



October 23, 2009

Mr. Leo Francendese
On-Scene Coordinator
U.S. Environmental Protection Agency
61 Forsyth Street, SW 11th Floor
Atlanta, Georgia 30303

**Subject: Surface Water Sampling Letter Report
Barite Hills Nevada Goldfields Site
McCormick, McCormick County, South Carolina
Contract No. EP-W-05-053
Technical Direction Document (TDD) No.: TNA-05-003-0049**

Dear Mr. Francendese:

Oneida Total Integrated Enterprises (OTIE), Superfund Technical Assessment and Response Team (START), prepared this Letter Report detailing activities performed in support of the Barite Hills Nevada Goldfields site (the site) investigation under Contract Number (No.) EP-W-05-053, Technical Direction Document (TDD) No. TNA-05-003-0049. All activities and procedures were performed in accordance with the EPA Science and Ecosystems Support Division (SESD) Region 4 Field Branches Quality System and Technical Procedures dated November 2007, and the EPA-approved site-specific Quality Assurance Project Plan (QAPP).

Under this work assignment, START was tasked with conducting water sampling of the Main Pit lake (the lake), Hawes Creek tributary (the creek), and monitoring wells located on-site, south of the Main Pit lake. A site location map is provided in Attachment A. Two samples were collected from the lake, one sample was collected at seep location 0 along the creek, and samples were collected from monitoring wells (MW) 1 and MW-2. Water quality parameters were prior to water sampling. Water quality parameters from August 2009 and comparative tables of potentially applicable standards can be found in Attachment B with corresponding graphs. Laboratory analytical data is in Attachment C. The Health and Safety Plan (HASP) can be found in Attachment D.

Site Background

The site is an abandoned pit mine located approximately 3 miles south of McCormick, McCormick County, South Carolina between US Highway (Hwy) 378 and US Hwy 221 on the northern side of Road 30. The site is located in a relatively remote area; there are no buildings, homes, or commercial buildings within 0.5 mile of the site boundary.

The site is located along a topographic high ridge area forming the headwaters of the creek. The topography of the area consists of rolling hills with ridgelines at an elevation of about 500 feet above mean sea level (amsl). Within the site, the ridgeline comprising the site has a high point of about 510 feet amsl and an average elevation of approximately 480 feet amsl.

The Main Pit from the mining operations remains. When the mine was abandoned, the Main Pit flooded. The waste rock stockpiles previously surrounding the eastern and southeastern portions of the Main Pit were a source of acid rock drainage. The pit contains approximately 60 million gallons of water with an historical pH of 2 and a high dissolved metal content.

Field Investigation Activities

On September 24, 2009, START conducted surface water sampling, and on October 2, 2009, START conducted monitoring well sampling. The investigation consisted of measuring water quality and collecting water samples from the lake, nearby creek, and monitoring wells. A HASP was developed for the site prior to fieldwork activities.

START collected two samples from the lake, one sample from the creek, and two samples from the monitoring wells (Figure 1). Water quality parameters were measured at each sample location (Table 1). The lake water column was measured every meter from the surface to the bottom. BHR-MPS-016 was collected one meter below the lake water surface, and BHR-MPB-016 was collected one meter from the bottom of the lake using a Bacon Bomb. BHR-S0-016 was collected adjacent to the spillway along the creek (Seep 0). Sample BHR-MW1-003 was collected from MW-1, and sample BHR-MW2-003 was collected from MW-2, both located just south of the lake. Lake samples were analyzed by Analytical Environmental Services, Inc. (AES) for various parameters including dissolved target analyte list (TAL) metals, total TAL metals, total organic carbon, pH, alkalinity, ferric/ferrous speciation, and total dissolved solids (TDS). The creek sample was analyzed for total metals only, and the monitoring wells were sampled for total metals, pH, ferric/ferrous speciation, TDS, ammonia, nitrate, sulfate, and total acidity. Aliquots sampled for dissolved metals were filtered on-site using a 0.45 micron filter. Laboratory analytical reports are provided in Attachment C.

Conclusions

Tables 2, 3, and 4 are analytical comparisons of the lake surface, lake bottom, and creek respectively, from June 2008 through September 2009 of potentially applicable standards, including priority and non-priority pollutants. Table 5 is the analytical comparison of the

monitoring wells. Graph 1 illustrates the lake surface dissolved metal concentrations over time. Graph 2 is a close up of Graph 1, detailing the lower concentrations. Graph 3 illustrates the seep 0 concentrations of total metal concentrations over time. Tables and graphs can be found in Attachment B.

If you have any questions or comments regarding this Letter Report or require any additional information, please contact me at (678) 355-5550 ext. 5707.

Sincerely,

A handwritten signature in black ink, appearing to read "Russell Henderson", with a long horizontal flourish extending to the right.

Russell Henderson

Project Manager

Oneida Total Integrated Enterprises (OTIE)

Superfund Technical Assessment and Response Team (START)

Enclosures

Attachment A – Figures

Attachment B – Tables & Graphs

Attachment C – Analytical Data

Attachment D – HASP

ATTACHMENT A
FIGURES



Legend

 Monitoring Well

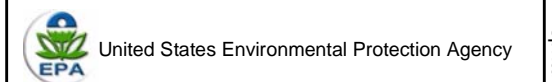
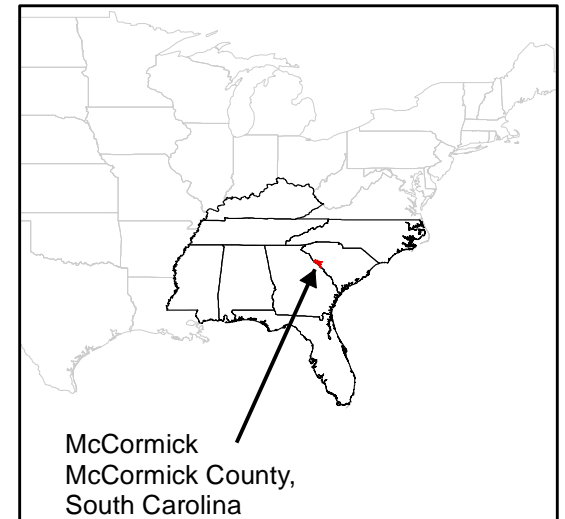
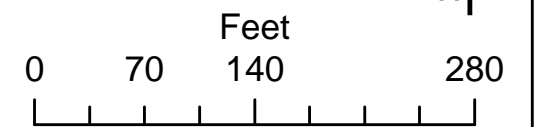
Note:

MW - Monitoring Well

MPS - Mine Pit Surface

MPB - Mine Pit Bottom

BHR - Barite Hills Removal



**BARITE HILLS
MCCORMICK, MCCORMICK
COUNTY, SOUTH CAROLINA
TDD No: TNA-05-003-0049**

**FIGURE 1
SAMPLE LOCATIONS
SEPTEMBER 2009**



ATTACHMENT B
TABLES & GRAPHS

Table 1
Water Quality Parameters

Nov. 19/21, 2008

YSI 5200

Main Pit Lake

Depth (m)	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)
1	4.38	43.8	4.74	13.41	3.327
2	4.6	-74.5	0.9	14.83	3.607
3	4.73	-88.3	0.63	14.88	3.575
4	4.81	-94.2	0.6	14.87	3.559
5	4.76	-96.5	0.47	14.87	3.537
6	4.81	-99.4	0.43	14.87	3.534
7	4.82	-100.1	0.4	14.87	3.529
8	4.82	-102.8	0.38	14.81	3.527
9	4.72	-136.9	0.39	16.12	3.818
10	4.65	-154.9	0.3	16.71	4.009
11	4.8	-197	0.43	16.69	3.774
12	5.26	-196.8	0.4	16.66	3.684

