcite, clay, fine sand mix) coatings on gravel.

Project Name:	Bisbee Mitigation Order							Boring No.: BMO-2008-13M
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
80	Basin Fill	60	20	20	GC	2.5YR 7/3	S	Light reddish brown clayey gravel with sand. Gravel is primarily gray limestone with some yellow recrystallized limestone with disseminated oxidized pyrite, and few reddish brown siltstone, green siltstone and milky quartz clasts. Fine carbonate-silt sand coatings on some surfaces. Sand is coarse to fine-grained, poorly graded, quartz and lithic grains.
90		35	45	20	SM	2.5YR 7/2 2.5YR 6/2	S	Pale red silty sand with gravel. Gravel is angular to subangular clasts =2 cm diameter with a few =1 cm rounded pebbles. Gravel clasts are a mix of gray sandstone, greenish yellow and reddish brown siltstone, gray limestone, and trace phyllite and quartz, compositional change relative to previous intervals marked by decreased limestone, increased clastics, appearance of gray sandstone and phyllite. Pink caliche coatings on many faces. Sand is predominately lithic grains, fine to coarse grained, moderately well-graded.
100		85	5	10	GP-GC	5YR 7/3	S	Pink gravel with clay. Pink color is imparted by calcareous clay matrix and of caliche coatings on the gravel clasts. Gravel is light to dark gray, greenish to pale red when washed; composed of gray limestones, gray sandstone, reddish brown siltstone, and fine-grained sandstone with trace phyllite, black chert, and epidote-chlorite-calcite clasts (in order of decreasing abundance).
110		65	20	15	GC	2.5YR 7/3	S	Light reddish brown clayey gravel with sand. Gravel is mostly is =2.5 cm, oblong to equidimensional, grading to coarse sand. Clasts are angular to subrounded, with subrounded material being finer pebbles. Sand is coarse to fine-grained. Caliche chunks generated during drilling are 10% of the sample gravel fraction. Gravel composition is as previous interval.
120		65	20	15	GC	2.5YR 7/2	S	Pale red clayey gravel with sand. Gravel clasts are angular to subrounded, =4 cm on long side oblong to equidimensional, composed primarily of gray limestone and fine-grained brownish gray sandstone with lesser amounts of chert, and Pinal Schist-derived phyllite and metamorphic quartz. Sand is coarse to fine-grained, with coarser sand mostly lithic grains and fine sand mostly quartz. Soft clayey to hard caliche matrix.
130		60	30	10	GP-GC	2.5YR 7/2	M	Pale red gravel with clay and sand. Pale red color is imparted by color of fines. Gravel and sand are mottled brown gray, green and white with few reds and yellow when washed. Gravel composition has changed relative to above intervals to primarily brown, gray, and green sandstone and siltstones, with some phyllite and little limestone. Gravel is angular to rounded = 1 cm diameter, some with calcite-sand-clay coatings. HCl reaction strong in fine fraction; moderate in sand and gravel.
140		85	10	5	GP	2.5YR 6/3	S	Light reddish brown gravel. Gravel composition is as above but coarser, up to 4 cm on long side; mostly angular to subangular; calcite-sand cement coatings are common.
150		65	25	10	GP-GM	5YR 6/3	S	Pale red gravel with silt and sand. Clasts are = 3 cm, angular to rounded, composed of sandstone, siltstone, phyllite, metamorphic quartz, and limestone. Calcite-fine sand coatings on some surfaces. Sand is coarse to fine-grained, composed of quartz and lithic grains.
160		50	35	15	GM	2.5YR 6/3	S	Light reddish brown silty gravel with sand. As above with larger sand fraction.

Project Name:	Bisbee Mitigation Order							Boring No.: BMO-2008-13M
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
170	Basin Fill	70	15	15	GC	2.5YR 7/3	S	Light reddish brown clayey and silty gravel with sand. Clasts are up to 3 cm on long side, but most are =1 cm; angular to rounded, composed of gray to brown sandstone, siltstone, limestone, phyllite, and chert; some calcite-sand cement coatings. Sand as above.
180		60	20	20	GC	2.5YR 6.3	S	Light reddish brown clayey and silty gravel with sand. As above with little green siltstone and sandstone clasts in addition.
190		45	35	20	GC	2.5YR 6/3	S	Light reddish brown clayey and silty gravel with sand; clay-calcite-fine sand cement. Gravel clasts are mostly =1.5 cm, angular to subrounded; abundant subrounded pebbles, composition as above. Sand is fine to coarse-grained, angular to subrounded, composed of lithic grains and quartz.
200		40	35	25	GC	2.5YR 6/3	S	Light reddish brown clayey gravel with sand, caliche-like cement chunks generated by drilling and as coatings on some gravel clasts. As above but gravel is finer, with most clasts = 1 cm. Sand as above.
210		80	10	15	GC	2.5YR 6/3	S	Light reddish brown clayey gravel. Gravel clasts are subangular to subrounded, equidimensional to oblong, up to 4 cm on long side. Caliche-like cement and coatings on some surfaces. Gravel composition continues to be primarily clastics with lesser limestone, phyllite, quartz, and rare chert. Sand as above.
220		35	45	20	SC	2.5YR 6/3	S	Light reddish brown clayey sand with gravel. Gravel clasts are angular to subrounded, up to 2 cm diameter, but mostly =1 cm, grading to coarse sand. Calcite-sand cement coatings. Gravel composition is variably colored sandstone and siltstone, with lesser gray limestone, phyllite and quartz. Sand as above.
230		50	30	20	GC	2.5YR 7/3	S	Light reddish brown clayey gravel with sand. Gravel and sand as above with trace light gray speckled limestone clasts in addition; calcite-sand cement coatings.
240		50	30	20	GC	2.5YR 6/3	S	Light reddish brown clayey gravel with sand. Gravel clasts are up to 3 cm, but mostly =1 cm pebbles; angular to subrounded sandstone, siltstones, gray and brown limestone, phyllite, quartz, and fine fossiliferous brown and gray limestone; calcite-fine sand cement coatings. Sand as above.
250		60	30	10	GP-GC	2.5YR 6/2	M	Pale red gravel with clay and sand. Gravel is =1 cm in diameter, angular to subrounded; lithologic composition as above. Sand as above.
260		55	40	5	GP	2.5 YR 6/2	M	Pale red gravel with sand. As above.
270		65	30	5	GP	2.5YR 6/2	M	Pale red gravel with sand. Gravel clasts are =2 cm diameter, angular to rounded, composed of variably colored sandstones with lesser siltstone, light gray micritic to black crystalline limestone, phyllite and quartz derived from Pinal Schist, and grayish brown chert. Sand as above. Calcite-fine sand cement coatings on some clasts.
280		45	50	5	SP	2.5YR 6/1, 6/2. 6/3	M	Mottled reddish gray, pale red, and light reddish brown sand with gravel. Gravel =2 cm, angular to subangular. Sand coarse to fine lithic grains and lesser quartz. Calcite sand cement on gravel clasts.

Project Name:		Bisbee Mitigation Order						Boring No.: BMO-2008-13M
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
290	Basin Fill	65	30	5	GP	2.5YR 6/1, 6/2,6/3	M	Mottled reddish gray, pale red, and light reddish brown gravel with sand. Gravel and sand fractions as above.
300		45	50	5	SP	2.5YR 6/3	M	Light reddish brown sand with gravel. Gravel to 2 cm, mottled reddish gray, pale red to light reddish brown; angular to subrounded, sandstone, limestone, phyllite, and siltstone clasts; local calcite-sand cement coatings. Sand fine to coarse lithic grains and quartz.
310		65	30	5	GP	2.5 YR 6/3	M	Light reddish brown gravel with sand. Gravel is mottled reddish gray, pale red to light reddish brown; = 2 cm diameter; angular to subrounded sandstone, phyllite, limestone, siltstone, and quartz clasts. Sand as above.
320		65	30	5	GP	2.5YR 6/3	M	Light reddish brown gravel with sand. Gravel is mottled pinkish white, light reddish gray, pale red to light reddish brown sandstone, phyllite, quartz, limestone, and siltstone. Sand as above. Calcite-fine sand cement.
330		60	30	10	GP-GM	2.5YR 6/3	M	Light reddish brown gravel with silt and sand. Gravel is angular to rounded, mostly subangular =2 cm clasts of sandstone, quartzite, limestone, siltstone, phyllite, and quartz. Sand as above. Calcite-fine sand cement.
340		65	30	5	GP	2.5YR 6/3	M	Light reddish brown gravel with sand. Gravel angular and subrounded with minor rounded gray limestones, arkosic sandstone, fine-grain greenish gray quartzite, Pinal Schist phyllite, and metamorphic quartz; calcite sand coatings. Sand as above.
350		65	30	5	GP	2.5YR 6/3	M	Light reddish brown gravel with sand. Polymictic gravel composed of quartz, sandstone, siltstones, limestones, and Pinal Schist derivatives. Calcite-sand cement. Sand as above.
360		65	30	5	GP	2.5YR 6/3	M	Light reddish brown gravel with sand. Gravel is mottled reddish gray, pale red, reddish brown; composed of limestone, sandstone, siltstone, Pinal Schist, and trace chert; =2 cm angular to subrounded clasts. Sand as above.
370		65	30	5	GP	2.5yr 6/3	M	Light reddish brown gravel with sand. Gravel is mottled reddish gray, gray, pale red, reddish brown to white; =2 cm diameter angular to subrounded clasts of sandstone, limestone, and Pinal Schist. Sand is coarse to fine-grained, well-graded; lithic grains with quartz in the finer sand fraction. Calcite-sand cement.
380		65	30	5	GP	2.5YR 5/2	M	Weak red gravel with sand; as above with a few yellowish brown calcareous sandstone clasts. Rig chatter indicates presence of some coarse cobbles.
390		65	25	10	GP-GM	2.5YR 6/2	M	Pale red gravel with silt and sand. Gravel clasts are gray, pale red to white; primarily limestone, Pinal Schist phyllite and quartz, with smaller amount of sandstone, and little siltstone. Rig chatter indicates presence of some cobbles. Sand as above.
400		65	25	10	GP-GM	2.5YR 6/2	M	Pale red gravel with silt and sand. Gravel clasts are pale red, light red dark gray, white and weak red; angular to subangular with few subrounded; composed primarily of sandstone and siltstone with lesser Pinal Schist and small amount of gray limestone. Calcite-fine sand cement coatings. Sand as above.

Project Name:	Bisbee Mitigation Order							Boring No.: BMO-2008-13M
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
410	Basin Fill	70	25	5	GP	2.5YR 6/2	M	Pale red gravel with sand. Gravel coloration and composition as above; clasts = 3 cm, angular to rounded. Sand as above. Calcite sand cement.
420		65	25	10	GP-GM	2.5YR 6/2	M	Pale red gravel with silt and sand. Gravel coloration and composition as above with trace chert. Clasts are mostly =2 cm in diameter with the exception of a few 4 cm; clasts angular to subrounded; calcite-sand cement coatings.
430		70	25	5	GP	2.5YR 6/3	M	Light reddish brown gravel with sand. Gravel is mostly reddish gray to light reddish brown; = 2 cm diameter angular to subrounded clasts of Pinal Schist phyllite with lesser sandstone and little limestone. Sand as above; calcite-sand cement common.
440		65	25	10	GP-GM	2.5YR 6/2	M	Pale red gravel with silt and sand. Gravel is pale red, reddish gray, white, and light reddish brown; clasts = 2cm diameter, few angular with mostly subangular to rounded; few with calcite sand cement. Gravel lithologic composition as above. Sand as above.
450		65	25	10	GP-GM	2.5YR 6/2	W	Pale red gravel with silt and sand. Gravel clasts are = 2 cm diameter, oblong to equidimensional, angular to rounded; pale red, weak red to reddish brown with few white clasts; composed dominantly of Pinal Schist-derived phyllite and quartz, with lesser sandstone. Calcite-sand coatings. Sand as above. HCl reaction restricted to cement and fines.
460		50	35	15	GM	2.5YR 6/2	M	Pale red silty gravel with sand. Gravel is mostly = 2 cm diameter, colored as above with trace greenish gray; dominantly Pinal Schist with lesser sandstone, siltstone, and trace limestone. Lacks calcite-sand coatings as seen in previous intervals. Sand as above.
470		35	45	20	SM	2.5YR 6/3	M	Light reddish brown silty sand with gravel. Gravel fine = 1 cm with very few =2 cm clasts, angular to subrounded, composed primarily of phyllite and metamorphic quartz derived from Pinal Schist, sandstone, and siltstone clasts. Sand is coarse to fine-grained; well-graded, composed primarily of lithic grains and smaller amounts of quartz. Few calcite-sand coatings.
480		45	40	15	GM	2.5YR 6/2	M	Pale red silty gravel with sand. Gravel and sand characteristics as previous interval.
490		45	40	15	GM	2.5YR 6/3- 2.5YR 6/2	M	Light reddish brown to pale red silty gravel with sand. As above; few calcite-sand coatings.
500		40	45	15	SM	2.5YR 6/2	M	Pale red silty sand with gravel. Gravel is as above with some calcite-sand coatings. Sand is mostly coarse-grained, poorly graded. Sand is mostly phyllite lithic grains and quartz.
510		20	65	15	SM	2.5YR 6/2	M	Pale red silty sand with gravel. As above, with larger percentage of sand. Few clay balls.

Project Name:	Bisbee Mitigation Order							Boring No.: BMO-2008-13M
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
520	Upper Mural Limestone				bedrock	5YR 7/2	S	Pinkish gray limestone; bedrock. Sample contains about 15% Pinal Schist fine gravel and sand-sized lithic grains, which are likely washing down from above. Limestone has few orangish clay coatings in fractures. Possibly Mural Limestone.
530						7.5YR 7/2	S	Pinkish gray limestone. Fine grained, micritic, locally oolitic; fossiliferous with fine shell fragments. Localized fine breccia textures. Few orange microfractures.
540						7.5YR 7/1	S	Light gray limestone. Limestone is finely crystalline, with few calcite microfracture fillings; fine few mm smooth convex and pectin shell fossil fragments replaced by calcite. Trace very fine-grained oxidized disseminated pyrite. Small amount of sandstone of same color also present; may represent thin sandstone interbed within the limestone.
550						7.5YR 7/1	S	Light gray limestone, finely crystalline, calcite in hairline microfractures, few orange limonite-calcite 1 mm fracture fillings. Rare shell fragments. Trace disseminated partially oxidized disseminated pyrite. Basin fill sand is washing down from the uncased 240-520' zone, and mixing with the bedrock samples.
560						7.5YR 7/1	S	Light gray limestone, as above. Hairline to 1 mm wide orange to yellow limonite +/- calcite fracture fillings. No fossils. Orange microfractures are not as abundant or as clayey as those seen in BMO-2008-13B.
570						7.5YR 7/1	S	Light gray limestone, finely crystalline, no fossils observed. Few hairline fractures with maroon hematite fillings.
580						10YR 7/2	S	Light gray argillaceous limestone, with small shell fossil fragments replaced by clear calcite.
587						10YR 7/2	S	Light gray micritic limestone with some small relic fossil shell textures.
590						10 YR 6/1	S	Gray micritic limestone, with local patches of fine sparry recrystallization. Rare small fossil shell textures.
600						10 YR 6/2	S	Light brownish gray limestone, micritic to finely crystalline, slightly argillaceous; few small shell fragments.
605						7.5YR 7/1	S	Light gray micritic limestone with = 1 mm orange limonite-clay-calcite microveinlets.
607						10YR 6/2	S	Light brownish gray limestone. Rare =1 mm fractures filled with orange to white calcite.
610						7.5YR 6/1 10YR 7/3	S	Mixed very pale brown argillaceous limestone with shell fragments and gray micritic limestone with no fossils.
612						7.5YR 5/1	S	Uniform gray micritic limestone, slightly argillaceous, with few small fossil shell fragments replaced by clear calcite.
614						7.5YR 5/1 - 7.5YR 6/2	S	Gray granular textured to light brown micritic limestone, few orange calcite-clay fracture fillings up to 2 mm wide.
616						7.5YR 5/1	S	Gray micritic to fine crystalline limestone, slightly argillaceous; few white calcareous clay fracture coatings.
620						7.5YR 6/1	S	Gray fine granular textured limestone with abundant small shell fragments replaced by clear calcite.

Project Name:	Bisbee Mitigation Order							Boring No.: BMO-2008-13M
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
626	Lower Mural Limestone					5 Y 5/1	S	Gray clay and little gray claystone. Material is mostly soft sticky plastic clay with few soft claystone chips. Little black disseminated free carbon which floats on top of water once liberated during drilling. This interval may be the top of the Lower Mural Limestone.
630						2.5YR 5/1	S	Gray calcareous mudstone. Mostly silty claystone with some local fine sandy silty claystone (mudstone).
639						2.5YR 5/1	S	Gray calcareous mudstone; mostly silty clay with local very fine sand.
640						2.5Y 6/1	S	Gray muddy limestone with few shell fragments and calcareous gray clay and soft claystone.
646						2.5Y 5/1	S	Gray mudstone. Clayey layers soft; silty sandy, hard gray calcareous mudstone.
650						2.5YR 5/1	S	Gray calcareous mudstone clayey and siltstone with very fine sand; clay balls, soft claystone.
651						GLEY1 5/N	S	As above with less clay and more very fine-grained sand.
657						GLEY1 5/N	S	Gray calcareous mudstone as above.
660						GLEY1 6/1	S	Gray calcareous mudstone; mostly clay and silt, less sandy than above.
670						2.5YR 6/2 to 6/3	S	Light brownish gray to light yellowish brown, strongly calcareous fine-grained sandstone and sandy siltstone, to sandy limestone.
680						10YR 6/1	W	Gray fine-grained arkosic sandstone; slightly argillaceous, calcareous matrix.
684						2.5Y 8/2	M	Pale yellow fine-grained arkosic sandstone and clayey silty fine-grained sandstone/mudstone.
689						10 YR 6/1	M	Gray fine-grained arkosic sandstone. Sand is quartz with few red black and rare green opaques; argillaceous, calcareous matrix.
690						2.5Y 7/1	S	Light gray clayey arkosic fine-grained sandstone. As above with greater clay content. Probably arkosic sandstone as above with thin more argillaceous lamina.
700						2.5 Y 5/1	M	Gray mudstone, from soft claystone to harder silty and fine sandy claystone. Moderately calcareous; carbonaceous.
703						2.5Y 6/2	S	Light brownish gray calcareous clay, claystone, clayey siltstone finely interlaminated.
708						2.5Y 7/2, 2.5Y7/3	S	Light gray to pale yellow limestone with abundant small shell fragments replaced by clear to reddish yellow crystalline calcite.
710						5y6/2	M	Light olive gray calcareous claystone, silty claystone, and clay balls.
712						2.5Y 6/3	M	Light brownish gray argillaceous calcareous fine-grained arkosic sandstone with little siltstone, few small gray shell fragments.
714						2.5Y 8/2	S	Pale yellow mudstone, varying ratios of clay, silt and sand.
720						2.5Y 8/2	S	Pale yellow sandy mudstone. Sand grains are fine-grained, supported in a matrix of clay and silt.
722						10YR 8/2 to 5YR 7/2, 2.5YR 7/2	M	Pale brown to pinkish gray fine-grained quartz sandstone. Sand grains are well sorted, calcite cement. Sandstone bed from 722 - 729 ft bls.

Project Name:	Bisbee Mitigation Order							Boring No.: BMO-2008-13M
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
730	Lower Mural Limestone					2.5Y 8/3	M	Pale yellow mudstone composed of clay, silt, and sand, grading to argillaceous silty sandstone.
731						10R 8/3	M	Pink quartz sandstone, fine to medium-grained, calcareous cement.
735						2.5YR 7/2	M	Pale red quartz sandstone, fine-grained calcite cement.
740						2.5Y 8/1	M	Pale yellow clayey, silty sandstone; fine-grained, calcareous argillaceous matrix.
743						10YR 8/2	W	Very pale brown fine-grained sandstone, argillaceous calcareous matrix.
750						5Y 6/1	W	Gray mudstone, moderately soft when wet, composed of fine sand, silt and clay, and sandy siltstone.
760						2.5Y 5/1	W	Gray mudstone, soft clayey with soft and locally fine sand, carbonaceous. Free fine carbon floats on water in hopper after liberation during the drilling process. Silty layers are more HCl-reactive than clayey material.
770						5Y 5/1	W	Gray mudstone, clay, claystone and clayey siltstone; carbonaceous. Locally carbon can be seen concentrated along fine laminae.
780						GLEY1 5/N	M	Gray calcareous, carbonaceous, silty fine-grained sandstone (80%) and 20% pink fine-grained sandstone (20%).
784.5						GLEY1 5/N	M	Gray calcareous fine-grained sandstone with 1 mm white calcite veinlets. Siltstone bed with carbon flecks that appear to be fine plant fragments at 789.
790						GLEY1 5/N	W	Gray carbonaceous soft claystone.
793						GLEY1 5/N	W	Gray carbonaceous mudstone composed of clay, silt and fine sand.
799						GLEY1 6/N	S	Gray muddy limestone with shell fragments.
800						GLEY1 5/N	M	Gray clayey carbonaceous calcareous siltstone. Visible fine carbon fragments.
810						GLEY1 4/N	M	Dark gray carbonaceous calcareous claystone, moderately soft; sample is mixed claystone chips and clay balls formed during drilling; some silty claystone also present.
820						5 Y 5/1	M	Gray carbonaceous calcareous claystone to fine-grained sandy mudstone. Claystone and clay balls more HCl-reactive than the sandy mudstone.
830						GLEY1 5/N	M	Gray claystone to silty claystone; calcareous, carbonaceous. Few chips of pale yellow limestone.

Project Name:	Bisbee Mitigation Order							Boring No.: BMO-2008-13M
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
840	Lower Mural Limestone					GLEY1 5/N	S	Gray calcareous siltstone to mudstone.
841						GLEY1 4/1	S	Gray carbonaceous clayey limestone with shell fragments.
845						GLEY1 4/1	S	Gray argillaceous limestone to calcareous clayey siltstone with scattered shell fragments.
850						GLEY1 5/N	S	Gray carbonaceous calcareous clayey siltstone to claystone.
860						GLEY1 5/N	S	Gray clay and claystone. Clay 80-90% of sample, is very soft, plastic, sticky, cohesive, calcareous. Claystone is soft, slightly platy.
865						GLEY1 5/N	S	Gray clay, claystone, silty claystone, sandy mudstone.
870						GLEY1 5/N	S	As above.
875						GLEY1 5/N	S	As above, clay content has decreased to about 10% of sample. Very small amount of a fine-grained reddish sandstone, calcareous cement.
880						GLEY1 5/N	S	Gray silty claystone, clay, and fine-grained clayey quartz sandstone.
885						GLEY 1 5/N	S	Gray claystone, clay, little siltstone. Claystone soft, platy, calcareous; 30% clay fraction soft, plastic, cohesive, calcareous.
890						GLEY1 5/N	S	Gray calcareous fine-grained sandstone to fine sandy limestone; hard.
895						GLEY1 5/N	S	Gray claystone, clay, and clayey siltstone, mudstone. Claystone soft, slightly platy, calcareous. 15% clay fraction soft, moderately plastic, cohesive.
900						GLEY1 5/N	M	Gray quartz sandstone, fine-grained, calcareous cement, hard; and some fine sandy limestone.
905						GLEY1 6/N	M	Gray fine sandy mudstone, siltstone, claystone, clay, little sandstone; calcareous cementation. 5-10% soft, sticky, moderately plastic clay.
910						GLEY1 6/N	M	Interbedded gray sandstone, sandy siltstone with some clay; small amount of sandy limestone.
915						GLEY1 5/N	M	Gray silty, sandy claystone (mudstone). Sand fraction very fine-grained, fairly hard, calcareous cementation.
920						GLEY1 5/N	M	Gray clay, claystone, silty claystone. Claystone soft, calcareous; 30-40% clay soft moderately plastic, cohesive.
925						GLEY1 5/N	M	As above, 40% fine-grained, hard gray limey sandstone to sandy limestone.
930						GLEY1 5/N	M	Gray clay, claystone, silty claystone and sandstone; sandstone fine-grained with calcareous cement; hard.
935						GLEY1 5/N	S	Gray sandstone. Fine-grained, hard, composed primarily of quartz grains with calcareous cementation.
940						GLEY1 5/N	S	Interbedded gray sandstone, mudstone, calcareous claystone. 10% calcareous clay, very soft, plastic, cohesive.
945						GLEY1 6/N	S	Gray fine-grained calcareous sandstone, siltstone, little limestone and silty limestone. Well-indurated.

Project Name:	Bisbee Mitigation Order							Boring No.: BMO-2008-13M
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
950	Lower Mural Limestone					GLEY1 6/N	S	Gray fine-grained, well-indurated quartz sandstone with calcareous cement and trace carbonaceous material along laminae. 10% soft gray mudstone and 3% pink sandstone.
960						GLEY1 6/N	M	Gray siltstone, claystone, argillaceous limestone, sandstone and little clay. 2-3% soft, moderately plastic, calcareous clay.
970						GLEY1 6/N	S	Gray mudstone and clay. Mudstone soft, calcareous; 25% soft plastic, cohesive, calcareous clay.
980								As above.
985						7.5YR 6/1	M	Gray sandstone, fined-grained, hard, calcareous, mostly quartz grains with few white and black opaque grains.
990						7.5YR 6/1	M	Gray fine-grained quartz sandstone, calcareous cement.
1000						GLEY1 5/N	M	Gray claystone, silty claystone; soft, slightly platy, with calcareous cement; 20% very soft, moderately plastic, cohesive, calcareous clay; trace reddish brown sandstone, .
1005						GLEY1 7/N	M	Light gray arkosic fine-grained sandstone, well-indurated, hard, calcareous cement.
1010						GLEY1 7/N	M	Light gray to gray, fine-grained sandstone with calcareous cement.
						GLEY1 5/N	M	
1015						GLEY1 5/N	M	Gray fine-grained sandstone with calcareous cement; soft siltstone silty claystone with calcareous cement; 15% very soft, moderately plastic, cohesive, calcareous clay.
1020						GLEY1 5/N	M	Gray, moderately soft, sandy clay-rich, calcareous mudstone.
1025						GLEY1 5/N	M	Gray clay, soft, plastic, cohesive, calcareous; silty claystone; trace limestone and pink sandstone.
1030						GLEY1 5/N	M	Gray fine-grained, hard, calcareous sandstone.
1035						2.5YR 7/1	M	Light gray, fine-grained, calcareous sandstone; hard; little dark gray laminated, platy, calcareous claystone.
1040						2.5YR 7/1	M	Light gray, fine-grained, well-indurated, calcareous sandstone and 10% dark gray, very soft, plastic, cohesive, calcareous clay.
						GLEY1 4/N	M	
1045						2.5YR 7/1	M	As above, with slightly less clay.
						GLEY1 4/N		
1050						2.5YR 7/1	M	Interbedded, light gray, hard, fine-grained, calcareous, sandstone; moderately soft, calcareous siltstone and claystone; very soft, moderately plastic, cohesive clay.
1055						2.5YR 7/1	M	As above.

Project Name:	Bisbee Mitigation Order					Boring No.: BMO-2008-13M		
Depth (Ft)	**Graphic Log**	**Estimated %**			**USCS Symbol**	**Munsell Color**	**HCl Rxn**	**Sample Description**
		GR	**SA**	**FI**				
1060	Lower Mural Limestone					2.5YR 7/1	M	Interbedded, light to dark gray, claystone, siltstone, and sandstone, with soft, moderately plastic, cohesive clay.
						GLEY 4/N		
1065						GLEY 4/N	S	Dark gray, soft; plastic, cohesive, sticky, calcareous clay with some mudstone and claystone.
1070						GLEY 4/N	S	Dark gray clay, claystone, and 20% fine-grained, calcareous sandstone.
1075						GLEY 4/N	M	Dark gray, hard, fine-grained, calcareous sandstone.
1080						GLEY 5/N	S	Gray mudstone; with 30% gray well-indurated fine-grained, calcareous sandstone and 20% gray limestone.
1090						GLEY 5/N	S	Gray calcareous, claystone, and limey cherty, with small amount of clay.
1095	Morita Formation					GLEY1 6/N	M	Gray very fine-grained, well-indurated, calcareous sandstone. May be top of Morita Formation
1100						2.5YR5/1	M	Reddish gray to gray calcareous sandstone; probably Morita Formation.
								TD = 1100 ft bls at 10:00 on 11/11/2008.

APPENDIX K

WATER QUALITY DATA COLLECTED DURING DRILLING OF BMO-2008 WELLS

APPENDIX K

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TABLES

TABLE K.1
BMO-2008-1G Reconnaissance Water Sampling Results

Sample Depth ft bls	pH SU	Temperature °C	EC µS/cm	TDS ppm	Field Sulfate mg/L	Laboratory Sulfate mg/L
Reconnaissance Groundwater Samples						
210	7.89	28.6	854	422	128	100
230	7.86	30.7	905	455	135	120
240	8.04	27.6	908	452	140	120
260	8.01	28.7	932	465	143	120
280	8.25	26.3	933	465	148	130
300	8.26	27.7	938	469	148	130
320	8.14	29.4	983	488	155	160

Notes:

ft bls = feet below land surface

SU = Standard units

µS/cm = microsiemens per centimeter

° C = Degrees Celsius

ppm = parts per million

mg/L = milligrams per liter

Field sulfate measurements conducted with an Orion AQ4000 Colorimeter

TABLE K.2
BMO-2008-3B Reconnaissance Water Sampling Results

Sample Depth ft bls	pH SU	Temperature °C	EC µS/cm	TDS ppm	Field Sulfate mg/L	Laboratory Sulfate mg/L
Reconnaissance Groundwater Samples						
156	7.52	27.0	675	377	150	140
170	7.69	28.4	792	390	200	200
190	7.78	22.7	718	363	200	190
220	8.05	22.3	883	441	270	300
240	7.90	23.2	711	356	150	200
260	8.11	22.2	581	290	120	110
270	7.28	24.0	685	342	160	150
280	7.80	24.1	652	326	150	140
300	7.89	22.3	658	327	140	130
320	7.74	21.2	623	311	130	120
340	7.76	23.5	607	305	130	110
360	7.74	23.5	587	294	120	110
380	7.83	23.7	557	277	97	87
400	7.77	23.7	570	285	94	90
420	7.72	24.2	555	276	110	90
440	7.78	24.0	497	249	63	59
460	7.91	23.4	495	247	49	51
480	7.78	24.4	496	249	56	53
500	7.59	22.4	520	260	65	63
520	7.78	22.5	562	280	110	94
540	7.90	24.3	523	262	80	66
560	7.76	24.5	544	270	94	81
580	7.85	24.2	532	266	86	76

Notes:

ft bls = feet below land surface
SU = Standard units
µS/cm = microsiemens per centimeter
^{o}C = Degrees Celsius
ppm = parts per million
mg/L = milligrams per liter
Field sulfate measurements conducted with an Orion AQ4000 Colorimeter

TABLE K.3
BMO-2008-4B Reconnaissance Water Sampling Results

Sample Depth ft bls	pH SU	Temperature °C	EC µS/cm	TDS ppm	Field Sulfate mg/L	Laboratory Sulfate mg/L
Reconnaissance Groundwater Samples						
180	7.00	23.0	939	499	324	430
200	7.19	15.1	1,143	577	666	570
220	7.32	15.4	1,637	819	813	700
240	7.42	18.6	1,471	735	--	--
260	7.41	19.0	893	443	--	260
280	7.42	20.7	797	398	--	190
300	7.66	19.3	751	374	192	170
320	7.70	21.8	1,005	503	--	300
340	7.48	22.0	922	460	--	280
360	7.33	22.3	903	452	300	270
380	7.50	22.0	912	458	--	280
400	7.39	22.3	888	444	--	260
420	7.39	21.5	880	439	262	250
436	7.27	18.7	853	426	271	260
440	7.54	18.9	960	482	--	310
460	7.60	19.8	878	437	--	240
480	7.43	21.3	848	423	--	230
500	7.36	22.9	801	400	--	220
520	7.57	22.9	826	413	--	220
540	7.40	22.9	814	407	--	220
560	7.33	20.1	811	406	254	210
580	7.51	20.3	810	405	--	200
600	7.58	20.5	822	410	260	220
620	7.64	21.6	791	394	244	210
640	7.64	21.7	778	390	242	210
660	7.63	22.4	735	367	186	190

Notes:

ft bls = feet below land surface

SU = Standard units

µS/cm = microsiemens per centimeter

^{o} C = Degrees Celsius

ppm = parts per million

mg/L = milligrams per liter

- - = not measured

Field sulfate measurements conducted with an Orion AQ4000 Colorimeter

TABLE K.4
BMO-2008-5M Reconnaissance Water Sampling Results

Sample Depth ft bls	pH SU	Temperature °C	EC µS/cm	TDS ppm	Field Sulfate mg/L	Laboratory Sulfate mg/L
Reconnaissance Groundwater Samples						
180	7.48	25.2	690	344	179	160
200	7.71	24.2	748	374	193	200
220	7.75	25.5	759	379	199	200
240	8.06	24.3	757	378	199	200
280	7.50	25.4	578	288	119	94
300	7.53	25.3	720	358	188	160
320	7.87	21.9	697	348	186	220
340	8.29	22.4	734	367	198	190
360	7.87	24.9	739	369	191	190
380	7.83	26.4	750	375	193	190
400	7.88	23.8	744	371	196	190
420	7.89	23.1	749	375	193	190
440	7.92	23.1	746	373	193	190
460	7.89	22.9	736	368	181	190

Notes:

ft bls = feet below land surface

SU = Standard units

µS/cm = microsiemens per centimeter

^{o} C = Degrees Celsius

ppm = parts per million

mg/L = milligrams per liter

Field sulfate measurements conducted with an Orion AQ4000 Colorimeter

TABLE K.5
BMO-2008-6M Reconnaissance Water Sampling Results

Sample Depth ft bls	pH SU	Temperature °C	EC µS/cm	TDS ppm	Field Sulfate mg/L	Laboratory Sulfate mg/L
Reconnaissance Groundwater Samples						
200	7.73	14.1	390	194	91	63
240	7.91	27.3	492	246	57	62
260	8.11	23.0	616	307	154	150
290	7.91	26.5	441	220	105	110
300	7.89	26.1	477	239	106	97
320	8.15	23.6	650	323	177	170
340	8.24	23.3	658	328	181	180
360	8.23	22.7	660	330	181	180
380	8.01	23.4	672	337	181	180
400	8.09	24.4	643	321	178	170
420	8.17	22.0	630	314	164	170
440	8.07	23.7	646	322	175	170
460	8.10	23.6	635	318	174	160

Notes:

ft bls = feet below land surface

SU = Standard units

µS/cm = microsiemens per centimeter

° C = Degrees Celsius

ppm = parts per million

mg/L = milligrams per liter

Field sulfate measurements conducted with an Orion AQ4000 Colorimeter

TABLE K.6
BMO-2008-7M Reconnaissance Water Sampling Results

Sample Depth ft bls	pH SU	Temperature °C	EC µS/cm	TDS ppm	Field Sulfate mg/L	Laboratory Sulfate mg/L
Reconnaissance Groundwater Samples						
235	8.36	20.9	365	--	--	37
255	8.02	16.5	462	--	--	120
275	7.69	18.2	2,410	--	1,120	1,200
295	7.82	20.9	2,580	--	--	1,400
315	8.01	23.9	1,979	--	--	1,200
335	7.97	22.2	2,745	1,357	--	1,400
345	8.07	22.1	2,824	1,410	1,137	--
360	7.99	22.4	2,842	1,422	--	1,400
380	7.89	20.7	2,873	1,437	--	1,450
400	8.01	20.7	2,678	1,319	--	--
420	8.13	21.9	1,945	967	--	880
440	7.95	20.8	2,424	1,210	--	--
460	7.99	20.3	2,320	1,153	--	1,100
480	7.93	21.0	2,254	1,128	--	--
500	7.97	20.7	2,266	1,134	--	1,100
520	8.02	21.5	2,233	1,105	--	1,000
540	8.11	21.9	1,754	--	--	750
560	7.92	22.6	617	--	--	110
580	8.18	23.0	546	--	--	67
600	8.23	22.9	567	--	--	78
620	8.12	22.4	508	--	--	54
640	8.16	23.4	495	--	--	45
660	8.15	23.2	496	--	--	47
680	8.20	23.3	488	--	--	45
700	8.18	22.8	483	--	36	39
720	8.24	23.4	459	--	26	29
740	8.23	23.8	458	--	26	31
750	8.19	23.7	450	--	21	27
Temporary Well Groundwater Samples						
300-320	8.10	22.9	2,170	1,098	900	1,000
370-390	7.96	21.6	2,493	1,248	1,085	1,200
450-470	8.22	21.4	1,797	899	700	600
515-535	8.33	21.4	484	240	55	42
585-605	8.29	23.8	545	273	89	74
655-675	8.43	23.7	439	219	37	40
720-740	8.58	24.6	593	--	66	71

Notes:

ft bls = feet below land surface

SU = Standard units

µS/cm = microsiemens per centimeter

° C = Degrees Celsius

ppm = parts per million

mg/L = milligrams per liter

- - = not measured

Field sulfate measurements conducted with an Orion AQ4000 Colorimeter

TABLE K.7
BMO-2008-8M Reconnaissance Water Sampling Results

Sample Depth ft bls	pH SU	Temperature °C	EC µS/cm	TDS ppm	Field Sulfate mg/L	Laboratory Sulfate mg/L
Reconnaissance Groundwater Samples						
360	7.94	22.5	3,140	1,666	1,671	1,700
380	7.53	25.0	3,220	1,703	1,859	1,800
400	7.70	23.4	3,346	1,772	1,787	1,900
420	7.61	23.2	3,170	1,682	1,826	1,800
440	7.64	23.9	2,958	1,567	1,666	1,700
460	7.51	23.9	2,895	1,533	1,666	1,700
480	7.55	22.5	2,926	1,548	1,615	1,600
500	7.84	22.4	2,847	1,507	1,506	1,500
520	7.77	23.3	2,707	1,432	1,507	1,400
540	7.41	26.1	2,690	1,425	1,562	1,500
560	7.81	22.9	2,763	1,464	1,553	1,500
580	7.28	21.9	2,914	1,456	1,679	1,400
600	7.28	22.8	2,875	1,441	1,670	1,400
620	7.12	22.6	2,854	1,425	1,668	1,400
640	7.25	22.5	2,953	1,463	1,678	1,400
660	7.24	22.8	2,829	1,414	1,602	1,300
680	7.83	23.2	2,806	1,401	1,517	1,300
700	7.26	19.9	2,708	1,354	1,470	1,300
720	7.25	23.4	2,709	1,352	1,530	1,300
740	7.41	23.0	2,628	1,313	1,540	1,300
760	7.26	23.1	2,570	1,285	1,449	1,200
780	7.23	22.4	2,585	1,291	1,482	1,200
800	7.25	22.0	2,494	1,246	1,348	1,100
820	7.24	22.5	2,551	1,275	1,320	1,300
840	7.41	25.7	2,547	1,349	1,418	1,200
860	7.58	14.2	2,690	1,429	1,308	1,100
880	7.19	23.5	2,527	1,265	1,300	1,200
900	7.20	21.5	2,537	1,268	1,305	1,100
920	7.12	21.6	2,395	1,209	1,296	1,200
940	7.28	21.4	2,564	1,271	1,308	1,200
960	7.28	21.6	2,574	1,284	1,333	1,200
980	7.36	20.3	2,554	1,276	1,378	1,200
1000	7.28	21.6	2,533	1,265	1,371	1,200
1020	7.29	22.1	2,588	1,292	1,272	1,200
1040	7.27	22.4	2,587	1,292	1,289	1,200
1060	7.29	24.5	2,582	1,289	1,351	1,300
1080	7.26	23.5	2,261	1,133	1,231	1,100
1100	7.16	22.6	2,263	1,128	1,396	1,100
1120	7.19	23.7	2,515	1,257	1,309	1,200
1140	7.06	23.3	2,480	1,241	1,372	1,000
1160	7.22	23.0	2,443	1,217	1,358	1,100
1180	7.25	23.2	2,434	1,217	1,342	1,100
1200	7.28	23.3	2,405	1,206	1,255	1,000
1220	7.23	23.5	2,546	1,272	1,262	1,100

TABLE K.7
BMO-2008-8M Reconnaissance Water Sampling Results

Sample Depth ft bls	pH SU	Temperature °C	EC µS/cm	TDS ppm	Field Sulfate mg/L	Laboratory Sulfate mg/L
Temporary Well Groundwater Samples						
530-550	7.88	22.2	2,937	1,560	1,645	1,500
630-650	7.71	23.0	1,791	895	913	810
730-750	7.23	23.4	2,381	1,189	1,367	1,100
830-850	7.25	23.7	2,403	1,201	1,479	1,200
930-950	7.17	24.0	2,063	1,032	1,254	960
1030-1050	7.32	23.6	585	292	153	120
1175-1195	7.49	25.4	1,532	765	626	550

Notes:

ft bls = feet below land surface

SU = Standard units

µS/cm = microsiemens per centimeter

^{o}C = Degrees Celsius

ppm = parts per million

mg/L = milligrams per liter

Field sulfate measurements conducted with an Orion AQ4000 Colorimeter

TABLE K.8
BMO-2008-9M Reconnaissance Water Sampling Results

Sample Depth ft bls	pH SU	Temperature °C	EC µS/cm	TDS ppm	Field Sulfate mg/L	Laboratory Sulfate mg/L
Reconnaissance Groundwater Samples						
305	7.53	28.9	1,718	858	897	730
320	7.57	28.1	1,857	927	883	780
340	7.68	28.1	1,902	951	940	830
360	7.77	28.0	2,436	1,218	978	1,200
380	7.88	24.8	1,760	1,760	669	760
400	7.98	24.2	1,766	880	786	750
420	7.83	21.7	1,628	813	603	660
440	7.88	24.1	1,764	882	698	700
460	7.92	24.4	1,721	858	602	660
480	7.79	23.4	1,846	920	699	700
500	7.81	23.5	1,876	936	637	720
520	7.81	23.3	1,880	940	662	720
540	7.80	23.7	1,885	942	751	710
560	7.81	23.8	1,863	933	642	710
580	7.70	22.5	1,860	927	719	730
600	7.75	22.5	1,904	951	747	780
620	7.73	23.6	1,873	936	724	750
640	7.91	21.8	1,966	982	913	790
660	7.83	23.1	1,893	946	892	720
680	7.81	23.2	1,881	942	840	680
700	7.67	23.4	1,895	946	879	760
720	7.79	24.0	1,868	935	860	700
740	7.92	22.0	1,229	614	347	380
760	7.71	22.3	1,891	945	932	700
780	7.85	22.4	1,907	952	925	720
Temporary Well Groundwater Samples						
555-575	8.25	24.0	1,553	776	657	560
655-675	8.13	24.0	628	314	116	94
765-785	8.25	24.4	566	281	87	62

Notes:

ft bls = feet below land surface

SU = Standard units

µS/cm = microsiemens per centimeter

° C = Degrees Celsius

ppm = parts per million

mg/L = milligrams per liter

Field sulfate measurements conducted with an Orion AQ4000 Colorimeter

TABLE K.9
BMO-2008-10GU Reconnaissance Water Sampling Results

Sample Depth ft bls	pH SU	Temperature °C	EC µS/cm	TDS ppm	Field Sulfate mg/L	Laboratory Sulfate mg/L
Reconnaissance Groundwater Samples						
230	7.07	28.5	3,573	1,787	--	2,100
240	7.53	26.2	3,620	1,816	1,640	1,800
260	7.36	26.7	3,600	1,804	1,648	1,900
280	7.38	26.8	3,652	1,820	1,680	1,800
300	7.93	28.1	3,546	1,774	1,609	1,900
320	7.18	28.2	3,504	1,752	1,638	1,900
340	7.27	28.4	3,554	1,774	1,555	1,800
360	7.46	23.0	3,584	1,794	1,659	1,800
380	7.15	24.0	3,278	1,641	1,451	1,900
400	7.11	23.9	3,497	1,756	1,554	1,900
420	7.13	25.5	3,378	1,670	1,513	1,900
440	7.14	25.5	3,078	1,543	1,552	1,900
460	7.22	24.6	3,208	1,598	1,492	2,000
480	7.21	24.5	3,232	1,621	1,503	1,900
500	7.21	27.6	3,420	1,725	1,477	2,000
520	7.51	22.0	2,720	--	1,029	1,800
540	7.47	24.0	3,390	--	1,522	1,900
560	7.49	23.5	3,350	--	1,563	1,800
580	7.54	23.6	3,330	--	1,607	1,800
610	7.49	23.8	3,180	--	1,522	1,900
620	7.47	24.5	3,240	--	1,597	1,800
640	7.42	23.5	2,740	--	1,545	1,800
660	7.39	26.2	3,250	--	1,589	1,800
680	7.36	24.2	3,070	--	1,593	1,900
700	7.46	25.0	2,570	--	1,562	1,900
Temporary Well Groundwater Samples						
424-464	7.94	22.0	3,760	--	1,778	1,800
460-480	7.38	28.2	3,810	--	1,661	1,800

Notes:

ft bls = feet below land surface

SU = Standard units

µS/cm = microsiemens per centimeter

° C = Degrees Celsius

ppm = parts per million

mg/L = milligrams per liter

- - = not measured

Field sulfate measurements conducted with an Orion AQ4000 Colorimeter

TABLE K.10
BMO-2008-10GL Reconnaissance Water Sampling Results

Sample Depth ft bls	pH SU	Temperature °C	EC µS/cm	TDS ppm	Field Sulfate mg/L	Laboratory Sulfate mg/L
Reconnaissance Groundwater Samples						
460	7.40	24.7	2,266	1,195	1,587	--
560	7.30	29.4	3,068	1,536	1,542	--
780	8.48	33.3	487	245	90	69
790	8.27	32.4	499	250	94	71
800	8.17	31.5	507	253	71	67
820	7.97	30.7	502	250	92	70
Airlift Development Groundwater Sample						
700-800	8.59	26.8	580	290	120	96

Notes:

ft bls = feet below land surface

SU = Standard units

µS/cm = microsiemens per centimeter

°C = Degrees Celsius

ppm = parts per million

mg/L = milligrams per liter

- - = not measured

Field sulfate measurements conducted with an Orion AQ4000 Colorimeter

TABLE K.11
BMO-2008-11G Reconnaissance Water Sampling Results

Sample Depth ft bls	pH SU	Temperature °C	EC µS/cm	TDS ppm	Field Sulfate mg/L	Laboratory Sulfate mg/L
Reconnaissance Groundwater Samples						
500	7.60	22.2	399	199	27	24
680	8.29	30.3	365	193	23	22
700	8.22	28.8	322	180	21	18
720	8.17	28.6	355	190	24	19
740	8.43	29.0	365	193	25	19
760	8.17	29.3	387	208	24	23
780	8.19	29.8	387	202	26	23
800	8.28	28.2	423	225	27	18
820	8.49	24.2	410	218	21	18

Notes:

ft bls = feet below land surface

SU = Standard units

µS/cm = microsiemens per centimeter

^{o} C = Degrees Celsius

ppm = parts per million

mg/L = milligrams per liter

Field sulfate measurements conducted with an Orion AQ4000 Colorimeter

TABLE K.12
BMO-2008-13B Reconnaissance Water Sampling Results

Sample Depth ft bls	pH SU	Temperature °C	EC µS/cm	TDS ppm	Field Sulfate mg/L	Laboratory Sulfate mg/L
Reconnaissance Groundwater Samples						
240	28.00	7.3	1,708	922	564	1,100
250	27.20	8.0	1,804	951	602	1,000
260	24.00	7.4	1,826	968	715	870
270	22.90	8.0	1,951	1,031	776	1,000
290	23.20	8.0	1,964	1,036	782	1,100
310	23.20	8.0	1,971	1,043	796	1,100
330	23.50	7.9	1,986	1,052	790	1,100
350	23.40	7.9	2,019	1,068	805	1,100
370	22.80	7.9	2,027	1,073	798	1,100
390	23.00	7.9	2,058	1,090	787	1,100
410	22.90	7.8	2,140	1,133	812	1,200
430	21.80	7.8	2,158	1,144	805	1,100
450	21.70	7.8	2,281	1,209	811	1,200
470	22.30	7.8	1,191	1,191	824	1,200
510	22.60	7.7	1,182	1,182	796	1,200
530	23.00	7.5	2,113	1,120	921	1,000
540	23.20	7.5	2,076	1,101	1,078	930
560	25.20	7.1	2,027	1,077	1,108	910
580	23.60	7.7	2,079	1,103	1,098	980
600	24.10	7.2	2,004	1,065	1,070	960
620	22.90	7.4	1,845	974	986	940
640	23.60	7.2	1,773	940	918	850
660	24.70	7.3	1,655	878	806	800
680	23.60	8.1	1,670	883	888	800
700	23.80	7.7	1,643	867	909	820
Temporary Well Groundwater Samples						
550-570	27.80	8.2	2,106	1,111	1,049	1,100

Notes:

ft bls = feet below land surface

SU = Standard units

µS/cm = microsiemens per centimeter

^{o}C = Degrees Celsius

ppm = parts per million

mg/L = milligrams per liter

Field sulfate measurements conducted with an Orion AQ4000 Colorimeter

TABLE K.13
BMO-2008-13M Reconnaissance Water Sampling Results

Sample Depth ft bls	pH SU	Temperature °C	EC µS/cm	TDS ppm	Field Sulfate mg/L	Laboratory Sulfate mg/L
Reconnaissance Groundwater Samples						
260	7.88	23.2	1,933	1,024	1,205	890
300	7.88	23.3	1,937	1,026	1,059	900
340	7.77	23.6	1,998	1,058	1,139	940
380	7.56	23.6	2,054	1,089	1,125	990
420	7.82	22.6	2,135	1,128	1,171	1,000
460	7.62	22.0	2,078	1,099	1,098	1,000
500	7.46	22.5	2,075	1,099	1,100	920
540	7.34	23.2	1,779	942	849	820
580	7.34	26.3	1,935	1,027	996	820
620	7.38	22.6	1,824	966	951	800
660	7.60	25.2	1,905	1,010	1,024	860
700	7.53	21.7	1,851	985	968	830
720	7.56	23.6	1,974	1,046	1,083	870
740	7.62	23.2	1,861	986	980	820
780	8.27	22.8	1,992	1,055	1,081	920
800	8.14	22.3	1,934	1,023	1,044	900
820	8.16	21.5	2,016	1,066	1,240	960
840	7.75	22.5	1,860	983	1,299	890
860	7.48	24.3	1,747	897	1,080	860
880	7.49	22.4	1,697	846	1,074	880
900	7.13	22.3	1,889	945	996	810
920	7.24	22.6	1,857	929	962	820
940	7.25	23.4	1,842	921	960	810
960	7.51	23.4	1,990	989	1,187	970
980	7.50	22.4	1,853	928	973	930
1000	7.86	25.9	2,095	1,046	1,087	1,000
1020	7.84	23.6	1,987	996	1,008	880
1040	7.48	23.2	2,030	1,013	1,046	1,000
1060	7.54	22.3	1,902	951	1,027	890
1080	7.48	23.7	1,860	928	1,860	890
1100	7.51	23.3	1,873	942	1,873	900
Temporary Well Groundwater Samples						
720-740	7.86	23.3	1,360	722	510	500
820-840	7.86	23.7	1,788	949	1,191	850
920-940	7.47	25.4	1,856	925	899	800
1070-1090	8.51	19.9	1,392	696	424	410

Notes:

ft bls = feet below land surface

SU = Standard units

µS/cm = microsiemens per centimeter

° C = Degrees Celsius

ppm = parts per million

mg/L = milligrams per liter

Field sulfate measurements conducted with an Orion AQ4000 Colorimeter

APPENDIX L

WELL CONSTRUCTION DIAGRAMS FOR BMO-2008 WELLS

APPENIDX L

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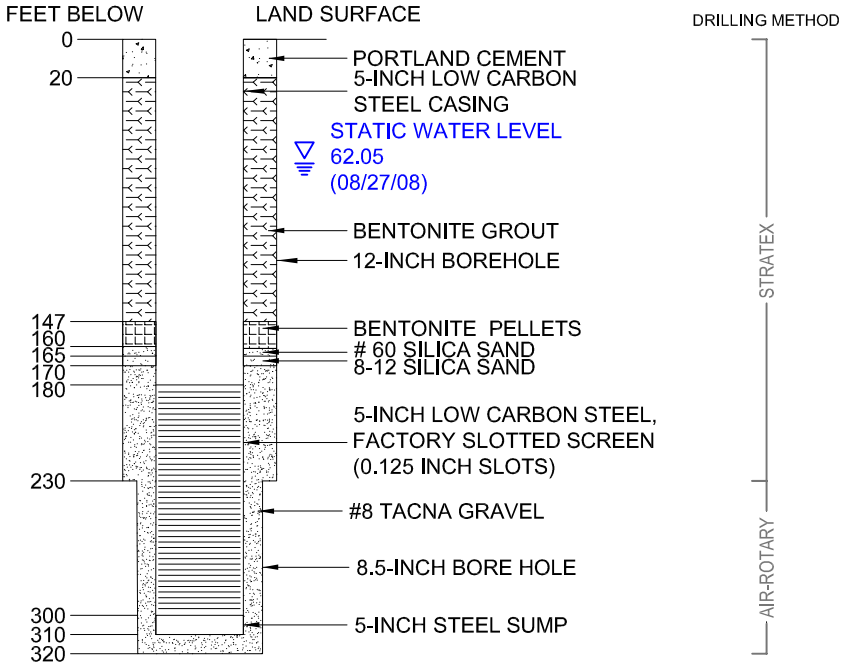
L.3 Well Construction Diagram for BMO-2008-4B
L.4 Well Construction Diagram for BMO-2008-5M
L.5 Well Construction Diagram for BMO-2008-5B
L.6 Well Construction Diagram for BMO-2008-6M
L.7 Well Construction Diagram for BMO-2008-6B
L.8 Well Construction Diagram for BMO-2008-7M
L.9 Well Construction Diagram for BMO-2008-8M
L.10 Well Construction Diagram for BMO-2008-8B
L.11 Well Construction Diagram for BMO-2008-9M
L.12 Well Construction Diagram for BMO-2008-10GU
L.13 Well Construction Diagram for BMO-2008-10GL
L.14 Well Construction Diagram for BMO-2008-11G
L.15 Well Construction Diagram for BMO-2008-13B
L.16 Well Construction Diagram for BMO-2008-13M

FIGURES

BMO-2008-1G
WELL CONSTRUCTION

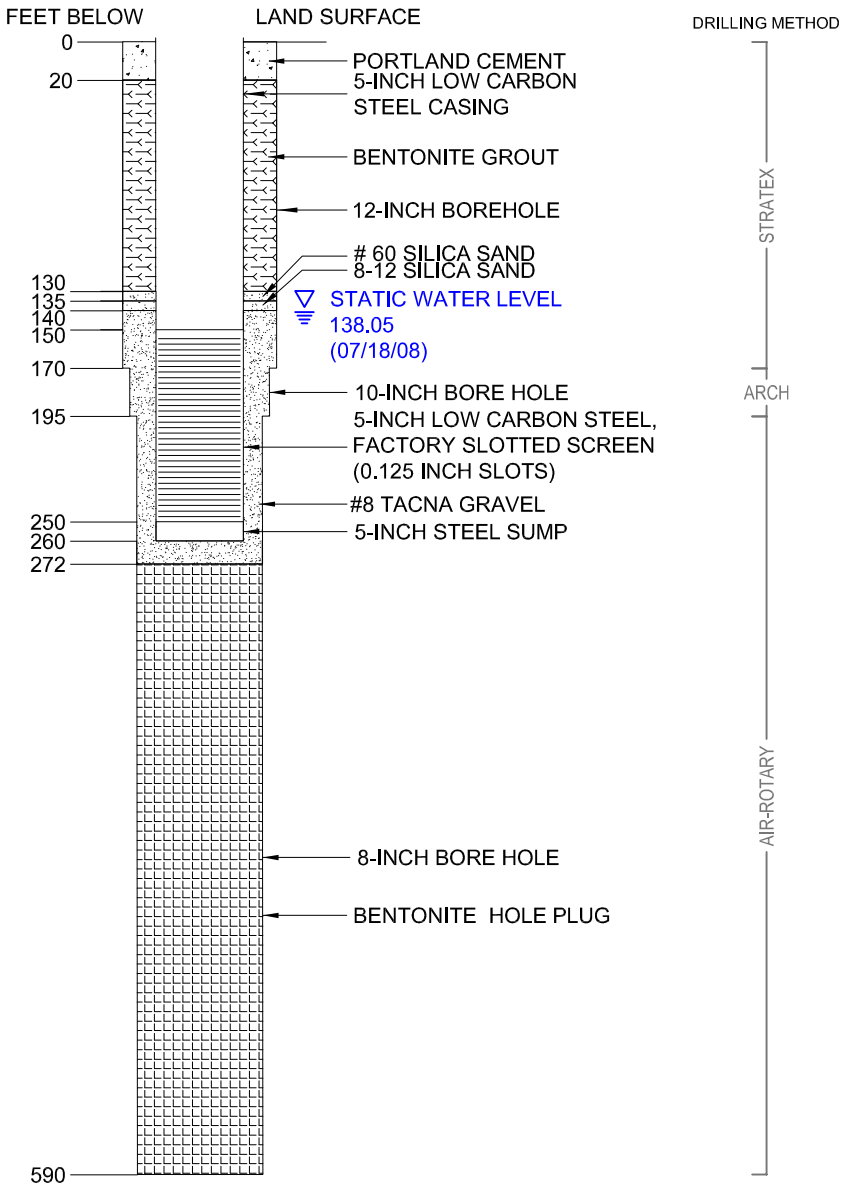


HYDRO GEO CHEM, INC.

WELL CONSTRUCTION DIAGRAM FOR WELL BMO-2008-1G (55-909474)

Approved	Date	Author	Date	File Name	Figure
RKZ	04/23/09	AMC	04/23/09	8720144A	L.1

BMO-2008-3B
WELL CONSTRUCTION

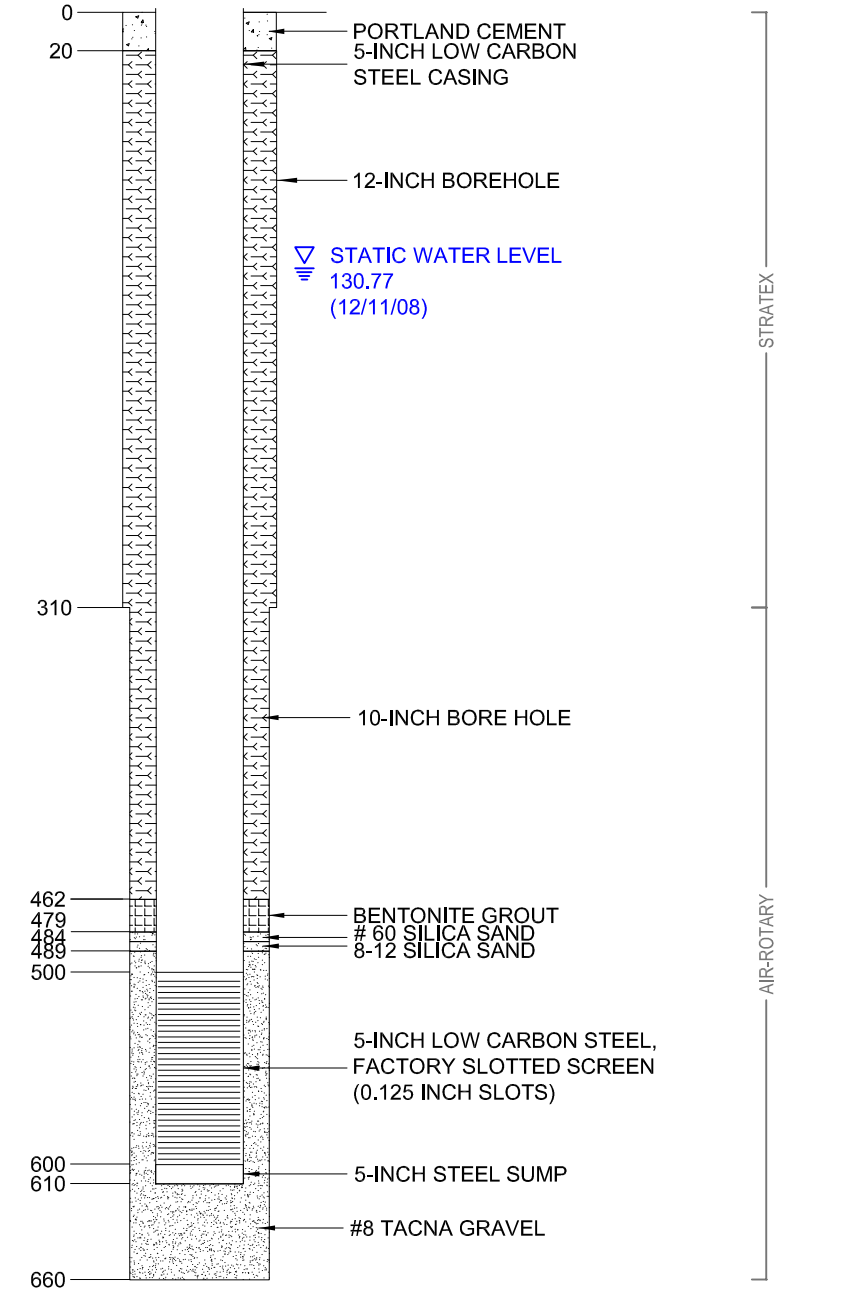


HYDRO GEO CHEM, INC.

