



Freeport-McMoRan Chino Mines Company
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October 30, 2019

Certified Mail #70182290000117902887
Return Receipt Requested

Mr. Kurt Vollbrecht, Manager
New Mexico Environment Department
Ground Water Quality Bureau
Mining Environmental Compliance Section
P. O. Box 5624
Santa Fe, New Mexico 87502

Dear Mr. Vollbrecht:

Re: Annual Monitoring Report, Groundhog Mine Site IRA
Hanover-Whitewater Creeks Investigation Unit, Chino AOC

Freeport-McMoRan Chino Mines Company (Chino) submits the attached Annual Monitoring Report for the completed Groundhog Mine Site Interim Remedial Action (IRA) for the monitoring period ending September 30, 2019. The Groundhog Mine Site IRA was completed by Chino pursuant to requirements of the Administrative Order on Consent between the New Mexico Environment Department (NMED) and Chino.

As per Section 6.0 of the IRA Completion Report dated June 10, 2009, this annual monitoring report includes the bulleted information listed below with the exception of the annual vegetation monitoring survey required to be performed for the first five years. NMED approved the *Vegetation Monitoring Report for the Groundhog Mine Site and Small Historic Stockpile Sites Interim Remedial Action* in a letter dated August 31, 2017.

- Data tabulation sheet of analytical results screened against NM Groundwater Quality Standards from monitoring well and surface water samples collected at the Groundhog Mine Site;
- Copies of the original laboratory data sheets; and
- The quarterly erosion surveys.

Additionally, this report includes information described in Section 6.0 of the Completion Report for the Osceolla, CG Bell, and Tenderfoot B Stockpiles IRA. These three historical mine sites are proximal and have similar requirements as the Groundhog IRA. The five year quantitative vegetation survey report submitted September 30, 2016 also addresses these sites and thus no further annual vegetation surveys are required as provided in the Completion Report. The following information is also attached for these stockpiles:

- Quarterly erosion reports for the three historic small stockpiles are included with the Groundhog Mine Site quarterly monitoring survey.
- Also included are erosion reports for the Star Stockpile.
- Figure 1 illustrates locations for all of the IRA sites.

The attached ground water quality data are for monitor wells GH-2004-2S and GH-2004-2D. See Figure 1 for well locations. Beginning in 2009 shallow ground water quality began to increase in

concentrations for cadmium, manganese, sulfate, TDS, and zinc. This is being addressed as part of the Discharge Permit (DP) 1340 Site Wide Abatement (SWA) process. A *Draft Revised Final Site Investigation Report* under, Site Wide Stage 1 Abatement dated March 30, 2016 is under review by NMED.

Water quality data in the table for the existing surface impoundment system are also provided. The surface impoundment sampling locations include the Lower Stormwater Sump "GH-Sump" and the Lower Stormwater Pond "GH-Lower Pond" which make up the Groundhog Mine seepage collection system located up gradient of, and including, the headwall. See Figure 1. Surface water from this collection system when present is pumped to Reservoir 17 for use as process water.

Chino has continued monitoring surface water quality for improvements from remediation at this seepage collection system for approximately twelve years as it is the downstream drainage endpoint for the Groundhog Mine Site. Sample results are provided in this annual report, as per the Groundhog IRA Completion Report, to document improving water quality. Upon reaching water quality standards, and following the Record Of Decision, the watershed surface water from the remediated mine site runoff would be released to flow into Whitewater Creek.

However, the operational pipelines for the Chino mill divide the IRA site and the Groundhog Mine seepage collection system. Thus, the Groundhog Lower Stormwater Pond is now utilized by mine operations as a containment for upset conditions in the event of a pipeline break as part of the "pipeline spill containment system" under Discharge Permit 213. Recent sample data from GH-Lower Pond reflects residual tailing effects due to a pipeline spill in February 2017. The Groundhog Lower Pond, and the upstream natural drainage comprising the collection system, can no longer be included in the Groundhog Mine IRA as the remedial objectives cannot be met. See Figure 2.

In alignment with comments made by NMED in a letter dated March 21, 2018, Chino will request the Groundhog Lower Pond collection system be removed from the oversight of the AOC and placed under Discharge Permit (DP) 213. To address this portion of the IRA site that is part of active operations, the Groundhog Lower Pond collection system will be explicitly included in the pending renewal for DP-213.

If you require additional information regarding this submittal, please contact Ms. Pam Pinson at (575) 912-5213.

Sincerely,


Sherry Burt-Kested, Manager
Environmental Services

SBK:pp
Enclosures
20191029-002

c: David Mercer, NMED (4 copies)
Joseph Fox, NMED (via email)
D.J. Ennis, Mining & Minerals Division, NMEMNRD (via email)
Petra Sanchez, Environmental Protection Agency (via email)
Christian Krueger, Chino (via email)
Rita Lloyd-Mills, Chino (via email)
Steward, Mike, FMI (via email)

Freeport-McMoRan Chino Mines Company

Groundhog Mine IRA Annual Report

October 30, 2019

Site Number	Sample ID	Sample Date	Comments	Ca, Diss (mg/L)	Cd, Diss (mg/l)	Co, Diss (mg/l)	Cu, Diss (mg/l)	F, Tot (mg/l)	Fe, Diss (mg/l)	Mg, Diss (mg/L)	Mn, Diss (mg/l)	Ni, Diss (mg/l)	Pb, Diss (mg/l)	Zn, Diss (mg/l)	pH, Field (su)	SO4, Tot (mg/l)	TDS (mg/l)	Cond, Fld (micromho)	Water Temp (Cent)	Well Collar Level (ft msl)	Well Depth (ft)	Depth to Water (ft)
WQCC Water Quality Standard					0.01	0.05	1	1.6	1		0.2	0.2	0.05	10	6-9	600	1000					
GH-2004-2D	235809	10/28/2004		NA	0.0044	<0.006	0.0049	<1	<0.02	NA	0.0591	<0.01	<0.005	0.743	6.63	1780	2580	2292	17.3	6009.7	157.6	62
GH-2004-2D	245863	5/17/2005		NA	0.0027	<0.006	<0.01	<0.5	0.089	NA	0.374	<0.01	<0.005	0.654	6.76	1640	2440	2339	17.4	6003.74	147.6	44.5
GH-2004-2D	270674	10/25/2005		NA	0.0074	<0.006	<0.01	1.03	<0.06	NA	0.213	<0.01	0.009	1.65	6.62	1620	2530	2354	17.4	6003.74	147.6	46.3
GH-2004-2D	276910	3/14/2006		NA	0.0087	<0.006	<0.01	0.2	<0.06	NA	0.129	<0.01	0.009	0.851	6.63	1600	2770	2334	17.2	6003.74	147.6	47.43
GH-2004-2D	283019	8/4/2006		NA	0.0119	<0.006	<0.01	<0.2	<0.06	NA	0.123	<0.01	0.0108	1	6.58	1590	2620	2384	17.6	6003.74	147.6	50.3
GH-2004-2D	299167	2/6/2007		NA	0.0095	<0.006	<0.01	<0.2	<0.06	NA	0.108	<0.01	0.0091	0.903	6.53	1660	2630	2372	17.3	6003.74	147.6	43.03
GH-2004-2D	305946	7/23/2007		NA	0.011	<0.006	<0.01	<0.5	<0.06	NA	0.0899	<0.01	0.011	0.935	6.72	1640	2700	2432	18.1	6003.74	147.6	43.45
GH-2004-2D	316507	3/25/2008		NA	0.0105	<0.006	<0.01	<0.2	<0.06	NA	0.0555	<0.01	0.0086	0.82	6.79	1760	2700	2304	17	6003.74	147.6	44.7
GH-2004-2D	320089	10/28/2008		NA	0.0094	<0.006	<0.01	<0.5	<0.06	NA	0.112	<0.01	0.011	0.866	6.63	1990	2700	2351	17.2	6003.74	147.6	41.42
GH-2004-2D	321236	03/23/2009		NA	0.0072	<0.006	0.015	0.107	<0.06	NA	0.254	<0.01	<0.0075	0.904	6.82	1570	2690	2348	17.2	6003.74	147.6	44.8
GH-2004-2D	322688	09/30/2009		494	0.0101	<0.006	0.016	<0.5	<0.06	121	0.139	<0.01	<0.0075	0.873	6.43	1560	2730	2405	17.8	6003.74	147.6	48.08
GH-2004-2D	323312	03/11/2010		491	0.0116	<0.0061	0.013	<0.2	<0.061	118	0.0689	<0.01	0.008	0.838	6.77	1710	2680	2382	16.9	6003.74	147.6	48.22
GH-2004-2D	324880	09/20/2010		515	0.0117	<0.006	<0.01	<0.5	<0.06	125	0.0606	<0.01	0.0108	0.775	6.81	1660	2760	2422	18.7	6003.74	147.6	44.74
GH-2004-2D	326361	03/02/2011		509	0.0122	<0.006	<0.01	<0.5	<0.06	118	0.0703	<0.01	0.0134	0.855	6.73	1620	2540	2367	17.5	6003.74	147.6	47.99
GH-2004-2D	327872	09/02/2011		489	0.0098	<0.006	0.01	<0.1	<0.06	113	0.0474	<0.01	<0.0075	0.782	6.75	1640	2660	2416	18.9	6003.74	147.6	50.32
GH-2004-2D	329325	03/22/2012		527	0.0118	<0.006	<0.01	<0.5	<0.06	122	0.0626	<0.01	0.0096	0.804	6.63	1,750	2,710	2,272	17.9	6003.74	147.6	45.34
GH-2004-2D	330950	09/06/2012		525	0.0119	<0.006	<0.01	<0.5	<0.06	123	0.0484	<0.01	0.009	0.852	6.72	1,800	2,640	2,467	19.3	6003.74	147.6	49.13
GH-2004-2D	332598	03/11/2013		540	0.0136	<0.006	0.011	<0.5	<0.06	130	0.0496	<0.01	0.0144	0.912	6.69	1,780	2,720	2,389	18	6003.74	147.6	52.56
GH-2004-2D	334321	09/18/2013		541	0.0143	<0.006	<0.01	1.01	<0.06	127	0.0635	<0.01	0.012	0.912	6.69	1,780	2,720	2,428	17.9	6003.74	147.6	50.28
GH-2004-2D	335938	03/06/2014		512	0.0156	<0.006	<0.01	0.96	<0.06	122	0.0932	<0.01	0.0091	0.883	6.63	1,720	2,570	2,361	17.9	6003.74	147.6	47
GH-2004-2D	337693	09/09/2014		521	0.0148	<0.006	<0.01	<0.5	<0.06	124	0.064	<0.01	<0.0075	0.843	6.75	1,750	2,680	2,404	18.3	6003.74	147.6	50.24
GH-2004-2D	339360	03/12/2015		503	0.0119	<0.006	<0.01	<0.5	<0.06	118	0.0436	<0.01	<0.0075	0.801	6.79	1,700	2,440	2,247	16.9	6003.74	147.6	45.65
GH-2004-2D	341186	09/02/2015		489	0.0147	<0.006	<0.01	<0.5	<0.06	112	0.0507	<0.01	<0.0075	0.874	6.71	1,730	2,580	2,396	19.3	6003.74	147.6	49.32
GH-2004-2D	343006	03/03/2016		486	0.0154	<0.006	<0.01	0.732	<0.06	115	0.0539	<0.01	<0.0075	0.956	6.75	1,710	2,610	2,310	18	6003.74	147.6	49.74
GH-2004-2D	345111	09/13/2016		505	0.0146	<0.006	<0.01	<0.1	<0.1	116	0.0276	<0.01	<0.0075	0.79	6.74	1,650	2,530	2,260	17.4	6003.74	147.6	54.09
GH-2004-2D	347288	06/01/2017		498	0.0151	<0.006	<0.01	0.577	<0.1	118	0.0484	<0.01	0.0089	0.889	6.74	1,690	2,540	2,450	17.6	6003.74	147.6	44.35
GH-2004-2D	349336	09/12/2017		522	0.0151	<0.006	<0.01	0.185	<0.1	127	0.0829	<0.01	<0.0075	0.866	6.65	44	2,500	2,539	18.8	6003.74	147.6	44.21
GH-2004-2D	351227	03/21/2018		515	0.0142	<0.006	<0.01	<0.5	<0.1	113	0.0517	<0.01	<0.0075	0.878	6.77	2,030	2,490	2,504	17.6	6003.74	147.6	48.47
GH-2004-2D	352966	09/24/2018		460	<0.002	<0.006	<0.01	<0.1	<0.1	108	0.129	<0.01	<0.0075	0.117	7.01	1,490	2,440	2,279	17.7	6003.74	147.6	46.7
GH-2004-2D	354773	03/15/2019		480	<0.002	<0.006	<0.01	0.138	<0.1	109	0.212	<0.01	<0.0075	<0.01	6.55	1,500	2,330	2,661	16.2	5,941.04	95	65.27
GH-2004-2D	356619	09/17/2019		464	<0.002	<0.006	<0.01	0.111	<0.1	107	0.107	<0.01	<0.0075	0.291	6.37	1,550	2,530	3,370	18.3	5,958.6	95	47.71
GH-2004-2S	236057	10/28/2004		NA	0.0153	<0.006	0.007	0.31	<0.02	NA	0.703	<0.01	<0.005	2.15	7.07	1460	2120	2019	17	6009.7	**	53.25
GH-2004-2S	245864	5/17/2005		NA	0.0029	<0.006	0.014	<0.5	<0.06	NA	0.0826	<0.01	<0.005	0.371	7.39	1360	2080	2046	17.4	6003.74	83	46.73
GH-2004-2S	270675	10/25/2005		NA	0.0026	<0.006	<0.01	1.02	<0.06	NA	0.0321	<0.01	<0.0075	0.421	6.99	1390	2160	2152	17.3	6003.74	83	40.16
GH-2004-2S	276911	3/14/2006		NA	0.0027	<0.006	<0.01	0.73	<0.06	NA	0.0216	<0.01	<0.008	0.291	7.26	1410	2240	2204	17.1	6003.74	83	40.64
GH-2004-2S	283020	8/4/2006		NA	0.0027	<0.006	<0.01	<0.2	<0.06	NA	0.011	<0.01	<0.0075	0.359	7.27	1390	2240	2203	17.8	6003.74	83	43.84
GH-2004-2S	299168	2/6/2007		NA	0.0031	0.01	0.111	1.16	<0.06	NA	0.564	<0.01	<0.0075	0.557	6.53	1410	2220	2142	17.4	6003.74	83	37.08
GH-2004-2S	305947	7/23/2007		NA	<0.002	<0.006	<0.01	<0.5	<0.06	NA	<0.004	<0.01	<0.008	0.226	7.03	1440	2300	2279	17.7	6003.74	83	36.89
GH-2004-2S	316508	3/25/2008		NA	0.0052	<0.006	0.065	<0.5	0.092	NA	0.389	<0.01	<0.0075	1.36	7.23	1970	3000	2648	16.3	6003.74	83	37.75
GH-2004-2S	320090	10/28/2008		NA	0.0022	<0.006	0.011	<0.5	<0.06	NA	0.0547	<0.01	<0.0075	0.318	7.07	1870	2900	2650	17.8	6003.74	83	59.59
GH-2004-2S	321237	03/23/2009		NA	0.0068	<0.006	0.051	<0.1	<0.06	NA	0.916	<0.01	<0.0075	1.63	7.02	1720	2810	2554	16.9	6003.74	83	37.27
GH-2004-2S	322689	09/30/2009		468	0.0286	<0.006	0.072	0.995	<0.06	137	3.42	0.031	<0.0075	5.91	6.73	1850	3170	2845	17.3	6003.74	83	39.47
GH-2004-2S	323313	03/11/2010		539	0.0906	0.0114	0.768	1.48	<0.061	172	12	0.026	<0.0076	21	6.62	2520	3620	2639	15.7	6003.74	83	40.25
GH-2004-2S	324881	09/20/2010		619	0.115	<0.006	0.019	<1	<0.06	200	6.43	0.036	<0.0075	21.5	6.69	2450	3820	3318	18.2	6003.74	83	37.33
GH-2004-2S	326362	03/02/2011		563	0.111	<0.006	0.012	0.858	<0.06	181	5.52	0.036	<0.0075	23	6.6	2220	3550	3102	17.1	6003.74	83	42.2</

