FREEPORT-McMoRan COPPER & GOLD

Sierrita Operations
Environment, Land & Water Department
6200 West Duval Mine Road
PO Box 527
Green Valley, Arizona 85622-0527

April 28, 2010

Via Certified Mail: 7008 2810 0000 0983 5409
Return Receipt Requested

Ms. Cynthia S. Campbell
Arizona Department of Environmental Quality
Water Quality Compliance Section
1100 West Washington Street
Phoenix, Arizona 85007-2935

Re: Semiannual Groundwater Monitoring Report for Samples Collected During the Fourth Quarter 2009 and First Quarter 2010 Mitigation Order on Consent Docket No. P-50-06

Dear Ms. Campbell:

Attached please find three (3) hard copies and one (1) disc of the *Semiannual Groundwater Monitoring Report for Samples Collected During the Fourth Quarter 2009 and the First Quarter 2010,* prepared by Clear Creek Associates for Freeport-McMoRan Sierrita Inc. (Sierrita). This document provides results of groundwater monitoring conducted during the fourth quarter of 2009 and the first quarter of 2010, as agreed upon and described on letter from ADEQ to Sierrita dated April 17, 2009.

Please do not hesitate to contact me at (520) 393-4435.

Sincerely,

Martha G. Mottley
Chief Environmental Engineer
Freeport-McMoRan Sierrita Inc.

MGM:mg
Attachments
20100428_002

xc: Henry Darwin, Arizona Department of Environmental Quality
John Broderick, Sierrita
Chad Fretz, Sierrita
Ned Hall, Freeport-McMoRan Copper & Gold Inc.
Stuart Brown, Freeport-McMoRan Copper & Gold Inc..
Jim Norris, Clear Creek Associates, P.L.C.

SEMIANNUAL GROUNDWATER MONITORING REPORT FOR SAMPLES COLLECTED DURING THE FOURTH QUARTER 2009 AND FIRST QUARTER 2010

MITIGATION ORDER ON CONSENT DOCKET NO. P-50-06 PIMA COUNTY, ARIZONA

Prepared for:

FREEPORT-MCMORAN SIERRITA INC.
6200 West Duval Mine Road
Green Valley, Arizona 85614

Prepared by:

CLEAR CREEK ASSOCIATES, P.L.C.
221 North Court Avenue
Tucson, Arizona 85701
(520) 622-3222

April 16, 2010

SEMIANNUAL GROUNDWATER MONITORING REPORT FOR SAMPLES COLLECTED DURING THE FOURTH QUARTER 2009 AND FIRST QUARTER 2010

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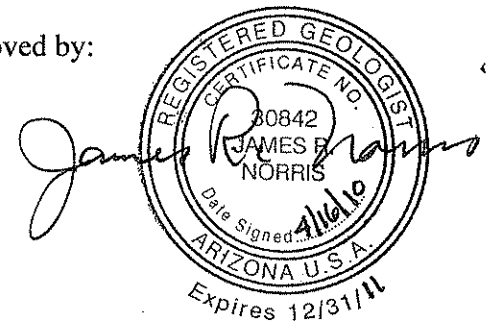
Green Valley, Arizona 85614

Approved by:



James R. Norris
Arizona Registered Geologist No. 30842

April 16, 2010

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1. INTRODUCTION

This report provides the results of groundwater monitoring conducted in the fourth quarter 2009 and first quarter 2010 in the vicinity of the Freeport-McMoRan Sierrita Inc. (Sierrita) Tailing Impoundment (STI). Groundwater monitoring was conducted by Sierrita to characterize groundwater sulfate concentrations and groundwater elevations in the vicinity of the STI. This semiannual groundwater monitoring report was prepared by Clear Creek Associates (CCA) on behalf of Sierrita.

1.1 Scope of Groundwater Monitoring

Quarterly groundwater monitoring pursuant to the Mitigation Order on Consent Docket No. P-50-06 has been conducted since the fourth quarter 2006 according to the specifications on the Work Plan (HGC, 2006a) submitted to and approved by Arizona Department of Environmental Quality (ADEQ). The purpose of the groundwater monitoring under the Work Plan was to document sulfate concentrations and water levels to determine the lateral and vertical extent of the sulfate plume and provide data for the development of conceptual and numerical models of the plume. Submittal of the Aquifer Characterization Report (HGC, 2009a), Feasibility Study (HGC, 2008) and Mitigation Plan (HGC, 2009b) has fulfilled the objectives of monitoring recommended by the Work Plan.

In 2009, the groundwater monitoring requirements were revised in collaboration with ADEQ. The objectives of the revised groundwater monitoring plan are to track the location of the plume edge and monitor drinking water supply wells near the plume prior to implementation of the additional mitigation measures recommended in the Feasibility Study.

The details of the pre-implementation groundwater monitoring are outlined in letters from Sierrita to ADEQ on May 15, 2009 (Sierrita, 2009a) and June 12, 2009 (Sierrita, 2009b). Wells identified for annual, quarterly, and semiannual monitoring for pre-implementation groundwater monitoring are shown in Table 1 and Figure 1.

Groundwater sampling and analysis methods followed by Sierrita are described in the Quality Assurance Project Plan (QAPP) contained in Appendix E of the Work Plan (HGC, 2006a). Results of groundwater monitoring are presented in Section 2.1.

2. GROUNDWATER MONITORING

2.1 Monitoring Results

Analytical results and groundwater elevation data for the fourth quarter 2009 and first quarter 2010 are tabulated in Table 2 and Table 3, respectively. Figure 2 shows the concentrations of dissolved sulfate in the wells sampled in the fourth quarter 2009. Figure 3 shows the dissolved sulfate concentrations in drinking water supply wells in the vicinity of the plume and their corresponding sentinel wells in the first quarter 2010. The highest sulfate concentration measured at co-located wells was used for concentration contouring. Groundwater elevations in the fourth quarter 2009 and the first quarter 2010 are presented on Figures 4 and 5, respectively. Groundwater elevations were calculated using the depth to water measurements taken under non-pumping conditions for all wells shown. However, static conditions may not have been fully achieved at active drinking water wells depending on the time between when the well was last pumped and when the water level measurement was made.

2.2 Quality Assurance/Quality Control Review

Pursuant to Section 6.4 of the QAPP, a data verification report was prepared for quality assurance and quality control purposes. The data verification report reviews groundwater data collected by Sierrita during the fourth quarter 2009 and first quarter 2010, and is included as Appendix A. Analytical laboratory reports for samples collected in the fourth quarter 2009 and first quarter 2010 are provided in portable document format on the compact diskette in Appendix B. As determined by the analytical data verification review, all data are of acceptable quality for use in the groundwater monitoring program conducted pursuant to the Mitigation Order.

3. FINDINGS

This semiannual data report provides the results of groundwater monitoring conducted in the vicinity of the STI for the fourth quarter 2009 and first quarter 2010 (Table 1). Groundwater samples and depth to water measurements were collected from 28 plume area wells during the fourth quarter 2009. In the first quarter 2010 groundwater samples and depth to water measurements were collected from 15 plume area wells.

All wells were sampled according to the schedule presented in the pre-implementation groundwater monitoring plan except well MO-2007-5B. Well MO-2007-5B was not sampled in the fourth quarter 2009 due to electrical problems with the permanent submersible pump. Sierrita personnel attempted to sample the well and repair the pump on several occasions but were not able to collect a sample in fourth quarter 2009. The pump repairs were completed and the well was sampled during the first quarter 2010.

- Sulfate concentration data indicate that the sulfate plume from the STI (as defined by the 250 mg/L sulfate concentration contour) extends northeast from the southeastern corner of the tailing impoundment to the vicinity of co-located wells CW-3/MO-2007-5. The plume then extends north from wells CW-3/MO-2007-5 to the west of wells NP-2/MO-2007-3 and to Duval Mine Road, just north of the MO-2007-1 wells (Figures 2 and 3). Comparison of the third quarter 2009 and first quarter 2010 sulfate concentration data with those collected in previous quarters indicates that the plume migrated northward to the MO-2007-1 wells. The northward migration of the plume is evidenced by the sulfate concentrations in monitor well MO-2007-1C, which changed from 236 mg/L in the second quarter 2009 to 301 mg/L in the fourth quarter 2009. Figure C.5 in Appendix C presents sulfate concentrations over time in the MO-2007-1 wells.
- Appendix C presents time series graphs of sulfate concentrations for drinking water supply wells in the vicinity of the edge of the plume, sentinel wells between the plume and the drinking supply wells, and other monitoring wells that document the edge of the plume. The time series graphs for water supply wells CW-3, CW-9, CW-10, GVDWID-GV-01, and GVDWID-GV-02 indicate that sulfate concentrations are steady over time and less than the interim action trigger level of 135 mg/L (HGC, 2006b). Sulfate concentrations reported for groundwater samples collected from sentinel wells NP-2, MO-2007-3B, MO-2007-3C, MO-2007-4A, MO-2007-4B, MO-2007-4C, MO-2007-6A, MO-2007-6B, and MO-2009-1 are below 135 mg/L, which is the trigger level for more frequent monitoring at sentinel wells (Sierrita, 2009a).
- Data presented in the time series graphs indicate that sulfate concentrations in wells along the edge of the plume are relatively steady or decline over time except at MO-2009-1, MO-2007-1B, MO-2007-1C, and ESP-1. The limited data available at MO-2009-1 are insufficient to determine the long term trend. Sulfate concentrations increased at MO-

2007-1B and MO-2007-1C which are positioned at the leading edge of the plume and are expected to increase until the mitigation measures identified by the Feasibility Study and Mitigation Plan are implemented. Sulfate concentrations at ESP-1 are variable over time.

- Between the second and third quarters 2009, groundwater elevation changes ranged between a decrease of 30.9 feet and an increase of 28.4 feet for wells that were measured in both quarters. Between the third quarter 2009 and the first quarter 2010, groundwater elevation changes ranged between an increase of 0.58 feet and an increase of 13.64 feet.
- Appendix D presents time series graphs of groundwater elevation at the sentinel wells. The time series graphs show that water levels at these wells are relatively steady over time. Groundwater elevations for the sentinel wells generally increased through the first and second quarters and decreased through the third and fourth quarters.

4. REFERENCES

Hydro Geo Chem, Inc. (HGC). 2006a. Work Plan to Characterize and Mitigate Sulfate with Respect to Drinking Water Supplies in the Vicinity of the Phelps Dodge Sierrita Tailing Impoundment, Pima County, Arizona. August 11, 2006, revised October 31, 2006.

HGC. 2006b. Interim Action Identification, Technical Memorandum for Mitigation Order on Consent Docket No. P-50-06, Pima County, Arizona. December 22, 2006.

HGC. 2008. Feasibility Study for Mitigation of Sulfate in the Vicinity of the Freeport-McMoRan Sierrita Inc. Tailing Impoundment, Mitigation Order on Consent Docket No. P-50-06. October 22, 2008.

HGC. 2009a. Revision 1, Aquifer Characterization Report, Task 5 of Aquifer Characterization Plan, Mitigation Order on Consent Docket No. P-50-06. Pima County, Arizona. January 30, 2009.

HGC. 2009b. Mitigation Plan for Sulfate with Respect to Drinking Water Supplies in the Vicinity of the Freeport-McMoRan Sierrita Inc. Tailing Impoundment, Mitigation Order on Consent Docket No. P-50-06. May 8, 2009.

Sierrita. 2009a. Letter from Ned Hall (Sierrita) to Cynthia Campbell (ADEQ) Regarding Mitigation Order on Consent, Docket P-50-06, Response to ADEQ Comments on Recommended Groundwater Monitoring for Sulfate. May 15, 2009.

Sierrita. 2009b. Letter from Ned Hall (Sierrita) to Cynthia Campbell (ADEQ) Regarding Mitigation Order on Consent, Docket P-50-06, Supplemental Information on Recommended Groundwater Monitoring for Sulfate. June 12, 2009.

TABLES

TABLE 1
Sampling Schedule for the First Year of Pre-Implementation Groundwater Monitoring

Well Name	ADWR 55 Well Registry No.	Owner	Annual Sampling Second Quarter 2009	Quarterly Sampling Third Quarter 2009	Semiannual Sampling Fourth Quarter 2009	Quarterly Sampling First Quarter 2010
1350	ND	TBPI	WLO			
CC OF GV	501760	CC of GV	✓			
CW-3	627483	CWC	✓		✓	
CW-6	627485	CWC	✓	✓	✓	✓
CW-7	502546	CWC	WLO			
CW-8	543600	CWC	WLO			
CW-9	588121	CWC	✓	✓	✓	✓
CW-10	207982	CWC	✓	✓	✓	✓
ESP-1	623102	Sierrita	✓		✓	
ESP-2	623103	Sierrita	✓		✓	
ESP-3	623104	Sierrita	✓		✓	
ESP-4	623105	Sierrita	✓		✓	
ESP-5	623106	Sierrita	WLO			
GVDWID-GV-01	603428	GVDWID	✓	✓	✓	✓
GVDWID-GV-02	603429	GVDWID	✓	✓	✓	✓
GVDWID-GV-SI	208825	GVDWID	✓			
HAVEN GOLF	515867	Haven Golf	✓			
I-10	608525	TBPI	✓			
IW-1	623129	Sierrita	✓			
IW-2A	216464	Sierrita	✓			
IW-3A	623131	Sierrita	✓			
IW-4	623132	Sierrita	✓			
IW-5	623133	Sierrita	✓			
IW-6A	545565	Sierrita	✓			
IW-8	508236	Sierrita	✓			
IW-9	508238	Sierrita	✓			
IW-10	508237	Sierrita	✓			
IW-11	508235	Sierrita	✓			
IW-12	545555	Sierrita	✓			
IW-13	545556	Sierrita	✓			
IW-14	545557	Sierrita	✓			
IW-15	545558	Sierrita	✓			
IW-16	545559	Sierrita	✓			
IW-17	545560	Sierrita	✓			

TABLE 1
Sampling Schedule for the First Year of Pre-Implementation Groundwater Monitoring