WELL CONSTRUCTION DIAGRAM FOR WELL BMO-2008-3B (55-909147)

Approved	Date	Author	Date	File Name	Figure
RKZ	04/23/09	AMC	04/23/09	8720145A	L.2

BMO-2008-4B
WELL CONSTRUCTION

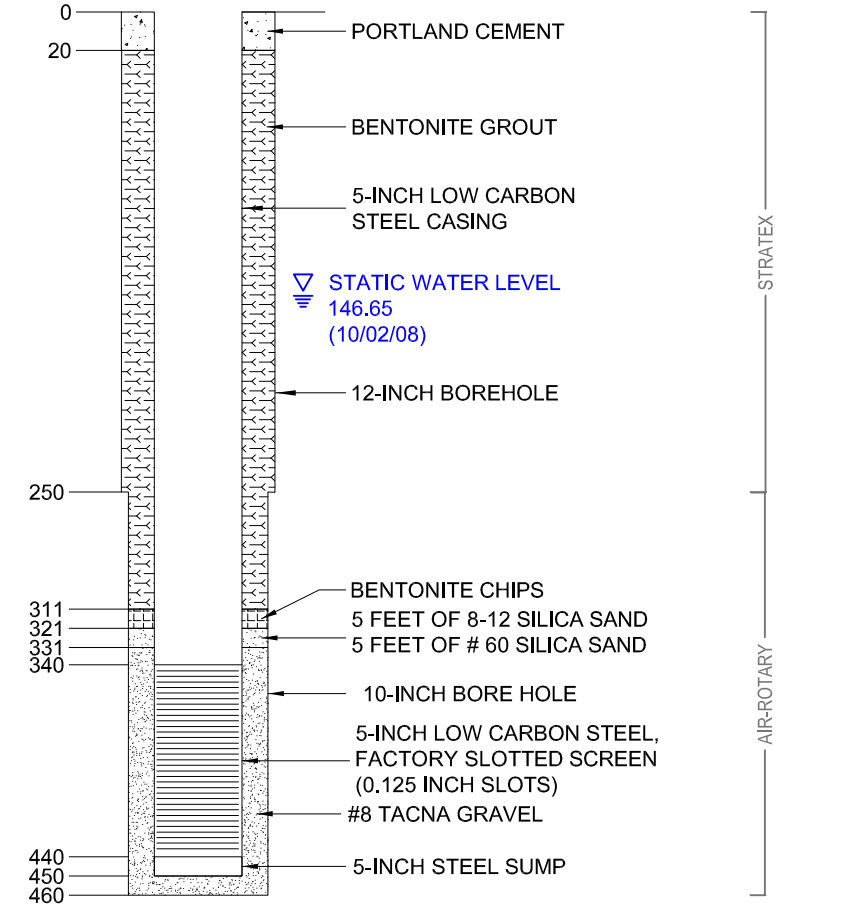


HYDRO GEO CHEM, INC.

WELL CONSTRUCTION DIAGRAM FOR WELL BMO-2008-4B (55-910096)

Approved	Date	Author	Date	File Name	Figure
RKZ	04/23/09	AMC	04/23/09	8720146A	L.3

BMO-2008-5M
WELL CONSTRUCTION

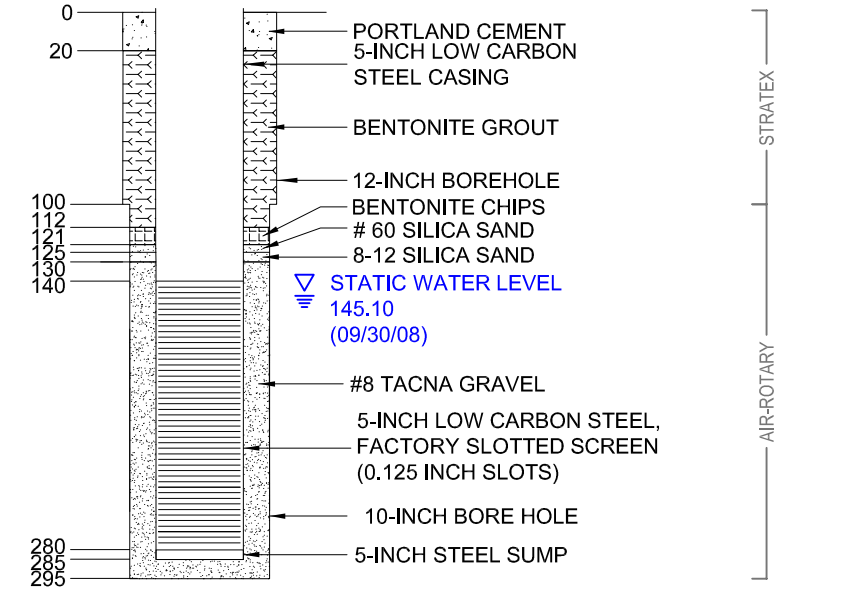


HYDRO GEO CHEM, INC.

WELL CONSTRUCTION DIAGRAM FOR WELL BMO-2008-5M (55-909552)

Approved	Date	Author	Date	File Name	Figure
RKZ	04/23/09	AMC	04/23/09	8720147A	L.4

BMO-2008-5B
WELL CONSTRUCTION

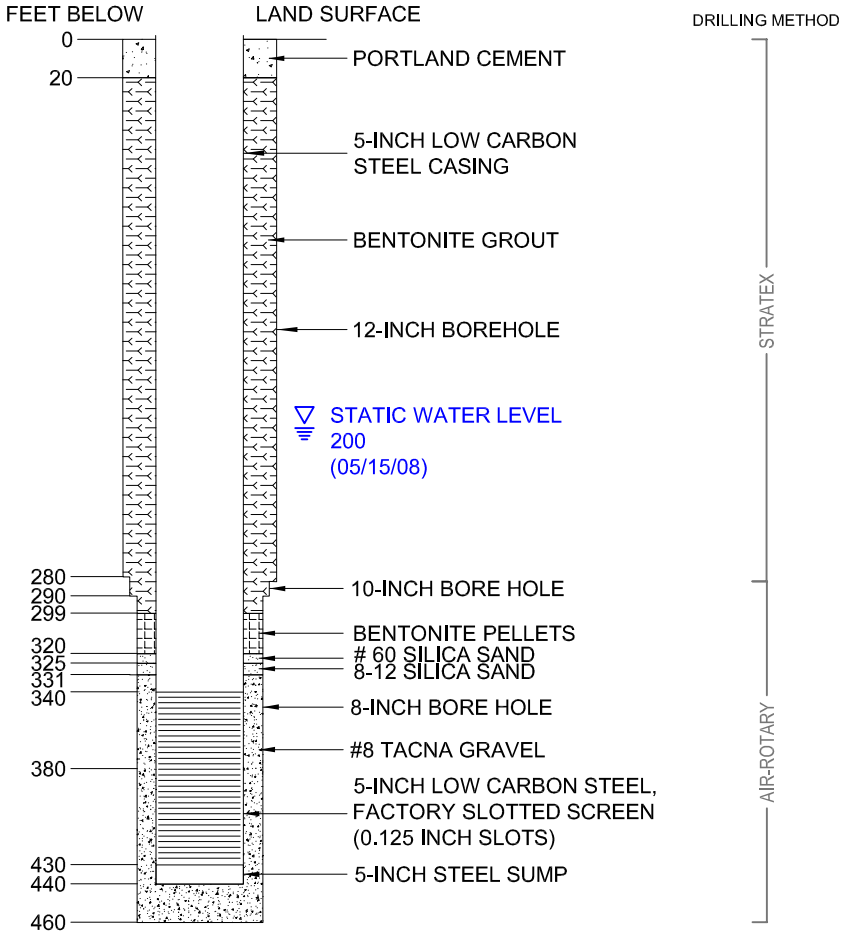


HYDRO GEO CHEM, INC.

WELL CONSTRUCTION DIAGRAM FOR WELL BMO-2008-5B (55-909653)

Approved	Date	Author	Date	File Name	Figure
RKZ	04/23/09	AMC	04/23/09	8720148A	L.5

BMO-2008-6M
WELL CONSTRUCTION

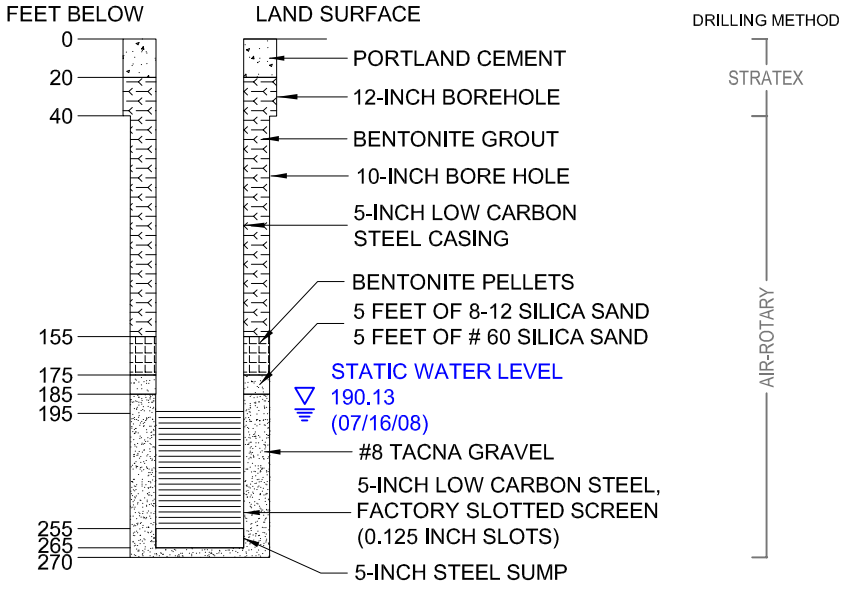


HYDRO GEO CHEM, INC.

WELL CONSTRUCTION DIAGRAM FOR WELL BMO-2008-6M (55-909019)

Approved	Date	Author	Date	File Name	Figure
RKZ	04/23/09	AMC	04/23/09	8720149A	L.6

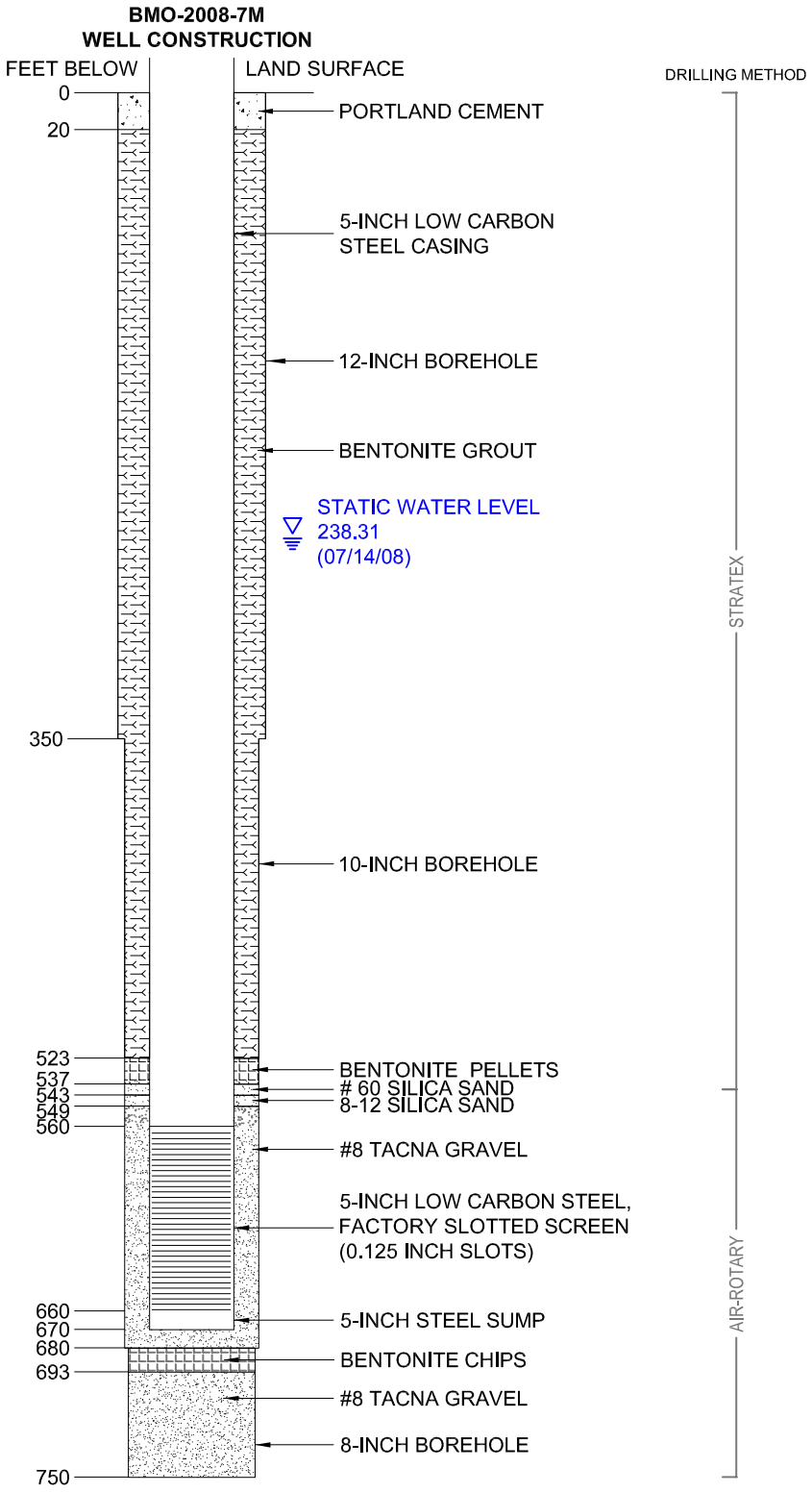
BMO-2008-6B
WELL CONSTRUCTION



HYDRO GEO CHEM, INC.

WELL CONSTRUCTION DIAGRAM FOR WELL BMO-2008-6B (55-909146)

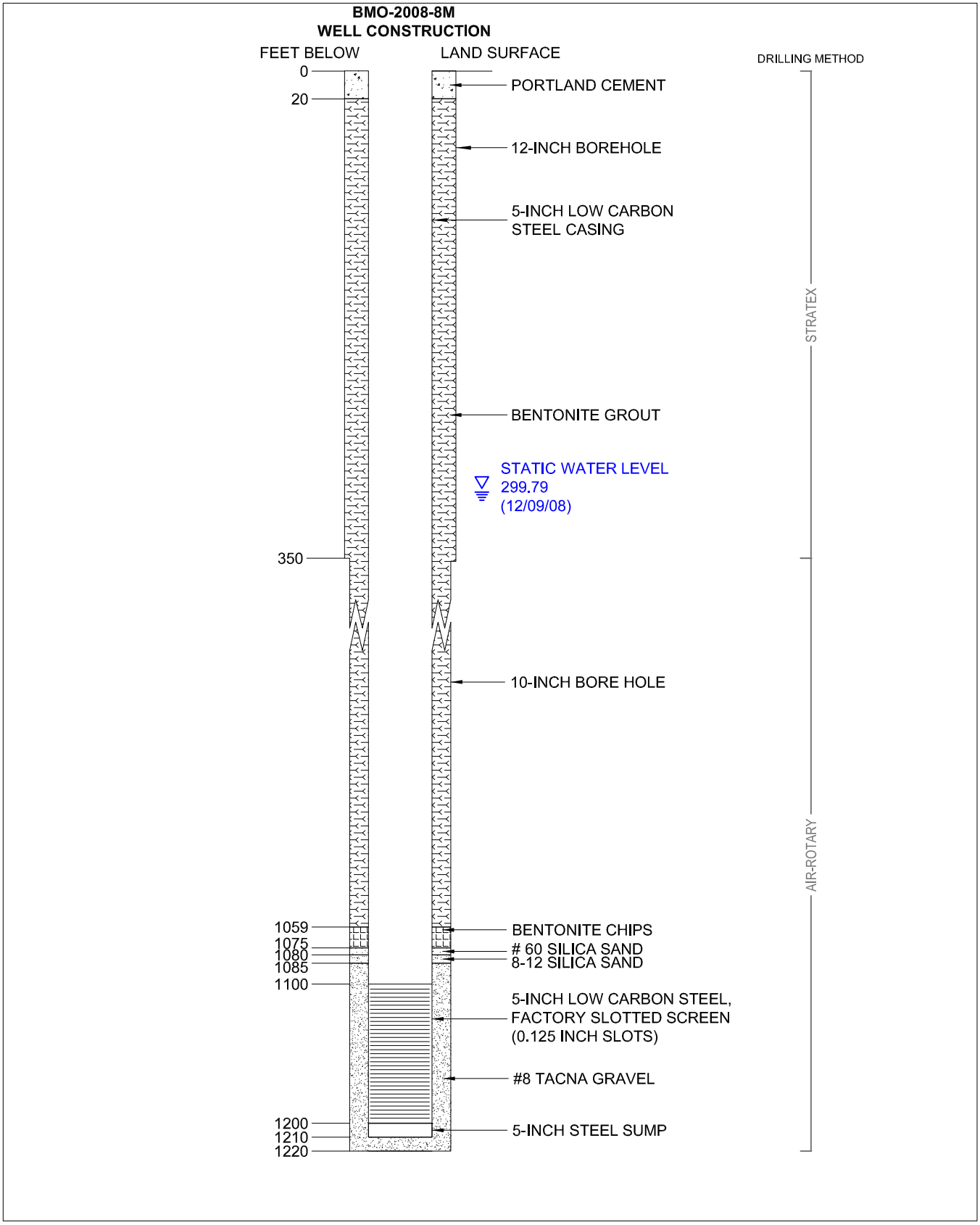
Approved	Date	Author	Date	File Name	Figure
RKZ	04/23/09	AMC	04/23/09	8720150A	L.7



HYDRO GEO CHEM, INC.

WELL CONSTRUCTION DIAGRAM FOR WELL BMO-2008-7M (55-908794)

Approved	Date	Author	Date	File Name	Figure
RKZ	04/23/09	AMC	04/23/09	8720151A	L.8

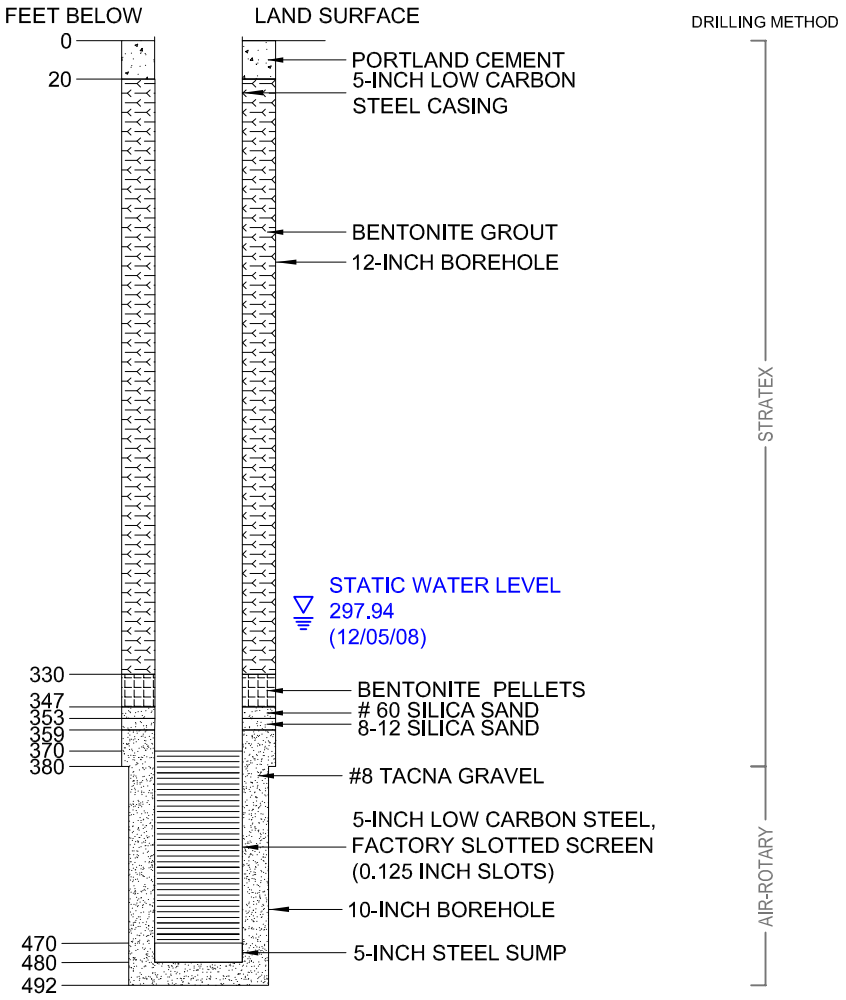


HYDRO GEO CHEM, INC.

WELL CONSTRUCTION DIAGRAM FOR WELL BMO-2008-8M (55-909711)

Approved	Date	Author	Date	File Name	Figure
RKZ	04/23/09	AMC	04/23/09	8720152A	L.9

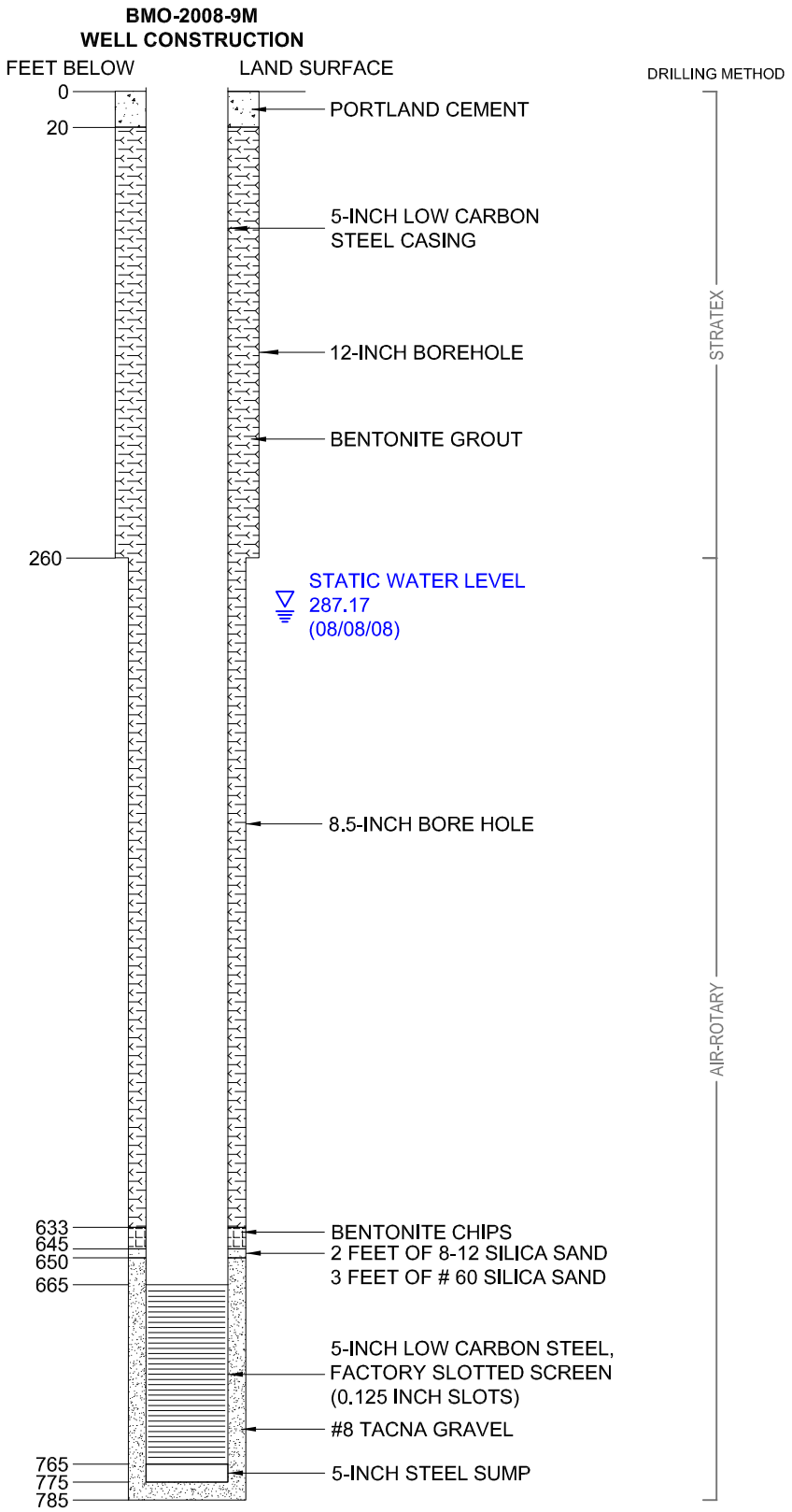
BMO-2008-8B
WELL CONSTRUCTION



HYDRO GEO CHEM, INC.

WELL CONSTRUCTION DIAGRAM FOR WELL BMO-2008-8B (55-910097)

Approved	Date	Author	Date	File Name	Figure
RKZ	04/23/09	AMC	04/23/09	8720153A	L.10

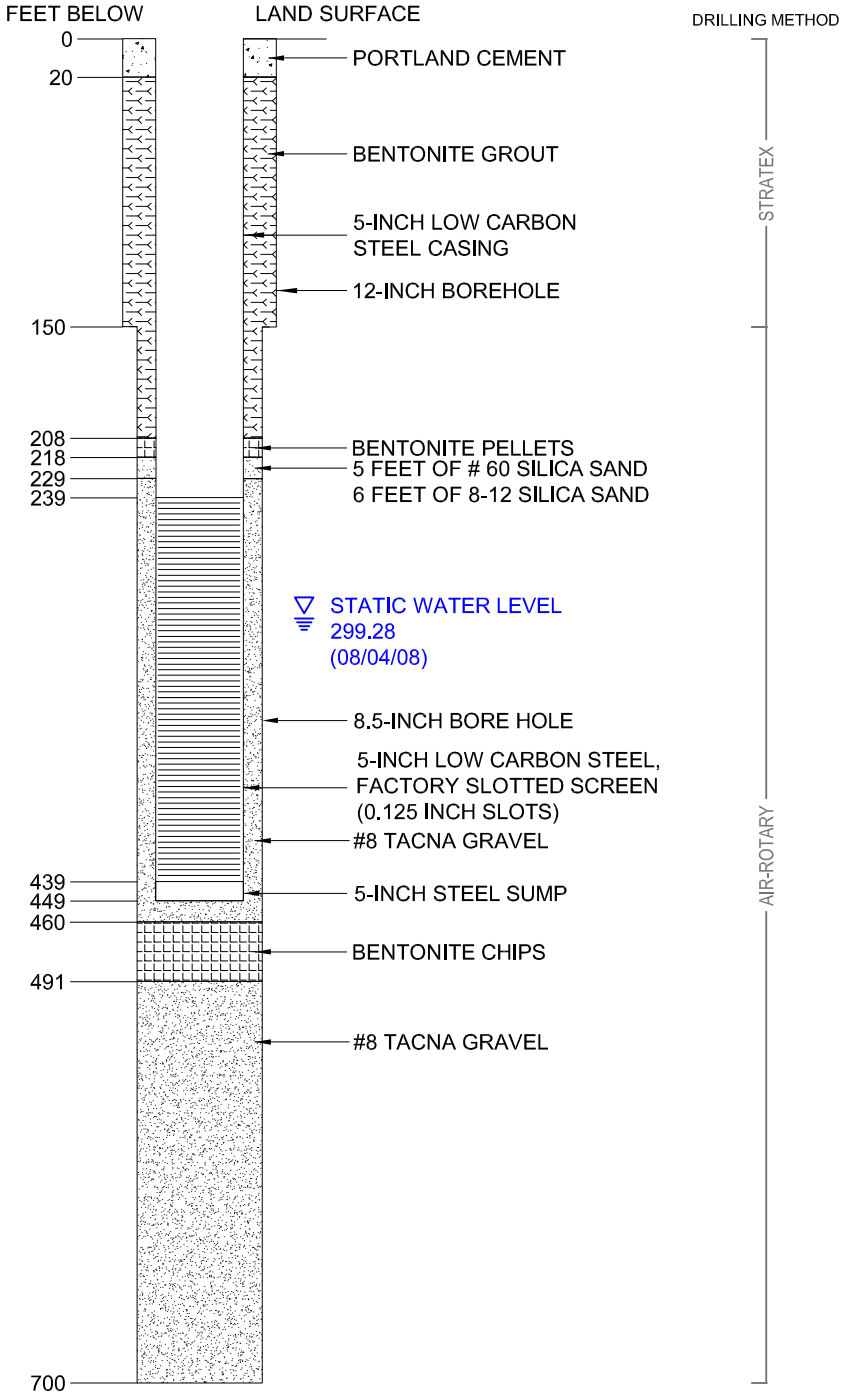


HYDRO GEO CHEM, INC.

WELL CONSTRUCTION DIAGRAM FOR WELL BMO-2008-9M (55-909255)

Approved	Date	Author	Date	File Name	Figure
RKZ	04/23/09	AMC	04/23/09	8720154A	L.11

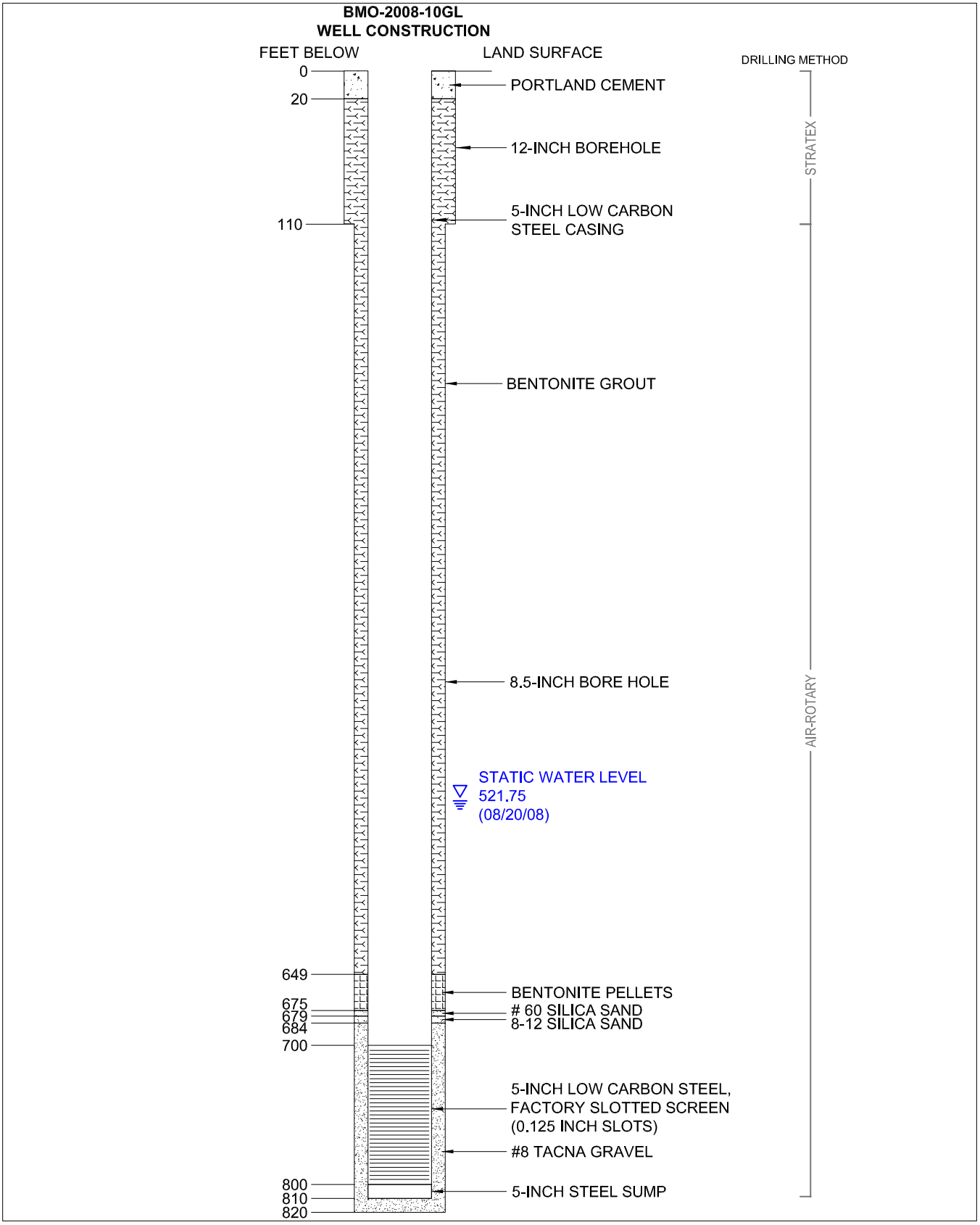
BMO-2008-10GU
WELL CONSTRUCTION



HYDRO GEO CHEM, INC.

WELL CONSTRUCTION DIAGRAM FOR WELL BMO-2008-10GU (55-909272)

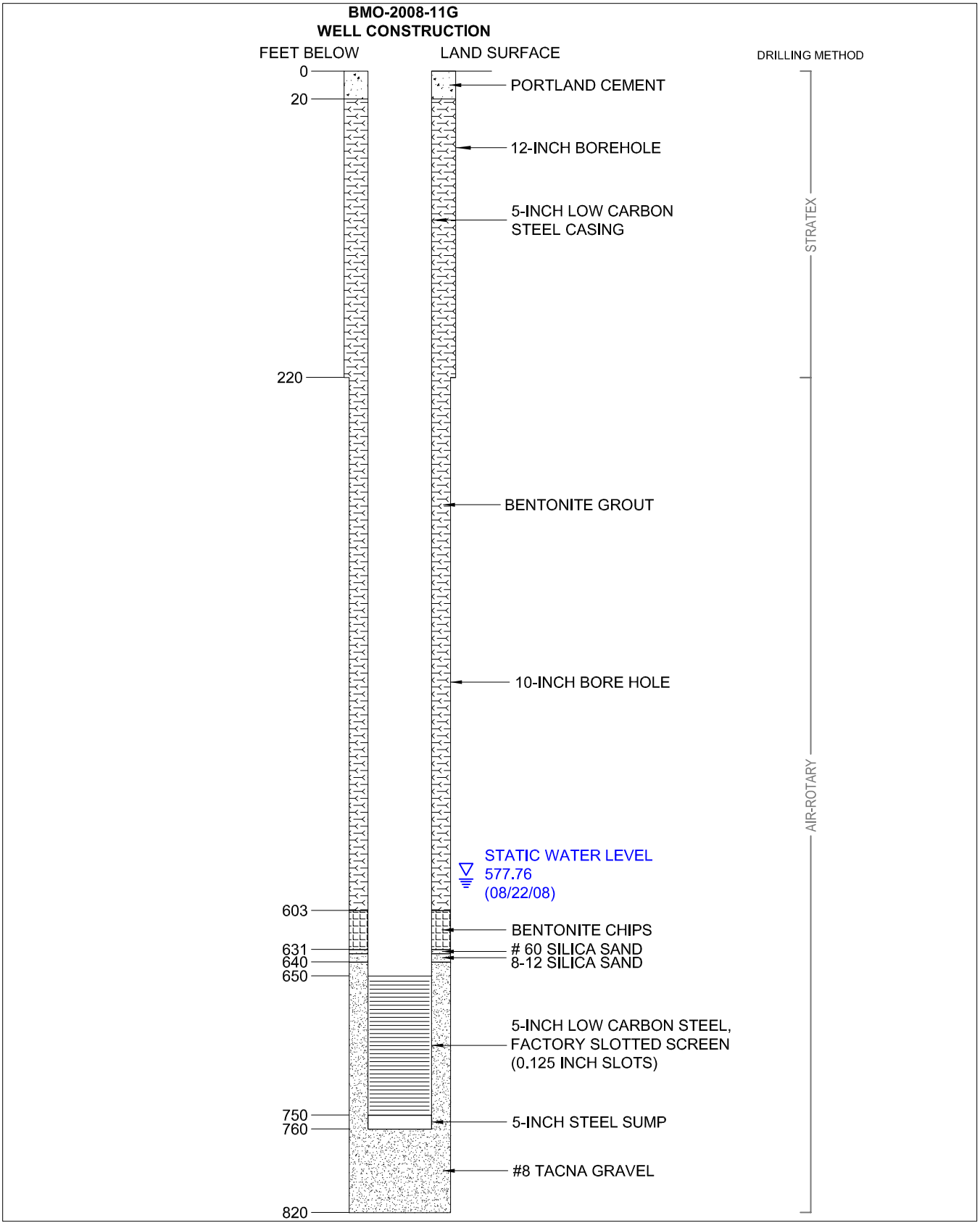
Approved	Date	Author	Date	File Name	Figure
RKZ	04/23/09	AMC	04/23/09	8720155A	L.12



HYDRO GEO CHEM, INC.

WELL CONSTRUCTION DIAGRAM FOR WELL BMO-2008-10GL (55-909435)

Approved	Date	Author	Date	File Name	Figure
RKZ	04/23/09	AMC	04/23/09	8720156A	L.13

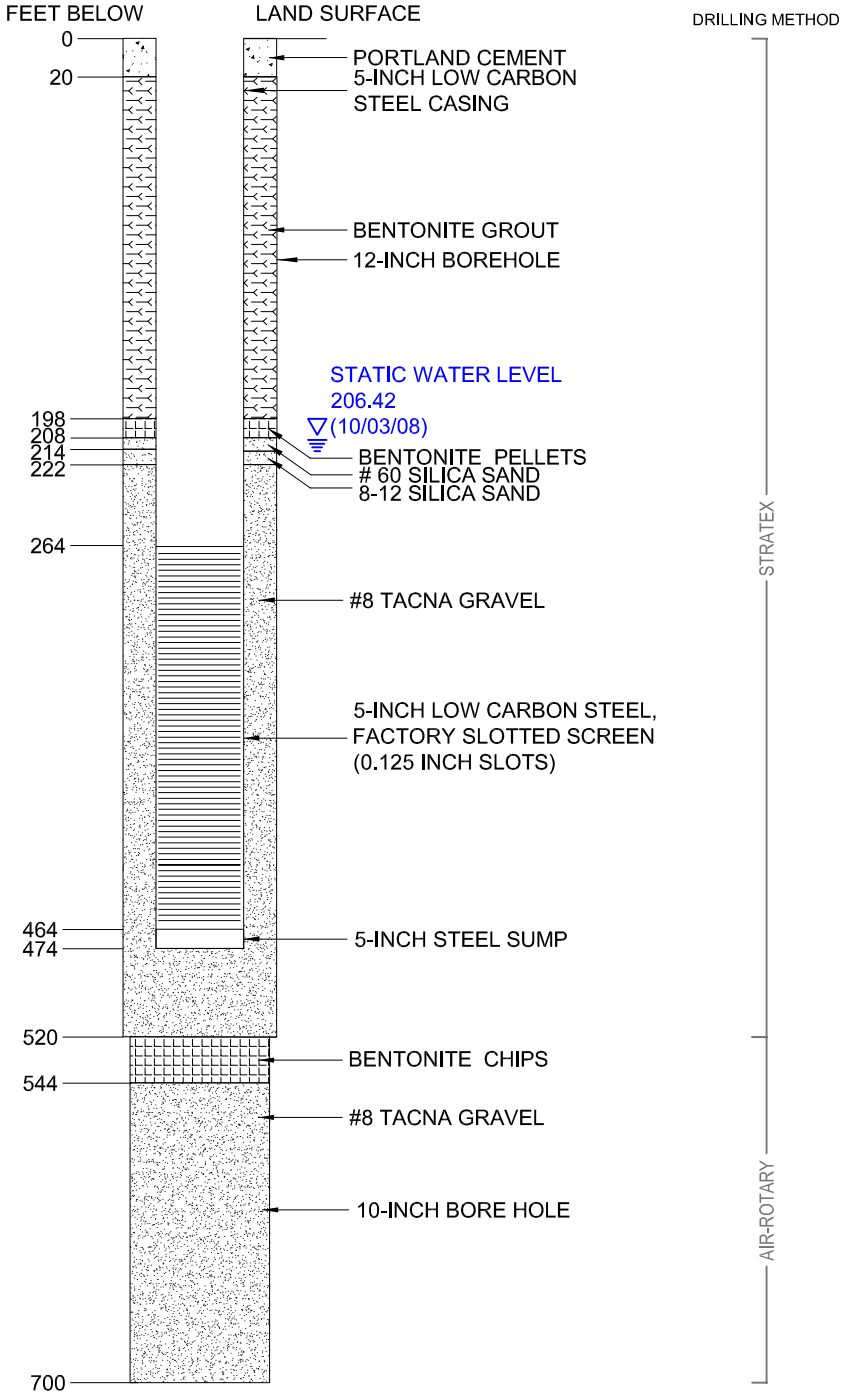


HYDRO GEO CHEM, INC.

WELL CONSTRUCTION DIAGRAM FOR WELL BMO-2008-11G (55-909434)

Approved	Date	Author	Date	File Name	Figure
RKZ	04/23/09	AMC	04/23/09	8720157A	L.14

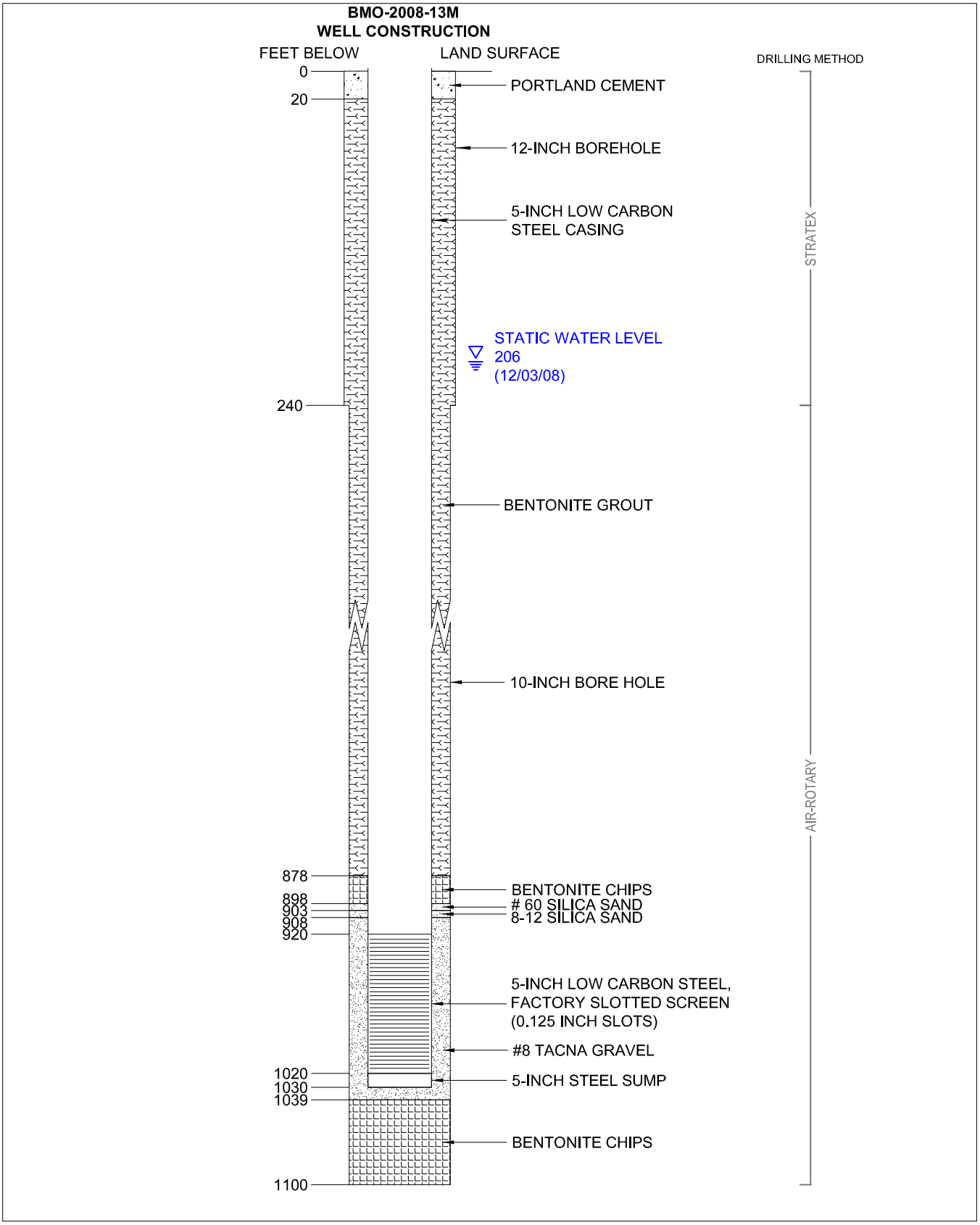
BMO-2008-13B
WELL CONSTRUCTION



HYDRO GEO CHEM, INC.

WELL CONSTRUCTION DIAGRAM
FOR WELL BMO-2008-13B
(55-909551)

Approved	Date	Author	Date	File Name	Figure
RKZ	04/23/09	AMC	04/23/09	8720158A	L.15



HYDRO GEO CHEM, INC.

WELL CONSTRUCTION DIAGRAM FOR WELL BMO-2008-13M (55-909760)

Approved	Date	Author	Date	File Name	Figure
RKZ	04/23/09	AMC	04/23/09	8720159A	L.16

APPENDIX M

WELL CONSTRUCTION SUMMARIES FOR BMO-2008 WELLS

HYDRO GEO CHEM, INC.

Well Construction Summary

Project Name:	**Bisbee Mitigation Order**			Boring No.:	**BMO-2008-1G**
Drilling Co.:	WDC Exploration and Wells			Project No.:	872000
ADWR Well No.:	**55-909474**	Driller:	William Berg	Geologist	Kim Wilson
UTM Location:	3467919.582 N	602012.923 E	Elevation:	4583.97 ft	NAD83/NAVD88

DRILLING SUMMARY

Total Depth:	320 ft bls	Hole Diameter:	12" to 230', 8.5" to 320'
Drill Rig:	GEFCO Speedstar 50K-CH	Drill bit/Type:	Stratex to 230', Tricone to 320'

WELL CONSTRUCTION DATA

Type of Material	Depth Interval (ft bls)		Description
	From	To	
Casing	0	180	5" steel, ASTM A53-B
Well Screen	180	300	5" steel, 0.125" slots
Sump	300	310	5" steel, ASTM A53-B
Centralizer Locations	150	300	4 @ 50' ft intervals along screen
Cement Grout	0	20	Type II Portland Cement
Bentonite Grout	20	147	High-solids bentonite grout
Bentonite Pellets	147	160	Coated time release pellets
FineTransition Sand	160	165	No. 60 Sand
CoarseTransition Sand	165	170	8x12 Sand
Filter Pack	170	320	#8 Tacna

CONSTRUCTION TIME LOG

TASK	Start		Finish	
	Date	Time	Date	Time
Drilling	29-Jul-08	10:08	31-Jul-08	12:59
Casing	5-Aug-08	15:40	6-Aug-08	13:35
Filter Pack	6-Aug-08	14:22	8-Aug-08	9:42
Bentonite Pellets	8-Aug-08	9:44	8-Aug-08	10:23
Bentonite Grout	8-Aug-08	10:45	8-Aug-08	15:15
Cement	9-Aug-08	10:30	9-Aug-08	10:45

AIRLIFT WELL DEVELOPMENT

Date & Time Started:	9-Aug-08 7:25	Flow Rate in gallons per minute:	8
Date & Time Completed:	9-Aug-08 9:25	Static water level in feet bls:	61
Duration in minutes:	120	Gallons Purged:	970

Remarks:

HYDRO GEO CHEM, INC.

Well Construction Summary

Project Name:	**Bisbee Mitigation Order**			Boring No.:	**BMO-2008-3B**
Drilling Co.:	WDC Exploration and Wells			Project No.:	872000
ADWR Well No.:	**55-909147**	Driller:	Arnold Lamon	Geologist:	Warren Thompson
UTM Location:	3472626.482 N	606800.995 E	Elevation:	4844.67 ft	NAD83/NAVD88

DRILLING SUMMARY

Total Depth:	590 ft bls	Hole Diameter:	12" to 165', 10" to 195', 8.5" to 590'
Drill Rig:	GEFCO Speedstar 50K-CH	Drill bit/Type:	Stratex to 165', ARCH to 195', Tricone to 590'

WELL CONSTRUCTION DATA

Type of Material	Depth Interval (ft bls)		Description
	From	To	
Casing	0	150	5" steel, ASTM A53-B
Well Screen	150	250	5" steel, 0.125" slots
Sump	250	260	5" steel, ASTM A53-B
Centralizer Locations	150	250	3 @ 50' ft intervals along screen
Cement Grout	0	20	Type II Portland Cement
Bentonite Grout	20	120	High-solids bentonite grout
Bentonite Chips	120	130	Medium chips
FineTransition Sand	130	135	No. 60 Sand
CoarseTransition Sand	135	140	8x12 Sand
Filter Pack	140	272	#8 Tacna
Bentonite Chips	272	590	Borehole abandonment

CONSTRUCTION TIME LOG

TASK	Start		Finish	
	Date	Time	Date	Time
Drilling	1-Jun-08	14:02	11-Jun-08	17:05
Casing	12-Jun-08	14:00	12-Jun-08	16:30
Filter Pack	14-Jun-08	14:40	15-Jun-08	13:51
Bentonite Chips	15-Jun-08	14:05	15-Jun-08	14:30
Bentonite Grout	15-Jun-08	14:35	15-Jun-08	15:40
Cement	15-Jun-08	15:00	15-Jun-08	15:30
Hole Abandonment	13-Jun-08	7:35	14-Jun-08	14:32

AIRLIFT WELL DEVELOPMENT

Date & Time Started:	6/16/2008 7:50	Flow Rate in gallons per minute:	50
Date & Time Completed:	6/16/2008 10:55	Static water level in feet bls:	138.05
Duration in minutes:	185	Gallons Purged:	9,300

Remarks:

HYDRO GEO CHEM, INC.

Well Construction Summary

Project Name:	**Bisbee Mitigation Order**			Boring No.:	**BMO-2008-4B**
Drilling Co.:	WDC Exploration and Wells			Project No.:	872000
ADWR Well No.:	**55-910096**	Driller:	William Berg	Geologist:	Warren Thompson
UTM Location:	3468383.430 N	601099.405 E	Elevation:	4573.17 ft	NAD83/NAVD88

DRILLING SUMMARY

Total Depth:	660 fl bls	Hole Diameter:	12" to 310', 10" to 660' bls
Drill Rig:	GEFCO Speedstar 50K-CH	Drill bit/Type:	Stratex to 310', Tricone to 660'

WELL CONSTRUCTION DATA

Type of Material	Depth Interval (ft bls)		Description
	From	To	
Casing	0	500	5" steel, ASTM A53-B
Well Screen	500	600	5" steel, 0.125" slots
Sump	600	610	5" steel, ASTM A53-B
Centralizer Locations	500	600	3 @ 50' ft intervals along screen
Cement Grout	0	20	Type II Portland Cement
Bentonite Grout	20	462	High-solids bentonite grout
Bentonite Pellets	462	479	Coated time release pellets
FineTransition Sand	479	484	No. 60 Sand
CoarseTransition Sand	484	489	8x12 Sand
Filter Pack	489	660	#8 Tacna

CONSTRUCTION TIME LOG

TASK	Start		Finish	
	Date	Time	Date	Time
Drilling	19-Nov-08	13:08	2-Dec-08	13:40
Casing	3-Dec-08	7:25	3-Dec-08	12:22
Filter Pack	3-Dec-08	13:20	4-Dec-08	10:10
Bentonite Pellets	4-Dec-08	10:23	4-Dec-08	12:15
Bentonite Grout	4-Dec-08	13:01	5-Dec-08	15:02
Cement	7-Dec-08	7:30	7-Dec-08	8:15

AIRLIFT WELL DEVELOPMENT

Date & Time Started:	12/6/2008 11:26	Flow Rate in gallons per minute:	150
Date & Time Completed:	12/6/2008 12:35	Static water level in feet bls:	130.58
Duration in minutes:	69	Gallons Purged:	9,700

Remarks:

HYDRO GEO CHEM, INC.

Well Construction Summary

Project Name:	**Bisbee Mitigation Order**			Boring No.:	**BMO-2008-5B**
Drilling Co.:	WDC Exploration and Wells			Project No.:	872000
ADWR Well No.:	**55-909653**	Driller:	Mike Thomas	Geologist:	Warren Thompson
UTM Location:	3468994.395 N	600438.375 E	Elevation:	4585.73 ft	NAD83/NAVD88

DRILLING SUMMARY

Total Depth:	295 ft bls	Hole Diameter:	12" to 100', 10" to 295'
Drill Rig:	GEFCO Speedstar 50K-CH	Drill bit/Type:	Stratex to 100', Tricone to 295'

WELL CONSTRUCTION DATA

Type of Material	Depth Interval (ft bls)		Description
	From	To	
Casing	0	140	5" steel, ASTM A53-B
Well Screen	140	280	5" steel, 0.125" slots
Sump	280	285	5" steel, ASTM A53-B
Centralizer Locations	140	280	4 @ 50' ft intervals along screen
Cement Grout	0	20	Type II Portland Cement
Bentonite Grout	20	112	High-solids bentonite grout
Bentonite Pellets	112	121	Coated time release pellets
FineTransition Sand	121	126	No. 60 Sand
CoarseTransition Sand	126	130	8x12 Sand
Filter Pack	130	295	#8 Tacna

CONSTRUCTION TIME LOG

TASK	Start		Finish	
	Date	Time	Date	Time
Drilling	23-Aug-08	9:51	24-Aug-08	17:22
Casing	25-Aug-08	11:20	25-Aug-08	13:56
Filter Pack	26-Aug-08	7:05	26-Aug-08	10:40
Bentonite Pellets	26-Aug-08	10:40	26-Aug-08	11:15
Bentonite Grout	26-Aug-08	12:40	26-Aug-08	14:10
Cement	27-Aug-08	9:15	27-Aug-08	10:00

AIRLIFT WELL DEVELOPMENT

Date & Time Started:	8/27/2008 7:15	Flow Rate in gallons per minute:	49
Date & Time Completed:	8/27/2008 10:15	Static water level in feet bls:	145.21
Duration in minutes:	120	Gallons Purged:	5,900

Remarks:

HYDRO GEO CHEM, INC.

Well Construction Summary

Project Name:	**Bisbee Mitigation Order**			Boring No.:	**BMO-2008-5M**
Drilling Co.:	WDC Exploration and Wells			Project No.:	872000
ADWR Well No.:	**55-909552**	Driller:	Mike Thomas	Geologist:	Warren Thompson
UTM Location:	3468993.961 N	600445.302 E	Elevation:	4585.63 ft	NAD83/NAVD88

DRILLING SUMMARY

Total Depth:	460 ft bls	Hole Diameter:	12" to 250', 10" to 460'
Drill Rig:	GEFCO Speedstar 50K-CH	Drill bit/Type:	Stratex to 250', Tricone to 460'

WELL CONSTRUCTION DATA

Type of Material	Depth Interval (ft bls)		Description
	From	To	
Casing	0	340	5" steel, ASTM A53-B
Well Screen	340	440	5" steel, 0.125" slots
Sump	440	450	5" steel, ASTM A53-B
Centralizer Locations	340	440	3 @ 50' ft intervals along screen
Cement Grout	0	20	Type II Portland Cement
Bentonite Grout	20	311	High-solids bentonite grout
Bentonite Pellets	311	321	Coated time release pellets
FineTransition Sand	321	326	No. 60 Sand
CoarseTransition Sand	326	331	8x12 Sand
Filter Pack	331	460	#8 Tacna

CONSTRUCTION TIME LOG

TASK	Start		Finish	
	Date	Time	Date	Time
Drilling	10-Aug-08	10:15	20-Aug-08	9:00
Casing	20-Aug-08	13:25	20-Aug-08	16:48
Filter Pack	21-Aug-08	8:35	21-Aug-08	10:55
Bentonite Pellets	21-Aug-08	11:16	21-Aug-08	11:30
Bentonite Grout	21-Aug-08	14:20	21-Aug-08	17:05
Cement	22-Aug-08	15:20	22-Aug-08	15:50

AIRLIFT WELL DEVELOPMENT

Date & Time Started:	8/22/2008 15:10	Flow Rate in gallons per minute:	86
Date & Time Completed:	8/22/2008 17:22	Static water level in feet bls:	146.54
Duration in minutes:	132	Gallons Purged:	11,400

Remarks:

HYDRO GEO CHEM, INC.

Well Construction Summary

Project Name:	**Bisbee Mitigation Order**			Boring No.:	**BMO-2008-6B**
Drilling Co.:	WDC Exploration and Wells			Project No.:	872000
ADWR Well No.:	**55-909146**	Driller:	Mike Thomas	Geologist:	Warren Thompson
UTM Location:	3469820.644 N	600366.523 E	Elevation:	4627.44 ft	NAD83/NAVD88

DRILLING SUMMARY

Total Depth:	270 ft bls	Hole Diameter:	12" to 40', 10" to 270'
Drill Rig:	GEFCO Speedstar 50K-CH	Drill bit/Type:	Statex to 40', Tricone to 270'

WELL CONSTRUCTION DATA

Type of Material	Depth Interval (ft bls)		Description
	From	To	
Casing	0	195	5" steel, ASTM A53-B
Well Screen	195	255	5" steel, 0.125" slots
Sump	255	265	5" steel, ASTM A53-B
Centralizer Locations	195	255	3 @ 50' ft intervals along screen
Cement Grout	0	20	Type II Portland Cement
Bentonite Grout	20	155	High-solids bentonite grout
Bentonite Pellets	155	175	Coated time release pellets
FineTransition Sand	175	180	No. 60 Sand
CoarseTransition Sand	180	185	8x12 Sand
Filter Pack	185	270	#8 Tacna

CONSTRUCTION TIME LOG

TASK	Start		Finish	
	Date	Time	Date	Time
Drilling	28-May-08	12:38	30-May-08	11:20
Casing	30-May-08	13:30	30-May-08	15:40
Filter Pack	30-May-08	16:00	31-May-08	8:36
Bentonite Pellets	31-May-08	8:36	31-May-08	8:55
Bentonite Grout	31-May-08	8:55	31-May-08	9:43
Cement	31-May-08	9:43	31-May-08	10:00

AIRLIFT WELL DEVELOPMENT

Date & Time Started:		Flow Rate in gallons per minute:	
Date & Time Completed:		Static water level in feet bls:	
Duration in minutes:		Gallons Purged:	

Remarks: Airlift development impossible due to low submergence. Well developed by swabbing and pumping in conjunction with pump testing.

HYDRO GEO CHEM, INC.

Well Construction Summary

Project Name:	**Bisbee Mitigation Order**			Boring No.:	**BMO-2008-6M**
Drilling Co.:	WDC Exploration and Wells			Project No.:	872000
ADWR Well No.:	**55-909019**	Driller:	Arnold Lamon	Geologist:	Warren Thompson
UTM Location:	3469813.885 N	600367.943 E	Elevation:	4626.90 ft	NAD83/NAVD88

DRILLING SUMMARY

Total Depth:	460 ft bls	Hole Diameter:	12" to 270', 10" to 280', 8.5" to 460'
Drill Rig:	GEFCO Speedstar 50K-CH	Drill bit/Type:	Stratex to 270', ARCH to 280', Tricone to 460'

WELL CONSTRUCTION DATA

Type of Material	Depth Interval (ft bls)		Description
	From	To	
Casing	0	340	5" steel, ASTM A53-B
Well Screen	340	440	5" steel, 0.125" slots
Sump	440	450	5" steel, ASTM A53-B
Centralizer Locations	340	440	3 @ 50' ft intervals along screen
Cement Grout	0	20	Type II Portland Cement
Bentonite Grout	20	299	High-solids bentonite grout
Bentonite Pellets	299	320	Coated time release pellets
FineTransition Sand	320	325	No. 60 Sand
CoarseTransition Sand	325	331	8x12 Sand
Filter Pack	331	460	#8 Tacna

CONSTRUCTION TIME LOG

TASK	Start		Finish	
	Date	Time	Date	Time
Drilling	17-May-08	8:28	20-May-08	15:40
Casing	21-May-08	12:46	21-May-08	15:00
Filter Pack	21-May-08	15:59	22-May-08	8:38
Bentonite Pellets	22-May-08	9:00	22-May-08	9:15
Bentonite Grout	22-May-08	13:52	22-May-08	16:00
Cement	28-May-08	8:00	28-May-08	8:55

AIRLIFT WELL DEVELOPMENT

Date & Time Started:	5/28/2008 7:54	Flow Rate in gallons per minute:	200
Date & Time Completed:	5/28/2008 9:05	Static water level in feet bls:	263.98
Duration in minutes:	69	Gallons Purged:	13,800

Remarks:

HYDRO GEO CHEM, INC.

Well Construction Summary

Project Name:	**Bisbee Mitigation Order**			Boring No.:	**BMO-2008-7M**
Drilling Co.:	WDC Exploration and Wells			Project No.:	872000
ADWR Well No.:	**55-908794**	Driller:	Arnold Lamon	Geologist:	Kim Wilson
UTM Location:	3470029.282 N	603099.165 E	Elevation:	4688.33 ft	NAD83/NAVD88

DRILLING SUMMARY

Total Depth:	750' bls	Hole Diameter:	12" to 350', 10" to 680', 8" to 750'
Drill Rig:	GEFCO Speedstar 50K-CH	Drill bit/Type:	Stratex to 540', Tricone to 750' *

WELL CONSTRUCTION DATA

Type of Material	Depth Interval (ft bls)		Description
	From	To	
Casing	0	560	5" steel, ASTM A53-B
Well Screen	560	660	5" steel, 0.125" slots
Sump	660	670	5" steel, ASTM A53-B
Centralizer Locations	550	650	3 @ 50' ft intervals along screen
Cement Grout	0	20	Type II Portland Cement
Bentonite Grout	20	523	High-solids bentonite grout
Bentonite Pellets	523	537	Coated time release pellets
FineTransition Sand	537	543	No. 60 Sand
CoarseTransition Sand	543	549	8x12 Sand
Filter Pack	549	680	#8 Tacna
Bentonite Chips	680	693	Lower seal
Gravel Backfill	693	750	

CONSTRUCTION TIME LOG

TASK	Start		Finish	
	Date	Time	Date	Time
Drilling	3-Apr-08	15:30	7-May-08	17:10
Casing	8-May-08	8:40	8-May-08	11:59
Filter Pack	8-May-08	12:00	8-May-08	16:30
Bentonite Pellets	13-May-08	9:00	13-May-08	9:37
Bentonite Grout	13-May-08	13:37	13-May-08	16:45
Cement	14-May-08	13:45	14-May-08	14:06

AIRLIFT WELL DEVELOPMENT

Date & Time Started:	5/14/2008 10:32	Flow Rate in gallons per minute:	70
Date & Time Completed:	5/14/2008 11:52	Static water level in feet bls:	237
Duration in minutes:	80	Gallons Purged:	5,600

Remarks: *ARCH was used 0-50 ft bls and 200-216 ft bls; open hole 12" tricone 50-200 ft bls

HYDRO GEO CHEM, INC.

