



Chino Mines Company  
Box 10  
Bayard, NM 88023

December 16, 2013

**Certified Mail #7012305000053967824**  
**Return Receipt Requested**

Erika Schwender, Director  
New Mexico Environment Department  
Resource Protection Division  
P.O. Box 5469  
Santa Fe, New Mexico 87502

Dear Ms. Schwender:

**Re: Groundhog No. 5 Stockpile Site Investigation**  
**Hanover and Whitewater Creeks Investigation Units - Chino AOC**

The New Mexico Environment Department (NMED) approved Freeport-McMoRan Chino Mines Company's (Chino) Groundhog No. 5 Stockpile Site Investigation Report Addendum under the Hanover/Whitewater Creeks Investigation Unit under the Chino Administrative Order on Consent (AOC) in a letter dated May 8, 2009. In the approval letter, NMED also requested that Chino collect shallow subsurface water quality data from monitoring point GH-97-04 located adjacent to the toe of the stockpile, as well as groundwater quality data from a monitoring location GH-97-02 located further down gradient in Bayard Canyon. Chino submitted these data, as requested, in a letter dated January 21, 2011. In response, NMED requested in a letter dated February 23, 2011, that Chino continue annual monitoring of the stockpile subsurface collection system in order to obtain a more representative seepage sample, with the goal of demonstrating that stockpile seepage meets applicable groundwater quality standards.

Drought conditions in 2011 and 2012 prevented successful sample collection until this year's higher precipitation season in which Chino was able to successfully collect seepage samples. These results are summarized in the attached table. Also attached are the analytical laboratory reports for the 2013 water samples.

The New Mexico Energy, Minerals and Natural Resources Department, Mining and Mineral Division (MMD) has approved two extension requests by Chino under Permit GR009RE for the Lucky Bill Groundhog Mine No. 5 site since 2009 for completion of reclamation activities which will remain in effect until June 2014. These extension periods have been necessary for Chino to sequence the MMD reclamation process with the AOC. Chino looks forward to discussing with NMED the next steps that would allow both AOC and MMD requirements to be completed for the Groundhog No. 5 Stockpile.

Please contact Mr. Ned Hall at (520) 393-2292 if you have any questions regarding this submittal.

Sincerely,

Sherry Burt-Kested, Manager  
Environmental Services

SBK:pp  
Attachments

c: Matt Schultz, NMED  
Joseph Fox, NMED  
Jerry Schoepfner, NMED  
Chris Eustice, MMD  
Holland Shepard, MMD  
Petra Sanchez, US EPA  
Ned Hall, Freeport-McMoRan Copper & Gold Inc. (e-mail)

20131216-004

9/12  
DP-526  
Groundwater



One Government Gulch - PO Box 929      Kellogg ID 83837-0929      (208) 784-1258      Fax (208) 783-0891

Freeport McMoRan - Chino Mines PO Box 10 Bayard, NM 88023	<b>Project Name: Chino Routine</b> Work Order: W310400 Reported: 02-Oct-13 16:07
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**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received
GH97-04	W310400-01	Water	12-Sep-13 11:35	JKF	17-Sep-2013

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.  
Sample preparation is defined by the client as per their Data Quality Objectives.  
This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.  
The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.



One Government Gulch - PO Box 929

Kellogg ID 83837-0929

(208) 784-1258

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Freeport McMoRan - Chino Mines  
PO Box 10  
Bayard, NM 88023

Project Name: Chino Routine  
Work Order: W310400  
Reported: 02-Oct-13 16:07

Client Sample ID: GH97-04

SVL Sample ID: W310400-01 (Water)

Sample Report Page 1 of 1

Sampled: 12-Sep-13 11:35  
Received: 17-Sep-13  
Sampled By: JKF

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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**Metals (Total Recoverable--reportable as Total per 40 CFR 136)**

EPA 200.7	Aluminum	< 0.080	mg/L	0.080	0.016		W338134	TJK	10/02/13 11:43	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.004		W338134	TJK	10/02/13 11:43	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0004		W338134	TJK	10/02/13 11:43	
EPA 200.7	Calcium	551	mg/L	0.200	0.075	10	W338134	TJK	10/02/13 12:03	D2,M3
EPA 200.7	Chromium	< 0.0060	mg/L	0.0060	0.0004		W338134	TJK	10/02/13 11:43	
EPA 200.7	Cobalt	< 0.0060	mg/L	0.0060	0.0003		W338134	TJK	10/02/13 11:43	
EPA 200.7	Copper	0.010	mg/L	0.010	0.003		W338134	TJK	10/02/13 11:43	
EPA 200.7	Iron	< 0.060	mg/L	0.060	0.010		W338134	TJK	10/02/13 11:43	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0017		W338134	TJK	10/02/13 11:43	
EPA 200.7	Magnesium	83.8	mg/L	0.060	0.020		W338134	TJK	10/02/13 11:43	M3
EPA 200.7	Manganese	< 0.0040	mg/L	0.0040	0.0006		W338134	TJK	10/02/13 11:43	
EPA 200.7	Nickel	0.010	mg/L	0.010	0.002		W338134	TJK	10/02/13 11:43	
EPA 200.7	Potassium	14.3	mg/L	0.50	0.06		W338134	TJK	10/02/13 11:43	
EPA 200.7	Sodium	37.9	mg/L	0.50	0.06		W338134	TJK	10/02/13 11:43	
EPA 200.7	Zinc	0.157	mg/L	0.0100	0.0012		W338134	TJK	10/02/13 11:43	