Well Name	ADWR 55 Well Registry No.	Owner	Annual Sampling Second Quarter 2009	Quarterly Sampling Third Quarter 2009	Semiannual Sampling Fourth Quarter 2009	Quarterly Sampling First Quarter 2010
IW-18	545561	Sierrita	✓			
IW-19	545562	Sierrita	✓			
IW-20	545563	Sierrita	✓			
IW-21	545564	Sierrita	✓			
IW-22	200554	Sierrita	✓			
IW-23	200555	Sierrita	✓			
IW-24	200556	Sierrita	✓			
M-8	87390	TBPI	✓		✓	
M-9	501652	TBPI	✓			
M-10	501653	TBPI	✓		✓	
M-20	906595	TBPI	✓			
MH-1	803629	Sierrita	WLO			
MH-3	803630	Sierrita	WLO			
MH-5	803632	Sierrita	WLO			
MH-6	803633	Sierrita	WLO			
MH-7	803634	Sierrita	WLO			
MH-9	803635	Sierrita	WLO			
MH-10	803636	Sierrita	✓			
MH-11	803637	Sierrita	✓			
MH-13A	904071	Sierrita	✓			
MH-13B	904072	Sierrita	✓			
MH-13C	904073	Sierrita	✓			
MH-14	528098	Sierrita	WLO			
MH-15E	528094	Sierrita	WLO			
MH-15W	528093	Sierrita	WLO			
MH-16E	528100	Sierrita	WLO			
MH-16W	528099	Sierrita	WLO			
MH-24	563799	Sierrita	WLO			
MH-25A	201528	Sierrita	✓			
MH-25B	208429	Sierrita	✓			
MH-25C	208426	Sierrita	✓			
MH-26A	201527	Sierrita	✓			
MH-26B	208427	Sierrita	✓			
MH-26C	208428	Sierrita	✓			
MH-28	903648	Sierrita	✓		✓	

TABLE 1
Sampling Schedule for the First Year of Pre-Implementation Groundwater Monitoring

Well Name	ADWR 55 Well Registry No.	Owner	Annual Sampling Second Quarter 2009	Quarterly Sampling Third Quarter 2009	Semiannual Sampling Fourth Quarter 2009	Quarterly Sampling First Quarter 2010
MH-29	903649	Sierrita	✓		✓	
MH-30	903884	Sierrita	✓			
MO-2007-1A	907342	Sierrita	✓		✓	
MO-2007-1B	907210	Sierrita	✓		✓	
MO-2007-1C	907209	Sierrita	✓		✓	
MO-2007-2	906765	Sierrita	✓			
MO-2007-3B[1]	906816	Sierrita	✓	✓	✓	✓
MO-2007-3C[1]	906817	Sierrita	✓	✓	✓	✓
MO-2007-4A[2]	907213	Sierrita	✓	✓	✓	✓
MO-2007-4B[2]	907212	Sierrita	✓	✓	✓	✓
MO-2007-4C[2]	907211	Sierrita	✓	✓	✓	✓
MO-2007-5B	907456	Sierrita	✓			✓[5]
MO-2007-5C	907457	Sierrita	✓		✓	
MO-2007-6A[3]	907607	Sierrita	✓	✓	✓	✓
MO-2007-6B[3]	907606	Sierrita	✓	✓	✓	✓
MO-2009-1[4]	910458	Sierrita	✓	✓	✓	✓
NP-2[1]	605898	CWC	✓	✓	✓	✓
PZ-7	561870	Sierrita	✓			
PZ-8	561866	Sierrita	✓			
TMM-1	616156	Pima County	✓		✓	

Notes:

ADWR = Arizona Department of Water Resources
CC OF GV = Country Club of Green Valley
CWC = Community Water Company of Green Valley
GVDWID = Green Valley Domestic Water Improvement District
ND = No Data
Sierrita = Freeport-McMoRan Sierrita Inc.
TBPI = Twin Buttes Properties, Inc.
WLO = Water Level Only

[1] *Sentinel Well for CW-9*

[2] *Sentinel Well for CW-6*

[3] *Sentinel Well for GV-01-GVDWID and GV-02-GVDWID*

[4] *Sentinel Well for CW-10*

[5] *MO-2007-5B was scheduled to be sample in the third quarter 2009 but was sampled in the first quarter 2010 due to electrical problems with the permanent pump*

TABLE 2
Analytical Results for Third Quarter 2009 and First Quarter 2010 Groundwater Monitoring

Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Temperature (deg C)	Specific Conductance (µS/cm)	Sulfate, dissolved (mg/L)
CW-3	627483	12/31/09	7.57	23.8	419	56.2
CW-6	627485	11/5/09	7.52	25.1	434	59.7
		2/10/10	7.68	24.4	369	46.6
CW-9	588121	11/5/09	6.82	27.4	376	44.7
		2/10/10	7.55	26.0	351	43.4
CW-10	207982	11/5/09	7.60	29.7	364	49.9
		2/10/10	7.69	28.4	346	44.9
ESP-1	623102	11/10/09	7.45	26.8	649	173
ESP-2	623103	11/10/09	7.58	27.0	343	28.9
ESP-3	623104	11/12/09	7.71	27.0	354	39.5
ESP-4	623105	10/23/09	7.41	27.8	954	485
GVDWID-GV-01	603428	11/4/09	7.45	25.1	415	45.1
		1/27/10	7.54	24.5	411	47.0
GVDWID-GV-02	603429	11/4/09	7.25	24.3	547	93.2
		1/27/10	7.47	22.0	547	94.9
		1/27/10 DUP	7.47	22.0	547	94.5
M-8	087390	11/5/09	7.61	26.6	382	31.4
M-10	501653	11/5/09	7.13	30.5	479	110
		11/5/09 DUP	7.13	30.5	479	107
MH-28		10/13/09	6.88	25.7	1589	1800
MH-29	903649	10/13/09	6.95	25.0	1421	1600
		10/13/09 DUP	6.95	25.0	1421	1700
MO-2007-1A	907342	10/22/09	7.53	26.4	360	16.6
		10/22/09 DUP	7.53	26.4	360	16.6
MO-2007-1B	907210	10/22/09	7.63	28.5	600	143
MO-2007-1C	907209	10/22/09	7.66	28.1	356	301
MO-2007-3B	906816	10/22/09	7.76	28.0	354	39.1
		1/20/10	7.97	27.6	328	37.9
MO-2007-3C	906817	10/22/09	8.01	29.8	488	108
		1/20/10	8.20	26.2	469	103
MO-2007-4A	907213	10/26/09	7.64	27.2	378	35.7
		1/26/10	7.66	25.7	356	36.0
MO-2007-4B	907212	10/26/09	7.68	28.7	348	34.5
		1/26/10	7.74	23.7	332	34.1
MO-2007-4C	907211	10/26/09	8.22	30.5	427	83.9
		10/26/09 DUP	8.22	30.5	427	83.8
		1/26/10	8.40	30.0	409	83.2

TABLE 2
Analytical Results for Third Quarter 2009 and First Quarter 2010 Groundwater Monitoring

Well Name	ADWR 55 Registry No.	Sample Date	pH (SU)	Temperature (deg C)	Specific Conductance (µS/cm)	Sulfate, dissolved (mg/L)
MO-2007-5B	907456	1/25/10	7.98	28.8	1010	462
MO-2007-5C	907457	10/27/09	7.55	30.1	651	238
MO-2007-6A	907607	10/26/09	7.52	27.9	349	23.5
		1/20/10	7.66	26.2	343	24.6
MO-2007-6B	907606	10/26/09	7.90	30.5	398	62.1
		1/20/10	8.05	27.4	406	69.7
MO-2009-1	910458	11/3/09	8.17	29.5	513	109
		1/25/10	8.23	29.2	481	82.1
NP-2	605898	12/31/09	7.60	23.6	387	40.7
		2/17/10	6.35	24.7	450	42.0
		2/17/10 DUP	6.35	24.7	450	42.0
TMM-1	616156	10/14/09	8.12	31.1	256	0.6

Notes:
SU = Standard Units
µS/cm = microsiemens per centimeter
deg C = degrees Celsius
NA = Not Analyzed
mg/L = milligrams per Liter
DUP = Duplicate sample

TABLE 3
Groundwater Elevation Data for Third Quarter 2009 and First Quarter 2010 Groundwater Monitoring

Well Name	ADWR 55 Registry No.	Survey Source	UTM East	UTM North	Measuring Point Elevation (ft amsl)	Date	Depth to Water (feet)	Groundwater Elevation (ft amsl)
CW-3	627483	HGC	500047.663	3523809.985	2941.71	12/31/09	272.10	2669.61
CW-6	627485	CWC	500891.072	3525794.239	2867.00	11/5/09	258.10	2608.90
						2/10/10	250.76	2616.24
CW-9	588121	CWC	501072.040	3528740.784	2834.30	11/5/09	321.60	2512.70
						2/10/10	316.69	2517.61
CW-10	207982	CWC	500913.364	3523455.502	2868.50	11/5/09	199.10	2669.40
						2/10/10	186.00	2682.50
ESP-1	623102	Sierrita	499969.682	3526448.677	2954.27	11/10/09	355.67	2598.60
ESP-2	623103	Sierrita	500241.637	3526924.656	2934.60	11/10/09	346.50	2588.10
ESP-3	623104	Sierrita	500234.067	3527377.239	2935.18	11/12/09	363.37	2571.81
ESP-4	623105	Sierrita	499916.830	3526132.758	2958.60	10/23/09	355.64	2602.96
GVDWID-GV-01	603428	GVDWID	499812.869	3522254.157	2942.35	11/4/09	232.80	2709.55
						1/27/10	224.80	2717.55
GVDWID-GV-02	603429	GVDWID	499786.207	3521654.457	2930.47	11/4/09	203.50	2726.97
						1/27/10	195.15	2735.32
M-8	87390	Sierrita	499658.916	3529692.237	2999.53	11/5/09	465.60	2533.93
M-10	501653	Sierrita	499659.027	3530143.114	3005.68	11/5/09	481.20	2524.48
MH-28	903548	Sierrita	497471.427	3524609.980	3142.18	10/13/09	401.10	2741.08
MH-29	903649	Sierrita	497604.326	3522805.518	3123.15	10/13/09	380.52	2742.63

TABLE 3
Groundwater Elevation Data for Third Quarter 2009 and First Quarter 2010 Groundwater Monitoring

Well Name	ADWR 55 Registry No.	Survey Source	UTM East	UTM North	Measuring Point Elevation (ft amsl)	Date	Depth to Water (feet)	Groundwater Elevation (ft amsl)
MO-2007-1A	907342	Sierrita	500016.947	3529331.380	2967.65	10/22/09	434.05	2533.60
MO-2007-1B	907210	Sierrita	500021.574	3529325.119	2966.82	10/22/09	434.90	2531.92
MO-2007-1C	907209	Sierrita	500013.405	3529328.959	2968.58	10/22/09	427.60	2540.98
MO-2007-3B	906816	Sierrita	500522.491	3528508.801	2912.15	10/22/09	365.50	2546.65
						3/11/10	359.36	2552.79
MO-2007-3C	906817	Sierrita	500529.713	3528508.743	2911.90	10/22/09	362.80	2549.10
						3/11/10	359.62	2552.28
MO-2007-4A	907213	Sierrita	500383.682	3525634.956	2923.63	10/26/09	309.10	2614.53
						1/26/10	308.52	2615.11
MO-2007-4B	907212	Sierrita	500380.947	3525613.952	2923.57	10/26/09	313.00	2610.57
						1/26/10	308.29	2615.28
MO-2007-4C	907211	Sierrita	500382.217	3525624.484	2923.66	10/26/09	311.30	2612.36
						1/26/10	309.53	2614.13
MO-2007-5B	907456	Sierrita	500013.850	3523743.376	2944.35	1/25/10	268.30	2676.05
MO-2007-5C	907457	Sierrita	500014.152	3523736.459	2944.91	10/27/09	284.70	2660.21

TABLE 3
Groundwater Elevation Data for Third Quarter 2009 and First Quarter 2010 Groundwater Monitoring

Well Name	ADWR 55 Registry No.	Survey Source	UTM East	UTM North	Measuring Point Elevation (ft amsl)	Date	Depth to Water (feet)	Groundwater Elevation (ft amsl)
MO-2007-6A	907607	Sierrita	498367.161	3521842.050	3043.37	10/26/09	307.00	2736.37
						3/11/10	306.15	2737.22
MO-2007-6B	907606	Sierrita	498367.887	3521849.495	3043.05	10/26/09	319.37	2723.68
						3/11/10	316.58	2726.47
MO-2009-1	910458	Sierrita	500534.089	3523369.438	2890.78	11/3/09	225.90	2664.88
						1/25/10	212.26	2678.52
NP-2	605898	HGC	500582.904	3528517.116	2906.56	12/31/10	358.57	2547.99
						2/17/10	357.20	2549.36
TMM-1	616156	HGC	500018.323	3529736.231	2967.08	10/14/09	444.00	2523.08

Notes:

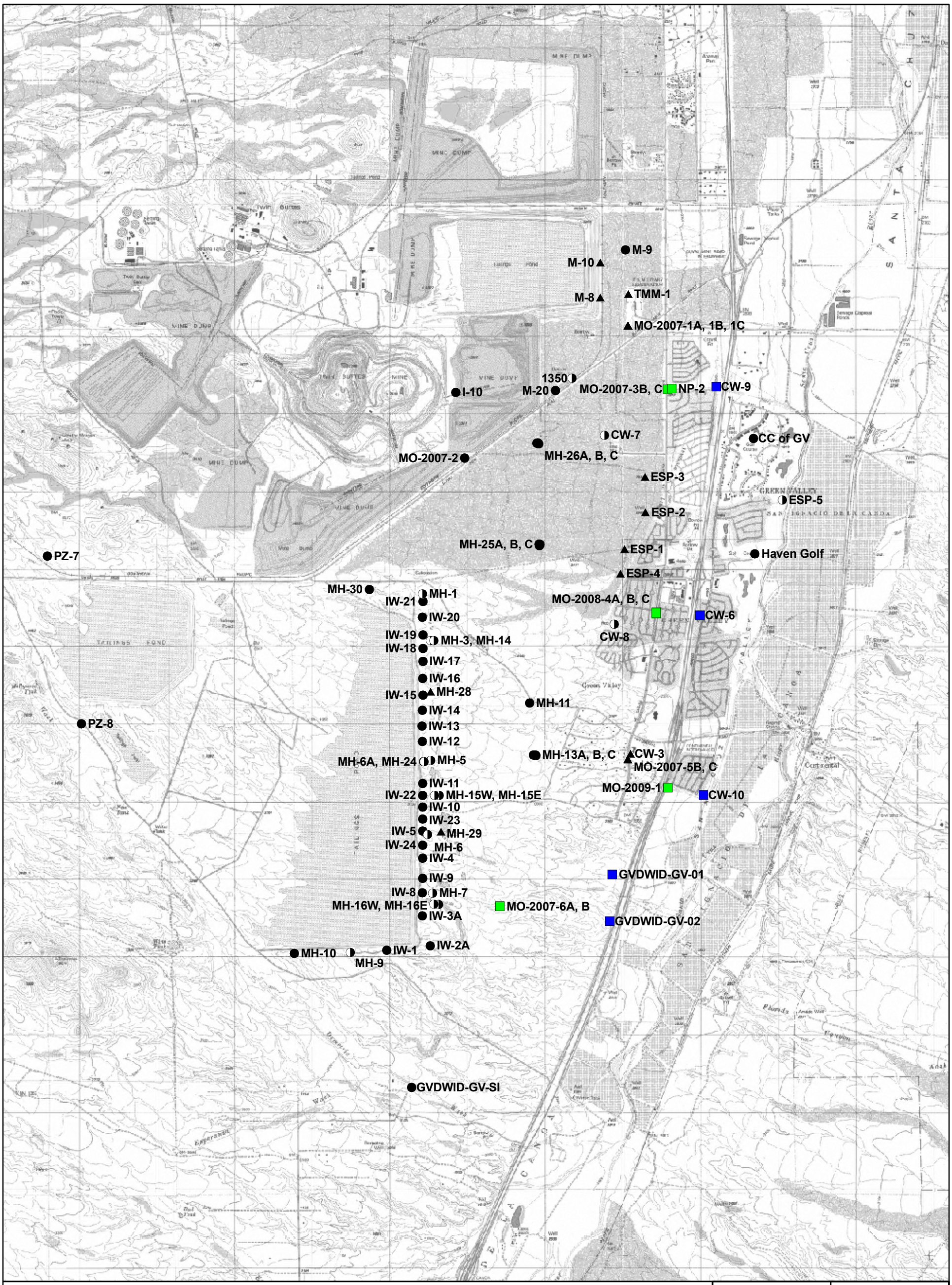
UTM = Universal Transverse Mercator, Zone 12 North American Datum 1983 (NAD83)

ft amsl = feet above mean sea level

Water level measurement for IW were collected under dynamic conditions and not used for contouring

HGC = Hydro Geo Chem, Inc.