Well Construction Summary

Project Name:	**Bisbee Mitigation Order**			Boring No.:	**BMO-2008-8B**
Drilling Co.:	WDC Exploration and Wells			Project No.:	872000
ADWR Well No.:	**55-910097**	Driller:	Mike Thomas	Geologist:	Warren Thompson
UTM Location:	3471141.719 N	604171.347 E	Elevation:	4753.25 ft	NAD83/NAVD88

DRILLING SUMMARY

Total Depth:	492 ft bls	Hole Diameter:	12" to 350', 10" to 492'
Drill Rig:	GEFCO Speedstar 50K-CH	Drill bit/Type:	Stratex to 350', Tricone to 492'

WELL CONSTRUCTION DATA

Type of Material	Depth Interval (ft bls)		Description
	From	To	
Casing	0	370	5" steel, ASTM A53-B
Well Screen	370	470	5" steel, 0.125" slots
Sump	470	480	5" steel, ASTM A53-B
Centralizer Locations	370	470	3 @ 50' ft intervals along screen
Cement Grout	0	20	Type II Portland Cement
Bentonite Grout	20	330	High-solids bentonite grout
Bentonite Pellets	330	347	Coated time release pellets
FineTransition Sand	347	353	No. 60 Sand
CoarseTransition Sand	353	359	8x12 Sand
Filter Pack	359	492	#8 Tacna

CONSTRUCTION TIME LOG

TASK	Start		Finish	
	Date	Time	Date	Time
Drilling	6-Nov-08	8:00	17-Nov-08	10:00
Casing	17-Nov-08	11:30	17-Nov-08	15:00
Filter Pack	17-Nov-08	15:45	18-Nov-08	8:20
Bentonite Pellets	18-Nov-08	9:00	18-Nov-08	9:20
Bentonite Grout	18-Nov-08	13:45	18-Nov-08	17:00
Cement	19-Nov-08	12:32	19-Nov-08	13:50

AIRLIFT WELL DEVELOPMENT

Date & Time Started:	11/19/08 12:32	Flow Rate in gallons per minute:	16
Date & Time Completed:	11/19/08 14:47	Static water level in feet bls:	185.65
Duration in minutes:	135	Gallons Purged:	2,200

Remarks:

HYDRO GEO CHEM, INC.

Well Construction Summary

Project Name:	**Bisbee Mitigation Order**			Boring No.:	**BMO-2008-8M**
Drilling Co.:	WDC Exploration and Wells			Project No.:	872000
ADWR Well No.:	**55-909711**	Driller:	Mike Thomas	Geologist:	Warren Thompson
UTM Location:	3471127.902 N	604167.912 E	Elevation:	4752.45 ft	NAD83/NAVD88

DRILLING SUMMARY

Total Depth:	1,220 ft bls	Hole Diameter:	12" to 380', 10" to 1,220'
Drill Rig:	GEFCO Speedstar 50K-CH	Drill bit/Type:	Stratex to 380', Tricone to 1,220'

WELL CONSTRUCTION DATA

Type of Material	Depth Interval (ft bls)		Description
	From	To	
Casing	0	1100	5" steel, ASTM A53-B
Well Screen	1100	1200	5" steel, 0.125" slots
Sump	1200	1210	5" steel, ASTM A53-B
Centralizer Locations	1100	1200	3 @ 50' ft intervals along screen
Cement Grout	0	20	Type II Portland Cement
Bentonite Grout	20	1059	High-solids bentonite grout
Bentonite Pellets	1059	1074	Coated time release pellets
FineTransition Sand	1074	1079	No. 60 Sand
CoarseTransition Sand	1079	1085	8x12 Sand
Filter Pack	1085	1220	#8 Tacna

CONSTRUCTION TIME LOG

TASK	Start		Finish	
	Date	Time	Date	Time
Drilling	2-Sep-08	15:00	30-Oct-08	12:00
Casing	31-Oct-08	7:10	31-Oct-08	12:13
Filter Pack	31-Oct-08	16:25	1-Nov-08	8:00
Bentonite Pellets	1-Nov-08	9:00	1-Nov-08	9:55
Bentonite Grout	1-Nov-08	10:58	4-Nov-08	14:35
Cement	19-Nov-08	14:10	19-Nov-08	14:47

AIRLIFT WELL DEVELOPMENT

Date & Time Started:	11/5/2008 8:17	Flow Rate in gallons per minute:	47
Date & Time Completed:	11/5/2008 12:03	Static water level in feet bls:	299.79
Duration in minutes:	226	Gallons Purged:	10,600

Remarks:

HYDRO GEO CHEM, INC.

Well Construction Summary

Project Name:	**Bisbee Mitigation Order**			Boring No.:	**BMO-2008-9M**
Drilling Co.:	WDC Exploration and Wells			Project No.:	872000
ADWR Well No.:	**55-909255**	Driller:	Mike Thomas	Geologist:	Warren Thompson
UTM Location:	3471121.675 N	604668.669 E	Elevation:	4762.61 ft	NAD83/NAVD88

DRILLING SUMMARY

Total Depth:	785 ft bls	Hole Diameter:	12" to 260', 8.5" to 785'
Drill Rig:	GEFCO Speedstar 50K-CH	Drill bit/Type:	Stratex to 260', Tricone to 785'

WELL CONSTRUCTION DATA

Type of Material	Depth Interval (ft bls)		Description
	From	To	
Casing	0	665	5" steel, ASTM A53-B
Well Screen	665	765	5" steel, 0.125" slots
Sump	765	775	5" steel, ASTM A53-B
Centralizer Locations	665	765	3 @ 50' ft intervals along screen
Cement Grout	0	20	Type II Portland Cement
Bentonite Grout	20	633	High-solids bentonite grout
Bentonite Pellets	633	645	Coated time release pellets
FineTransition Sand	645	648	No. 60 Sand
CoarseTransition Sand	648	650	8x12 Sand
Filter Pack	650	785	#8 Tacna

CONSTRUCTION TIME LOG

TASK	Start		Finish	
	Date	Time	Date	Time
Drilling	18-Jun-08	13:55	12-Jul-08	14:05
Casing	13-Jul-08	10:24	13-Jul-08	15:14
Filter Pack	13-Jul-08	16:05	15-Jul-08	9:10
Bentonite Pellets	15-Jul-08	9:15	15-Jul-08	9:35
Bentonite Grout	15-Jul-08	10:30	15-Jul-05	17:12
Cement	16-Jul-08	7:40	16-Jul-08	8:47

AIRLIFT WELL DEVELOPMENT

Date & Time Started:	7/16/2008 12:00	Flow Rate in gallons per minute:	60
Date & Time Completed:	7/16/2008 14:35	Static water level in feet bls:	288.02
Duration in minutes:	155	Gallons Purged:	9,300

Remarks:

HYDRO GEO CHEM, INC.

Well Construction Summary

Project Name:	**Bisbee Mitigation Order**			Boring No.:	**BMO-2008-10GU**
Drilling Co.:	WDC Exploration and Wells			Project No.:	872000
ADWR Well No.:	**55-909272**	Driller:	Butch Eldred	Geologist:	Kim Wilson
UTM Location:	3471731.866 N	605267.551 E	Elevation:	4793.45 ft	NAD83/NAVD88

DRILLING SUMMARY

Total Depth:	700 ft bls	Hole Diameter:	12" to 150', 8.5" to 700'
Drill Rig:	GEFCO Speedstar 50K-CH	Drill bit/Type:	Stratex to 150', Tricone to 700'

WELL CONSTRUCTION DATA

Type of Material	Depth Interval (ft bls)		Description
	From	To	
Casing	0	239	5" steel, ASTM A53-B
Well Screen	239	439	5" steel, 0.125" slots
Sump	439	449	5" steel, ASTM A53-B
Centralizer Locations	439	439	5 @ 50' ft intervals along screen
Cement Grout	0	20	Type II Portland Cement
Bentonite Grout	20	208	High-solids bentonite grout
Bentonite Pellets	208	218	Coated time release pellets
FineTransition Sand	218	223	No. 60 Sand
CoarseTransition Sand	223	229	8x12 Sand
Filter Pack	229	460	#8 Tacna
Bentonite Chips	460	491	Lower seal
Glance Conglomerate fragments	491	700	Caved borehole

CONSTRUCTION TIME LOG

TASK	Start		Finish	
	Date	Time	Date	Time
Drilling	13-Jun-08	15:01	27-Jun-08	16:44
Casing	30-Jun-08	9:03	30-Jun-08	17:23
Filter Pack	1-Jul-08	14:10	2-Jul-08	9:27
Bentonite Pellets	2-Jul-08	11:15	2-Jul-08	15:30
Bentonite Grout	2-Jul-08	10:03	2-Jul-08	10:15
Cement	8-Jul-08	14:45	8-Jul-08	15:30
Lower Bentonite Seal	1-Jul-08	7:00	1-Jul-08	12:25

AIRLIFT WELL DEVELOPMENT

Date & Time Started:	7/8/2008 9:30	Flow Rate in gallons per minute:	2
Date & Time Completed:	7/8/2008 14:05	Static water level in feet bls:	225
Duration in minutes:	275	Gallons Purged:	550

Remarks: Indicator parameters very stable throughout airlifting.

HYDRO GEO CHEM, INC.

Well Construction Summary

Project Name:	**Bisbee Mitigation Order**			Boring No.:	**BMO-2008-10GL**
Drilling Co.:	WDC Exploration and Wells			Project No.:	872000
ADWR Well No.:	**55-909435**	Driller:	William Berg	Geologist:	Kim Wilson
UTM Location:	3471702.043 N	605264.072 E	Elevation:	4792.21 ft	NAD83/NAVD88

DRILLING SUMMARY

Total Depth:	820 ft bls	Hole Diameter:	12" to 110', 8.5 to 820'
Drill Rig:	GEFCO Speedstar 50K-CH	Drill bit/Type:	Stratex to 110' Tricone to 820'

WELL CONSTRUCTION DATA

Type of Material	Depth Interval (ft bls)		Description
	From	To	
Casing	0	700	5" steel, ASTM A53-B
Well Screen	700	800	5" steel, 0.125" slots
Sump	800	810	5" steel, ASTM A53-B
Centralizer Locations	700	800	3 @ 50' ft intervals along screen
Cement Grout	0	20	Type II Portland Cement
Bentonite Grout	20	649	High-solids bentonite grout
Bentonite Pellets	649	675	Coated time release pellets
FineTransition Sand	675	679	No. 60 Sand
CoarseTransition Sand	679	684	8x12 Sand
Filter Pack	684	820	#8 Tacna

CONSTRUCTION TIME LOG

TASK	Start		Finish	
	Date	Time	Date	Time
Drilling	9-Jul-08	10:02	23-Jul-08	15:37
Casing	24-Jul-08	8:00	24-Jul-08	19:30
Filter Pack	25-Jul-08	7:45	26-Jul-08	8:00
Bentonite Pellets	26-Jul-08	8:00	26-Jul-08	8:30
Bentonite Grout	26-Jul-08	8:30	26-Jul-08	17:12
Cement	28-Jul-08	12:00	28-Jul-08	12:20

AIRLIFT WELL DEVELOPMENT

Date & Time Started:	7/27/2008 11:01	Flow Rate in gallons per minute:	7.5
Date & Time Completed:	7/28/2008 8:41	Static water level in feet bls:	448
Duration in minutes:	210	Gallons Purged:	1,575

Remarks:

HYDRO GEO CHEM, INC.

Well Construction Summary

Project Name:	**Bisbee Mitigation Order**			Boring No.:	**BMO-2008-11G**
Drilling Co.:	WDC Exploration and Wells			Project No.:	872000
ADWR Well No.:	**55-909434**	Driller:	Mike Thomas	Geologist:	Warren Thompson
UTM Location:	3472626.482 N	603800.995 E	Elevation:	4844.67 ft	NAD83/NAVD88

DRILLING SUMMARY

Total Depth:	820 ft bls	Hole Diameter:	12" to 220', 10" to 820'
Drill Rig:	GEFCO Speedstar 50K-CH	Drill bit/Type:	Stratex to 220', Tricone to 820'

WELL CONSTRUCTION DATA

Type of Material	Depth Interval (ft bls)		Description
	From	To	
Casing	0	650	5" steel, ASTM A53-B
Well Screen	650	750	5" steel, 0.125" slots
Sump	750	760	5" steel, ASTM A53-B
Centralizer Locations	650	750	3 @ 50' ft intervals along screen
Cement Grout	0	20	Type II Portland Cement
Bentonite Grout	20	603	High-solids bentonite grout
Bentonite Pellets	603	631	Coated time release pellets
FineTransition Sand	631	635	No. 60 Sand
CoarseTransition Sand	635	640	8x12 Sand
Filter Pack	640	820	#8 Tacna

CONSTRUCTION TIME LOG

TASK	Start		Finish	
	Date	Time	Date	Time
Drilling	17-Jul-08	11:37	31-Jul-08	8:41
Casing	5-Aug-08	13:40	6-Aug-08	9:40
Filter Pack	6-Aug-08	10:50	6-Aug-08	15:39
Bentonite Pellets	6-Aug-08	15:46	6-Aug-08	16:10
Bentonite Grout	7-Aug-08	7:02	7-Aug-08	13:30
Cement	8-Aug-08	12:40	8-Aug-08	13:25

AIRLIFT WELL DEVELOPMENT

Date & Time Started:	8/8/2008 7:55	Flow Rate in gallons per minute:	10
Date & Time Completed:	8/8/2008 11:25	Static water level in feet bls:	577.76
Duration in minutes:	210	Gallons Purged:	2,100

Remarks:

HYDRO GEO CHEM, INC.

Well Construction Summary

Project Name:	**Bisbee Mitigation Order**			Boring No.:	**BMO-2008-13B**
Drilling Co.:	WDC Exploration and Wells			Project No.:	872000
ADWR Well No.:	**55-909551**	Driller:	William Berg	Geologist:	Kim Wilson
UTM Location:	3470076.358 N	601657.612 E	Elevation:	4649.21 ft	NAD83/NAVD88

DRILLING SUMMARY

Total Depth:	700 ft bls	Hole Diameter:	12" to 520', 10" to 700'
Drill Rig:	GEFCO Speedstar 50K-CH	Drill bit/Type:	Stratex to 520', Tricone to 700'

WELL CONSTRUCTION DATA

Type of Material	Depth Interval (ft bls)		Description
	From	To	
Casing	0	264	5" steel, ASTM A53-B
Well Screen	264	464	5" steel, 0.125" slots
Sump	464	474	5" steel, ASTM A53-B
Centralizer Locations	264	464	5 @ 50' ft intervals along screen
Cement Grout	0	20	Type II Portland Cement
Bentonite Grout	20	198	High-solids bentonite grout
Bentonite Pellets	198	208	Coated time release pellets
FineTransition Sand	208	214	No. 60 Sand
CoarseTransition Sand	214	222	8x12 Sand
Filter Pack	222	520	#8 Tacna
Bentonite Chips	520	544	Lower seal
Cuttings and gravel	544	700	Borehole backfill

CONSTRUCTION TIME LOG

TASK	Start		Finish	
	Date	Time	Date	Time
Drilling	10-Aug-08	12:00	8-Sep-08	10:30
Casing	10-Sep-08	13:00	10-Sep-08	17:30
Filter Pack	11-Sep-08	15:00	11-Sep-08	21:00
Bentonite Pellets	11-Sep-08	21:00	11-Sep-08	21:15
Bentonite Grout	16-Sep-08	10:00	16-Sep-08	12:35
Cement	17-Nov-08	14:45	17-Nov-08	15:31
Bentonite Chips - lower seal	11-Sep-08	11:35	11-Sep-08	14:45

AIRLIFT WELL DEVELOPMENT

Date & Time Started:	9/16/2008 15:25	Flow Rate in gallons per minute:	80
Date & Time Completed:	9/16/2008 17:35	Static water level in feet bls:	206.95
Duration in minutes:	130	Gallons Purged:	10,400

Remarks: Borehole caving prevented further penetration. Bottom of borehole was abandoned to complete well in the basin fill aquifer.

HYDRO GEO CHEM, INC.

Well Construction Summary

Project Name:	**Bisbee Mitigation Order**			Boring No.:	**BMO-2008-13M**
Drilling Co.:	WDC Exploration and Wells			Project No.:	872000
ADWR Well No.:	**55-909760**	Driller:	William Berg	Geologist:	Warren Thompson
UTM Location:	3470040.455 N	601650.495 E	Elevation:	4647.15 ft	NAD83/NAVD88

DRILLING SUMMARY

Total Depth:	1100 ft bls	Hole Diameter:	12" to 240', 10" to 1100'
Drill Rig:	GEFCO Speedstar 50K-CH	Drill bit/Type:	Stratex to 240', Tricone to 1100'

WELL CONSTRUCTION DATA

Type of Material	Depth Interval (ft bls)		Description
	From	To	
Casing	0	920	5" steel, ASTM A53-B
Well Screen	920	1020	5" steel, 0.125" slots
Sump	1020	1030	5" steel, ASTM A53-B
Centralizer Locations	920	1020	3 @ 50' ft intervals along screen
Cement Grout	0	20	Type II Portland Cement
Bentonite Grout	20	878	High-solids bentonite grout
Bentonite Pellets	878	898	Coated time release pellets
FineTransition Sand	898	903	No. 60 Sand
CoarseTransition Sand	903	908	8x12 Sand
Filter Pack	908	1039	#8 Tacna
Bentonite Chips	1039	1100	Lower seal

CONSTRUCTION TIME LOG

TASK	Start		Finish	
	Date	Time	Date	Time
Drilling	17-Sep-08	14:15	11-Nov-05	10:00
Casing	12-Nov-08	7:30	12-Nov-08	13:05
Filter Pack	12-Nov-08	15:20	13-Nov-08	11:43
Bentonite Pellets	13-Nov-08	12:14	13-Nov-08	13:05
Bentonite Grout	13-Nov-08	13:10	16-Nov-08	17:30
Cement	17-Nov-08	13:45	17-Nov-08	14:30
Bentonite Chips-Lower Seal	12-Nov-08	14:47	12-Nov-08	15:18

AIRLIFT WELL DEVELOPMENT

Date & Time Started:	11/17/2008 13:05	Flow Rate in gallons per minute:	6
Date & Time Completed:	11/17/2008 16:16	Static water level in feet bls:	224.11
Duration in minutes:	191	Gallons Purged:	1,150

Remarks:

APPENDIX N

HYDRAULIC TESTING OF BMO-2008 WELLS (TASK 2.3) AND EXISTING WELLS (TASK 2.4)

APPENDIX N

HYDRAULIC TESTING OF BMO-2008 WELLS (TASK 2.3) AND EXISTING WELLS (TASK 2.4)

Prepared for:

FREEPORT-MCMORAN COPPER QUEEN BRANCH
36 West Highway 92
Bisbee, Arizona 85603

Prepared by:

HYDRO GEO CHEM, INC.
51 West Wetmore Road
Tucson, Arizona 85705
(520) 293-1500

April 29, 2009

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1. HYDRAULIC TESTING

This section describes the performance, analysis, and results of hydraulic tests conducted at the BMO-2008-Series (BMO-Series) groundwater monitoring wells and well nests installed under Task 2.3, and the selected pre-existing wells under Task 2.4 of the Work Plan (HGC, 2008). Locations of the tested wells are shown in Figures 8 and 10 and construction details are summarized in Table 13 of the main text. A detailed description of each well is provided in the well installation section of the report (Section 3.4 of the main text). Geologic logs for the BMO-2008-Series wells are in Appendix J of the main text.

The purpose of hydraulic testing was to evaluate aquifer hydraulic properties, including transmissivity, storage coefficient, and where possible, vertical hydraulic conductivity in the vicinity of each well. Hydraulic testing was conducted using the procedures described in the Work Plan. Most tests were conducted at multiple pumping rates (thereby constituting step rate tests), to enable evaluation of pumping well efficiency parameters. Pumping well efficiency parameters quantify the proportion of drawdown in the pumped well that is due to resistance to flow into the well bore and include non-linear head losses related to flow through well screen slots. In some cases, especially where the permeability of the aquifer is relatively high, the drawdown in the well is dominated by these head losses. This effect is illustrated in Figure N.1.

Hydraulic testing was conducted at each BMO-2008 well installed for Task 2.3 as described in the Work Plan (HGC, 2008). During hydraulic testing of the BMO-2008 wells, a water sample from each well was collected and analyzed for sulfate and a suite of major

elements as an initial characterization of water quality. The results of the initial sampling of the BMO-2008 wells are included in Table 11 of the main text.

1.1 Selection of Existing Wells

Hydraulic testing of wells existing prior to the installation of the BMO-Series well for Task 2.4 was conducted to develop additional hydraulic properties data for aquifer characterization. Testing at the existing wells required identifying appropriate and accessible wells. Wells identified by the well inventory (Section 3.1 of the main text) were screened to eliminate previously tested wells, dry wells, and wells that were inappropriate due to obstructions, a lack of access ports, or lack of a permanent cap. Additionally, wells were eliminated from testing if they were screened across more than a single geologic formation or if the geologic formation of the screened interval was unknown. Although there were a large number of potential wells considered, hydraulic testing was not practical at the majority of them because of difficulty obtaining access, the inability to interrupt water supply pumping, or construction characteristics that made the well poorly suited to hydraulic testing.

Five existing wells were selected for hydraulic testing: COB MW-1 (hereafter referred to as MW-1), GARNER 635, TM-02A, NWC-03, and TVI-875. MW-1 was chosen because it is a basin fill well near the location of BMO-2008-7M. GARNER 635 and TM-02A were chosen to test the Cintura and Morita Formations near the leading edge and source area of the sulfate plume, respectively. NWC-03 and TVI-875 were selected because they are in basin fill at the leading edge of the sulfate plume and have nearby wells that were used as observation wells.

1.2 Hydraulic Test Procedures

Hydraulic tests at the BMO-2008-series wells and the selected existing wells consisted of step-rate pumping of the well, measuring the pumping rates, and measuring the water levels in the pumping well and nearby observation wells (where available) before, during, and after pumping. Constant-rate pumping was performed when step-rate pumping was not practical. Observation wells consisted of other newly installed co-located wells, or existing nearby wells, that were screened at intervals deeper or shallower than the pumped well, often within a different hydrologic unit than the pumped well. For example, one well may have been completed in the basin fill and the other in the underlying bedrock at a particular location. Barometric pressure was also measured during each test to allow correction for any barometrically induced water level changes. Collected data were analyzed to estimate pumped well efficiency parameters and aquifer hydraulic properties in the vicinities of the well nests. Hereafter, for convenience, wells will be referred to using a shortened designation, for example BMO-6B, rather than BMO-2008-6B.

1.3 Pumping Procedures

Hydraulic tests were conducted subsequent to development of each new well. A sufficient time was allowed between well development and testing to allow recovery after development. Submersible pumps for testing BMO-series wells were supplied, deployed, and operated by Verdad Group, LLC. Testing at existing wells was conducted using the dedicated submersible pumps in the wells. Each well (except MW-1, TM-02A, GARNER 635, NWC-03, and TVI-875) was pumped at multiple, increasing, rates to allow analysis of pumping well

efficiency parameters. Target pumping rates were approximately 15, 30, and 50 gallons per minute (gpm) for basin fill wells and 5, 10, and 20 gpm for bedrock wells. Actual pumping rates varied depending on pump capacities, well productivities, and aquifer properties. For example, most wells completed in the Glance Conglomerate were pumped at substantially lower rates due the formation's low productivity. At BMO-1G and BMO-10GU, the tested well was pumped at only two rates due to low productivity. In general, the duration of pumping at the first two rates was approximately 1 hour for each, and at the maximum rate, approximately 8 hours (hrs), although at some locations (e.g., BMO-10GL) the initial low rate was sustained for approximately 8 hrs and the higher rates at about 1 hr each. Table N.1 lists pumping rates and durations for each test.

Pumping rates for BMO-series tests were measured using in-line flowmeters supplied by Verdad Group and by measuring the time to fill a vessel of known volume (the "bucket and stopwatch" method). In most cases, the vessel consisted of a calibrated, 55-gallon drum that allowed very accurate calculation of actual pumping rates because of its large capacity. Pumping rates for tests at existing wells were measured using in-line flowmeters when possible or by the bucket and stopwatch method.

1.4 Water Level Monitoring

Water level monitoring consisted of continuous monitoring of water levels in pumping and (where available) observation wells prior to, during, and after pumping. Observation wells included available wells within a few hundred feet of the pumped well. Observation wells were

either other wells in the newly installed well nest, or existing wells, screened at intervals either deeper or shallower than the pumped well. For example, BMO-6M was used as an observation well during pumping of BMO-6B and vice versa. Relative to BMO-6B, completed in basin fill, BMO-6M is screened over a deeper interval within the underlying Morita Formation (Section 3.4.4.5 of the main text).

Water levels were typically monitored at 30-second intervals using In-Situ Level Trolls (Trolls). The Trolls, which are submersible instruments containing pressure transducers and data loggers, were initially placed at sufficient depths below the static water levels in the wells to remain submerged throughout each test. Some of the Trolls used in the tests were vented to the atmosphere and therefore measured gauge pressures, while others were absolute pressure transducers. In all cases, an absolute pressure Troll at the surface continuously recorded atmospheric pressure during each test.

The pressure ranges of the Trolls selected for each test were based on the anticipated maximum response in the well in which the Troll was to be deployed. Trolls with a range of 30 pounds per square inch (psi), or approximately 70 feet of water, were typically used. For some of the pumped wells, Trolls with ranges of as much as 100 psi (approximately 230 feet of water) were used.

As an independent verification of the Troll data, water level measurements in pumping and observation wells were collected by hand using an electric water level sounder as frequently as practical. In some cases, hand collection of water levels was not possible over the entire

duration of a test due to binding-up of the water level probe. Binding resulted from crowding within the narrow diameter (2-inch or less) sounding tubes, which accommodated the vent lines and cables for the Trolls, and provided the only access for the water level sounder. In cases where the drawdown in a well exceeded the depth of placement of the Troll (such as at BMO-10GU) the hand-collected data were used during the period that the Troll was not submerged. In cases where the Troll data were of poor quality (excessively noisy), the hand collected data were used exclusively for analysis (e.g., at BMO-13B).

1.5 Data Analysis

Pressure data from the Trolls were downloaded and converted to depths to water and to water level drawdowns for purposes of analysis. Although these data were corrected for changes in atmospheric pressure, the corrections were in most cases negligible with respect to drawdown. In many cases where sufficient measurements were available (for example, at BMO-3B), the hand collected depths to water were converted to water level drawdowns and analyzed independently. As discussed above, in cases where the Troll data were of poor quality, the hand-collected data were used exclusively in the analyses. In all cases, hand-measured depths to water were compared with depths to water calculated from Troll readings as a check on Troll accuracy.

For purposes of analysis, the total number of automatically logged drawdown records was reduced. Typically, the first 5 to 10 records at the beginning of each pumping step were retained for analysis. Then, every second, then third, then fourth, etc, record was retained, until the beginning of the next pumping step. This was necessary in most cases to meet input data size

limits for the software used to analyze the data, and to improve the rate at which automatic parameter estimation could proceed.

At BMO-3B and BMO-6M Troll data were noisy, but useable, and were smoothed prior to analysis. This was accomplished by taking a 7-point moving average one or more times until the desired smoothness was achieved, or by breaking the data into blocks of 20 to 30 values and using the average value of each block in the analysis.

Drawdown and pumping rate data were analyzed using WHIP, a well hydraulics interpretation package developed and marketed by HGC (HGC, 1988). WHIP has solutions that account for variable pumping rates, vertical flow and leakage, wellbore storage, and partial penetration of pumping and observation wells within a vertically anisotropic aquifer. WHIP also accounts for head losses in the pumped well resulting from well efficiency effects. Direct estimation of vertical hydraulic conductivities of the aquifer and an aquitard (if present) is available as part of the vertically anisotropic aquifer solution provided in WHIP.

Hydraulic properties and pumping well efficiency parameters were estimated using either the 'homogeneous aquifer' solution or the 'vertically anisotropic, partially penetrating well solution' (the partial penetration solution) available in WHIP. In many cases, both solutions were used for comparison. The homogeneous aquifer solution assumes full well penetration, allows faster parameter estimation than the partial penetration solution, and accounts for well bore storage effects and vertical leakage (if present) into the aquifer. The homogeneous aquifer solution was used exclusively in cases where the pumped well fully penetrated the basin fill

aquifer (for example, at BMO-3B). The partial penetration solution accounts for partial penetration of pumping and observation wells, for vertical flow within an aquifer, and for leakage into the aquifer from an aquitard. The partial penetration solution was used for either basin fill or bedrock wells that did not fully penetrate the basin fill or bedrock unit they were completed within. Figure N.2 is a schematic illustrating some of the assumptions used in applying the two solutions. Non-horizontal flow typically associated with unconfined (phreatic) aquifer conditions can be approximated by applying a Dupuit correction to either solution

Hydraulic parameters estimated from each test included transmissivity, storage coefficient, and pumped well efficiency parameters. Vertical hydraulic conductivity was estimated when the partially penetrating well solution was used. In each case, pumping and recovery data were analyzed together to obtain the best fit to all collected data. In cases where a good fit to both were not obtained, drawdown and recovery data were analyzed separately. The automatic parameter estimation routines were utilized when needed to improve the fits between measured and simulated drawdowns. In cases where a nearby observation well completed at a different depth interval than the pumping well in the same formation showed no response to pumping (for example at site BMO-10), the lack of response was used to provide a limit on the vertical conductivity.

Because the only wells close enough to serve as observation wells were completed within a different formation than the pumped well or were completed within a different depth interval of the same formation in which the pumped well was completed, drawdowns were not detectable at observation wells in most cases. Accurate estimation of storage coefficient is usually not

possible using only data from the pumped well. Drawdowns in the pumped well are often significantly affected by borehole storage and head losses due to low well efficiency. Therefore, a value of 0.01 was initially assumed for wells completed in unconfined aquifers, and 1 x 10^{-5} for wells which were assumed to be completed in confined aquifers. In general, wells completed in basin fill were assumed to be under unconfined conditions, and those completed in bedrock aquifers located beneath either saturated basin fill or saturated bedrock of an overlying formation were assumed to be under confined conditions. During analysis, the storage coefficient was adjusted to improve the fit between measured and simulated drawdowns at the pumped well even though analyzable observation well data were not obtained.

When using the partial penetration solution, the specification of the screened intervals of pumping and observation wells, and the upper and lower boundaries of the aquifer (and aquitard, if present) were based on the particular conditions at each test location. For basin fill wells, the lower aquifer boundary was usually assumed to coincide with the bedrock contact, and the top of the aquifer to coincide with the static water level in the well. For bedrock wells, the lower boundary was typically assumed to be the base of the well's filter pack, and the top boundary to be either the upper contact of the formation, or the static water level in the well if the static water level was below the upper contact. The effective horizontal hydraulic conductivities of the aquifer intervals penetrated by the pumped wells can be approximated by dividing the estimated transmissivity by the aquifer thicknesses assumed in the respective analyses.

Exceptions to these guidelines occurred at locations where observation wells completed in one formation responded to pumping in another formation. For example, at the location of the

BMO-5 series wells, the well completed in the basin fill (BMO-5B) responded to pumping at the well completed in the underlying Cintura Formation (BMO-5M) and vice versa. Analyses using the partial penetration solution assumed that the aquifer extended from the water table (the static water level in BMO-5B) to the base of the filter pack in BMO-5M. Calculating the effective hydraulic conductivity across the assumed aquifer thickness in this case resulted in some averaging of the basin fill and Cintura Formation conductivities. Other exceptions are discussed in Section 1.5.1.

When analyzing tests at partially penetrating wells using the homogeneous aquifer solution, the pumped well was assumed to be fully penetrating, the aquifer assumed to be only as thick as the pumped well filter pack interval, and any vertical flow was represented as leakage from intervals above or below. These assumptions result in a lower transmissivity than would be calculated using the partial penetration solution because the assumed aquifer thickness would be correspondingly smaller. In most cases, however, the effective hydraulic conductivity computed would be similar to that computed using the partial penetration solution because the reduced transmissivity estimate would be nearly compensated for by the reduced aquifer thickness assumed.

Figure N.3 provides conceptual schematics that illustrate the application of the homogeneous aquifer and partial penetration solutions to the various test analyses described in Section 1.5.1. The schematics indicate the locations of well screens relative to formation boundaries, the selection of aquifer boundaries, and the location of the piezometric surfaces relative to formation and assumed aquifer boundaries.

1.5.1 Results

The results of analyzing pumping rate and drawdown data at the tested wells are provided in Figures N.4 through N.59 and Tables N.2 and N.3. Table N.2 provides the results of all the analyses. Table N.3 summarizes the ranges of hydraulic conductivity and provides a set of representative values for hydraulic properties. Details of the test results are provided in Sections 1.5.1.1 through 1.5.1.15. The results of the analyses for sulfate in samples collected at the time of testing are provided in Section 3.4.4 of the main text.

Multiple interpretations of the data from most tests were performed. The multiple interpretations were considered necessary because a single conceptual model could not *a priori* be determined to be superior to other possible conceptual models. Alternate interpretations were possible even when using one conceptual model and one aquifer solution method. Table N.2 and corresponding figures show the results corresponding to each interpretation and the quality of each interpretation. The quality of each interpretation is reflected in the goodness of fit between measured and simulated drawdowns using a particular set of hydraulic parameters.

The rationale for providing the results of multiple interpretations is that in most cases more than one conceptual model can provide an adequate fit to the data. Furthermore, when using a particular solution method, one set of parameters may not fit all portions of the data equally well. While one interpretation may provide a better fit to some portions of the data, another interpretation may provide a better fit to other portions. Because one interpretation was not always superior, the selection and presentation of only one interpretation may result in the loss of useful information. The final set of parameters provided in Table N.3 are generally based

on averages of the results shown in Table N.2, with the constraint that values considered outliers (based on professional judgment) were not included.

1.5.1.1 BMO-1

Results of testing well BMO-1G are provided in Table N.2 and Figures N.4 through N.6. BMO-1G is completed in the Glance Conglomerate (Section 3.4.4.1 of the main text). Drawdown data were analyzed using both the homogeneous aquifer and partial penetration solutions. There were no nearby wells to serve as observation wells during pumping of BMO-1G. Due to low productivity, BMO-1G was pumped at only two rates as shown in Table N.1.

Using the partial penetration solution, a transmissivity estimate of 75 ft^2/day over an aquifer thickness of 258 feet (the approximate thickness of the water column in the well) was obtained yielding a hydraulic conductivity of 0.29 ft/day. A negligible vertical conductivity of 5 x 10^{-7} ft/day was estimated. Using the homogeneous aquifer solution, transmissivity estimates ranged from 25 feet squared per day (ft^2/day) to 34.8 ft^2/day over a saturated thickness of 150 feet (the approximate length of the well's filter pack) yielding hydraulic conductivity estimates of 0.17 to 0.23 ft/day. Improving the fit to the first step (Figure N.5) reduces the quality of the fit to the third step and the recovery data. Fits to the data were generally better using the homogeneous aquifer solution. Low estimated storage coefficients of 5 x 10^{-6} to 6 x 10^{-6} imply confined conditions.

1.5.1.2 BMO-3

Results of testing BMO-3B are provided in Table N.2 and Figures N.7 through N.10. BMO-3B is completed within the basin fill (Section 3.4.4.2 of the main text). The test was analyzed using the homogeneous aquifer solution because the well fully penetrated the saturated portion of the basin fill. There were no nearby wells to serve as observation wells during pumping of BMO-3B.

Depending on the relative weight given to drawdown or recovery data, transmissivity estimates ranged from 3,000 to 4,500 ft^2/day which imply horizontal conductivities of 23.1 to 34.6 ft/day over a saturated thickness of 130 feet (the approximate saturated thickness of the basin fill at this location). An improved fit to the step 3 drawdowns was obtained by applying a Dupuit correction (Figure N.9). The improved fit implies non-horizontal flow to the well, consistent with a fully penetrating well in a phreatic (unconfined) aquifer, although the low estimated storage coefficients of 1×10^{-4} to 1×10^{-6} imply confined conditions. Analysis of the hand-collected drawdown data (Figure N.10) yielded results nearly identical to the results of analysis of the automatically logged data.

1.5.1.3 BMO-4

Results of testing BMO-4B are provided in Table N.2 and Figures N.11 and N.12. BMO-4B is completed within the basin fill (Section 3.4.4.3 of the main text). The test was analyzed using the partial penetration solution because the well only partially penetrated the saturated portion of the basin fill, and because nearby wells (NWC-03, ROGERS 803, and TVI-713/875)

that were used as observation wells were screened at various depths within the basin fill. During the test, measurable drawdowns were obtained only at the pumped well and observation well NWC-03 CAP. Data from NWC-03 CAP during the first 6 hours of the test were not useful because they were influenced by cycling of NWC-03 and, presumably, other nearby production wells. Only hand collected drawdowns from the pumped well were used in the analysis because automatically logged data were excessively noisy.

Transmissivity was estimated to range from 19,900 to 20,000 ft^2/day, vertical hydraulic conductivity from 0.867 to 1 ft/day, and storage coefficient from 4.15×10^{-4} to 4.5×10^{-4} (Table N.2 and Figures N.11 and N.12) depending on whether data from the pumped well or the observation well (NWC-03 CAP) was analyzed. These transmissivities yield nearly identical horizontal hydraulic conductivities of 39.4 and 39.6 ft/day over an aquifer thickness of 505 feet (the approximate saturated thickness of the basin fill at this location). The estimated storage coefficients are lower than would be expected for an unconfined aquifer.

Background monitoring of BMO-4B and observation well NWC-03 CAP prior to the testing indicated that variations in water level of a few tenths of a foot to more than 1 foot (that are only partially related to changes in barometric pressure) can occur within the vicinity of BMO-4B (Figure N.13). BMO-4B is screened from 500-600 feet below land surface (ft bls), and NWC-03 CAP is screened only to a depth of 160 feet. Although NWC-03 CAP is located only about 200 feet from BMO-4B, the background water level fluctuations in the two wells correlate poorly. The poor correlation indicates that changes in hydraulic head within the basin fill in this area can vary substantially with depth.

1.5.1.4 BMO-5

Results of testing the BMO-5 series wells are provided in Table N.2 and Figures N.14 through N.20. BMO-5B is completed within the basin fill and BMO-5M within the Cintura Formation (Section 3.4.4.4 of the main text). For comparison purposes, tests were analyzed using both the partial penetration solution and the homogeneous aquifer solutions.

Variations in drawdown during the third step of the BMO-5M test, which were reflected in both automatically logged and hand collected data, were not attributable to measured changes in atmospheric pressure or changes in pumping rate (Figure N.14). Although BMO-5M is completed in bedrock (interpreted to be the Cintura Formation) and BMO-5B in the basin fill, measurable responses were obtained at BMO-5M during pumping at BMO-5B and vice versa. These responses indicate significant hydraulic interaction between the basin fill and the upper bedrock at this location.

When analyzing the test data from pumping BMO-5B using the partial penetration solution, the upper portion of the Cintura Formation was assumed part of the same aquifer as the basin fill. This assumption is justified by the response of BMO-5M to pumping at BMO-5B and vice versa, and allowed estimation of hydraulic parameters using BMO-5M as an observation well during pumping of BMO-5B and vice versa. When using an observation well completed in a different formation than the pumping well, estimates of horizontal and vertical hydraulic conductivity and storage coefficient will be affected by the properties of both formations.

Using the partial penetration solution and only data from the pumping well (BMO-5B), a transmissivity estimate of 25,000 ft^2/day, a vertical hydraulic conductivity estimate of 3 ft/day, and a storage coefficient estimate of 0.076 were obtained (Figure N.15). Using only data from the observation well (BMO-5M) during pumping of BMO-5B, a transmissivity estimate of 30,000 ft^2/day, a vertical hydraulic conductivity estimate of 4.3 ft/day, and a storage coefficient estimate of 1.05×10^{-4} were obtained (Figure N.16). The transmissivity and vertical hydraulic conductivity estimates are similar but the estimated storage coefficients differ by 2 orders of magnitude. The low estimate obtained from the observation well (BMO-5M) data is likely more representative of the Cintura Formation in which it is completed than of the basin fill aquifer. The range of estimated transmissivities imply a range in horizontal conductivity of 93.3 ft/day to 95.2 ft/day over an assumed aquifer thickness of 315 feet. The assumed aquifer thickness was defined by the static water level in BMO-5B and the base of the filter pack in BMO-5M.

Analyzing data from pumping of BMO-5M using the partial penetration solution resulted in somewhat different parameters even though the aquifer thickness was assumed to be the same and a response to pumping BMO-5M was measured at BMO-5B. Using only data from the pumping well (BMO-5M), a transmissivity of 2,200 ft^2/day and a vertical hydraulic conductivity estimate of 3 ft/day were obtained (Figure N.18). Using only data from the observation well (BMO-5B) during pumping of BMO-5M, a transmissivity estimate of 528 ft^2/day, a vertical hydraulic conductivity estimate of 1.1 ft/day, and a storage coefficient of 0.035 were obtained (Figure N.19). The transmissivity estimates are one to two orders of magnitude lower than estimated from the data obtained from pumping BMO-5B although the vertical conductivity estimates are similar. The range of transmissivities implies a range in horizontal conductivities

of 1.7 ft/day to 7 ft/day over an aquifer thickness of 315 feet. The analysis of data from the observation well (BMO-5B) yields a significantly lower horizontal conductivity and higher storage coefficient than data from the pumping well (BMO-5M). The higher storage estimate obtained from the observation well data is likely more representative of the basin fill in which it is completed than of the Cintura Formation. Conversely, the transmissivity estimate is likely more representative of the pumped (Cintura) formation.

That transmissivity estimates are dominated by the pumped formation is consistent with the Cintura Formation having a lower average conductivity than the basin fill. The similar vertical conductivity estimates represent some average over the two hydrostratigraphic units. The relatively high estimates of vertical conductivity are consistent with the responses measured in one unit while the other is pumped. The interaction between the two units is also consistent with the lithologic logs which show an absence of clayey material sometimes reported near the bottom of the basin fill. The cross-formation responses suggest that either the upper portion of the Cintura Formation is so weathered, fractured, poorly cemented, or coarse-grained, that its behavior is hydraulically similar to the basin fill, or that near-vertical permeable structures penetrating the Cintura Formation (or both the Cintura Formation and basin fill) exist at this location.

When using the homogeneous aquifer solution to analyze data from the pumping wells, full well penetration and horizontal flow were assumed, and vertical flow (leakage) into the portion of the aquifer penetrated by the pumped well filter pack was approximated by assigning a

leakance term. The assumed aquifer thicknesses of 145 feet for BMO-5B, and 130 feet for BMO-5M, are the approximate lengths of the respective filter pack lengths.

A transmissivity estimate of 3,370 ft^2/day, a leakance of 0.2/day, and a storage coefficient of 6.9 x 10^{-3} were obtained from the data from BMO-5B (Figure N.17). This transmissivity implies a conductivity of only 23.2 ft/day over an aquifer thickness of 145 feet, which is substantially lower than the estimate obtained using the partial penetration solution. The rather large leakance value of 0.2/day implies significant vertical flow. A transmissivity estimate of 986 ft^2/day, a leakance of 0.06/day, and a storage coefficient of 1.9 x 10^{-3} were obtained for the data from BMO-5M (Figure N.20). This transmissivity implies a horizontal conductivity of 7.6 ft/day over an aquifer thickness of 130 feet, which is at the high end of the range estimated using data from the pumping well and data from the observation well in the partial penetration analysis.

In general, slightly better fits to the pumping well data, especially to the third step, were obtained using the homogeneous aquifer solutions for both the BMO-5B and BMO-5M test data (Figures N.17 and N.20). These improved fits could only be obtained by assuming large leakances which imply vertical interaction between basin fill and Cintura Formation. These results imply the existence of high vertical permeability structures in the vicinity of the BMO-5 wells as discussed above.

1.5.1.5 BMO-6

Results of testing the BMO-6 series wells are provided in Table N.2 and Figures N.21 through N.26. BMO-6M is completed in bedrock interpreted to be the Cintura Formation and BMO-6B in both basin fill and the weathered upper portion of the Cintura Formation (Section 3.4.4.5 of the main text). Measurable responses were not obtained at BMO-6M during pumping at BMO-6B or vice versa. The data from BMO-6M were analyzed using both the partial penetration solution and the homogeneous aquifer solutions for comparison purposes. The data from BMO-6B were analyzed using only the homogeneous aquifer solution because the well fully penetrated the saturated portion of the basin fill.

Only the data from the first two steps of the test at BMO-6B were interpretable for hydraulic properties. Figure N.21 shows the raw drawdown data, Figure N.22 shows the fit to the first two steps, and Figure N.23 shows the fit to all the data. Features in the drawdown data from BMO-6B that made the third step uninterpretable for hydraulic properties include the rapid increases in drawdown during the initial portion of the third step and from 540 minutes to the end of pumping. The rapid increases in drawdown that occurred in the early and latter portions of the third step cannot be attributed to changes in pumping rate or to low well efficiency. Furthermore, the changes in slope of the drawdown data (Figure N.21) were detected over the same depth intervals in the pumping and recovery data. This behavior likely results from dewatering of relatively thin water bearing zones that supply most of the water to the well or to the development of seepage faces as the water level in the well dropped below one or more of these relatively thin water bearing zones. Once seepage faces develop, the well is decoupled from these water bearing zones, and the rate at which water flows into the well from these zones

is independent of the water level in the well. Under these conditions the standard solutions used to analyze hydraulic tests are invalid.

Using the homogeneous aquifer solution to analyze data from the first two steps, the transmissivity at BMO-6B was estimated to be 170 ft^2/day over a saturated thickness of 75 feet yielding a hydraulic conductivity of 2.26 ft/day (Figures N.22 and N.23). The estimated storage coefficient of 1 x 10^{-4} suggests confined behavior.

Using the partial penetration solution, the transmissivity at BMO-6M was estimated to be 2,870 ft^2/day over an aquifer thickness of 190 feet (the approximate depth of penetration of the well into the Cintura Formation) (Figure N.24). In performing the analysis, the basin fill was treated as an aquitard (or confining layer that is a source of leakage, Figure N.2 and N.3) but having the same vertical conductivity as the Cintura Formation. The vertical hydraulic conductivities of the Cintura Formation and basin fill were estimated to be negligible (1 x 10^{-6} ft/day), indicating that the basin fill and the Cintura Formation are essentially isolated hydraulically. Analysis of the hand-collected drawdown data at BMO-6M yielded results nearly identical to the results of analysis of the automatically logged data (Figure N.26). Using the homogeneous aquifer solution, a transmissivity of 2,100 ft^2/day over an aquifer thickness of 130 feet (the approximate length of the filter pack) was obtained (Figure N.26). The aquifer was assumed to be only as thick as the filter pack length, and flow to be horizontal, with no vertical leakage from above or below the aquifer interval penetrated by the filter pack.

These transmissivities and assumed aquifer thicknesses yield similar hydraulic conductivities of 15.1 and 16.2 ft/day, respectively. Estimated storage coefficients of 1×10^{-5} are consistent with confined conditions.

The estimated low hydraulic conductivity of the material penetrated by BMO-6B, which included basin fill and weathered Cintura Formation, and the changes in slopes in the drawdown, are consistent with a heterogeneous material that transmitted water to BMO-6B primarily via higher conductivity (coarser-grained) zones. These zones are likely thin and/or discontinuous. The calculated conductivity represents an average over the entire saturated portion of the basin fill and top of the Cintura Formation penetrated by the well and is influenced by the presence of thick intervals having a large proportion of fine-grained material. These fine-grained materials, described in the lithologic logs for this well (Appendix J), presumably have a low conductivity. The low calculated conductivity for the mixture of basin fill and weathered top of the Cintura Formation penetrated by BMO-6B seems anomalous in comparison to the relatively high conductivity calculated for the Cintura Formation at co-located well BMO-6M.

1.5.1.6 BMO-7 and MW-1

Results of testing BMO-7M and MW-1 are provided in Table N.2 and Figures N.27 through N.37. BMO-7M is completed in the Morita Formation and MW-1 in the basin fill (Section 3.4.4.6 of the main text). Tests were analyzed using both the partial penetration and the homogeneous aquifer solutions.

Although BMO-7M is completed in the Morita Formation and MW-1 in the basin fill, and MW-1 is located nearly 500 feet east of BMO-7M, a measurable response was obtained at MW-1 during pumping of BMO-7M. Conversely, BMO-7M did not respond to pumping at MW-1, perhaps because MW-1 was pumped at only one low rate of 11 gpm (Table N.1) whereas BMO-7 was pumped at three rates (11, 23, and 34 gpm). The response of MW-1 to pumping at BMO-7M indicates the potential for vertical interaction between basin fill and the shallow Morita Formation at this location.

Although well efficiency parameters were estimated for BMO-7M, the solutions were not very sensitive to these parameters, and applying them provided little improvement in the fit between measured and simulated drawdowns. Regardless, the well efficiency corrections were applied as shown in Table N.3.

Using the partial penetration solution to analyze drawdowns at BMO-7M, a transmissivity estimate of 105 ft^2/day over a thickness of 190 feet (the approximate depth of penetration of the well into the Morita Formation) and a vertical conductivity of 1 x 10^{-5} ft/day were obtained. This transmissivity and aquifer thickness yield a hydraulic conductivity of 0.62 ft/day (Figure N.27). The analysis assumed that the basin fill was a source of water to the Morita Formation at BMO-7M via downward flow or leakage. The basin fill was treated as an aquitard (or confining layer that is a source of leakage, Figure N.2 and N.3) but having the same vertical conductivity as the Morita Formation. The vertical hydraulic conductivities of the Morita Formation and basin fill were estimated to be low (1 x 10^{-5} ft/day), indicating little hydraulic interaction between the two formations. Attempts to treat the basin fill as part of the same

aquifer as the Morita Formation (as in the partial penetration analyses for BMO-5) did not provide reasonable fits to the data.

Using the homogeneous aquifer solution, a transmissivity estimate of 81 ft^2/day over a thickness of 130 feet (the approximate length of the well's filter pack) was obtained Figure N.31). This transmissivity and aquifer thickness yield a horizontal conductivity of approximately 0.55 ft/day. Only the aquifer interval penetrated by the filter pack was assumed to provide water to the well. Flow was assumed to be primarily horizontal with no significant leakage from above or from below the screened interval of the well.

Assuming a somewhat large effective well radius of 0.5 feet provided the best fit to all the data when using the homogeneous aquifer solution. This suggests an effective bore radius that is larger than nominal due to washout of the borehole during drilling. The increased bore radius would increase the storage of the filter pack and would increase the effective well radius provided the filter pack has higher storage than the aquifer. The increased diameter of the borehole will, however, only affect the results to the extent that the filter pack has different storage properties than the aquifer. Borehole washout at BMO-7M is likely, by analogy with BMO-8M and BMO-13M where it has been confirmed by video and caliper logging.

The fits between measured and simulated drawdowns were poor for both the partial penetration and homogeneous aquifer solutions as shown in Figures N.27 and N.31. Improved fits to the third step and recovery data were obtained by applying a Dupuit correction to the BMO-7M drawdown data (Figures N.28 and N.32) regardless of whether the well was

considered fully or partially penetrating. Using the Dupuit correction with the partial penetration solution, a transmissivity estimate of 125 ft^2/day over a thickness of 190 feet and a vertical conductivity of 0.45 ft/day were obtained, implying a horizontal conductivity of 0.66 ft/day. This is very close to the 0.62 ft/day obtained without the Dupuit correction. Using the Dupuit correction with the homogeneous aquifer solution, a transmissivity estimate of 170 ft^2/day over a thickness of 100 feet (the length of the screen) was obtained, implying a horizontal conductivity of 1.7 ft/day. This estimate is more than double the estimate of 0.55 ft/day obtained without the Dupuit correction.

The improved fits when using the Dupuit correction suggest the occurrence of non-horizontal flow similar to that encountered when pumping an unconfined (phreatic) aquifer. Analysis of the hand-collected drawdown data at BMO-7M yielded results nearly identical to the results of analysis of the automatically logged data (Figure N.28 and N.29). The improvement of the fit when using the partial penetration solution with the Dupuit correction and a higher vertical conductivity (Figure N.28) is consistent with the apparent response of MW-1 to pumping in BMO-7M because it implies a vertical flow component. However, a reasonably good fit to all the data was obtained by assuming full penetration with no vertical leakage (Figure N.32).

Although improved fits were obtained to the third step and recovery data by applying a Dupuit correction, Figures N.27 and N.31 indicate that the fit to the first and second steps is rather poor. An analysis using the partial penetration solution that considered only the first step is shown in Figure N.30. A transmissivity estimate of 278 ft^2/day over a thickness of 190 feet, and a vertical conductivity of 0.1 ft/day were obtained, implying a horizontal conductivity of 1.5

ft/day. This estimate is more than double the estimate of 0.66 ft/day obtained using all the data. Again, the vertical conductivity estimate implies vertical interaction and is consistent with the apparent response at MW-1. The higher transmissivity estimate obtained from the first step suggests that the effective conductivity of the Morita Formation may decrease as drawdown increases, possibly due to dewatering of relatively isolated, relatively low storage, higher permeability zones as pumping rate increases. While this suggests dual porosity, a dual porosity effect was not evident in the drawdown data.

The response at MW-1 to pumping at BMO-7M was also analyzed using the partial penetration solution. This required the assumption that the basin fill and portion of the Morita Formation penetrated by BMO-7M constituted a single aquifer (similar to the analysis at BMO-5). A transmissivity of 16,100 ft^2/day over a thickness of 440 feet and a vertical conductivity of 0.064 ft/day were obtained (Figure N.33). The assumed aquifer thickness of 440 feet is defined by the static water level in MW-1 and the base of the filter pack in BMO-7M. The transmissivity estimate is anomalously high for the Morita Formation because it represents some averaging of the basin fill and Morita Formation at this location. The implied horizontal conductivity of 37 ft/day is much larger than the estimates for the Morita Formation based on pumping well data but is less than half the basin fill conductivity estimates obtained from analysis of pumping MW-1 as discussed below. The approximate arithmetic average of the conductivities of the basin fill and Morita Formation is 37 ft/day at this location.

Estimates of storage coefficient from the various analyses of data obtained from pumping BMO-7M varied from 4.6×10^{-5} to 0.42 depending on the method of analysis, and therefore

range from values typical of confined to unconfined conditions. The lowest value was obtained from analysis of the response at MW-1 to pumping at BMO-7M. This is to be expected because measurable drawdowns would be very unlikely considering the relatively short duration of pumping, the relatively low pumping rate at BMO-7M, and the lateral and vertical distance between the well screens, unless the effective storage coefficient was low.

Analysis of data obtained during pumping of MW-1 using the partial penetration solution provided a transmissivity estimate of 19,200 ft^2/day over a thickness of 257 feet (the thickness of saturated basin fill at this location), yielding a hydraulic conductivity of 75 ft/day (Figure N.34). The vertical hydraulic conductivity was estimated to be negligible. Using the homogeneous aquifer solution, transmissivity estimates ranging from 7,790 ft^2/day to 11,500 ft^2/day over a thickness of 90 feet (the approximate length of the well's filter pack) were obtained, yielding hydraulic conductivity estimates of 87 to 128 ft/day (Figures N.35 through N.37). Analysis of the hand-collected data at MW-1 yielded a higher transmissivity compared to the results of analysis of the automatically logged data (Table N.3). The estimated storage coefficients of 0.1 to 0.01 are consistent with unconfined conditions.

The ranges of estimates of hydraulic properties obtained from testing of BMO-7M and MW-1 are indicative of the complexity of the hydraulic system at that location. Some interaction between the basin fill and Morita Formation is indicated by the response of MW-1 to pumping at BMO-7M. This interaction could be due to weathering or fracturing of the upper portion of the Morita Formation that increases its permeability to levels more typical of basin fill, or to near-vertical structures that penetrate both Morita Formation and basin fill at this location. Such

structures would be consistent with the low effective storage coefficient estimated from the MW-1 response to BMO-7M pumping. However, reasonable fits to drawdown data obtained during pumping of MW-1, or to later portions of the drawdown data at BMO-7M, did not require the assumption of significant vertical flow, which would seem to be necessary if pumping from the bedrock at BMO-7M can affect basin fill water levels at MW-1. These apparent inconsistencies are not resolvable using standard analytical aquifer test methods.

1.5.1.7 BMO-8

Results of testing the BMO-8 series wells are provided in Table N.2 and Figures N.38 through N.43. BMO-8M is completed in the Morita Formation and BMO-8B in the basin fill (Section 3.4.4.7 of the main text). The data from BMO-8B were analyzed using the partial penetration solution because the well did not fully penetrate the saturated portion of the basin fill. The data from BMO-8M were analyzed using both the partial penetration solution and the homogeneous aquifer solution for comparison purposes. No measurable responses were obtained at BMO-8M during pumping at BMO-8B or vice versa. Due to excessive noise in the automatically logged data during pumping, hand collected data were used exclusively to analyze the pumping portions of the tests. Because the noise did not affect the automatically logged recovery data, the automatically logged data were used to analyze the recovery portions of the tests.

Using the homogeneous aquifer solution, the transmissivity at BMO-8B was estimated to be 3,500 ft^2/day over a saturated thickness of 197 feet (the thickness of saturated basin fill at this

location) yielding a hydraulic conductivity of 17.8 ft/day. A storage coefficient of 0.01 was estimated, consistent with unconfined conditions (Figure N.38).

Using the partial penetration solution, the transmissivity at BMO-8M was estimated to range from 115 to 146 ft^2/day over an aquifer thickness of 725 feet (the approximate depth of penetration of the well into the Morita Formation), depending on whether drawdown or recovery data were analyzed. This transmissivity and aquifer thickness yield a hydraulic conductivity range of 0.16 to 0.20 ft/day (Figures N.39 and N.40). The vertical hydraulic conductivity was estimated to be negligible (1×10^{-5} ft/day). In performing the analysis, the Morita Formation was considered to be hydraulically isolated from the basin fill. A large effective well radius of 1 foot improved the quality of fit to the data. Using the homogeneous aquifer solution, transmissivity estimates ranged from 20 to 31 ft^2/day over an aquifer thickness of 135 feet (the approximate length of the filter pack), yielding hydraulic conductivities ranging from 0.15 to 0.23 ft/day (Figures N.41 and N.42). The aquifer was assumed to be only as thick as the filter pack length, and flow to be horizontal, with no vertical leakage from above or below the aquifer interval penetrated by the filter pack. Effective well radii of 0.33 and 0.43 feet improved the quality of fit to the data. Using the Dupuit correction (Figure N.42) also improved the overall fit to the data, suggesting the occurrence of the non-horizontal flow conditions typical when pumping an unconfined (phreatic) aquifer.

Because fits to the first step were slightly poor, an additional analysis was performed using the partial penetration solution that considered only the first step data (Figure N.43). A transmissivity of 220 ft^2/day over an aquifer thickness of 725 feet, and a vertical conductivity of

1 x 10^{-3} ft/day were obtained. This transmissivity and aquifer thickness yield a horizontal hydraulic conductivity of 0.30 ft/day.

Estimates of storage coefficient ranged from 0.12 to 0.40 depending on the method of analysis, and are inconsistent with the expected confined conditions at BMO-8M. The estimated storage coefficients would be even higher if, as discussed below, a large effective well radius was not assumed in the analyses. The assumption of relatively large storage coefficients and large effective well radii provided the best overall fits to the data.

The improved fits to the data when specifying an effective well radius of up to 1 foot in using the partial penetration solution indicate that the effective bore radius was larger than nominal due to washout of the borehole during drilling. A similar behavior was encountered when analyzing tests at BMO-7M (Section 1.5.1.6). Borehole washout was confirmed at BMO-8M by video and caliper logging. Washout would increase the storage of the filter pack and could increase the effective well radius assuming that the filter pack has a higher storage that the formation. However, it seems unlikely that washout would be extensive enough to justify an effective radius as large as 1 foot. The effective radii used in the homogeneous aquifer solutions (of 0.43 feet or less, Table N.3) are more reasonable.

1.5.1.8 BMO-9

Results of testing BMO-9M are provided in Table N.2 and Figures N.44 and N.45. BMO-9M is completed in the Morita Formation (Section 3.4.4.8 of the main text). The data

were analyzed using the homogeneous aquifer solution because reasonable fits to measured drawdowns were not obtained using the partial penetration solution. A good fit to all the data was not possible using only one set of parameters. Therefore, two analyses were performed; one focused on the late time drawdown and recovery data and the other on the first pumping step.

Transmissivity estimates range from 28 ft^2/day (using the late time and recovery data, Figure N.44) to 101 ft^2/day (using only step 1 data, Figure N.45) over an aquifer thickness of 130 feet (the approximate length of the well's filter pack), yielding hydraulic conductivities of 0.21 and 0.78 ft/day, respectively. Only the aquifer interval penetrated by the filter pack was assumed to provide water to the well. Flow was assumed to be horizontal with no significant leakage from above or from below the filter pack interval of the well. The storage coefficient estimated from the late time and recovery data was 0.24, and from step 1 data was 0.021 (Table N.2). The value of 0.24 is typical of an unconfined aquifer.

When focusing on the late time and recovery data, specifying a rather large effective well radius of 0.81 feet provided the best overall fit, suggesting that the bore radius was larger than nominal due to washout, as at BMO-7M and BMO-8M. As shown in Figure N.44, the fit to the recovery portion of the data is good, but the fit to the pumping portion of the data is poor. In this case the assumption of both a large storage coefficient and a large effective well radius were needed to provide the best fit to all the data, especially the recovery data. When considering only step 1 the specification of a large well radius was not necessary to provide a good fit to the data; however, the aquifer properties that provided a good fit to step 1 did not provide good fits to steps 2 or 3 or to the recovery data.

1.5.1.9 BMO-10

Results of testing the BMO-10G well nest are provided in Table N.2 and Figures N.46 through N.48. Both BMO-10GU and BMO-10GL are completed in the Glance Conglomerate (Section 3.4.4.9 of the main text). BMO-10GU is about 95 feet north of BMO-10GL. Tests of both wells were analyzed using the homogeneous aquifer solution. No measurable responses were obtained at BMO-10GU during pumping at BMO-10GL or vice versa. Due to low productivity, BMO-10GL was pumped at only two rates as shown in Table N.1.

The drawdown at BMO-10GU displayed several significant changes in slope during both steps of the test (Figure N.46) even though pumping rate was relatively constant during each step. The changes in slope are interpreted to represent changes in hydraulic responses due to discontinuities in the aquifer materials. The drawdowns during the latter portion of the first step and during the higher pumping step could not be interpreted; only the early portion of the first step and the latter portion of the recovery data were interpretable for hydraulic parameters. The decrease in data frequency once the drawdown exceeded about 70 feet is due to the dropping of the water level below the Troll in the well. Hand collected data are displayed in the time interval during which the Troll was not submerged.

Transmissivity estimates of 4.92 ft^2/day over an assumed aquifer thickness of 140 feet, and 0.451 ft^2/day over a thickness of 135 feet were obtained at BMO-10GU and BMO-10GL, respectively (Figures N.47 and N.48). The approximate filter pack lengths for BMO-10GU and BMO-10GL are 140 feet and 135 feet, respectively. In analyzing the data, only the aquifer interval penetrated by each well's filter pack was assumed to provide water to the well. Flow

was assumed to be horizontal with no significant leakage from above or from below the filter pack interval of either well. These transmissivities and thicknesses yield hydraulic conductivity estimates of 0.035 ft/day for BMO-10GU and 0.0033 ft/day for BMO-10GL.

The estimated storage coefficients of 0.21 at BMO-10GU and of 0.0138 at BMO-10GL are generally typical of unconfined conditions. As at BMO-8M, the best fit to the data at BMO-10GL required the assumption of a large effective well radius and a somewhat larger storage coefficient than would seem typical for the expected confined conditions. Assuming a rather large effective well radius of 2.36 feet provided the best fit to all the BMO-10GL data. This value seems too large to be consistent with borehole washout but does indicate that the test was strongly influenced by storage effects regardless of the mechanism.