Freeport-McMoRan Chino Mines Company

Groundhog Mine IRA Annual Report

October 30, 2019

Site Number	Sample ID	Sample Date	Comments	Ca, Diss (mg/L)	Cd, Diss (mg/l)	Co, Diss (mg/l)	Cu, Diss (mg/l)	F, Tot (mg/l)	Fe, Diss (mg/l)	Mg, Diss (mg/L)	Mn, Diss (mg/l)	Ni, Diss (mg/l)	Pb, Diss (mg/l)	Zn, Diss (mg/l)	pH, Field (su)	SO4, Tot (mg/l)	TDS (mg/l)	Cond, Fld (micromho)	Water Temp (Cent)	Well Collar Level (ft msl)	Well Depth (ft)	Depth to Water (ft)
GH-2004-2S	343007	03/03/2016		458	0.291	<0.006	0.0189	1.66	<0.06	167	16.9	0.0563	<0.0075	61.8	6.26	2,370	3,420	3,292	19	6003.74	83	40.36
GH-2004-2S	345112	09/06/2016		509	0.221	<0.006	0.0103	1.86	<0.1	180	7.83	0.0426	<0.0075	61.7	6.31	2,220	3,310	3,156	17.8	6003.74	83	44.61
GH-2004-2S	351228	03/21/2018		499	0.385	<0.006	0.391	1.49	<0.1	168	17.4	0.0803	<0.0075	102	6.09	2,180	3,130	2,879	17.3	6003.74	5,964.67	40.91
GH-2004-2S	352967	09/24/2018		510	0.187	<0.006	0.0108	1.11	<0.1	179	43.7	0.0696	0.0121	71.1	6.61	2,150	3,500	3,055	17.6	6003.74	5,965.81	39.77
GH-2004-2S	354774	03/15/2019		541	0.0999	<0.006	<0.01	0.815	<0.1	182	38.4	0.0597	<0.0075	59.1	6.47	2,140	3,220	3,460	16.3	5,965.67	45	39.91
GH-2004-2S	356620	09/17/2019		509	0.0599	<0.006	<0.01	0.569	<0.1	172	20.9	0.0491	<0.0075	53.8	6.28	2,190	3,220	3,546	18.1	5,965.1	45	40.48
Lower GH-Sump*	250151	4/14/2005		NA	2.31	1.11	95.1	6.04	0.28	NA	333	0.846	1.24	844	3.92	5530	9220	5550	17.7	surface	surface	surface
Lower GH-Sump*	267561	9/26/2005		NA	0.749	0.307	20.2	1.32	<0.3	NA	95.3	0.178	0.289	224	4.05	2870	4450	3643	23.6	surface	surface	surface
Lower GH-Sump*	283021	8/4/2006		NA	0.35	0.147	9.11	1.08	0.15	NA	44	0.086	0.0815	92	5.27	1530	2390	2298	22.6	surface	surface	surface
Lower GH-Sump*	305948	7/23/2007		NA	0.299	0.15	7.19	1.15	<0.06	NA	52.8	0.097	0.078	76.8	5.64	1600	2600	2314	22.8	surface	surface	surface
Lower GH-Sump*	316509	3/25/2008	Dry	NS	NS	NS	NS	NS	NS	NA	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface
Lower GH-Sump*	320091	10/28/2008		NA	0.0725	<0.006	0.227	0.825	<0.06	NA	6.43	0.019	<0.0075	18	6.93	1890	2400	1970	15.8	surface	surface	surface
Lower GH-Sump*	321238	03/23/2009	Dry	NS	NS	NS	NS	NS	NS	NA	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface
Lower GH-Sump	322691	09/30/2009		111	0.0028	<0.006	0.03	1.02	<0.06	18.1	0.124	<0.01	<0.0075	0.55	7.35	329	536	645	18	surface	surface	surface
GH-Sump ¹	323315	03/10/2010		279	0.0149	<0.0061	0.04	1.08	<0.061	44.5	0.67	<0.01	<0.0076	1.69	6.88	837	1360	1130	8.8	surface	surface	surface
GH-Sump ¹	324883	09/20/2010	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface
GH-Sump ¹	326364	03/02/2011	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface
GH-Sump ¹	327875	09/02/2011		126	0.0074	<0.006	0.049	0.87	<0.06	20.6	1.02	<0.01	<0.0075	1.07	6.65	378	626	838	24.5	surface	surface	surface
GH-Sump ¹	329328	03/22/2012	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface
GH-Sump ¹	330953	09/06/2012	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface
GH-Sump ¹	332601	03/11/2013	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface
GH-Sump ¹	334167	08/05/2013		119	0.0046	<0.006	0.027	0.98	<0.06	17.7	0.0281	<0.01	<0.0075	0.737	6.82	379	570	758	24.2	surface	surface	surface
GH-Sump ¹	334324	09/18/2013		155	0.0069	<0.006	0.031	1.06	<0.06	24.6	0.203	<0.01	<0.0075	0.907	6.83	409	699	837	20.6	surface	surface	surface
GH-Sump ¹	335941	03/06/2014	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface
GH-Sump ¹	337696	09/09/2014		162	0.0029	<0.006	0.019	1.04	<0.06	23.8	<0.004	<0.01	<0.0075	0.461	7.06	475	748	906	21.4	surface	surface	surface
GH-Sump ¹	339363	03/12/2015		310	0.0274	<0.006	0.407	0.828	<0.06	48.3	0.0865	<0.01	<0.0075	7.91	6.66	912	1,370	1,245	14.4	surface	surface	surface
GH-Sump ¹	341189	09/01/2015		130	0.0082	<0.006	0.126	1.27	0.559	21.5	0.235	<0.01	0.0854	1.51	6.8	419	653	851	24.7	surface	surface	surface
GH-Sump ¹	343009	03/04/2016		186	0.0065	<0.006	0.02	0.928	<0.06	29.2	<0.004	<0.01	<0.0075	1.54	7.17	554	884	849	12.2	surface	surface	surface
GH-Sump ¹	345114	09/14/2016		159	0.0046	<0.006	0.0279	0.639	<0.1	23.4	0.0197	<0.01	<0.0075	0.72	7.04	404	691	809	21.5	surface	surface	surface
GH-Sump ¹	347291	06/01/2017	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface
GH-Sump ¹	349339	09/12/2017		107	0.0039	<0.006	0.0134	0.697	<0.1	18.9	0.316	<0.01	<0.0075	0.834	7.08	348	552	758	22.1	surface	surface	surface
GH-Sump ¹	351230	03/21/2018		107	0.0088	<0.006	0.0347	0.627	<0.1	16.1	0.0335	<0.01	<0.0075	3.38	7.01	350	522	566	10.6	surface	surface	surface
GH-Sump ¹	352970	09/24/2018		61.4	0.0022	<0.006	0.0166	1.18	0.121	9.56	0.284	<0.01	0.0211	0.501	6.92	148	326	426	19.6	surface	surface	surface
GH-Sump	354776	03/15/2019		142	0.0066	<0.006	0.0276	0.714	<0.1	18.8	0.129	<0.01	0.0079	1.91	6.79	387	608	928	8.2	NA	NA	10.09
GH-Sump	356623	09/17/2019	No surface water	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NM	NS	NM
Lower GH-Sump Pond*		3/14/2006		NA	0.701	0.284	20.2	5.34	<0.06	NA	116	0.184	0.16	232	4.88	3160	5100	3293	13.1	surface	surface	surface
Lower GH-Sump Pond*	299169	2/6/2007		NA	0.273	0.117	6.41	2.22	<0.06	NA	45	0.073	0.053	72.6	4.8	1870	2900	2047	10.5	surface	surface	surface
GH-Lower Pond ²	322690	09/30/2009		85.3	<0.002	<0.006	0.017	0.991	<0.06	15.3	0.0159	<0.01	<0.0075	0.0108	7.72	254	438	524	17.1	surface	surface	surface
GH-Lower Pond ²	323314	03/10/2010		261	0.0048	<0.0061	0.016	1.21	<0.061	49.7	0.225	<0.01	<0.0076	0.496	7.49	849	1360	1140	9.5	surface	surface	surface
GH-Lower Pond ²	324882	09/20/2010		151	<0.002	<0.006	0.013	0.847	<0.06	25.9	0.183	<0.01	<0.0075	0.0204	8.58	430	740	874	23.5	surface	surface	surface
GH-Lower Pond ²	326363	03/02/2011	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface
GH-Lower Pond ²	327874	09/02/2011		130	<0.002	<0.006	0.018	0.86	<0.06	20.7	0.119	<0.01	<0.0075	<0.01	7.94	415	656	821	23.8	surface	surface	surface
GH-Lower Pond ²	329327	03/22/2012	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface
GH-Lower Pond ²	330952	09/06/2012	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface
GH-Lower Pond ²	332600	03/11/2013	Dry	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface
GH-Lower Pond ²	GH-Lower Pond	07/22/2013		62.3	0.0059	<0.006	0.061	0.52	<0.06	10.9	1.12	<0.01	<0.0075	1.02	6.75	210	350	442	21.6	surface	surface	surface
GH-Lower Pond ²	334166	08/05/2013		98.1	0.0061	<0.006	0.039	0.7	<0.06	16	1.71	<0.01	<0.0075	0.447	7.52	330	494	682	26.5	surface	surface	surface
GH-Lower Pond ²	334323	09/18/2013		123	0.018	0.0061	0.131	0.62	<0.06	24.1	2.84	<0.01	0.0077	3.53	7.09	411	634	745	21.2	surface	surface	surface
GH-Lower Pond ²	335940	03/06/2014		333	0.0055	<0.006	0.051	1.52	<0.06	59.6	0.0924	<0.01	<0.0075	0.554	8.03	1,090	1,650	1,574	16.5	surface	surface	surface
GH-Lower Pond ²	337695	09/09/2014		127	0.0055	<0.006	0.045	0.95	<0.06	19.5	0.812	<0.01	<0.0075	0.35	7.79	406	607	772	22.7	surface	surface	surface
GH-Lower Pond ²	339362	03/12/2015		251	0.0377	0.0069	0.0354	1	<0.06	50.9	4.88	<0.01	<0.0075	3.66	7.18	873	1,260	1,157	13.6	surface	surface	surface
GH-Lower Pond ²	341188	09/01/2015		83.2	0.0047	<0.006	0.0282	0.67	<0.06	13	0.92	<0.01	<0.0075	0.266	8.58	269	406	585	26.3	surface	surface	surface
GH-Lower Pond ²	343008	03/04/2016		191	0.0043	<0.006	0.0199	0.936	<0.06	32	0.292	<0.01	<0.0075	0.216	8.27	622	956	911	13.1	surface	surface	surface