**Metals (Dissolved)**

EPA 200.7	Aluminum	< 0.080	mg/L	0.080	0.031		W338139	TJK	10/02/13 14:25	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.008		W338139	TJK	10/02/13 14:25	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0007		W338139	TJK	10/02/13 14:25	
EPA 200.7	Calcium	535	mg/L	0.040	0.015		W338139	TJK	10/02/13 14:25	
EPA 200.7	Chromium	< 0.0060	mg/L	0.0060	0.0008		W338139	TJK	10/02/13 14:25	
EPA 200.7	Cobalt	< 0.0060	mg/L	0.0060	0.0007		W338139	TJK	10/02/13 14:25	
EPA 200.7	Copper	< 0.010	mg/L	0.010	0.006		W338139	TJK	10/02/13 14:25	
EPA 200.7	Iron	< 0.060	mg/L	0.060	0.019		W338139	TJK	10/02/13 14:25	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0034		W338139	TJK	10/02/13 14:25	
EPA 200.7	Magnesium	78.5	mg/L	0.060	0.039		W338139	TJK	10/02/13 14:25	
EPA 200.7	Manganese	< 0.0040	mg/L	0.0040	0.0012		W338139	TJK	10/02/13 14:25	
EPA 200.7	Nickel	< 0.010	mg/L	0.010	0.003		W338139	TJK	10/02/13 14:25	
EPA 200.7	Potassium	13.0	mg/L	0.50	0.11		W338139	TJK	10/02/13 14:25	
EPA 200.7	Sodium	33.9	mg/L	0.50	0.11		W338139	TJK	10/02/13 14:25	
EPA 200.7	Zinc	0.157	mg/L	0.0100	0.0025		W338139	TJK	10/02/13 14:25	

**Classical Chemistry Parameters**

SM 2320B/2310B	Bicarbonate	83.7	mg/L as CaCO3	1.0			W338131	DKS	09/18/13 10:36	
SM 2320B/2310B	Carbonate	< 1.0	mg/L as CaCO3	1.0			W338131	DKS	09/18/13 10:36	
SM 2320B/2310B	Total Alkalinity	83.7	mg/L as CaCO3	1.0			W338131	DKS	09/18/13 10:36	
SM 2540 C	Total Diss. Solids	2580	mg/L	40			W338156	RS	09/18/13 09:00	D1

**Anions by Ion Chromatography**

EPA 300.0	Chloride	3.90	mg/L	1.00	0.30	5	W339231	AEW	09/25/13 20:43	D1
EPA 300.0	Fluoride	1.19	mg/L	0.50	0.08	5	W339231	AEW	09/25/13 20:43	D1
EPA 300.0	Sulfate as SO4	1660	mg/L	15.0	3.30	50	W339231	AEW	09/25/13 20:53	D2

**Cation/Anion Balance and TDS Ratios**

Cation Sum: 35.0 meq/L    Anion Sum: 36.4 meq/L    C/A Balance: -2.01 %    Calculated TDS: 2389    TDS/cTDS: 1.08

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Kirby Gray  
Technical Director



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Kellogg ID 83837-0929

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Fax (208) 783-0891

Freeport McMoRan - Chino Mines  
 PO Box 10  
 Bayard, NM 88023

**Project Name: Chino Routine**  
 Work Order: **W3I0400**  
 Reported: 02-Oct-13 16:07

**Quality Control - BLANK Data**

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
<b>Metals (Total Recoverable--reportable as Total per 40 CFR 136)</b>								
EPA 200.7	Aluminum	mg/L	<0.080	0.016	0.080	W338134	02-Oct-13	
EPA 200.7	Arsenic	mg/L	<0.025	0.004	0.025	W338134	02-Oct-13	
EPA 200.7	Cadmium	mg/L	<0.0020	0.0004	0.0020	W338134	02-Oct-13	
EPA 200.7	Calcium	mg/L	<0.040	0.008	0.040	W338134	02-Oct-13	
EPA 200.7	Chromium	mg/L	<0.0060	0.0004	0.0060	W338134	02-Oct-13	
EPA 200.7	Cobalt	mg/L	<0.0060	0.0003	0.0060	W338134	02-Oct-13	
EPA 200.7	Copper	mg/L	<0.010	0.003	0.010	W338134	02-Oct-13	
EPA 200.7	Iron	mg/L	<0.060	0.010	0.060	W338134	02-Oct-13	
EPA 200.7	Lead	mg/L	<0.0075	0.0017	0.0075	W338134	02-Oct-13	
EPA 200.7	Magnesium	mg/L	<0.060	0.020	0.060	W338134	02-Oct-13	
EPA 200.7	Manganese	mg/L	<0.0040	0.0006	0.0040	W338134	02-Oct-13	
EPA 200.7	Nickel	mg/L	<0.010	0.002	0.010	W338134	02-Oct-13	
EPA 200.7	Potassium	mg/L	<0.50	0.06	0.50	W338134	02-Oct-13	
EPA 200.7	Sodium	mg/L	<0.50	0.06	0.50	W338134	02-Oct-13	
EPA 200.7	Zinc	mg/L	<0.0100	0.0012	0.0100	W338134	02-Oct-13	