The discontinuities evident in the BMO-10GU drawdown (Figure N.46) during pumping were reflected in the recovery data. These discontinuities likely result from the development of seepage faces as the water level in the well dropped below a succession of relatively thin water bearing zones that supply most of the water to the well. Once seepage faces develop, the well is decoupled from these water bearing zones in that the rate at which water flows into the well from these zones is independent of the water level in the well. Under these conditions the standard solutions used to analyze hydraulic tests are invalid. Possibly BMO-10GL would have displayed similar behavior had water levels in that well dropped below the top of the screened interval during testing.

1.5.1.10 BMO-11

Results of testing BMO-11G are provided in Table N.2 and Figures N.49 and N.50. BMO-11G is completed in the Glance Conglomerate (Section 3.4.4.10 of the main text). The data were analyzed using both the partial penetration solution and the homogeneous aquifer solution for comparison purposes.

Using the partial penetration solution, the transmissivity was estimated as 115 ft^2/day over an aquifer thickness of 325 feet (the approximate length of the water column in the well) yielding a hydraulic conductivity estimate of 0.35 ft/day. Vertical conductivity was estimated as 0.01 ft/day. Using the homogeneous aquifer solution, the transmissivity was estimated as 60 ft^2/day over an assumed aquifer thickness of 180 feet (the approximate filter pack length of the well). The aquifer was assumed to be only as thick as the filter pack length, and flow to be horizontal, with no vertical leakage from above or below the aquifer interval penetrated by the filter pack. The assumption of negligible vertical leakage is generally consistent with the relatively low vertical conductivity of 0.01 ft/day estimated using the partial penetration solution. Estimated storage coefficients of 1×10^{-4} to 1×10^{-5} are consistent with confined conditions.

As shown in Table N.2, significant non-linear head losses occurred in the well at the higher pumping rates, as reflected in the well loss exponents that were estimated to range from 1.9 to 2.8 depending on the method of analysis.

1.5.1.11 BMO-13

The results of testing the BMO-13 series wells are provided in Table N.2 and Figures N.51 and N.52. BMO-13B is completed in the basin fill and BMO-13M in the Mural Limestone (Section 3.4.4.11 of the main text). Drawdown data from BMO-13B were analyzed using the partial penetration solution because the well does not quite fully penetrate the basin fill aquifer. Data from BMO-13M were analyzed using the homogeneous aquifer solution. Reasonable fits to measured drawdowns at BMO-13M could not be obtained using the partial penetration solution. No measurable responses were obtained at BMO-13M during pumping at BMO-13B or vice versa. Only hand collected data from BMO-13B were analyzed because the automatically logged data were excessively noisy.

As shown in Figure N.51, the interpretation of the test data from BMO-13B was complicated by short term changes in drawdown that are noticeable during the third step of the test. These were due to periodic cessation of drilling at nearby well BMO-13M at which times no water was airlifted from the formation. BMO-13B is approximately 120 feet from BMO-13M. The effect of water removal from the nearby well could be ignored in the analysis because the drilling began about 45 minutes prior to testing, and the water removed during drilling resulted in a relatively constant drawdown prior to the start of the test. The short term variations in drawdown caused by periodic cessation of drilling were sufficiently symmetrical that they did not need to be removed from the data set during the analysis.

Using the partial penetration solution, a transmissivity estimate of 7,500 ft^2/day over an assumed aquifer thickness of 313 feet and a storage coefficient of 0.01 were obtained at BMO-

13B. The approximate saturated thickness of the basin fill is 313 feet at this location. The transmissivity and assumed aquifer thickness yield a horizontal hydraulic conductivity of 24 ft/day. The response at BMO-13B to airlifting at BMO-13M suggests that the actual storage coefficient may be less than 0.01.

Using the homogeneous aquifer solution, a transmissivity estimate of 0.661 ft^2/day over an assumed aquifer thickness of 130 feet and a storage coefficient of 0.019 were obtained at BMO-13M. 130 feet is the approximate length of the well's filter pack. The aquifer was assumed to be only as thick as the filter pack length, and flow to be horizontal, with no vertical leakage from above or below the aquifer interval penetrated by the filter pack. The transmissivity and assumed aquifer thickness yield a horizontal hydraulic conductivity of 0.0051 ft/day. Assuming a rather large effective well radius of 1.13 feet provided the best fit to all the data. As discussed in Section 1.5.1.6, a large effective well radius is consistent with borehole washout during drilling. Washout was confirmed at BMO-13M by video and caliper logging. Although the effective well radius of 1.13 feet seems too large to be consistent with borehole washout, it indicates that the test was strongly influenced by storage effects.

The estimated storage coefficients of 0.01 at BMO-13B and 0.019 at BMO-13M are both typical of unconfined conditions. As at BMO-8M, the best fit to the data at BMO-13M required the assumption of a large effective well radius and a somewhat larger storage coefficient than would seem typical for the expected confined conditions.

1.5.1.12 GARNER

Results of testing the GARNER well are provided in Table N.2 and Figure N.53. The GARNER well is a private well interpreted to be completed within the Cintura Formation (but previously reported to be completed in Morita Formation). Data were analyzed using the homogeneous aquifer solution. As shown in Table N.1, the GARNER well was pumped at only a single rate due to constraints at the well.

A transmissivity estimate of 142 ft^2/day over a thickness of 120 feet (the approximate length of the well's filter pack) was obtained, yielding a hydraulic conductivity estimate of 1.18 ft/day. A storage coefficient of 1×10^{-5} was obtained, consistent with confined conditions. The analysis assumed strictly horizontal flow within the aquifer interval penetrated by the well screen, with no vertical leakage into this interval from above or below.

1.5.1.13 TM-02A

Results of testing TM-02A are provided in Table N.2 and Figures N.54 and N.55. TM-02A is a groundwater monitoring wells completed within the Glance Conglomerate. Data were analyzed using both the partial penetration and the 'homogeneous aquifer' solutions. As shown in Table N.1, TM-02A was pumped at only a single rate for a short period of time due to rapid dewatering. As a result of the low yield, the drawdown during pumping was significantly impacted by borehole storage.

Using the partial penetration solution, a transmissivity estimate of 15.7 ft^2/day over an aquifer thickness of 346 feet was obtained, yielding a hydraulic conductivity of 0.045 ft/day. 346 feet is the approximate depth of the penetration of the well into the Glance Conglomerate. A storage coefficient of 0.041 was obtained.

Using the homogeneous aquifer solution a transmissivity of 2 ft^2/day over a thickness of 100 feet was obtained, yielding a hydraulic conductivity estimate of 0.02 ft/day. 100 feet is the approximate length of the well's filter pack. The analysis assumed strictly horizontal flow within the aquifer interval penetrated by the well screen, with no vertical leakage into this interval from above or below. A storage coefficient of 2×10^{-4} was obtained, which seems more reasonable for the expected confined conditions at this well.

In fitting the data at TM-02A, assuming rather large effective well radii of 1.66 to 2.36 feet provided the best fit to the data. Although these values seem too large to be consistent with borehole washout, they indicate that the test was strongly influenced by storage effects.

1.5.1.14 NWC-03

Results of testing NWC-03 are provided in Table N.2 and Figure N.56. NWC-03 is a public supply well owned and operated by Naco Water Company that is completed within the basin fill. The test was conducted by monitoring drawdown at NWC-03 CAP, a former production well located approximately 25 feet from NWC-03, during a typical pumping cycle at

NWC-03. As shown in Table N.1, NWC-03 was pumped at only a single rate of approximately 52 gpm, which was estimated from the totalizer flow meter on NWC-03.

Drawdown data were analyzed using only the partial penetration solution because both the pumping well (NWC-03) and the observation well (NWC-03 CAP) partially penetrate the basin fill aquifer. NWC-03 CAP, with a total depth of only 179 ft bls, is screened over a shallower interval than NWC-03, which is screened from 252 to 312 ft bls. A transmissivity estimate of 21,000 ft^2/day over an aquifer thickness of 505 feet (based on the basin fill aquifer thickness encountered in BMO-4B), a vertical conductivity of 3.45 ft/day, and a storage coefficient of 4.53 x 10^{-4} were obtained. The transmissivity estimate implies a horizontal conductivity of 41.6 ft/day. The low storage coefficient is consistent with confined conditions.

1.5.1.15 TVI-875

Results of testing TVI-875 are provided in Table N.2 and Figures N.57 through N.59. TVI-875 is completed within the basin fill. The test was analyzed using the partial penetration solution because the well only partially penetrated the saturated portion of the basin fill, and because nearby wells (BMO-4B, NWC-03 CAP, and TVI-713) that were used as observation wells were screened at various depths within the basin fill. During the test, measurable drawdowns were obtained at all three observation wells. Drawdowns in the pumped well were not measured due to inaccessibility for water level monitoring.

Water level monitoring before and after the test indicated that water levels in all observation wells were increasing at a rate of approximately 2.92 x 10^{-5} ft/min. This trend was subtracted from the drawdown data prior to analysis. Although measurable drawdowns were obtained at all three observation wells, reasonable estimates of hydraulic parameters were not obtainable from drawdown data at NWC-03 CAP and BMO-4B using the partial penetration solution in WHIP. The Neuman unconfined aquifer solution available in AQTESOLV (HydroSOLVE, Inc., 2000) was therefore used to analyze these data. As with WHIP, wells were treated as partially penetrating when using the Neuman solution.

Transmissivity was estimated to range from 21,860 to 28,850 ft^2/day, vertical hydraulic conductivity from 8.6 x 10^{-3} to 1 ft/day, and storage coefficient from 6.9 x 10^{-6} to 3.2 x 10^{-3} (Table N.2 and Figures N.57 through N.59) depending on which observation well was analyzed and on the solution method. When using the Neuman solution, vertical conductivities were calculated from the resulting beta factors. The estimated transmissivities yield horizontal hydraulic conductivities ranging from 43.3 to 57.1 ft/day over an estimated aquifer thickness of 505 feet (based on the thickness encountered in BMO-4B). The horizontal hydraulic conductivities of 43.3 and 57.1 ft/day obtained using the Neuman solution bracket the estimate of 47.5 ft/day obtained using WHIP. The estimated storage coefficients are lower than would be expected for an unconfined aquifer.

1.6 Discussion

As shown in Table N.3, transmissivities are highest in basin fill and lowest in the Mural Limestone and Glance Conglomerate, with the Cintura and Morita Formations having intermediate values. Calculated hydraulic conductivities over the entire assumed aquifer thicknesses (which represent vertically averaged values) are also highest in the basin fill and lowest in the Mural Limestone and Glance Conglomerate. Although a number of different conceptual models were used to interpret data at some of the test locations, the hydraulic conductivity estimates shown in Table N.3 are similar to previous estimates for the site (Table 6 of the main text). The differences between maximum and minimum hydraulic conductivity estimates at individual test locations are greatest for bedrock wells, and are within a factor of two at all locations except at BMO-5M, BMO-7M, and BMO-9M.

Some of the important results of the hydraulic testing include:

1. Vertical hydraulic conductivities in bedrock aquifers are likely small except in the vicinities of BMO-5M and BMO-7M.

2. Responses in basin fill to pumping in the Cintura and Morita Formations at BMO-5M and BMO-7M, respectively, imply that either the upper bedrock and basin fill have similar hydraulic properties or that permeable vertical structures exist that connect them hydraulically at these locations.

3. Vertically averaged horizontal hydraulic conductivities (calculated over the assumed aquifer thicknesses) can vary by 2 to 3 orders of magnitude in both basin fill and bedrock.

4. Hydraulic conductivities generally decrease with depth in the bedrock.

5. Flow within bedrock aquifers may be dominated (at least locally) by higher permeability zones of limited thickness and/or lateral extent.

6. In areas where relatively thin higher permeability zones dominate the bedrock flow system, the permeability of these zones could be substantially higher than the (vertically averaged) estimates shown in Table N.3.

The presence of relatively thin permeable zones in bedrock is indicated by the discontinuities in the measured drawdowns during pumping of BMO-10GU. These discontinuities likely resulted from the development of seepage faces as the water level in the well dropped below a succession of relatively thin water bearing zones that presumably supplied most of the water to the well. The presence of these zones was evident at BMO-10GU because the well was screened at a shallow depth near the water table. The shallow construction and low permeability resulted in dewatering of a portion of the screened interval during the test, a necessary precondition for the development of seepage faces.

The thin water-bearing zones in the bedrock likely have higher conductivities due to fracturing, which would also imply relatively low effective porosities. Under these conditions, the rate of sulfate transport in these zones could be similar to the rate of transport in basin fill even though the rate of mass transport in bedrock may be substantially smaller because the average transmissivity of the bedrock is small compared to the basin fill.

In addition, background water level monitoring in the basin fill in the vicinity of BMO-4B indicated that variations in water level of a few tenths of a foot to more than 1 foot (that are only partially related to changes in barometric pressure) can occur in this area. Water level fluctuations in BMO-4B, screened from 500-600 ft bls, correlate poorly with water level fluctuations in NWC-03 CAP, screened only to a depth of 160 feet. The poor correlation indicates that changes in hydraulic head within the basin fill in this area can vary significantly with depth. These results imply that the permeability and the potential rate of sulfate transport within the basin fill may vary significantly with depth.

2. REFERENCES

Hydro Geo Chem, Inc. (HGC). 2008. Revision 1, Work Plan to Characterize and Mitigate Sulfate with Respect to Drinking Water Supplies in the Vicinity of the Concentrator Tailings Storage Area, Cochise County, Arizona. July 3, 2008.

HGC. 1988. WHIP. Well Hydraulics Interpretation Program. Version 3.22, User's Manual. July 1988.

HydroSOLVE, Inc. 2000. AQTESOLV Aquifer Test Analysis Software. Licensed by HydroSOLVE, Inc.

TABLES

TABLE N.1
Summary of Hydraulic Test Conditions

Well	Rate 1	Duration	Rate 2	Duration	Rate 3	Duration
BMO-2008-1G	3.50	127.0	6.00	482.0	NA	NA
BMO-2008-3B	15.00	62.0	41.00	64.5	62.00	480.0
BMO-2008-4B	21.00	65.0	48.00	78.0	60.50	461.0
BMO-2008-5B	20.00	60.0	43.00	60.0	61.00	480.0
BMO-2008-5M	3.50	60.0	6.00	61.5	8.50	601.5
BMO-2008-6B	1.00	62.0	1.70	64.5	3.90	484.0
BMO-2008-6M	24-10	60.0	42.00	74.0	60.00	367.5
BMO-2008-7M	11.00	61.5	23.00	62.5	34.00	484.0
BMO-2008-8B	15.00	60.5	30.00	64.5	53.00	475.5
BMO-2008-8M	3.00	59.5	8.30	61.2	14.00	479.2
BMO-2008-9M	20.00	60.0	25.00	60.0	38.00	479.5
BMO-2008-10GL	1.10	483.0	2.20	89.0	3.60	62.0
BMO-2008-10GU	1.40	56.0	2.30	483.0	NA	NA
BMO-2008-11G	1.00	118.0	1.70	196.5	4.60	362.0
BMO-2008-13B	12-8.8	60.0	42.50	60.0	58.00	480.0
BMO-2008-13M	1.75	60.0	3.75	420.8	NA	NA
MW-1	11.00	601.0	NA	NA	NA	NA
GARNER	15.00	357.0	NA	NA	NA	NA
TM-02A	9.00	15.0	NA	NA	NA	NA
NWC-3	52.00	20.5	NA	NA	NA	NA
TVI-875	380.00	2079	NA	NA	NA	NA

Notes:

Rates are in gpm and durations in minutes.

NA = not applicable

TABLE N.2
Hydraulic Parameter Estimates from BMO-Series and Additional Well Tests

pumped well	observation well	solution	aquifer	T (ft^2/day)	S	Kv (ft/day)	b (ft)	Kc (ft/day)	c	n	effective well radius	effective casing radius	Kh (ft/day)	comment
BMO-1G	BMO-1G	partial penetrtn.	Glance	75.0	5.18E-06	5.00E-07	258	NA	0.75	2.25	NA	NA	0.29	
BMO-1G	BMO-1G	homogeneous	Glance	34.8	6.00E-06	NA	150	NA	0.32	2.6	0.208	0.208	0.23	recovery emphasized
BMO-1G	BMO-1G	homogeneous	Glance	25.0	5.00E-06	NA	150	NA	8.00E-03	4.2	0.208	0.208	0.17	step 1 emphasized
BMO-3B	BMO-3B	homogeneous	basin fill	3,000	1.00E-06	NA	130	NA	2.97E-03	1.66	0.208	0.208	23.1	drawdown
BMO-3B	BMO-3B	homogeneous	basin fill	4,500	1.00E-04	NA	130	NA	0.024	1.35	0.208	0.208	34.6	recovery
BMO-3B	BMO-3B	homogeneous	basin fill	4,500	1.00E-04	NA	130	NA	0.024	1.33	0.208	0.208	34.6	dupuit
BMO-3B[1]	BMO-3B[1]	homogeneous	basin fill	4,500	1.00E-04	NA	130	NA	0.024	1.35	0.208	0.208	34.6	dupuit
BMO-4B[1]	BMO-4B[1]	partial penetrtn.	basin fill	20,000	4.50E-04	1	505	NA	0.14	1.12	0.208	0.208	39.6	
BMO-4B	*NWC-3 CAP*	partial penetrtn.	basin fill	19,900	4.15E-04	0.867	505	NA	NA	NA	NA	NA	39.4	obs well NWC-3
BMO-5B	BMO-5B	partial penetrtn.	basin fill	25,000	0.076	3	315	NA	0.046	1.13	0.208	0.208	79.4	
BMO-5B	*BMO-5M*	partial penetrtn.	basin fill/Cintura	30,000	1.05E-04	4.3	315	NA	NA	NA	0.208	0.208	95.2	obs well BMO-5M
BMO-5B	BMO-5B	homogeneous	basin fill	3,370	6.84E-03	NA	145	NA	0.017	1.19	0.208	0.208	23.2	sp leak = 0.2/day
BMO-5M	BMO-5M	partial penetrtn.	Cintura	2,200	2.80E-03	3	315	NA	0.190	1.16	0.208	0.208	7.0	
BMO-5M	*BMO-5B*	partial penetrtn.	basin fill/Cintura	528	0.035	1.09	315	NA	NA	NA	0.208	0.208	1.7	obs well BMO-5B
BMO-5M	BMO-5M	homogeneous	Cintura	986	1.90E-03	NA	130	NA	0.228	1.1	0.208	0.208	7.6	sp leak = 0.09/day
BMO-6B	BMO-6B	partial penetrtn.	basin fill/Cintura	170	1.04E-04	NA	75	NA	NA	NA	0.354	0.287	2.27	
BMO-6M	BMO-6M	partial penetrtn.	Cintura	2,870	1.00E-05	1.00E-06	190	1.00E-06	2.00E-03	2.24	0.208	0.208	15.1	
BMO-6M[1]	BMO-6M[1]	partial penetrtn.	Cintura	2,870	1.00E-05	1.00E-06	190	1.00E-06	2.00E-03	2.24	0.208	0.208	15.1	hand measured
BMO-6M	BMO-6M	homogeneous	Cintura	2,100	1.00E-05	NA	130	NA	2.29E-03	2.21	0.208	0.208	16.2	
BMO-7M	BMO-7M	partial penetrtn.	Morita	105	0.27	1.00E-05	190	1.00E-05	4.44E-05	2.85	0.208	0.208	0.55	poor fit
BMO-7M	BMO-7M	partial penetrtn.	Morita	125	0.20	0.45	190	0.45	1.00E-04	2.5	0.208	0.208	0.66	dupuit
BMO-7M[1]	BMO-7M[1]	partial penetrtn.	Morita	125	0.20	0.45	190	0.45	1.00E-04	2.5	0.208	0.208	0.66	dupuit
BMO-7M	BMO-7M	partial penetrtn.	Morita	278	0.42	0.1	190	NA	NA	NA	0.208	0.208	1.46	step 1
BMO-7M	BMO-7M	homogeneous	Morita	80.6	0.13	NA	130	NA	3.26E-03	2.41	0.503	0.208	0.62	poor fit
BMO-7M	BMO-7M	homogeneous	Morita	170	3.50E-04	NA	100	NA	NA	NA	0.5	0.208	1.7	dupuit
BMO-7M	*COB MW-1*	partial penetrtn.	basin fill/Morita	16,100	4.60E-05	0.064	440	NA	NA	NA	NA	NA	36.6	obs well cob MW-1
BMO-8B[1]	BMO-8B[1]	partial penetrtn.	basin fill	3,500	0.01	0.1	197	NA	0.14	1.04	0.208	0.208	17.8	hand measured
BMO-8M[1]	BMO-8M[1]	partial penetrtn.	Morita	115	0.40	1.00E-05	725	NA	NA	NA	1	0.208	0.16	drawdown
BMO-8M	BMO-8M	partial penetrtn.	Morita	146	0.12	1.00E-05	725	NA	NA	NA	1	0.208	0.20	recovery
BMO-8M	BMO-8M	homogeneous	Morita	20	0.48	NA	135	NA	NA	NA	0.43	0.301	0.15	
BMO-8M	BMO-8M	homogeneous	Morita	31	0.36	NA	135	NA	NA	NA	0.331	0.301	0.23	dupuit
BMO-8M[1]	BMO-8M[1]	partial penetrtn.	Morita	220	0.15	1.00E-03	725	NA	NA	NA	1	0.208	0.30	step 1

TABLE N.2
Hydraulic Parameter Estimates from BMO-Series and Additional Well Tests

pumped well	observation well	solution	aquifer	T (ft^2/day)	S	Kv (ft/day)	b (ft)	Kc (ft/day)	c	n	effective well radius	effective casing radius	Kh (ft/day)	comment
BMO-9M	BMO-9M	homogeneous	Morita	28	0.24	NA	130	NA	NA	NA	0.811	1.16E-03	0.21	
BMO-9M	BMO-9M	homogeneous	Morita	101	0.021	NA	130	NA	NA	NA	0.208	0.208	0.78	step 1
BMO-10GU	BMO-10GU	partial penetrtn.	Glance	4.92	0.21	NA	140	NA	NA	NA	0.208	0.208	0.035	step 1
BMO-10GL	BMO-10GL	homogeneous	Glance	0.451	0.014	NA	135	NA	NA	NA	2.36	0.259	0.0033	
BMO-11G	BMO-11G	partial penetrtn.	Glance	115	1.00E-04	0.010	325	NA	0.1	2.8	0.208	0.208	0.35	
BMO-11G	BMO-11G	homogeneous	Glance	60	1.00E-05	NA	180	NA	0.5	1.92	0.208	0.208	0.33	
BMO-13B[1]	BMO-13B[1]	partial penetrtn.	basin fill	7,500	0.010	1	313	NA	0.074	1.04	0.208	0.208	24.0	hand measured
BMO-13M	BMO-13M	homogeneous	Mural	0.661	0.019	1.00E-03	130	NA	NA	NA	1.13	0.455	0.005	
COB MW-1	COB MW-1	partial penetrtn.	basin fill	19,200	0.10	1.50E-06	257	NA	0.029	1.5	0.208	0.208	74.7	
COB MW-1	COB MW-1	homogeneous	basin fill	7,790	0.010	NA	90	NA	0.029	1.5	0.208	0.208	86.6	
COB MW-1[1]	COB MW-1[1]	homogeneous	basin fill	10,300	0.010	NA	90	NA	0.031	1.5	0.208	0.208	114.4	hand measured
COB MW-1[1]	COB MW-1[1]	homogeneous	basin fill	11,500	0.010	NA	90	NA	0.032	1.5	0.234	0.208	127.8	hand measured
NWC-3R	*NWC-3*	partial penetrtn.	basin fill	21,000	4.53E-04	3.45	505	NA	NA	NA	NA	NA	41.6	
GARNER	GARNER	homogeneous	Cintura	142	1.00E-05	NA	120	NA	0.044	2	0.208	0.208	1.18	
TM-02A	TM-02A	partial penetrtn.	Glance	15.7	0.041	NA	346	NA	NA	NA	1.66	0.225	0.045	
TM-02A	TM-02A	homogeneous	Glance	2	2.00E-04	NA	100	NA	NA	NA	2.31	0.225	0.020	
TVI-875	TVI-713	partial penetrtn.	basin fill	24,000	6.94E-02	1	505	NA	NA	NA	NA	NA	47.5	
TVI-875	BMO-4B	Neuman	basin fill	28,850	6.85E-06	8.60E-03	505	NA	NA	NA	NA	NA	57.1	specific yield = 0.012
TVI-875	NWC-3	Neuman	basin fill	21,860	3.15E-03	0.046	505	NA	NA	NA	NA	NA	43.3	specific yield =0.049

Notes:

[1] = hand collected data
T = Transmissivity
S = Storage coefficient
K_V = Vertical hydraulic conductivity
Kc = Vertical hydraulic conductivity of confining layer
b = Assumed aquifer thickness
c = Well loss constant
n = Well loss exponent
Kh = horizontal hydraulic conductivity calculated as T/b
dupuit = dupuit correction for unconfined conditions
sp leak = specific leakage (homogeneous aquifer solution)

TABLE N.3
Summary of Hydraulic Parameters

pumped well	T (ft^2/day)	S	Kv (ft/day)	aquifer	Kh (ft/day)	Range in Kh
BMO-1G	44.9	5.39E-06	5.00E-07	Glance	0.23	0.17 - 0.29
BMO-3B	4,000	6.70E-05	NA	basin fill	30.8	23.1 - 34.6
BMO-4B	19,950	4.33E-04	0.9335	basin fill	39.5	39.4 - 39.6
BMO-5B	15,400	0.023	3.65	basin fill	55.0	22.3 - 79.4
BMO-5M	1,238	0.013	2.045	Cintura	5.4	1.7 - 7.6
BMO-6B	170	1.04E-04	NA	basin fill/Cintura	2.27	2.27
BMO-6M	2,613	1.00E-05	1.00E-06	Cintura	15.5	15.1 - 16.2
BMO-7M	152	0.21	1.83E-01	Morita	1.00	0.55 - 1.7
BMO-8B	3,500	0.010	0.1	basin fill	17.8	17.8
BMO-8M	106	0.30	3.40E-04	Morita	0.21	0.15 - 0.30
BMO-9M	64	0.13	NA	Morita	0.49	0.21 - 0.78
BMO-10GU	4.92	0.21	NA	Glance	0.035	0.035
BMO-10GL	0.45	0.014	NA	Glance	0.0033	0.0033
BMO-11G	88	5.50E-05	0.010	Glance	0.34	0.33 - 0.35
BMO-13B	7,500	0.010	1	basin fill	24.0	24
BMO-13M	0.661	0.019	1.00E-03	Mural	0.0051	0.0051
COB MW-1	12,198	0.033	1.50E-06	basin fill	100.9	74.7 - 127.8
NWC-3R	21,000	4.53E-04	3.45	basin fill	41.6	41.6
GARNER	142	1.00E-05	NA	Cintura	1.18	1.18
TM-02A	8.9	0.021	NA	Glance	0.033	0.020 - 0.045
TVI-875	24,900	2.42E-02	0.685	basin fill	49.30	43.3 - 57.1

Notes:

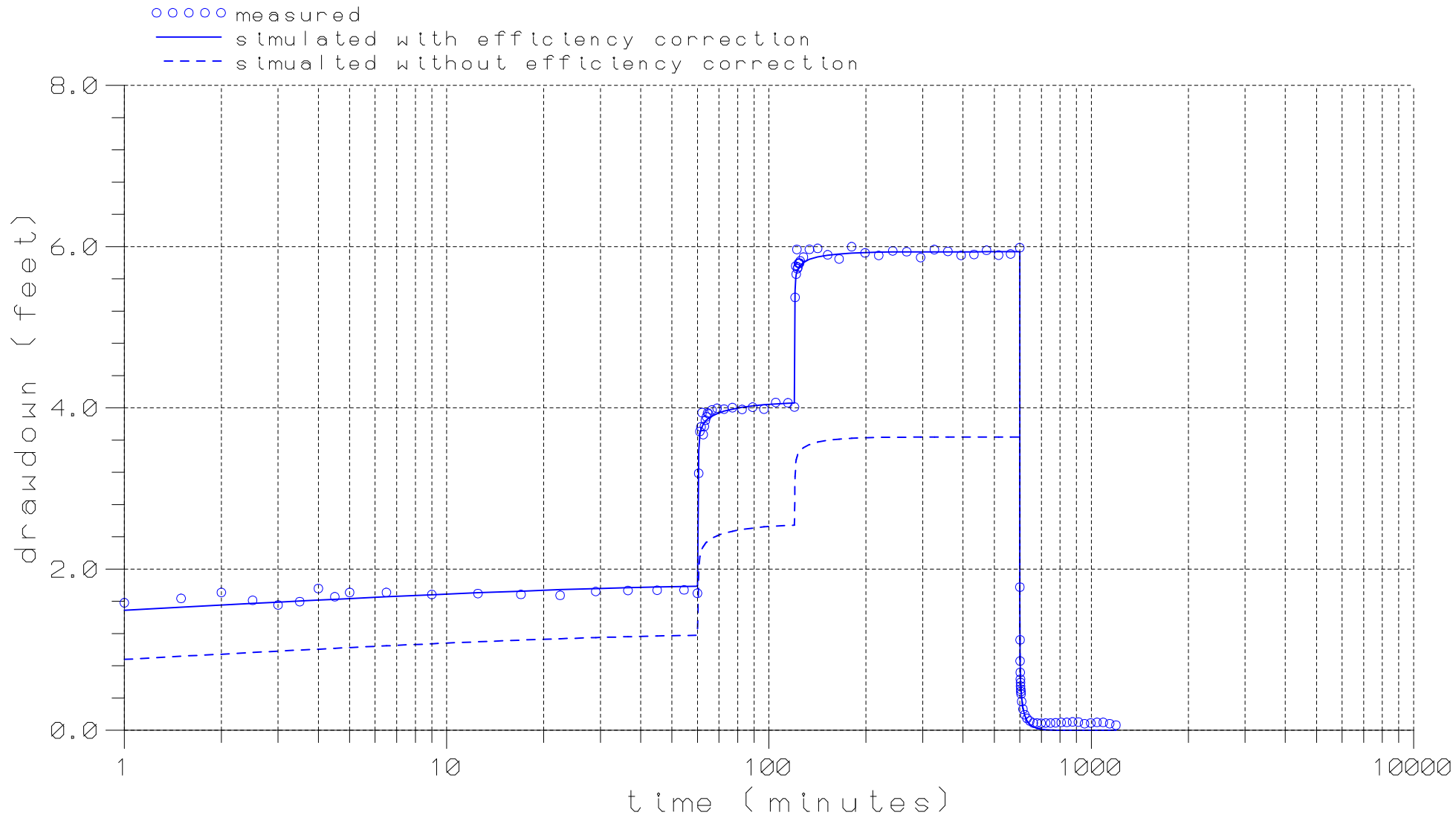
T = Transmissivity

S = Storage coefficient

K_V = Vertical hydraulic conductivity

Kh = horizontal hydraulic conductivity calculated as T/b

FIGURES



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MEASURED AND SIMULATED DRAWDOWNS WITH AND WITHOUT WELL EFFICIENCY CORRECTION

APPROVED	DATE	REFERENCE	FIGURE
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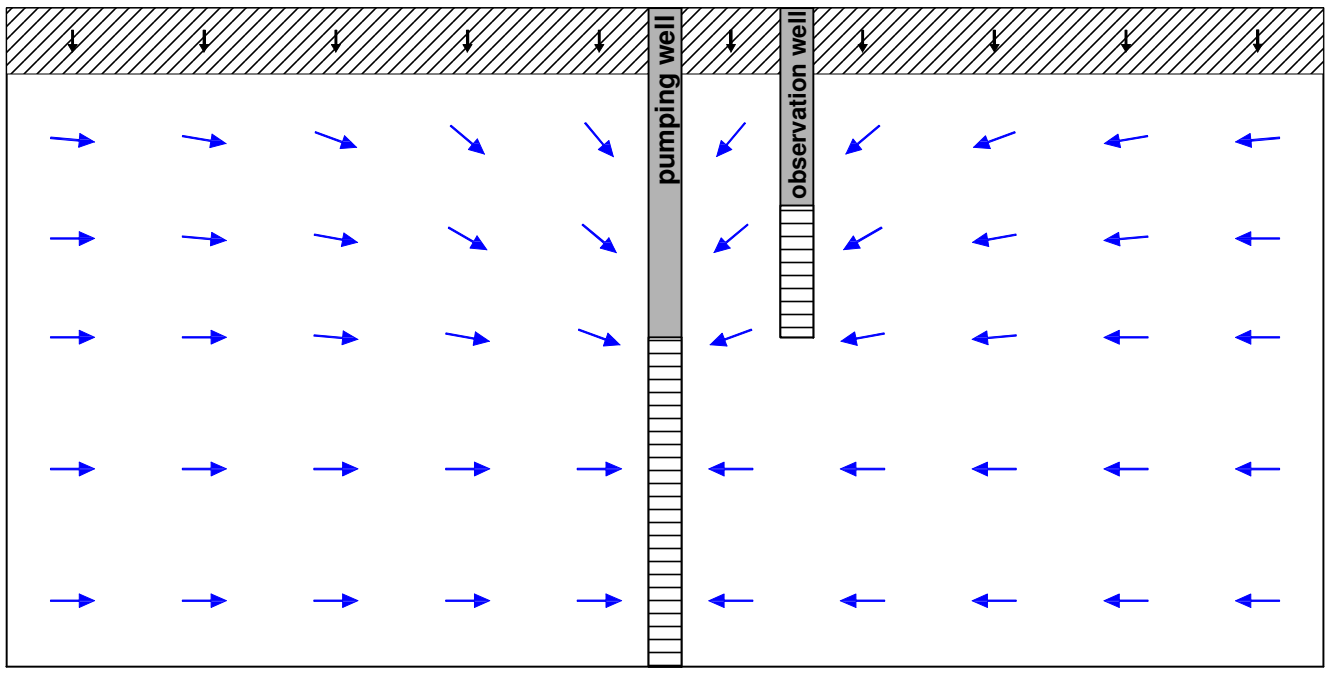
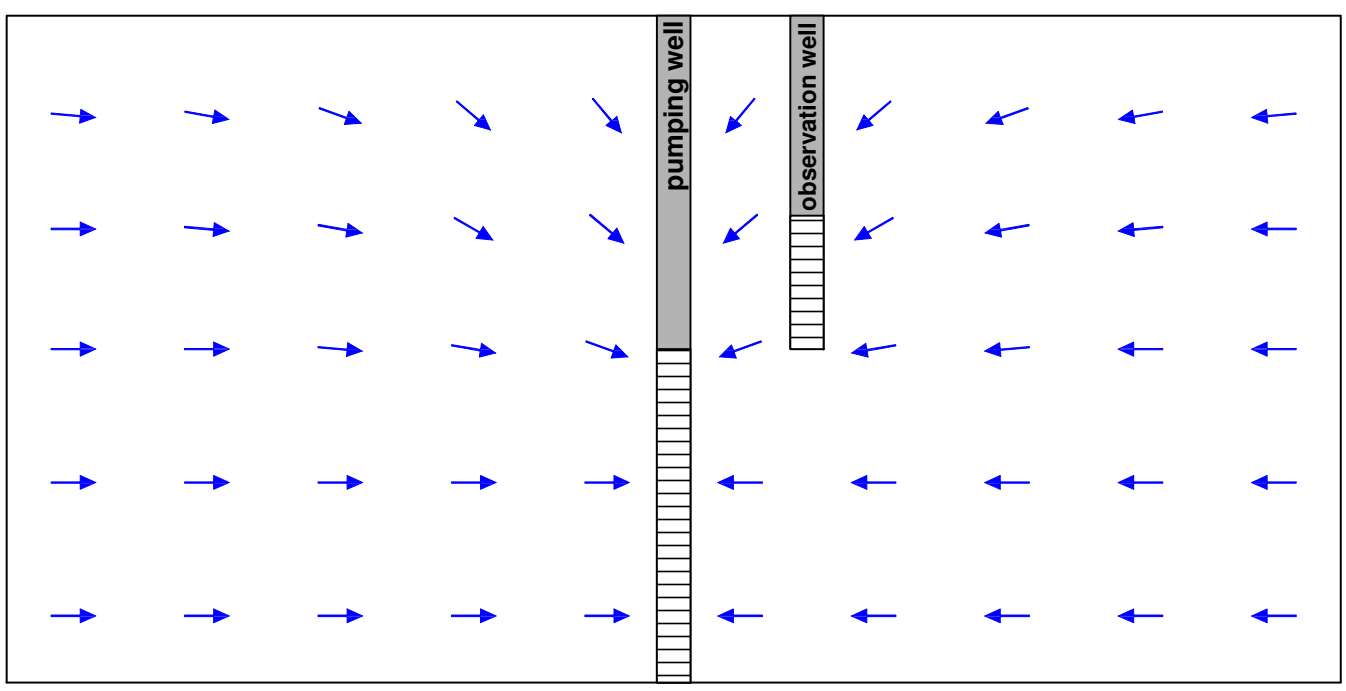


leakage from aquitard into aquifer

non-horizontal flow to well partially penetrating the aquifer

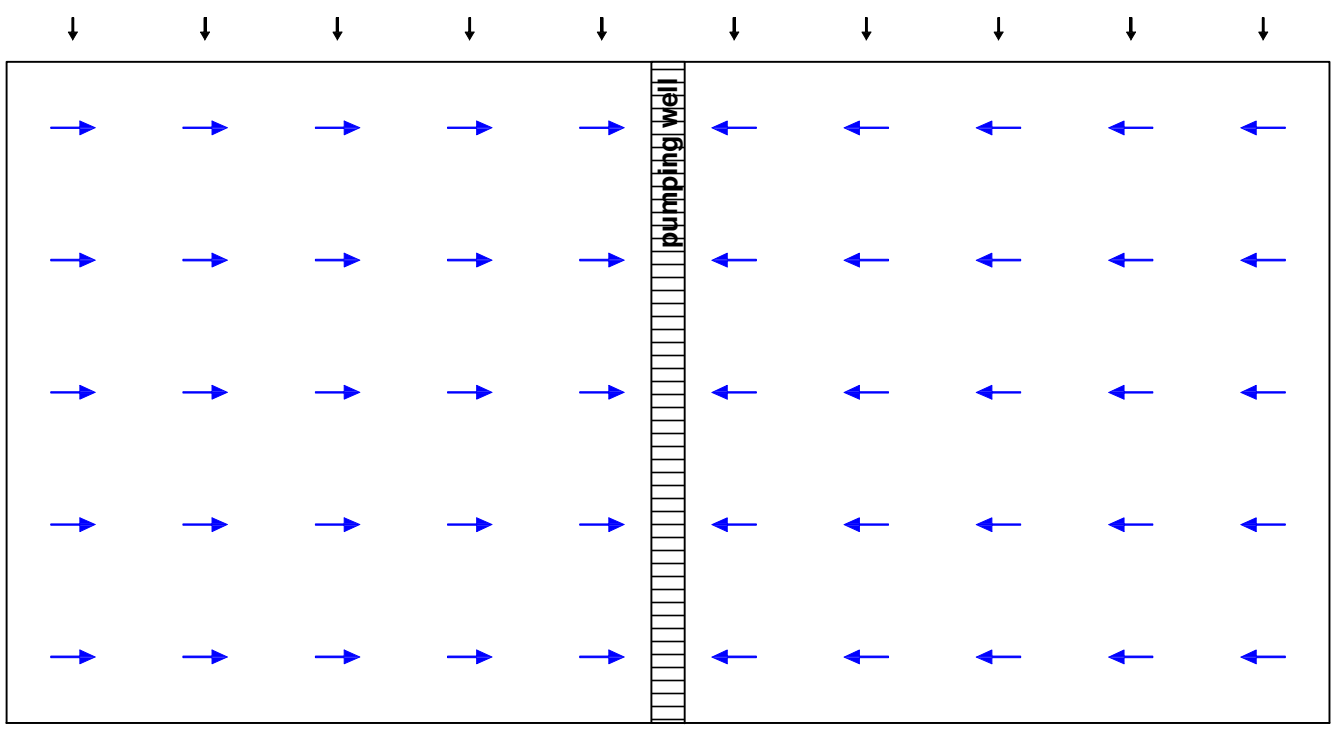
Partial Penetration Solution (with aquitard)



no aquitard (or leakage into aquifer)

non-horizontal flow to well partially penetrating the aquifer

Partial Penetration Solution (without aquitard)



leakage (if present) into aquifer

horizontal flow to well fully penetrating the aquifer

Homogeneous Solution

EXPLANATION

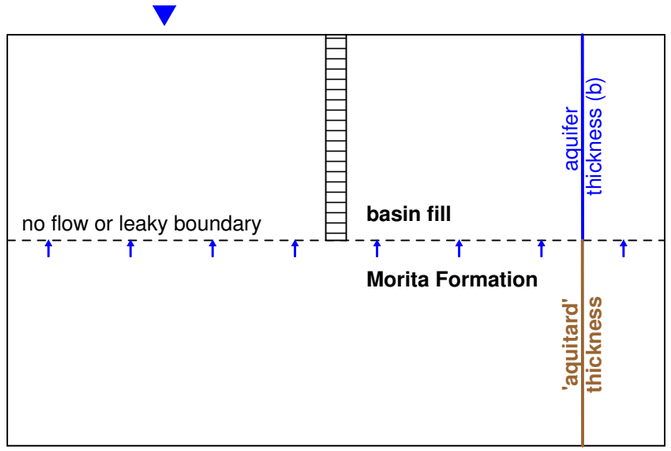
→ schematic flow direction within aquifer horizon

↓ schematic leakage into aquifer horizon

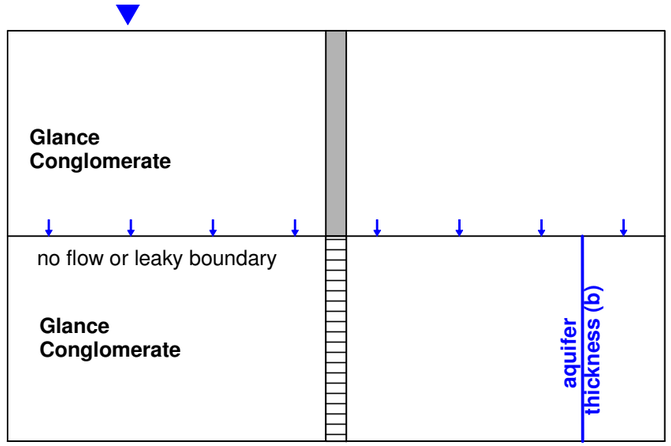
HYDRO GEO CHEM, INC.

SCHEMATIC DIAGRAM ILLUSTRATING THE PARTIAL PENETRATION AND HOMOGENEOUS AQUIFER SOLUTIONS

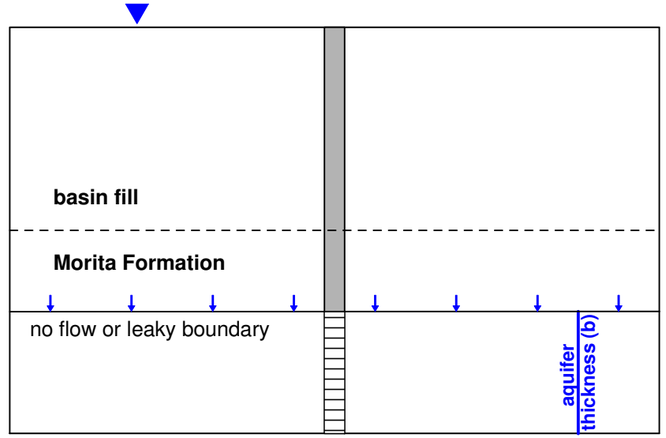
APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	P:/stewart/bisbee/pumptest/figure/schematic.srf	N.2



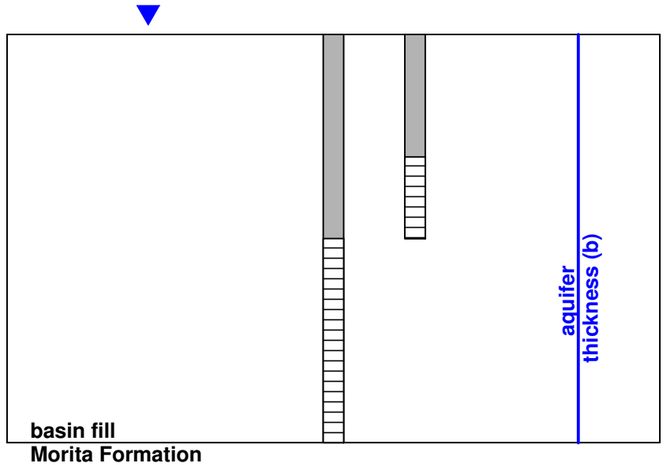
Application of the homogeneous aquifer solution to a well ully penetrating the basin fill with upward leakage from the Morita Formation (note: basin fill/Morita contact treated as no flow when leakage rate set to zero)



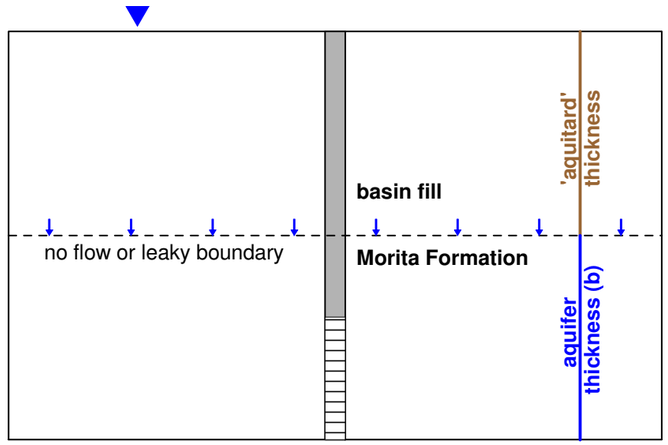
Application of the homogeneous aquifer solution to a well partially penetrating the Glance Conglomerate (note: upper aquifer boundary treated as no flow when leakage rate set to zero)



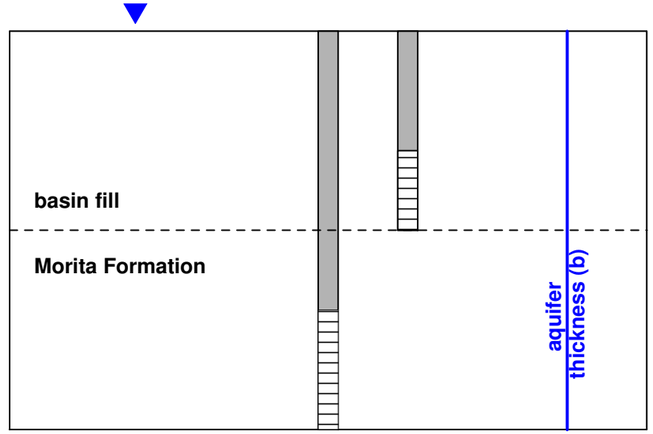
Application of the homogeneous aquifer solution to a well partially penetrating the Morita Formation showing leakage from the upper Morita into the assumed aquifer horizon (note: assumed upper aquifer boundary treated as no flow when leakage rate set to zero)



Application of the partial penetration solution to wells partially penetrating the basin fill (note: basin fill/Morita contact is treated as no flow in this example)



Application of the partial penetration solution to a well partially penetrating the Morita Formation showing leakage from the basin fill into the assumed aquifer horizon (note: basin fill treated as a leaky 'aquitard' source of water



Application of the partial penetration solution to a well partially penetrating the Morita Formation treating the basin fill and the portion of the Morita penetrated by the well as part of the assumed aquifer horizon

EXPLANATION

well schematic showing screened interval

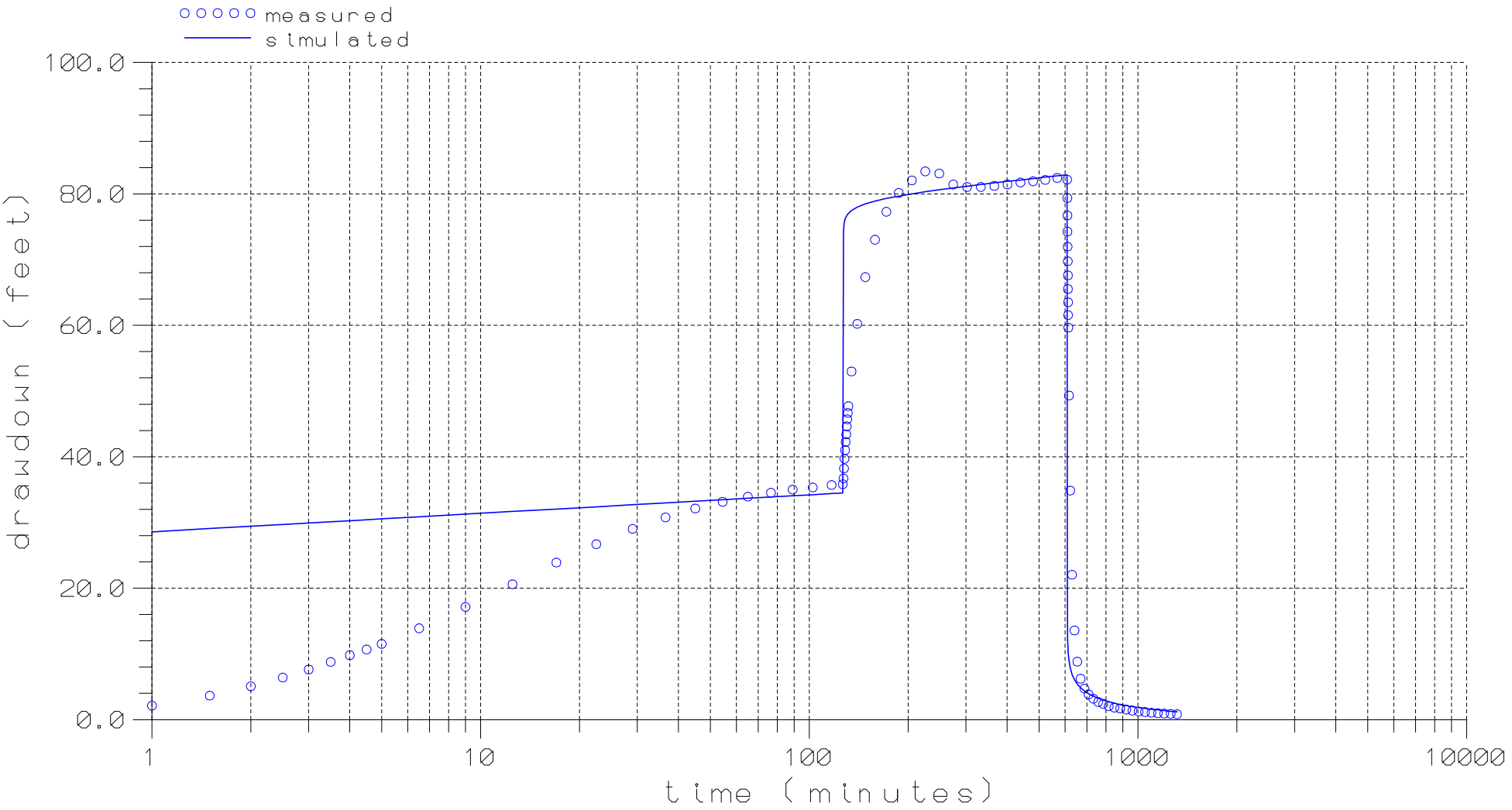
schematic leakage into assumed aquifer horizon

piezometric surface (water table if unconfined)

HYDRO GEO CHEM, INC.

CONCEPTUAL SCHEMATICS SHOWING APPLICATIONS OF HOMOGENEOUS AQUIFER AND PARTIAL PENETRATION SOLUTIONS IN WHIP

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	P:/stewart/bisbee/pumptest/figure/conceptual.srf	N.3



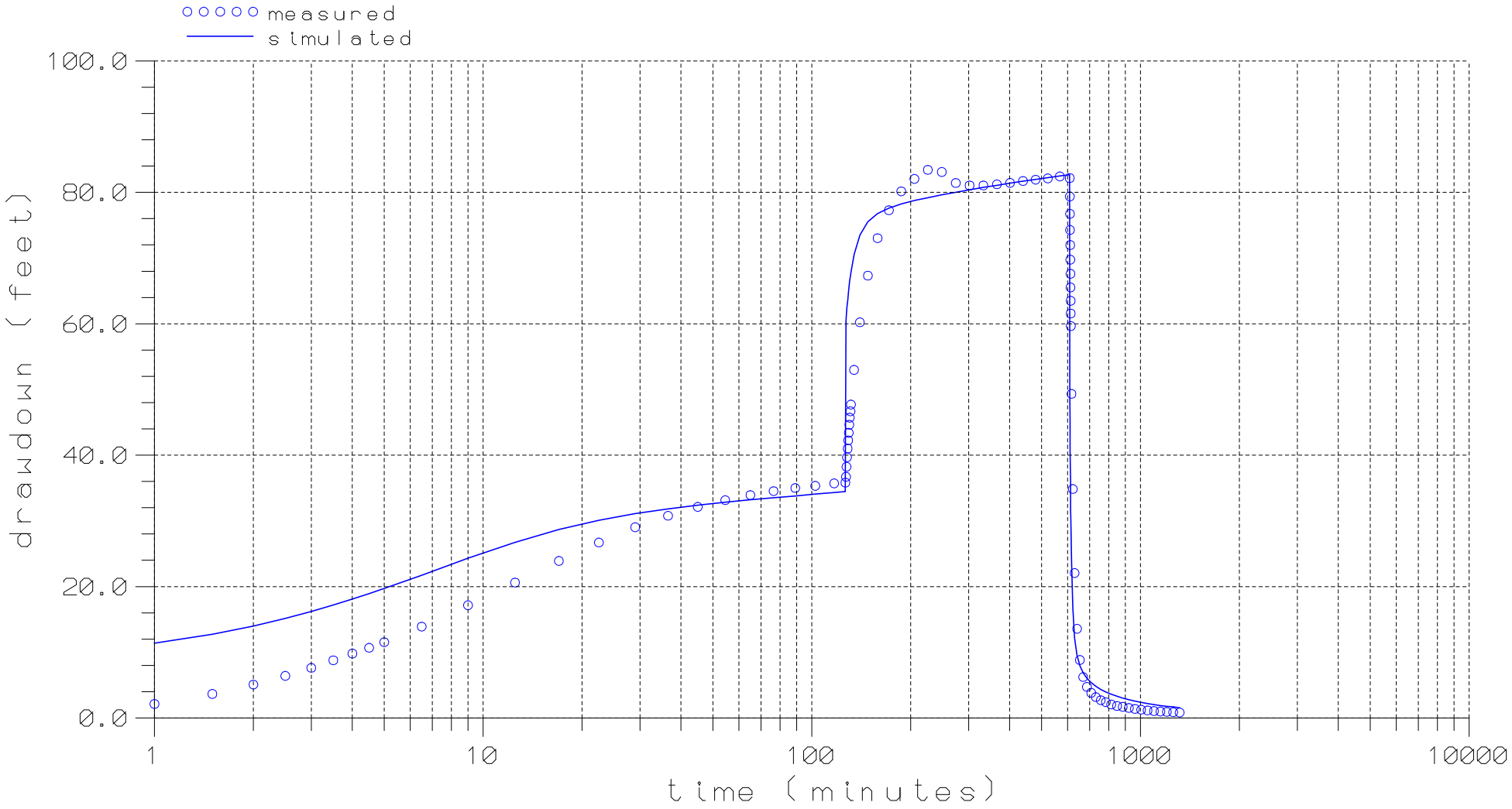
RESULTS

Transmissivity = 74.6 ft2/day
Storage coefficient = 5.18e-6
Vertical Hydraulic Conductivity =
well loss constant = 0.75
well loss exponent = 2.25
assumed aquifer thickness = 258 ft
effective well radius/casing radius = 0.208 / 0.208 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-1G DURING PUMPING AT APPROXIMATELY 3.5 AND 6 GPM WITH EMPHASIS ON LATE DRAWDOWN AND RECOVERY DATA

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-1G/whip/bmo1gs.srf	**N.4**



RESULTS

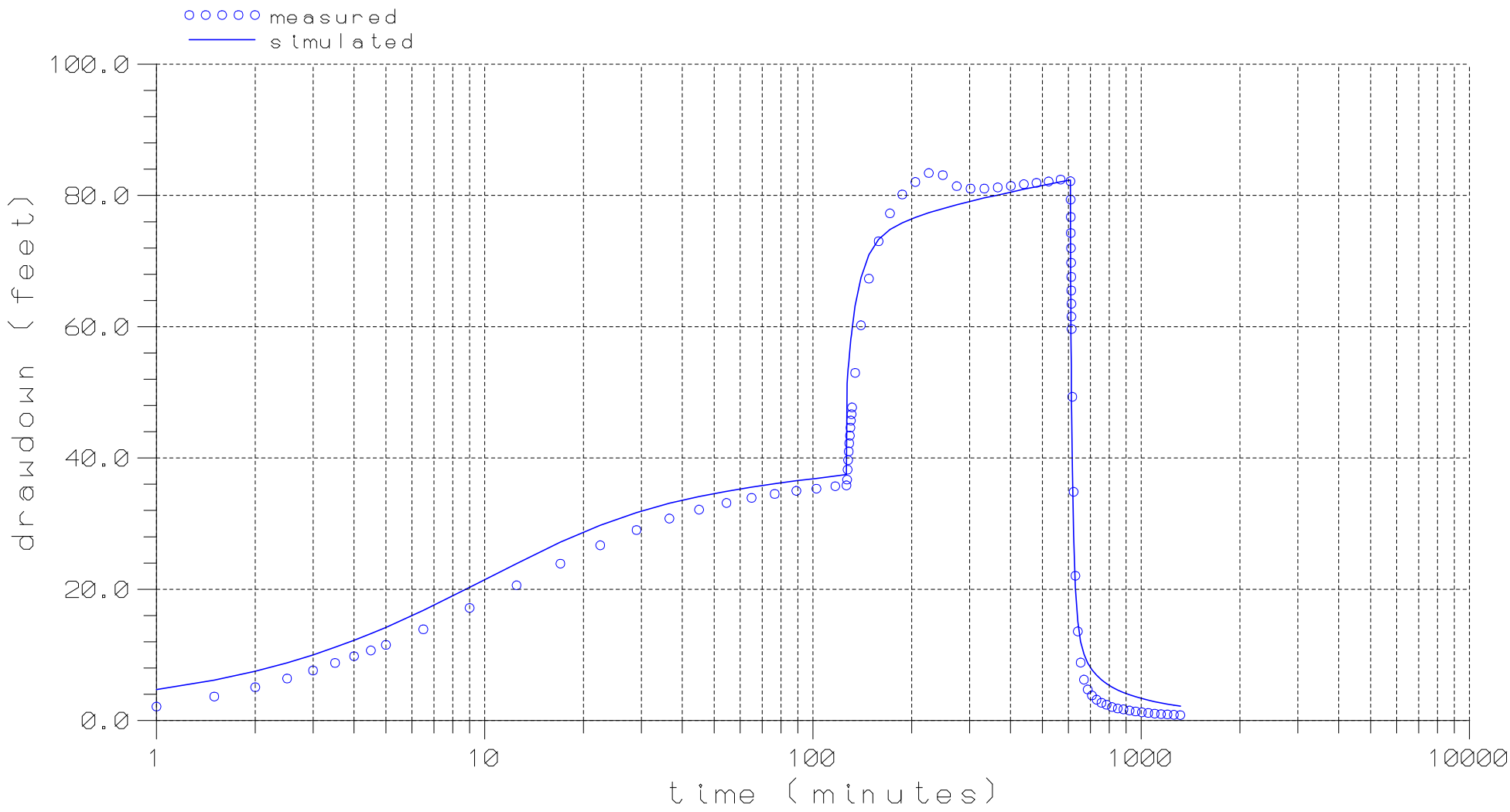
Transmissivity = 34.8 ft2/day
Storage coefficient = 6.0e-6
Vertical Hydraulic Conductivity = NA
well loss constant = 0.32
well loss exponent = 2.6
assumed aquifer thickness = 150 ft
effective well radius/casing radius = 0.208 / 0.208 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-1G DURING PUMPING AT APPROXIMATELY 3.5 AND 6 GPM WITH EMPHASIS ON LATE DRAWDOWN AND RECOVERY DATA

(homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-1G/whip/bmo1gfpr.srf	**N.5**



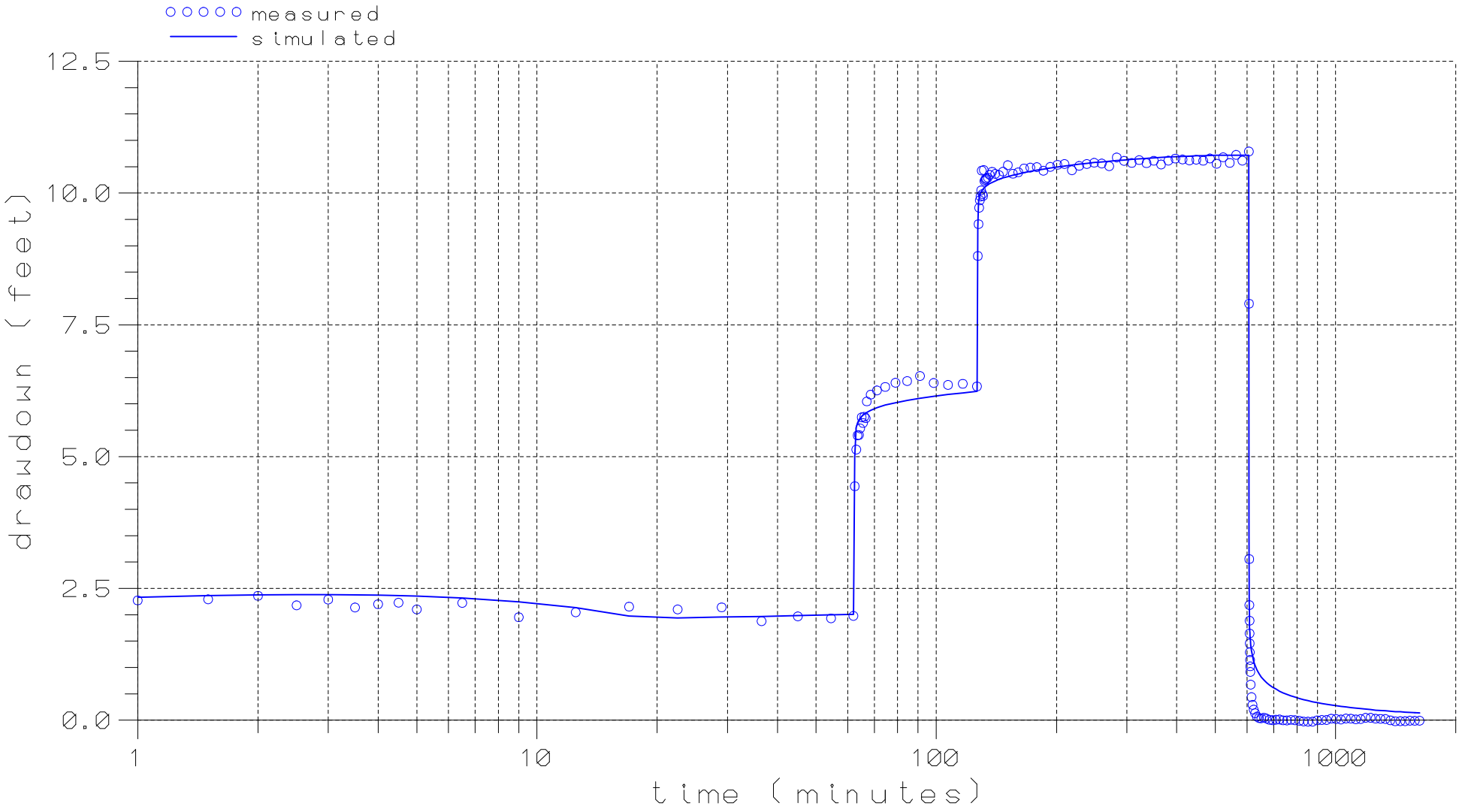
RESULTS

Transmissivity = 25 ft2/day
Storage coefficient = 5.0e-6
Vertical Hydraulic Conductivity = NA
well loss constant = 0.008
well loss exponent = 4.2
assumed aquifer thickness = 150 ft
effective well radius/casing radius = 0.208 / 0.208 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-1G DURING PUMPING AT APPROXIMATELY 3.5 AND 6 GPM WITH EMPHASIS ON EARLY DRAWDOWN DATA
(homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-1G/whip/bmo1gfps.srf	**N.6**