Creeks

Location	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)
1					
2	3.05	452	3.1	7.91	3.568
3 SE	6.54	232	4.17	9.24	0.429
3 SW					

Dec. 16, 2008

YSI 5200

Main Pit Lake

Depth (m)	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)
1	4.9	-42	1.5	11.59	3.258
2	4.95	-60	1.86	11.67	3.277
3	4.98	-64	2.39	11.66	3.278
4	5.02	-66	0.86	11.63	3.276
5	5.04	-70	0.71	11.62	3.276
6	5.07	-71	0.67	11.63	3.279
7	5.07	-71	0.63	11.64	3.28
8	5.08	-72	0.61	11.64	3.28
9	5.08	-72	0.6	11.63	3.28
10	5.1	-73	0.58	11.63	3.28
11	5.1	-73	0.57	11.63	3.28
12	5.1	-73	0.56	11.63	3.28
13	5.08	-94	0.54	11.66	3.285
14	5.8	-102	0.39	11.86	2.732
15	5.82	-113	0.41	11.85	2.721

Table 1
Water Quality Parameters

Feb. 7, 2009

Horbia U-22XD

Main Pit Lake

Depth (m)	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)
1	5.27	-6	1.79	9.7	6.44
2	5.27	-8	1.27	9.3	7.12
3	5.26	-9	0.79	9	6.02
4	5.27	-8	0.76	9	5.82
5	5.27	-10	0.7	8.9	6.09
6	5.27	-8	0.67	8.9	8.09
7	5.27	-35	0.58	8.9	9.3
8	5.27	-40	0.54	8.9	6.64
9	5.27	-40	0.55	9	8.12
10	5.27	-40	0.54	9	9.49
11	5.27	-10	0.74	8.9	6.9
12	5.98	-146	0	10	3.88
13	6.08	-160	0	10	2.56
14	6.09	-165	0	10	2.26
15	6.1	-185	0	10.4	1.7

Jan. 30, 2009

Creeks

Location	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)
1	2.6			8.2	
2	2.68			8.4	
3 SE	5.17			9.3	
3 SW	3.65			10.2	

Feb. 26, 2009

Horbia U-22XD

Main Pit Lake

Depth (m)	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)
1	4.76	106	6.97	11.5	0.828
2	4.85	101	5.39	9.5	0.825
3	5.31	29	1.48	9.6	0.982
4	5.38	16	0.15	9.3	0.888
5	5.39	15	0	9.3	0.864
6	5.4	13	0	9.3	0.888
7	5.4	14	0	9.3	0.989
8	5.41	12	0	9.3	0.987
9	5.41	11	0	9.3	1.45
10	5.83	-59	0	9.5	1.24
11	5.93	-79	0	9.7	1.16
12	5.96	-91	0	9.7	1.08
13	5.98	-98	0	9.8	1.04
14	5.99	-105	0	9.8	1
15	6	-107	0	9.8	0.96
15.5	6.17	-192	0	10.1	0.555

Table 1
Water Quality Parameters

SE Corner of Lake

Depth (m)	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)
1	4.9	97	6.63	10.5	0.452
2	4.9	106	5.79	9.5	0.436
3	5.38	32	2.52	9.6	0.595
4	5.45	24	0.29	9.3	0.712
5	5.45	22	0	9.3	0.698
6	5.45	19	0	9.3	0.725
7	5.46	16	0	9.3	0.73
8	5.45	15	0	9.3	0.728
9	5.45	16	0	9.3	0.717
10	5.8	-35	0	9.5	0.709
11	5.97	-69	0	9.7	0.69

SW Corner of Lake

Depth (m)	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)
1	4.88	105	6.92	10.4	0.425
2	4.9	108	5.86	9.5	0.424
3	5.43	35	2.14	9.4	0.518
4	5.45	31	0.71	9.3	0.6
5	5.46	29	0.26	9.3	0.616
6	5.46	27	0	9.3	0.628
7	5.47	26	0	9.3	0.655
8	5.46	26	0	9.2	0.652
9	5.85	-24	0	9.5	0.69
10	5.9	-43	0	9.6	0.693

Creeks

Location	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)
0	3.96	305	10.82	12.2	83.3
MC	6.32	45	9.74	12.9	18.5
1	2.93	386	6.98	12.4	0.287
2	3.09	383	7.91	14.5	0.23
3	3.77	368	7.15	14	64.9

Apr. 08, 2009

Horbia U-22XD

Main Pit Lake

Depth (m)	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)	Turbidity (NTU)
0.5	3.83	231	6.27	12.9	1.15	20.5
1	5.07	-43	5.02	12.8	1.14	19.5
2	5.17	-43	1.48	12.6	1.06	13.4
3	5.22	-43	0.00	10.7	1.1	8.9
4	5.24	-45	0.00	10.5	1.13	8.1
5	5.26	-48	0.00	10.4	1.15	9.0
6	5.26	-49	0.00	10.4	1.19	9.3
7	5.26	-49	0.00	10.3	1.25	11.3
8	5.27	-51	0.00	10.3	1.3	11.5
9	5.26	-51	0.00	10.3	1.33	14.5
10	5.27	-52	0.00	10.3	1.38	14.4
11	5.31	-57	0.00	10.3	1.48	47.4
12	5.31	-57	0.00	10.3	0.999	128
13	5.33	-60	0.00	10.3	0.889	offscale
14	5.37	-60	0.00	10.3	0.832	offscale
15	6.13	-182	0.00	10.4	0.777	offscale

Table 1
Water Quality Parameters

Creeks

Location	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)	Turbidity (NTU)
0	4.33	207	11.63	11.4	0.181	50
1	4.73	179	11.43	11	33.7	42.9
2	3.36	317	10.26	12.2	0.135	17.7
3	4.14	296	9.35	11.8	50.3	22.2

May 15, 2009

Horbia U-22

Main Pit Lake

Depth (m)	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)	Turbidity (NTU)
1	3.14	259	3.98	23.9	0.357	33.0
2	5.05	-104	0.00	17.2	0.442	32.6
3	5.04	-92	0.00	12.6	0.447	25.3
4	5.03	-88	0.00	11.7	0.452	26.0
5	5.03	-86	0.00	11.4	0.437	27.6
6	5.05	-88	0.00	11.3	0.463	31.0
7	5.04	-85	0.00	11.3	0.469	32.4
8	5.05	-87	0.00	11.2	0.477	32.1
9	5.05	-86	0.00	11.2	0.485	33.8
10	5.06	-87	0.00	11.2	0.493	35.7
11	5.05	-88	0.00	11.2	0.502	35.6
12	5.08	-90	0.00	11.2	0.515	41.4
13	5.10	-93	0.00	11.2	0.535	75.7
14	5.18	-101	0.03	11.2	0.554	269
15	5.94	-195	0.22	11.3	0.588	offscale

Creeks

Location	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)	Turbidity (NTU)
0	2.96	374	10.02	19.0	0.112	29.9
1	2.36	429	2.82	18.0	0.293	30.2
2	2.41	421	5.95	18.2	0.236	23.9
3	2.85	351	4.64	18.0	0.128	39.7