**Metals (Dissolved)**

EPA 200.7	Aluminum	mg/L	<0.080	0.031	0.080	W338139	02-Oct-13	
EPA 200.7	Arsenic	mg/L	<0.025	0.008	0.025	W338139	02-Oct-13	
EPA 200.7	Cadmium	mg/L	<0.0020	0.0007	0.0020	W338139	02-Oct-13	
EPA 200.7	Calcium	mg/L	<0.040	0.015	0.040	W338139	02-Oct-13	
EPA 200.7	Chromium	mg/L	<0.0060	0.0008	0.0060	W338139	02-Oct-13	
EPA 200.7	Cobalt	mg/L	<0.0060	0.0007	0.0060	W338139	02-Oct-13	
EPA 200.7	Copper	mg/L	<0.010	0.006	0.010	W338139	02-Oct-13	
EPA 200.7	Iron	mg/L	<0.060	0.019	0.060	W338139	02-Oct-13	
EPA 200.7	Lead	mg/L	<0.0075	0.0034	0.0075	W338139	02-Oct-13	
EPA 200.7	Magnesium	mg/L	<0.060	0.039	0.060	W338139	02-Oct-13	
EPA 200.7	Manganese	mg/L	<0.0040	0.0012	0.0040	W338139	02-Oct-13	
EPA 200.7	Nickel	mg/L	<0.010	0.003	0.010	W338139	02-Oct-13	
EPA 200.7	Potassium	mg/L	<0.50	0.11	0.50	W338139	02-Oct-13	
EPA 200.7	Sodium	mg/L	<0.50	0.11	0.50	W338139	02-Oct-13	
EPA 200.7	Zinc	mg/L	<0.0100	0.0025	0.0100	W338139	02-Oct-13	

**Classical Chemistry Parameters**

SM 2320B/2310B	Total Alkalinity	mg/L as CaCO3	<1.0		1.0	W338131	18-Sep-13	
SM 2320B/2310B	Bicarbonate	mg/L as CaCO3	<1.0		1.0	W338131	18-Sep-13	
SM 2320B/2310B	Carbonate	mg/L as CaCO3	<1.0		1.0	W338131	18-Sep-13	
SM 2540 C	Total Diss. Solids	mg/L	<10		10	W338156	18-Sep-13	

**Anions by Ion Chromatography**

EPA 300.0	Fluoride	mg/L	<0.10	0.02	0.10	W339231	25-Sep-13	
EPA 300.0	Chloride	mg/L	<0.20	0.06	0.20	W339231	25-Sep-13	
EPA 300.0	Sulfate as SO4	mg/L	<0.30	0.07	0.30	W339231	25-Sep-13	

**Quality Control - LABORATORY CONTROL SAMPLE Data**

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
<b>Metals (Total Recoverable--reportable as Total per 40 CFR 136)</b>									
EPA 200.7	Aluminum	mg/L	1.08	1.00	108	85 - 115	W338134	02-Oct-13	
EPA 200.7	Arsenic	mg/L	0.930	1.00	93.0	85 - 115	W338134	02-Oct-13	
EPA 200.7	Cadmium	mg/L	0.896	1.00	89.6	85 - 115	W338134	02-Oct-13	
EPA 200.7	Calcium	mg/L	19.9	20.0	99.7	85 - 115	W338134	02-Oct-13	
EPA 200.7	Chromium	mg/L	0.904	1.00	90.4	85 - 115	W338134	02-Oct-13	
EPA 200.7	Cobalt	mg/L	0.916	1.00	91.6	85 - 115	W338134	02-Oct-13	
EPA 200.7	Copper	mg/L	0.913	1.00	91.3	85 - 115	W338134	02-Oct-13	
EPA 200.7	Iron	mg/L	10.1	10.0	101	85 - 115	W338134	02-Oct-13	

SVL holds the following certifications:

AZ:0538, CA:2080, FL(NELAC):E87993, ID:ID00019 & ID00965 (Microbiology), NV:ID000192007A, WA:C573



Freeport McMoRan - Chino Mines PO Box 10 Bayard, NM 88023	<b>Project Name: Chino Routine</b> Work Order: <b>W310400</b> Reported: 02-Oct-13 16:07
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Quality Control - LABORATORY CONTROL SAMPLE Data (Continued)									
Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes

<b>Metals (Total Recoverable--reportable as Total per 40 CFR 136) (Continued)</b>									
EPA 200.7	Lead	mg/L	0.881	1.00	88.1	85 - 115	W338134	02-Oct-13	
EPA 200.7	Magnesium	mg/L	20.5	20.0	102	85 - 115	W338134	02-Oct-13	
EPA 200.7	Manganese	mg/L	0.904	1.00	90.4	85 - 115	W338134	02-Oct-13	
EPA 200.7	Nickel	mg/L	0.918	1.00	91.8	85 - 115	W338134	02-Oct-13	
EPA 200.7	Potassium	mg/L	20.4	20.0	102	85 - 115	W338134	02-Oct-13	
EPA 200.7	Sodium	mg/L	20.1	19.0	106	85 - 115	W338134	02-Oct-13	
EPA 200.7	Zinc	mg/L	0.878	1.00	87.8	85 - 115	W338134	02-Oct-13	