RESULTS
(smoothed step 3 data)

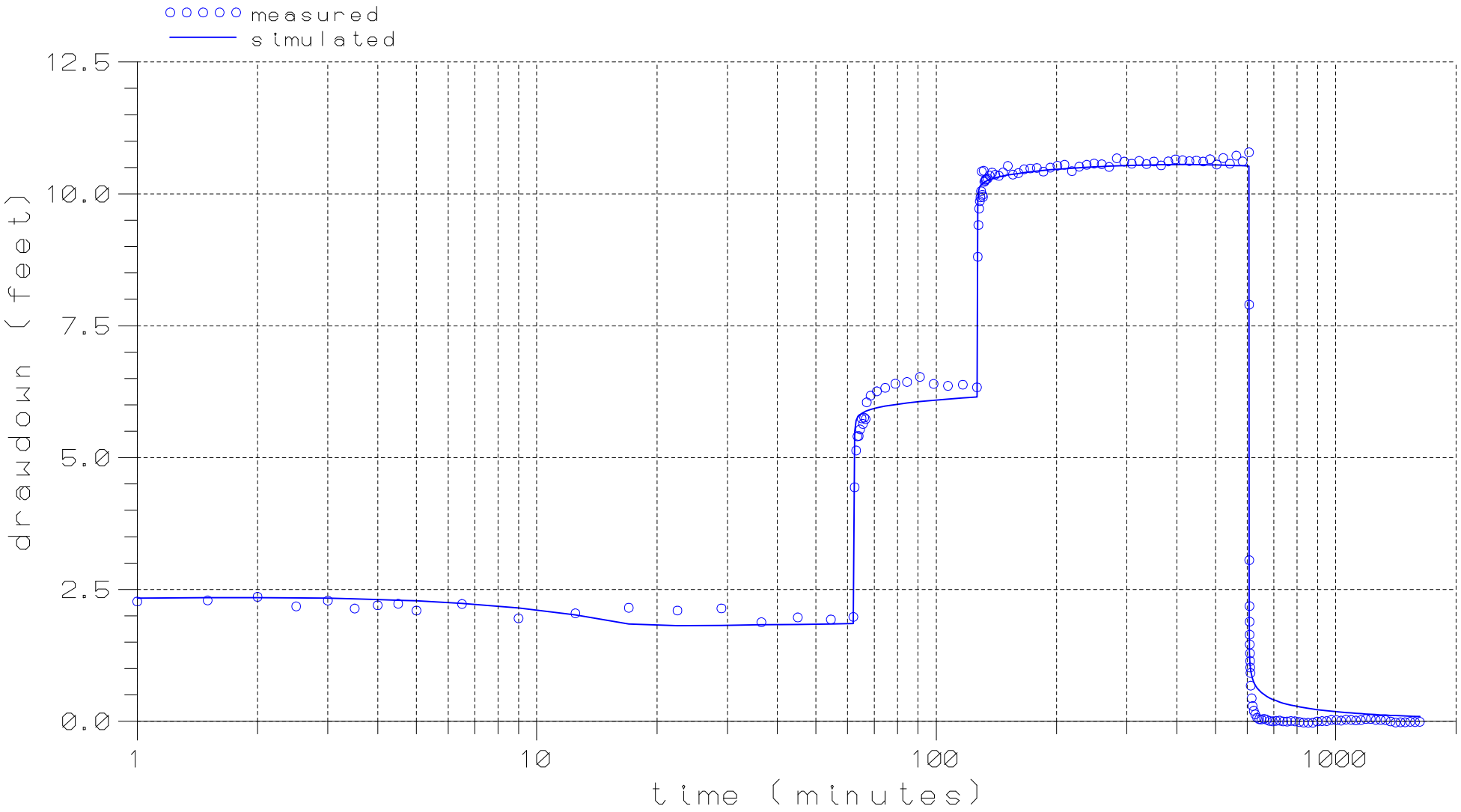
Transmissivity = 3,000 ft2/day
Storage coefficient = 1.e-6
Vertical Hydraulic Conductivity = NA
well loss constant = 2.97e-3
well loss exponent = 1.66
assumed aquifer thickness = 130 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-3B DURING PUMPING AT APPROXIMATELY 15, 41, AND 62 GPM

(homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-3B/whip/bmo3b.srf	**N.7**



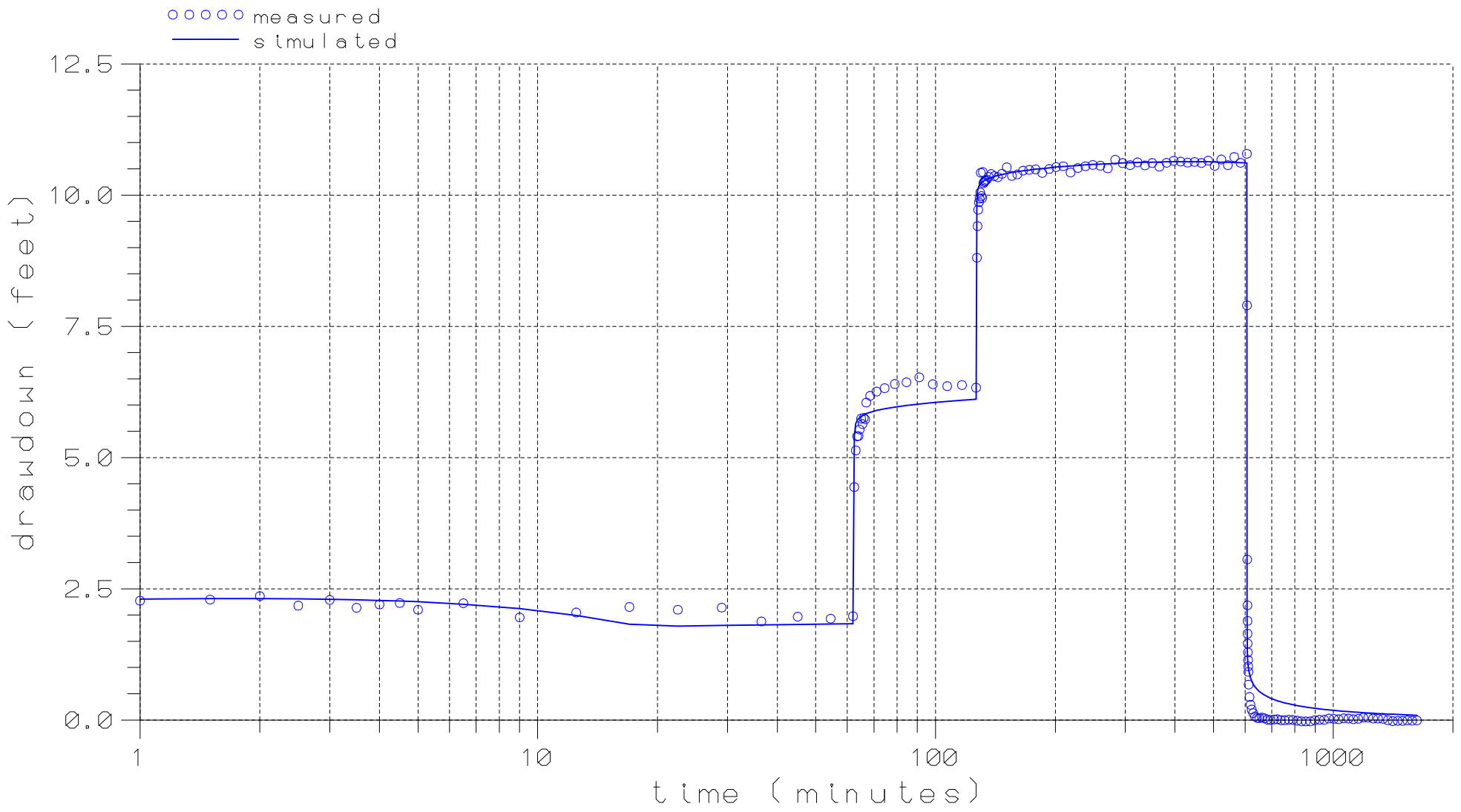
RESULTS
(smoothed step 3 data)

Transmissivity = 4,500 ft2/day
Storage coefficient = 1.e-4
Vertical Hydraulic Conductivity = NA
well loss constant = 2.36e-2
well loss exponent = 1.35
assumed aquifer thickness = 130 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-3B DURING PUMPING AT APPROXIMATELY 15, 41, AND 62 GPM (WITH MORE EMPHASIS ON RECOVERY DATA)
(homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-3B/whip/bmo3br.srf	**N.8**



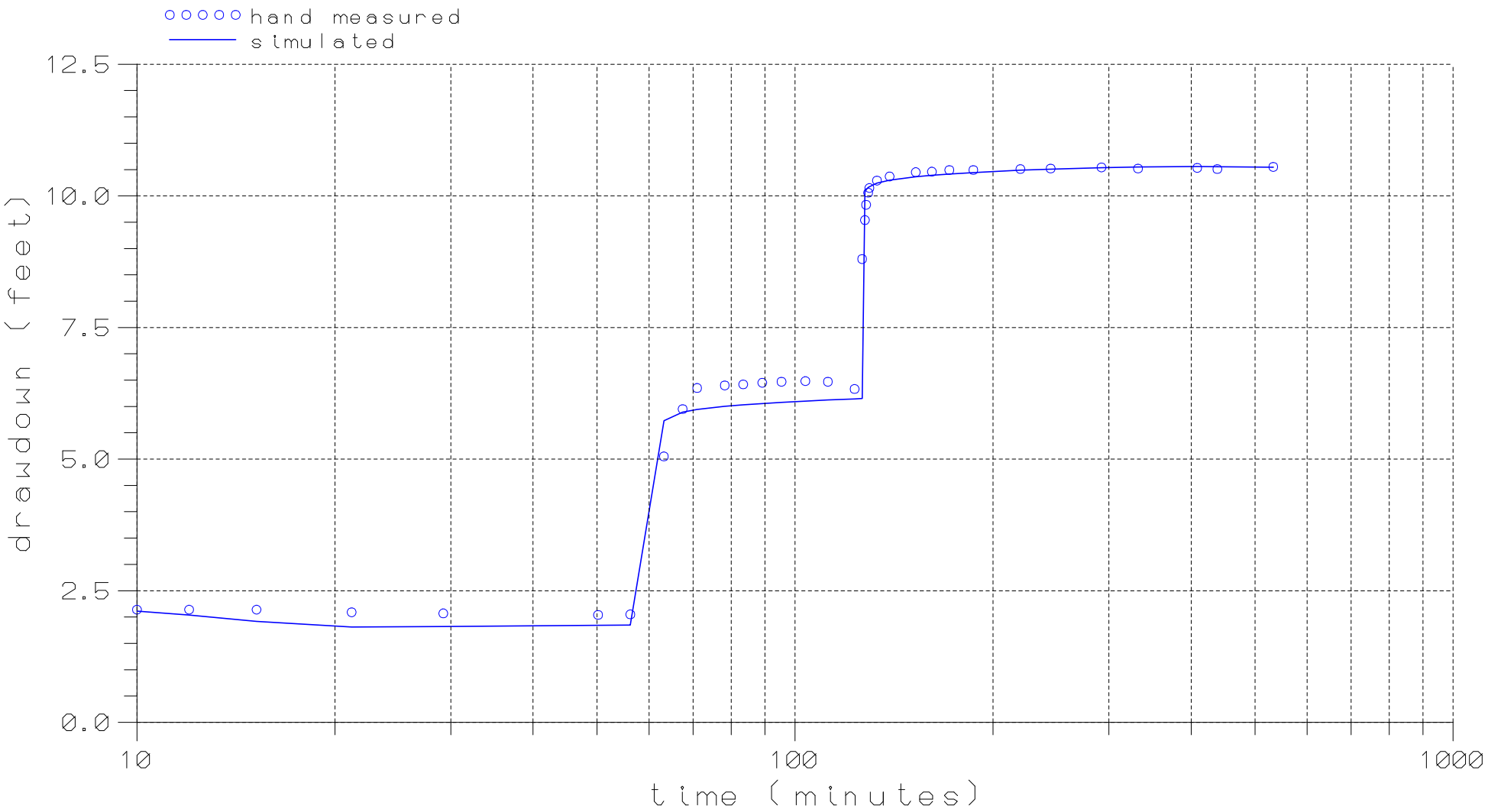
RESULTS
(using Dupuit Correction)

Transmissivity = 4,500 ft2/day
Storage coefficient = 1.e-4
Vertical Hydraulic Conductivity = NA
well loss constant = 2.36e-2
well loss exponent = 1.33
assumed aquifer thickness = 130 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-3B DURING PUMPING AT APPROXIMATELY 15, 41, AND 62 GPM (WITH MORE EMPHASIS ON RECOVERY DATA)
(homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-3B/whip/bmo3bd.srf	**N.9**



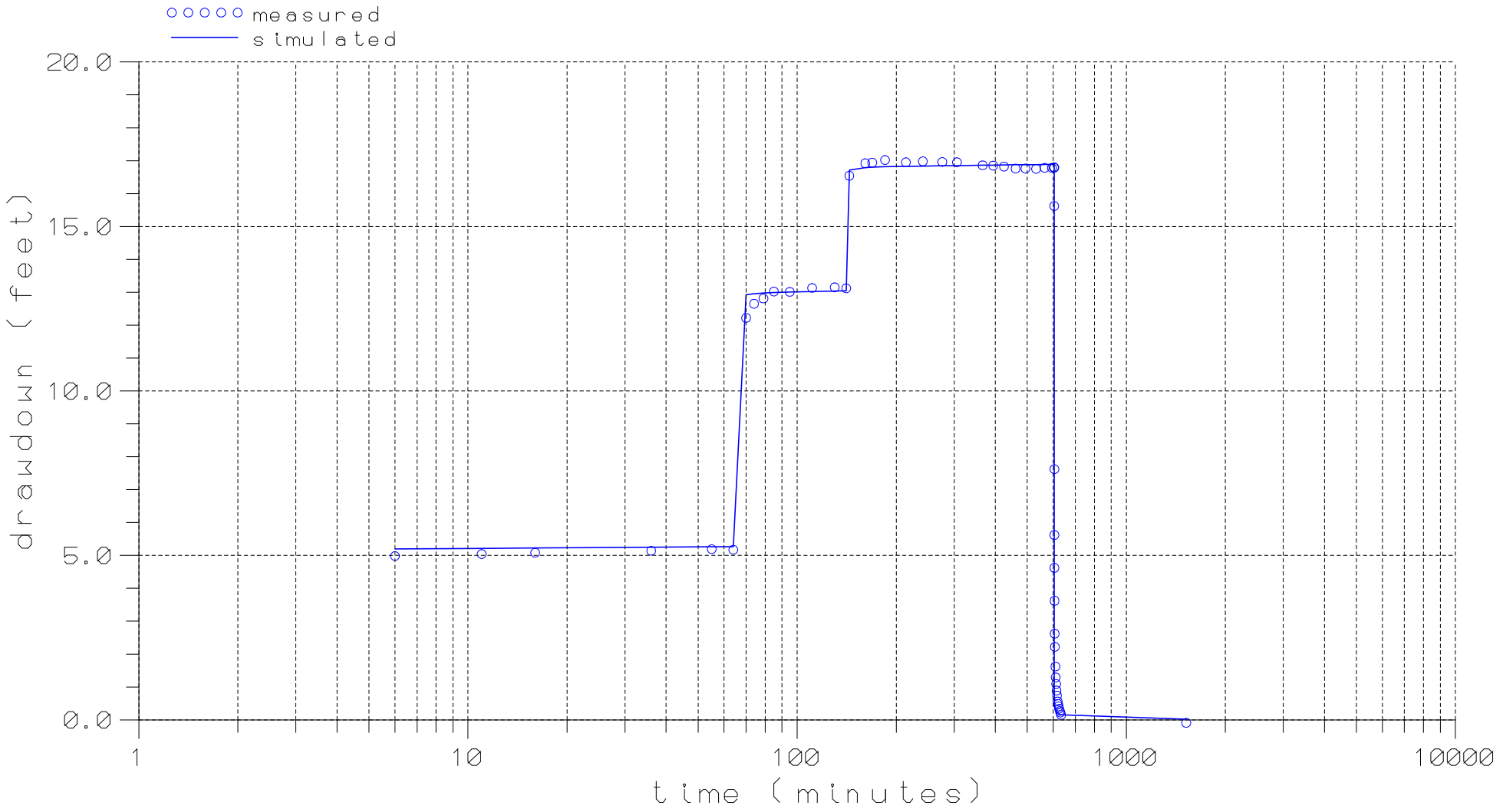
RESULTS
(using Dupuit correction)

Transmissivity = 4,500 ft2/day
Storage coefficient = 1.e-4
Vertical Hydraulic Conductivity = NA
well loss constant = 2.36e-2
well loss exponent = 1.35
assumed aquifer thickness = 130 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-3B DURING PUMPING AT APPROXIMATELY 15, 41, AND 62 GPM USING HAND COLLECTED DATA
(homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-3B/whip/bmo3bh.srf	**N.10**



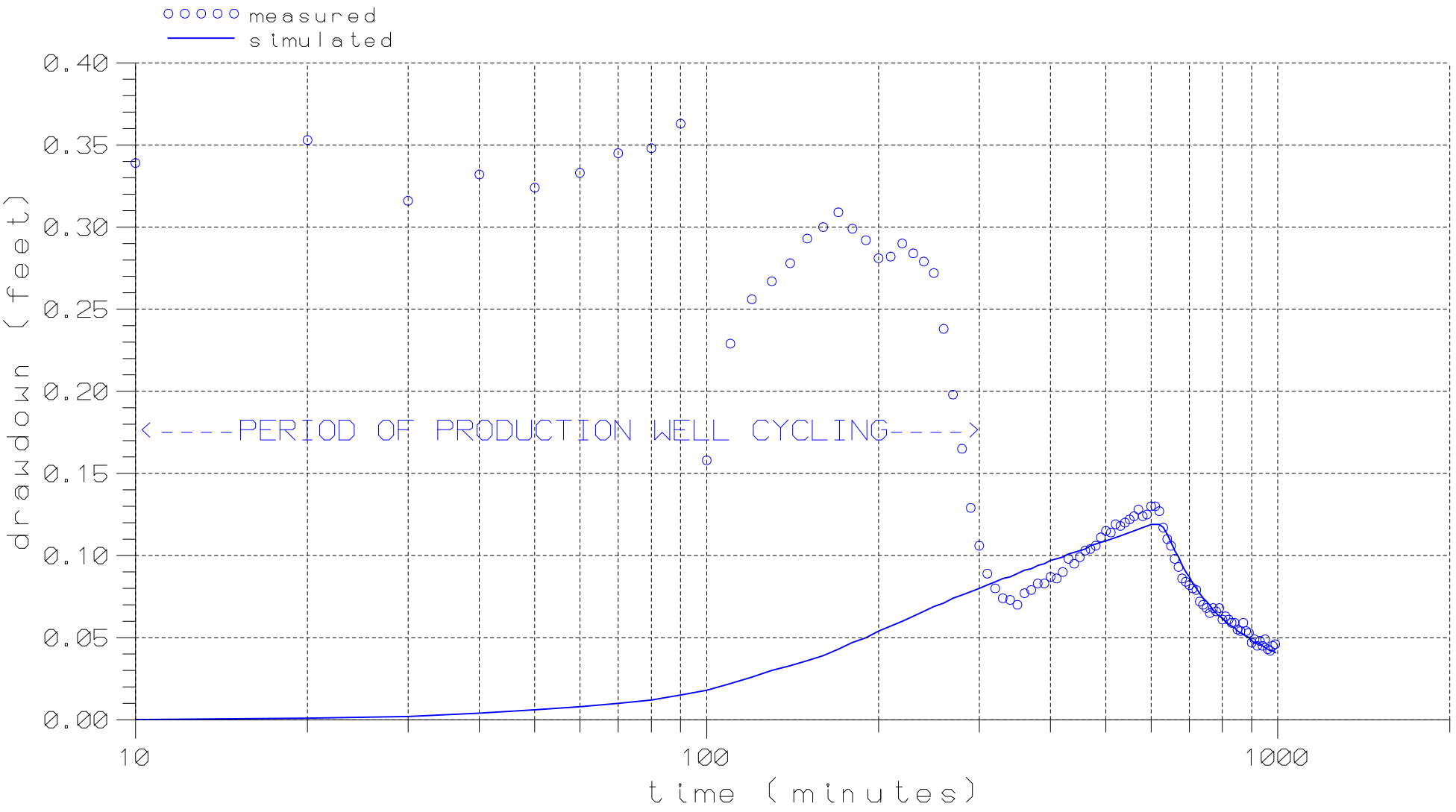
RESULTS

Transmissivity = 20,000 ft2/day
Storage coefficient = 4.5e-4
Vertical Hydraulic Conductivity = 1 ft/day
well loss constant = 0.0142
well loss exponent = 1.12
assumed aquifer thickness = 505 ft
effective well radius/casing radius = 0.208 / 0.208

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-4B DURING PUMPING AT APPROXIMATELY 21, 48, AND 60.5 GPM USING HAND COLLECTED DATA

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-6B/whip//2ndtest/bmo4bh.srf	**N.11**



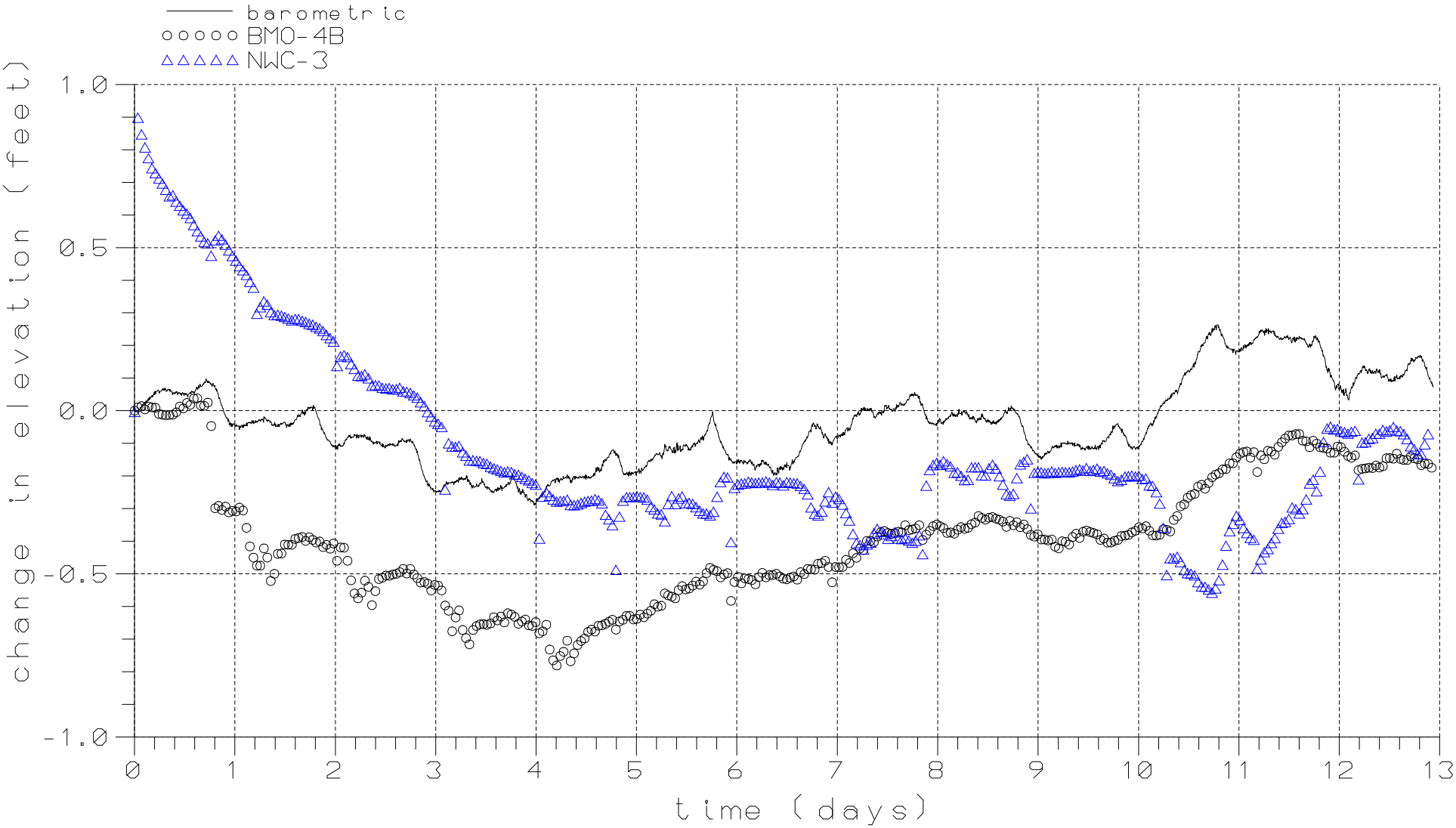
RESULTS

Transmissivity = 19,900 ft2/day
Storage coefficient = 4.5e-4
Vertical Hydraulic Conductivity = 0.87 ft/day
well loss constant = 0.0142
well loss exponent = 1.12
assumed aquifer thickness = 505 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT NWC-3 DURING PUMPING OF BMO-4B AT APPROXIMATELY 21, 48, AND 60.5 GPM

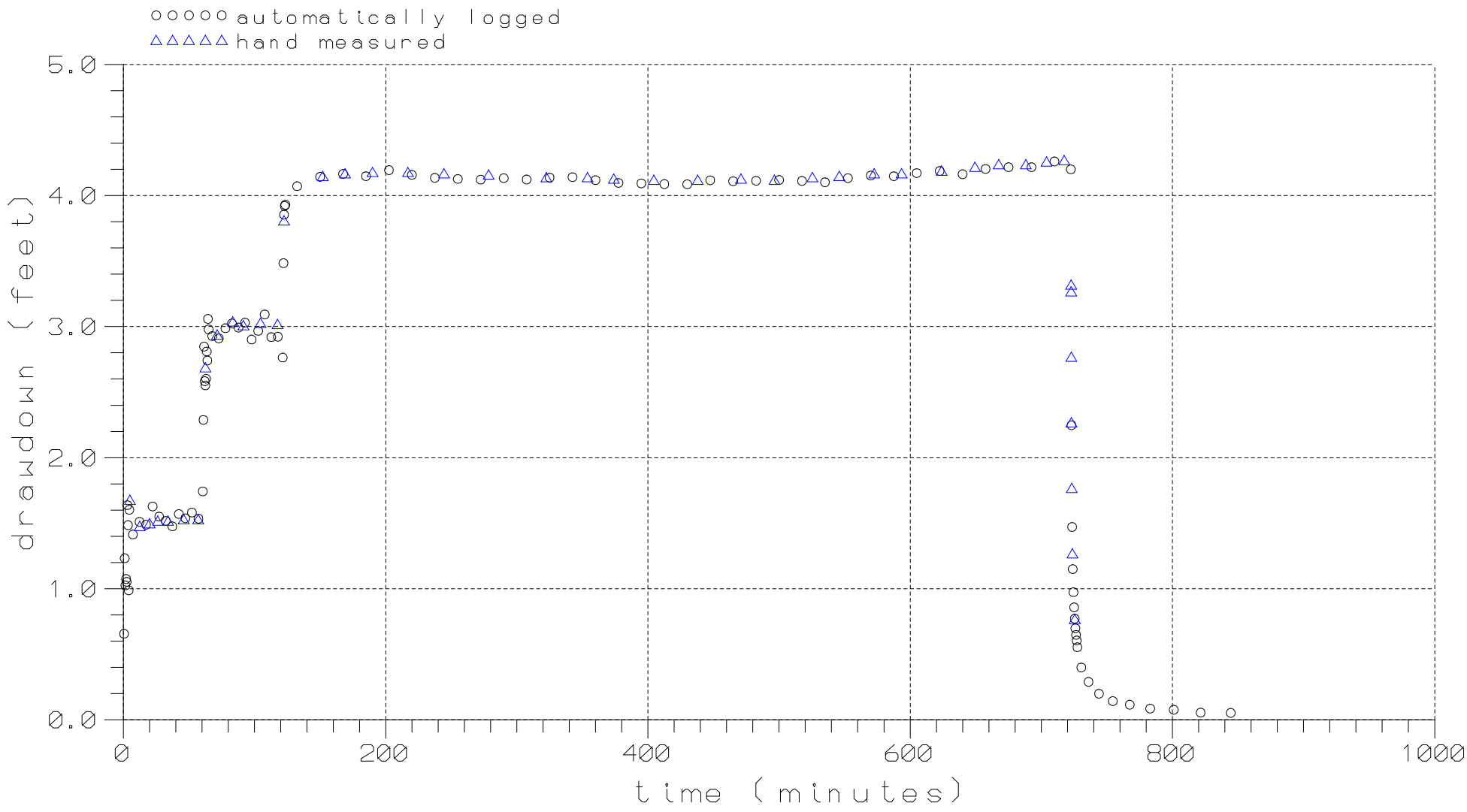
APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-6B/whip/2ndtest/bmo4bob.srf	N.12



HYDRO GEO CHEM, INC.

WATER LEVELS AT BMO-4B AND NWC-3 PRIOR TO PUMPING BMO-4B

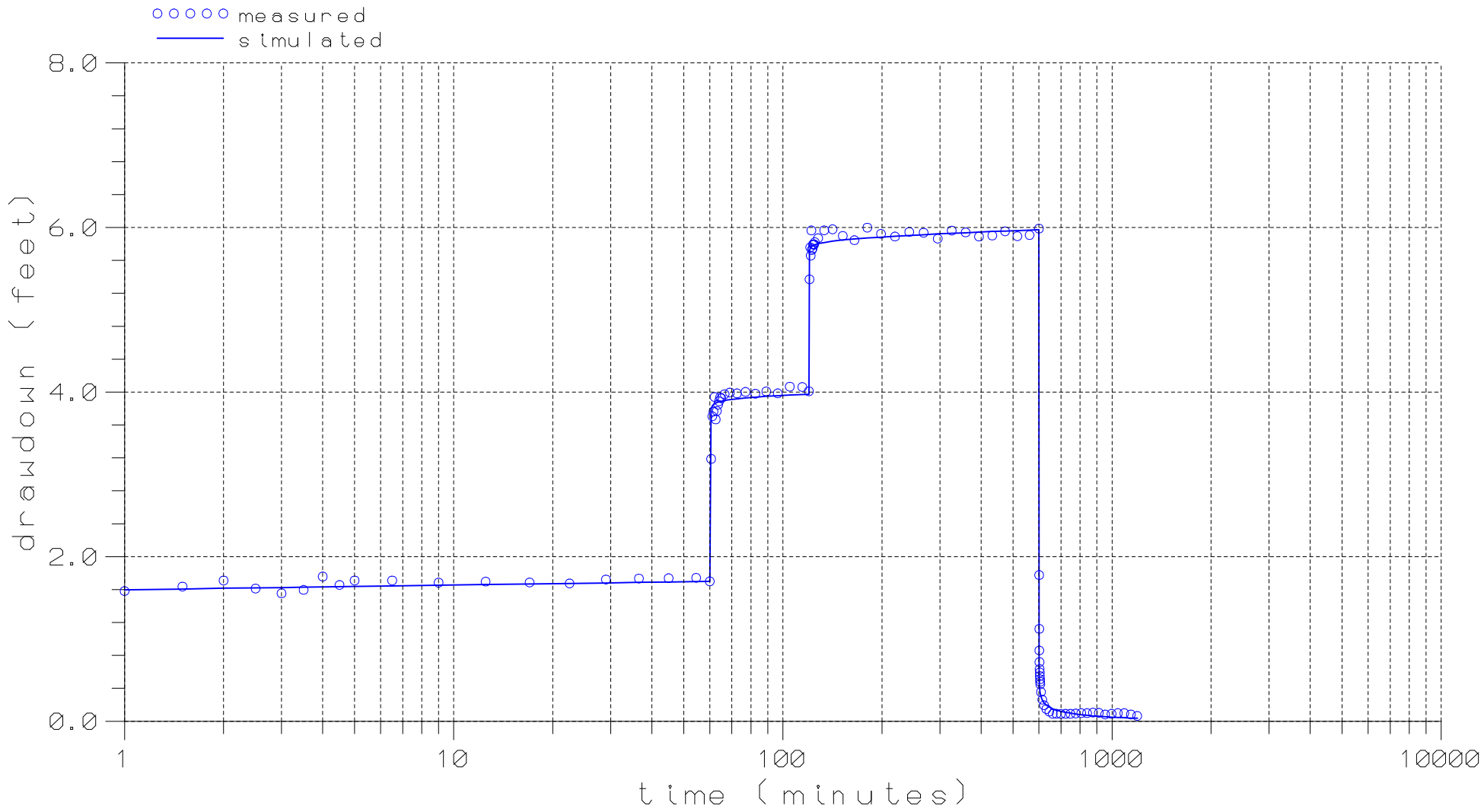
APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-4B/monotoring/bmo4bbk.srf	**N.13**



HYDRO GEO CHEM, INC.

COMPARISON OF AUTOMATICALLY LOGGED AND HAND COLLECTED DRAWDOWNS AT BMO-5M DURING PUMPING AT APPROXIMATELY 3.5, 6, AND 8.5 GPM

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-5M/whip/5Mretest/compare.srf	**N.14**



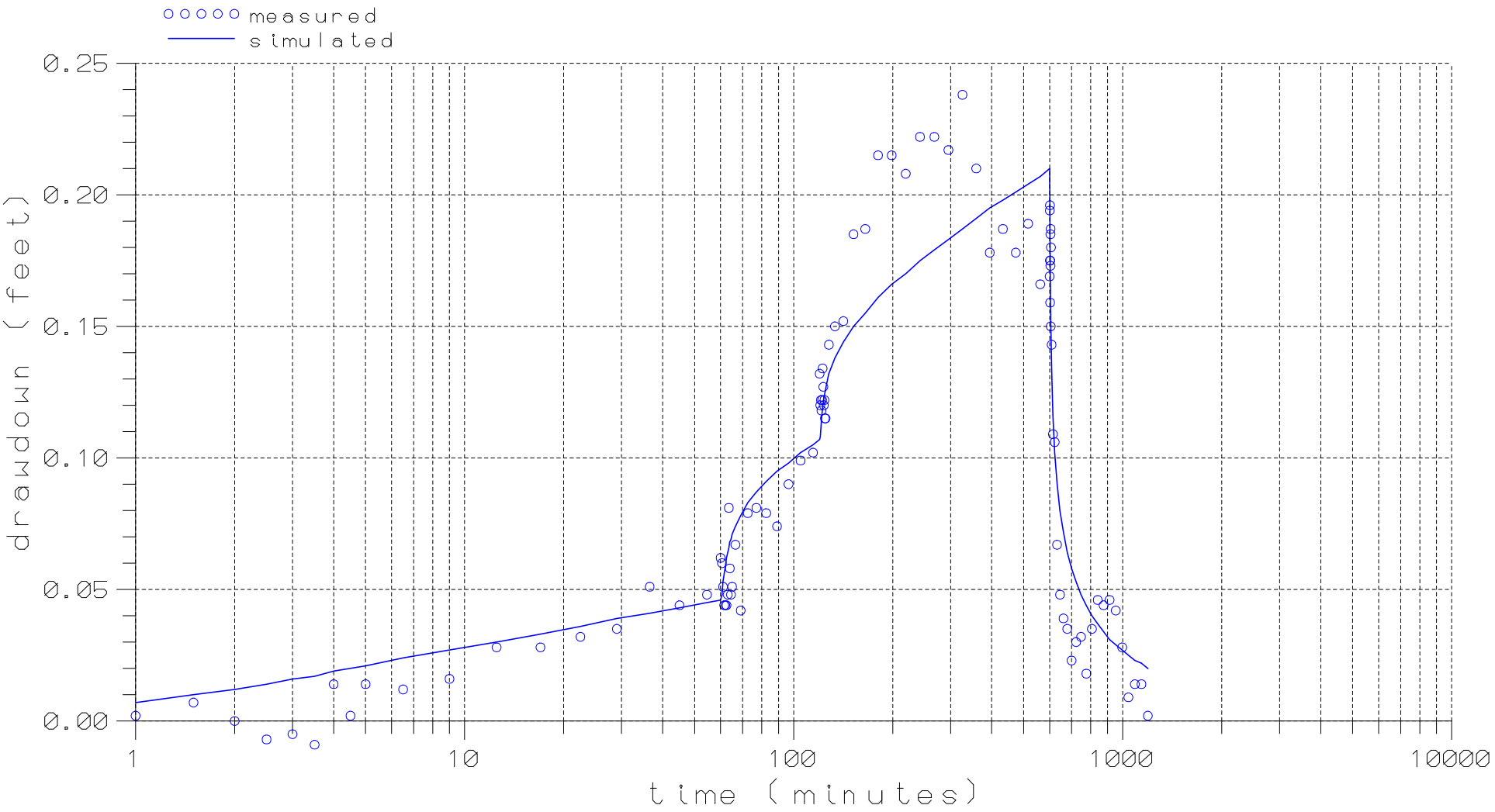
RESULTS
(step3 data smoothed)

Transmissivity = 25,000 ft2/day
Storage coefficient = 0.0764
Vertical Hydraulic Conductivity = 3 ft/day
well loss constant = 0.046
well loss exponent = 1.13
assumed aquifer thickness = 315 ft
effective well radius/casing radius = 0.208 / 0.208

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-5B DURING PUMPING AT APPROXIMATELY 20, 43, AND 61 GPM (ASSUMING AQUIFER EFFECTIVELY EXTENDS INTO THE UPPER MORITA)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-5B/whip/bmo5b.srf	**N.15**



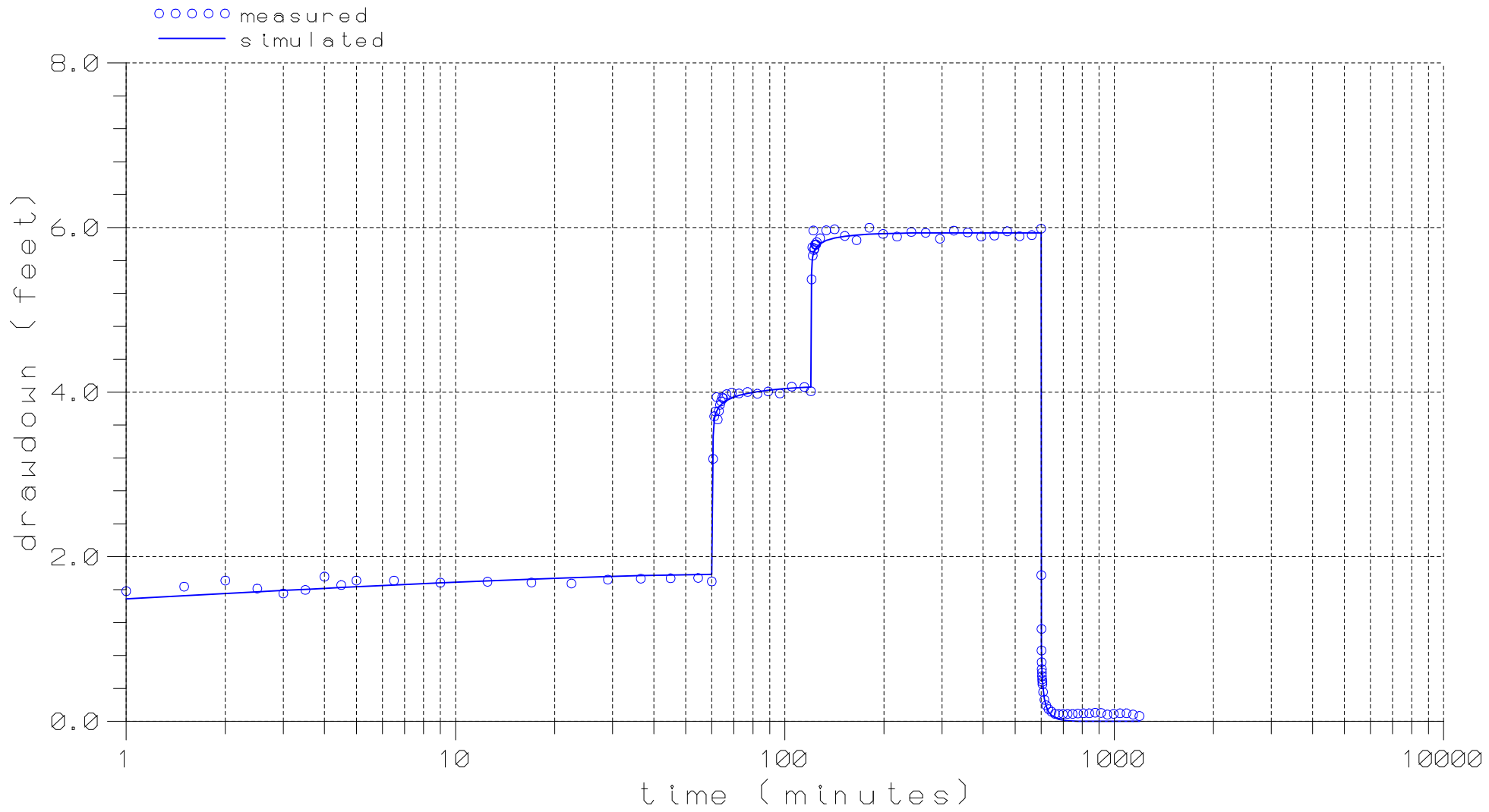
RESULTS

Transmissivity = 30,000 ft2/day
Storage coefficient = 1.05e-4
Vertical Hydraulic Conductivity = 4.3 ft/day
well loss constant = NA
well loss exponent = NA
assumed aquifer thickness = 315 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-5M DURING PUMPING AT BMO-5B AT APPROXIMATELY 20, 43, AND 61 GPM (ASSUMING AQUIFER EFFECTIVELY EXTENDS INTO THE UPPER MORITA)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-5B/whip/bmo5bob.srf	**N.16**



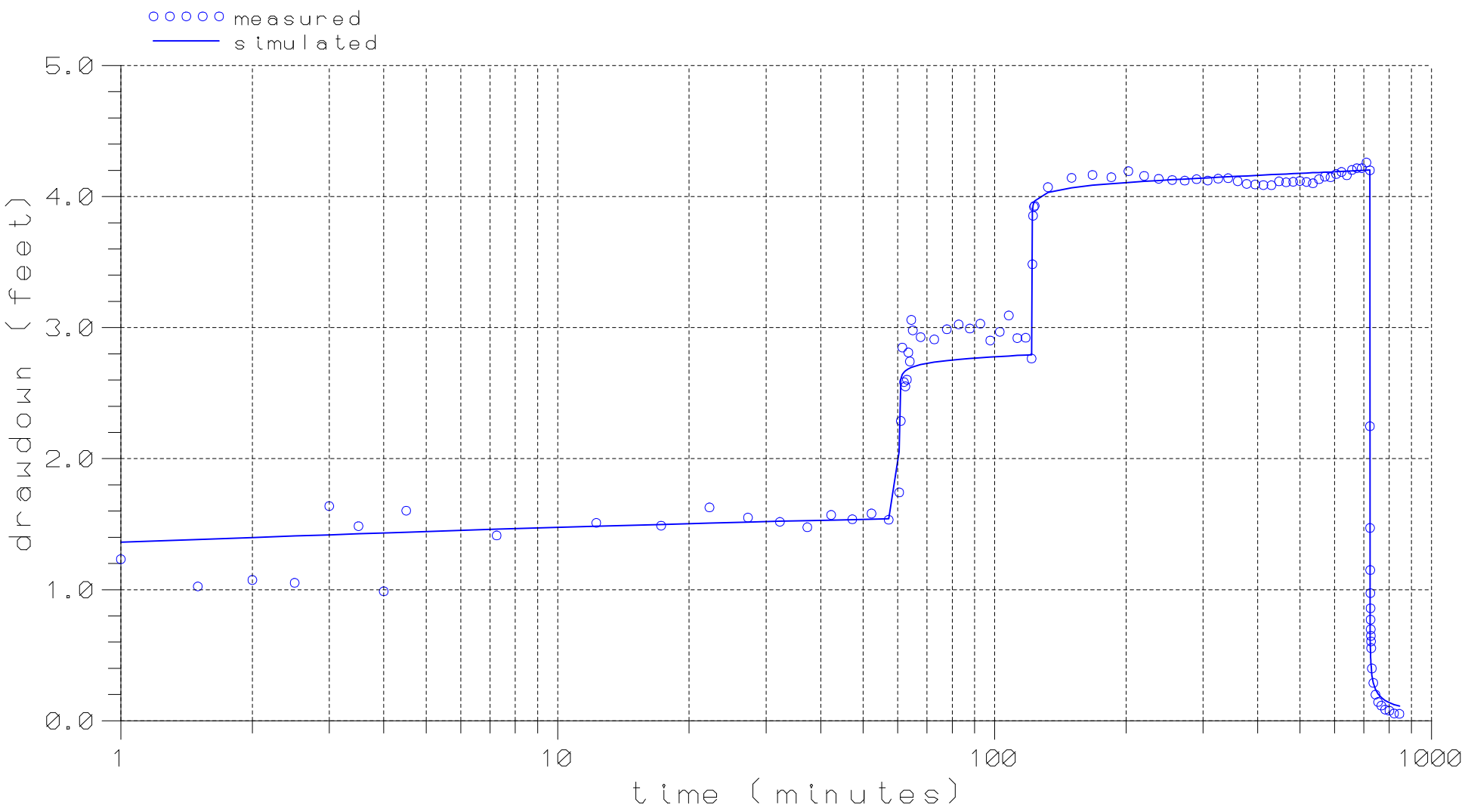
RESULTS
(step3 data smoothed)

Transmissivity = 3,370 ft2/day
Storage coefficient = 6.84e-3
Vertical specific leakage = 0.2/day
well loss constant = 0.017
well loss exponent = 1.19
assumed aquifer thickness = 145 ft
effective well radius/casing radius = 0.208 / 0.208

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-5B DURING PUMPING AT APPROXIMATELY 20, 43, AND 61 GPM (ASSUMING AQUIFER BASE AT MORITA CONTACT AND UPWARD LEAKAGE FROM MORITA) (homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-5B/whip/bmo5bfp.srf	**N.17**



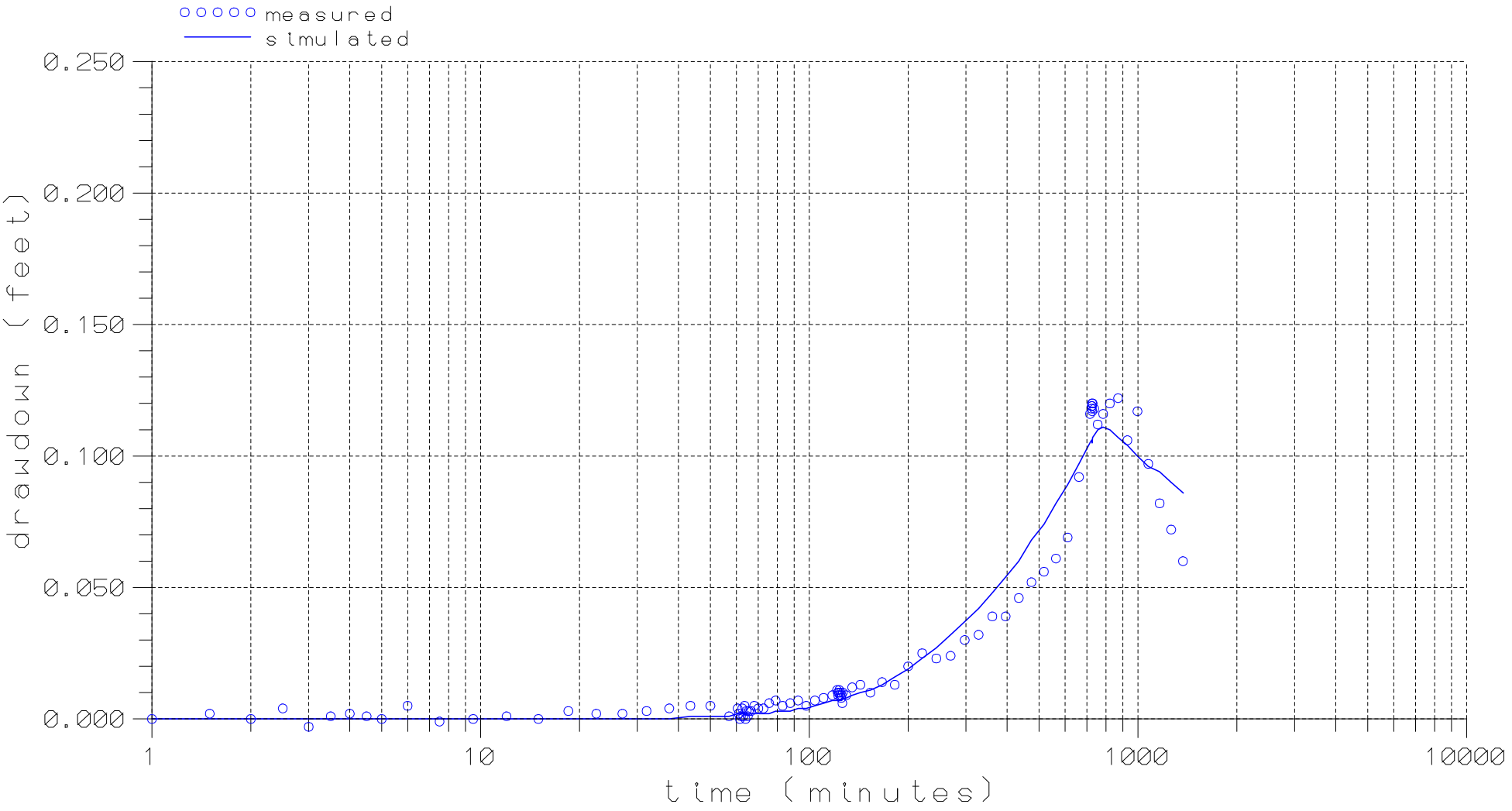
RESULTS
(step 3 data smoothed)

Transmissivity = 2,200 ft2/day
Storage coefficient = 2.75e-3
Vertical Hydraulic Conductivity = 3 ft/day
well loss constant = 0.191
well loss exponent = 1.16
assumed aquifer thickness = 315 ft
effective well radius/casing radius = 0.208 / 0.208

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-5M DURING PUMPING AT APPROXIMATELY 3.5, 6, AND 8.5 GPM (ASSUMING AQUIFER EFFECTIVELY EXTENDS INTO THE BASIN FILL)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-5M/whip/5mrestart/bmo5mr.srf	**N.18**



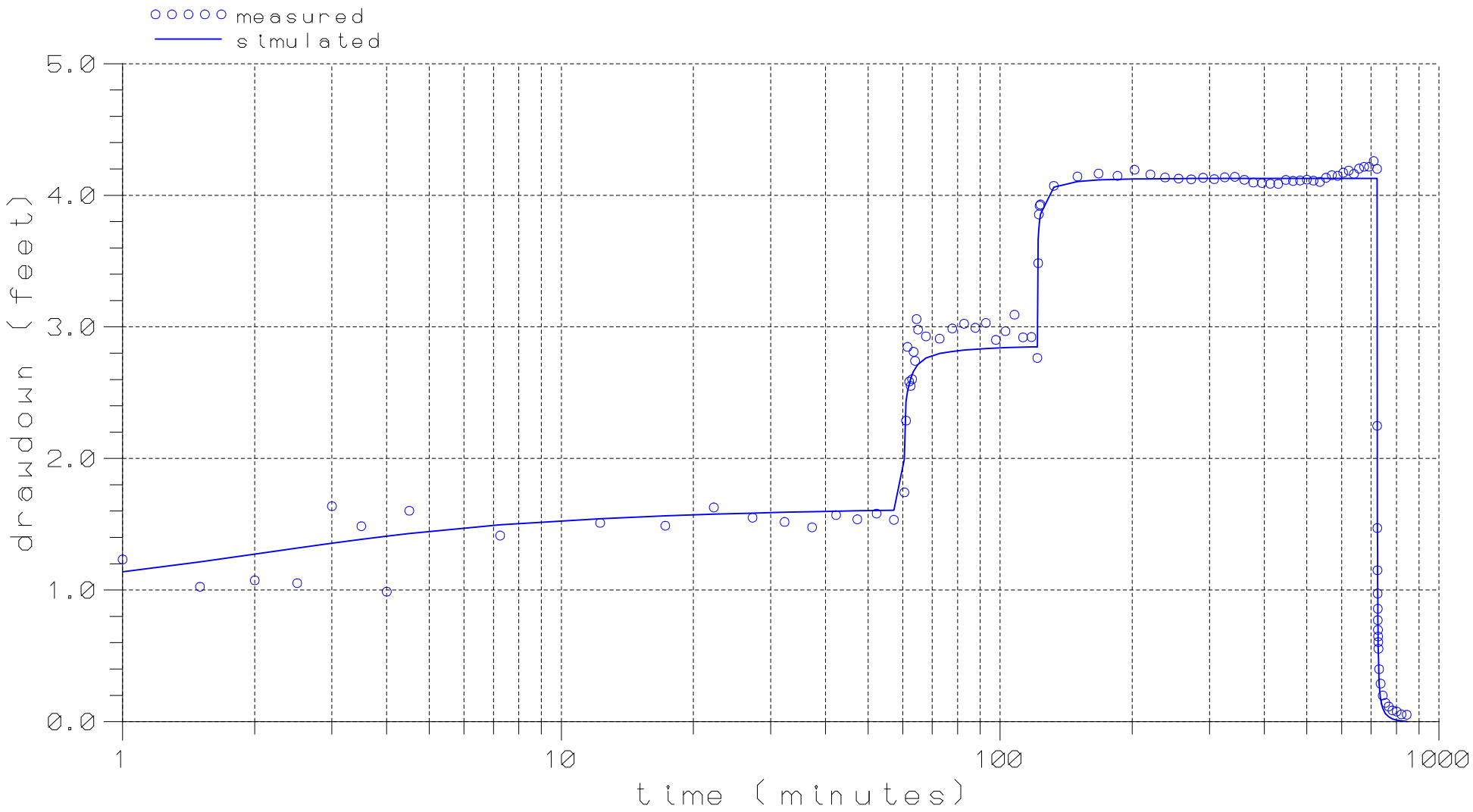
RESULTS

Transmissivity = 528 ft2/day
Storage coefficient = 3.49e-2
Vertical Hydraulic Conductivity = 1.1 ft/day
well loss constant = NA
well loss exponent = NA
assumed aquifer thickness = 315 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-5B DURING PUMPING AT BMO-5M AT APPROXIMATELY 3.5, 6, AND 8.5 GPM (ASSUMING AQUIFER EFFECTIVELY EXTENDS INTO THE BASIN FILL)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-5M/whip/5Mretest/bmo5mob.srf	**N.19**



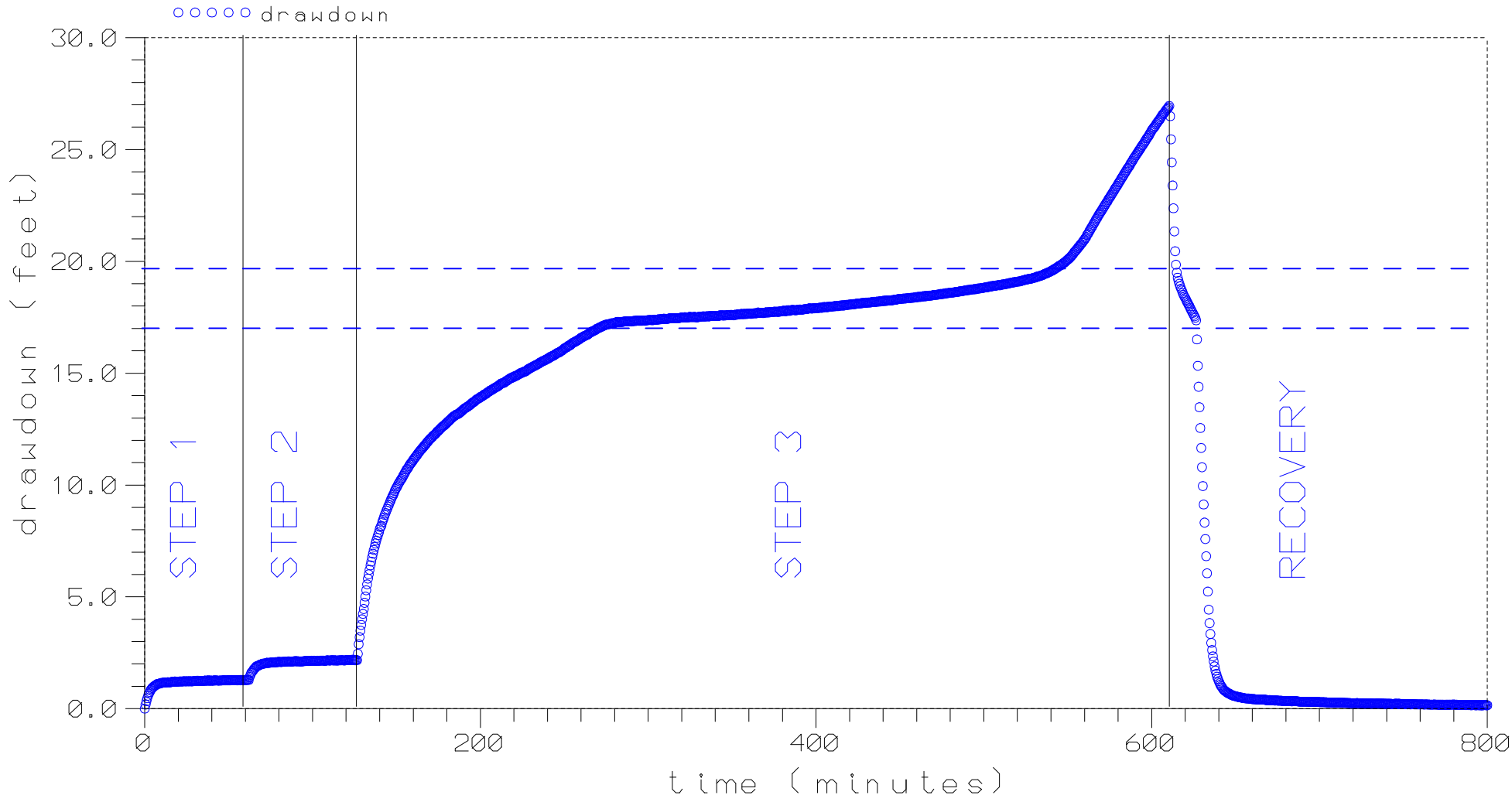
RESULTS
(step 3 data smoothed)

Transmissivity = 986 ft2/day
Storage coefficient = 1.89e-3
Vertical specific leakage = 0.06/day
well loss constant = 0.228
well loss exponent = 1.10
assumed aquifer thickness = 130 ft
effective well radius/casing radius = 0.673 / 0.208

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-5M DURING PUMPING AT APPROXIMATELY 3.5, 6, AND 8.5 GPM (ASSUMING LEAKY TOP OF AQUIFER AT BASIN FILL CONTACT)
(homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-5M/whip/5Mretest/bmo5mf.srf	**N.20**

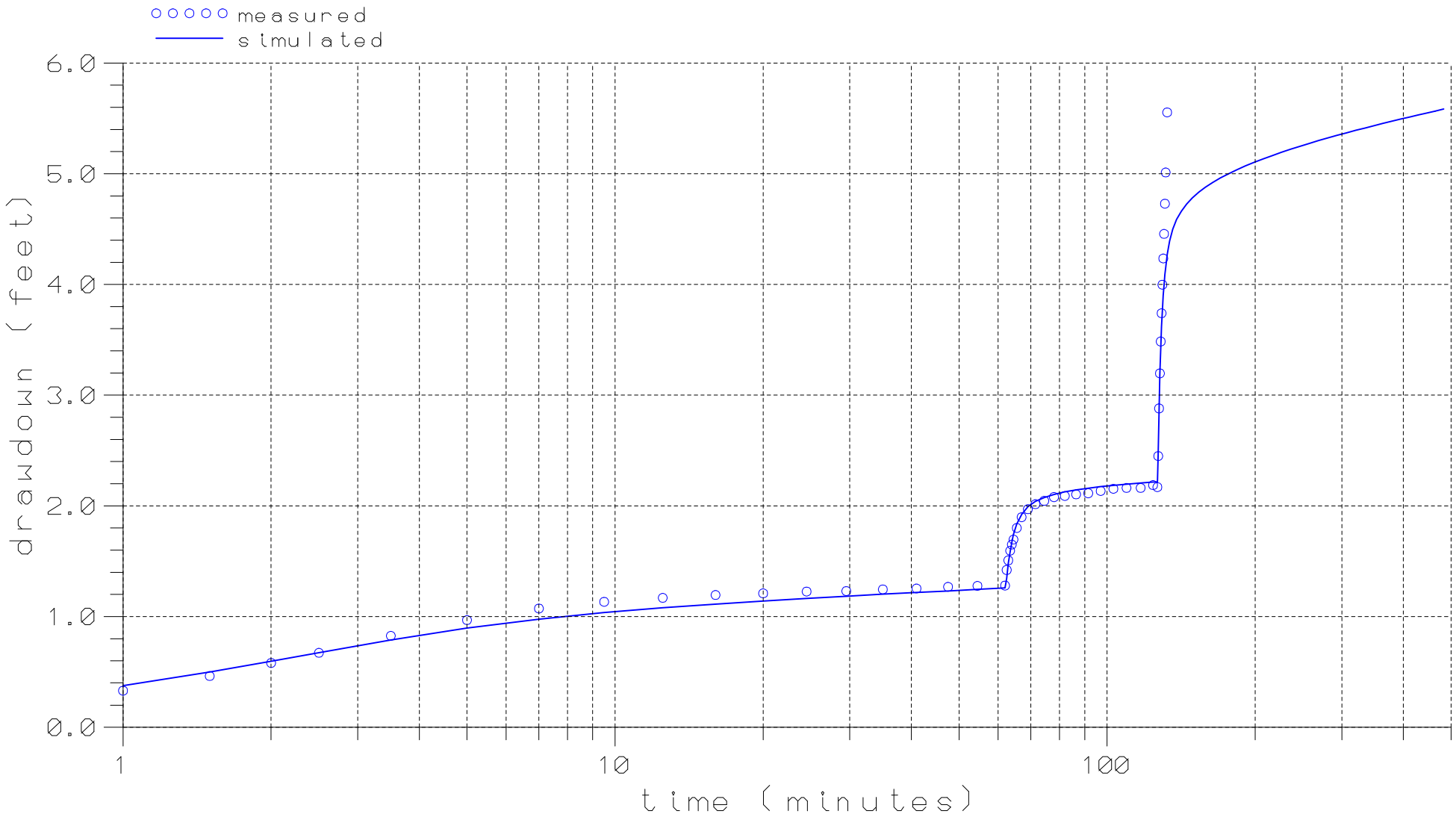


NOTE: dashed lines indicate discontinuities in the drawdown and recovery data

HYDRO GEO CHEM, INC.