Freeport-McMoRan Chino Mines Company Groundhog Mine IRA Annual Report October 30, 2019

Site Number	Sample ID	Sample Date	Comments	Ca, Diss (mg/L)	Cd, Diss (mg/l)	Co, Diss (mg/l)	Cu, Diss (mg/l)	F, Tot_ (mg/l)	Fe, Diss (mg/l)	Mg, Diss (mg/L)	Mn, Diss (mg/l)	Ni, Diss (mg/l)	Pb, Diss (mg/l)	Zn, Diss (mg/l)	pH, Field (su)	SO4, Tot_ (mg/l)	TDS (mg/l)	Cond, Fld (micromho)	Water Temp (Cent)	Well Collar Level (ft msl)	Well Depth (ft)	Depth to Water (ft)
GH-Lower Pond ²	345113	09/13/2016		108	0.0028	<0.006	0.0207	0.555	<0.1	16.3	0.467	<0.01	<0.0075	0.067	7.78	310	486	606	19.7	surface	surface	surface
GH-Lower Pond ²	347290	04/28/2017	Dry		NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	surface	surface	surface
GH-Lower Pond ²	349338	09/12/2017		109	<0.002	<0.006	0.0137	0.621	<0.1	17.4	0.144	<0.01	<0.0075	0.056	7.2	339	507	761	24.2	surface	surface	surface
GH-Lower Pond ²	351229	03/21/2018		150	0.0056	<0.006	0.012	0.818	<0.1	23.3	1.22	<0.01	<0.0075	0.5	7.54	480	722	793	13.4	surface	surface	surface
GH-Lower Pond ²	352969	09/24/2018		144	0.0086	<0.006	0.0225	0.685	<0.1	23.3	2.22	<0.01	<0.0075	0.361	7.19	423	695	898	21.2	surface	surface	surface
GH-Lower Pond ²	354775	03/15/2019		328	0.0429	0.0124	0.115	0.623	<0.1	57.9	5.32	0.0138	0.0103	8.84	6.77	1,040	1,610	1,920	8.1	NA	NA	NA
GH-Lower Pond ²	356622	09/17/2019		101	0.0149	0.0083	0.0547	0.576	<0.1	14.7	2.62	<0.01	<0.0075	2.67	6.23	322	509	744	22.9	NA	NA	NA

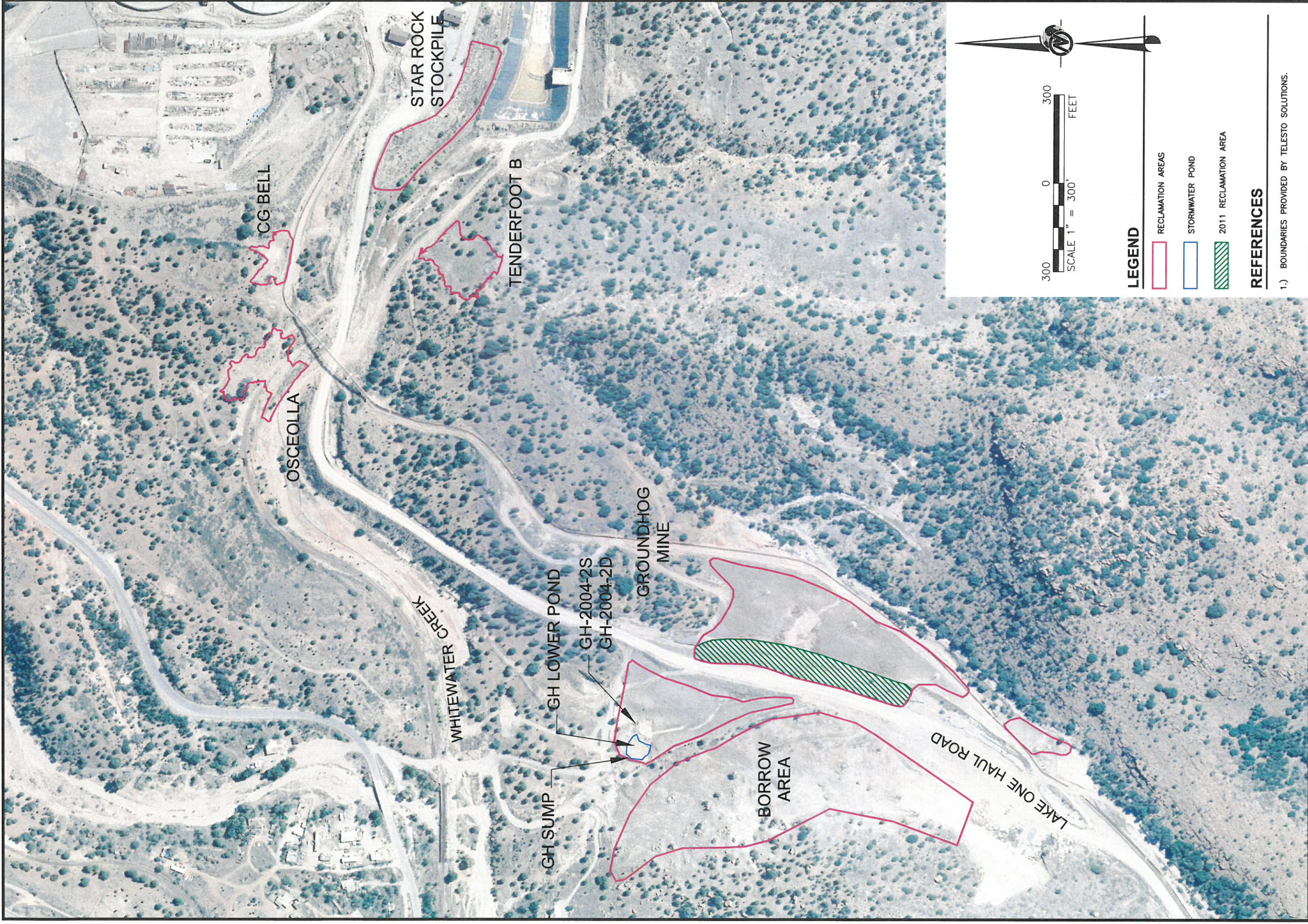
*Water in sump at this time was from the construction phase of the stockpile removal.

**Well depth on record is incorrect.

NS - Not sampled, sump and/or sump pond are dry.

NS - Not analysed.

² "GH-Lower Pond" is the same monitoring site and location as "Lower GH-Sump" (the site was renamed)



LEGEND

- RECLAMATION AREAS
- STORMWATER POND
- 2011 RECLAMATION AREA

REFERENCES

- 1.) BOUNDARIES PROVIDED BY TELESTO SOLUTIONS.