<b>Metals (Dissolved)</b>									
EPA 200.7	Aluminum	mg/L	0.999	1.00	99.9	85 - 115	W338139	02-Oct-13	
EPA 200.7	Arsenic	mg/L	0.911	1.00	91.1	85 - 115	W338139	02-Oct-13	
EPA 200.7	Cadmium	mg/L	0.908	1.00	90.8	85 - 115	W338139	02-Oct-13	
EPA 200.7	Calcium	mg/L	18.4	20.0	92.2	85 - 115	W338139	02-Oct-13	
EPA 200.7	Chromium	mg/L	0.928	1.00	92.8	85 - 115	W338139	02-Oct-13	
EPA 200.7	Cobalt	mg/L	0.929	1.00	92.9	85 - 115	W338139	02-Oct-13	
EPA 200.7	Copper	mg/L	0.944	1.00	94.4	85 - 115	W338139	02-Oct-13	
EPA 200.7	Iron	mg/L	9.06	10.0	90.6	85 - 115	W338139	02-Oct-13	
EPA 200.7	Lead	mg/L	0.912	1.00	91.2	85 - 115	W338139	02-Oct-13	
EPA 200.7	Magnesium	mg/L	18.7	20.0	93.6	85 - 115	W338139	02-Oct-13	
EPA 200.7	Manganese	mg/L	0.907	1.00	90.7	85 - 115	W338139	02-Oct-13	
EPA 200.7	Nickel	mg/L	0.926	1.00	92.6	85 - 115	W338139	02-Oct-13	
EPA 200.7	Potassium	mg/L	18.7	20.0	93.7	85 - 115	W338139	02-Oct-13	
EPA 200.7	Sodium	mg/L	18.3	19.0	96.1	85 - 115	W338139	02-Oct-13	
EPA 200.7	Zinc	mg/L	0.889	1.00	88.9	85 - 115	W338139	02-Oct-13	

<b>Classical Chemistry Parameters</b>									
SM 2320B/2310B	Total Alkalinity	mg/L as CaCO3	97.5	97.2	100	85 - 115	W338131	18-Sep-13	
SM 2320B/2310B	Bicarbonate	mg/L as CaCO3	97.5	97.2	100	85 - 115	W338131	18-Sep-13	

<b>Anions by Ion Chromatography</b>									
EPA 300.0	Fluoride	mg/L	1.90	2.00	95.0	90 - 110	W339231	25-Sep-13	
EPA 300.0	Chloride	mg/L	2.82	3.00	94.0	90 - 110	W339231	25-Sep-13	
EPA 300.0	Sulfate as SO4	mg/L	9.89	10.0	98.9	90 - 110	W339231	25-Sep-13	

Quality Control - DUPLICATE Data									
Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes

<b>Classical Chemistry Parameters</b>									
SM 2320B/2310B	Total Alkalinity	mg/L as CaCO3	<1.0	<1.0	UDL	20	W338131	18-Sep-13	
SM 2320B/2310B	Bicarbonate	mg/L as CaCO3	<1.0	<1.0	UDL	20	W338131	18-Sep-13	
SM 2320B/2310B	Carbonate	mg/L as CaCO3	<1.0	<1.0	UDL	20	W338131	18-Sep-13	
SM 2540 C	Total Diss. Solids	mg/L	1170	1200	1.9	10	W338156	18-Sep-13	
SM 2540 C	Total Diss. Solids	mg/L	760	746	1.9	10	W338156	18-Sep-13	



Freeport McMoRan - Chino Mines PO Box 10 Bayard, NM 88023	<b>Project Name: Chino Routine</b> Work Order: <b>W3I0400</b> Reported: 02-Oct-13 16:07
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**Quality Control - MATRIX SPIKE Data**