FIGURES



Legend

- Annual Sampling
- Annual Water Level Only
- Semi-Annual Sampling
- Quarterly Sampling - Sentinel Well
- Quarterly Sampling - Drinking Water Supply Well

Scale

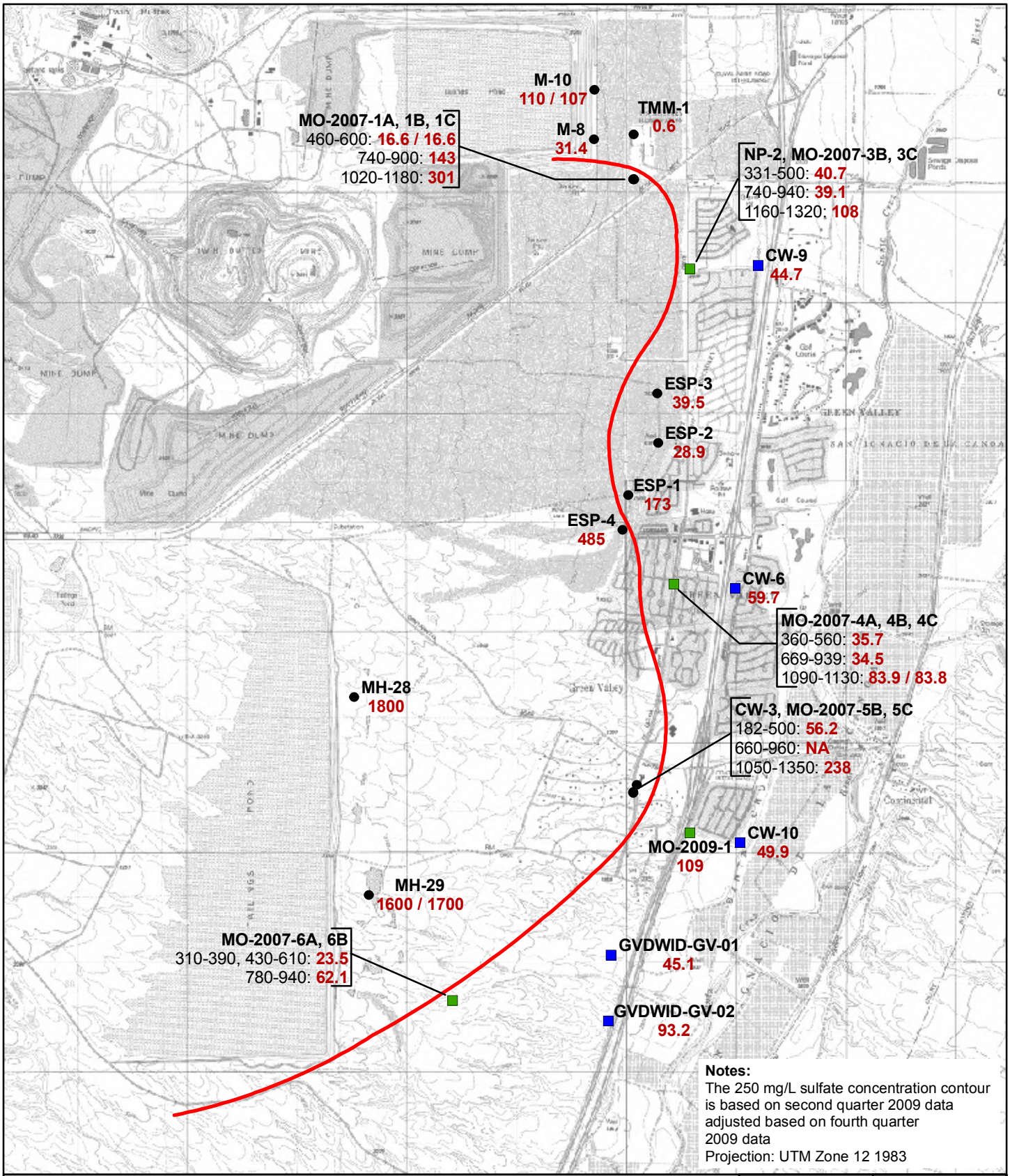
0 2,000 4,000 8,000

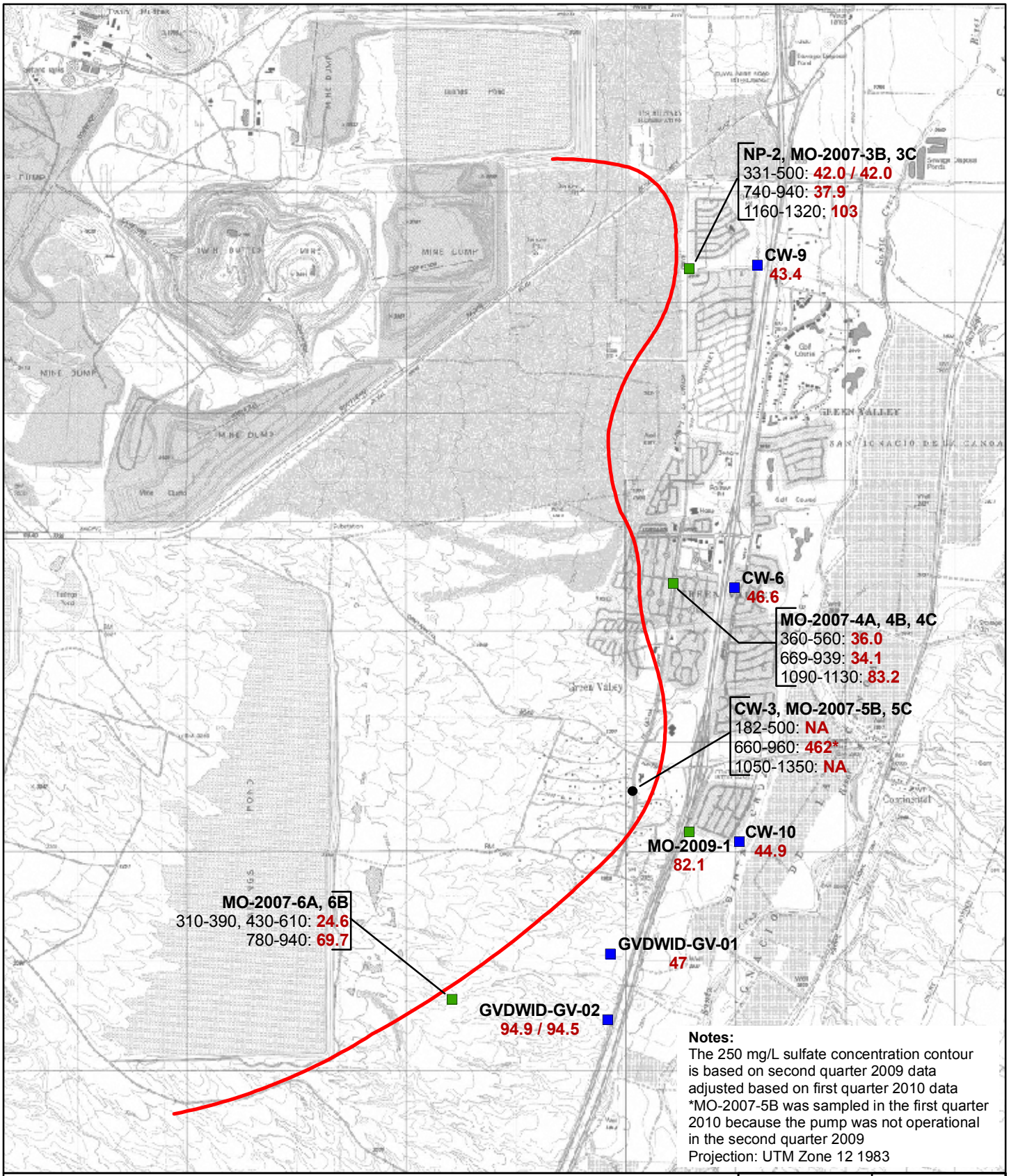
Feet

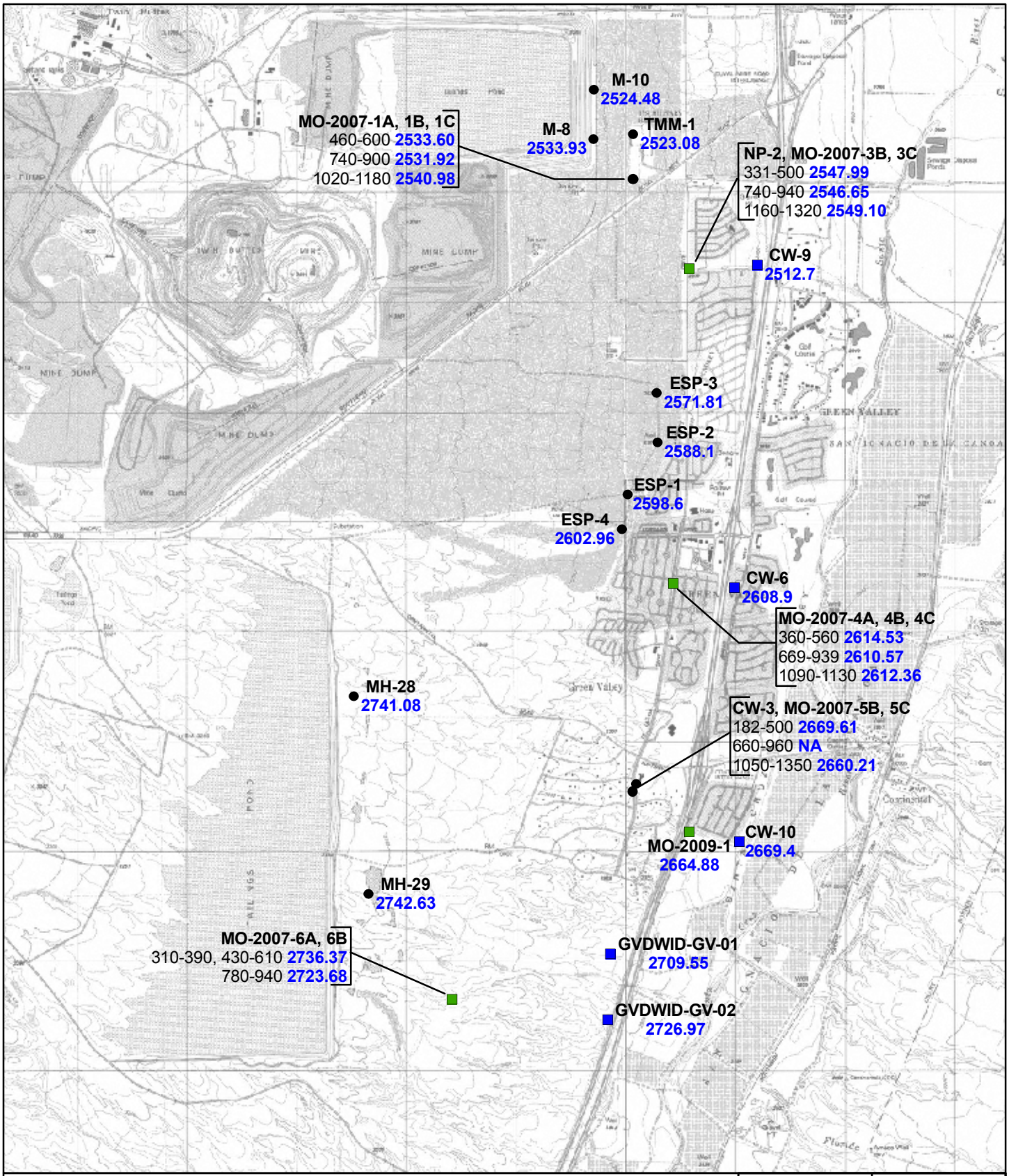
Date	File ID
1/20/10	055038-006

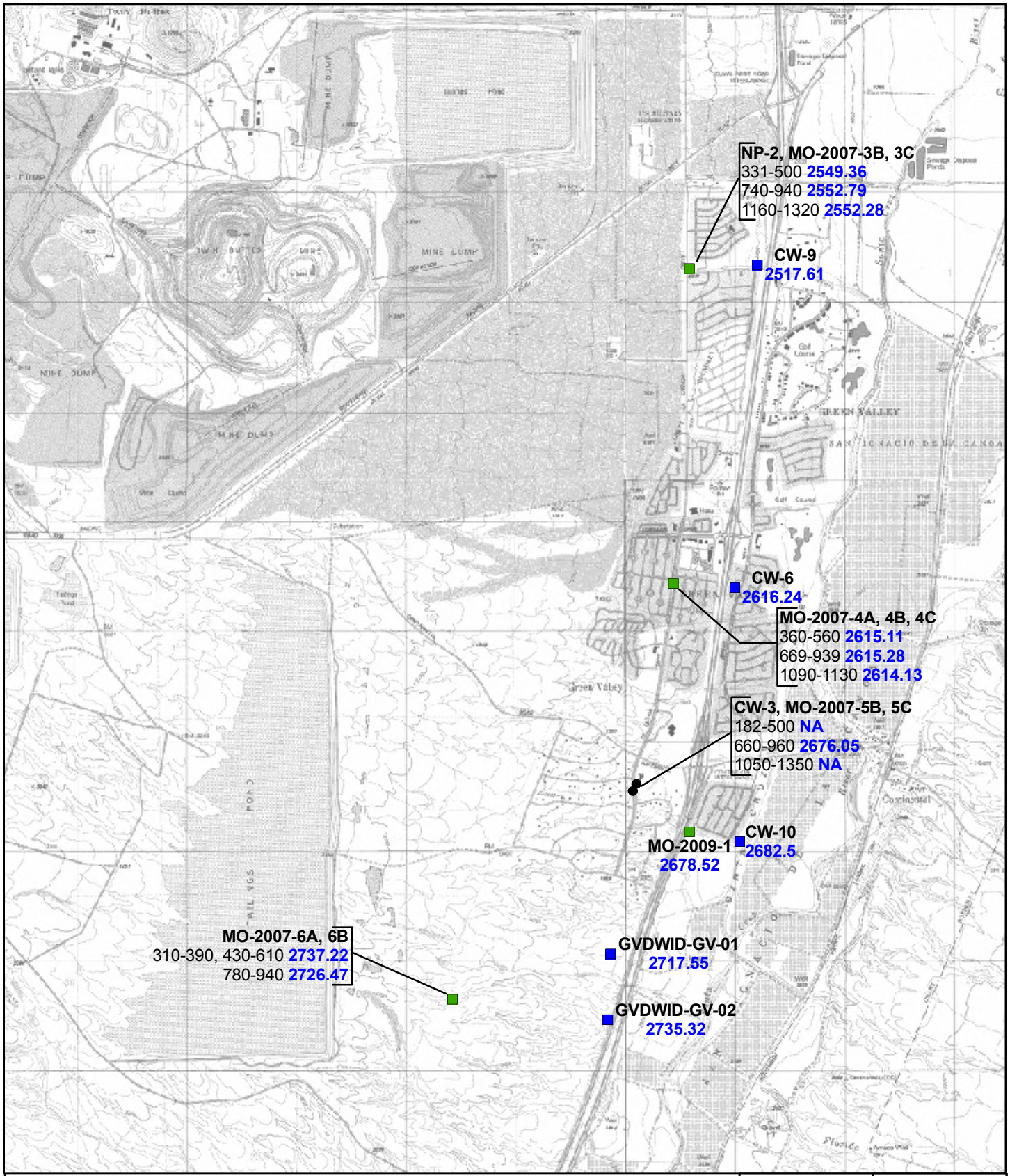
CLEAR CREEK ASSOCIATES

Figure 1
Sampling Locations for
Pre-Implementation Groundwater
Monitoring


M-10
110 / 107
TMM-1
0.6
M-8
31.4
MO-2007-1A, 1B, 1C
460-600: 16.6 / 16.6
740-900: 143
1020-1180: 301
NP-2, MO-2007-3B, 3C
331-500: 40.7
740-940: 39.1
1160-1320: 108
CW-9
44.7
ESP-3
39.5
ESP-2
28.9
ESP-1
173
ESP-4
485
CW-6
59.7
MO-2007-4A, 4B, 4C
360-560: 35.7
669-939: 34.5
1090-1130: 83.9 / 83.8
MH-28
1800
CW-3, MO-2007-5B, 5C
182-500: 56.2
660-960: NA
1050-1350: 238
MO-2009-1
109
CW-10
49.9
MH-29
1600 / 1700
MO-2007-6A, 6B
310-390, 430-610: 23.5
780-940: 62.1
GVDWID-GV-01
45.1
GVDWID-GV-02
93.2
Notes:
The 250 mg/L sulfate concentration contour is based on second quarter 2009 data adjusted based on fourth quarter 2009 data
Projection: UTM Zone 12 1983
Legend
250 mg/L Sulfate Concentration Contour
CW-9 Well ID
44.7 Sulfate Concentration (mg/L)
Duplicate Results Separated by "/"
Co-Located Wells
Screened Interval (ft bls): Sulfate Concentration (mg/L)
Well Symbols
Well
Water Supply Well
Sentinel Well
0 2,000 4,000
Feet
CLEAR CREEK ASSOCIATES
File ID 055039-007
Date 3/16/10
Figure 2
Sulfate Concentrations
for Fourth Quarter 2009


NP-2, MO-2007-3B, 3C
331-500: 42.0 / 42.0
740-940: 37.9
1160-1320: 103
CW-9
43.4
CW-6
46.6
MO-2007-4A, 4B, 4C
360-560: 36.0
669-939: 34.1
1090-1130: 83.2
CW-3, MO-2007-5B, 5C
182-500: NA
660-960: 462*
1050-1350: NA
MO-2009-1
82.1
CW-10
44.9
MO-2007-6A, 6B
310-390, 430-610: 24.6
780-940: 69.7
GVDWID-GV-01
47
GVDWID-GV-02
94.9 / 94.5
Notes:
The 250 mg/L sulfate concentration contour is based on second quarter 2009 data adjusted based on first quarter 2010 data
*MO-2007-5B was sampled in the first quarter 2010 because the pump was not operational in the second quarter 2009
Projection: UTM Zone 12 1983
Legend
250 mg/L Sulfate Concentration Contour
CW-9 Well ID
44.7 Sulfate Concentration (mg/L)
Duplicate Results Separated by "/"
Co-Located Wells
Screened Interval (ft bls): Sulfate Concentration (mg/L)
Well Symbols
Well
Water Supply Well
Sentinel Well
0 2,000 4,000
Feet
CLEAR CREEK ASSOCIATES
File ID 055039-008
Date 3/16/10
Figure 3
Sulfate Concentrations for First Quarter 2010


M-10
2524.48
MO-2007-1A, 1B, 1C
460-600 2533.60
740-900 2531.92
1020-1180 2540.98
M-8
2533.93
TMM-1
2523.08
NP-2, MO-2007-3B, 3C
331-500 2547.99
740-940 2546.65
1160-1320 2549.10
CW-9
2512.7
ESP-3
2571.81
ESP-2
2588.1
ESP-1
2598.6
ESP-4
2602.96
CW-6
2608.9
MO-2007-4A, 4B, 4C
360-560 2614.53
669-939 2610.57
1090-1130 2612.36
MH-28
2741.08
CW-3, MO-2007-5B, 5C
182-500 2669.61
660-960 NA
1050-1350 2660.21
MO-2009-1
2664.88
CW-10
2669.4
MH-29
2742.63
MO-2007-6A, 6B
310-390, 430-610 2736.37
780-940 2723.68
GVDWID-GV-01
2709.55
GVDWID-GV-02
2726.97
Legend
CW-9 Well ID
2432.45 Grounwater Elevation (ft amsl)
Well Symbols
Well
Water Supply Well
Sentinel Well
0 2,000 4,000
Feet
Co-Located Wells
Screened Interval (ft bls): Grounwater Elevation (ft amsl)
CLEAR CREEK ASSOCIATES
File ID 055039-009
Date 3/16/10
Figure 4
Grounwater Elevations
for Fourth Quarter 2009



Legend

● **CW-9** Well ID
2432.45 Grounwater Elevation (ft amsl)

Well Symbols
- ● Well
- ■ Water Supply Well
- ■ Sentinel Well

Co-Located Wells
Screened Interval (ft bls): **Grounwater Elevation (ft amsl)**

0 2,000 4,000
Feet

CLEAR CREEK ASSOCIATES

File ID 055039-010
Date 3/16/10

Figure 5
Grounwater Elevations
for First Quarter 2010

APPENDIX A

DATA VERIFICATION REPORT

GROUNDWATER SAMPLES COLLECTED BY FREEPORT-MCMORAN SIERRITA INC. DURING THE FOURTH QUARTER 2009 AND FIRST QUARTER 2010

APPENDIX A

DATA VERIFICATION REPORT

GROUNDWATER SAMPLES COLLECTED BY FREEPORT-MCMORAN SIERRITA INC. DURING THE FOURTH QUARTER 2009 AND FIRST QUARTER 2010

Prepared for:

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April 16, 2010

PRIVILEGED AND CONFIDENTIAL
Prepared at the Direction of Legal Counsel

TABLE OF CONTENTS

1. INTRODUCTION

This report summarizes the data verification review of groundwater samples collected and analyzed during the fourth quarter 2009 and first quarter 2010 by Freeport-McMoRan Sierrita Inc. (Sierrita) pursuant to Mitigation Order on Consent Docket No. P-50-06. All analytical results for groundwater samples collected during this reporting period were provided to Sierrita by ACZ Laboratories, Inc. (ACZ) for preparation of the Semiannual Groundwater Monitoring Report.

This report does not review field sampling or sample handling procedures for Sierrita. Sierrita collected samples following the methods in the *Quality Assurance/Quality Control (QA/QC) Plan for Water Monitoring, Phelps Dodge Sierrita, Inc.* (PDSI, 2005) in Appendix E of the Work Plan (Hydro Geo Chem, Inc. [HGC], 2006). Additionally, laboratory QA/QC data are evaluated according to the data quality indicators (DQIs) given in the Quality Assurance Project Plan (QAPP) (HGC, 2006).

Appendix B of the main text of this report contains laboratory reports for samples collected by Sierrita including COC forms, laboratory correspondence, QC summaries, data qualifiers, and any case narratives. The analytical results for all 43 samples collected are contained in 7 reports having the ACZ Project numbers identified in the following table.

ACZ Project ID	Wells Reported
28 Samples were collected during the fourth quarter 2009 4 Duplicate samples were collected during the fourth quarter 2009	
L78771	MH-28, MH-29, DUP20091013B