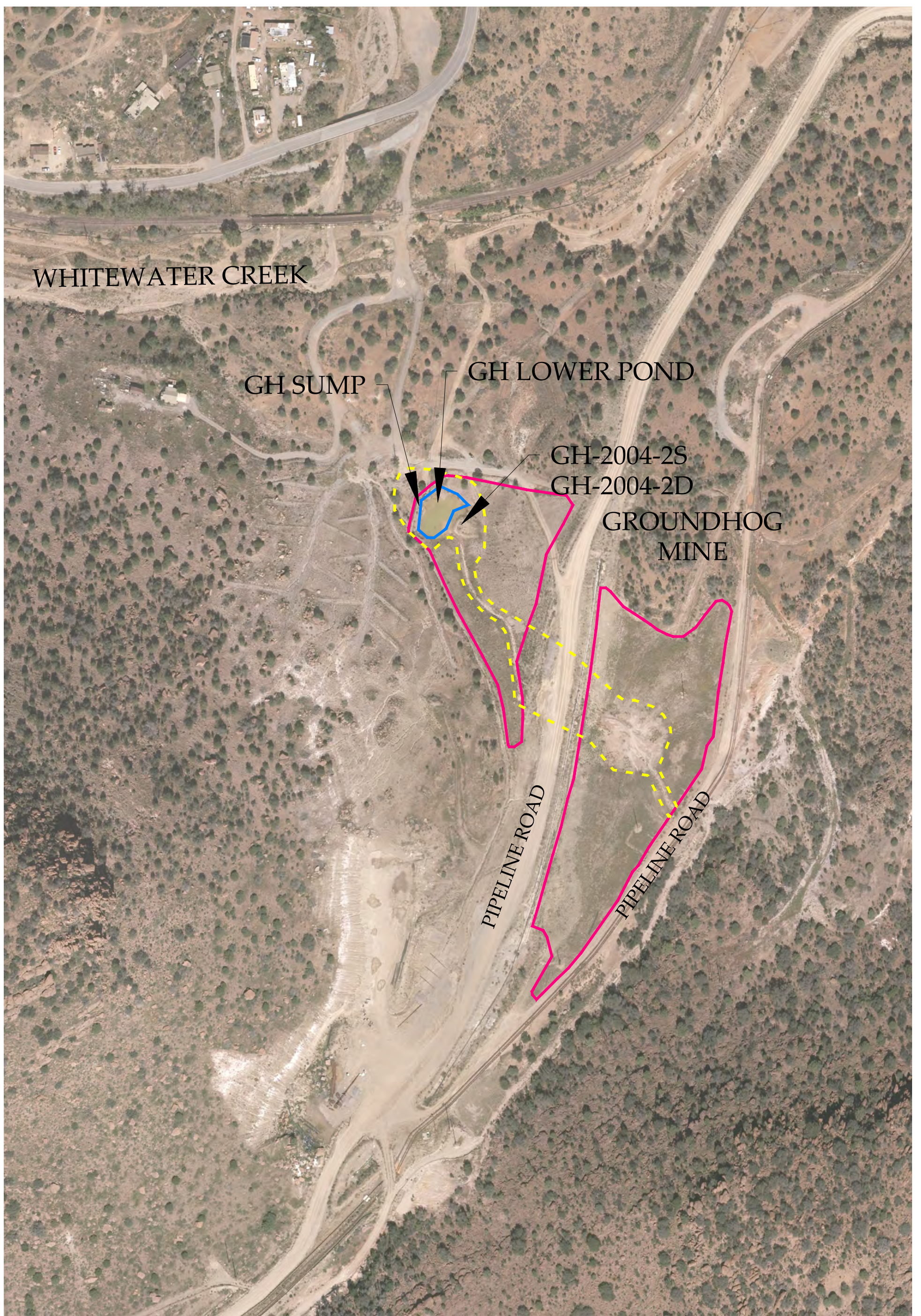


GROUNDHOG MINE AND SMALL HISTORIC STOCKPILES IRAS'S GRANT COUNTY, NEW MEXICO

TITLE
ANNUAL MONITORING OF INTERIM REMEDIAL ACTION SITES LOCATION MAP

PROJECT No.	141-1160		
FILE No.	Figure01.dwg		
REV. 0	SCALE	AS SHOWN	
DESIGN	DR	10/28/10	
CADD	CM	10/20/14	
CHECK	EC	10/20/14	
REVIEW	DR	10/20/14	

FIGURE 1



Legend

- - - - Proposed Operations Area/Pipeline Spill Containment System
- Reclaimed Area
- Pond



Figure 2

Scale: As Noted	Date: 10-31-2017	Notes:
Dept: Environmental Services		
Drawn By: SMG	Checked By: PDP	



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

Project Name: Chino Routine
Work Order: **X9C0338**
Reported: 03-Apr-19 17:10

ANALYTICAL REPORT FOR SAMPLES

COC Number: 8140

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received	Notes
354773 / GH-2004-2D	X9C0338-08	Water	15-Mar-19 11:59	LS	19-Mar-2019	
354774 / GH-2004-2S	X9C0338-09	Water	15-Mar-19 11:35	LS	19-Mar-2019	
354775 / GH-Lower Pond	X9C0338-10	Water	15-Mar-19 12:12	LS	19-Mar-2019	
354776 / GH-Sump	X9C0338-11	Water	15-Mar-19 12:29	LS	19-Mar-2019	

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.

Analyses were performed in accordance with SVL standard operating procedures and calibrations were performed and met SVL internal QC criteria.

The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.



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

Project Name: Chino Routine
Work Order: **X9C0338**
Reported: 03-Apr-19 17:10

Client Sample ID: **354773 : GH-2004-2D**
SVL Sample ID: **X9C0338-08 (Water)**

Sampled: 15-Mar-19 11:59
Received: 19-Mar-19
Sampled By: LS

Sample Report Page 1 of 1

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X912182	AS	04/02/19 11:32	
EPA 200.7	Calcium	480	mg/L	0.100	0.069		X912182	AS	04/02/19 11:32	
EPA 200.7	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X912182	AS	04/02/19 11:32	
EPA 200.7	Copper	< 0.0100	mg/L	0.0100	0.0027		X912182	AS	04/02/19 11:32	
EPA 200.7	Iron	< 0.100	mg/L	0.100	0.056		X912182	AS	04/02/19 11:32	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0049		X912182	AS	04/02/19 11:32	
EPA 200.7	Magnesium	109	mg/L	0.50	0.32		X912182	AS	04/02/19 11:32	
EPA 200.7	Manganese	0.212	mg/L	0.0080	0.0034		X912182	AS	04/02/19 11:32	
EPA 200.7	Nickel	< 0.0100	mg/L	0.0100	0.0023		X912182	AS	04/02/19 11:32	
EPA 200.7	Zinc	< 0.010	mg/L	0.010	0.005		X912182	AS	04/02/19 11:32	
Classical Chemistry Parameters										
SM 2540 C	Total Diss. Solids	2330	mg/L	40			X912106	RS	03/20/19 14:30	D2
Anions by Ion Chromatography										
EPA 300.0	Fluoride	0.138	mg/L	0.100	0.062		X912149	AJH	04/02/19 13:41	
EPA 300.0	Sulfate as SO4	1500	mg/L	15.0	9.00	50	X912149	AJH	04/02/19 14:07	D2

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

Dianne M Gardner **Dianne Gardner**
Project Manager



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

Project Name: Chino Routine
Work Order: **X9C0338**
Reported: 03-Apr-19 17:10

Client Sample ID: **354774 : GH-2004-2S**
SVL Sample ID: **X9C0338-09 (Water)**

Sampled: 15-Mar-19 11:35
Received: 19-Mar-19
Sampled By: LS

Sample Report Page 1 of 1

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	0.0999	mg/L	0.0020	0.0016		X912182	AS	04/02/19 11:36	
EPA 200.7	Calcium	541	mg/L	0.100	0.069		X912182	AS	04/02/19 11:36	
EPA 200.7	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X912182	AS	04/02/19 11:36	
EPA 200.7	Copper	< 0.0100	mg/L	0.0100	0.0027		X912182	AS	04/02/19 11:36	
EPA 200.7	Iron	< 0.100	mg/L	0.100	0.056		X912182	AS	04/02/19 11:36	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0049		X912182	AS	04/02/19 11:36	
EPA 200.7	Magnesium	182	mg/L	0.50	0.32		X912182	AS	04/02/19 11:36	
EPA 200.7	Manganese	38.4	mg/L	0.0080	0.0034		X912182	AS	04/02/19 11:36	
EPA 200.7	Nickel	0.0597	mg/L	0.0100	0.0023		X912182	AS	04/02/19 11:36	
EPA 200.7	Zinc	59.1	mg/L	0.100	0.054	10	X912182	AS	04/02/19 12:16	D2
Classical Chemistry Parameters										
SM 2540 C	Total Diss. Solids	3220	mg/L	40			X912106	RS	03/20/19 14:30	D2
Anions by Ion Chromatography										
EPA 300.0	Fluoride	0.815	mg/L	0.100	0.062		X912149	AJH	04/02/19 14:25	
EPA 300.0	Sulfate as SO4	2140	mg/L	15.0	9.00	50	X912149	AJH	04/02/19 14:42	D2

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

Dianne M Gardner **Dianne Gardner**
Project Manager



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

Project Name: Chino Routine
Work Order: **X9C0338**
Reported: 03-Apr-19 17:10

Client Sample ID: **354775 : GH-Lower Pond**
SVL Sample ID: **X9C0338-10 (Water)**

Sampled: 15-Mar-19 12:12
Received: 19-Mar-19
Sampled By: LS

Sample Report Page 1 of 1

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	0.0429	mg/L	0.0020	0.0016		X912182	AS	04/02/19 11:39	
EPA 200.7	Calcium	328	mg/L	0.100	0.069		X912182	AS	04/02/19 11:39	
EPA 200.7	Cobalt	0.0124	mg/L	0.0060	0.0016		X912182	AS	04/02/19 11:39	
EPA 200.7	Copper	0.115	mg/L	0.0100	0.0027		X912182	AS	04/02/19 11:39	
EPA 200.7	Iron	< 0.100	mg/L	0.100	0.056		X912182	AS	04/02/19 11:39	
EPA 200.7	Lead	0.0103	mg/L	0.0075	0.0049		X912182	AS	04/02/19 11:39	
EPA 200.7	Magnesium	57.9	mg/L	0.50	0.32		X912182	AS	04/02/19 11:39	
EPA 200.7	Manganese	5.32	mg/L	0.0080	0.0034		X912182	AS	04/02/19 11:39	
EPA 200.7	Nickel	0.0138	mg/L	0.0100	0.0023		X912182	AS	04/02/19 11:39	
EPA 200.7	Zinc	8.84	mg/L	0.010	0.005		X912182	AS	04/02/19 11:39	
Classical Chemistry Parameters										
SM 2540 C	Total Diss. Solids	1610	mg/L	10			X912106	RS	03/20/19 14:30	
Anions by Ion Chromatography										
EPA 300.0	Fluoride	0.623	mg/L	0.100	0.062		X912149	AJH	04/02/19 15:35	
EPA 300.0	Sulfate as SO4	1040	mg/L	15.0	9.00	50	X912149	AJH	04/02/19 15:52	D2