June 18, 2009

Horbia U-22

Main Pit Lake

Depth (m)	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)	Turbidity (NTU)
Surface	3.24	282	7.36	30.0	3.27	offscale
0.25	3.24	280	7.20	30.0	3.27	offscale
0.50	3.23	275	6.98	30.0	3.28	offscale
0.75	3.26	257	6.01	29.9	3.28	15.5
1	5.18	-63	1.36	27.9	3.57	13.5
2	5.17	-82	1.68	17.9	3.80	14.9
3	5.19	-70	1.32	14.1	3.71	15.8
4	5.17	-54	1.42	13.2	3.73	12.3
5	5.17	-50	1.48	13.1	3.69	11.3
6	5.17	-48	1.50	12.9	3.68	13.4
7	5.17	-48	1.54	12.9	3.68	13.7
8	5.17	-47	1.61	12.9	3.67	12
9	5.18	-47	1.60	12.9	3.67	14.5
10	5.19	-47	1.60	12.8	3.67	13.5
11	5.21	-48	1.28	12.8	3.66	15.3
12	5.23	-50	0.00	12.8	3.65	19.6
13	5.65	-66	0.00	12.8	3.62	16.8
14	5.63	-176	0.00	12.9	3.00	offscale
15	5.58	-167	0.00	13.0	3.05	offscale

Table 1
Water Quality Parameters

Creeks

Location	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)	Turbidity (NTU)
0	3.63	244	11.18	25.2	1.55	offscale
1	2.96	349	11.49	21.8	0.394	offscale
2	3.31	297	11.22	22.0	0.242	offscale
3	4.06	158	10.1	22.1	0.163	offscale

July 24, 2009

Horbia U-22

Main Pit Lake

Depth (m)	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)	Turbidity (NTU)
Surface	8.72	-156	2.7	29.1	3.9	1.9
0.50	8.67	-166	2.55	28.2	3.89	2.3
1	8.59	-180	2.51	27.9	3.9	1.0
2	8.35	-198	2.19	27.7	3.88	1.8
3	8.03	-248	1.13	27.5	3.9	2.2
4	6.15	-171	0.00	15.7	3.93	652.0
5	6.16	-170	0.00	14.2	3.93	653.0
6	6.15	-170	0.00	14.2	3.93	652.0
7	6.16	-170	0.00	14.2	3.93	650
8	6.16	-171	0.00	14.2	3.93	671
9	6.17	-172	0.00	14.2	3.93	638
10	6.17	-172	0.00	14.2	3.93	654
11	6.18	-173	0.00	14.2	3.93	634
12	6.18	-174	0.00	14.1	3.93	626
13	6.18	-174	0.00	14.1	3.94	594
14	6.17	-173	0.00	14	3.97	591
15	6.21	-171	0.00	13.8	4.04	offscale

Creeks

Location	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)	Turbidity (NTU)
0	3.03	419	3.46	25.8	2.67	0.3

Monitoring Wells

Location	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)	Turbidity (NTU)
MW-1	2.86	280	2.06	20.9	10.6	0
MW-2	3.81	205	1.58	20.1	11.4	0

August 29, 2009

Horbia U-22

Main Pit Lake

Depth (m)	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)	Turbidity (NTU)
Surface	6.06	-62	4.46	28.1	3.86	0.2
1	6.04	-64	4.22	28	3.86	9.5
2	6	-71	3.97	28	3.86	0
3	5.7	-190	0.00	21.8	3.93	5.9
4	5.54	-155	0.00	16.9	3.92	11.1
5	5.54	-149	0.00	16	3.93	11.1
6	5.54	-146	0.00	15.8	3.92	10.5
7	5.54	-144	0.00	15.7	3.92	9.4
8	5.55	-146	0.00	15.7	3.92	9.3
9	5.57	-146	0.00	15.6	3.92	10.1
10	5.6	-149	0.00	15.6	3.92	11
11	5.63	-155	0.00	15.6	3.91	9.1
12	5.69	-170	0.00	15.6	3.9	903
13	5.58	-205	0.00	15.5	3.82	offscale
14	5.53	-201	0.00	15.4	3.69	673
15	5.52	-199	0.00	15.3	3.37	offscale

Table 1
Water Quality Parameters

Creeks

Location	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)	Turbidity (NTU)
0	3.79	0.1	7.15	24.4	2.66	0

Monitoring Wells

Location	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)	Turbidity (NTU)
MW-1	1.71	267	1.83	19.1	19.3	offscale
MW-2	3.79	NR	NR	NR	2	NR

* NR = Not recorded

September 24, 2009 Horbia U-22

Main Pit Lake

Depth (m)	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)	Turbidity (NTU)
Surface	6.15	-194	4.08	27.6	4.3	1.1
1	6.05	-111	3.3	27.1	4.3	8.9
2	5.95	-126	2.19	26.9	4.29	18.4
3	5.6	-206	0.00	26.1	4.3	17.3
4	5.57	-200	0.00	19.7	4.43	18.5
5	5.58	-194	0.00	17.1	4.44	18.5
6	5.59	-193	0.00	16.6	4.44	20.4
7	5.59	-193	0.00	16.5	4.43	19.3
8	5.61	-195	0.00	16.4	4.44	18
9	5.68	-198	0.00	16.4	4.29	18.8
10	5.71	-201	0.00	16.3	4.28	16.7
11	5.75	-205	0.00	16.2	4.25	offscale
12	5.8	-209	0.00	16.2	4.08	offscale
13	5.81	-222	0.00	16.1	3.56	offscale
14	5.72	-221	0.00	15.9	3.25	offscale
15	5.7	-222	0.00	15.9	3.25	offscale

Creeks

Location	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)	Turbidity (NTU)
0	2.56	416	7.74	24.0	1.81	1.3

Monitoring Wells

Location	pH	ORP (mV)	DO (mg/L)	Temp (°C)	Conductivity (mS/cm)	Turbidity (NTU)
MW-1	1.71	277	6.65	20.3	16.4	2.8
MW-2	1.78	256	6.44	21.3	27.1	offscale

Table 2
Pit Lake Surface Potentially Applicable Standards Comparison

	Human Health	SCDHEC WQC under R61-68		Oct. 2007	May 2, 2008	June 10, 2008	July 30, 2008	Aug. 22, 2008	Nov. 6, 2008
	MCL	CMC	CCC	BHB-005	BHT-001	BHR-5-001	BRR-JR-LAKE		BHR-MP05-110608
Potentially Applicable Standards (priority pollutants)				Pit Water Untreated (mg/L)	Pit water treated (Total, mg/L)	Pit water treated (Dissolved, mg/L)	Pit water treated (Dissolved, mg/L)	Pit water treated (Dissolved, mg/L)	Pit water treated (Dissolved, mg/L)
Antimony	0.006	NSA	NSA	0.02	NA	0.006	0.2	0.2	BRL*
Arsenic	0.01	0.34	0.15	0.968	NA	BRL†	BRL†	BRL†	BRL†
Cadmium	0.005	0.008	0.0026	1.57	NA	BRL#	BRL#	BRL#	BRL#
Chromium	0.1	0.57	0.074	0.141	NA	BRL†	BRL†	BRL†	BRL†
Copper	1	0.057	0.039	287	NA	BRL†	BRL†	BRL†	BRL†
Lead	0.015	0.32	0.005	0.161	NA	BRL†	BRL†	BRL†	0.0381
Nickel	0.61	1.071	0.167	0.404	NA	0.163	BRL*	BRL*	BRL*
Selenium	0.05	NSA	0.005	0.23	NA	0.022	0.028	0.01	BRL*
Zinc	5	0.339	0.339	40.2	NA	1.44	BRL*	BRL*	0.132
Potentially Applicable Standards (non-priority pollutants)									
Aluminum	0.2	0.75	0.087	224	NA	0.347	BRL§	BRL§	0.342
Iron	0.3		1	1150	121	309	322	287	148
Manganese	0.05-0.1			13.6	NA	10.6	11	11.7	8.96
Ferrous Iron (mg/L)									
Iron, Ferric (+3)	0.3	NSA	1	NA	BRL°	NA	NA	NA	BRL°
Iron, Ferrous (+2)	0.3	NSA	1	NA	145	NA	NA	NA	217

Notes:

SCDHEC - South Carolina Department of Health and Environmental Control
a - South Carolina Regulation 61-68, Water Classifications and Standards, adopted June 2004 and adjusted for water hardness of 400 mg/L.