MEASURED DRAWDOWNS AT BMO-6B DURING PUMPING AT APPROXIMATELY 1.0, 1.7, AND 3.9 GPM WITH DISCONTINUITIES INDICATED
(analysis using WHIP)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-6B/whip/bmo6braw.srf	**N.21**



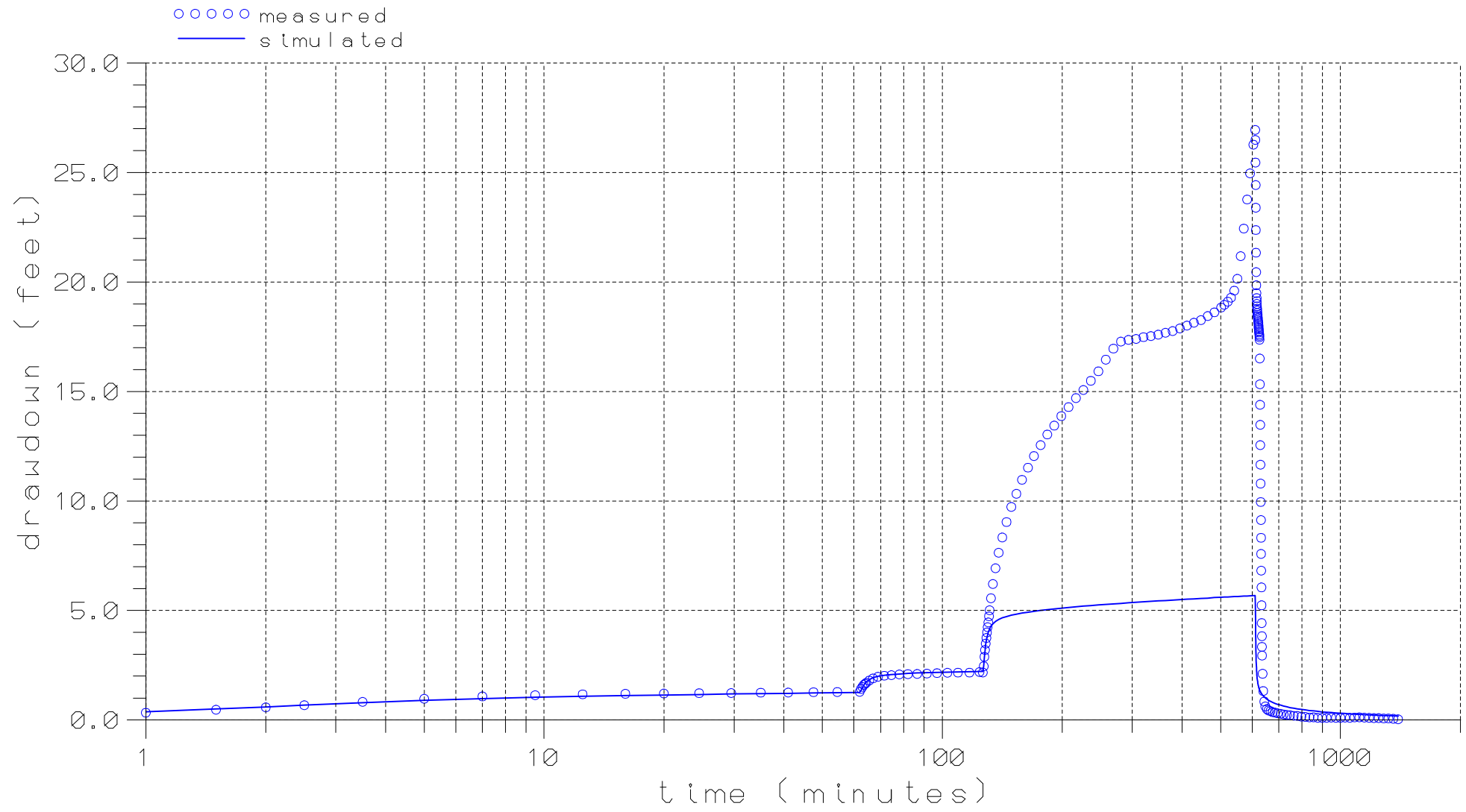
RESULTS

Transmissivity = 170 ft2/day
Storage coefficient = 1.04e-4
Vertical Hydraulic Conductivity = NA
well loss constant = NA
well loss exponent = NA
assumed aquifer thickness = 80 ft
effective well radius/casing radius = 0.354 / 0.287 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-6B DURING PUMPING AT APPROXIMATELY 1.0, 1.7, AND 3.9 GPM (detail of steps 1 and 2) (homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-6B/whip/bmo6b2.srf	N.22



RESULTS

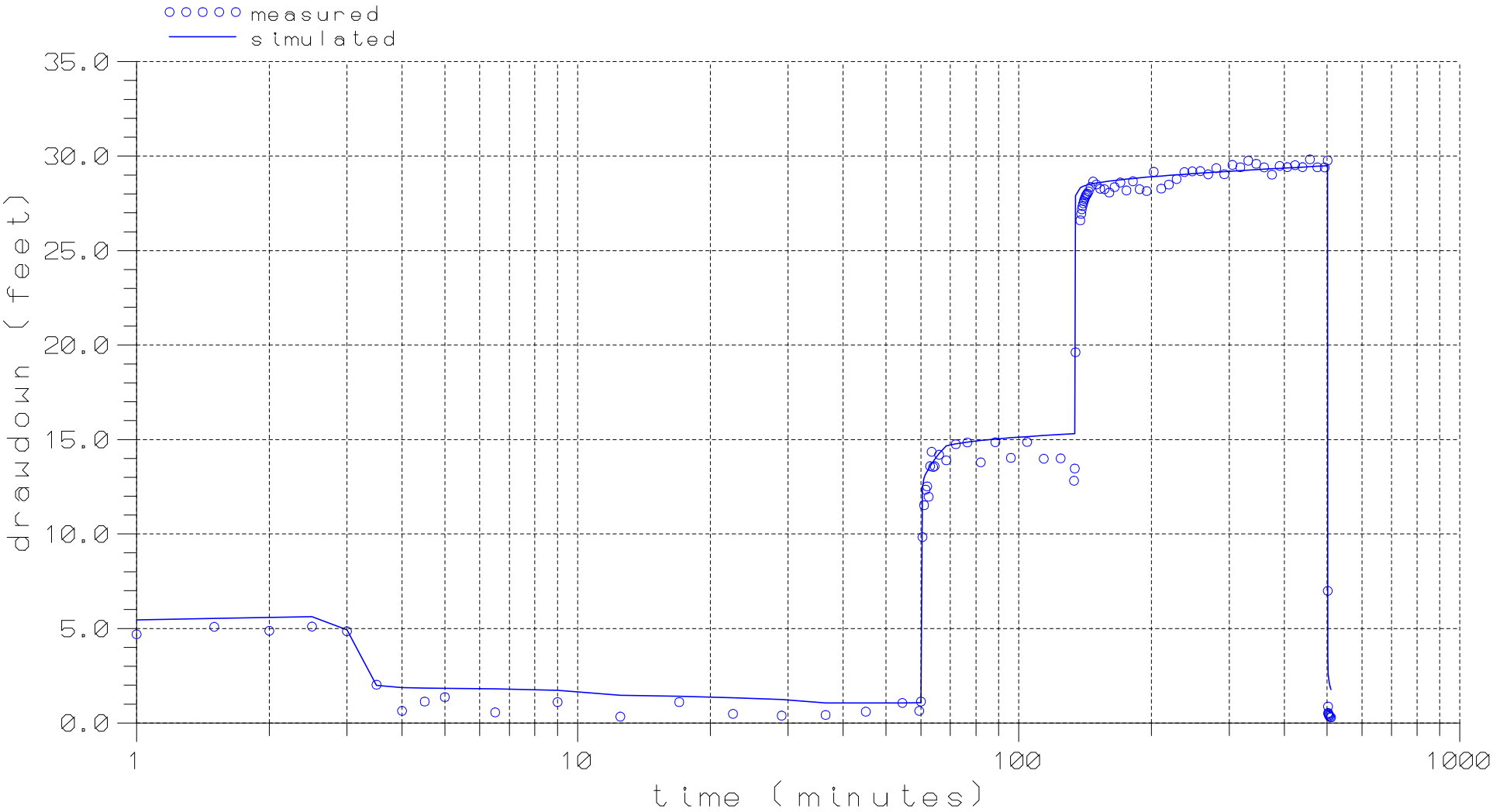
Transmissivity = 170 ft2/day
Storage coefficient = 1.04e-4
Vertical Hydraulic Conductivity = NA
well loss constant = NA
well loss exponent = NA
assumed aquifer thickness = 80 ft
effective well radius/casing radius = 0.354 / 0.287 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-6B DURING PUMPING AT APPROXIMATELY 1.0, 1.7, AND 3.9 GPM

(homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-6B/whip/bmo6b.srf	**N.23**



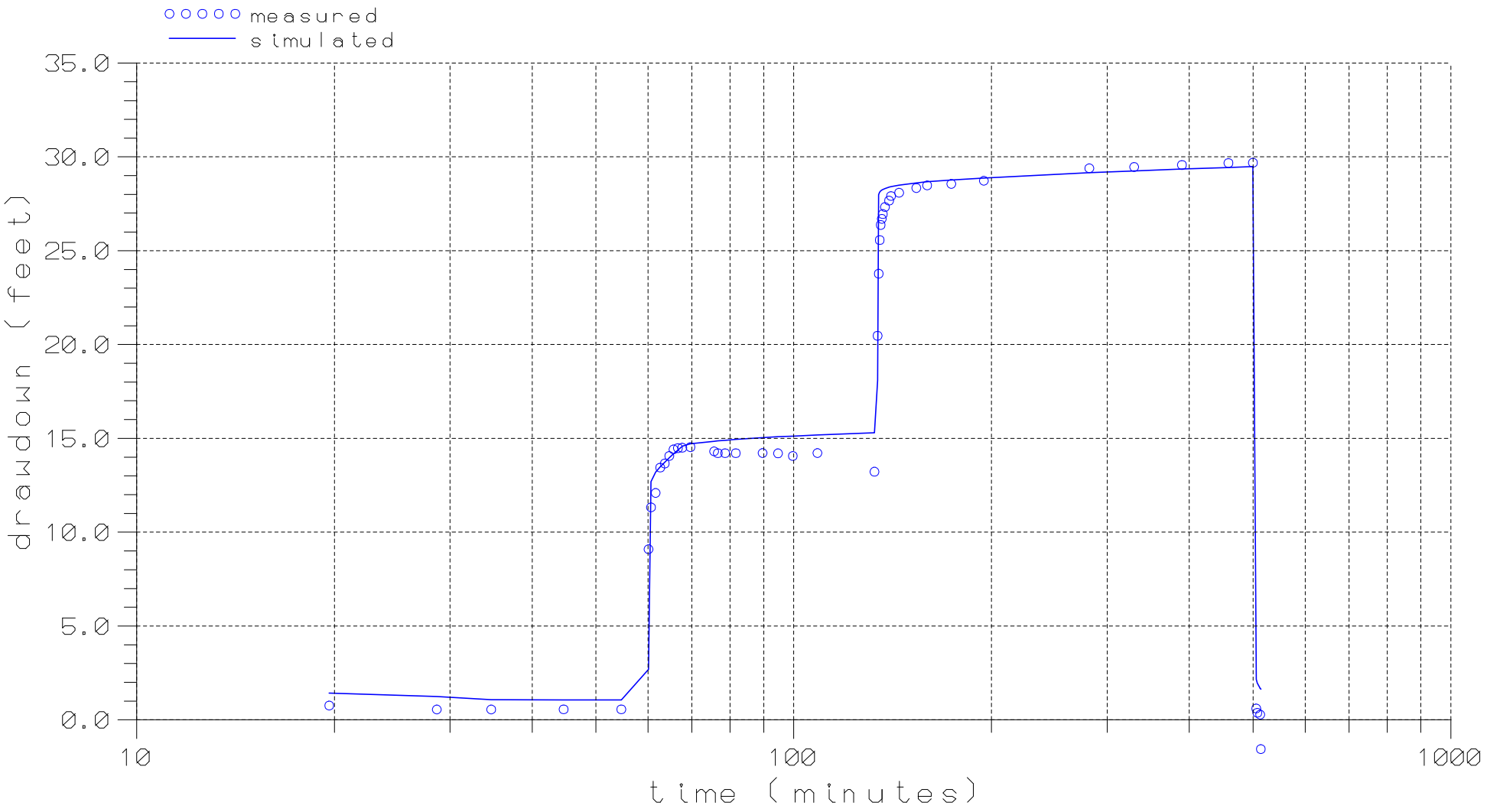
RESULTS
(step3 data smoothed)

Transmissivity = 2,870 ft2/day
Storage coefficient = 1.0e-5
Vertical Hydraulic Conductivity = 1.e-6
well loss constant = 2.0e-3
well loss exponent = 2.24
assumed aquifer thickness = 190 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-6M DURING PUMPING AT APPROXIMATELY 24-10, 42, AND 60 GPM

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-6M/whip/bmo6m.srf	**N.24**



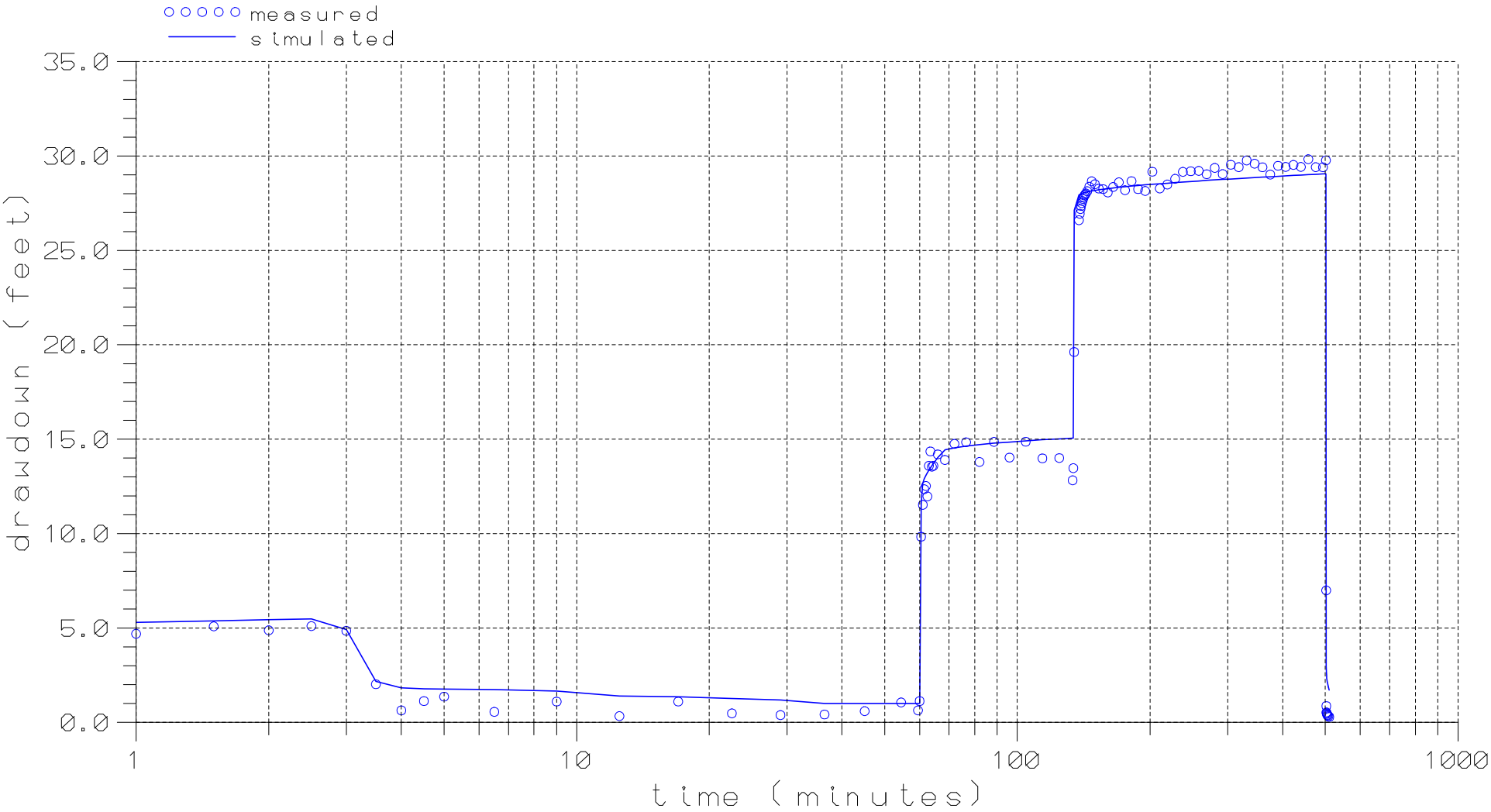
RESULTS

Transmissivity = 2,870 ft2/day
Storage coefficient = 1.0e-5
Vertical Hydraulic Conductivity = 1.e-6
well loss constant = 2.0e-3
well loss exponent = 2.24
assumed aquifer thickness = 190 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-6M DURING PUMPING AT APPROXIMATELY 24-10, 42, AND 60 GPM USING HAND COLLECTED DATA

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-6M/whip/bmo6mh.srf	N.25



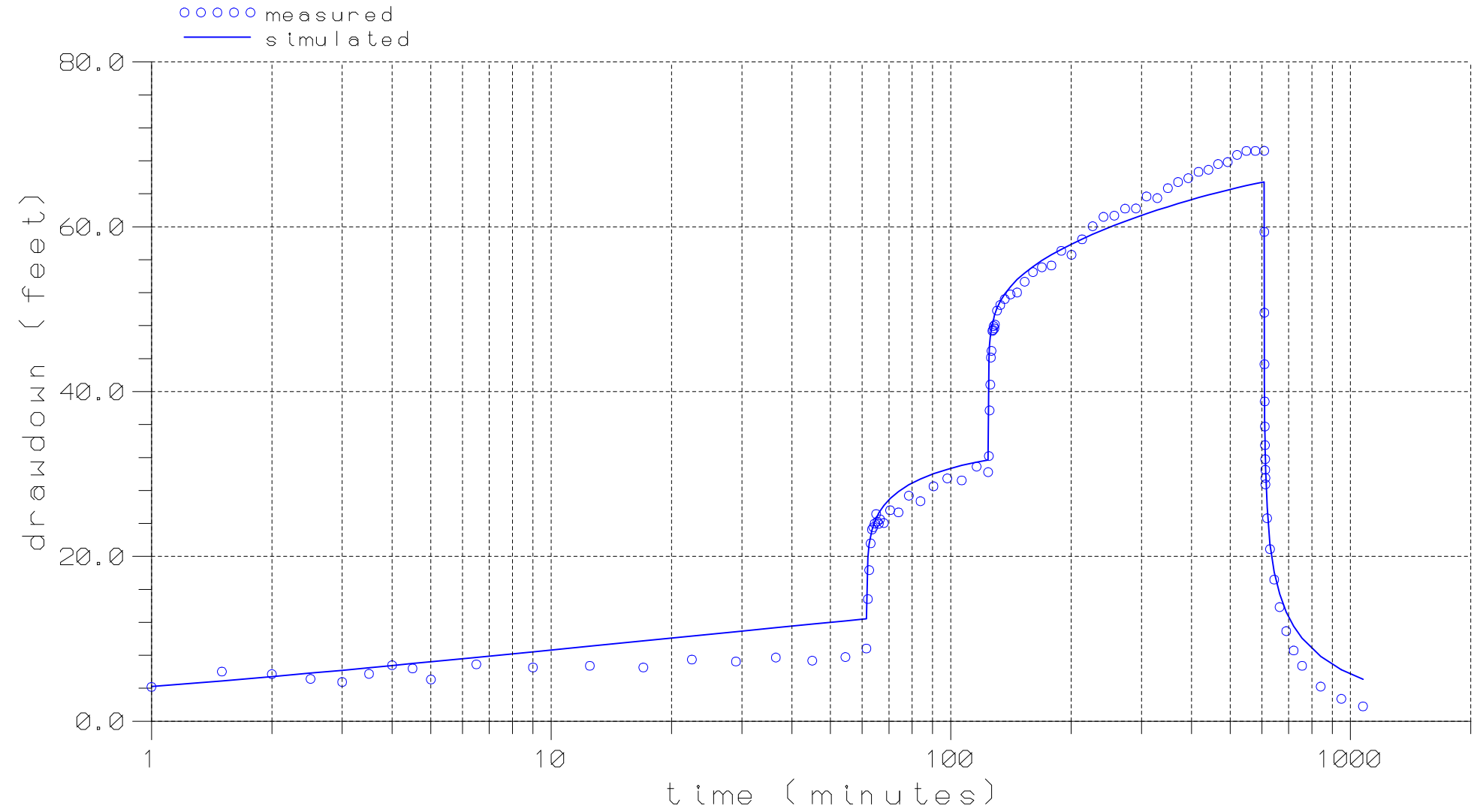
RESULTS
(step 3 data smoothed)

Transmissivity = 2,100 ft2/day
Storage coefficient = 1.0e-5
Vertical Hydraulic Conductivity = NA
well loss constant = 2.29e-3
well loss exponent = 2.21
assumed aquifer thickness = 130 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-6M DURING PUMPING AT APPROXIMATELY 24-10, 42, AND 60 GPM
(homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-6M/whip/bmo6mf.srf	**N.26**



RESULTS

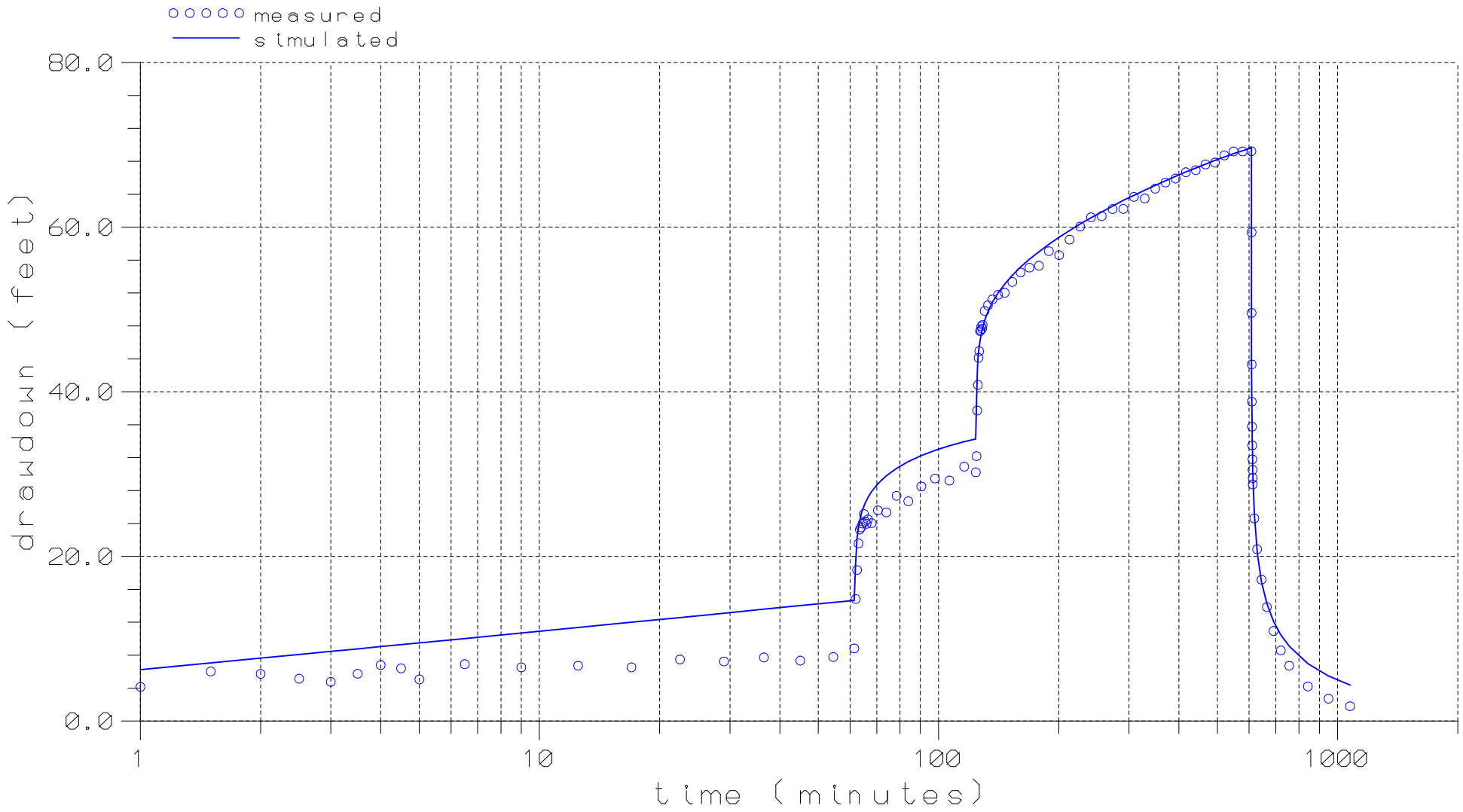
Transmissivity = 80.6 ft2/day
Storage coefficient = 0.132
Vertical Hydraulic Conductivity = NA
well loss constant = 3,26e-3
well loss exponent = 2.41
assumed aquifer thickness = 130 ft
effective well radius/casing radius = 0.503 / 0.208 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-7M DURING PUMPING AT APPROXIMATELY 11, 23, AND 34 GPM

(homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-7M/whip/bmo7mf.srf	**N.27**



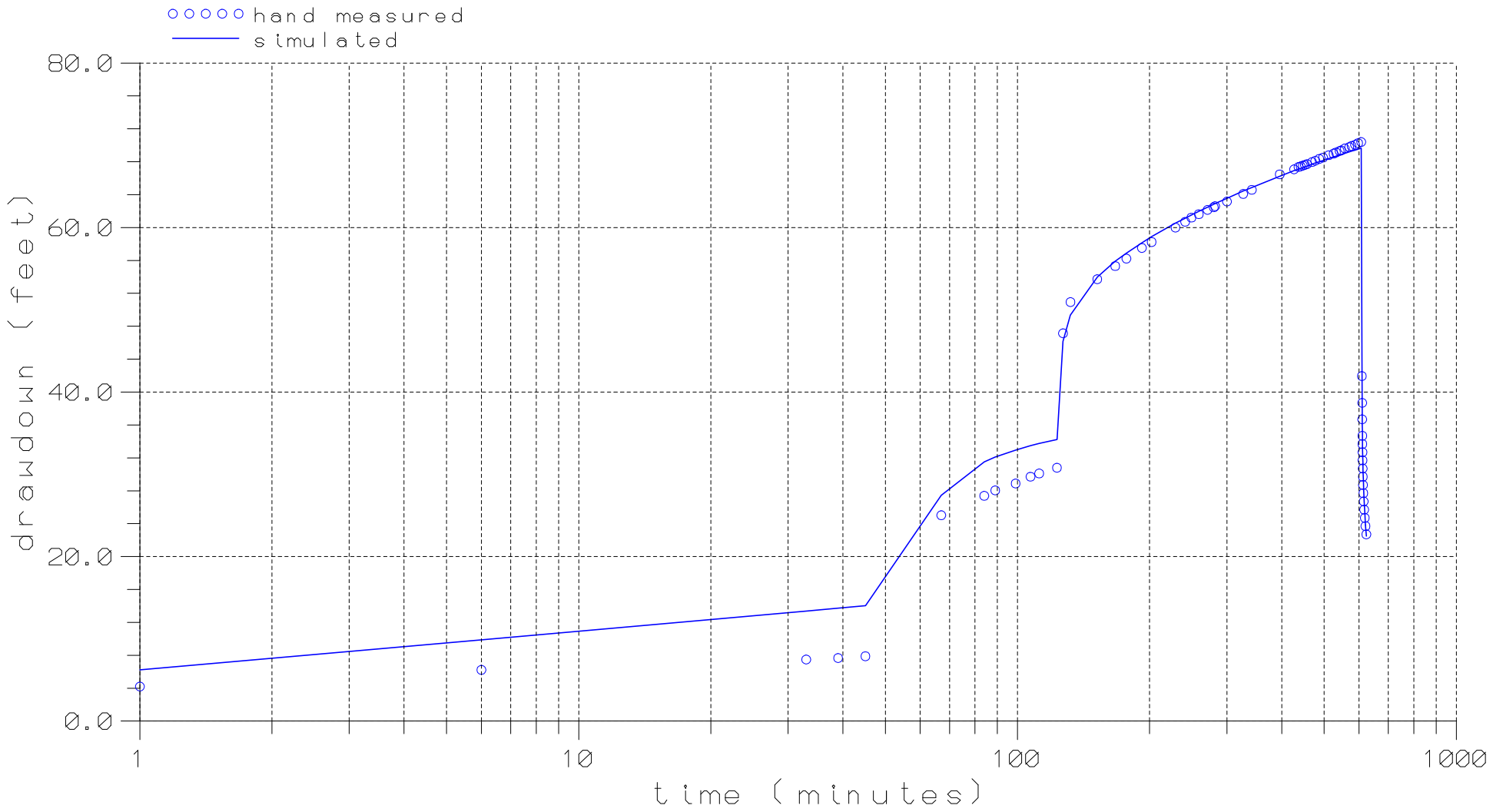
RESULTS
(using Dupuit correction)

Transmissivity = 125 ft2/day
Storage coefficient = 0.20
Vertical Hydraulic Conductivity = 0.45
well loss constant = 1.0e-4
well loss exponent = 2.5
assumed aquifer thickness = 190 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-7M DURING PUMPING AT APPROXIMATELY 11, 23, AND 34 GPM

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-7M/whip/bmo7md.srf	**N.28**



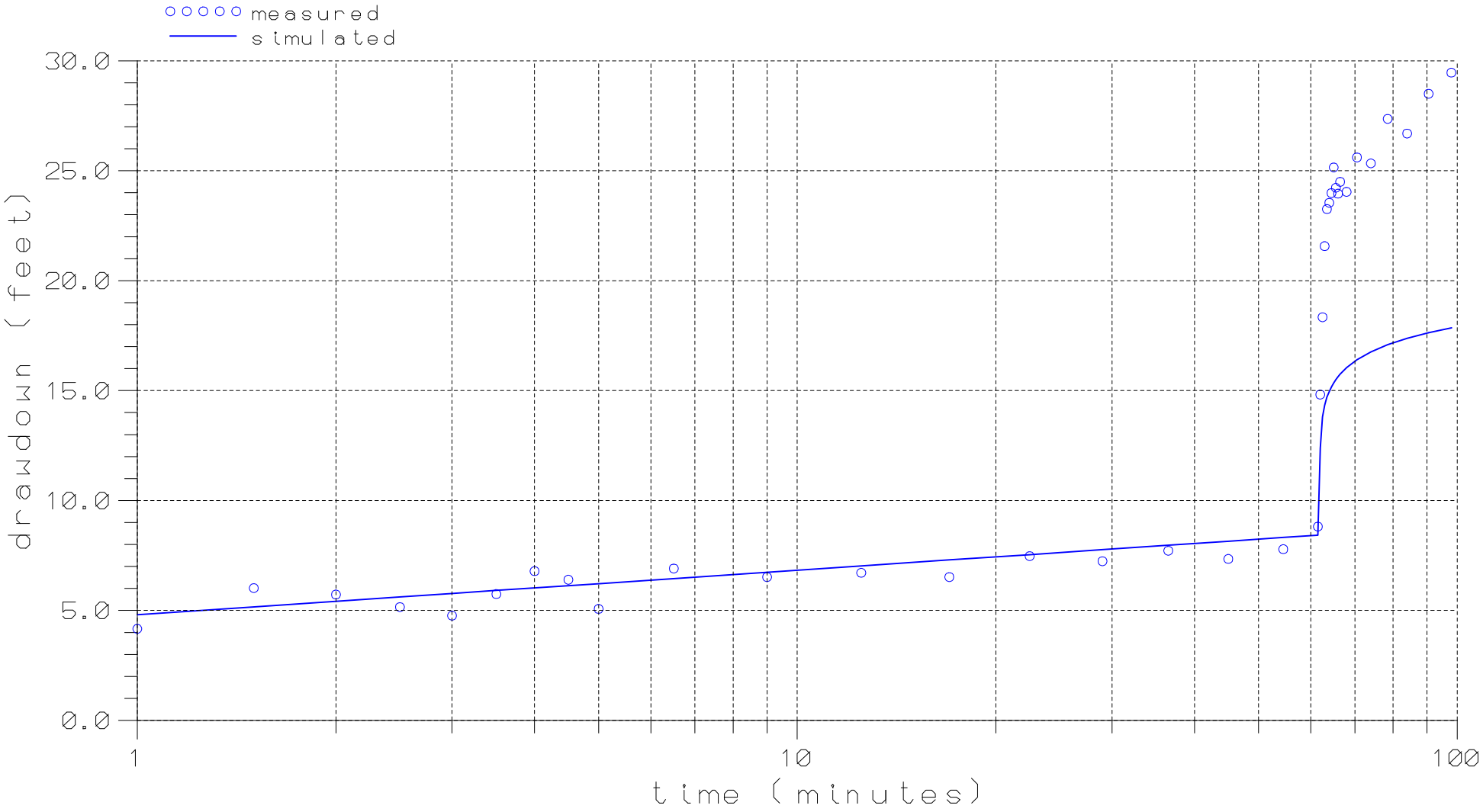
RESULTS
(using Dupuit correction)

Transmissivity = 125 ft2/day
Storage coefficient = 0.20
Vertical Hydraulic Conductivity = 0.45
well loss constant = 1.0e-4
well loss exponent = 2.5
assumed aquifer thickness = 190 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-7M DURING PUMPING AT APPROXIMATELY 11, 23, AND 34 GPM USING HAND-COLLECTED DATA

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-7M/whip/bmo7mhd.srf	**N.29**



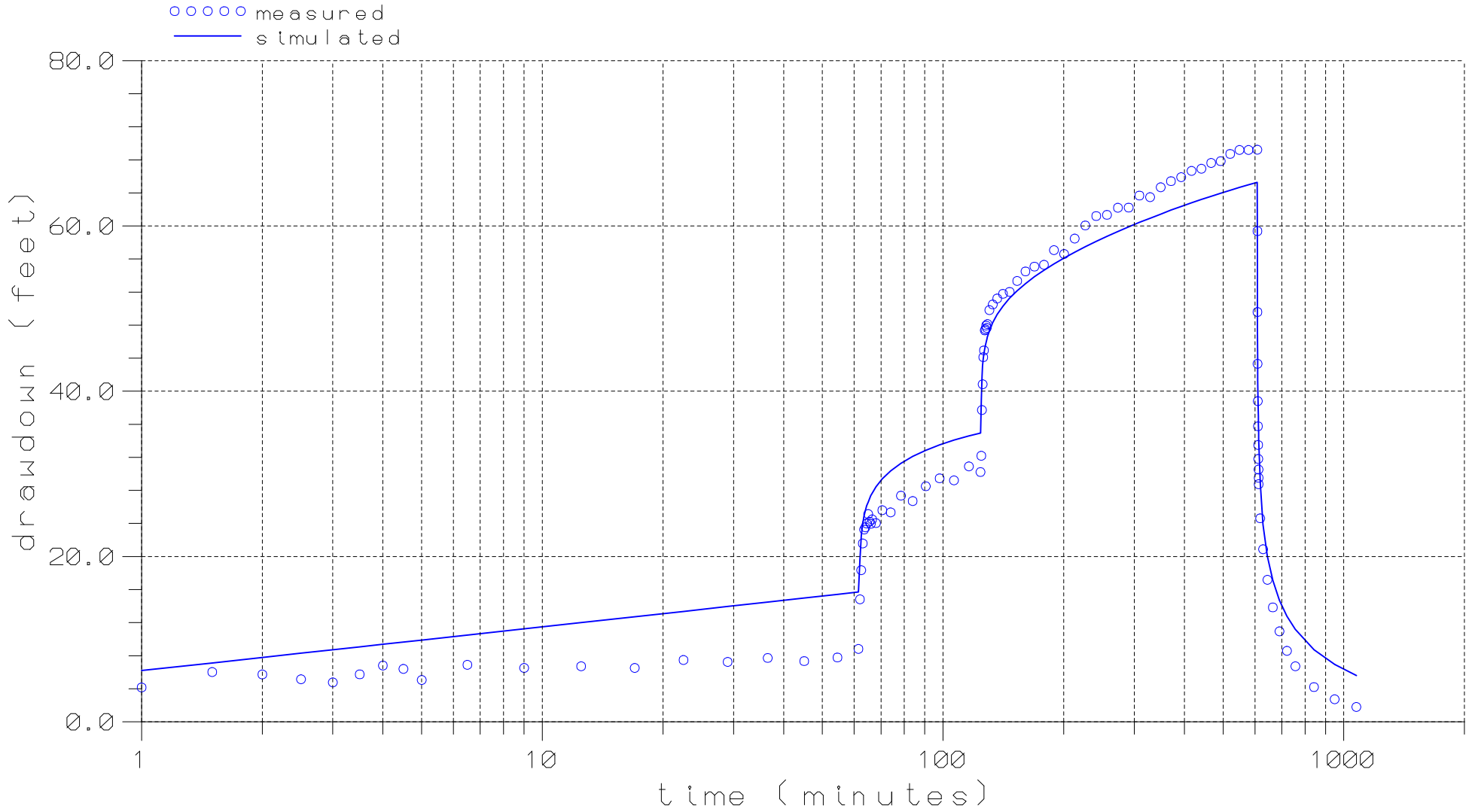
RESULTS

Transmissivity = 278 ft2/day
Storage coefficient = 0.42
Vertical Hydraulic Conductivity = 0.1
well loss constant = NA
well loss exponent = NA
assumed aquifer thickness = 190 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-7M DURING PUMPING AT APPROXIMATELY 11, AND 23 GPM SHOWING FIT TO FIRST STEP ONLY

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-7M/whip/b7mst1.srf	**N.30**



RESULTS

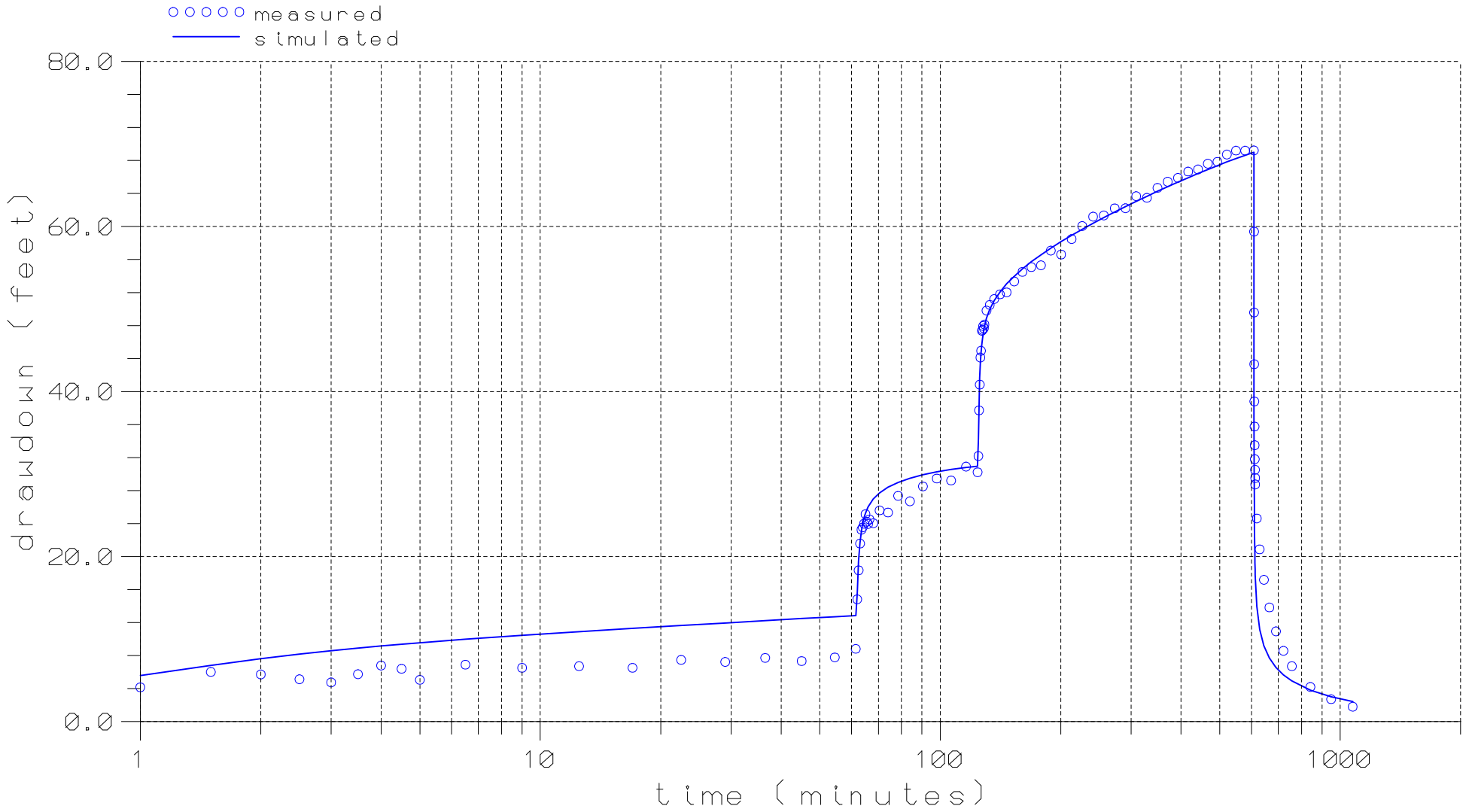
Transmissivity = 105 ft2/day
Storage coefficient = 0.274
Vertical Hydraulic Conductivity = 1.e-5
well loss constant = 4.44e-5
well loss exponent = 2.85
assumed aquifer thickness = 190 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-7M DURING PUMPING AT APPROXIMATELY 11, 23, AND 34 GPM

(analysis using WHIP)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-7M/whip/bmo7m.srf	**N.31**



RESULTS
(using Dupuit correction)

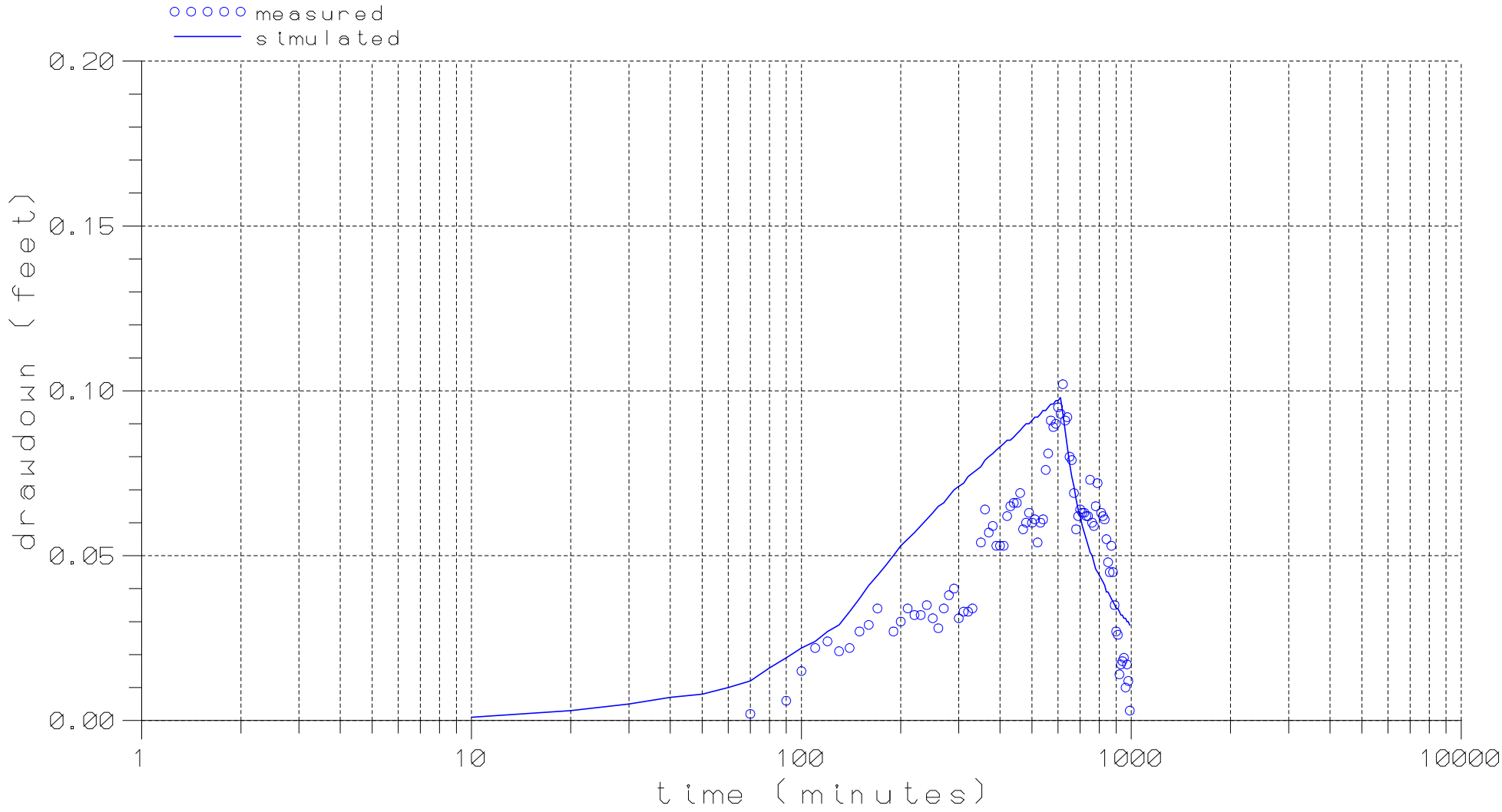
Transmissivity = 170 ft2/day
Storage coefficient = 3.5e-4
Vertical Hydraulic Conductivity = NA
well loss constant = NA
well loss exponent = NA
assumed aquifer thickness = 100 ft
effective well radius/casing radius = 0.5 / 0.208 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-7M DURING PUMPING AT APPROXIMATELY 11, 23, AND 34 GPM

(homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-7M/whip/bmo7mfd.srf	**N.32**



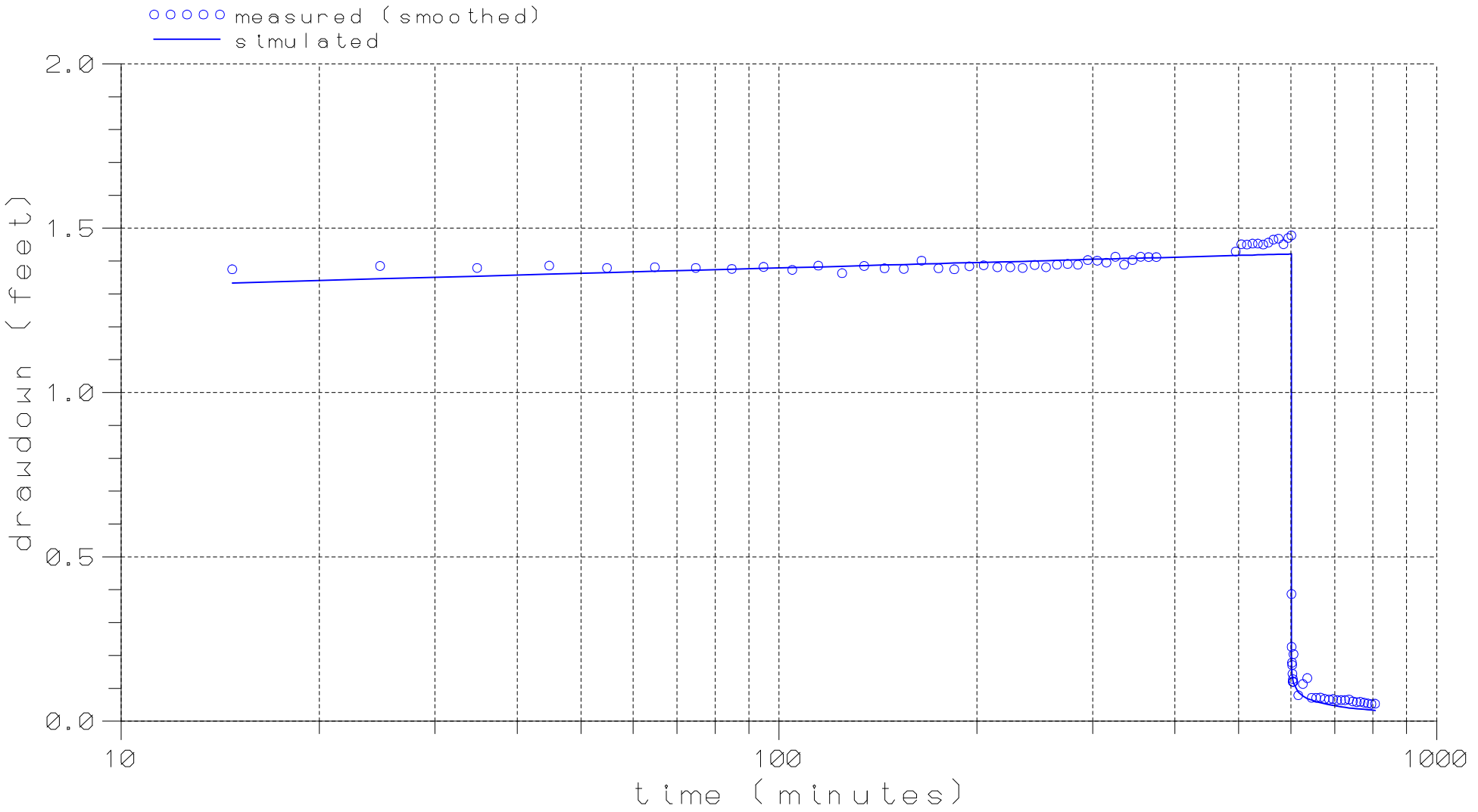
RESULTS

Transmissivity = 16,100 ft2/day
Storage coefficient = 4.6e-5
Vertical Hydraulic Conductivity = 0.064
well loss constant = NA
well loss exponent = NA
assumed aquifer thickness = 440 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT COB MW-1 DURING PUMPING AT BMO-7M AT APPROXIMATELY 11, 23, AND 34 GPM

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-7M/whip/bmo7mob.srf	**N.33**



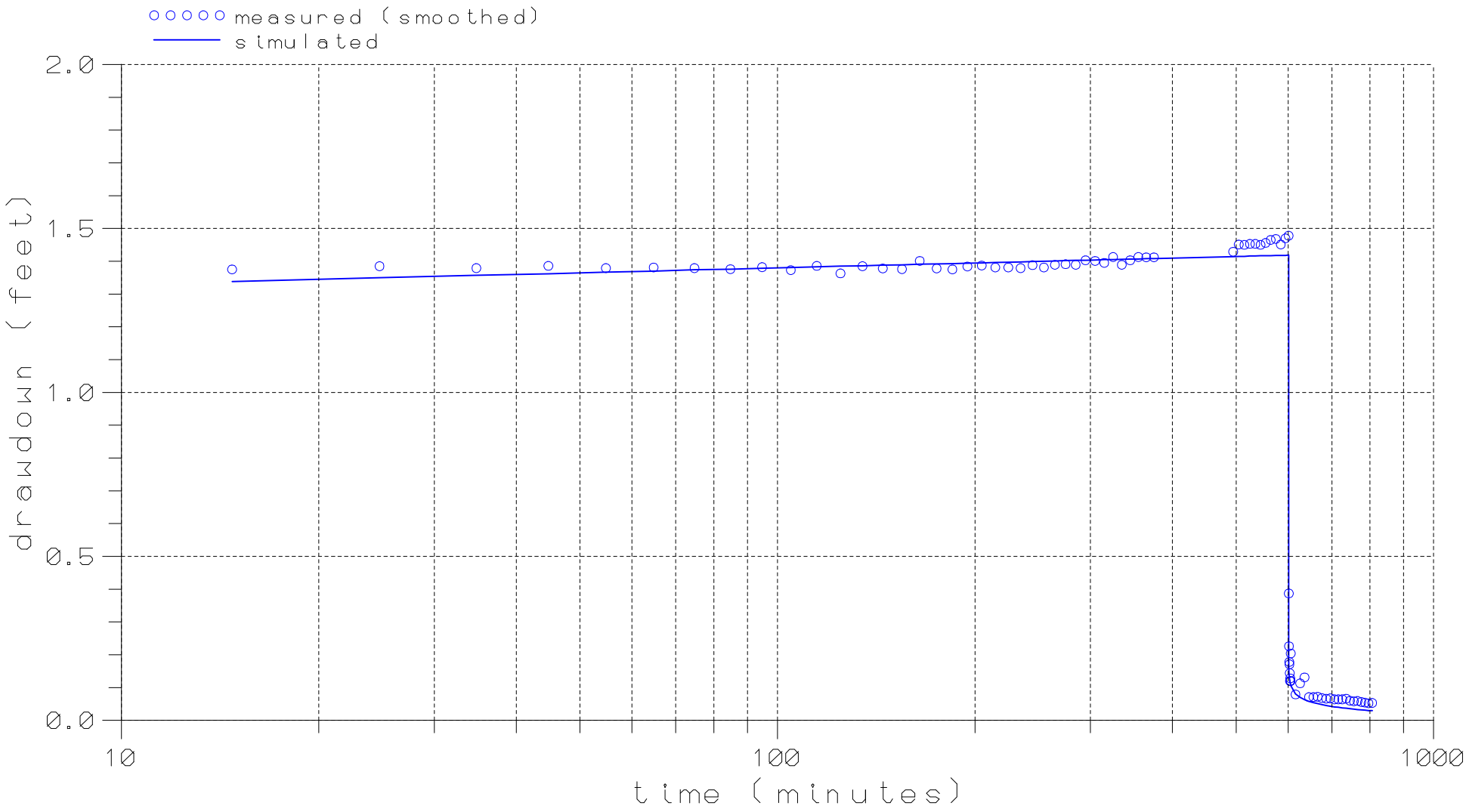
RESULTS
(smoothed data)

Transmissivity = 19,200 ft2/day
Storage coefficient = 0.1
Vertical Hydraulic Conductivity = 1.5e-6 ft/day
well loss constant = 0.029
well loss exponent = 1.5
ssumed aquifer thickness = 257 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT COB MW-1 DURING PUMPING AT APPROXIMATELY 11 GPM

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ COB MW-1/whip/mw1.srf	**N.34**



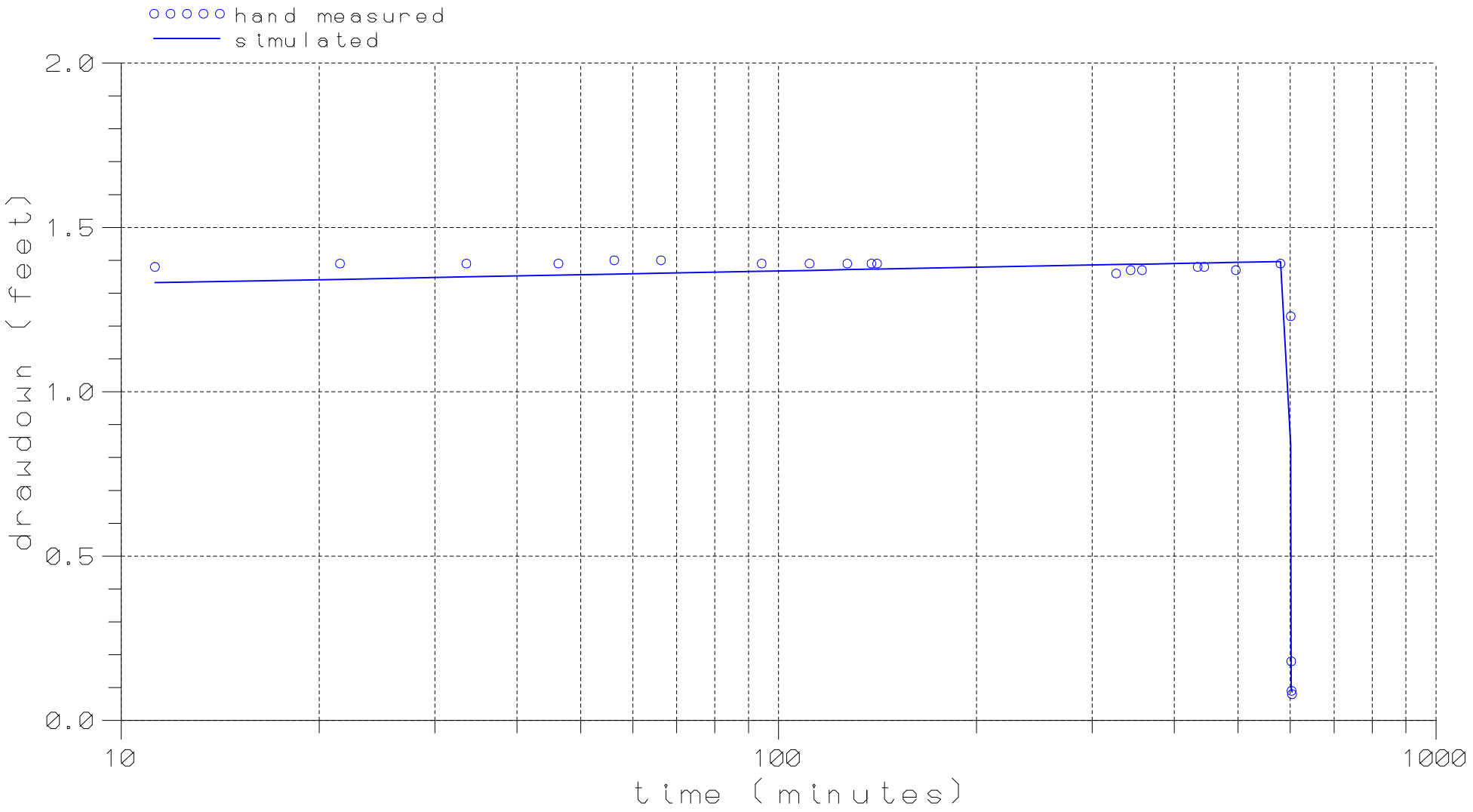
RESULTS
(smoothed data)

Transmissivity = 7,790 ft2/day
Storage coefficient = 0.01
Vertical Hydraulic Conductivity = NA
well loss constant = 0.029
well loss exponent = 1.5
ssumed aquifer thickness = 90 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT COB MW-1 DURING PUMPING AT APPROXIMATELY 11 GPM
(homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ COB MW-1/whip/mw1c.srf	**N.35**



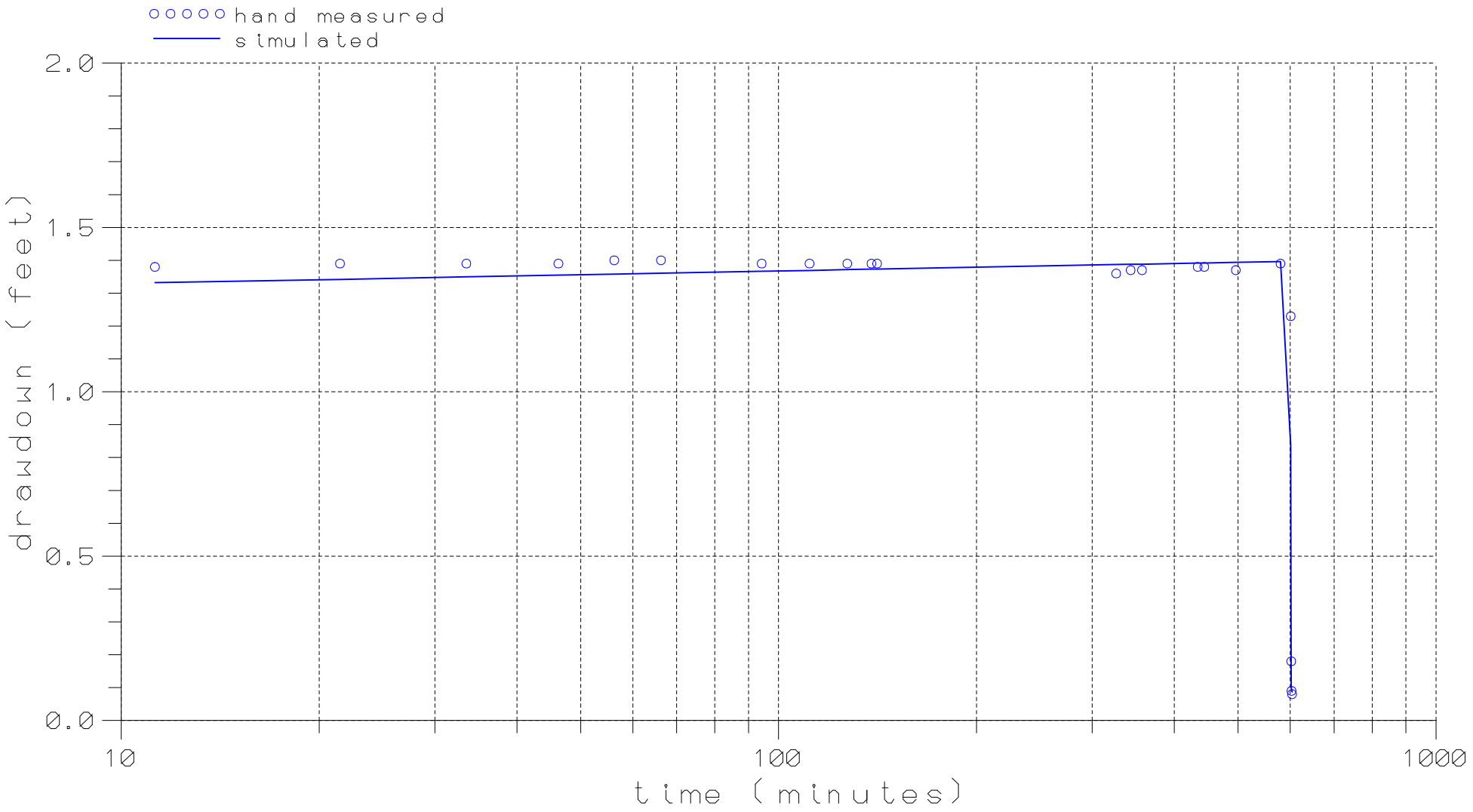
RESULTS

Transmissivity = 10,300 ft2/day
Storage coefficient = 0.01
Vertical Hydraulic Conductivity = NA
well loss constant = 0.031
well loss exponent = 1.5
ssumed aquifer thickness = 90 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT COB MW-1 DURING PUMPING AT APPROXIMATELY 11 GPM USING HAND COLLECTED DATA
(homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ COB MW-1/whip/mw1h.srf	**N.36**