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

Dianne M Gardner **Dianne Gardner**
Project Manager



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

Project Name: Chino Routine
Work Order: **X9C0338**
Reported: 03-Apr-19 17:10

Client Sample ID: **354776 : GH-Sump**
SVL Sample ID: **X9C0338-11 (Water)**

Sampled: 15-Mar-19 12:29
Received: 19-Mar-19
Sampled By: LS

Sample Report Page 1 of 1

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	0.0066	mg/L	0.0020	0.0016		X912182	AS	04/02/19 11:43	
EPA 200.7	Calcium	142	mg/L	0.100	0.069		X912182	AS	04/02/19 11:43	
EPA 200.7	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X912182	AS	04/02/19 11:43	
EPA 200.7	Copper	0.0276	mg/L	0.0100	0.0027		X912182	AS	04/02/19 11:43	
EPA 200.7	Iron	< 0.100	mg/L	0.100	0.056		X912182	AS	04/02/19 11:43	
EPA 200.7	Lead	0.0079	mg/L	0.0075	0.0049		X912182	AS	04/02/19 11:43	
EPA 200.7	Magnesium	18.8	mg/L	0.50	0.32		X912182	AS	04/02/19 11:43	
EPA 200.7	Manganese	0.129	mg/L	0.0080	0.0034		X912182	AS	04/02/19 11:43	
EPA 200.7	Nickel	< 0.0100	mg/L	0.0100	0.0023		X912182	AS	04/02/19 11:43	
EPA 200.7	Zinc	1.91	mg/L	0.010	0.005		X912182	AS	04/02/19 11:43	
Classical Chemistry Parameters										
SM 2540 C	Total Diss. Solids	608	mg/L	10			X912107	RS	03/21/19 12:30	
Anions by Ion Chromatography										
EPA 300.0	Fluoride	0.714	mg/L	0.100	0.062		X912149	AJH	04/03/19 06:47	
EPA 300.0	Sulfate as SO4	387	mg/L	3.00	1.80	10	X912149	AJH	04/03/19 07:05	D2

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

Dianne M Gardner **Dianne Gardner**
Project Manager



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

Project Name: Chino Routine
 Work Order: **X9C0338**
 Reported: 03-Apr-19 17:10

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
Metals (Dissolved)								
EPA 200.7	Cadmium	mg/L	<0.0020	0.0016	0.0020	X912182	02-Apr-19	
EPA 200.7	Calcium	mg/L	<0.100	0.069	0.100	X912182	02-Apr-19	
EPA 200.7	Cobalt	mg/L	<0.0060	0.0016	0.0060	X912182	02-Apr-19	
EPA 200.7	Copper	mg/L	<0.0100	0.0027	0.0100	X912182	02-Apr-19	
EPA 200.7	Iron	mg/L	<0.100	0.056	0.100	X912182	02-Apr-19	
EPA 200.7	Lead	mg/L	<0.0075	0.0049	0.0075	X912182	02-Apr-19	
EPA 200.7	Magnesium	mg/L	<0.50	0.32	0.50	X912182	02-Apr-19	
EPA 200.7	Manganese	mg/L	<0.0080	0.0034	0.0080	X912182	02-Apr-19	
EPA 200.7	Nickel	mg/L	<0.0100	0.0023	0.0100	X912182	02-Apr-19	
EPA 200.7	Zinc	mg/L	<0.010	0.005	0.010	X912182	02-Apr-19	
Classical Chemistry Parameters								
SM 2540 C	Total Diss. Solids	mg/L	<10		10	X912106	20-Mar-19	
SM 2540 C	Total Diss. Solids	mg/L	<10		10	X912107	21-Mar-19	
Anions by Ion Chromatography								
EPA 300.0	Fluoride	mg/L	<0.100	0.062	0.100	X912149	02-Apr-19	
EPA 300.0	Sulfate as SO4	mg/L	<0.30	0.18	0.30	X912149	02-Apr-19	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Dissolved)									
EPA 200.7	Cadmium	mg/L	1.00	1.00	100	85 - 115	X912182	02-Apr-19	
EPA 200.7	Calcium	mg/L	19.9	20.0	99.3	85 - 115	X912182	02-Apr-19	
EPA 200.7	Cobalt	mg/L	0.986	1.00	98.6	85 - 115	X912182	02-Apr-19	
EPA 200.7	Copper	mg/L	0.990	1.00	99.0	85 - 115	X912182	02-Apr-19	
EPA 200.7	Iron	mg/L	9.95	10.0	99.5	85 - 115	X912182	02-Apr-19	
EPA 200.7	Lead	mg/L	0.997	1.00	99.7	85 - 115	X912182	02-Apr-19	
EPA 200.7	Magnesium	mg/L	19.8	20.0	99.2	85 - 115	X912182	02-Apr-19	
EPA 200.7	Manganese	mg/L	1.02	1.00	102	85 - 115	X912182	02-Apr-19	
EPA 200.7	Nickel	mg/L	0.982	1.00	98.2	85 - 115	X912182	02-Apr-19	
EPA 200.7	Zinc	mg/L	0.999	1.00	99.9	85 - 115	X912182	02-Apr-19	
Anions by Ion Chromatography									
EPA 300.0	Fluoride	mg/L	2.01	2.00	100	90 - 110	X912149	02-Apr-19	
EPA 300.0	Sulfate as SO4	mg/L	10.2	10.0	102	90 - 110	X912149	02-Apr-19	

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
Classical Chemistry Parameters									
SM 2540 C	Total Diss. Solids	mg/L	167	175	4.7	10	X912107	21-Mar-19	
SM 2540 C	Total Diss. Solids	mg/L	263	240	9.2	10	X912107	21-Mar-19	
SM 2540 C	Total Diss. Solids	mg/L	3940	3880	1.4	10	X912106	20-Mar-19	D2
SM 2540 C	Total Diss. Solids	mg/L	426	448	5.0	10	X912106	20-Mar-19	



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Project Name: Chino Routine
 Work Order: **X9C0338**
 Reported: 03-Apr-19 17:10

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Recovery	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	mg/L	1.01	<0.0020	1.00	101	70 - 130	X912182	02-Apr-19	
EPA 200.7	Cadmium	mg/L	1.03	<0.0020	1.00	103	70 - 130	X912182	02-Apr-19	
EPA 200.7	Calcium	mg/L	79.9	60.1	20.0	99.3	70 - 130	X912182	02-Apr-19	
EPA 200.7	Calcium	mg/L	199	178	20.0	105	70 - 130	X912182	02-Apr-19	
EPA 200.7	Cobalt	mg/L	0.990	<0.0060	1.00	99.0	70 - 130	X912182	02-Apr-19	
EPA 200.7	Cobalt	mg/L	0.991	<0.0060	1.00	99.1	70 - 130	X912182	02-Apr-19	
EPA 200.7	Copper	mg/L	0.995	<0.0100	1.00	99.5	70 - 130	X912182	02-Apr-19	
EPA 200.7	Copper	mg/L	1.04	<0.0100	1.00	104	70 - 130	X912182	02-Apr-19	
EPA 200.7	Iron	mg/L	9.99	<0.100	10.0	99.9	70 - 130	X912182	02-Apr-19	
EPA 200.7	Iron	mg/L	10.4	<0.100	10.0	104	70 - 130	X912182	02-Apr-19	
EPA 200.7	Lead	mg/L	1.00	<0.0075	1.00	100	70 - 130	X912182	02-Apr-19	
EPA 200.7	Lead	mg/L	1.00	<0.0075	1.00	100	70 - 130	X912182	02-Apr-19	
EPA 200.7	Magnesium	mg/L	27.8	8.18	20.0	98.2	70 - 130	X912182	02-Apr-19	
EPA 200.7	Magnesium	mg/L	96.9	76.6	20.0	102	70 - 130	X912182	02-Apr-19	
EPA 200.7	Manganese	mg/L	1.02	<0.0080	1.00	102	70 - 130	X912182	02-Apr-19	
EPA 200.7	Manganese	mg/L	1.06	<0.0080	1.00	106	70 - 130	X912182	02-Apr-19	
EPA 200.7	Nickel	mg/L	0.985	<0.0100	1.00	98.3	70 - 130	X912182	02-Apr-19	
EPA 200.7	Nickel	mg/L	1.10	0.115	1.00	98.1	70 - 130	X912182	02-Apr-19	
EPA 200.7	Zinc	mg/L	1.03	0.015	1.00	101	70 - 130	X912182	02-Apr-19	
EPA 200.7	Zinc	mg/L	1.01	<0.010	1.00	101	70 - 130	X912182	02-Apr-19	
Anions by Ion Chromatography										
EPA 300.0	Fluoride	mg/L	2.05	<0.100	2.00	103	90 - 110	X912149	02-Apr-19	
EPA 300.0	Fluoride	mg/L	2.08	<0.100	2.00	104	90 - 110	X912149	02-Apr-19	
EPA 300.0	Sulfate as SO4	mg/L	11.2	0.66	10.0	106	90 - 110	X912149	02-Apr-19	
EPA 300.0	Sulfate as SO4	mg/L	11.7	1.16	10.0	106	90 - 110	X912149	02-Apr-19	

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	% Rec.	RPD	RPD Limit	Batch ID	Analyzed	Notes
Metals (Dissolved)											
EPA 200.7	Cadmium	mg/L	1.03	1.01	1.00	103	1.6	20	X912182	02-Apr-19	
EPA 200.7	Calcium	mg/L	79.8	79.9	20.0	98.8	0.1	20	X912182	02-Apr-19	
EPA 200.7	Cobalt	mg/L	1.01	0.990	1.00	101	1.5	20	X912182	02-Apr-19	
EPA 200.7	Copper	mg/L	1.02	0.995	1.00	102	2.4	20	X912182	02-Apr-19	
EPA 200.7	Iron	mg/L	10.0	9.99	10.0	100	0.4	20	X912182	02-Apr-19	
EPA 200.7	Lead	mg/L	1.02	1.00	1.00	102	1.7	20	X912182	02-Apr-19	
EPA 200.7	Magnesium	mg/L	27.9	27.8	20.0	98.6	0.3	20	X912182	02-Apr-19	
EPA 200.7	Manganese	mg/L	1.02	1.02	1.00	102	0.2	20	X912182	02-Apr-19	
EPA 200.7	Nickel	mg/L	1.00	0.985	1.00	99.8	1.5	20	X912182	02-Apr-19	
EPA 200.7	Zinc	mg/L	1.04	1.03	1.00	103	1.4	20	X912182	02-Apr-19	
Anions by Ion Chromatography											
EPA 300.0	Fluoride	mg/L	2.09	2.05	2.00	105	2.0	20	X912149	02-Apr-19	
EPA 300.0	Sulfate as SO4	mg/L	11.3	11.2	10.0	107	1.1	20	X912149	02-Apr-19	



Freeport McMoRan - Chino Mines
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Project Name: Chino Routine
Work Order: **X9C0338**
Reported: 03-Apr-19 17:10

Notes and Definitions

D2	Sample required dilution due to high concentration of target analyte.
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
0.30R>S	% recovery not applicable; spike level is less than 30% of the sample concentration
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable



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526-6H

Freeport McMoRan - Chino Mines
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Bayard, NM 88023

Project Name: Chino Routine
Work Order: **X910462**
Reported: 03-Oct-19 17:31

ANALYTICAL REPORT FOR SAMPLES

COC Number: 8348

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received	Notes
356630 / Equipment Blank - Chino	X910462-01	Water	17-Sep-19 13:02	LS	19-Sep-2019	
356631 / Field Blank - Chino	X910462-02	Water	17-Sep-19 12:55	LS	19-Sep-2019	
356619 / GH-2004-2D	X910462-03	Water	17-Sep-19 12:25	LS	19-Sep-2019	
356620 / GH-2004-2S	X910462-04	Water	17-Sep-19 12:55	LS	19-Sep-2019	
356622 / GH-Lower Pond	X910462-05	Water	17-Sep-19 13:17	LS	19-Sep-2019	

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.