MCL - Maximum contaminant level

CMC - Criterion maximum concentration

CCC - Criterion continuous concentration

mg/L - Milligrams per liter

NSA - Standard not available

BRL - Below reporting limit

* - Reporting limit 0.02

† - Reporting limit 0.01

‡ - Reporting limit 0.05

- Reporting limit 0.005

§ - Reporting limit 0.2

° - Reporting limit 0.1

Yellow - Exceeds one criteria (Human Health Standard or SCDHEC WQC)

Red - Exceeds all criteria (both Human Health Standard and SCDHEC WQC)

Table 2
Pit Lake Surface Potentially Applicable Standards Comparison

	Human Health	SCDHEC WQC under R61-68		Nov. 19, 2008	Dec. 16, 2008	Jan. 30, 2009	Feb. 26, 2009	Apr. 08, 2009	May 15, 2009
	MCL	CMC	CCC	BHR-MPS-001	BHR-MPS-006	BHR-MPS-006	BHR-MPS-010	BHR-MPS-011	BHR-MPS-012
Potentially Applicable Standards (priority pollutants)				Pit water treated (Dissolved, mg/L)	Pit water treated (Dissolved, mg/L)	Pit water treated (Dissolved, mg/L)	Pit water treated (Dissolved, mg/L)	Pit water treated (Dissolved, mg/L)	Pit water treated (Dissolved, mg/L)
Antimony	0.006	NSA	NSA	0.257	BRL*	BRL*	BRL*	0.0045	0.0039
Arsenic	0.01	0.34	0.15	BRL‡	BRL‡	BRL‡	BRL‡	BRL‡	BRL‡
Cadmium	0.005	0.008	0.0026	BRL#	BRL#	BRL#	BRL#	BRL#	BRL#
Chromium	0.1	0.57	0.074	BRL†	BRL†	BRL†	BRL†	0.0013	0.0015
Copper	1	0.057	0.039	BRL†	0.0278	0.0293	BRL†	0.0572	0.138
Lead	0.015	0.32	0.005	0.0353	BRL†	BRL†	0.0427	BRL†	0.0024
Nickel	0.61	1.071	0.167	BRL*	BRL*	BRL*	BRL*	0.005	0.0033
Selenium	0.05	NSA	0.005	BRL*	BRL*	BRL*	BRL*	BRL*	BRL*
Zinc	5	0.339	0.339	0.118	0.061	0.0628	0.0685	0.0748	0.106
Potentially Applicable Standards (non-priority pollutants)									
Aluminum	0.2	0.75	0.087	0.257	0.314	BRL§	BRL§	0.177	0.459
Iron	0.3		1	169	212	165	186	151	77.8
Manganese	0.05-0.1			9.33	11.2	10.2	10.7	10.8	10.3
Ferrous Iron (mg/L)									
Iron, Ferric (+3)	0.3	NSA	1	37.2	BRL°	BRL°	28.5	55.7	2.05
Iron, Ferrous (+2)	0.3	NSA	1	191	305	209	194	103	75.7

Notes:

SCDHEC - South Carolina Department of Health and Environmental Control
a - South Carolina Regulation 61-68, Water Classifications and Standards, adopted June 2004 and adjusted for water hardness of 400 mg/L.

MCL - Maximum contaminant level

CMC - Criterion maximum concentration

CCC - Criterion continuous concentration

mg/L - Milligrams per liter

NSA - Standard not available

BRL - Below reporting limit

* - Reporting limit 0.02

† - Reporting limit 0.01

‡ - Reporting limit 0.05

- Reporting limit 0.005

§ - Reporting limit 0.2

° - Reporting limit 0.1

Yellow - Exceeds one criteria (Human Health Standard or SCDHEC WQC)

Red - Exceeds all criteria (both Human Health Standard and SCDHEC WQC)

Table 2
Pit Lake Surface Potentially Applicable Standards Comparison

	Human Health	SCDHEC WQC under R61-68		June 18, 2009	July 24, 2009	Aug. 29, 2009	Sept. 24, 2009
	MCL	CMC	CCC	BHR-MPS-013	BHR-MPS-014	BHR-MPS-015	BHR-MPS-016
Potentially Applicable Standards (priority pollutants)				Pit water treated (Dissolved, mg/L)	Pit water treated (Dissolved, mg/L)	Pit water treated (Dissolved, mg/L)	Pit water treated (Dissolved, mg/L)
Antimony	0.006	NSA	NSA	0.0051			
Arsenic	0.01	0.34	0.15	BRL†			
Cadmium	0.005	0.008	0.0026	BRL#			
Chromium	0.1	0.57	0.074	BRL†			
Copper	1	0.057	0.039	0.145	BRL†	0.00603	0.00649
Lead	0.015	0.32	0.005	0.0049			
Nickel	0.61	1.071	0.167	0.0026			
Selenium	0.05	NSA	0.005	BRL*	BRL*	BRL#	BRL#
Zinc	5	0.339	0.339	0.117	BRL*	BRL†	BRL†
Potentially Applicable Standards (non-priority pollutants)							
Aluminum	0.2	0.75	0.087	0.622			
Iron	0.3		1	64.8	BRL°	BRL°	BRL°
Manganese	0.05-0.1			9.27	3.48	5.91	6.72
Ferrous Iron (mg/L)							
Iron, Ferric (+3)	0.3	NSA	1	102	0.475	BRL°	BRL°
Iron, Ferrous (+2)	0.3	NSA	1	68.2	BRL°	BRL°	BRL°

Notes:

SCDHEC - South Carolina Department of Health and Environmental Control
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MCL - Maximum contaminant level

CMC - Criterion maximum concentration

CCC - Criterion continuous concentration

mg/L - Milligrams per liter

NSA - Standard not available

BRL - Below reporting limit

* - Reporting limit 0.02

† - Reporting limit 0.01

‡ - Reporting limit 0.05

- Reporting limit 0.005

§ - Reporting limit 0.2

° - Reporting limit 0.1

Yellow - Exceeds one criteria (Human Health Standard or SCDHEC WQC)

Red - Exceeds all criteria (both Human Health Standard and SCDHEC WQC)