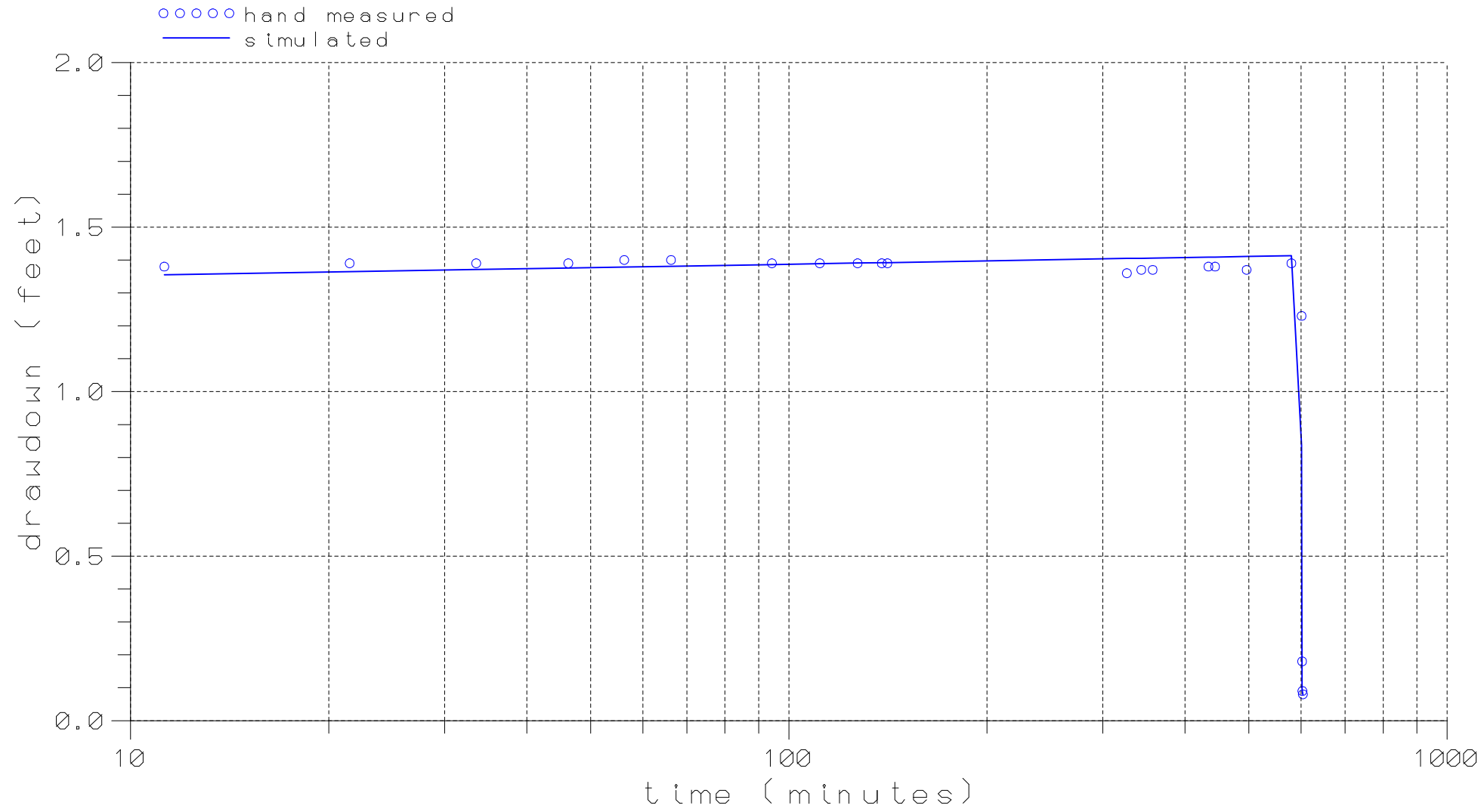
RESULTS

Transmissivity = 10,300 ft2/day
Storage coefficient = 0.01
Vertical Hydraulic Conductivity = NA
well loss constant = 0.031
well loss exponent = 1.5
ssumed aquifer thickness = 90 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT COB MW-1 DURING PUMPING AT APPROXIMATELY 11 GPM USING HAND COLLECTED DATA
(homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ COB MW-1/whip/mw1h.srf	**N.36**



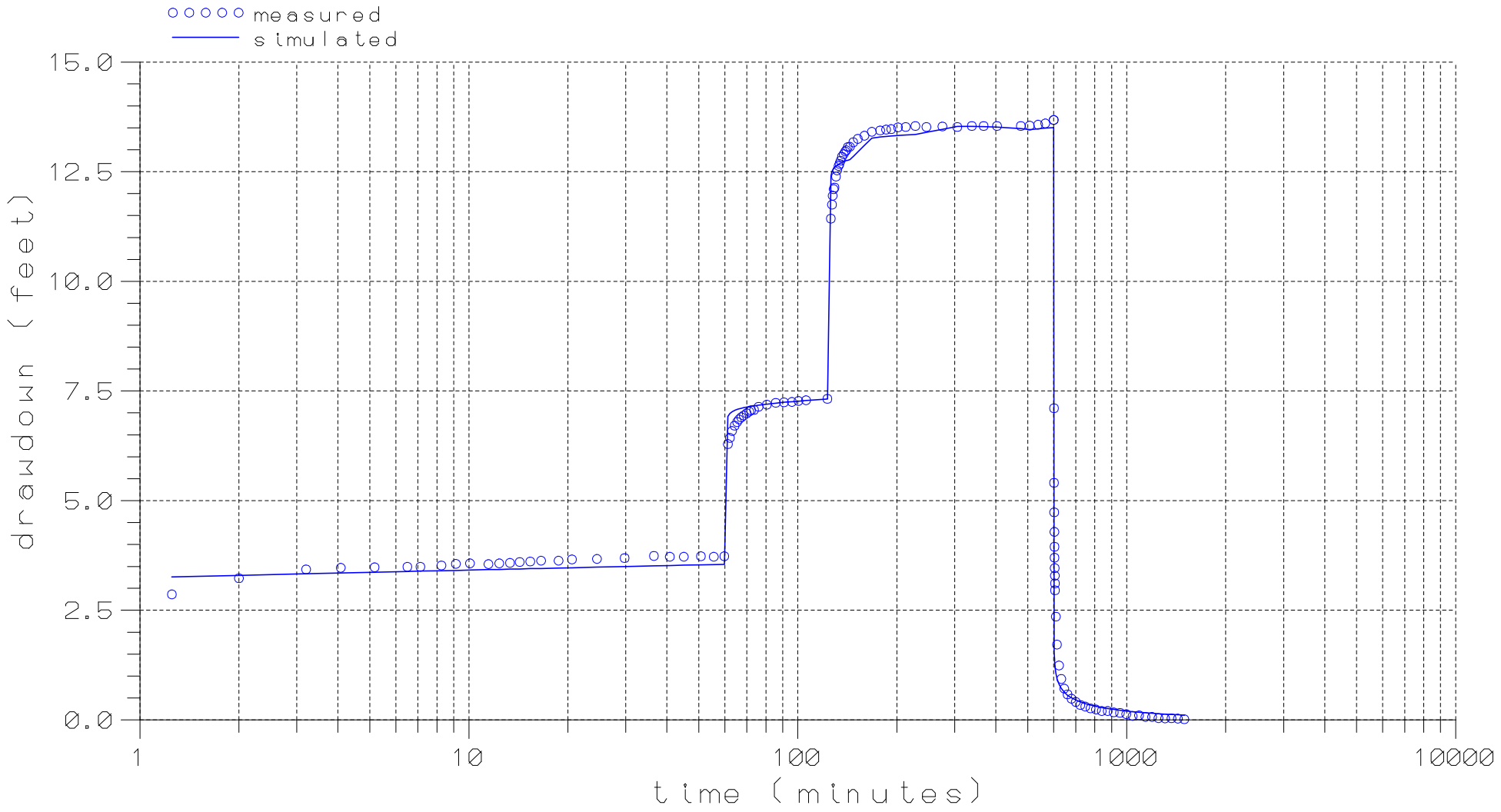
RESULTS

Transmissivity = 11,500 ft2/day
Storage coefficient = 0.01
Vertical Hydraulic Conductivity = NA
well loss constant = 0.032
well loss exponent = 1.5
ssumed aquifer thickness = 90 ft
effective well radius/casing radius = 0.234 / 0.208

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT COB MW-1 DURING PUMPING AT APPROXIMATELY 11 GPM USING HAND COLLECTED DATA
(homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ COB MW-1/whip/mw1hrad.srf	**N.37**



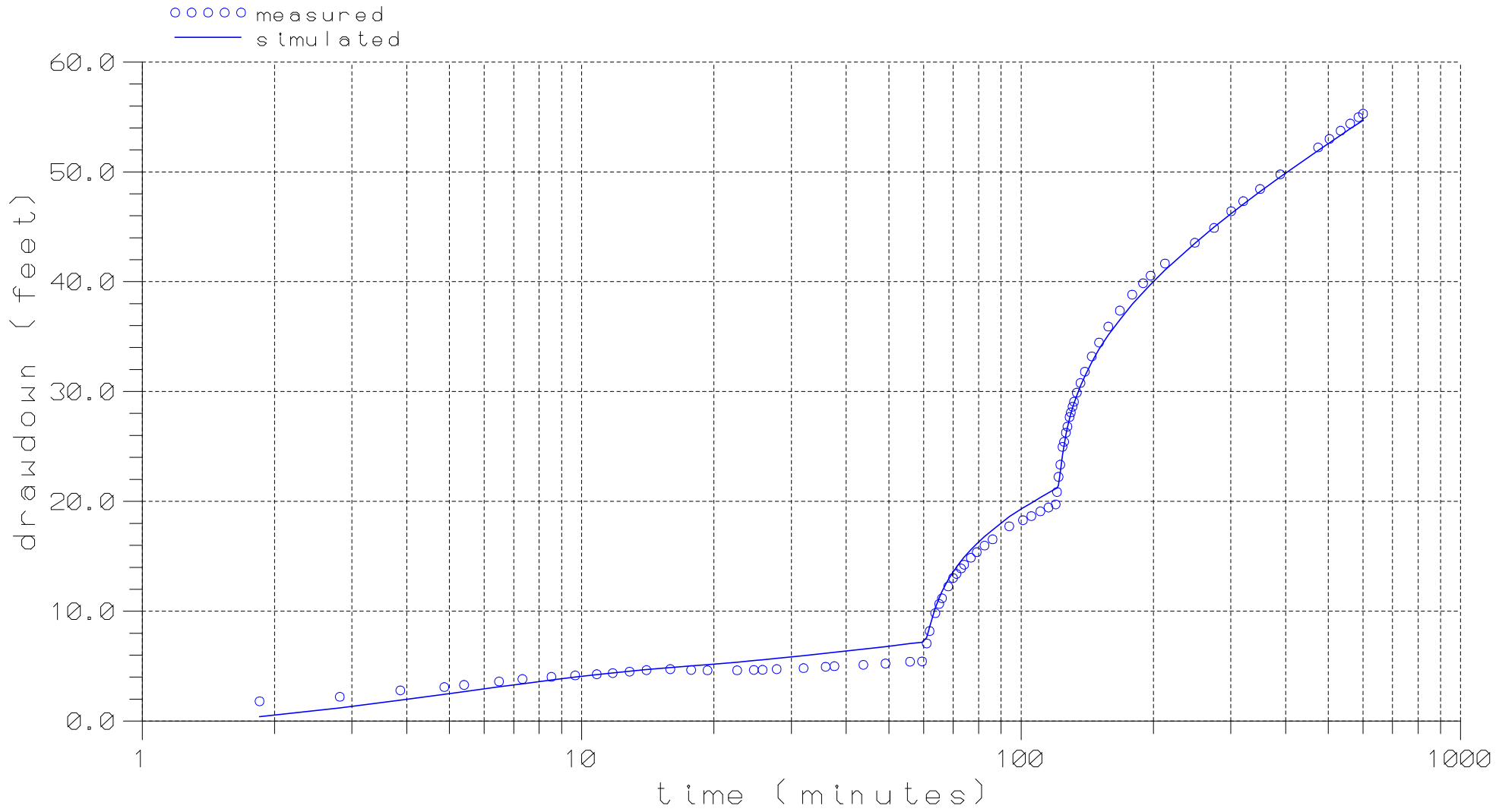
RESULTS

Transmissivity = 3500 ft2/day
Storage coefficient = 0.01
Vertical Hydraulic Conductivity = 0.1 ft/day
well loss constant = 0.14
well loss exponent = 1.04
assumed aquifer thickness = 197 ft
effective well radius/casing radius = 0.208 / 0.208

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-8B DURING PUMPING AT APPROXIMATELY 15, 30, AND 53 GPM

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-8B/whip/bmo8b.srf	**N.38**



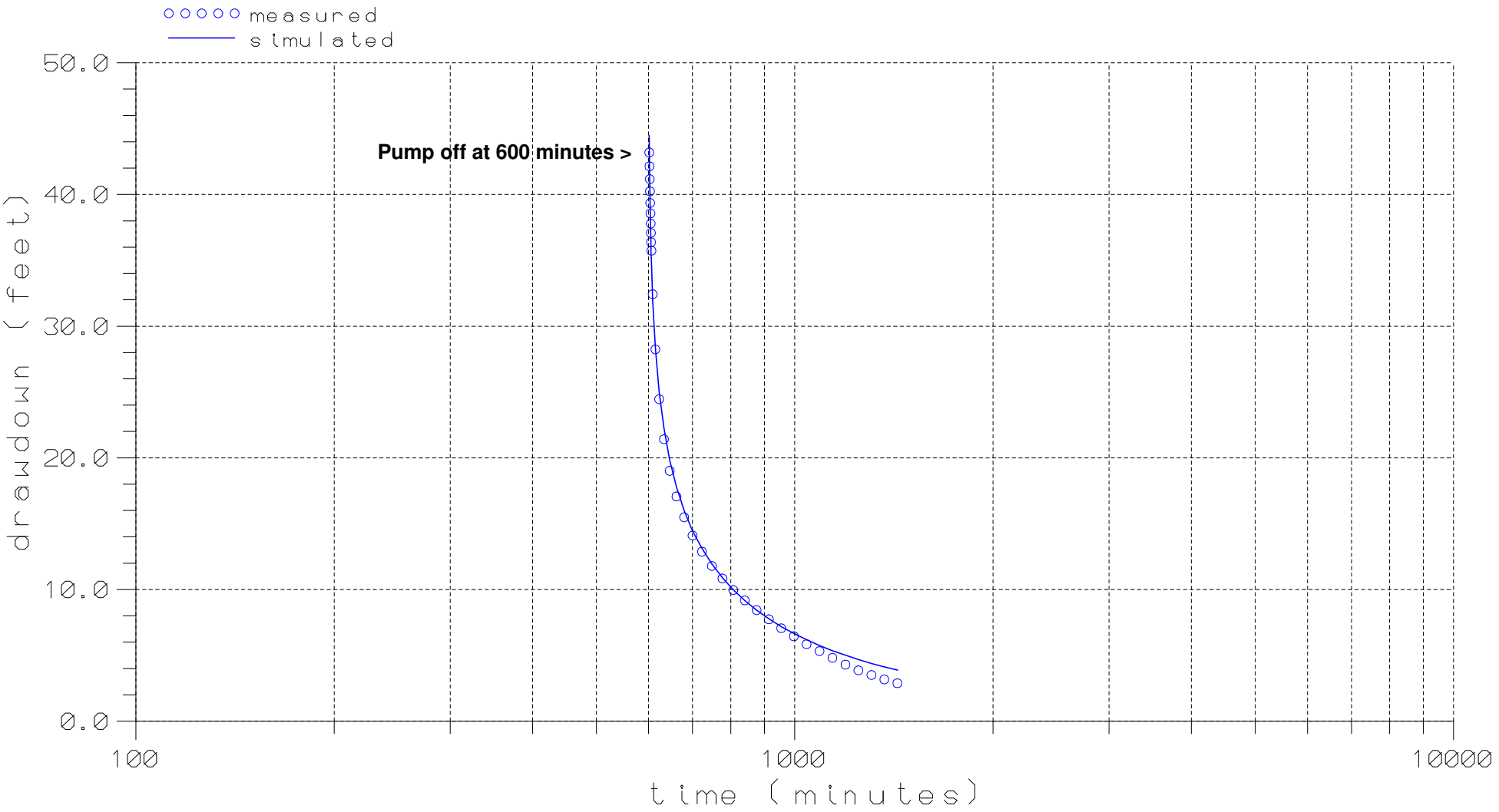
RESULTS

Transmissivity = 115 ft2/day
Storage coefficient = 0.396
Vertical Hydraulic Conductivity = 1.e-5 ft/day
well loss constant = NA
well loss exponent = NA
assumed aquifer thickness = 725 ft
effective well radius/casing radius = 1.0 / 0.208

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-8M DURING PUMPING AT APPROXIMATELY 3, 8.3, AND 14 GPM USING HAND COLLECTED DATA

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-8M/whip/bmo8m.srf	**N.39**



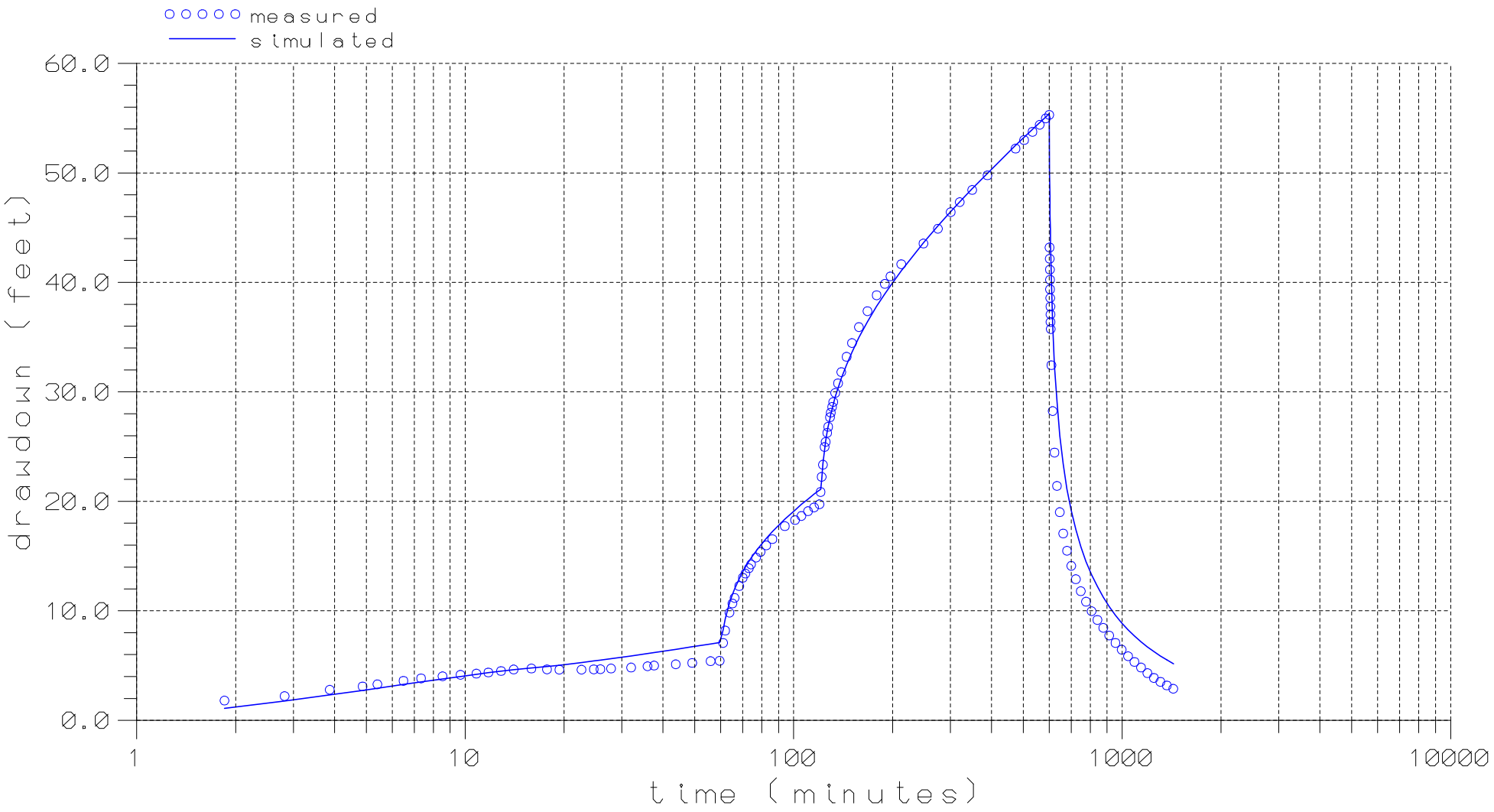
RESULTS

Transmissivity = 146 ft2/day
Storage coefficient = 0.116
Vertical Hydraulic Conductivity = 1.e-5 ft/day
well loss constant = NA
well loss exponent = NA
assumed aquifer thickness = 725 ft
effective well radius/casing radius = 1.0 / 0.208

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED RECOVERY AT BMO-8M USING AUTOMATICALLY LOGGED DATA

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-8M/whip/bmo8mr.srf	**N.40**



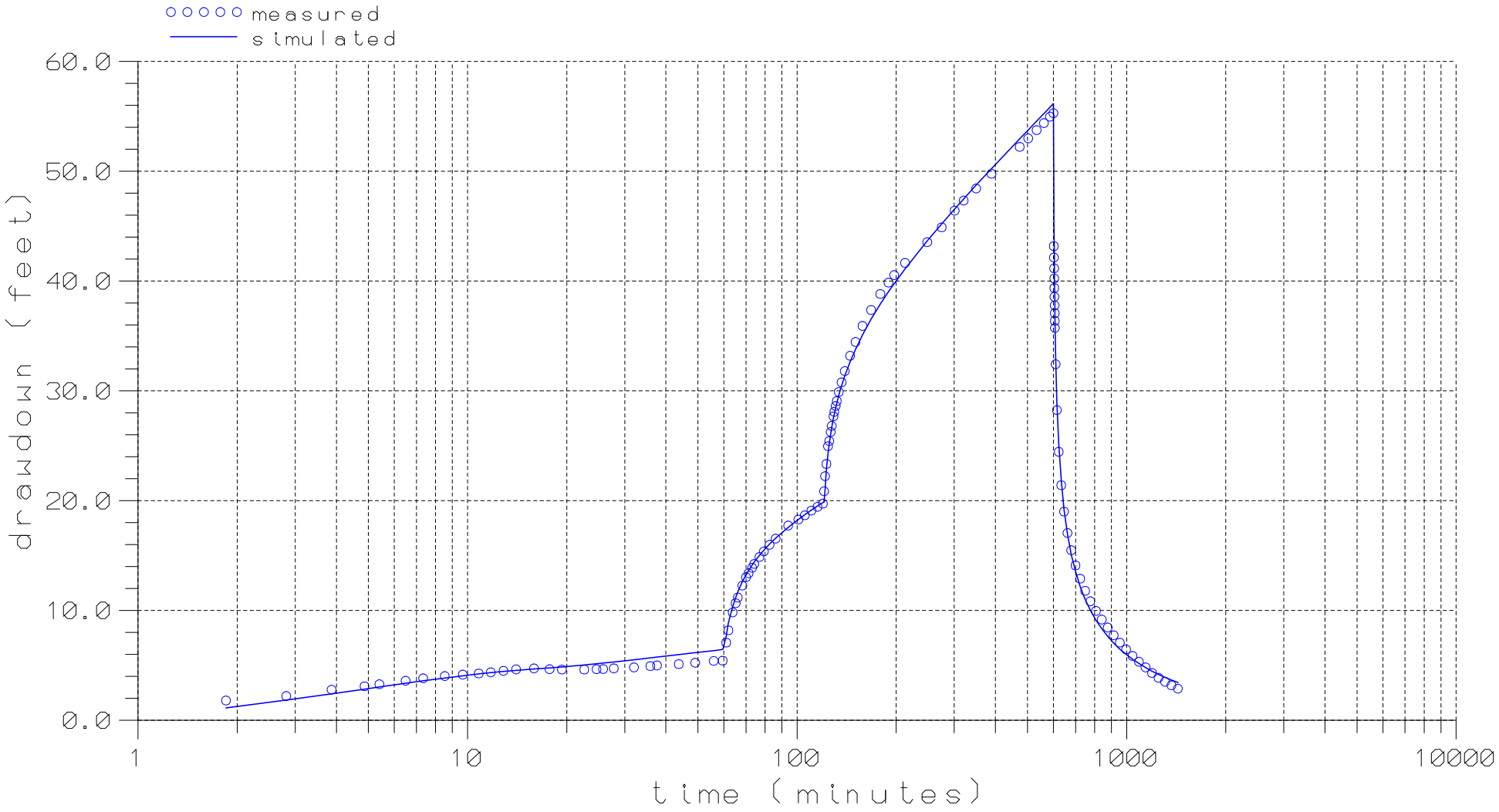
RESULTS

Transmissivity = 20 ft2/day
Storage coefficient = 0.482
Vertical Hydraulic Conductivity = NA
well loss constant = NA
well loss exponent = NA
assumed aquifer thickness = 135 ft
effective well radius/casing radius = 0.43 / 0.301

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-8M DURING PUMPING AT APPROXIMATELY 3, 8.3, AND 14 GPM USING HAND COLLECTED AND AUTOMATICALLY LOGGED DATA
(homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-8M/whip/bmo8mf.srf	**N.41**



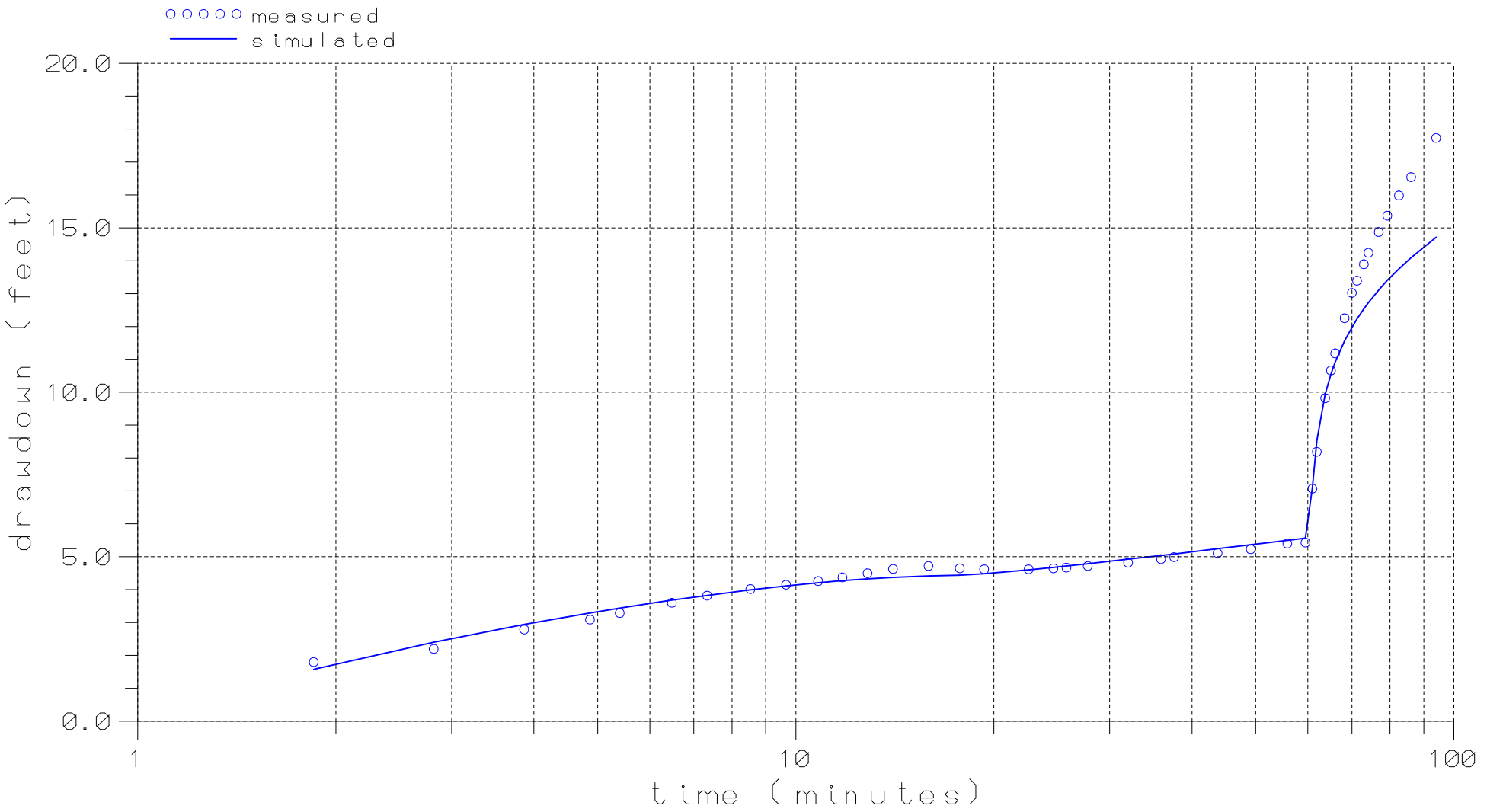
RESULTS
(using Dupuit correction)

Transmissivity = 31.2 ft2/day
Storage coefficient = 0.355
Vertical Hydraulic Conductivity = NA
well loss constant = NA
well loss exponent = NA
assumed aquifer thickness = 135 ft
effective well radius/casing radius = 0.331 / 0.301

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-8M DURING PUMPING AT APPROXIMATELY 3, 8.3, AND 14 GPM USING AUTOMATICALLY LOGGED AND HAND COLLECTED DATA
(homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-8M/whip/bmo8mfd.srf	**N.42**



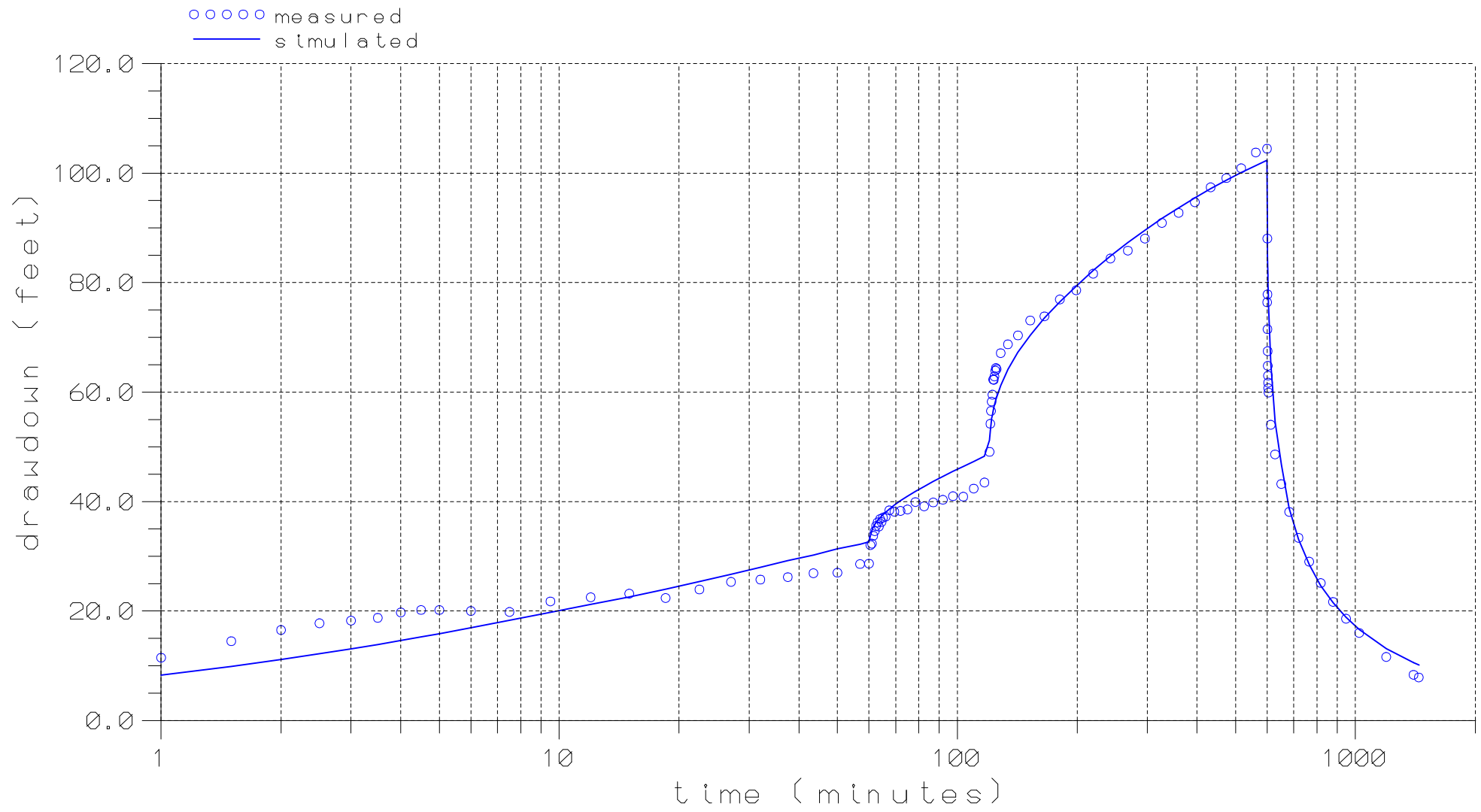
RESULTS

Transmissivity = 220 ft2/day
Storage coefficient = 0.146
Vertical Hydraulic Conductivity = 1.e-3 ft/day
well loss constant = NA
well loss exponent = NA
assumed aquifer thickness = 725 ft
effective well radius/casing radius = 1.0 / 0.208

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-8M DURING PUMPING AT APPROXIMATELY 3, AND 8.3 GPM (ANALYSIS OF STEP 1 HAND COLLECTED DATA ONLY)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-8M/whip/bmo8mst1.srf	**N.43**



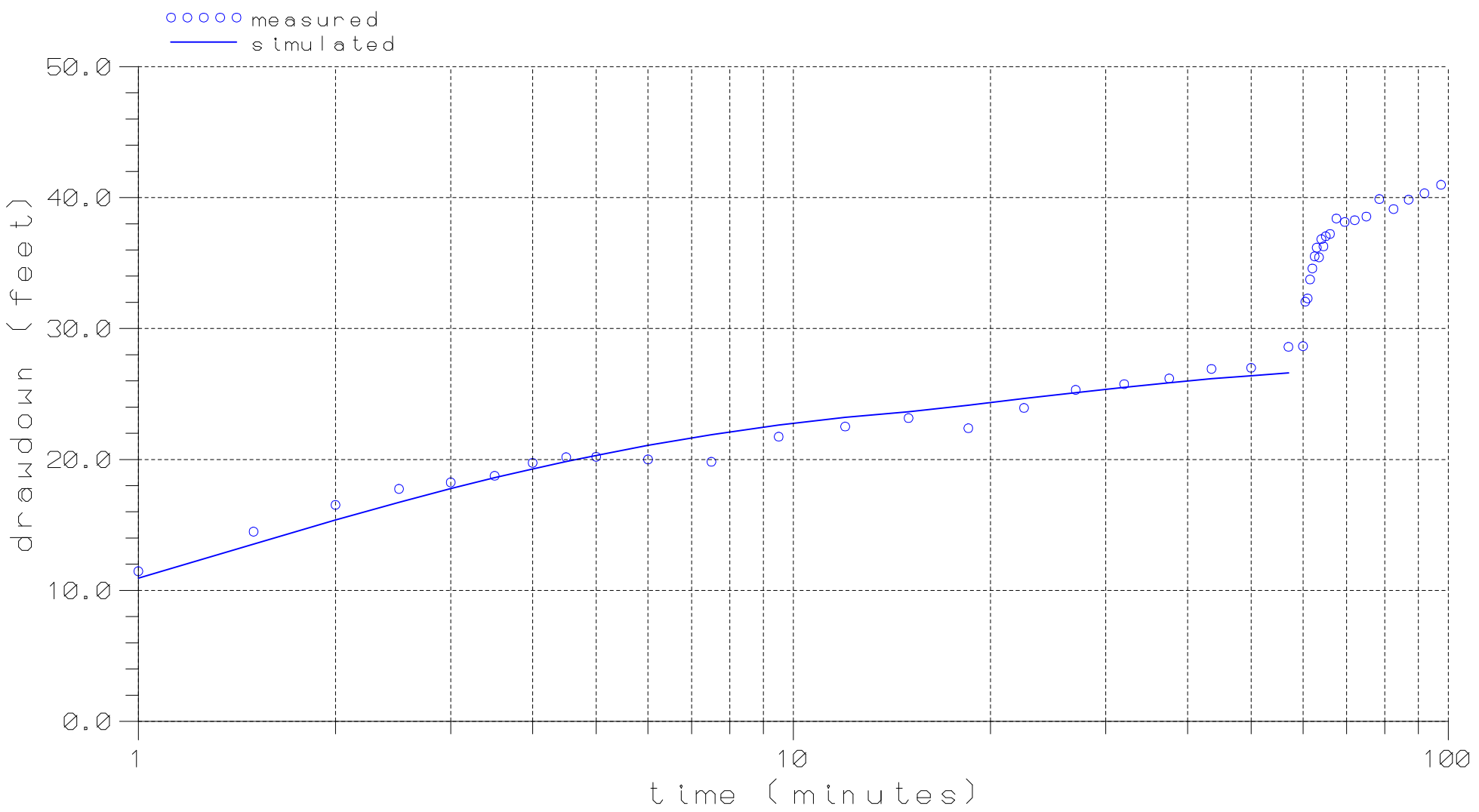
RESULTS

Transmissivity = 27.6 ft2/day
Storage coefficient = 0.24
Vertical Hydraulic Conductivity = NA
well loss constant = NA
well loss exponent = NA
assumed aquifer thickness = 130 ft
effective well radius/casing radius = 0.811 / 1.16e-3 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-9M DURING PUMPING AT APPROXIMATELY 20, 25 , AND 38 GPM WITH EMPHASIS ON STEP 3 AND RECOVERY DATA
(analysis using WHIP)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-9M/whip/bmo9mfp.srf	**N.44**



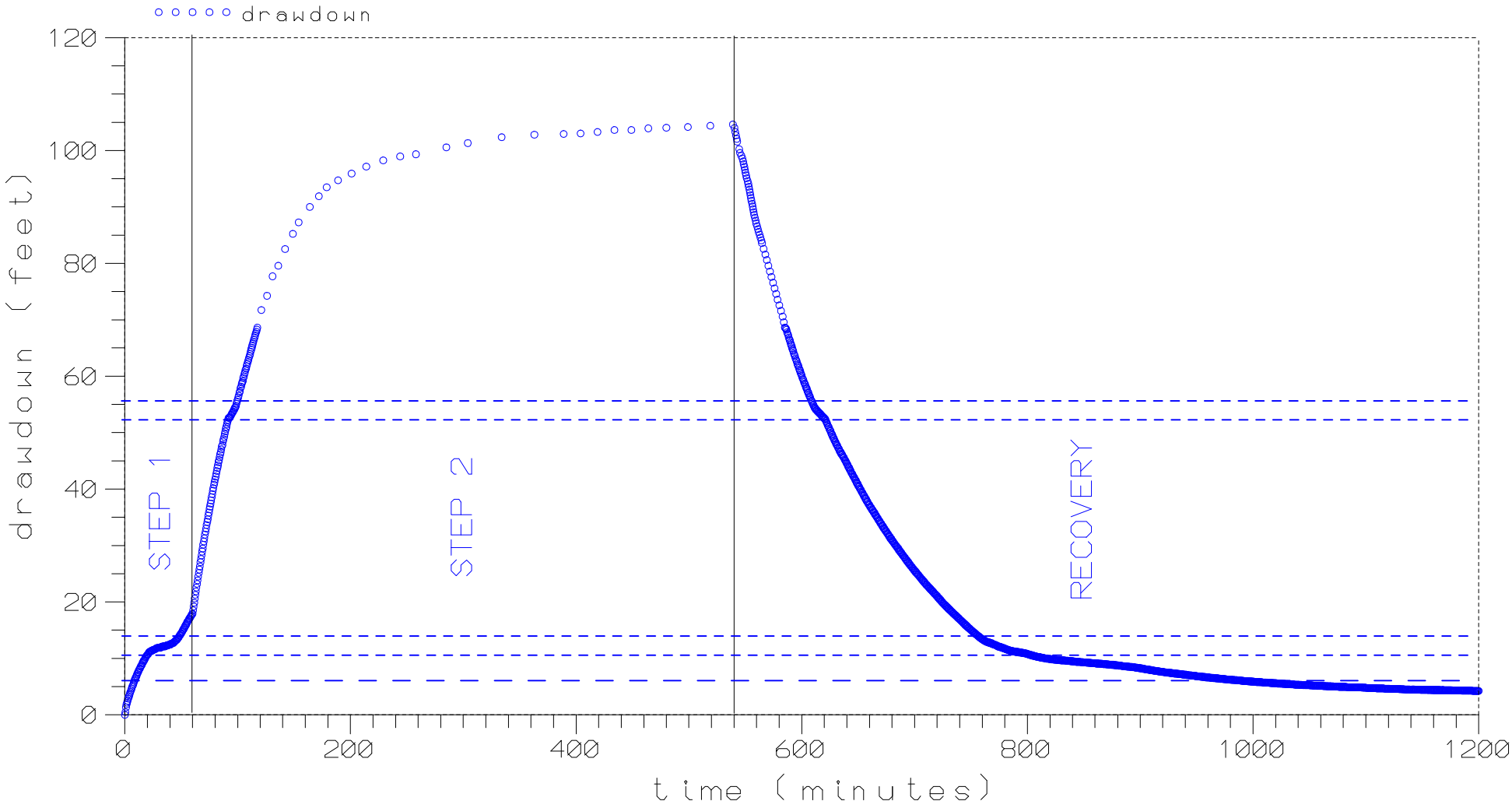
RESULTS

Transmissivity = 101 ft2/day
Storage coefficient = 0.0214
Vertical Hydraulic Conductivity = NA
well loss constant = NA
well loss exponent = NA
assumed aquifer thickness = 130 ft
effective well radius/casing radius = 0.208 / 0.208 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-9M DURING PUMPING AT APPROXIMATELY 20, AND 25 GPM (ANALYSIS OF STEP 1 DATA ONLY)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-9M/whip/bmo9mst1.srf	N.45

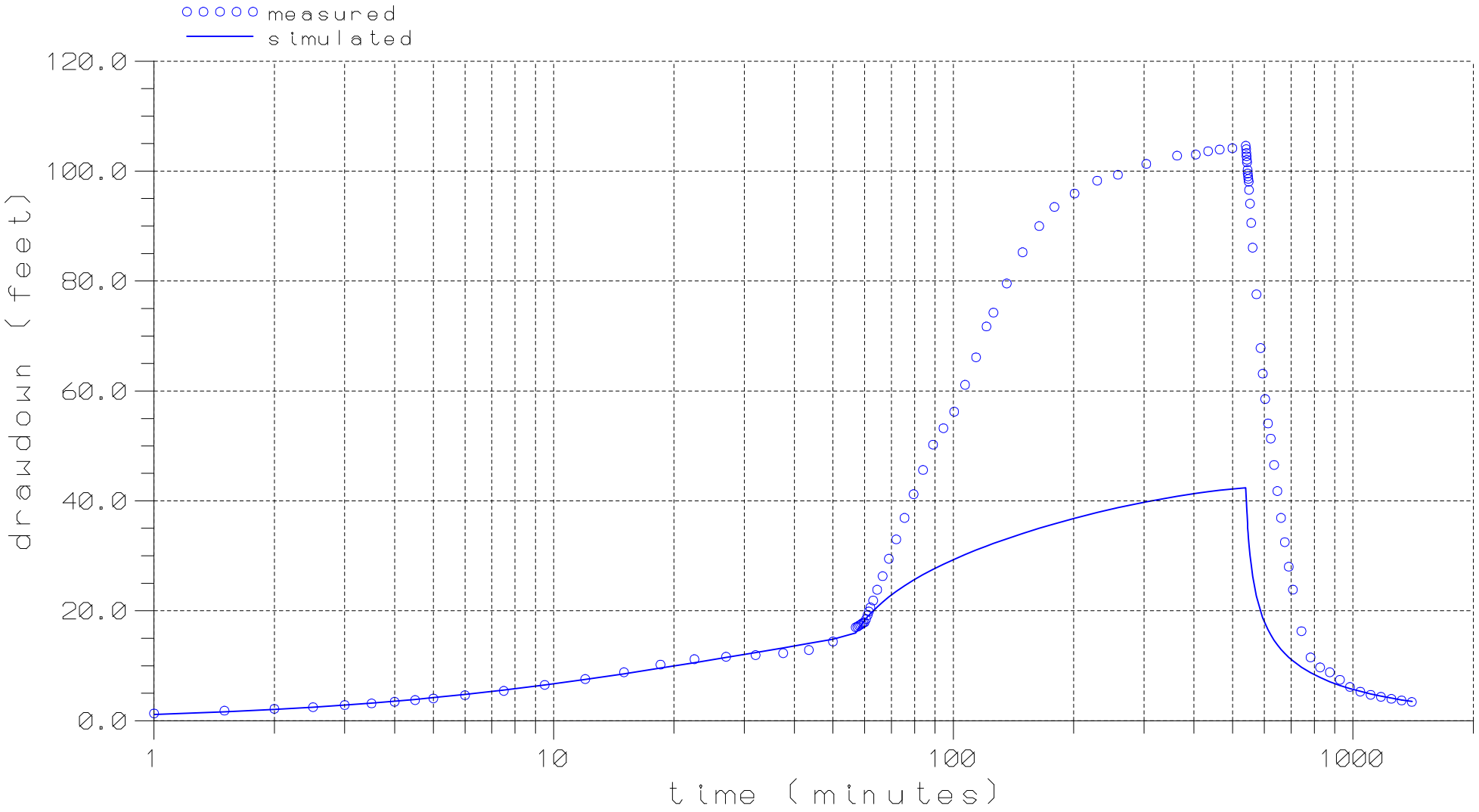


NOTE: dashed lines indicate discontinuities in the drawdown and recovery data

HYDRO GEO CHEM, INC.

MEASURED DRAWDOWNS AT BMO-10GU DURING PUMPING AT APPROXIMATELY 1.4 AND 2.3 GPM WITH DISCONTINUITIES INDICATED

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-10GU/whip/b10guraw.srf	**N.46**



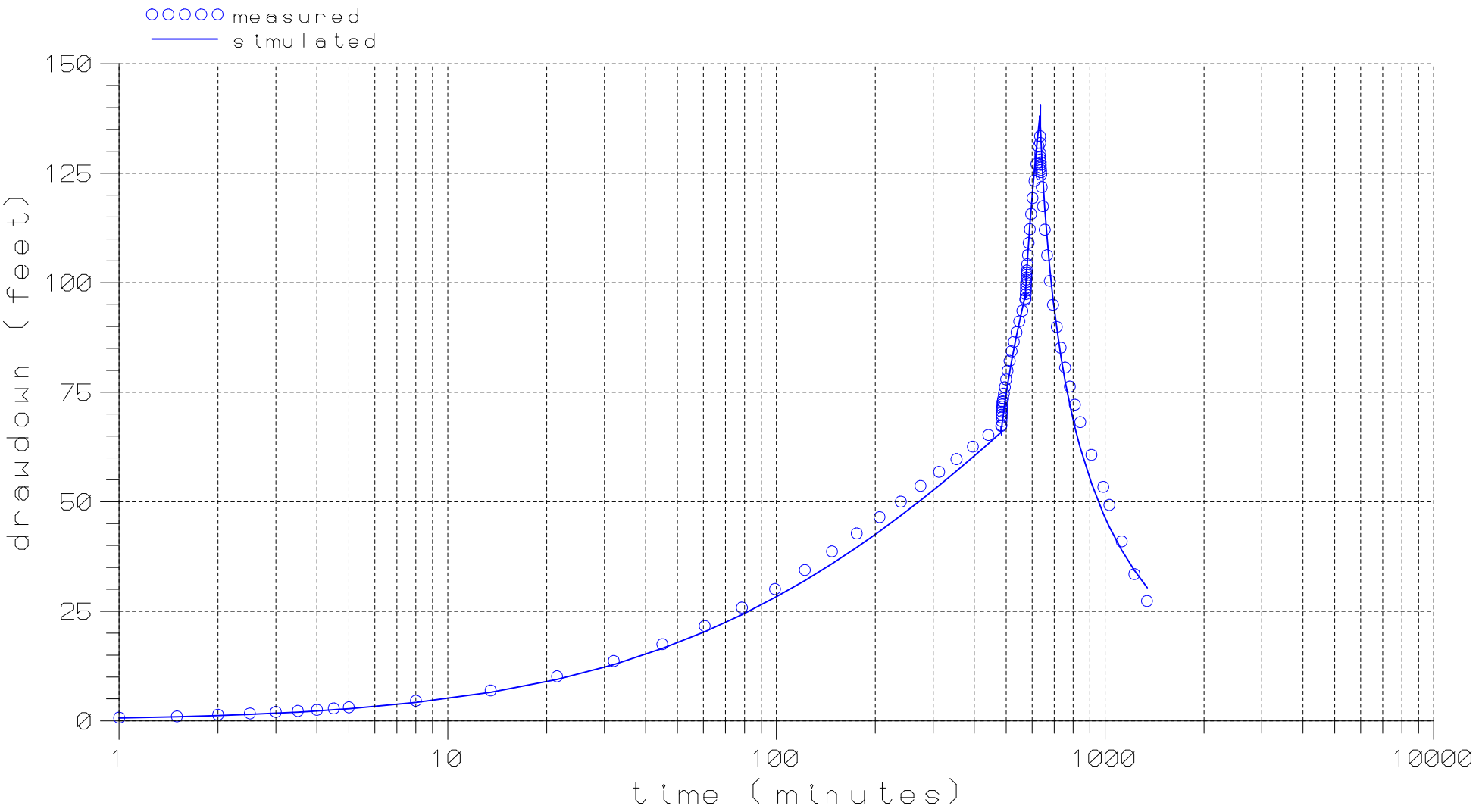
RESULTS

Transmissivity = 4.92 ft2/day
Storage coefficient = 0.21
Vertical Hydraulic Conductivity = NA
well loss constant = NA
well loss exponent = NA
assumed aquifer thickness = 140 ft
effective well radius/casing radius = 0.208 / 0.208 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-10GU DURING PUMPING AT APPROXIMATELY 1.4 AND 2.3 GPM WITH EMPHASIS ON STEP 1 AND LATE RECOVERY DATA
(homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-10GU/whip/b10gufs1.srf	**N.47**



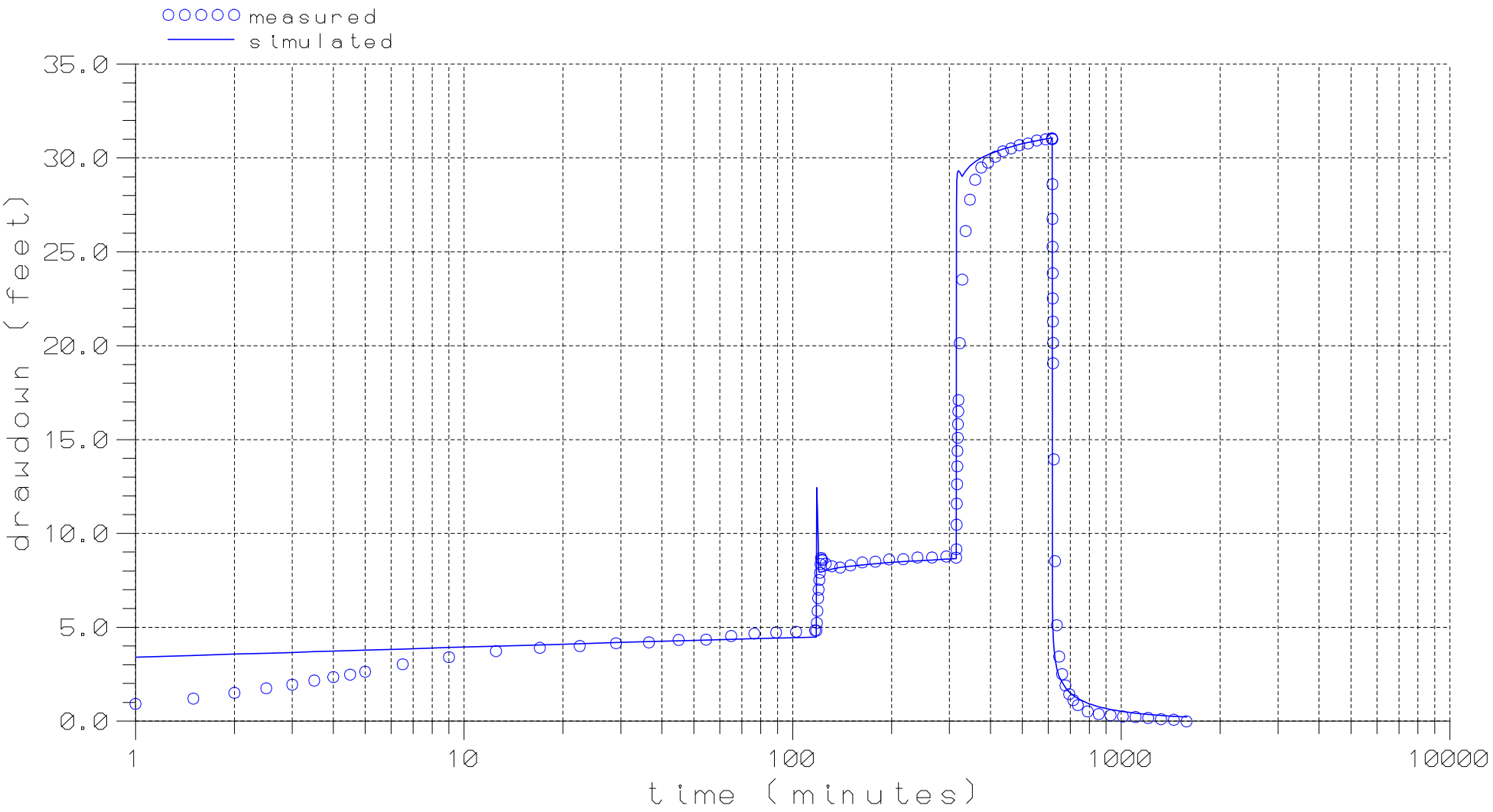
RESULTS

Transmissivity = 0.451 ft2/day
Storage coefficient = 1.38e-2
Vertical Hydraulic Conductivity = NA
well loss constant = NA
well loss exponent = NA
assumed aquifer thickness = 135 ft
effective well radius/casing radius = 2.36 / 0.259 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-10GL DURING PUMPING AT APPROXIMATELY 1.1, 2.2, AND 3.6 GPM
(homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-10GL/whip/bmo10glf.srf	**N.48**



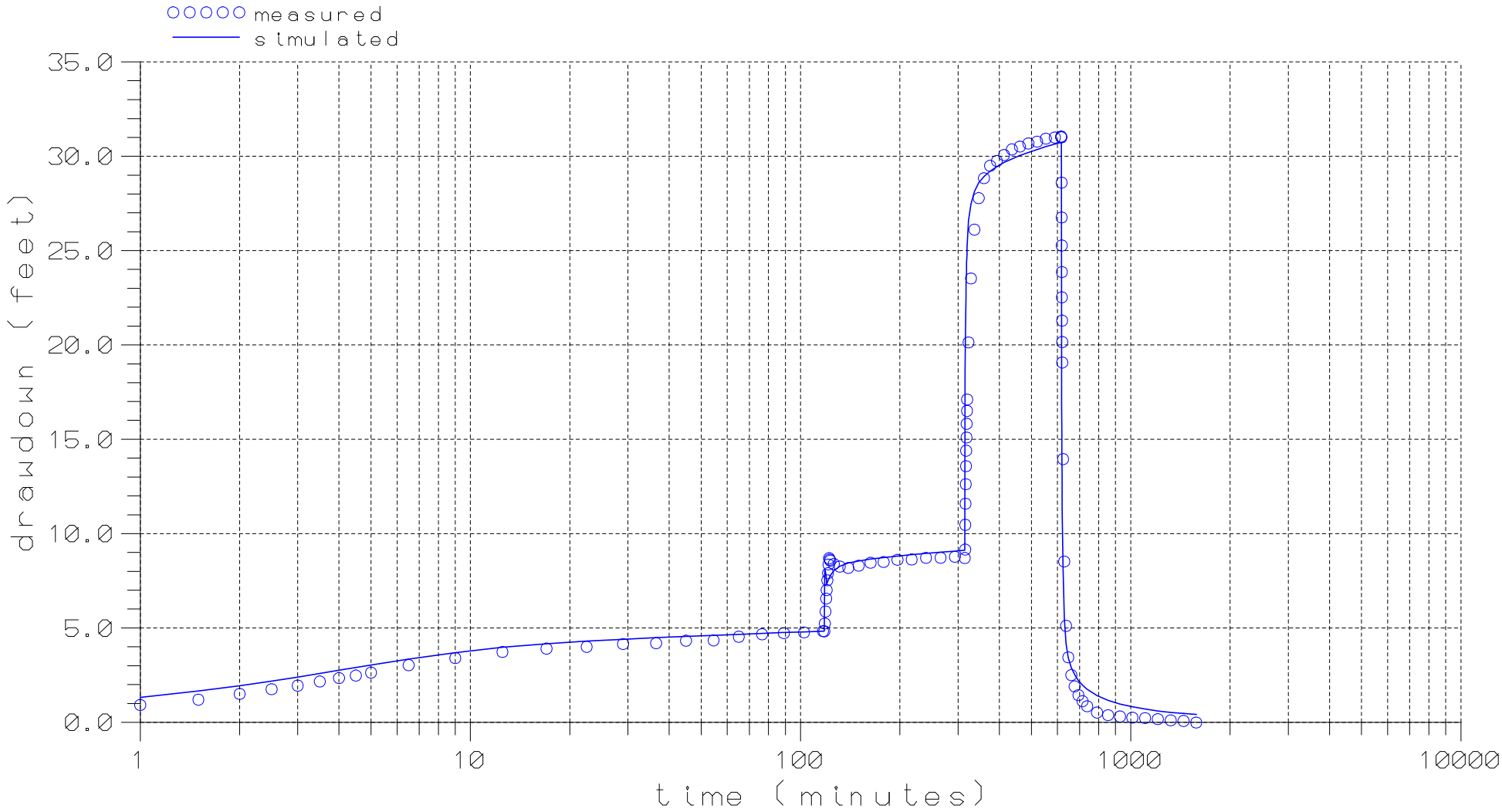
RESULTS

Transmissivity = 115 ft2/day
Storage coefficient = 1.0e-4
Vertical Hydraulic Conductivity = 0.01 ft/day
well loss constant = 0.9
well loss exponent = 1.78
assumed aquifer thickness = 325 ft
effective well radius/casing radius = 0.208 / 0.208 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-11GL DURING PUMPING AT APPROXIMATELY 1.0, 1.7, AND 4.6 GPM

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-11G/whip/bmo11g.srf	**N.49**



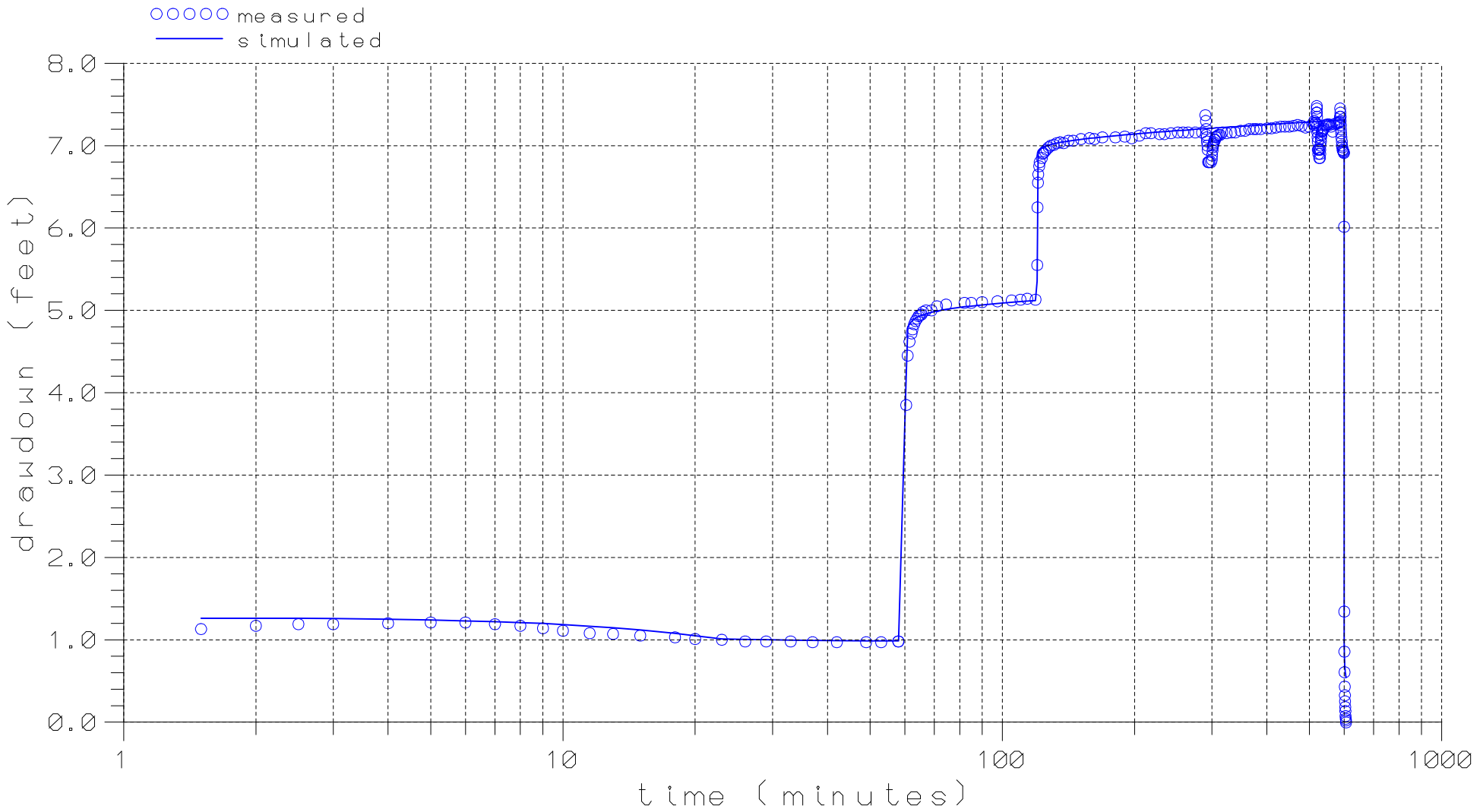
RESULTS

Transmissivity = 60 ft2/day
Storage coefficient = 1.0e-5
Vertical Hydraulic Conductivity = NA
well loss constant = 0.5
well loss exponent = 1.92
assumed aquifer thickness = 180 ft
effective well radius/casing radius = 0.208 / 0.208 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-11GL DURING PUMPING AT APPROXIMATELY 1.0, 1.7, AND 4.6 GPM
(homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-11G/whip/bmo11gfp.srf	**N.50**



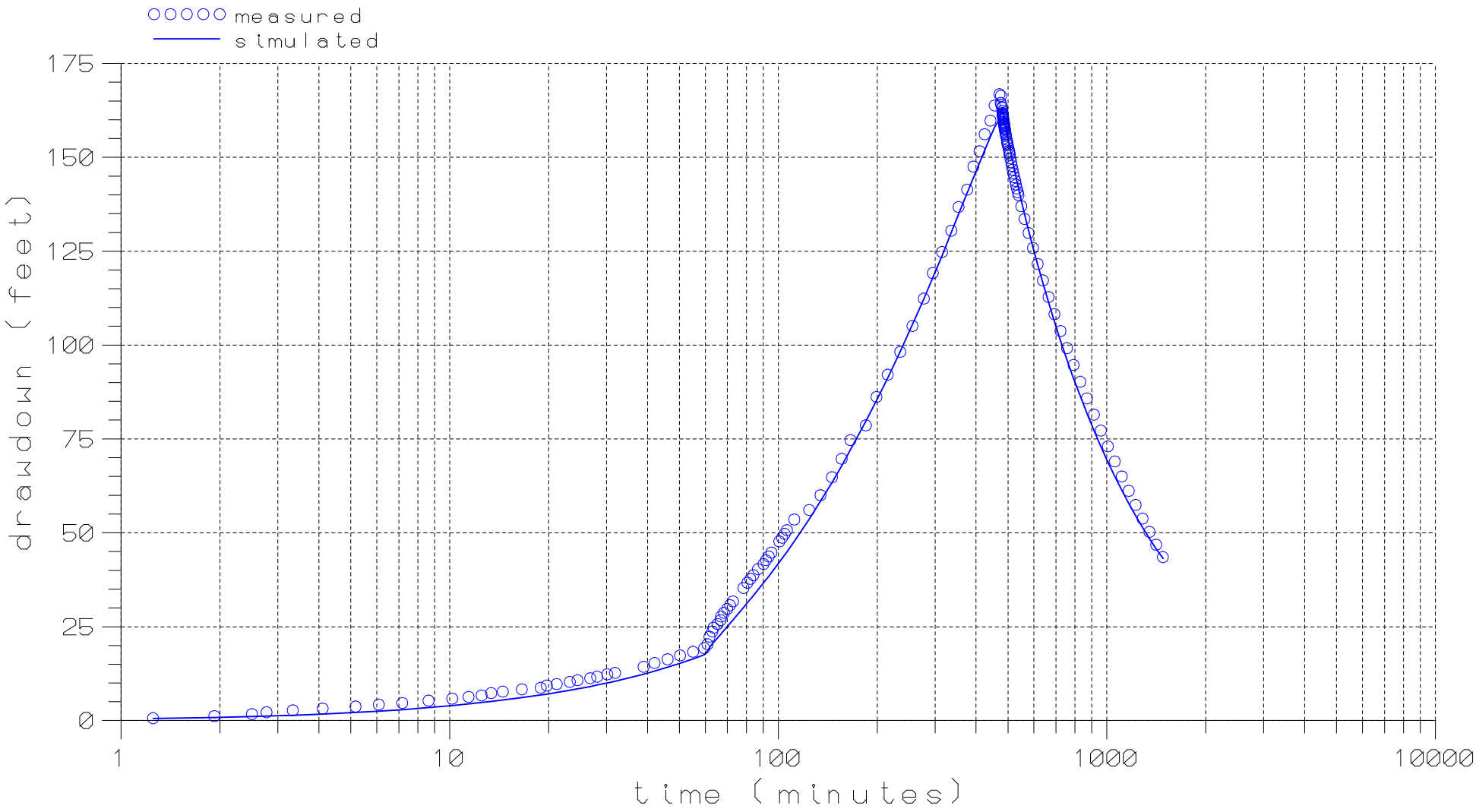
RESULTS

Transmissivity = 7500 ft2/day
Storage coefficient = 0.01
Vertical Hydraulic Conductivity = 1.0 ft/day
well loss constant = 0.074
well loss exponent = 1.05
assumed aquifer thickness = 313 ft
effective well radius/casing radius = 0.208 / 0.208 ft

HYDRO GEO CHEM, INC.