Analyses were performed in accordance with SVL standard operating procedures and calibrations were performed and met SVL internal QC criteria.

The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

Case Narrative: X910462

The state of origin only accredits for drinking water analyses.



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Project Name: Chino Routine
Work Order: **X910462**
Reported: 03-Oct-19 17:31

Client Sample ID: **356630 : Equipment Blank - Chino**
SVL Sample ID: **X910462-01 (Water)**

Sampled: 17-Sep-19 13:02
Received: 19-Sep-19
Sampled By: LS

Sample Report Page 1 of 1

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
SM 2540 C	Total Diss. Solids	33	mg/L	10			X938323	TL	09/23/19 12:55	
Anions by Ion Chromatography										
EPA 300.0	Sulfate as SO4	0.49	mg/L	0.30	0.18		X939018	RS	09/25/19 16:58	

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

Dianne Gardner
Project Manager



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Project Name: Chino Routine
Work Order: **X910462**
Reported: 03-Oct-19 17:31

Client Sample ID: **356631 : Field Blank - Chino**
SVL Sample ID: **X910462-02 (Water)**

Sampled: 17-Sep-19 12:55
Received: 19-Sep-19
Sampled By: LS

Sample Report Page 1 of 1

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Classical Chemistry Parameters										
SM 2540 C	Total Diss. Solids	3340	mg/L	40			X938323	TL	09/23/19 12:55	D2
Anions by Ion Chromatography										
EPA 300.0	Sulfate as SO4	2150	mg/L	15.0	9.00	50	X939018	RS	09/25/19 17:12	D2

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

Dianne Gardner

Dianne Gardner
Project Manager



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Project Name: Chino Routine
 Work Order: **X910462**
 Reported: 03-Oct-19 17:31

Client Sample ID: **356619 : GH-2004-2D**
 SVL Sample ID: **X910462-03 (Water)**

Sampled: 17-Sep-19 12:25
 Received: 19-Sep-19
 Sampled By: LS

Sample Report Page 1 of 1

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X938307	AS	10/02/19 10:49	
EPA 200.7	Calcium	464	mg/L	0.100	0.069		X938307	AS	10/02/19 10:49	
EPA 200.7	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X938307	AS	10/02/19 10:49	
EPA 200.7	Copper	< 0.0100	mg/L	0.0100	0.0027		X938307	AS	10/02/19 10:49	
EPA 200.7	Iron	< 0.100	mg/L	0.100	0.056		X938307	AS	10/02/19 10:49	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0049		X938307	AS	10/02/19 10:49	
EPA 200.7	Magnesium	107	mg/L	0.50	0.08		X938307	AS	10/02/19 10:49	
EPA 200.7	Manganese	0.107	mg/L	0.0080	0.0034		X938307	AS	10/02/19 10:49	
EPA 200.7	Nickel	< 0.0100	mg/L	0.0100	0.0023		X938307	AS	10/02/19 10:49	
EPA 200.7	Zinc	0.291	mg/L	0.010	0.005		X938307	AS	10/02/19 10:49	
Classical Chemistry Parameters										
SM 2540 C	Total Diss. Solids	2530	mg/L	40			X938323	TL	09/23/19 12:55	D2
Anions by Ion Chromatography										
EPA 300.0	Fluoride	0.111	mg/L	0.100	0.062		X939018	RS	09/25/19 17:27	
EPA 300.0	Sulfate as SO4	1550	mg/L	15.0	9.00	50	X939018	RS	09/25/19 17:42	D2

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

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Project Name: Chino Routine
Work Order: **X910462**
Reported: 03-Oct-19 17:31

Client Sample ID: **356620 : GH-2004-2S**

Sampled: 17-Sep-19 12:55

SVL Sample ID: **X910462-04 (Water)**

Received: 19-Sep-19

Sample Report Page 1 of 1

Sampled By: LS

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	0.0599	mg/L	0.0020	0.0016		X938307	AS	10/02/19 10:53	
EPA 200.7	Calcium	509	mg/L	0.100	0.069		X938307	AS	10/02/19 10:53	
EPA 200.7	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X938307	AS	10/02/19 10:53	
EPA 200.7	Copper	< 0.0100	mg/L	0.0100	0.0027		X938307	AS	10/02/19 10:53	
EPA 200.7	Iron	< 0.100	mg/L	0.100	0.056		X938307	AS	10/02/19 10:53	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0049		X938307	AS	10/02/19 10:53	
EPA 200.7	Magnesium	172	mg/L	0.50	0.08		X938307	AS	10/02/19 10:53	
EPA 200.7	Manganese	20.9	mg/L	0.0080	0.0034		X938307	AS	10/02/19 10:53	
EPA 200.7	Nickel	0.0491	mg/L	0.0100	0.0023		X938307	AS	10/02/19 10:53	
EPA 200.7	Zinc	53.8	mg/L	0.100	0.054	10	X938307	AS	10/02/19 12:37	D2
Classical Chemistry Parameters										
SM 2540 C	Total Diss. Solids	3220	mg/L	40			X938323	TL	09/23/19 12:55	D2
Anions by Ion Chromatography										
EPA 300.0	Fluoride	0.569	mg/L	0.100	0.062		X939018	RS	09/25/19 17:57	
EPA 300.0	Sulfate as SO4	2190	mg/L	15.0	9.00	50	X939018	RS	09/25/19 18:12	D2

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

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Project Name: Chino Routine
 Work Order: **X910462**
 Reported: 03-Oct-19 17:31

Client Sample ID: **356622 : GH-Lower Pond**
 SVL Sample ID: **X910462-05 (Water)**

Sample Report Page 1 of 1

Sampled: 17-Sep-19 13:17
 Received: 19-Sep-19
 Sampled By: LS

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	0.0149	mg/L	0.0020	0.0016		X938307	AS	10/02/19 10:57	
EPA 200.7	Calcium	101	mg/L	0.100	0.069		X938307	AS	10/02/19 10:57	
EPA 200.7	Cobalt	0.0083	mg/L	0.0060	0.0016		X938307	AS	10/02/19 10:57	
EPA 200.7	Copper	0.0547	mg/L	0.0100	0.0027		X938307	AS	10/02/19 10:57	
EPA 200.7	Iron	< 0.100	mg/L	0.100	0.056		X938307	AS	10/02/19 10:57	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0049		X938307	AS	10/02/19 10:57	
EPA 200.7	Magnesium	14.7	mg/L	0.50	0.08		X938307	AS	10/02/19 10:57	
EPA 200.7	Manganese	2.62	mg/L	0.0080	0.0034		X938307	AS	10/02/19 10:57	
EPA 200.7	Nickel	< 0.0100	mg/L	0.0100	0.0023		X938307	AS	10/02/19 10:57	
EPA 200.7	Zinc	2.67	mg/L	0.010	0.005		X938307	AS	10/02/19 10:57	
Classical Chemistry Parameters										
SM 2540 C	Total Diss. Solids	509	mg/L	10			X938323	TL	09/23/19 12:55	
Anions by Ion Chromatography										
EPA 300.0	Fluoride	0.576	mg/L	0.100	0.062		X939018	RS	09/25/19 18:56	
EPA 300.0	Sulfate as SO4	322	mg/L	3.00	1.80	10	X939018	RS	09/25/19 19:11	D2

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

Dianne Gardner
 Dianne Gardner
 Project Manager



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Project Name: Chino Routine
 Work Order: **X910462**
 Reported: 03-Oct-19 17:31

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
Metals (Dissolved)								
EPA 200.7	Cadmium	mg/L	<0.0020	0.0016	0.0020	X938307	02-Oct-19	
EPA 200.7	Calcium	mg/L	<0.100	0.069	0.100	X938307	02-Oct-19	
EPA 200.7	Cobalt	mg/L	<0.0060	0.0016	0.0060	X938307	02-Oct-19	
EPA 200.7	Copper	mg/L	<0.0100	0.0027	0.0100	X938307	02-Oct-19	
EPA 200.7	Iron	mg/L	<0.100	0.056	0.100	X938307	02-Oct-19	
EPA 200.7	Lead	mg/L	<0.0075	0.0049	0.0075	X938307	02-Oct-19	
EPA 200.7	Magnesium	mg/L	<0.50	0.08	0.50	X938307	02-Oct-19	
EPA 200.7	Manganese	mg/L	<0.0080	0.0034	0.0080	X938307	02-Oct-19	
EPA 200.7	Nickel	mg/L	<0.0100	0.0023	0.0100	X938307	02-Oct-19	
EPA 200.7	Zinc	mg/L	<0.010	0.005	0.010	X938307	02-Oct-19	

Classical Chemistry Parameters

SM 2540 C	Total Diss. Solids	mg/L	<10		10	X938323	23-Sep-19	
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Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	<0.100	0.062	0.100	X939018	25-Sep-19	
EPA 300.0	Sulfate as SO4	mg/L	<0.30	0.18	0.30	X939018	25-Sep-19	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Dissolved)									
EPA 200.7	Cadmium	mg/L	0.971	1.00	97.1	85 - 115	X938307	02-Oct-19	
EPA 200.7	Calcium	mg/L	19.6	20.0	97.9	85 - 115	X938307	02-Oct-19	
EPA 200.7	Cobalt	mg/L	0.970	1.00	97.0	85 - 115	X938307	02-Oct-19	
EPA 200.7	Copper	mg/L	0.980	1.00	98.0	85 - 115	X938307	02-Oct-19	
EPA 200.7	Iron	mg/L	9.48	10.0	94.8	85 - 115	X938307	02-Oct-19	
EPA 200.7	Lead	mg/L	0.975	1.00	97.5	85 - 115	X938307	02-Oct-19	
EPA 200.7	Magnesium	mg/L	19.3	20.0	96.5	85 - 115	X938307	02-Oct-19	
EPA 200.7	Manganese	mg/L	0.965	1.00	96.5	85 - 115	X938307	02-Oct-19	
EPA 200.7	Nickel	mg/L	0.964	1.00	96.4	85 - 115	X938307	02-Oct-19	
EPA 200.7	Zinc	mg/L	0.969	1.00	96.9	85 - 115	X938307	02-Oct-19	
Anions by Ion Chromatography									
EPA 300.0	Fluoride	mg/L	1.91	2.00	95.6	90 - 110	X939018	25-Sep-19	
EPA 300.0	Sulfate as SO4	mg/L	10.5	10.0	105	90 - 110	X939018	25-Sep-19	

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
Classical Chemistry Parameters									
SM 2540 C	Total Diss. Solids	mg/L	1310	1300	0.5	10	X938323	23-Sep-19	
SM 2540 C	Total Diss. Solids	mg/L	502	509	1.4	10	X938323	23-Sep-19	



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Project Name: Chino Routine
Work Order: X910462
Reported: 03-Oct-19 17:31