Table 3
Pit Lake Bottom Potentially Applicable Standards Comparison

	Human Health	SCDHEC WQC under R61-68		Oct. 2007	Dec. 16, 2008	Feb. 26, 2009	Apr. 08, 2009
	MCL	CMC	CCC	BHB-005	BHR-MPSB-008	BHR-MPB-010	BHR-MPB-011
Potentially Applicable Standards (priority pollutants)				Pit Water Untreated (mg/L)	Pit water treated (Dissolved, mg/L)	Pit water treated (Dissolved, mg/L)	Pit water treated (Dissolved, mg/L)
Antimony	0.006	NSA	NSA	0.02	BRL*	BRL*	BRL*
Arsenic	0.01	0.34	0.15	0.968	BRL‡	BRL‡	BRL‡
Cadmium	0.005	0.008	0.0026	1.57	BRL#	BRL#	BRL#
Chromium	0.1	0.57	0.074	0.141	BRL†	BRL†	0.0019
Copper	1	0.057	0.039	287	0.0189	0.0284	0.0052
Lead	0.015	0.32	0.005	0.161	BRL†	0.036	BRL†
Nickel	0.61	1.071	0.167	0.404	BRL*	BRL*	0.0067
Selenium	0.05	NSA	0.005	0.23	BRL*	BRL*	BRL*
Zinc	5	0.339	0.339	40.2	0.0676	0.0601	0.112
Potentially Applicable Standards (non-priority pollutants)							
Aluminum	0.2	0.75	0.087	224	0.38	BRL§	0.193
Iron	0.3		1	1150	217	178	187
Manganese	0.05-0.1			13.6	11.4	10.6	11.1
Ferrous Iron (mg/L)							
Iron, Ferric	0.3	NSA	1		BRL°	0.52	5.83
Iron, Ferrous	0.3	NSA	1		285	186	188

Notes:

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MCL - Maximum contaminant level

CMC - Criterion maximum concentration

CCC - Criterion continuous concentration

mg/L - Milligrams per liter

NSA - Standard not available

BRL - Below reporting limit

* - Reporting limit 0.02

† - Reporting limit 0.01

‡ - Reporting limit 0.05

- Reporting limit 0.005

§ - Reporting limit 0.2

° - Reporting limit 0.1

Yellow - Exceeds one criteria (Human Health Standard or SCDHEC WQC)

Red - Exceeds all criteria (both Human Health Standard and SCDHEC WQC)

Table 3
Pit Lake Bottom Potentially Applicable Standards Comparison

	Human Health	SCDHEC WQC under R61-68		May 15, 2009	June 18, 2009	July 24, 2009	Aug. 29, 2009
	MCL	CMC	CCC	BHR-MPB-012	BHR-MPB-013	BHR-MPB-014	BHR-MPB-015
Potentially Applicable Standards (priority pollutants)				Pit water treated (Dissolved, mg/L)	Pit water treated (Dissolved, mg/L)	Pit water treated (Dissolved, mg/L)	Pit water treated (Dissolved, mg/L)
Antimony	0.006	NSA	NSA	0.0082	0.0056		
Arsenic	0.01	0.34	0.15	BRL‡	BRL‡		
Cadmium	0.005	0.008	0.0026	BRL#	BRL#		
Chromium	0.1	0.57	0.074	0.0015	BRL†		
Copper	1	0.057	0.039	BRL†	BRL†	BRL†	0.00553
Lead	0.015	0.32	0.005	BRL†	0.0058		
Nickel	0.61	1.071	0.167	0.0059	0.0065		
Selenium	0.05	NSA	0.005	0.0106	0.01	BRL*	0.00533
Zinc	5	0.339	0.339	0.127	0.055	BRL*	BRL†
Potentially Applicable Standards (non-priority pollutants)							
Aluminum	0.2	0.75	0.087	0.06	0.156		
Iron	0.3		1	149	157	74.4	62.1
Manganese	0.05-0.1			11.4	9.79	10.6	10.2
Ferrous Iron (mg/L)							
Iron, Ferric	0.3	NSA	1	BRL°	BRL°	48.1	BRL°
Iron, Ferrous	0.3	NSA	1	163	173	101	71.9

Notes:

SCDHEC - South Carolina Department of Health and Environmental Control
a - South Carolina Regulation 61-68, Water Classifications and Standards, adopted June 2004 and adjusted for water hardness of 400 mg/L.

MCL - Maximum contaminant level

CMC - Criterion maximum concentration

CCC - Criterion continuous concentration

mg/L - Milligrams per liter

NSA - Standard not available

BRL - Below reporting limit

* - Reporting limit 0.02

† - Reporting limit 0.01

‡ - Reporting limit 0.05

- Reporting limit 0.005

§ - Reporting limit 0.2

° - Reporting limit 0.1

Yellow - Exceeds one criteria (Human Health Standard or SCDHEC WQC)

Red - Exceeds all criteria (both Human Health Standard and SCDHEC WQC)

Table 3
Pit Lake Bottom Potentially Applicable Standards Comparison

	Human Health	SCDHEC WQC under R61-68		Sept. 24, 2009
	MCL	CMC	CCC	BHR-MPB-016
Potentially Applicable Standards (priority pollutants)				Pit water treated (Dissolved, mg/L)
Antimony	0.006	NSA	NSA	
Arsenic	0.01	0.34	0.15	
Cadmium	0.005	0.008	0.0026	
Chromium	0.1	0.57	0.074	
Copper	1	0.057	0.039	0.00255
Lead	0.015	0.32	0.005	
Nickel	0.61	1.071	0.167	
Selenium	0.05	NSA	0.005	0.00646
Zinc	5	0.339	0.339	BRL†
Potentially Applicable Standards (non-priority pollutants)				
Aluminum	0.2	0.75	0.087	
Iron	0.3		1	35.8
Manganese	0.05-0.1			10.2
Ferrous Iron (mg/L)				
Iron, Ferric	0.3	NSA	1	BRL°
Iron, Ferrous	0.3	NSA	1	48.6

Notes:

SCDHEC - South Carolina Department of Health and Environmental Control
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MCL - Maximum contaminant level

CMC - Criterion maximum concentration

CCC - Criterion continuous concentration

mg/L - Milligrams per liter

NSA - Standard not available

BRL - Below reporting limit

* - Reporting limit 0.02

† - Reporting limit 0.01

‡ - Reporting limit 0.05

- Reporting limit 0.005

§ - Reporting limit 0.2

° - Reporting limit 0.1

Yellow - Exceeds one criteria (Human Health Standard or SCDHEC WQC)

Red - Exceeds all criteria (both Human Health Standard and SCDHEC WQC)

Table 4
Creek Potentially Applicable Standards Comparison (Total)

Seep 0	Human Health	SCDHEC WQC under R61-68		July 24, 2009	Aug. 29, 2009	Sept. 24, 2009
	MCL	CMC	CCC	BHR-S0-014	BHR-S0-015	BHR-S0-016
Potentially Applicable Standards (priority pollutants)						
Copper	1	0.057	0.039	20.2	1.68	6.66
Selenium	0.05	NSA	0.005	0.053	0.00726	0.0118
Zinc	5	0.339	0.339	11.4	1.32	6.10
Potentially Applicable Standards (non-priority pollutants)						
Iron	0.3	NSA	1	93	6.72	19
Manganese	0.05-0.1	NSA	NSA	13.8	5.96	8.10
Potassium	NSA	NSA	NSA	11.6	27.7	4.64
Sodium	NSA	NSA	NSA	44.3	205	30.8

Notes:

SCDHEC - South Carolina Department of Health and Environmental Control
a - South Carolina Regulation 61-68, Water Classifications and Standards,
adopted June 2004 and adjusted for water hardness of 400 mg/L.