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
<b>Metals (Total Recoverable--reportable as Total per 40 CFR 136)</b>										
EPA 200.7	Aluminum	mg/L	11.8	7.20	1.00	R > 4S	70 - 130	W338134	02-Oct-13	M3
EPA 200.7	Aluminum	mg/L	1.13	<0.080	1.00	113	70 - 130	W338134	02-Oct-13	
EPA 200.7	Arsenic	mg/L	1.01	<0.025	1.00	101	70 - 130	W338134	02-Oct-13	
EPA 200.7	Arsenic	mg/L	1.17	<0.025	1.00	117	70 - 130	W338134	02-Oct-13	
EPA 200.7	Cadmium	mg/L	0.938	<0.0020	1.00	93.8	70 - 130	W338134	02-Oct-13	
EPA 200.7	Cadmium	mg/L	0.936	<0.0020	1.00	93.5	70 - 130	W338134	02-Oct-13	
EPA 200.7	Calcium	mg/L	77.5	58.5	20.0	95.0	70 - 130	W338134	02-Oct-13	
EPA 200.7	Calcium	mg/L	579	551	20.0	R > 4S	70 - 130	W338134	02-Oct-13	D2,M3
EPA 200.7	Chromium	mg/L	0.947	<0.0060	1.00	94.4	70 - 130	W338134	02-Oct-13	
EPA 200.7	Chromium	mg/L	0.964	<0.0060	1.00	96.4	70 - 130	W338134	02-Oct-13	
EPA 200.7	Cobalt	mg/L	0.935	<0.0060	1.00	93.3	70 - 130	W338134	02-Oct-13	
EPA 200.7	Cobalt	mg/L	0.959	<0.0060	1.00	95.9	70 - 130	W338134	02-Oct-13	
EPA 200.7	Copper	mg/L	1.20	0.158	1.00	104	70 - 130	W338134	02-Oct-13	
EPA 200.7	Copper	mg/L	1.15	0.010	1.00	114	70 - 130	W338134	02-Oct-13	
EPA 200.7	Iron	mg/L	16.9	6.69	10.0	102	70 - 130	W338134	02-Oct-13	
EPA 200.7	Iron	mg/L	9.96	<0.060	10.0	99.5	70 - 130	W338134	02-Oct-13	
EPA 200.7	Lead	mg/L	0.954	0.0278	1.00	92.6	70 - 130	W338134	02-Oct-13	
EPA 200.7	Lead	mg/L	0.947	<0.0075	1.00	94.7	70 - 130	W338134	02-Oct-13	
EPA 200.7	Magnesium	mg/L	31.5	10.9	20.0	103	70 - 130	W338134	02-Oct-13	
EPA 200.7	Magnesium	mg/L	102	83.8	20.0	90.2	70 - 130	W338134	02-Oct-13	M3
EPA 200.7	Manganese	mg/L	1.16	0.193	1.00	96.6	70 - 130	W338134	02-Oct-13	
EPA 200.7	Manganese	mg/L	0.969	<0.0040	1.00	96.9	70 - 130	W338134	02-Oct-13	
EPA 200.7	Nickel	mg/L	0.974	<0.010	1.00	96.6	70 - 130	W338134	02-Oct-13	
EPA 200.7	Nickel	mg/L	1.09	0.010	1.00	108	70 - 130	W338134	02-Oct-13	
EPA 200.7	Potassium	mg/L	27.0	5.93	20.0	105	70 - 130	W338134	02-Oct-13	
EPA 200.7	Potassium	mg/L	35.4	14.3	20.0	106	70 - 130	W338134	02-Oct-13	
EPA 200.7	Sodium	mg/L	29.5	8.96	19.0	108	70 - 130	W338134	02-Oct-13	
EPA 200.7	Sodium	mg/L	57.8	37.9	19.0	105	70 - 130	W338134	02-Oct-13	
EPA 200.7	Zinc	mg/L	0.945	0.0612	1.00	88.3	70 - 130	W338134	02-Oct-13	
EPA 200.7	Zinc	mg/L	1.04	0.157	1.00	88.1	70 - 130	W338134	02-Oct-13	
<b>Metals (Dissolved)</b>										
EPA 200.7	Aluminum	mg/L	1.05	<0.080	1.00	105	70 - 130	W338139	02-Oct-13	
EPA 200.7	Aluminum	mg/L	1.04	<0.080	1.00	104	70 - 130	W338139	02-Oct-13	
EPA 200.7	Arsenic	mg/L	0.989	<0.025	1.00	98.9	70 - 130	W338139	02-Oct-13	
EPA 200.7	Arsenic	mg/L	1.16	0.155	1.00	100	70 - 130	W338139	02-Oct-13	
EPA 200.7	Cadmium	mg/L	0.962	<0.0020	1.00	96.2	70 - 130	W338139	02-Oct-13	
EPA 200.7	Cadmium	mg/L	0.955	<0.0020	1.00	95.5	70 - 130	W338139	02-Oct-13	
EPA 200.7	Calcium	mg/L	76.3	56.0	20.0	102	70 - 130	W338139	02-Oct-13	
EPA 200.7	Calcium	mg/L	50.3	29.5	20.0	104	70 - 130	W338139	02-Oct-13	
EPA 200.7	Chromium	mg/L	0.961	<0.0060	1.00	96.1	70 - 130	W338139	02-Oct-13	
EPA 200.7	Chromium	mg/L	0.959	<0.0060	1.00	95.8	70 - 130	W338139	02-Oct-13	
EPA 200.7	Cobalt	mg/L	0.964	<0.0060	1.00	96.4	70 - 130	W338139	02-Oct-13	
EPA 200.7	Cobalt	mg/L	0.959	<0.0060	1.00	95.9	70 - 130	W338139	02-Oct-13	
EPA 200.7	Copper	mg/L	1.01	0.035	1.00	97.4	70 - 130	W338139	02-Oct-13	
EPA 200.7	Copper	mg/L	0.998	<0.010	1.00	99.8	70 - 130	W338139	02-Oct-13	
EPA 200.7	Iron	mg/L	9.46	<0.060	10.0	94.4	70 - 130	W338139	02-Oct-13	
EPA 200.7	Iron	mg/L	9.40	<0.060	10.0	94.0	70 - 130	W338139	02-Oct-13	
EPA 200.7	Lead	mg/L	0.975	<0.0075	1.00	97.5	70 - 130	W338139	02-Oct-13	
EPA 200.7	Lead	mg/L	0.967	<0.0075	1.00	96.7	70 - 130	W338139	02-Oct-13	
EPA 200.7	Magnesium	mg/L	29.2	9.74	20.0	97.0	70 - 130	W338139	02-Oct-13	
EPA 200.7	Magnesium	mg/L	28.9	9.43	20.0	97.6	70 - 130	W338139	02-Oct-13	
EPA 200.7	Manganese	mg/L	0.986	0.0423	1.00	94.3	70 - 130	W338139	02-Oct-13	
EPA 200.7	Manganese	mg/L	0.943	<0.0040	1.00	94.3	70 - 130	W338139	02-Oct-13	
EPA 200.7	Nickel	mg/L	0.955	<0.010	1.00	95.5	70 - 130	W338139	02-Oct-13	
EPA 200.7	Nickel	mg/L	0.959	<0.010	1.00	95.9	70 - 130	W338139	02-Oct-13	
EPA 200.7	Potassium	mg/L	23.9	4.41	20.0	97.5	70 - 130	W338139	02-Oct-13	