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Recovery	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Dissolved)										
EPA 200.7	Cadmium	mg/L	1.01	0.0103	1.00	99.5	70 - 130	X938307	02-Oct-19	
EPA 200.7	Cadmium	mg/L	1.01	<0.0020	1.00	101	70 - 130	X938307	02-Oct-19	
EPA 200.7	Calcium	mg/L	145	127	20.0	91.9	70 - 130	X938307	02-Oct-19	
EPA 200.7	Calcium	mg/L	708	703	20.0	0.30R>S	70 - 130	X938307	02-Oct-19	M3
EPA 200.7	Cobalt	mg/L	0.969	<0.0060	1.00	96.7	70 - 130	X938307	02-Oct-19	
EPA 200.7	Cobalt	mg/L	0.977	<0.0060	1.00	97.7	70 - 130	X938307	02-Oct-19	
EPA 200.7	Copper	mg/L	1.14	0.142	1.00	99.4	70 - 130	X938307	02-Oct-19	
EPA 200.7	Copper	mg/L	1.02	<0.0100	1.00	102	70 - 130	X938307	02-Oct-19	
EPA 200.7	Iron	mg/L	9.58	<0.100	10.0	95.8	70 - 130	X938307	02-Oct-19	
EPA 200.7	Iron	mg/L	9.36	<0.100	10.0	93.6	70 - 130	X938307	02-Oct-19	
EPA 200.7	Lead	mg/L	0.970	<0.0075	1.00	97.0	70 - 130	X938307	02-Oct-19	
EPA 200.7	Lead	mg/L	0.949	<0.0075	1.00	94.9	70 - 130	X938307	02-Oct-19	
EPA 200.7	Magnesium	mg/L	34.9	15.6	20.0	96.4	70 - 130	X938307	02-Oct-19	
EPA 200.7	Magnesium	mg/L	19.0	<0.50	20.0	92.9	70 - 130	X938307	02-Oct-19	
EPA 200.7	Manganese	mg/L	1.84	0.868	1.00	96.9	70 - 130	X938307	02-Oct-19	
EPA 200.7	Manganese	mg/L	0.938	<0.0080	1.00	93.4	70 - 130	X938307	02-Oct-19	
EPA 200.7	Nickel	mg/L	0.962	<0.0100	1.00	96.2	70 - 130	X938307	02-Oct-19	
EPA 200.7	Nickel	mg/L	0.969	<0.0100	1.00	96.9	70 - 130	X938307	02-Oct-19	
EPA 200.7	Zinc	mg/L	1.22	0.258	1.00	96.5	70 - 130	X938307	02-Oct-19	
EPA 200.7	Zinc	mg/L	0.964	<0.010	1.00	95.8	70 - 130	X938307	02-Oct-19	

Anions by Ion Chromatography

EPA 300.0	Fluoride	mg/L	3.03	1.17	2.00	93.5	90 - 110	X939018	25-Sep-19	
EPA 300.0	Fluoride	mg/L	2.15	0.198	2.00	97.4	90 - 110	X939018	25-Sep-19	
EPA 300.0	Sulfate as SO4	mg/L	206	201	10.0	0.30R>S	90 - 110	X939018	25-Sep-19	D2,M4
EPA 300.0	Sulfate as SO4	mg/L	55.7	45.0	10.0	107	90 - 110	X939018	25-Sep-19	D2

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	% Rec.	RPD	RPD Limit	Batch ID	Analyzed	Notes
Metals (Dissolved)											
EPA 200.7	Cadmium	mg/L	0.991	1.01	1.00	98.1	1.5	20	X938307	02-Oct-19	
EPA 200.7	Calcium	mg/L	145	145	20.0	89.6	0.3	20	X938307	02-Oct-19	
EPA 200.7	Cobalt	mg/L	0.955	0.969	1.00	95.3	1.5	20	X938307	02-Oct-19	
EPA 200.7	Copper	mg/L	1.12	1.14	1.00	97.8	1.4	20	X938307	02-Oct-19	
EPA 200.7	Iron	mg/L	9.49	9.58	10.0	94.9	0.9	20	X938307	02-Oct-19	
EPA 200.7	Lead	mg/L	0.956	0.970	1.00	95.6	1.5	20	X938307	02-Oct-19	
EPA 200.7	Magnesium	mg/L	34.9	34.9	20.0	96.8	0.2	20	X938307	02-Oct-19	
EPA 200.7	Manganese	mg/L	1.82	1.84	1.00	94.8	1.2	20	X938307	02-Oct-19	
EPA 200.7	Nickel	mg/L	0.947	0.962	1.00	94.7	1.6	20	X938307	02-Oct-19	
EPA 200.7	Zinc	mg/L	1.21	1.22	1.00	94.9	1.3	20	X938307	02-Oct-19	
Anions by Ion Chromatography											
EPA 300.0	Fluoride	mg/L	3.01	3.03	2.00	92.4	0.7	20	X939018	25-Sep-19	
EPA 300.0	Sulfate as SO4	mg/L	207	206	10.0	0.30R>S	0.6	20	X939018	25-Sep-19	D2,M4



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

Project Name: Chino Routine
Work Order: **X910462**
Reported: 03-Oct-19 17:31

Notes and Definitions

- 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.
 - M4 The analysis of the spiked sample required a dilution such that the spike recovery calculation does not provide useful information. The LCS recovery was acceptable.
 - LCS Laboratory Control Sample (Blank Spike)
 - RPD Relative Percent Difference
 - UDL A result is less than the detection limit
 - 0.30R>S % recovery not applicable; spike level is less than 30% of the sample concentration
 - <RL A result is less than the reporting limit
 - MRL Method Reporting Limit
 - MDL Method Detection Limit
 - N/A Not Applicable
-

CHAIN OF CUSTODY RECORD

COC Number 8348

Send Results To:

Name Chino Operations

Department Environmental Services Department

Address P. O. Box 10

Bayard NM 88023

Project Name
DP-213

Project Location
Chino Operations

Purchase Order Number

ZN000006YK



A. De

Site Number	Sample Identifier	Sample Date	Sample Time	Sample Method	Matrix	Sampler	Number of Containers	Analysis Required	Remark
Equipment Blank - Chino	356630	9/17/2019	13:02	Grab	Water	Lewes Schmidt	1	214 H	
Field Blank - Chino	356631	9/17/2019	12:55	Pump (Dedic)	Water	Lewes Schmidt	1	214 H	
GH-2004-2D	356619	9/17/2019	12:25	Pump (Dedic)	Water	Lewes Schmidt	2	526 K	
GH-2004-2S	356620	9/17/2019	12:55	Pump (Dedic)	Water	Lewes Schmidt	2	526 K	
GH-Lower Pond	356622	9/17/2019	13:17	Grab	Water	Lewes Schmidt	2	526 K	

Signatures		Date	Time	Shipping Details	
Relinquished by:	<i>[Signature]</i>	9-18-19	12:45	Method of Shipment:	
Received by:	<i>[Signature]</i>	9/18/19	9:20	Airbill Number:	
Relinquished by:	<i>[Signature]</i>			Lab Address:	
Received for Laboratory by:	<i>[Signature]</i>	9/19/19	10:00	Name	SVL
				Address	One Government Gulch
				Kellogg ID	83837
				Phone	8005977144
				Fax	208-763-0891



Sample Receipt Confirmation

One Government Gulch - PO Box 929

Work Order

Kellogg, ID 83837-0929

X9I0462

(208) 784-1258

Date Received: 19-Sep-19 10:00 Date Due: 3-Oct-19 (10 day TAT)

Client: Freeport McMoRan - Chino Mines	Project Manager: Dianne Gardner
Project: Chino Routine	Client PO Number: ZN000006YK
	COC Number: 8348

Report To:

Freeport McMoRan - Chino Mines
 Trish Potter
 PO Box 10
 Bayard, NM 88023
 Phone: (575) 912-5319
 Fax: 505-537-8012

Invoice To:

Freeport McMoRan - Chino Mines
 Accounts Payable
 PO Box 13308
 Phoenix, AZ 85502-3308
 Phone: 602-366-8200

Cooler information for **Default Cooler** Temp: 4.2°C Q6: Cooler temp outside 0-6°C **No**
 Custody Seals **Yes** Containers Intact **Yes** COC/Labels Agree **Yes** Preservation Confirmed **Yes** Received On Ice **Yes**

Sample information and analyses assigned

SVL ID: X9I0462-01	Client ID: 356630	[Water]	17-Sep-19 13:02 Mountain	Sample Alias: Equipment Blank - Chino
Analyses Assigned: Chino List 214H				
SVL ID: X9I0462-02	Client ID: 356631	[Water]	17-Sep-19 12:55 Mountain	Sample Alias: Field Blank - Chino
Analyses Assigned: Chino List 214H				
SVL ID: X9I0462-03	Client ID: 356619	[Water]	17-Sep-19 12:25 Mountain	Sample Alias: GH-2004-2D
Analyses Assigned: Chino List 526K				
SVL ID: X9I0462-04	Client ID: 356620	[Water]	17-Sep-19 12:55 Mountain	Sample Alias: GH-2004-2S
Analyses Assigned: Chino List 526K				
SVL ID: X9I0462-05	Client ID: 356622	[Water]	17-Sep-19 13:17 Mountain	Sample Alias: GH-Lower Pond
Analyses Assigned: Chino List 526K				

Analysis groups included in this work order

<i>Chino List 214H</i>			
300.0 SO4	TDS SM 2540C		
<i>Chino List 526K</i>			
300.0 F	300.0 SO4	D 200.7 Ca	D 200.7 Cd
D 200.7 Co	D 200.7 Cu	D 200.7 Fe	D 200.7 Mg
D 200.7 Mn	D 200.7 Ni	D 200.7 Pb	D 200.7 Zn
TDS SM 2540C			

Solid samples will be analyzed on an as-received, wet-weight basis unless otherwise instructed.