MCL - Maximum contaminant level

CMC - Criterion maximum concentration

CCC - Criterion continuous concentration

mg/L - Milligrams per liter

NSA - Standard not available

NA - Not analyzed

Yellow - Exceeds one criteria (Human Health Standard or SCDHEC WQC)

Red - Exceeds all criteria (both Human Health Standard and SCDHEC WQC)

Table 5
Monitoring Wells Potentially Applicable Standards Comparison

	Drinking Water	National Recommended WQC		SCDHEC WQC ^a		MW-01		MW-02		MW-01	
	Federal MCL	NOAEL Acute	NOAEL Chronic	NOAEL Acute	NOAEL Chronic	July 24, 2009		July 24, 2009		Aug. 29, 2009	
Wet Chem (mg/L)											
Residue, Total (wt%)											
Residue, Dissolved (TDS)	500					15,000	100	16,000	100	19,200	100
Chloride	250	860	NSA	NSA	230						
Nitrogen, Nitrate (As N)	10	NSA	NSA	NSA	NSA	BRL	2.5	BRL	2.5	BRL	250
Sulfate	250	NSA	NSA	NSA	NSA	14,800	1000	10,800	1000	14,400	1000
Organic Carbon, Total											
Alkalinity											
Acidity	NSA	NSA	NSA	NSA	NSA	8210	10	7,200	10	11900	10
Ammonia						5.81	0.2	4.74	0.2	6.64	0.4
Cyanide, Amenable to Chlorination											
Cyanide, Total											
Phosphorus, Total (As P)	NSA	NSA	NSA	NSA	NSA						
pH (pH units)	6.5-8.5	NSA	6.5 - 8.5	NSA	6.5 - 9.0	3.03	0.01	3.40	0.01	2.34	0.01
Metals, Total (mg/L)											
Aluminum	0.2	0.75	0.087	0.75	0.087						
Antimony	0.006	NSA	NSA	NSA	NSA						
Arsenic	0.01	0.34	0.15	0.34	0.15						
Barium	2	NSA	NSA	NSA	NSA						
Beryllium	0.004	NSA	NSA	NSA	NSA						
Cadmium	0.005	0.002	0.00025	0.00053	0.0001						
Calcium	NSA	NSA	NSA	NSA	NSA						
Chromium	0.1	0.57	0.074	0.016	0.011						
Cobalt	NSA	NSA	NSA	NSA	NSA						
Copper	1	0.013	0.009	0.0038	0.0029	257	0.1	174	0.1	734	1
Iron	0.3	NSA	1	NSA	1	2820	10	3020	10	5430	50
Lead	0.015	0.065	0.0025	0.014	0.00054						
Magnesium	NSA	NSA	NSA	NSA	NSA						
Manganese	0.05	NSA	NSA	NSA	NSA	12.1	0.015	14.9	0.015	26.1	2.5
Nickel	0.61	0.47	0.052	0.15	0.016						
Potassium	NSA	NSA	NSA	NSA	NSA	47.5	0.5	24.3	0.5	BRL	10
Selenium	0.05	NSA	0.005	NSA	0.005	0.0355	0.02	BRL	0.02	BRL	2.5
Silver	0.1	0.0032	NSA	0.00037	NSA						
Sodium	NSA	NSA	NSA	NSA	NSA	34.5	1	605	100	BRL	250
Thallium	0.002	NSA	NSA	NSA	NSA						
Vanadium	NSA	NSA	NSA	NSA	NSA						
Zinc	5	0.12	0.12	0.037	0.037	57.6	0.2	48.2	0.2	93.7	5
Mercury	0.002	0.0014	0.00077	0.0016	0.00091						
Ferrous Iron (mg/L)											
Iron, Ferric	0.3	NSA	1	NSA	1	67.6	0.1	BRL	0.1	1590	0.1
Iron, Ferrous	0.3	NSA	1	NSA	1	2760	500	3140	500	3840	500

Notes:

a - South Carolina Regulation 61-68, Water Classifications and Standards

NSA - Standard not available

mg/L - Milligrams per liter

BRL - Below Reporting Limit

Yellow - Exceeds one criteria (Federal Drinking Water Standard or SCDHEC WQC)

Red - Exceeds all criteria (both Federal Drinking Water Standard and SCDHEC WQC)

Table 5
Monitoring Wells Potentially Applicable Standards Comparison

	Drinking Water Federal MCL	National Recommended WQC NOAEL Acute	NOAEL Chronic	SCDHEC WQC ^a NOAEL Acute	NOAEL Chronic	MW-01 Oct. 2, 2009	MW-02 Oct. 2, 2009
Wet Chem (mg/L)							
Residue, Total (wt%)							
Residue, Dissolved (TDS)	500					16,400	46,400
Chloride	250	860	NSA	NSA	230		
Nitrogen, Nitrate (As N)	10	NSA	NSA	NSA	NSA	BRL	BRL
Sulfate	250	NSA	NSA	NSA	NSA	14,300	37,400
Organic Carbon, Total							
Alkalinity							
Acidity	NSA	NSA	NSA	NSA	NSA	15800	45,200
Ammonia						2	2
Cyanide, Amenable to Chlorination						4.69	7.08
Cyanide, Total							
Phosphorus, Total (As P)	NSA	NSA	NSA	NSA	NSA		
pH (pH units)	6.5-8.5	NSA	6.5 - 8.5	NSA	6.5 - 9.0	3.05	2.26
Metals, Total (mg/L)							
Aluminum	0.2	0.75	0.087	0.75	0.087	393	1910
Antimony	0.006	NSA	NSA	NSA	NSA	BRL	BRL
Arsenic	0.01	0.34	0.15	0.34	0.15	0.664	2.1
Barium	2	NSA	NSA	NSA	NSA	0.04	0.0349
Beryllium	0.004	NSA	NSA	NSA	NSA	0.0106	BRL
Cadmium	0.005	0.002	0.00025	0.00053	0.0001	1.15	2.89
Calcium	NSA	NSA	NSA	NSA	NSA	458	586
Chromium	0.1	0.57	0.074	0.016	0.011	0.228	1.18
Cobalt	NSA	NSA	NSA	NSA	NSA	1.62	3.5
Copper	1	0.013	0.009	0.0038	0.0029	252	1160
Iron	0.3	NSA	1	NSA	1	2920	7210
Lead	0.015	0.065	0.0025	0.014	0.00054	0.181	0.173
Magnesium	NSA	NSA	NSA	NSA	NSA	225	685
Manganese	0.05	NSA	NSA	NSA	NSA	14.3	30.2
Nickel	0.61	0.47	0.052	0.15	0.016	0.784	1.48
Potassium	NSA	NSA	NSA	NSA	NSA	13.1	2.91
Selenium	0.05	NSA	0.005	NSA	0.005	BRL	BRL
Silver	0.1	0.0032	NSA	0.00037	NSA	BRL	BRL
Sodium	NSA	NSA	NSA	NSA	NSA	435	27.7
Thallium	0.002	NSA	NSA	NSA	NSA	BRL	BRL
Vanadium	NSA	NSA	NSA	NSA	NSA	0.557	0.88
Zinc	5	0.12	0.12	0.037	0.037	53.8	140
Mercury	0.002	0.0014	0.00077	0.0016	0.00091	BRL	0.00049
Ferrous Iron (mg/L)							
Iron, Ferric	0.3	NSA	1	NSA	1	371	BRL
Iron, Ferrous	0.3	NSA	1	NSA	1	2550	7280