L79305	TMM-1, MO-2007-1A, 1B, 1C, MO-2007-3B, 3C, DUP20091022A, ESP-4, MO-2007-6A, 6B, MO-2007-4A, 4B, 4C, DUP20091026A, MO-2007-5C, MO-2009-1, GV-1, GV-2
L79553	CW-6, CW-9, CW-10, M-8, M-10, DUP20091105A, ESP-1, ESP-2, ESP-3
L80159	CW-3, NP-2
15 Samples were collected from wells during the first quarter 2010 2 Duplicate samples were collected during the first quarter 2010	
L80561	MO-2007-3B, 3C, MO-2007-6A, 6B, MO-2007-5B, MO-2007-4A, 4B, 4C, GV-1, GV-2, DUP20100127A, MO-2009-1
L80726	CW-6, CW-9, CW-10
L80948	NP-2, DUP 20100217A

The results of the internal QA/QC tests performed by ACZ also are presented with the laboratory reports included in Appendix B. Based on the results of surrogate spike recoveries, matrix spike/recovery and matrix spike duplicate tests, ACZ did not advise of any modifications that should be made regarding the usability and data validation status of the laboratory test results.

2. LABORATORY QUALITY CONTROL

As specified in the QAPP, laboratory QC was maintained for all analysis through proper licensure, the use of approved analytical methods, QC measurements, appropriate turnaround time for analysis (timeliness), method detection limits (MDLs), and practical quantitation limits (PQLs). Each of these controls is discussed in the following subsections.

The review of laboratory QC included a review to identify any qualified data and an assessment to determine their significance. Additionally, the laboratory QC summaries were reviewed to verify that results met QA criteria.

2.1 Licensure

ACZ is licensed with the Arizona Department of Health Services (license number AZ0102) and is accredited in accordance with the National Environmental Laboratory Accreditation Conference.

2.2 Analytical Methods

The following methods were used for sulfate analysis during this monitoring period:

- U.S. Environmental Protection Agency (EPA) 300.0 (Ion-Chromatography)
- EPA 375.4 (Turbidimetric)

2.3 Method Detection Limits (MDLs) and Practical Quantification Limits (PQLs)

The MDLs and PQLs of the analytical methods used by ACZ are shown in the following table. The MDLs for analyses of samples were equal to or less than the target MDLs identified in the QAPP.

Method	MDL (mg/L)	PQL (mg/L)	Target MDL[1] (mg/L)
EPA 300.0	0.5	3	10
EPA 375.4	1	5	10

mg/L = milligrams per liter
[1] Target MDL from Table E.2 of QAPP

2.4 Timeliness

Holding time was derived from the EPA methods utilized and were calculated beginning from the time of sample collection. All samples submitted for sulfate analysis were analyzed within the twenty-eight day holding time specified by each of the methods used for analysis.

2.5 Quality Control Measurements

The following QC samples were prepared and analyzed:

- Preparation blanks, calibration blanks, and calibration verification standards
- Analytical spikes and analytical spike duplicates
- Laboratory control samples
- Laboratory duplicate samples

2.5.1 Preparation Blanks, Calibration Blanks, and Calibration Verification Standards

Preparation blanks were run with each group of samples submitted for sulfate analyses. Preparation blanks were prepared from analyte-free water and treated as routine samples. Analytical results of the preparation blanks showed that no target analytes were detected at the indicated MDL.

Initial calibration blanks and initial calibration verification standards were analyzed prior to each group of samples submitted for sulfate analyses. The results of each initial calibration blank analyzed showed no detections of the target analyte. Analytical results for the initial calibration verification standards and laboratory fortified blanks showed percent recoveries that were within the acceptance criteria specified by the ACZ QA plan and the QAPP.

2.5.2 Analytical Spikes and Analytical Spike Duplicates

Analytical spike and spike duplicate samples were analyzed for 10 percent of the samples that were analyzed following EPA Method 300.0. The spike samples were prepared by adding a sulfate spike to one randomly chosen sample out of every ten samples analyzed. Spike recoveries for most analyses were between 90 and 110 percent. Instances in which analytical spike recoveries were high, low or unusable were qualified with an "M1", "M2" or "M3" flag, respectively. In each case where a qualifier was used the method control sample recovery was acceptable. The method control samples were prepared by adding a sulfate spike to de-ionized water.

2.5.3 Laboratory Control Samples

Laboratory control samples were run for each group of samples submitted for sulfate analysis following the gravimetric method of analysis. Recoveries for all laboratory control samples were within the acceptance criteria specified by ACZ.

2.5.4 Laboratory Duplicate Samples

Analyses of laboratory duplicate samples were also reviewed as part of this quality data verification report. Field duplicate samples are discussed in Section 3.1. The relative percent difference (RPDs) for most laboratory duplicate samples were within 20 percent, which is the tolerance range set by the laboratory. In some instances, the data were qualified with an "RA" flag indicating that the RPD was not used for data validation because the sample concentration was less than ten times the MDL, which is too low for accurate evaluation according to ACZ. In cases where the RPD could be calculated, the results met QA criteria and demonstrate an appropriate level of precision in laboratory analysis of these samples.

3. DATA QUALITY INDICATORS

The QAPP provides several DQIs for assessing the overall quality of the data. These DQIs include the following:

- Precision
- Bias
- Accuracy
- Representativeness
- Comparability
- Completeness
- Sensitivity

Each of these DQIs is discussed below in relation to the fourth quarter 2009 and first quarter 2010 groundwater sampling and analysis conducted by Sierrita.