Freeport McMoRan - Chino Mines  
 PO Box 10  
 Bayard, NM 88023

**Project Name: Chino Routine**  
 Work Order: W310400  
 Reported: 02-Oct-13 16:07

**Quality Control - MATRIX SPIKE Data (Continued)**

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
<b>Metals (Dissolved) (Continued)</b>										
EPA 200.7	Potassium	mg/L	23.7	4.21	20.0	97.7	70 - 130	W338139	02-Oct-13	
EPA 200.7	Sodium	mg/L	27.1	8.59	19.0	97.6	70 - 130	W338139	02-Oct-13	
EPA 200.7	Sodium	mg/L	65.5	45.6	19.0	105	70 - 130	W338139	02-Oct-13	
EPA 200.7	Zinc	mg/L	0.946	<0.0100	1.00	94.6	70 - 130	W338139	02-Oct-13	
EPA 200.7	Zinc	mg/L	0.931	<0.0100	1.00	93.1	70 - 130	W338139	02-Oct-13	
<b>Anions by Ion Chromatography</b>										
EPA 300.0	Fluoride	mg/L	2.14	0.12	2.00	101	90 - 110	W339231	25-Sep-13	
EPA 300.0	Fluoride	mg/L	2.29	0.38	2.00	95.7	90 - 110	W339231	25-Sep-13	
EPA 300.0	Chloride	mg/L	224	228	3.00	R > 4S	90 - 110	W339231	25-Sep-13	D2,M3
EPA 300.0	Chloride	mg/L	7.77	4.56	3.00	107	90 - 110	W339231	25-Sep-13	
EPA 300.0	Sulfate as SO4	mg/L	229	225	10.0	R > 4S	90 - 110	W339231	25-Sep-13	D2,M3
EPA 300.0	Sulfate as SO4	mg/L	173	164	10.0	R > 4S	90 - 110	W339231	25-Sep-13	D2,M3

**Quality Control - MATRIX SPIKE DUPLICATE Data**

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes
<b>Metals (Total Recoverable--reportable as Total per 40 CFR 136)</b>										
EPA 200.7	Aluminum	mg/L	12.0	11.8	1.00	2.1	20	W338134	02-Oct-13	M3
EPA 200.7	Arsenic	mg/L	1.02	1.01	1.00	0.6	20	W338134	02-Oct-13	
EPA 200.7	Cadmium	mg/L	0.939	0.938	1.00	0.1	20	W338134	02-Oct-13	
EPA 200.7	Calcium	mg/L	78.6	77.5	20.0	1.5	20	W338134	02-Oct-13	
EPA 200.7	Chromium	mg/L	0.959	0.947	1.00	1.2	20	W338134	02-Oct-13	
EPA 200.7	Cobalt	mg/L	0.966	0.935	1.00	3.2	20	W338134	02-Oct-13	
EPA 200.7	Copper	mg/L	1.22	1.20	1.00	2.1	20	W338134	02-Oct-13	
EPA 200.7	Iron	mg/L	17.2	16.9	10.0	1.8	20	W338134	02-Oct-13	
EPA 200.7	Lead	mg/L	0.950	0.954	1.00	0.4	20	W338134	02-Oct-13	
EPA 200.7	Magnesium	mg/L	32.0	31.5	20.0	1.5	20	W338134	02-Oct-13	
EPA 200.7	Manganese	mg/L	1.18	1.16	1.00	2.1	20	W338134	02-Oct-13	
EPA 200.7	Nickel	mg/L	1.01	0.974	1.00	3.9	20	W338134	02-Oct-13	
EPA 200.7	Potassium	mg/L	27.5	27.0	20.0	2.0	20	W338134	02-Oct-13	
EPA 200.7	Sodium	mg/L	30.1	29.5	19.0	1.9	20	W338134	02-Oct-13	
EPA 200.7	Zinc	mg/L	0.952	0.945	1.00	0.8	20	W338134	02-Oct-13	
<b>Metals (Dissolved)</b>										
EPA 200.7	Aluminum	mg/L	1.03	1.05	1.00	2.5	20	W338139	02-Oct-13	
EPA 200.7	Arsenic	mg/L	0.981	0.989	1.00	0.9	20	W338139	02-Oct-13	
EPA 200.7	Cadmium	mg/L	0.951	0.962	1.00	1.2	20	W338139	02-Oct-13	
EPA 200.7	Calcium	mg/L	75.4	76.3	20.0	1.2	20	W338139	02-Oct-13	
EPA 200.7	Chromium	mg/L	0.944	0.961	1.00	1.8	20	W338139	02-Oct-13	
EPA 200.7	Cobalt	mg/L	0.951	0.964	1.00	1.3	20	W338139	02-Oct-13	
EPA 200.7	Copper	mg/L	0.984	1.01	1.00	2.5	20	W338139	02-Oct-13	
EPA 200.7	Iron	mg/L	9.30	9.46	10.0	1.7	20	W338139	02-Oct-13	
EPA 200.7	Lead	mg/L	0.959	0.975	1.00	1.7	20	W338139	02-Oct-13	
EPA 200.7	Magnesium	mg/L	28.5	29.2	20.0	2.3	20	W338139	02-Oct-13	
EPA 200.7	Manganese	mg/L	0.968	0.986	1.00	1.8	20	W338139	02-Oct-13	
EPA 200.7	Nickel	mg/L	0.938	0.955	1.00	1.8	20	W338139	02-Oct-13	
EPA 200.7	Potassium	mg/L	23.4	23.9	20.0	2.3	20	W338139	02-Oct-13	
EPA 200.7	Sodium	mg/L	26.6	27.1	19.0	2.0	20	W338139	02-Oct-13	
EPA 200.7	Zinc	mg/L	0.937	0.946	1.00	0.9	20	W338139	02-Oct-13	
<b>Anions by Ion Chromatography</b>										
EPA 300.0	Fluoride	mg/L	2.14	2.14	2.00	0.1	20	W339231	25-Sep-13	
EPA 300.0	Chloride	mg/L	221	224	3.00	1.2	20	W339231	25-Sep-13	D2,M3