Notes:

a - South Carolina Regulation 61-68, Water Classifications and Standards

NSA - Standard not available

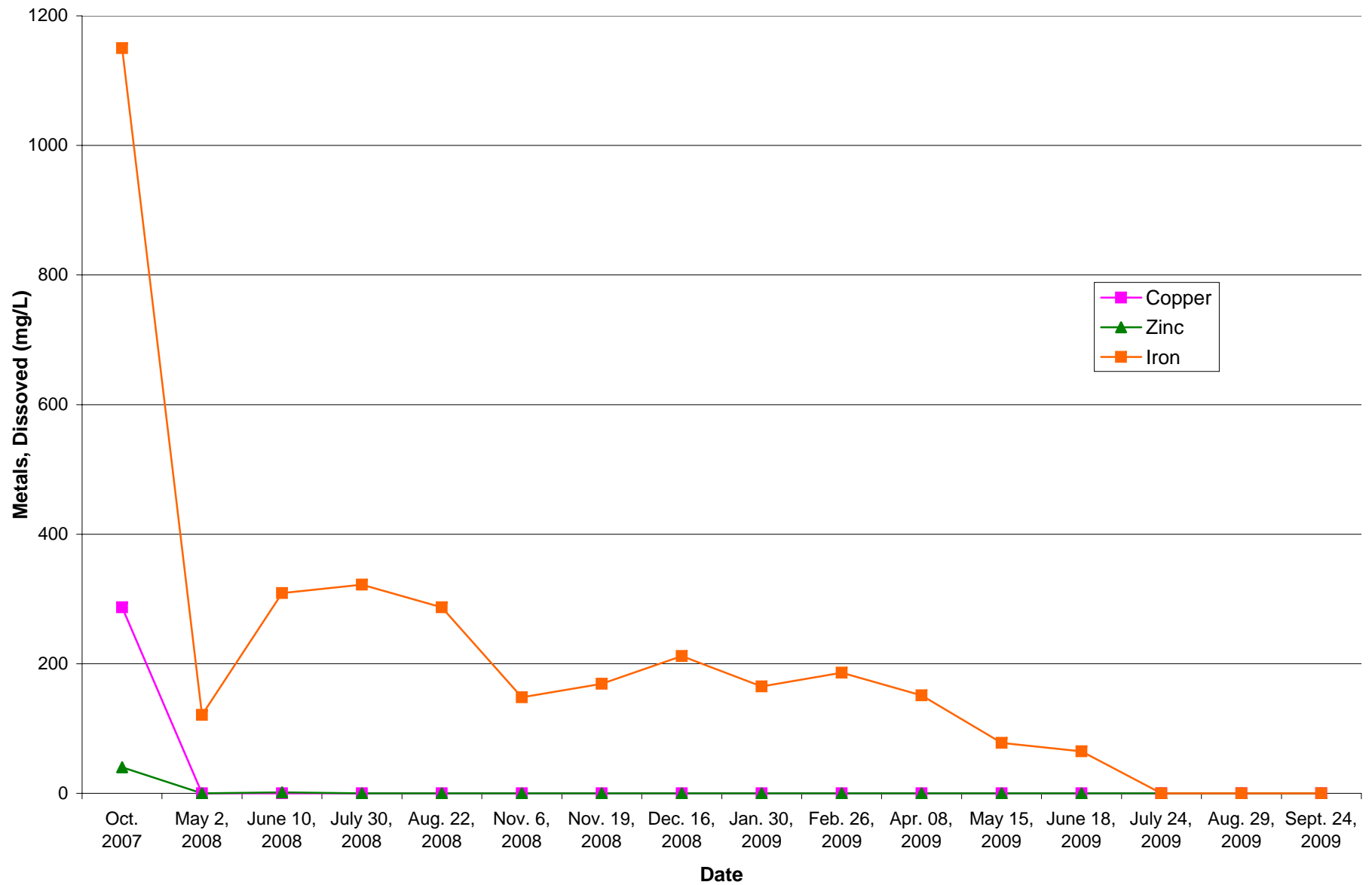
mg/L - Milligrams per liter

BRL - Below Reporting Limit

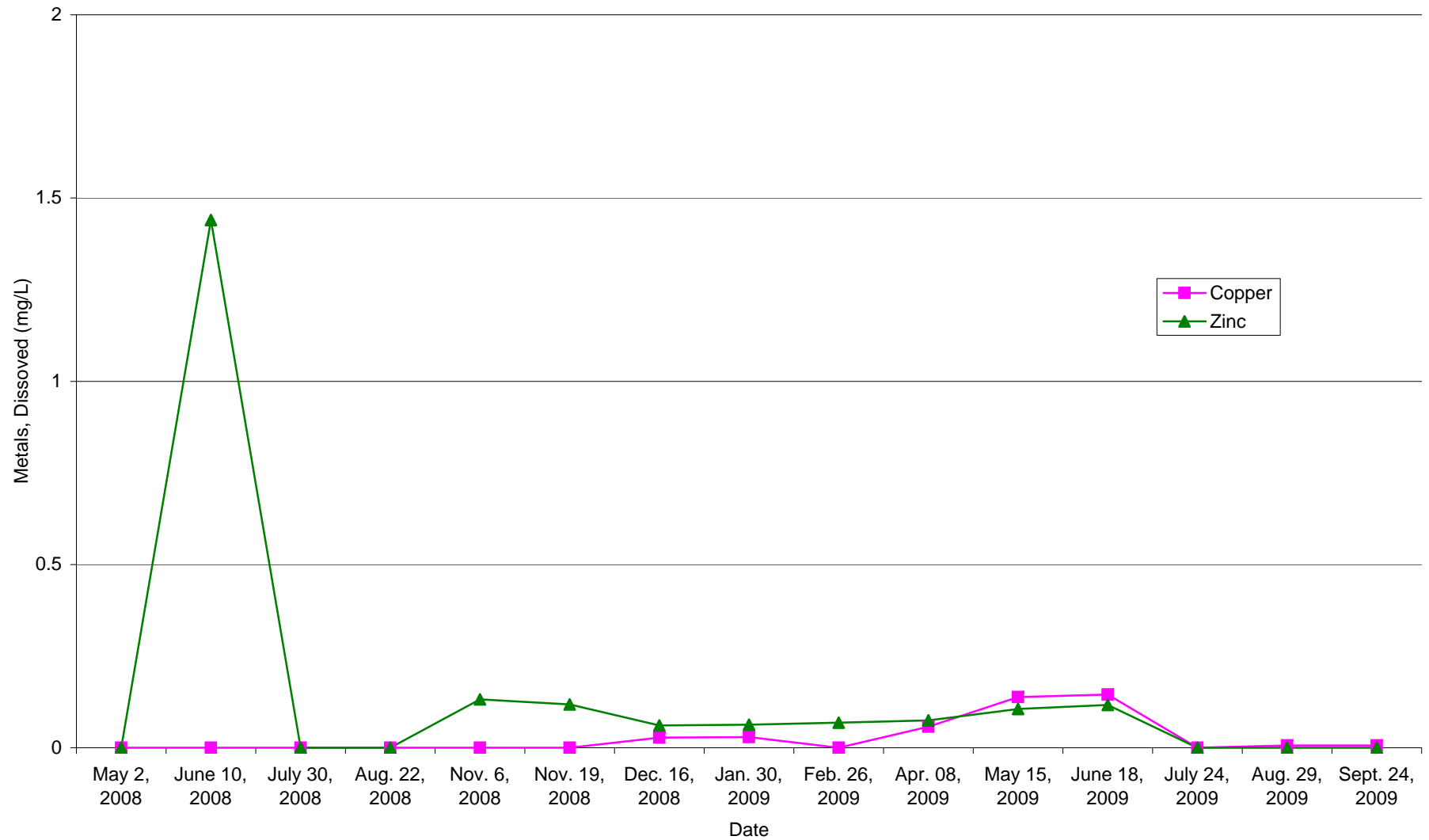
Yellow - Exceeds one criteria (Federal Drinking Water Standard or SCDHEC WQC)