3.1 Precision

Precision indicates how well a measurement can be reproduced. Precision is quantified by calculating the RPD between duplicate samples. For the purposes of QA/QC, precision was quantified by calculating the RPDs between duplicates among the following groups of duplicate samples:

- Laboratory duplicate samples
- Field duplicate samples

As discussed in Sections 2.5.2 and 2.5.4, there were no exceedances of RPD QA criteria for any laboratory duplicates. During this monitoring period, a total of 6 field duplicate samples were collected by Sierrita for filtered sulfate analysis (DUP20091013B, DUP20091022A, DUP20091026A, DUP20091105A, DUP20100127A, and DUP20100217A). The collection of 6 field duplicate samples meets the QA/QC goal of collecting one duplicate sample for every ten groundwater samples collected, as stated in Section 6 of Sierrita's quality assurance quality control plan.

Results of the field duplicate samples collected are provided in the table below. The range of RPD values was between 0 and 6.06 percent, all within the 20 percent acceptance criteria for field duplicates, as stated in Section 3.3.1 of the QAPP. Overall, the DQI for precision is met.

ACZ Project No.	Well ID	Duplicate ID	Sample (mg/l)	Duplicate (mg/l)	RPD
L78771	MH-29	DUP20091013B	1600	1700	6.06%
L79305	MO-2008-1A	DUP20091022A	16.6	16.6	0.00%
L79305	MO-2008-4C	DUP20091026A	83.9	83.8	0.12%
L79553	M-10	DUP20091105A	110	107	2.76%
L80561	GVDWID-GV-02	DUP20100127A	94.9	94.5	0.42%
L80948	NP-2	DUP20100217A	42.0	42.0	0%

mg/L = milligrams per liter
RPD = Relative Percent Difference

3.2 Bias

Bias is a systematic distortion of measurements causing consistent errors in one direction. Bias is managed in this data set by the consistent application of standardized sample collection and analysis procedures.

3.3 Accuracy

Accuracy is a measure of the agreement of a measurement to a known value and is measured using the recoveries from laboratory control samples. As discussed in Sections 2.5.1, 2.5.2, and 2.5.3 respectively, there were no significant exceedances of the recovery QA criteria for any of the calibration standards, analytical spikes, or laboratory control standards. Based on this information, the overall accuracy of the data is judged sufficient for the purpose of aquifer characterization.

3.4 Representativeness

All samples were taken from locations specified in the Pre-implementation Monitoring Plan (Sierrita, 2009) using sampling procedures specified in the QAPP. Therefore, the samples are judged to provide a good representation of groundwater quality at the locations. The analytical

data are judged to be representative of groundwater conditions because the analyses used standard procedures and methods that met QA/QC guidelines of the QAPP.

3.5 Comparability

All samples were collected using standardized procedures (PDSI, 2005) and were analyzed by ACZ using standardized methods. Insofar as standardized sample collection and analytical methods are adhered to, the sample results should be comparable.

3.6 Completeness

All samples collected by Sierrita were subsequently analyzed and reported by ACZ. All samples analyzed by ACZ are judged to satisfy the QA/QC criteria for this project and are deemed usable for aquifer characterization. Thus, the completeness of analytical results is 100 percent.

3.7 Sensitivity

The analytical methods used to analyze the samples meet the MDL requirements specified in Table E.2 of the QAPP. Therefore, the analytical sensitivity is considered acceptable for use in aquifer characterization.

4. REFERENCES

Hydro Geo Chem, Inc. 2006. Work Plan to Characterize and Mitigate Sulfate with Respect to Drinking Water Supplies in the Vicinity of the Phelps Dodge Sierrita Tailing Impoundment, Pima County, Arizona. August 11, 2006, revised October 31, 2006.

Phelps Dodge Sierrita, Inc. 2005. Quality Assurance/Quality Control Plan for Water Monitoring, Phelps Dodge Sierrita, Inc. June 2005.

Sierrita. 2009. Letter from Ned Hall (Sierrita) to Cynthia Campbell (ADEQ) Regarding Mitigation Order on Consent, Docket P-50-06, Response to ADEQ Comments on Recommended Groundwater Monitoring for Sulfate. May 15, 2009.

APPENDIX B

ANALYTICAL DATA REPORTS

APPENDIX C

TIME SERIES GRAPHS OF SULFATE CONCENTRATION

TABLE OF CONTENTS

TABLE

FIGURES

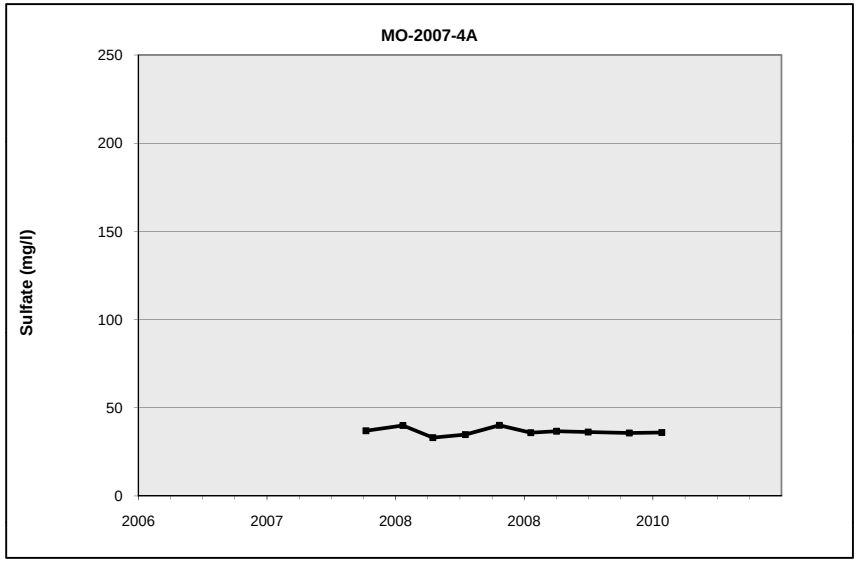
TABLE

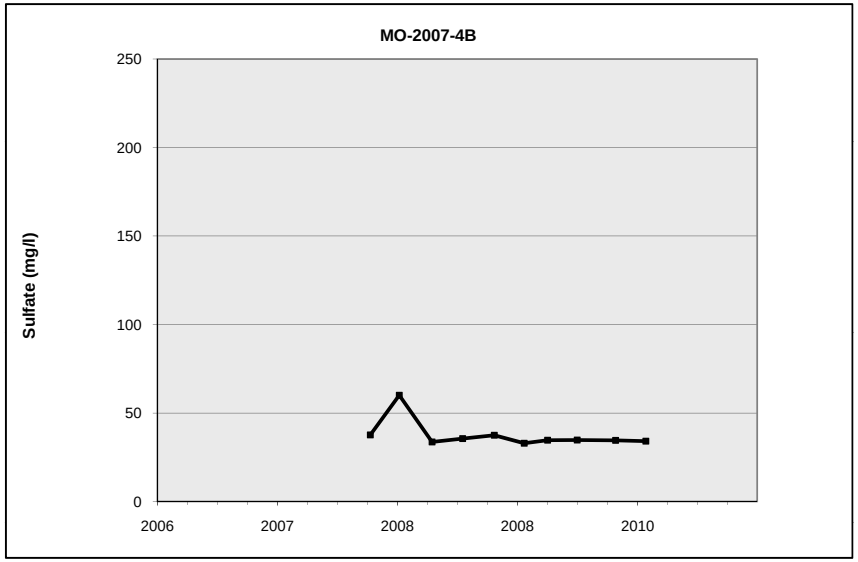
TABLE C.1
Sulfate Concentration Over Time

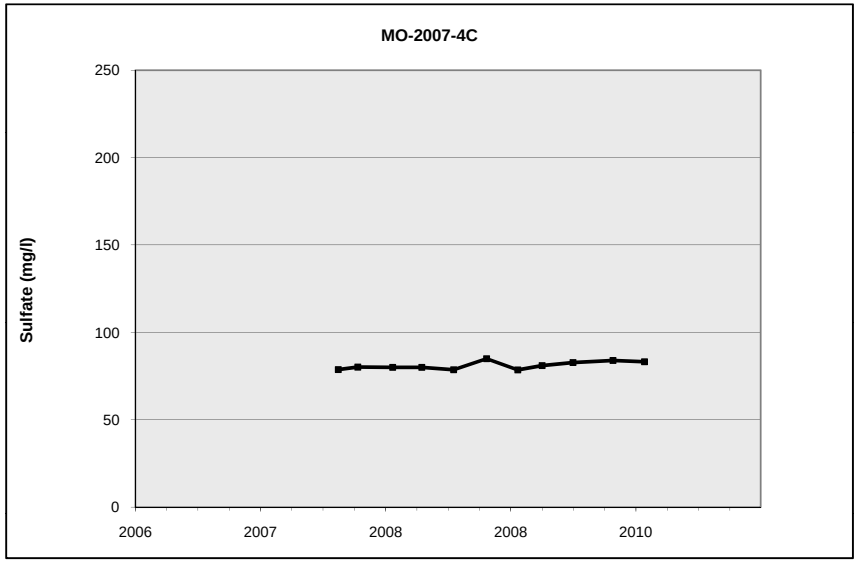
Date and dissolved sulfate concentration reported in milligrams per liter (mg/l)														
Well ID	**Q4 2006**	**Q1 2007**	**Q2 2007**	**Q3 2007**	**Q4 2007**	**Q1 2008**	**Q2 2008**	**Q3 2008**	**Q4 2008**	**Q1 2009**	**Q2 2009**	**Q3 2009**	**Q4 2009**	**Q1 2010**
CW-6	12/04/06 46.2	01/03/07 49.2	05/14/07 68.7	07/10/07 57.6	10/02/07 54.2	01/08/08 48.9	04/15/08 51.2	07/08/08 47.9	10/07/08 51.5	02/06/09 48.2	04/22/09 47.9	09/17/09 70	11/05/09 59.7	02/10/10 46.6
CW-9	12/04/06 44.5	01/03/07 44.9	05/14/07 47.8	07/10/07 46.7	10/02/07 46.4	01/08/08 47.3	04/15/08 43.7	07/08/08 44.1	10/07/08 43.5	02/06/09 45.1	04/22/09 44.3	07/30/09 43.8	11/05/09 44.7	02/10/10 43.4
CW-10	12/04/06 37.2	01/24/07 48.6	05/14/07 52.8	07/10/07 51.7	10/02/07 47.7	01/08/08 45.3	04/15/08 50.8	07/08/08 50.5	10/07/08 48.3	02/06/09 51.3	04/22/09 47.9	07/30/09 49.2	11/20/09 49.9	02/10/10 44.9
GV-01-GVDWID		01/09/07 40.9	04/10/07 43.2	07/11/07 41.5	10/03/07 43.8	01/07/08 45.7	04/16/08 44.1	07/07/08 45.2	11/25/08 39	03/03/09 42.3	04/22/09 40.6	07/29/09 44.3	11/04/09 45.1	01/27/10 47.0
GV-02-GVDWID		01/09/07 103	04/10/07 106	07/11/07 98	10/03/07 100	01/07/08 98	04/16/08 97	07/07/08 93.2	11/25/08 93.5	02/04/09 98.8	04/22/09 79.5	07/29/09 91.6	11/04/09 93.2	01/27/10 94.9
ESP-1	12/04/06 262	01/03/07 242	05/14/07 113	07/10/07 94	10/12/07 110	01/23/08 100	04/18/08 102	07/25/08 104	10/30/08 121	01/29/09 113	04/16/09 130	NS	11/10/09 173	NS
ESP-2	12/04/06 29.6	01/03/07 31.3	05/14/07 28.4	07/10/07 28.6	10/12/07 30	01/23/08 30	04/18/08 27.6	07/25/08 26.8	10/30/08 30.1	01/29/09 27.8	04/16/09 28.2	NS	11/10/09 28.9	NS
ESP-3	12/04/06 36.2	01/03/07 37.5	05/14/07 36.6	07/10/07 36.6	10/12/07 40	01/23/08 30	04/18/08 35.7	07/25/08 34	10/30/08 36.8	01/29/09 35.2	04/16/09 35.3	NS	11/12/09 39.5	NS
MO-2007-1A				08/08/07 19.2	10/09/07 20	01/24/08 20	04/09/08 21	07/14/08 16.6	10/17/08 17.9	01/16/09 18.1	04/01/09 18.2	07/01/09 16.3	10/22/09 16.6	NS
MO-2007-1B				08/02/07 18.9	10/09/07 30	01/24/08 30	04/09/08 35	07/14/08 39.8	10/17/08 54.3	01/16/09 69.7	04/01/09 84.1	07/01/09 99	10/22/09 143	NS
MO-2007-1C				07/31/07 112	10/09/07 90	01/24/08 140	04/09/08 149	07/14/08 165	10/21/08 146	01/16/09 233	04/01/09 229	07/01/09 236	10/22/09 301	NS
NP-2			06/04/07 41.2	08/13/07 41.7	11/06/07 41.7	01/11/08 43.5	04/17/08 40	07/11/08 40.5	10/09/08 39.7	02/09/09 42.4	04/24/09 32.1	09/17/09 40	NS	
MO-2007-3B				09/10/07 38	10/09/07 40	01/21/08 40	04/16/08 37	07/14/08 37.8	10/22/08 42.4	01/19/09 36.9	04/01/09 38.2	07/27/09 37.2	10/22/09 39.1	01/20/10 37.9
MO-2007-3C				07/05/07 136	10/10/07 110	01/21/08 130	04/15/08 127	07/14/08 126	10/21/08 103	01/19/09 113	04/01/09 115	07/22/09 107	10/22/09 108	01/20/10 103
MO-2007-4A					10/09/07 37	01/22/08 40	04/16/08 33.1	07/17/08 34.8	10/22/08 40.1	01/19/09 35.9	04/02/09 36.7	07/01/09 36.3	10/26/09 35.7	01/26/10 36.0
MO-2007-4B					10/11/07 37.6	01/07/08 60	04/16/08 33.6	07/18/08 35.5	10/22/08 37.4	01/21/09 32.9	04/02/09 34.6	07/01/09 34.7	10/26/09 34.5	01/26/10 34.1
MO-2007-4C				08/16/07 78.7	10/12/07 80.1	01/22/08 80	04/16/08 80	07/18/08 78.6	10/22/08 84.9	01/21/09 78.5	04/02/09 81	07/01/09 82.7	10/26/09 83.9	01/26/10 83.2
MO-2007-6A					10/02/07 26.5	01/22/08 30	04/18/08 20.5	07/24/08 16.9	10/23/08 18.6	01/22/09 26.9	04/02/09 23.7	07/22/09 19.8	10/26/09 23.5	01/20/10 24.6
MO-2007-6B					10/04/07 93.6	01/22/08 80	04/17/08 90.4	07/24/08 81.5	10/23/08 63.2	01/22/09 84.5	04/02/09 75.7	07/22/09 63.5	10/26/09 62.1	01/20/10 69.7
MO-2009-1											04/24/09 62.1	07/29/09 97.7	11/03/09 109	01/25/10 82.1