SVL holds the following certifications:

AZ:0538, CA:2080, FL(NELAC):E87993, ID:ID00019 & ID00965 (Microbiology), NV:ID000192007A, WA:C573



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Freeport McMoRan - Chino Mines  
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Project Name: Chino Routine  
Work Order: W3I0400  
Reported: 02-Oct-13 16:07

**Quality Control - MATRIX SPIKE DUPLICATE Data (Continued)**

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes
<b>Anions by Ion Chromatography (Continued)</b>										
EPA 300.0	Sulfate as SO4	mg/L	227	229	10.0	1.1	20	W339231	25-Sep-13	D2,M3

**Notes and Definitions**

- D1 Sample required dilution due to matrix.
- D2 Sample required dilution due to high concentration of target analyte.
- M3 The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to spike level. The LCS was acceptable.
- LCS Laboratory Control Sample (Blank Spike)
- RPD Relative Percent Difference
- UDL A result is less than the detection limit
- R > 4S % recovery not applicable, sample concentration more than four times greater than spike level
- <RL A result is less than the reporting limit
- MRL Method Reporting Limit
- MDL Method Detection Limit
- N/A Not Applicable





Freeport-McMoRan Copper Gold Inc. Water Quality Monitoring Data

Site Number	Sample Identifier	Sample Date	Comments	Al, Diss (mg/L)	Al, Tot (mg/L)	Alk, CO3 (mg/L)	Alk, HCO3 (mg/L)	Alk, Tot (mg/L)	As, Diss (mg/L)	As, Tot (mg/L)	Ca, Diss (mg/L)	Ca, Tot (mg/L)	Cd, Diss (mg/L)	Cd, Tot (mg/L)	Cl, Tot (mg/L)	Co, Diss (mg/L)	Co, Tot (mg/L)	Cr, Diss (mg/L)	Cr, Tot (mg/L)	Cu, Diss (mg/L)	Cu, Tot (mg/L)	F, Tot (mg/L)	Fe, Diss (mg/L)	Fe, Tot (mg/L)	K, Diss (mg/L)	K, Tot (mg/L)	Mg, Diss (mg/L)	Mg, Tot (mg/L)	Mn, Diss (mg/L)			
Water Quality Standard				5					0.1				0.01		250	0.05		0.05		1		1.6	1							0.2		
<b>Bayard Canyon</b>																																
	GH-97-02	09/01/1997		<0.0365	NA		NA	NA	<0.0015	NA	NA	NA	0.0312	NA	4.05	<0.0068	NA	<0.010	NA	0.058	NA	0.36	<0.0417	NA	NA	NA	NA	NA	NA	2.43		
	GH-97-02	09/20/2010		<0.08	0.146	<1	113	113	<0.025	<0.025	77.2	76.9	0.0143	0.0147	6.89	<0.006	<0.006	<0.006	<0.006	0.045	0.312	0.262	<0.06	0.086	5.94	6.18	18.5	17.7	0.0145			
				Not purged																												
<b>Toe of Groundhog No. 5 Stockpile</b>																																
	GH-97-04	09/01/1997	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS			
	GH-97-04	08/02/2010	Not purged	<0.08	<0.08	<1	82	82	0.00404	<0.003	517	484	<0.002	<0.002	3.83	<0.006	<0.006	<0.006	<0.006	0.01	0.01	1.79	<0.06	<0.06	14.1	14	89.3	86.4	<0.004			
	GH-97-04	07/22/2013	Not purged	<0.08	<0.08	<1	51.5	51.5	<0.025	NA	471	491	<0.002	<0.002	6.7	<0.006	<0.006	<0.006	<0.006	0.01	NA	1.62	<0.06	0.147	11.8	13.6	79	86.1	0.0083			
	GH-97-04	09/12/2013	Purged sample	<0.08	<0.08	<1	83.7	83.7	<0.025	NA	535	551	<0.002	<0.002	3.9	<0.006	<0.006	<0.006	<0.006	<0.01	NA	1.19	<0.06	<0.06	13	14.3	78.5	83.8	<0.004			
<b>Lucky Bill Canyon Drainage</b>																																
	GH-97-03	1997		<0.0365	NA		NA	NA	<0.0015	NA	NA	NA	<0.0025	NA	12.2	<0.0059	NA	<0.010	NA	0.0083	NA	0.23	<0.0417	NA	NA	NA	NA	NA	<0.0030			