Dianne M Gardner
Reviewed By

09/20/19
Date

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Ground Hog</i>	Weather Conditions: <i>Cloudy Cool.</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>2:00pm 11-26-2018</i>	
Vegetation Conditions: <i>Dry grass; shrubs visible.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>Tailing visible in lower portion channel above pond. Cleanup underway.</i>	Significant Erosion (Attach Description): <i>No significant erosion visible. Disturbance visible on upper portion of site due to tailing release cleanup.</i>
Monitoring Stations:	
Other Observations: <i>Sediment basin and culvert by road are loaded up with sediments. Work order in progress to remove sediments.</i>	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Bell</i>	Weather Conditions: <i>Partly Cloudy (High Clouds)</i> <i>windy</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>2:40 PM 11-29-2018</i>	
Vegetation Conditions: <i>Only vegetation visible along with live oak shrubs.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None noted.</i>
Monitoring Stations: <i>None.</i>	
Other Observations:	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Oceola</i>	Weather Conditions: <i>Partly Cloudy High clouds. windy</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>2:55 PM 11-29-2018</i>	
Vegetation Conditions: <i>Very little dry vegetation visible, some live OAK shrubs.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>Berman road eroded in area been breached in one spot.</i>	Significant Erosion (Attach Description): <i>No significant erosion. Some wind erosion noted from stormwater runoff above site.</i>
Monitoring Stations: <i>None.</i>	
Other Observations:	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>tender Foot</i>	Weather Conditions: <i>Scattered high Clouds.</i>
Inspector: <i>Steven M. Garcia</i>	<i>windy</i>
Time/Date: <i>3:10 pm 11-29-2018</i>	
Vegetation Conditions: <i>Dry grass; vegetation visible throughout site, along with live trees.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: <i>Survey flags noted at SW corner of site.</i>	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Star stockpile.</i>	Weather Conditions: <i>Scattered high clouds Windy</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>3:20 PM 11-29-2018</i>	
Vegetation Conditions: <i>Any vegetation visible through outside</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: 	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>East RAZON BACK</i>	Weather Conditions: <i>Cloudy cold windy</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>1:30pm 12-27-2018</i>	
Vegetation Conditions: <i>Dry vegetation visible through out site.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>Rock check dams on old Haul Rd. Blown out. Same as last quarter</i>	Significant Erosion (Attach Description): <i>rills visible throughout site. Most significant erosion is on the lower end of old haul Road.</i>
Monitoring Stations: <i>None.</i>	
Other Observations:	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Golf Course Road Road Area</i>	Weather Conditions: <i>Partly Cloudy Cold.</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>10:00 AM 12-31-2018</i>	
Vegetation Conditions: <i>Dry vegetation visible throughout site</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>At No visible concerns.</i>	Significant Erosion (Attach Description): <i>At None visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations:	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Ground Hog</i>	Weather Conditions: <i>Partly Cloudy & cool</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>10:10am 2-28-2019</i>	
Vegetation Conditions: <i>Dry grass and shrubs visible throughout site.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns. other than the The berm on upper road is being beat down by ongoing powerline project. This diversion berm should be reestablished once project is complete.</i>	Significant Erosion (Attach Description): <i>None. visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: <i>Upper Flat Area where old offices were is being used as a laydown area for powerline project.</i>	

Chino Mines Co. Reclamation/Erosion Monitoring Form

- Monthly
- Quarterly
- 1" Rain Event

Reclamation Unit: <i>Bell</i>	Weather Conditions: <i>overcast & warm</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>2:15 3-26-2019</i>	
Vegetation Conditions: <i>Dry grass and oak scrub visible on portions of site.</i>	Fences/Livestock: <i>None</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: <i>New conduit with for cables that attach the metal process water and tailings pipelines has been installed above ground just to the east of site.</i>	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Oceola</i>	Weather Conditions: <i>OVERCAST & WARM</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>2:25 PM 3-26-2019</i>	
Vegetation Conditions: <i>Some dry grass and oak scrub visible on site. Mostly bare ground on lower portion.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>Road berm needs improvement</i>	Significant Erosion (Attach Description): <i>small erosion cut from stormwater leaving road through cut in berm.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: 	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>tender Foot</i>	Weather Conditions: <i>overcast + 3/4 warm</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>2:45 3-26-2019</i>	
Vegetation Conditions: <i>mostly dry grass, Juniper trees some oak scrub visible throughout site.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>water bars on upper portion in fair shape. Diversion berm on southwestern portion needs reevaluating due to new road for powerline project</i>	Significant Erosion (Attach Description): <i>None visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: <i>New road build on south west portion of site to install new powerline</i>	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Star Stockpile.</i>	Weather Conditions: <i>overcast & warm</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>3:10^{pm} 8-26-2019</i>	
Vegetation Conditions: <i>Mostly dry grass and shrubs visible on site.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations:	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <p style="text-align: center;"><i>EAST RAZORBACK</i></p>	Weather Conditions: <p style="text-align: center;"><i>Cloudy & warm</i></p>
Inspector: <p style="text-align: center;"><i>Steven M. Garcia</i></p>	
Time/Date: <p style="text-align: center;"><i>2:10 3/27/2019</i></p>	
Vegetation Conditions: <p><i>Lots of dry grass along with some new growth. Also shrubs, live and dead juniper trees.</i></p>	Fences/Livestock: <p style="text-align: center;"><i>None.</i></p>
Ditches/Water Control: <p><i>Rock berms on old road are blown out from storm water runoff.</i></p>	Significant Erosion (Attach Description): <p><i>Rills noted throughout site. Some major and some minor. Major Rills on southeast of old road have filled in.</i></p>
Monitoring Stations: <p style="text-align: center;"><i>None</i></p>	
Other Observations: <p><i>Lots of wildlife sign throughout site.</i></p>	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Golfcourse - Rail Road Area</i>	Weather Conditions: <i>cloudy & warm</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>1:15 PM 3-27-2019</i>	
Vegetation Conditions: <i>Mostly dry grass and shrubs visible throughout site. some green vegetation noted</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations:	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>East Razor back</i>	Weather Conditions: <i>warm & sunny</i>
Inspector: <i>Steven M. Garcia</i>	
Time/Date: <i>10:00 Am 6-26-2019</i>	
Vegetation Conditions: <i>Lots of vegetation visible throughout site. Green shrubs and plants & dry grass</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>Rock berms on west end are blown out.</i>	Significant Erosion (Attach Description): <i>Erosion cut on southern end of west portion. seems to be slow slowly filling in.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: <i>grasshoppers are noted. Abundant animal scat visible. ATU/vehicle track visible on old road on west end of site.</i>	

Chino Mines Co. Reclamation/Erosion Monitoring Form

- Monthly
- Quarterly
- 1" Rain Event

Reclamation Unit: <i>Golf Course Railroad Area</i>	Weather Conditions:
Inspector: <i>Steven M. Guarcoiva</i>	
Time/Date: <i>11:10 Am 6-26-2009</i>	
Vegetation Conditions: <i>Vegetation visible through out site. dry grass green shrubs, bushes and plants.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations:	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Bell</i>	Weather Conditions: <i>Clear sky & warm</i>
Inspector: <i>Steven M. Garcia/Kari Dappen</i>	<i>88°F</i>
Time/Date: <i>1:30pm G-26-2019</i>	
Vegetation Conditions: <i>Some dry grass and live scrub oak visible.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations:	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Oceola</i>	Weather Conditions: <i>Clear & warm</i>
Inspector: <i>Kari Dappen</i> <i>Steven M. Garcia</i>	
Time/Date: <i>1:45 PM 6-26-2019</i>	
Vegetation Conditions: <i>Some dry GRASS and live SCRUB OAK bushes visible.</i>	Fences/Livestock: <i>None</i>
Ditches/Water Control: <i>Beim on road need to be reestablished.</i>	Significant Erosion (Attach Description): <i>Rills noted coming off of depleted road beim.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: 	

Chino Mines Co. Reclamation/Erosion Monitoring Form

- Monthly
- Quarterly
- 1" Rain Event

Reclamation Unit: <i>Tender Foot</i>	Weather Conditions: <i>PARTLY Cloudy And warm</i>
Inspector: <i>Steven M. Garcia/Kai; Dappen</i>	
Time/Date: <i>2:30 PM 6-26-2019</i>	
Vegetation Conditions: <i>Abundant dry grass and green plants spotted through out site.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns,</i>	Significant Erosion (Attach Description): <i>None Visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: <i>Road established to the west upper end of site near historic claim marker boulder.</i>	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Ground Hog.</i>	Weather Conditions: <i>Partly Cloudy warm.</i>
Inspector: <i>Steven M. Garcia / Kari Dappen</i>	
Time/Date: <i>2:50 PM 6-26-2019</i>	
Vegetation Conditions: <i>Dry grass spotted areas of green shrubs.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: <i>Plastic sheeting left in Road Area from the Project.</i>	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: Star shaft	Weather Conditions: warm and sunny with scattered clouds
Inspector: Steve Garcia / Kari Clappen	
Time/Date: 3:15 6/26/19	
Vegetation Conditions: dry vegetation visible throughout, scattered green grasses, budding plants, sparse trees	Fences/Livestock: not visible
Ditches/Water Control: no visible concerns, berm at top visible	Significant Erosion (Attach Description): no visible concern
Monitoring Stations: none	
Other Observations: debris dumped at top of site (metal, wood, and/or concrete potentially)	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>East Razorback</i>	Weather Conditions: <i>warm</i>
Inspector: <i>Steven M. Garcia</i> <i>P. M. P.inson</i> <i>(WYMER)</i> <i>David W. Mercer</i>	
Time/Date: <i>3:30 PM 9/19/2019</i>	
Vegetation Conditions: <i>Abundant vegetation visible throughout site.</i>	Fences/Livestock: <i>None</i>
Ditches/Water Control: <i>Rock berms at lower portion of site are blown out.</i>	Significant Erosion (Attach Description): <i>None visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: 	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>B Ranch</i>	Weather Conditions: <i>warm</i>
Inspector: <i>Steven M. Garcia</i> <i>Pam Pinson (OWNER)</i> <i>David Meeker</i>	
Time/Date: <i>3:15 PM 2/19/2019.</i>	
Vegetation Conditions: <i>Lots of green vegetation visible.</i>	Fences/Livestock: <i>None noted.</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None noted.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: 	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Bell</i>	Weather Conditions: <i>WARM</i>
Inspector: <i>Steven M. Garcia</i> <i>Pam P. Olson (NUEO)</i> <i>David Mercer</i>	
Time/Date: <i>2:50 PM 9/19/2019</i>	
Vegetation Conditions: <i>SPARCE VEGETATION ON BOTTOM AREA. MODERATE VEGETATION VISIBLE SURROUND IN AREA</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No Visible Concerns</i>	Significant Erosion (Attach Description): <i>None Visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations:	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>STAV</i>	Weather Conditions: <i>WARM</i>
Inspector: <i>Steven M. Garcia (NMEP) David Mercer</i>	
Time/Date: <i>2:40 PM 9/19/2019.</i>	
Vegetation Conditions: <i>Abundant vegetation visible throughout site.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns</i>	Significant Erosion (Attach Description): <i>None visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations: 	



Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Tender Foot</i>	Weather Conditions: <i>WARM</i>
Inspector: <i>Steven M. Garcia</i> <i>PAM Pinson</i> <i>NMED DAVID MERCER</i>	
Time/Date: <i>2:30 PM 9/19/2019</i>	
Vegetation Conditions: <i>Abundant live vegetation Noted on site.</i>	Fences/Livestock: <i>None</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations:	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Oceola</i>	Weather Conditions: <i>warm</i>
Inspector: <i>Steven M. Garcia (WME) PAMP: uson DAVID MILLER</i>	
Time/Date: <i>2:15 PM 9/19/2019</i>	
Vegetation Conditions: <i>SPARCE vegetation visible on most of the site.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>Berm on road needs to be built up.</i>	Significant Erosion (Attach Description): <i>Rills coming off of road noted.</i>
Monitoring Stations: <i>None.</i>	
Other Observations:	

Chino Mines Co. Reclamation/Erosion Monitoring Form

Monthly
 Quarterly
 1" Rain Event

Reclamation Unit: <i>Ground Hog</i>	Weather Conditions: <i>w sun</i>
Inspector: <i>Steven M. Garcia</i> <i>Pam Pinson (UMFA)</i> <i>DAVID MALCOLM</i>	
Time/Date: <i>2:00pm 9/19/2019</i>	
Vegetation Conditions: <i>Live vegetation visible throughout site.</i>	Fences/Livestock: <i>None.</i>
Ditches/Water Control: <i>No visible concerns.</i>	Significant Erosion (Attach Description): <i>None. Visible.</i>
Monitoring Stations: <i>None.</i>	
Other Observations:	