FIGURES

FIGURE C.1
SULFATE CONCENTRATION OVER TIME FOR WELLS
MO-2007-4A, MO-2007-4B, MO-2007-4C, AND CW-6







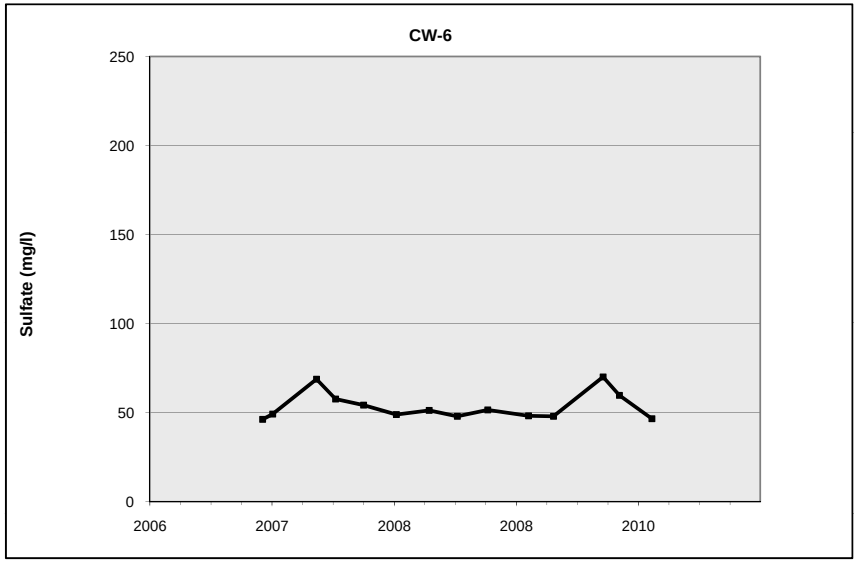
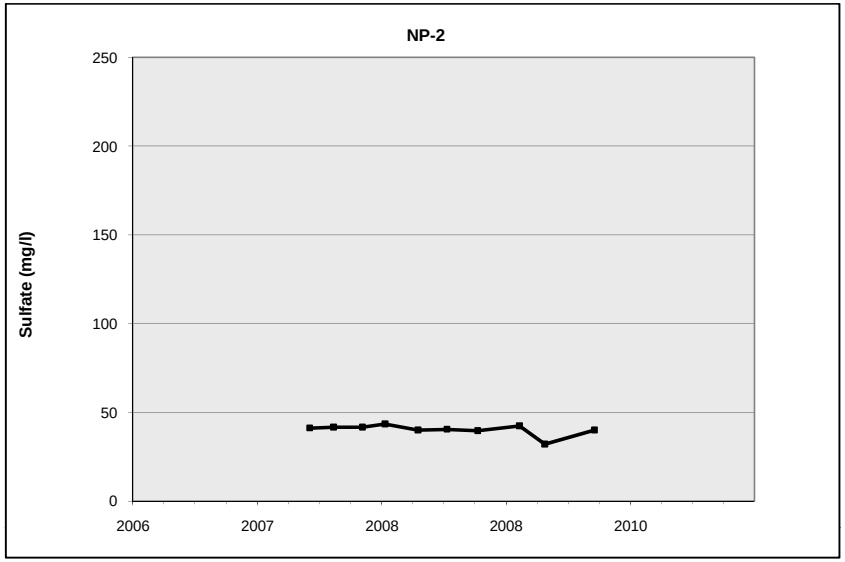
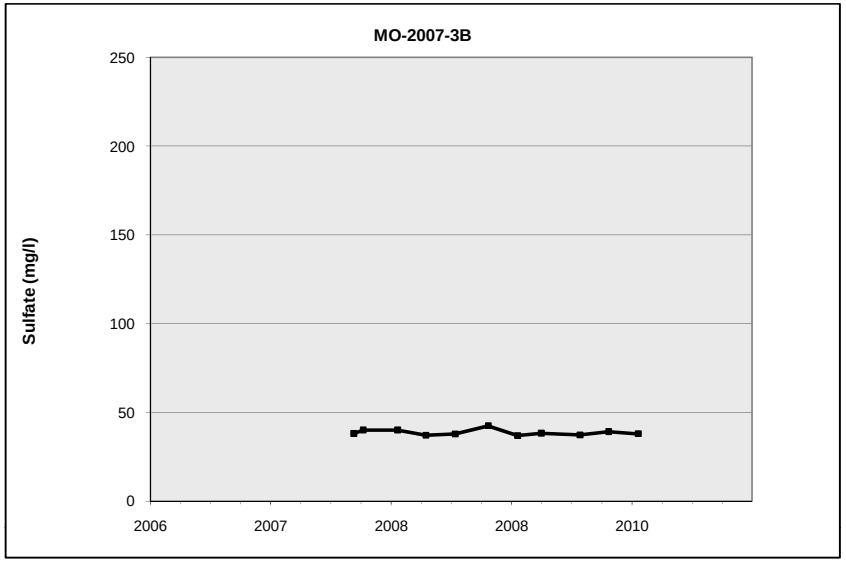
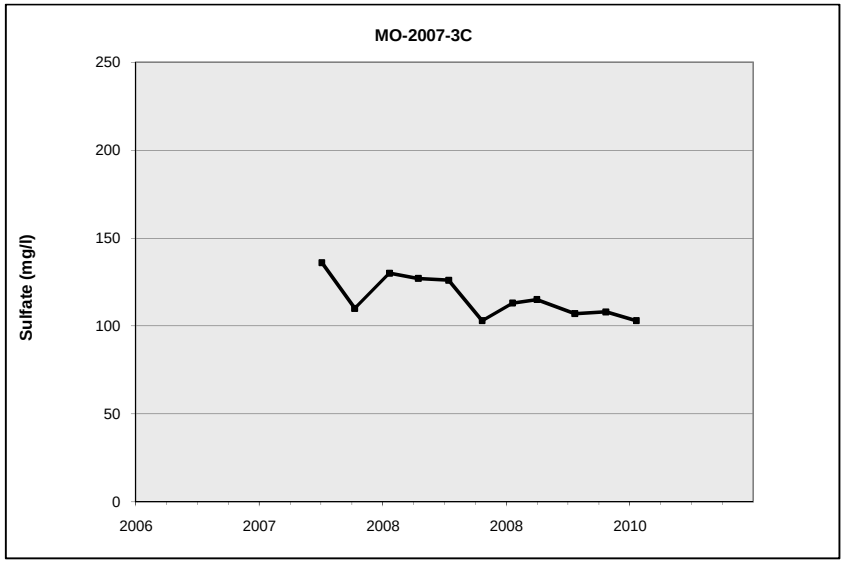


FIGURE C.2
SULFATE CONCENTRATION OVER TIME FOR WELLS
NP-2, MO-2007-3B, MO-2007-3C, AND CW-9







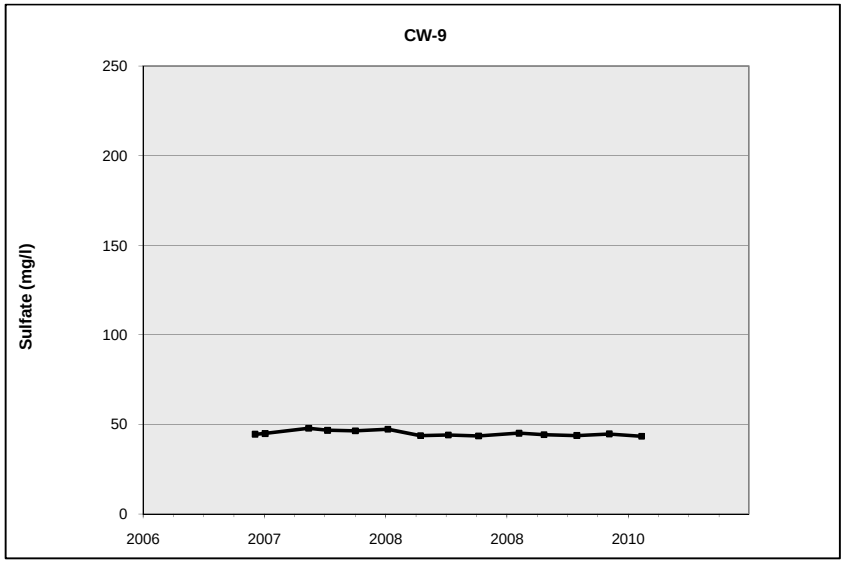


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FIGURE C.3
SULFATE CONCENTRATION OVER TIME FOR WELLS MO-2009-1 AND CW-10

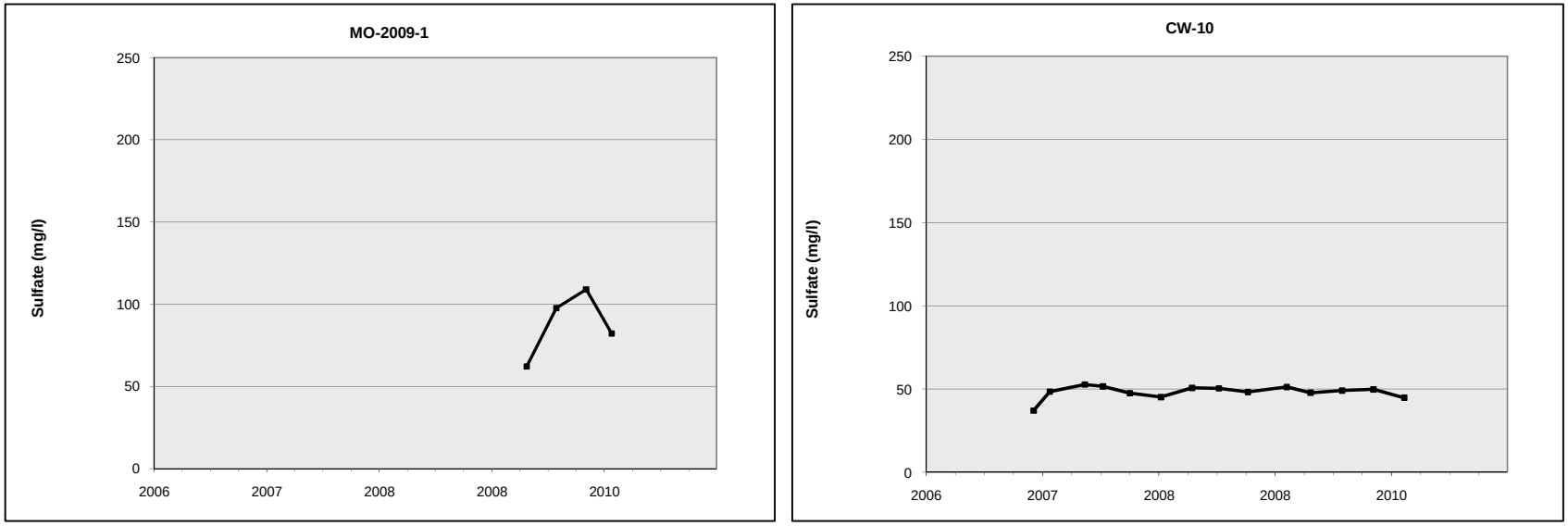

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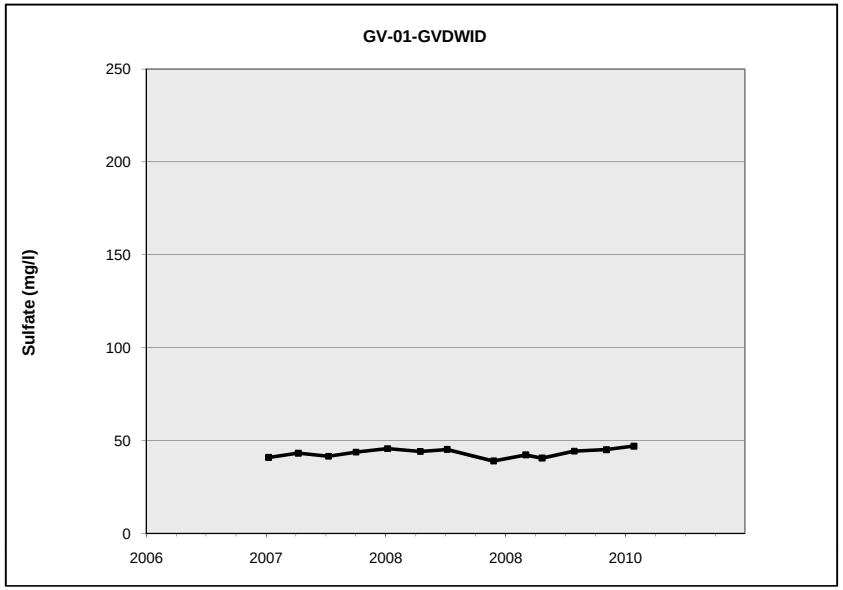
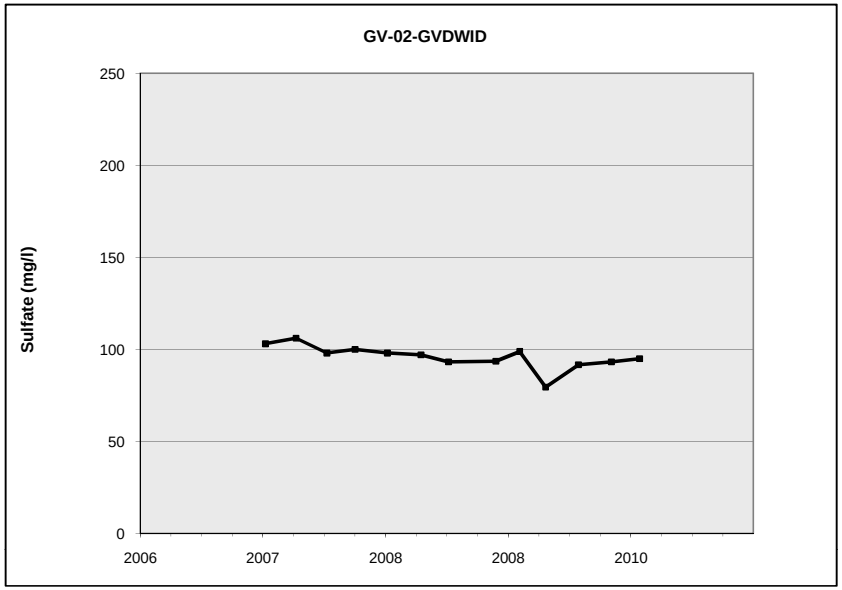
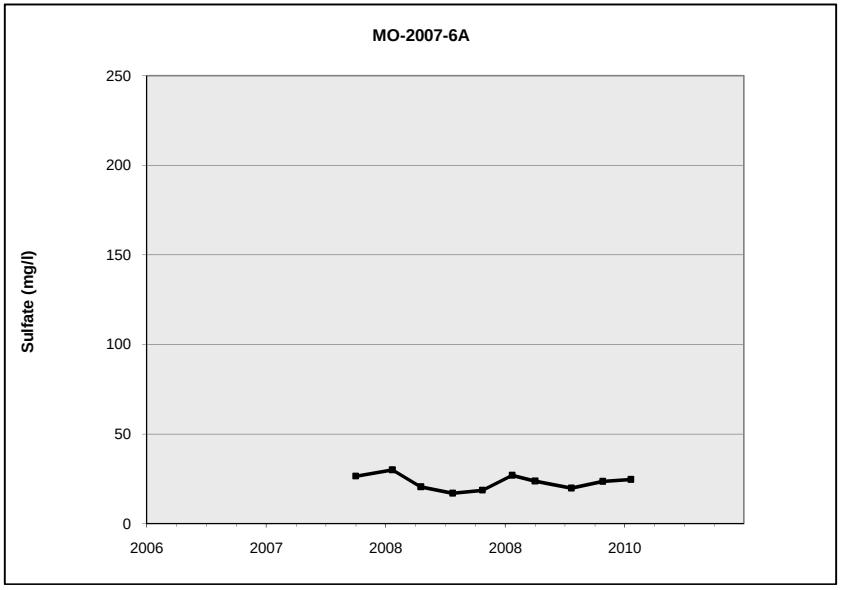
FIGURE C.4
SULFATE CONCENTRATION OVER TIME FOR WELLS
GV-01-GVDWID, GV-02-GVDWID, MO-2007-6A, AND MO-2007-6B