MEASURED (HAND COLLECTED) AND SIMULATED DRAWDOWNS AT BMO-13B DURING PUMPING AT APPROXIMATELY 12 - 8.8, 42.5, AND 58 GPM

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-13B/whip/bmo13bh.srf	**N.51**



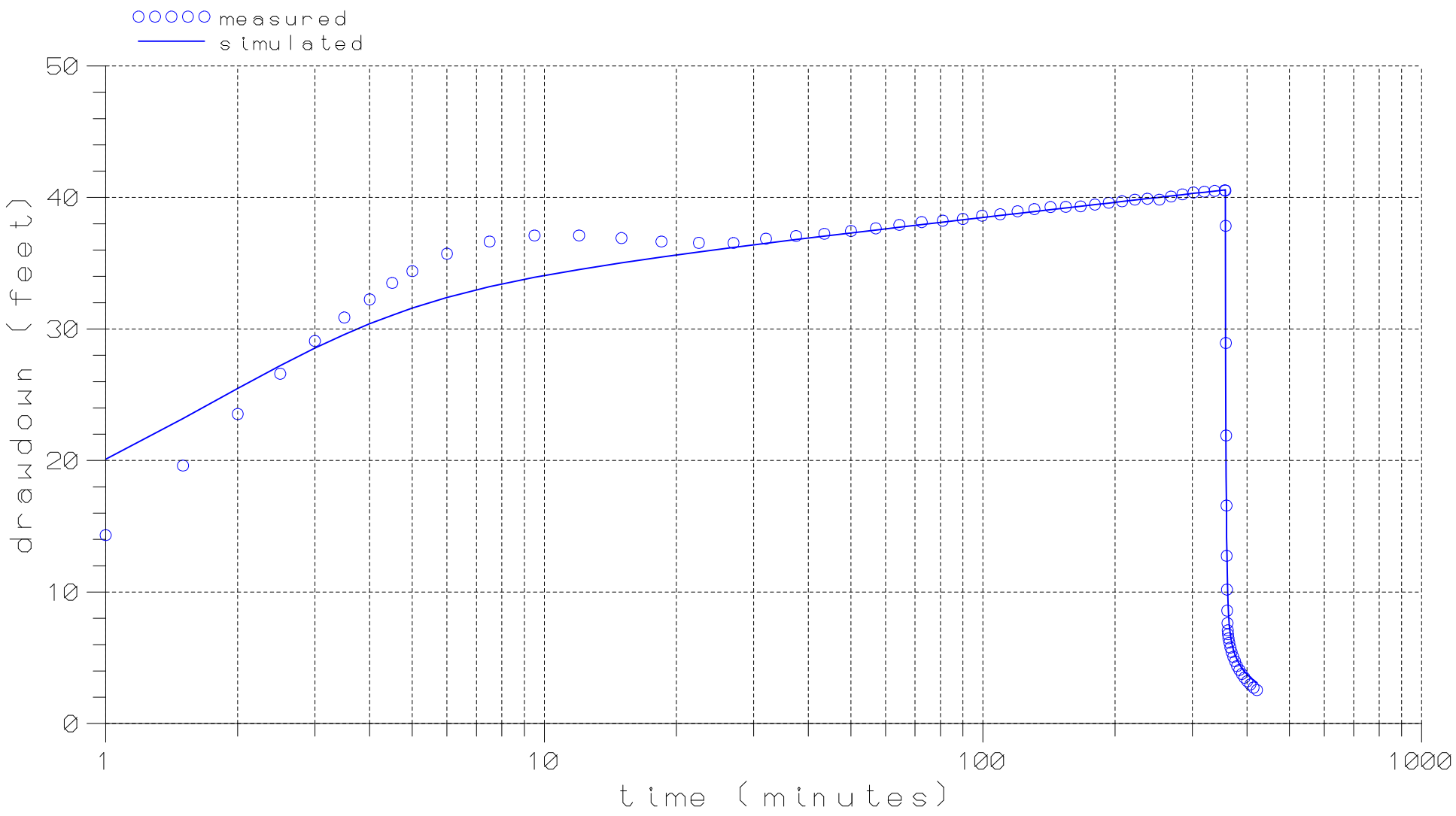
RESULTS

Transmissivity = 0.661 ft2/day
Storage coefficient = 1.94e-2
Vertical Hydraulic Conductivity = NA
well loss constant = NA
well loss exponent = NA
assumed aquifer thickness = 130 ft
effective well radius/casing radius = 1.13 / 0.455 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-13M DURING PUMPING AT APPROXIMATELY 1.75 AND 3.75 GPM
(homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ BMO-13M/whip/bmo13mf.srf	**N.52**



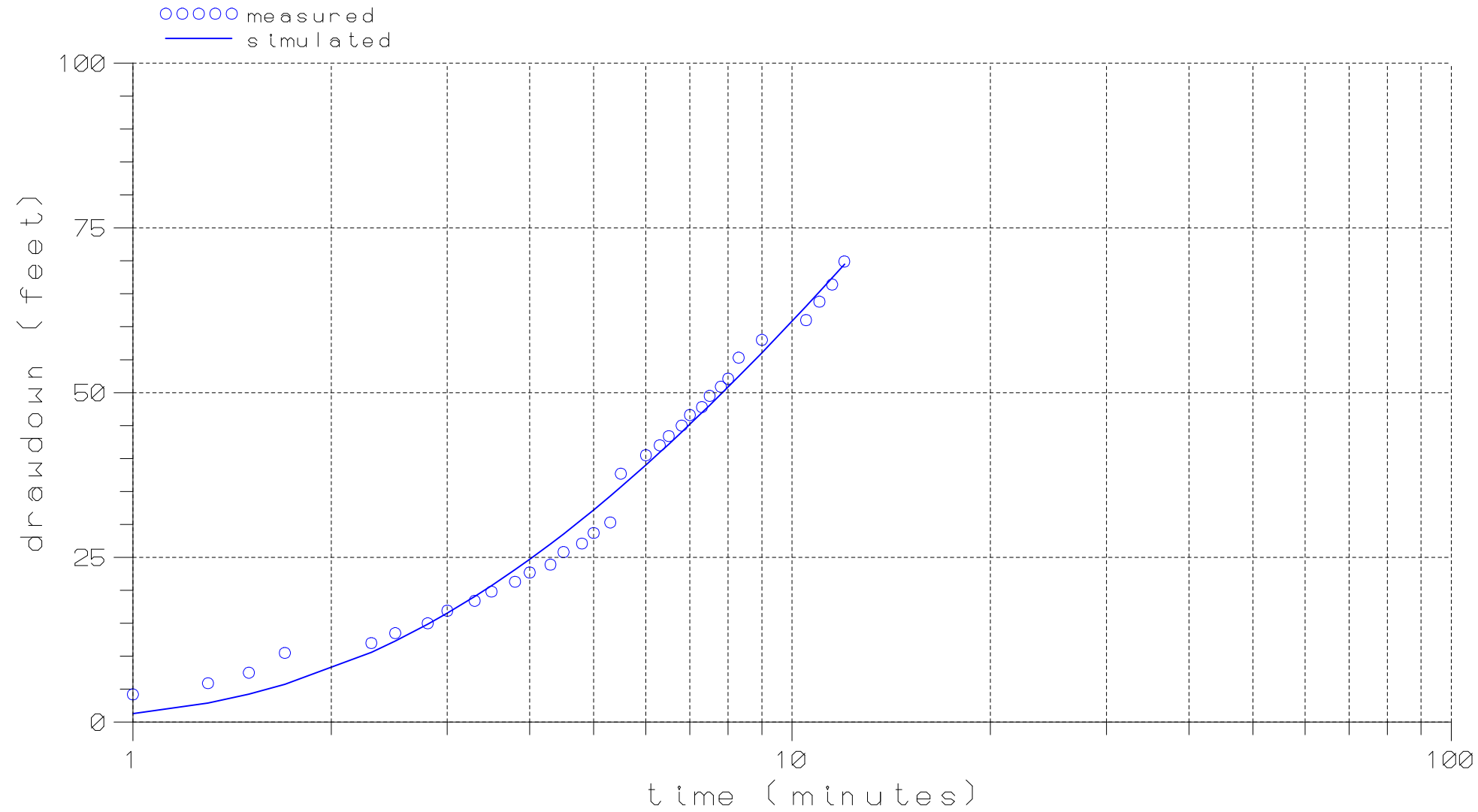
RESULTS

Transmissivity = 142 ft2/day
Storage coefficient = 1e-5
Vertical Hydraulic Conductivity = NA
well loss constant = 0.044
well loss exponent = 2
assumed aquifer thickness = 120 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT GARNER WELL DURING PUMPING AT APPROXIMATELY 15 GPM

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ GARNER/whip/garner.srf	**N.53**



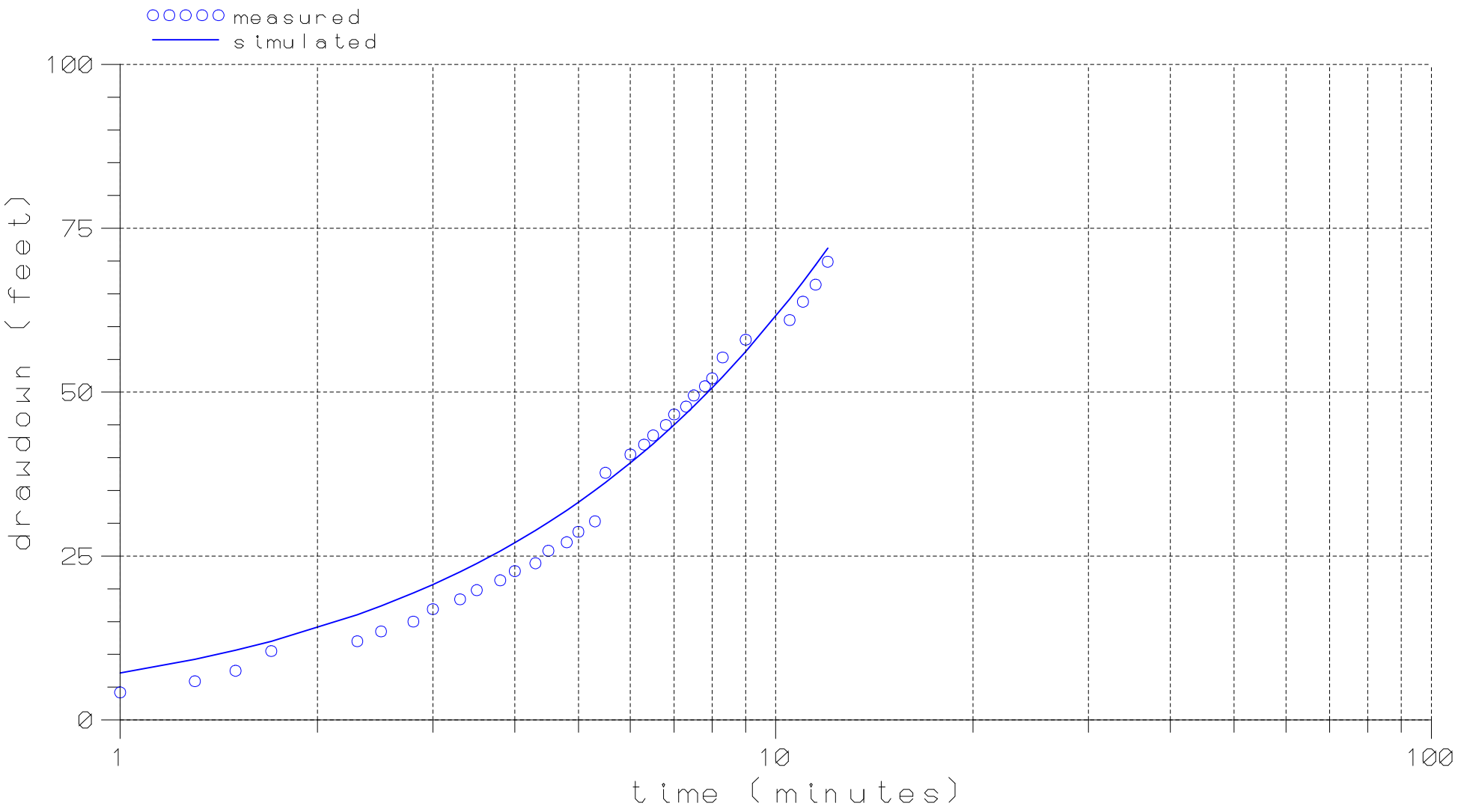
RESULTS

Transmissivity = 15.7 ft2/day
Storage coefficient = 0.041
Vertical Hydraulic Conductivity = 0
well loss constant = NA
well loss exponent = NA
assumed aquifer thickness = 346 ft
effective well radius/casing radius = 1.66 / 0.225

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT TM-02A DURING PUMPING AT APPROXIMATELY 9 GPM

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ TM-02A/whip/tm02a.srf	**N.54**



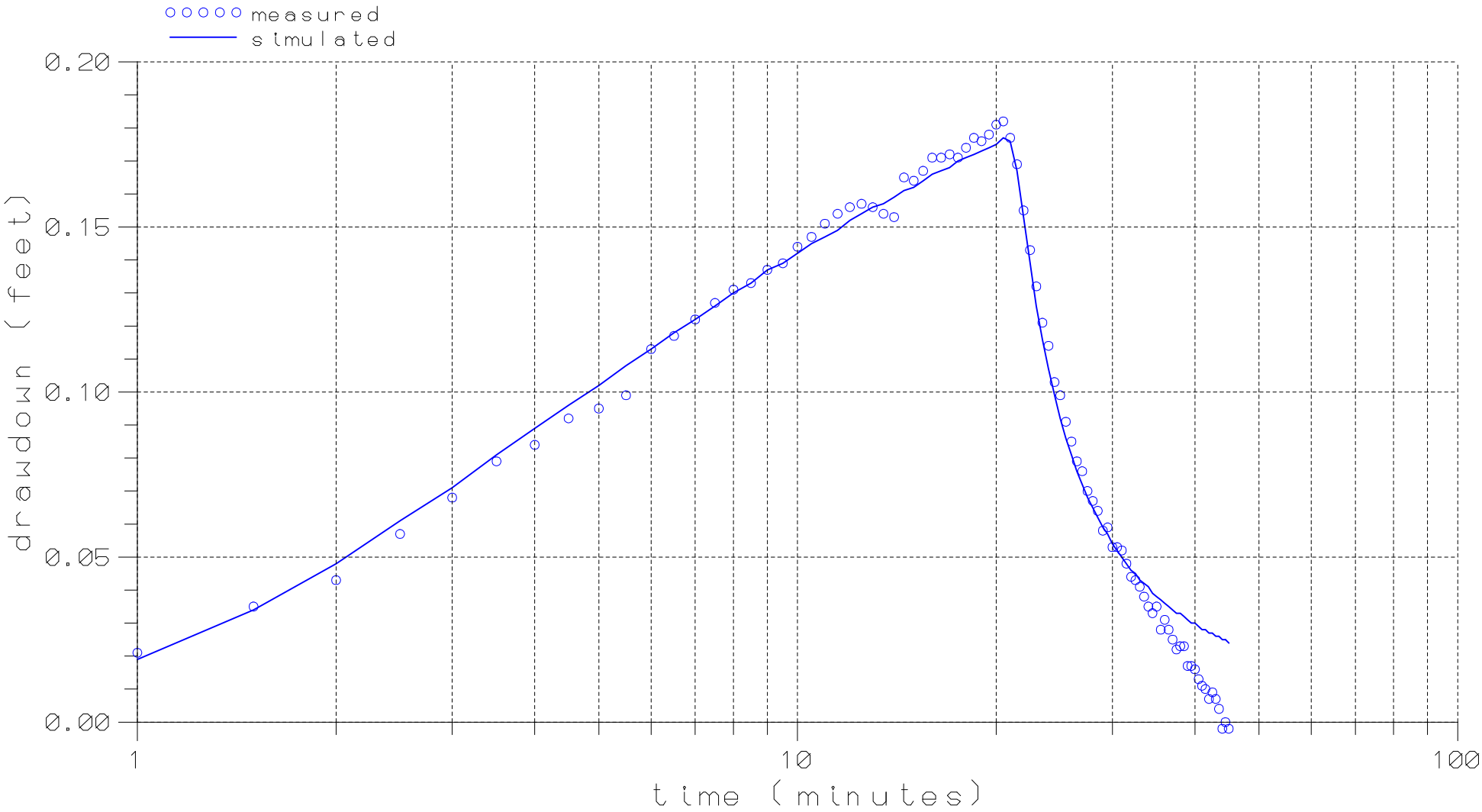
RESULTS

Transmissivity = 2.0 ft2/day
Storage coefficient = 2e-4
Vertical Hydraulic Conductivity = NA
well loss constant = NA
well loss exponent = NA
assumed aquifer thickness = 100 ft
effective well radius/casing radius = 2.36 / 0.259

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT TM-02A DURING PUMPING AT APPROXIMATELY 9 GPM
(homogeneous aquifer solution)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ TM-02A/whip/tm02afp.srf	**N.55**



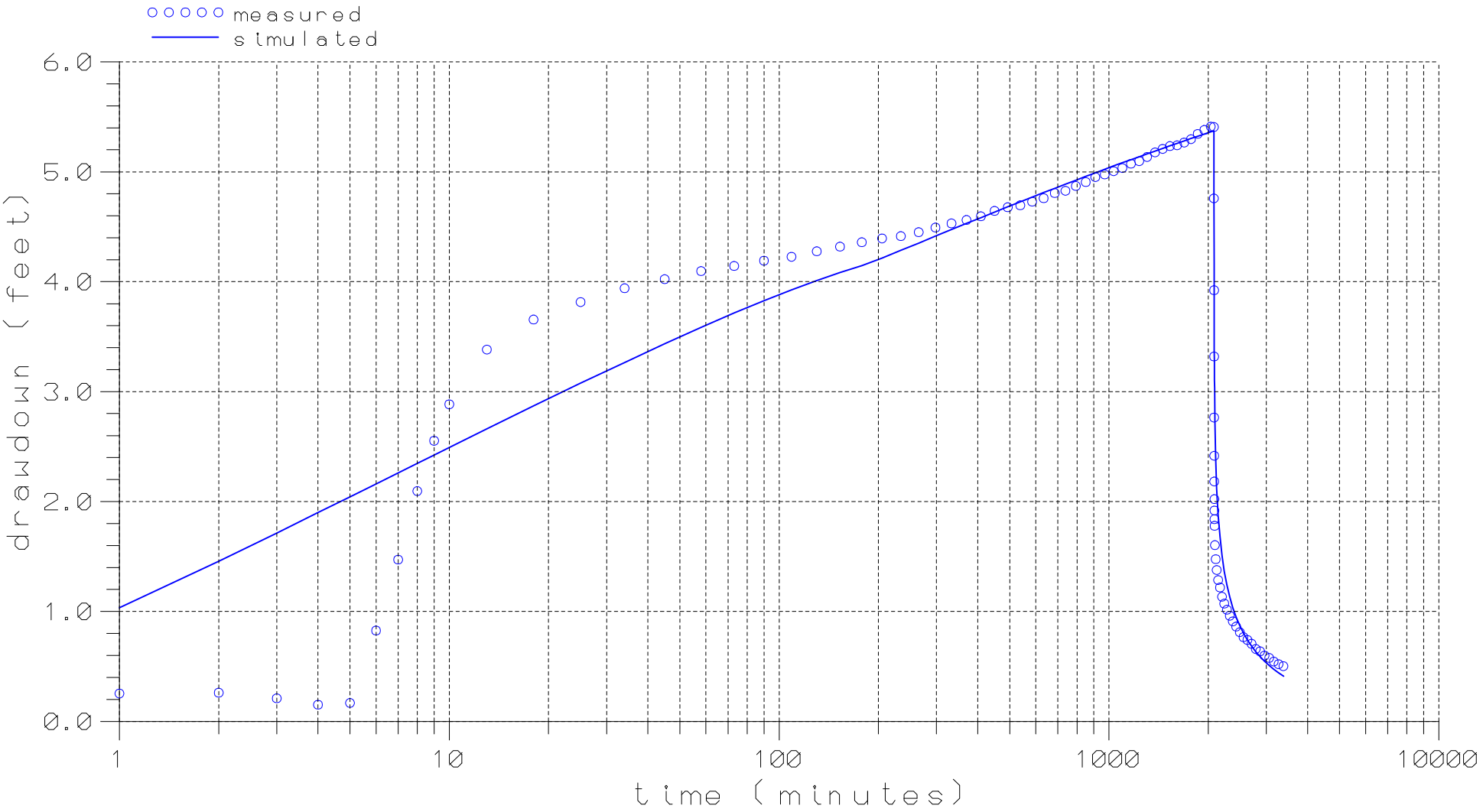
RESULTS
(linear trend removed)

Transmissivity = 21,000 ft2/day
Storage coefficient = 4.53e-4
Vertical Hydraulic Conductivity = 3.45 ft/day
well loss constant = NA
well loss exponent = NA
ssumed aquifer thickness = 505 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT NWC-3 CAP DURING PUMPING OF NWC-3 AT APPROXIMATELY 52 GPM (DATA CORRECTED FOR ATMOSPHERIC PRESSURE CHANGE AND A LINEAR TREND)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/29/09	H:/872000/Task 2.4/ NWC-3/2008test/whip/nwc3ob.srf	**N.56**



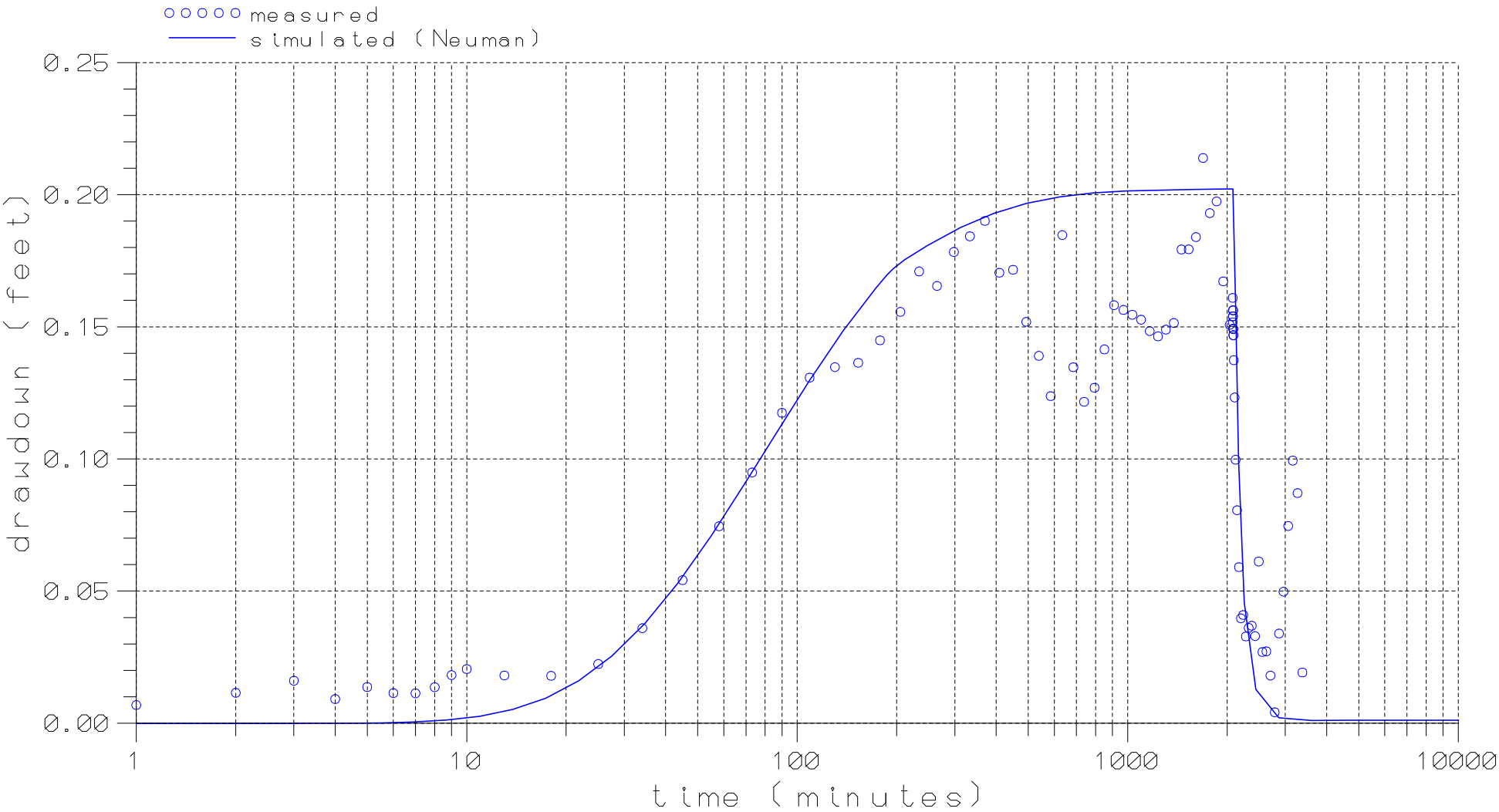
RESULTS
(linear trend removed)

Transmissivity = 24,000 ft2/day
Storage coefficient = 0.0694
Vertical Hydraulic Conductivity = 1 ft/day
well loss constant = NA
well loss exponent = NA
assumed aquifer thickness = 505 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT TVI-713 DURING PUMPING OF TVI-875 AT APPROXIMATELY 380 GPM

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ TVI875/whip/TVI713.srf	**N.57**



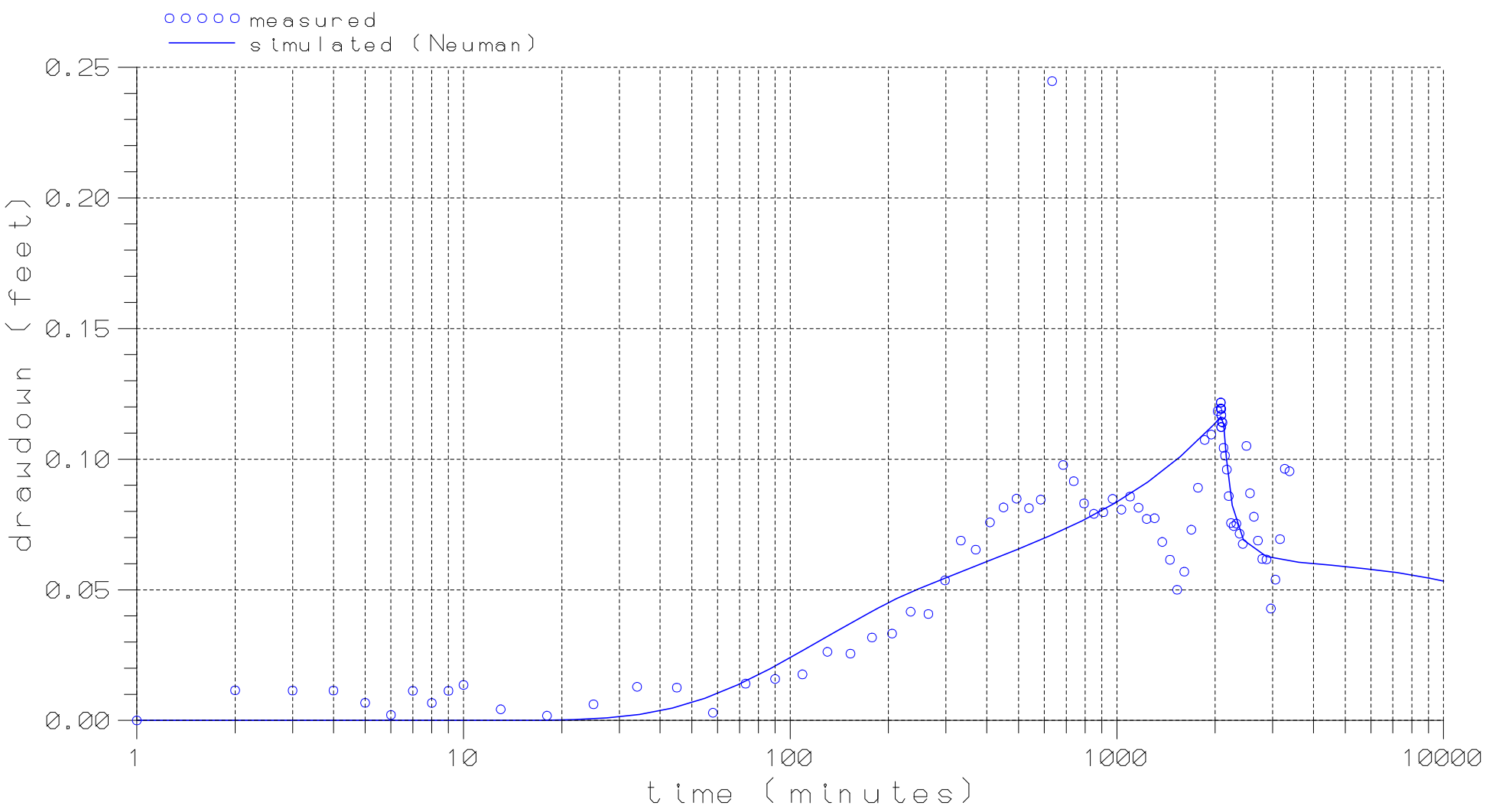
RESULTS
(linear trend removed)

Transmissivity = 28,850 ft2/day
Storage coefficient = 6.85e-6
Specific Yield = 0.012
Beta = 0.0008952 (implies Kz/Kh of 1.5e-4)
assumed aquifer thickness = 505 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT BMO-4B DURING PUMPING OF TVI-875 AT APPROXIMATELY 380 GPM (USING NEUMAN SOLUTION IN AQTESOLVE)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ TVI875/aqtesolv/bmo4baqt.srf	**N.58**



RESULTS
(linear trend removed)

Transmissivity = 21,860 ft2/day
Storage coefficient = 3.15e-3
Specific Yield = 0.0494
Beta = 0.0826 (implies Kz/Kh of 0.0107)
assumed aquifer thickness = 505 ft

HYDRO GEO CHEM, INC.

MEASURED AND SIMULATED DRAWDOWNS AT NWC-3 DURING PUMPING OF TVI-875 AT APPROXIMATELY 380 GPM (USING NEUMAN SOLUTION IN AQTESOLVE)

APPROVED	DATE	REFERENCE	FIGURE
SJS	4/25/09	H:/872000/Task 2.4/ TVI875/aqtesolv/nwc3aqt.srf	N.59

PLATES

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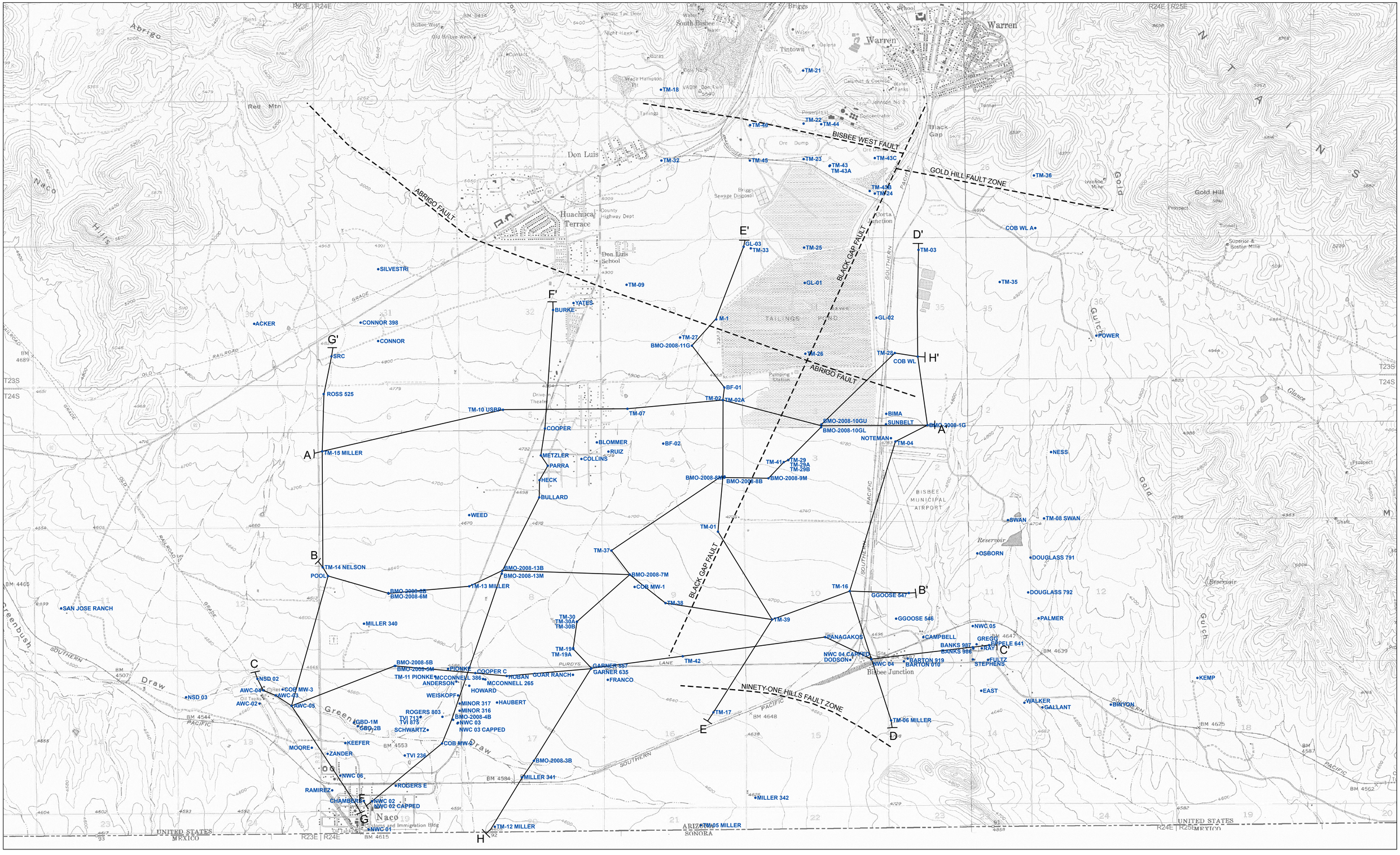
1 Cross Section Location Map
2 Cross Sections A-A' through C-C' and H-H'
3 Cross Sections D-D' through G-G'



Legend

- Well Location & ID
- Cross-section

0 1500 3000 Feet

PROJECTION:
UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

CROSS-SECTION LOCATION MAP

Approved	Date	Author	Date	File Name	Plate
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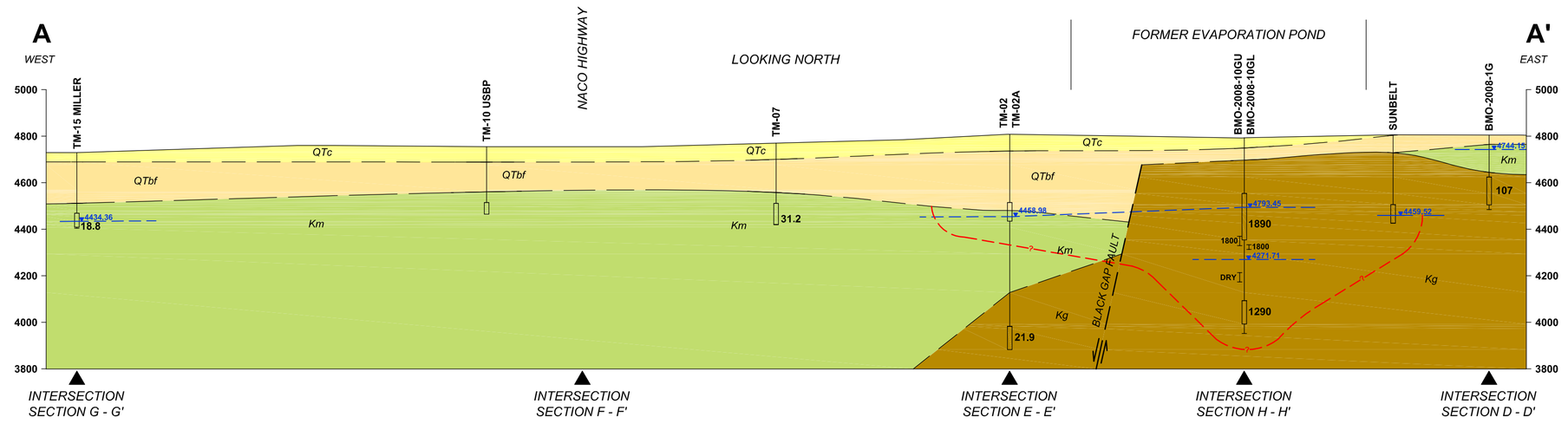
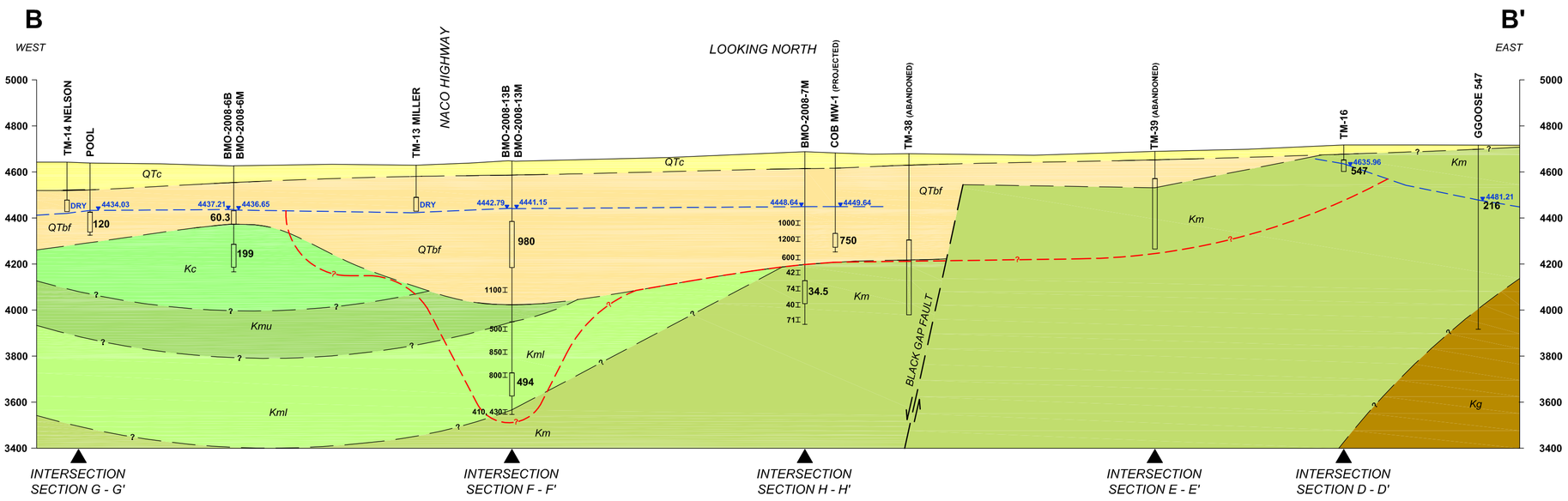
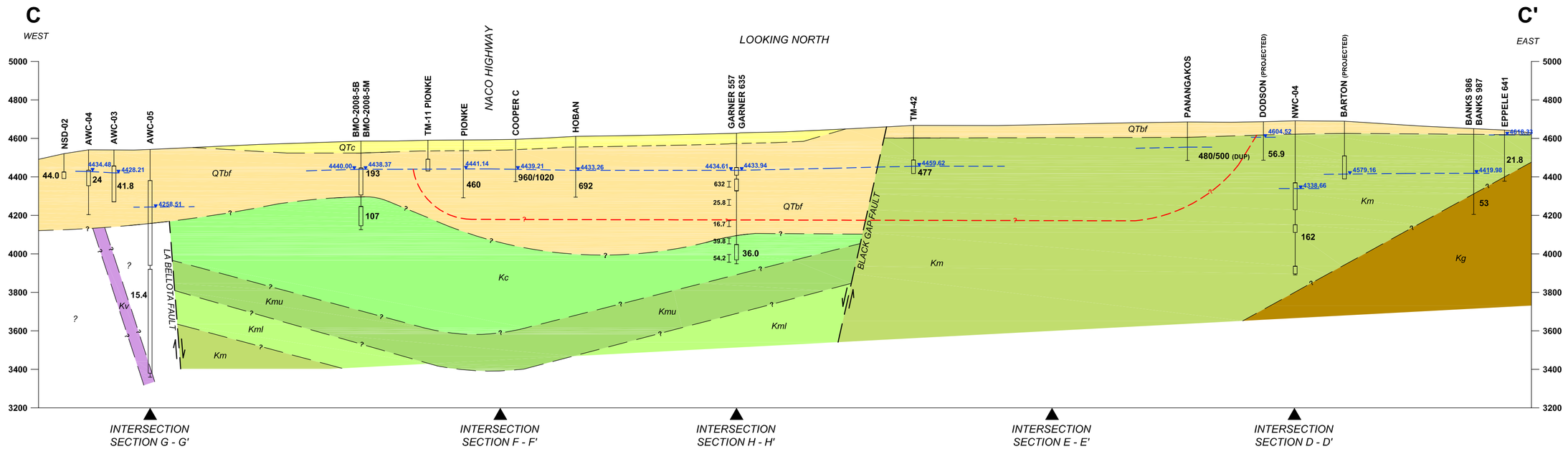
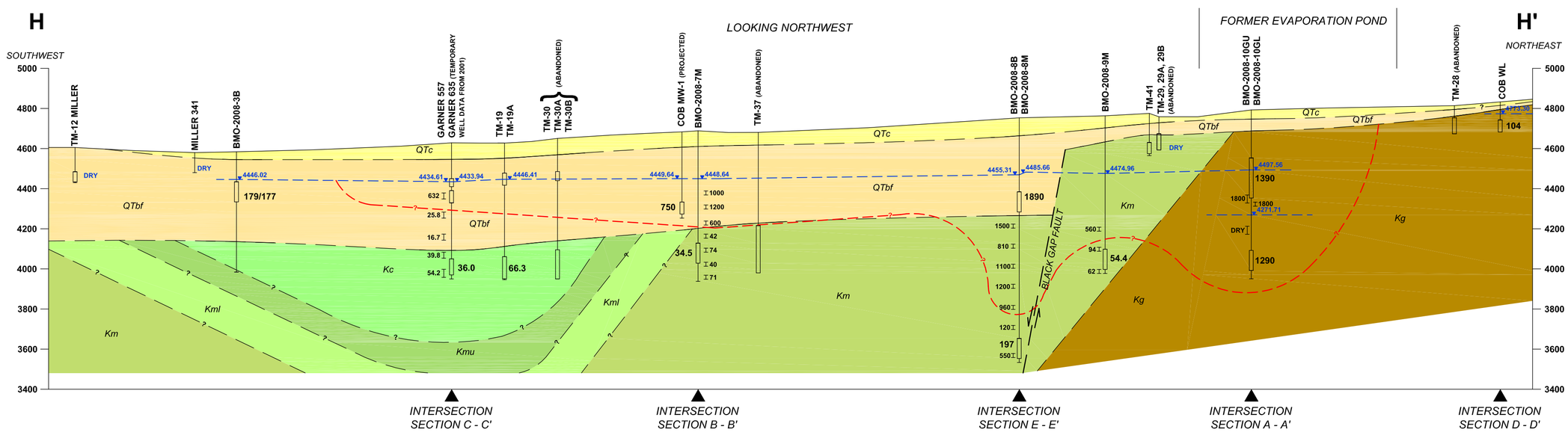








LEGEND

BASIN FILL

- QTc — Quaternary - Tertiary Caliche
- QTbf — Quaternary - Tertiary Basin Fill

BEDROCK

UNDIFFERENTIATED BISBEE GROUP

- Kc — Cretaceous Cintura Formation
- Kmu — Cretaceous Upper Mural Limestone
- Kml — Cretaceous Lower Mural Limestone
- Km — Cretaceous Morita Formation
- Kg — Cretaceous Glance Conglomerate
- Kv — Cretaceous (?) Volcanic

Geologic Contact, Dashed Where Inferred

Fault, Dashed Where Inferred

Approximate Limit of Sulfate > 250 mg/L

Vertical Scale: 0 400' 800'

Horizontal Scale: 0 1500' 3000'

BMO-2008-4B — Well Identifier

4442.40 — Water Level

Well

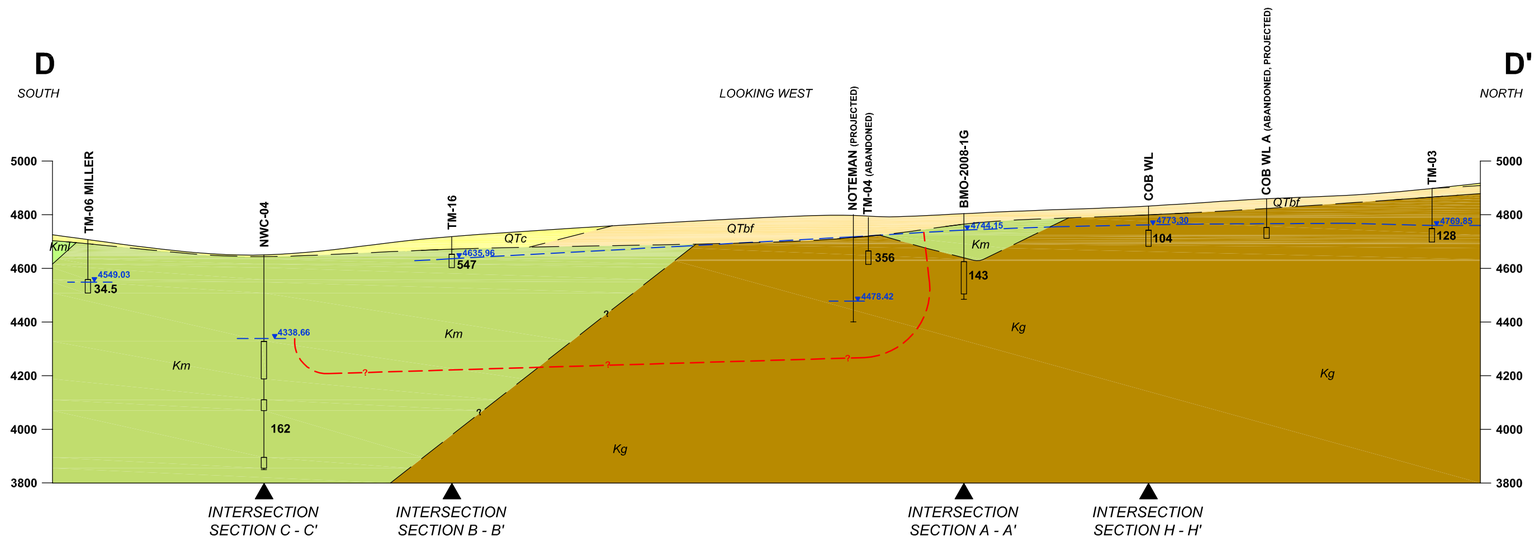
810 — Temporary Well, Sulfate Concentration (mg/L)

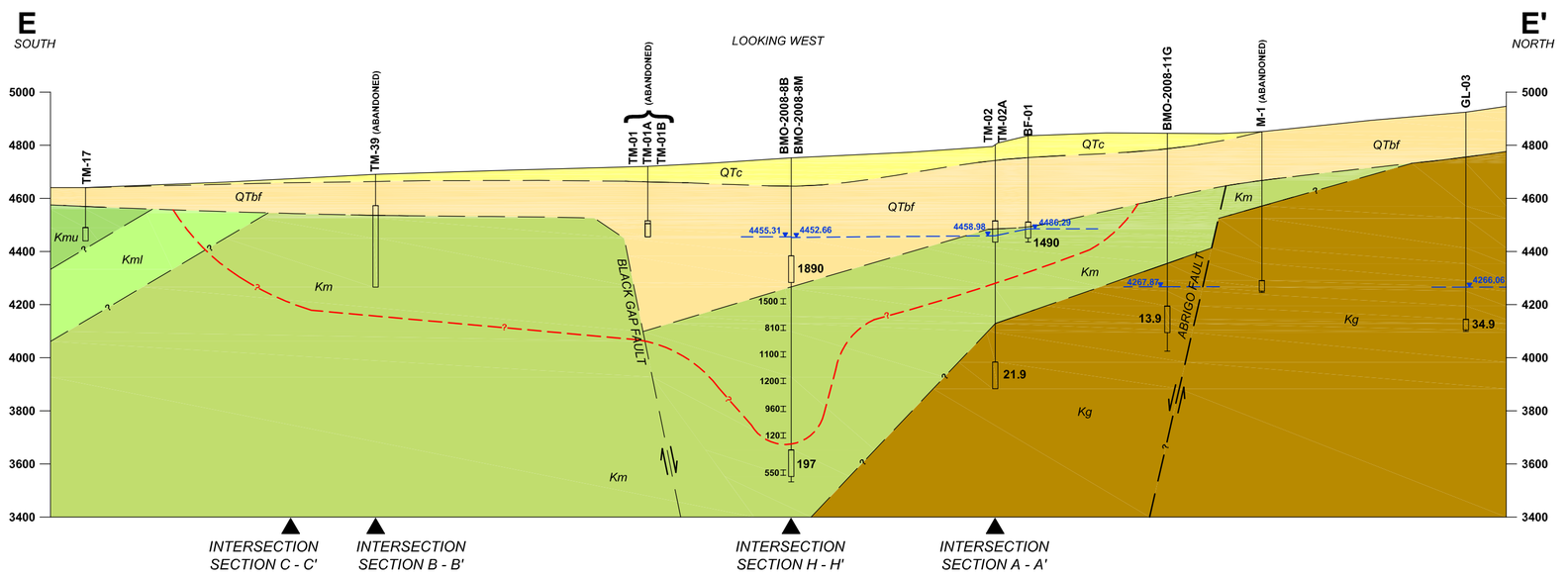
Screen 10.4 — Sulfate Concentration (mg/L) In Fourth Quarter 2008 (Duplicate Results Separated by /)

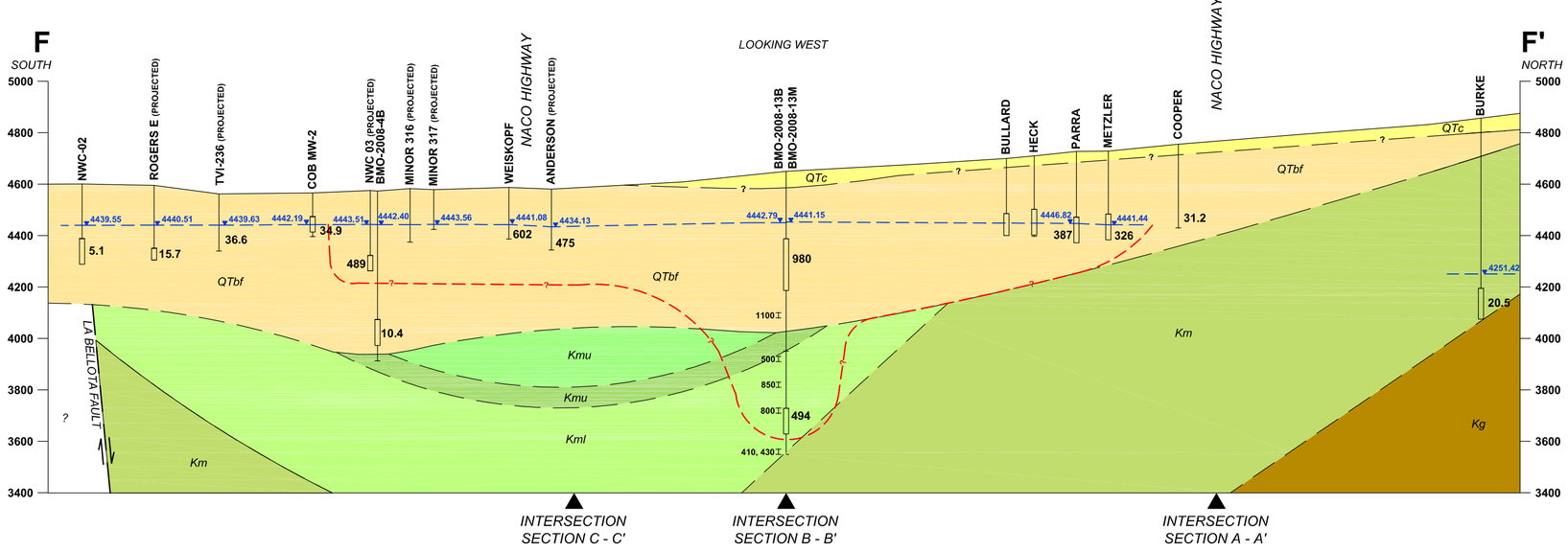
HYDRO GEO CHEM, INC.

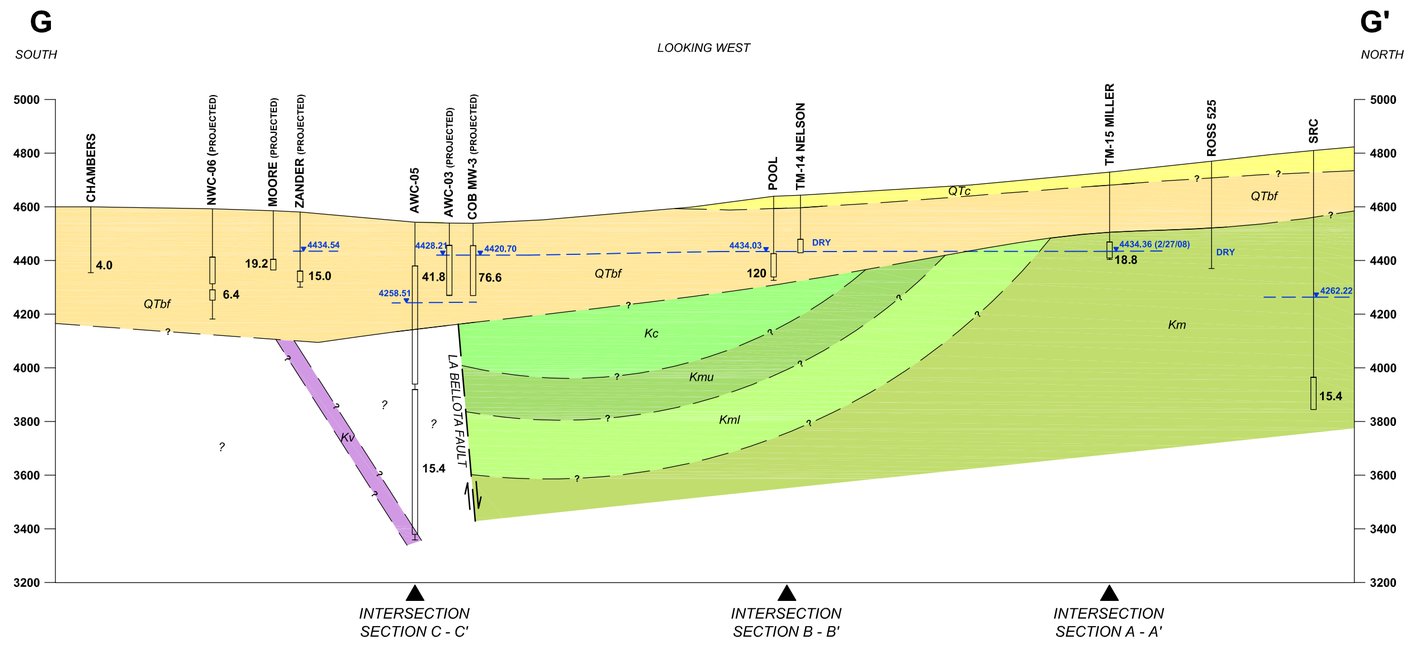
CROSS-SECTIONS
A - A' THROUGH C - C', AND H - H'
BISBEE - NACO

Approved	Date	Author	Date	File Name	Plate
JRN	04/27/09	AMC	04/27/09	8720175A	2









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Well

810 — Temporary Well, Sulfate Concentration (mg/L)

Screen 10.4 — Sulfate Concentration (mg/L) in Fourth Quarter 2008 (Duplicate Results Separated by /)

HYDRO GEO CHEM, INC.

CROSS-SECTIONS D-D' THROUGH G-G' BISBEE-NACO

Approved	Date	Author	Date	File Name	Plate
JRN	04/27/09	AMC	04/27/09	8720176A	3