NA- Not Analyzed  
NS- Not Sampled

**HISTORY**

Two shallow groundwater monitoring wells (GH-97-03 and GH-97-04) are located adjacent to the Groundhog No. 5 Stockpile. These wells were installed under the AOC in 1997 to collect samples of shallow groundwater in the alluvium/colluvium perched on the bedrock surface. These wells consist of a horizontal screen installed at the alluvium/bedrock interface connected to a standpipe. Well completion figures (Daniel B. Stephens and Associates, Inc, 1997). They were sampled and analyzed for dissolved metals in August and September 1997, before and after rain events (Daniel B. Stephens and Associates, Inc, 1997). Metals concentrations in Well GH-97-03 did not exceed New Mexico Water Quality Control Commission standards. Well GH-97-04, at the toe of the Groundhog No. 5 Stockpile, was dry. The wells were inspected again in July 2004. Well GH-97-04 was dry. Well GH-97-3, which is located in the channel in Lucky Bill Canyon, was silted in due to flooding.

Freeport-McMoRan Copper Gold Inc. Water Quality Monitoring Data

Site Number	Sample Identifier	Sample Date	Comments	Mn, Tot (mg/L)	Mo, Diss (mg/L)	Mo, Tot (mg/L)	Na, Diss (mg/L)	Na, Tot (mg/L)	Ni, Diss (mg/L)	Ni, Tot (mg/L)	Pb, Diss (mg/L)	Pb, Tot (mg/L)	pH, Lab (SU)	Sb, Diss (mg/L)	Sb, TR (mg/L)	Se, Diss (mg/L)	SO4, To (mg/L)	TDS (mg/L)	Zn, Diss (mg/L)	Zn, Tot (mg/L)	Depth to Water (feet)	Water Temp (Degrees C)
Water Quality Standard					1				0.2		0.05		6 - 9			0.05	600	1000	10			
<b>Bayard Canyon</b>																						
GH-97-02	GH-97-02	09/01/1997		NA	<0.0103	NA	NA	NA	<0.0297	NA	0.0144	NA	7.03	NA	NA	<0.0090	339	645	3.23	NA	NA	NA
GH-97-02	GH-97-02	09/20/2010		0.0161	NA	NA	23.9	25.7	<0.01	<0.01	0.0196	0.0344	6.89	NA	NA	NA	201	469	1.56	1.63	6.67	7.8
			Not purged																			
<b>Toe of Groundhog No. 5 Stockpile</b>																						
GH-97-04	GH-97-04	09/01/1997	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
GH-97-04	GH-97-04	08/02/2010	Not purged	<0.004	0.0108	0.0154	77.3	79	<0.01	<0.01	<0.003	<0.003	6.53	<0.02	<0.02	<0.04	1,720	2,660	0.176	0.154	4.69	21
GH-97-04	GH-97-04	07/22/2013	Not purged	0.0497	NA	NA	55.2	60.4	<0.01	<0.01	<0.0075	<0.0075	6.85	NA	NA	NA	1,690	2,410	0.132	0.164	5.29	20.2
GH-97-04	GH-97-04	09/12/2013	Purged sample	<0.004	NA	NA	33.9	37.9	<0.01	0.01	<0.0075	<0.0075	6.81	NA	NA	NA	1,660	2,580	0.157	0.157	1.91	22.7
<b>Lucky Bill Canyon Drainage</b>																						
GH-97-03	GH-97-03	1997		na	<0.0095	NA	NA	NA	<0.0297	NA	0.0015	NA	6.85	NA	NA	<0.00090	238	507	0.119	NA	NA	NA

NA- Not Analyzed  
NS- Not Sampled

**HISTORY**

Two shallow groundwater monitoring wells (GH-97-03 : to the Groundhog No. 5 Stockpile. These wells were in samples of shallow groundwater in the alluvium/colluvit These wells consist of a horizontal screen installed at t Well completion figures (Daniel B. Stephens and Assoc They were sampled and analyzed for dissolved metals before and after rain events (Daniel B. Stephens and A concentrations in Well GH-97-03 did not exceed New A Commission standards. Well GH-97-04, at the toe of tr Stockpile, was dry. The wells were inspected again in J Well GH-97-3, which is located in the channel in Lucky flooding.