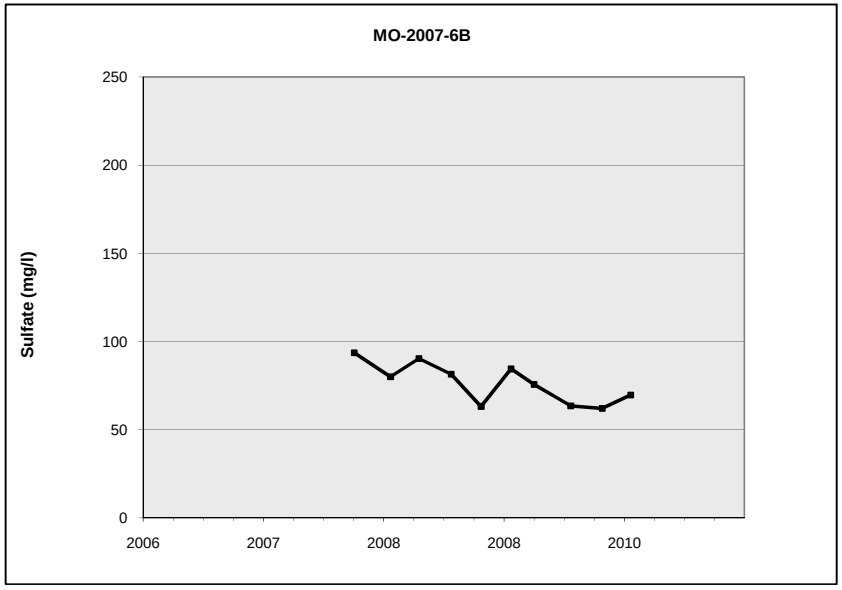


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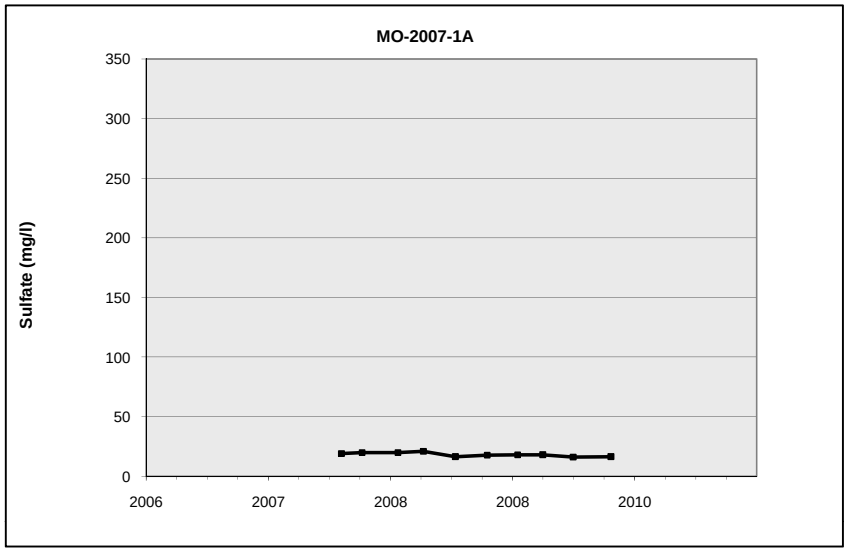
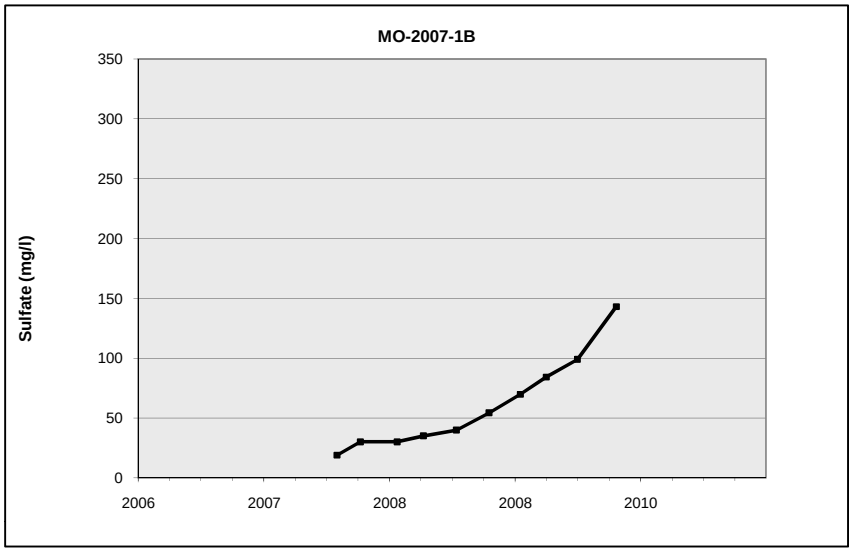
FIGURE C.5
SULFATE CONCENTRATION OVER TIME FOR WELLS
MO-2007-1A, MO-2007-1B, AND MO-2007-1C





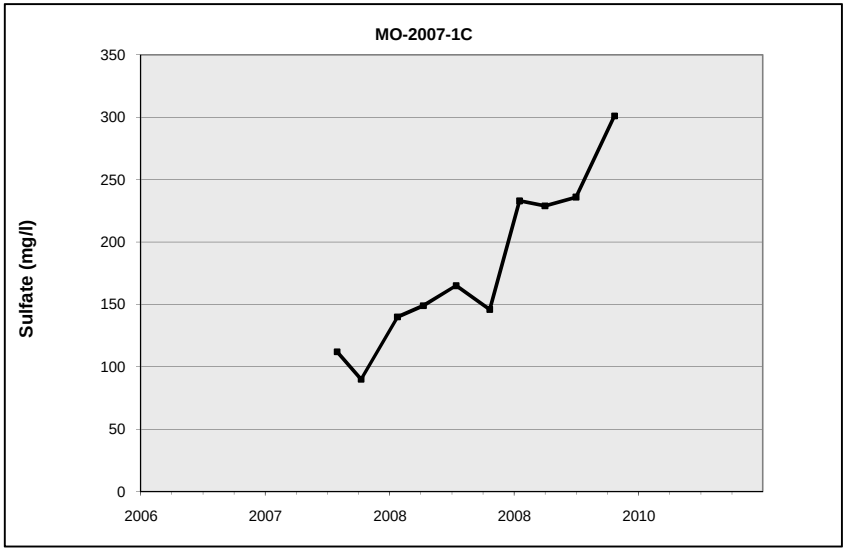


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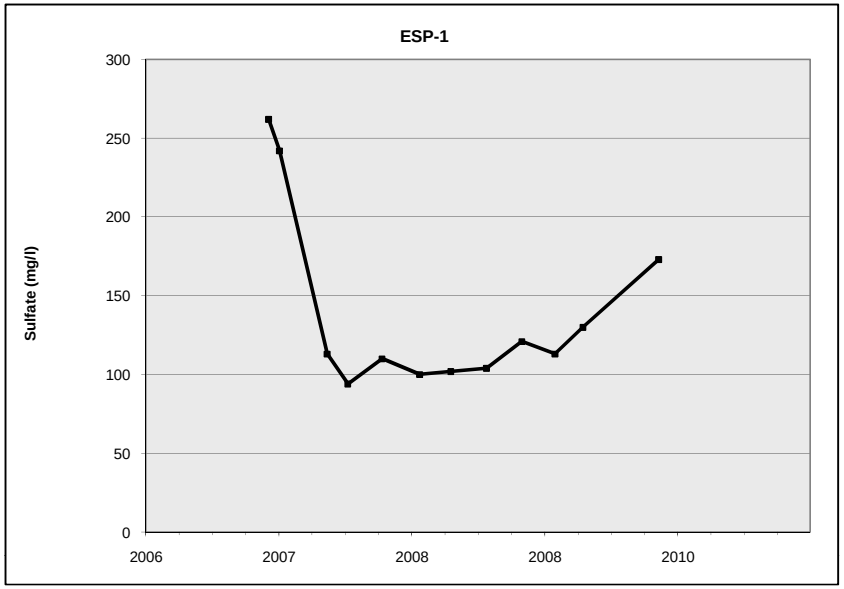
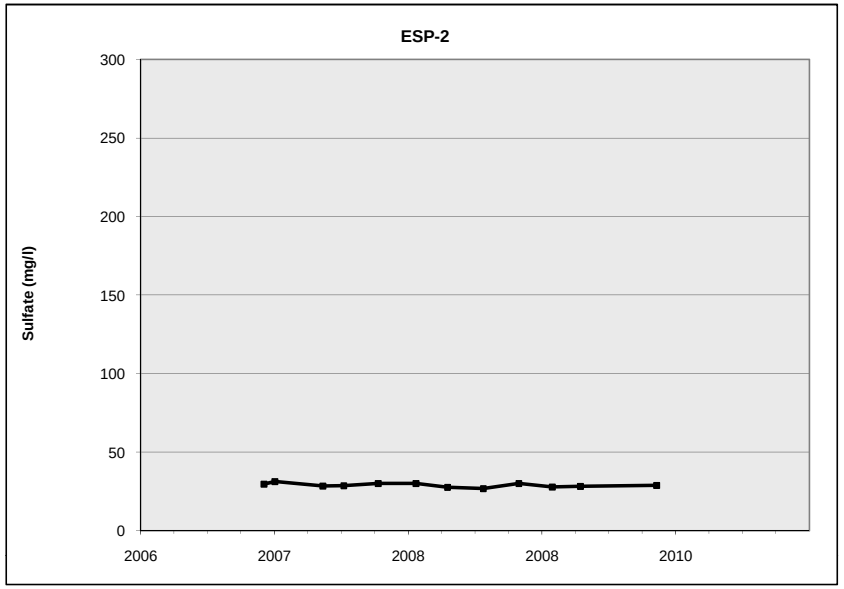
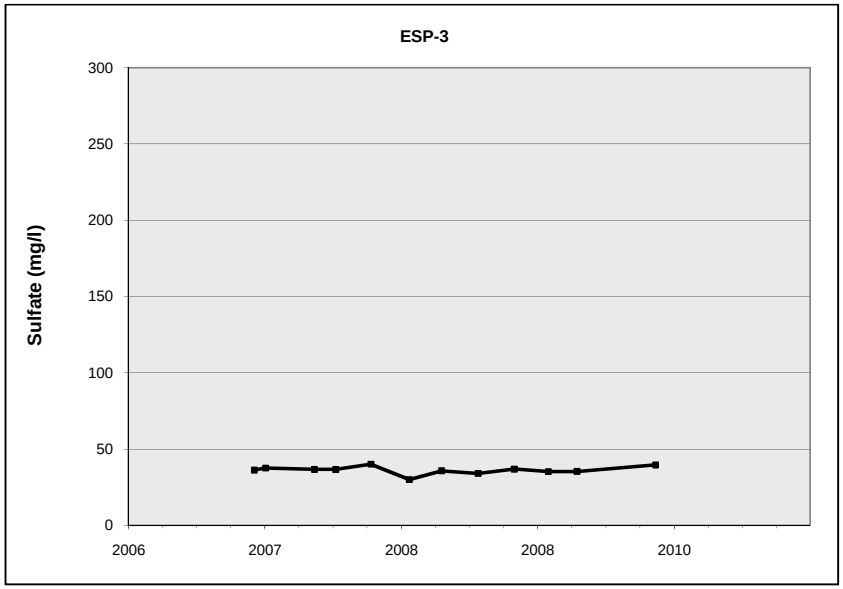
FIGURE C.6
SULFATE CONCENTRATION OVER TIME FOR WELLS
ESP-1, ESP-2, AND ESP-3







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APPENDIX D

TIME SERIES GRAPHS OF GROUNWATER ELEVATION

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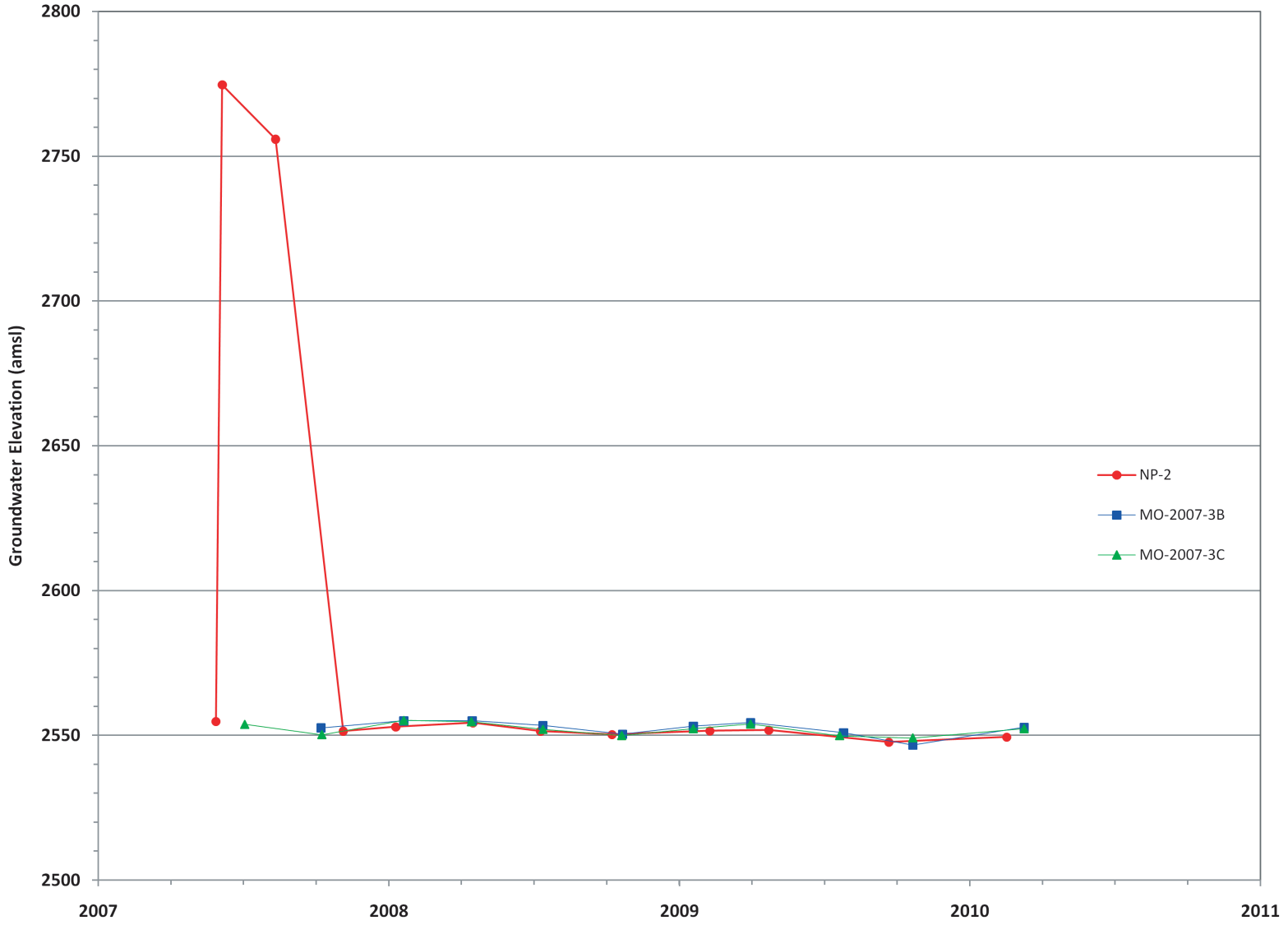

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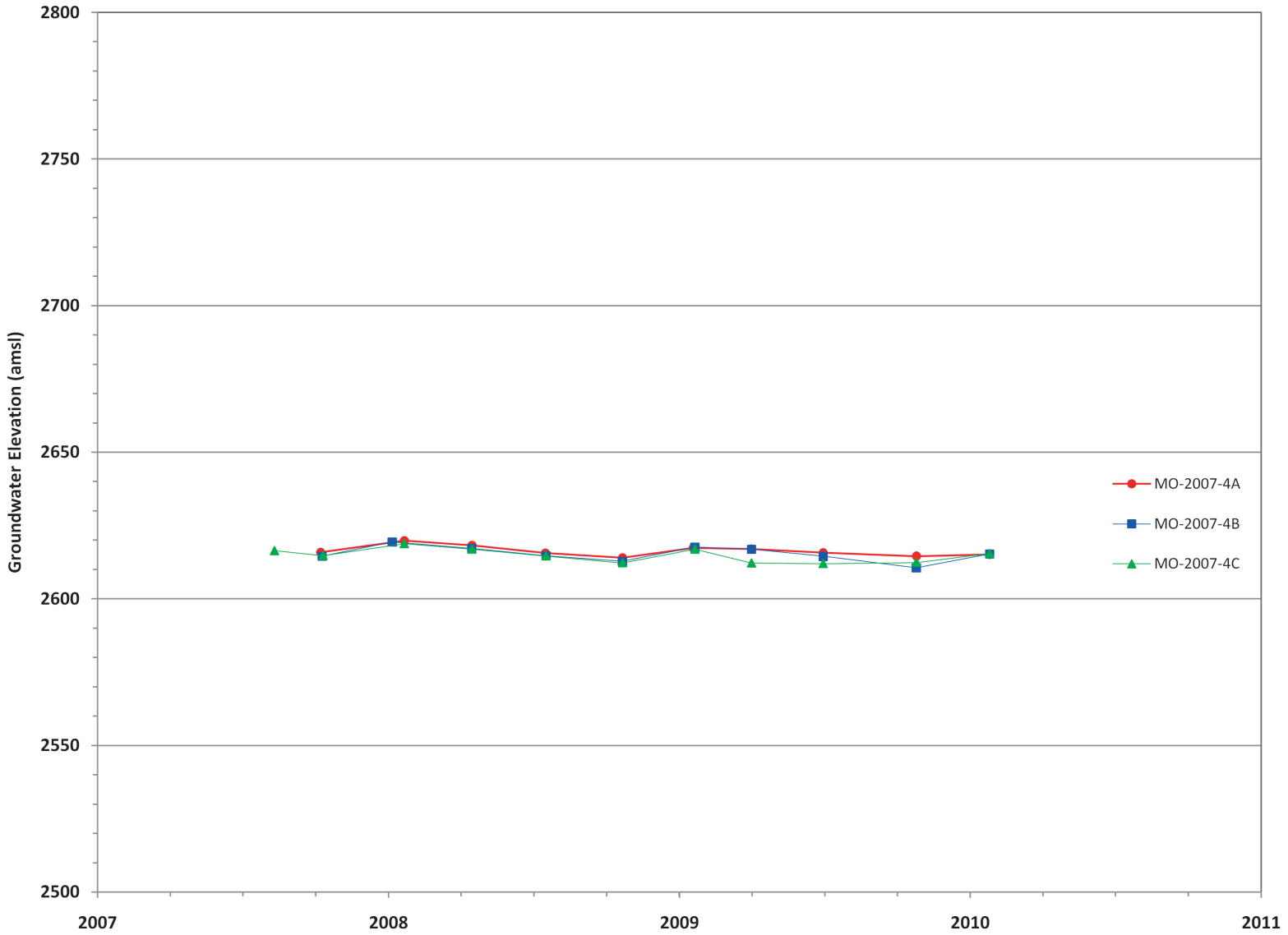
File ID 055039-012

Date 3/17/10

Figure D.1
Groundwater Elevation over Time
for Sentinel Wells NP-2, MO-2007-3B,
and MO-2007-3C



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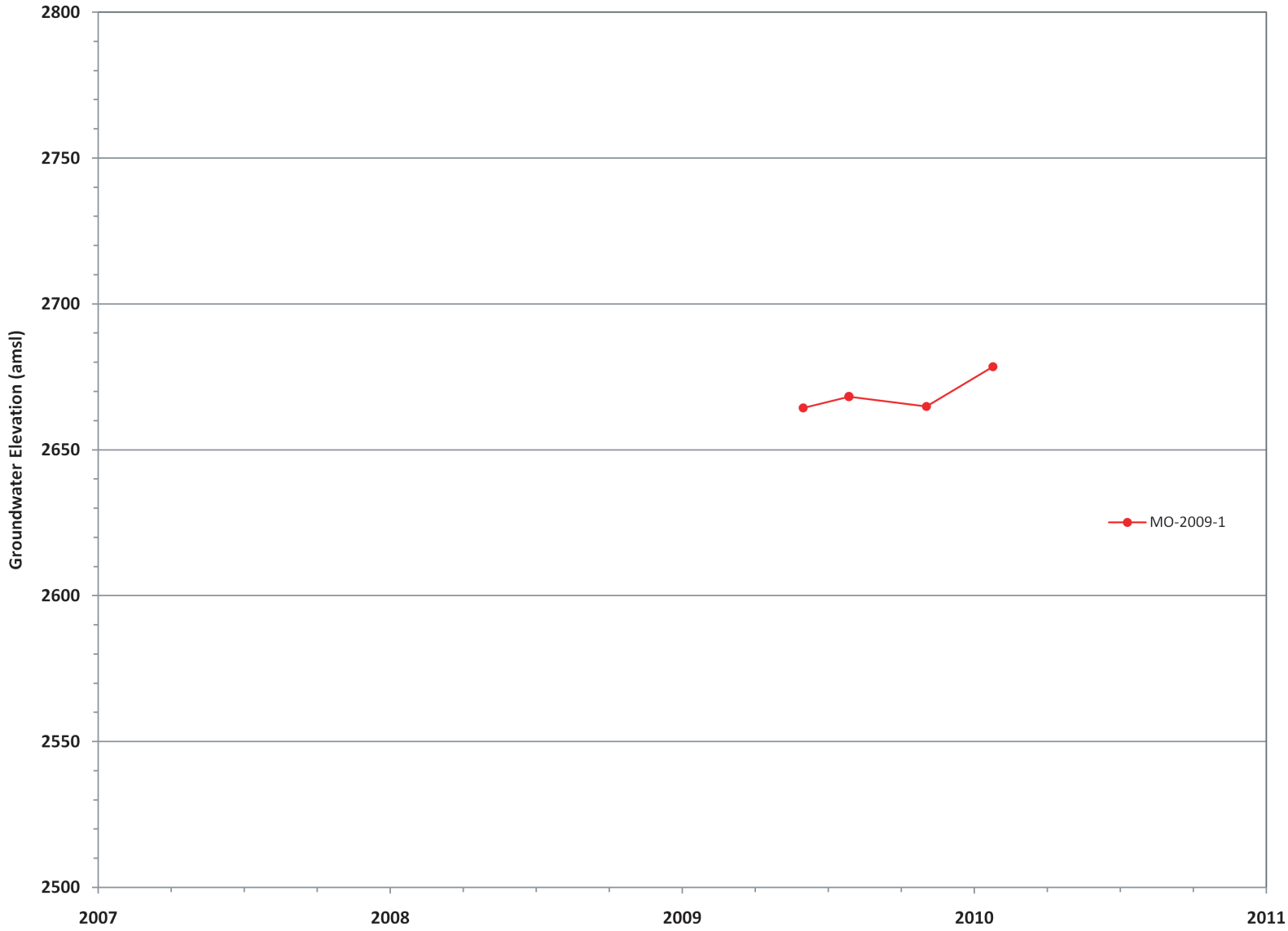
File ID 055039-013

Date 3/17/10

Figure D.2
Groundwater Elevation over Time
for Sentinel Wells MO-2007-4A,
MO-2007-4B, and MO-2007-4C



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Date 3/17/10

Figure D.3
Groundwater Elevation over Time
for Sentinel Well MO-2009-1

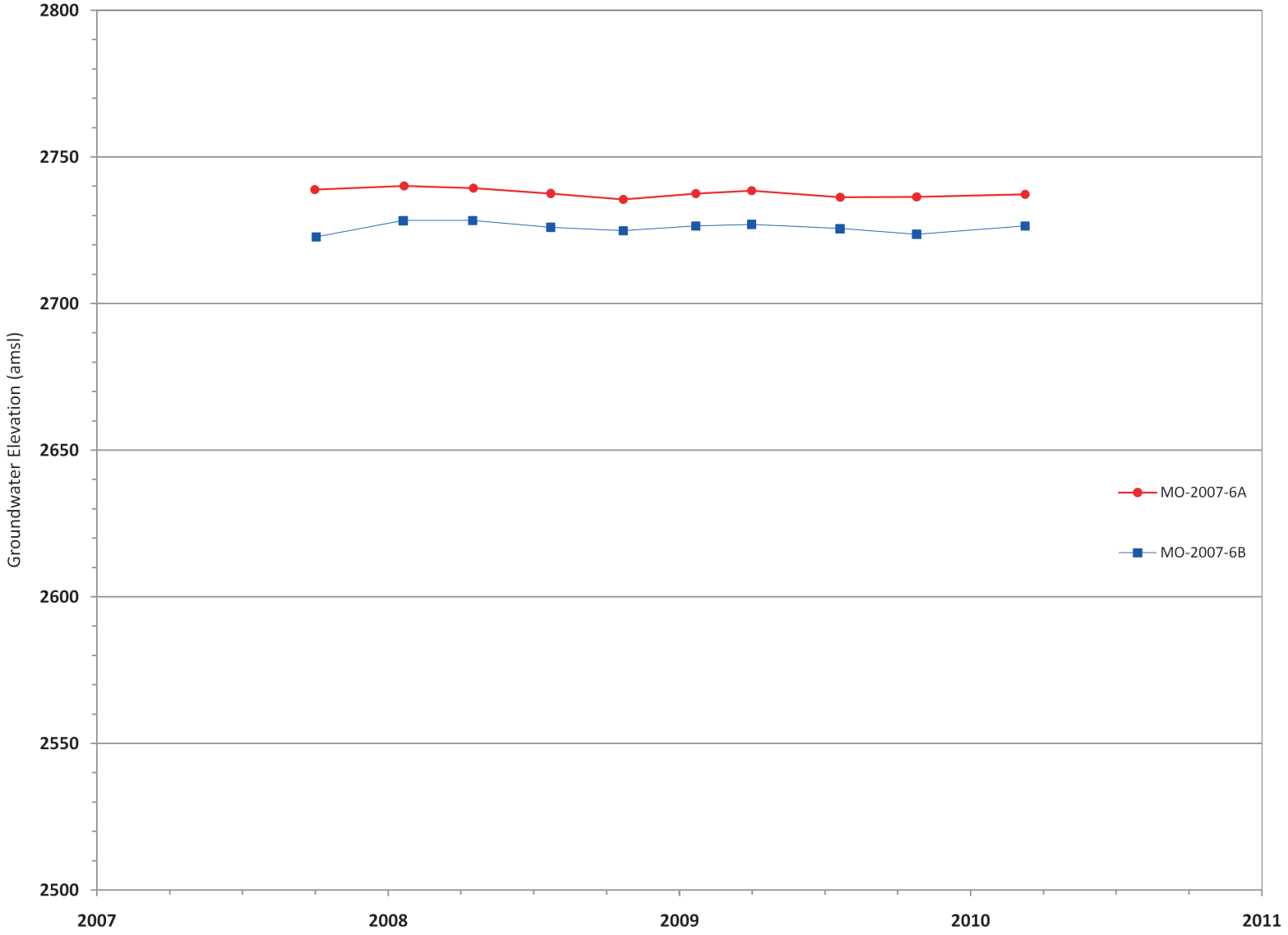

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Figure D.4
Groundwater Elevation over Time
for Sentinel Well MO-2007-6A and
MO-2007-6B