Red - Exceeds all criteria (both Federal Drinking Water Standard and SCDHEC WQC)

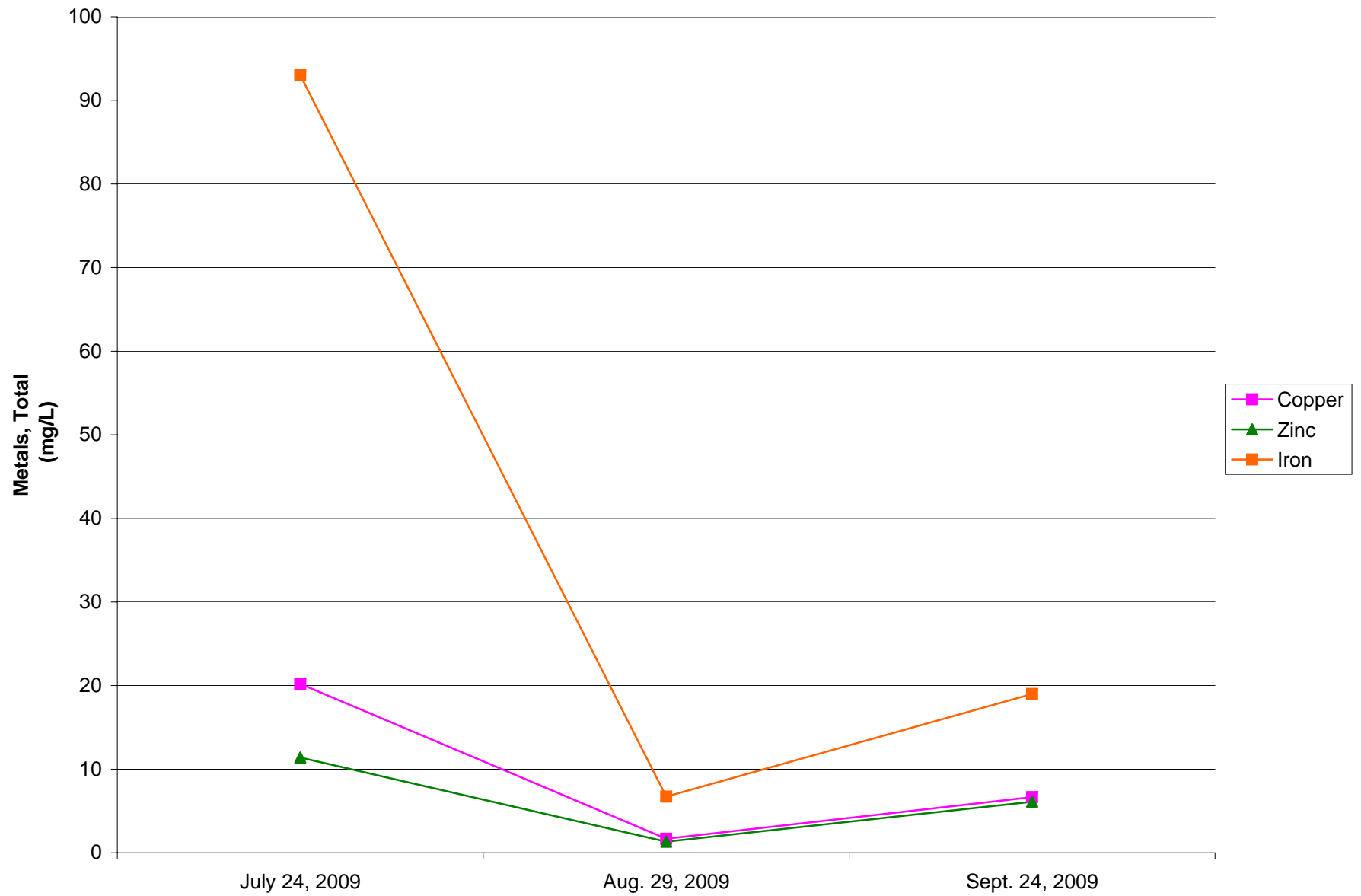
Graph 1
Pit Lake Comparison



Graph 2
Pit Lake Comparison Detailed
(Iron is not included since it is detailed on Graph 1)



Graph 3
Seep 0 Comparison



ATTACHMENT C
ANALYTICAL DATA

0909I96

CHAIN-OF-CUSTODY RECORD

PROJECT NAME:										PROJECT NUMBER:										LAB NAME AND CONTACT:										FAX AND MAIL REPORTS/EDD TO: RECIPIENT 1 (Name and Company)										RECIPIENT 1 (Address, Tel No., and Fax No.):										COC NUMBER:																			
Barite Hills Removal										1116										AES James Forrest																																																	
PROJECT PHASE/SITE/TASK:										CTO OR DO NUMBER:										LAB PO NUMBER:										FAX AND MAIL REPORTS/EDD TO: RECIPIENT 2 (Name and Company)										RECIPIENT 2 (Address, Tel No., and Fax No.):																													
2005148-1116																																																																					
PROJECT CONTACT:										PROJECT TEL NO AND FAX NO:										LAB TEL NO AND FAX NO:										FAX AND MAIL REPORTS/EDD TO: RECIPIENT 3 (Name and Company)										RECIPIENT 3 (Address, Tel No., and Fax No.):																													
Russell Henderson																				770-457-8177																																																	

17 ITEM	18 SAMPLE IDENTIFIER	19 SAMPLE DESCRIPTION/LOCATION	20 MATRIX (see codes on SOP)	21 DATE COLLECTED	22 TIME COLLECTED	23 DATA PKG LEVEL (see codes on SOP)	24 TAT (calendar days)	25 ANALYSES REQUIRED (Include Method Numbers)										26 SAMPLE TYPE (see codes on SOP)	27 COMMENTS/SCREENING READINGS	28 LAB ID (for lab's use)
								TAL Metals	Dissolved Metals	TOC	pH	Bicarbonate	Perchlorate	TDS	Ammonia, Nitrate, Sulfate	Total Acidity				
1	BHR-MPS-016	Main Pit Surface	1	09/24/09	10:10	II	5 Day	X	X	X	X	X	X	X		For Metals on totals run Copper, Manganese, Iron, Selenium, Zinc, sodium and potassium only				
2	BHR-MPB-016	Main Pit Bottom	1	09/24/09	9:30	II	5 Day	X	X	X	X	X	X	X		Dissolved run Copper, Manganese, Iron, Selenium, Zinc only				
3	BHR-S0-016	Seep 0	1	09/24/09	10:55	II	5 Day	X						X						
4																				
5																				
6																				
10																				

29 SAMPLER(S) AND COMPANY: (please print)										30 CARRIER AND SHIPPING NUMBER:										31 SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):																																							
RELINQUISHED BY										DATE										TIME										RECEIVED BY										DATE										TIME									
Printed Name and Signature: <i>Amber J. Henderson</i>										9-25-09																				Printed Name and Signature: <i>James Forrest</i>										9/25/09										14:59									
Printed Name and Signature:																														Printed Name and Signature:																				ctf									
Printed Name and Signature:																														Printed Name and Signature:																													

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client OT12

Work Order Number 0909I96

Checklist completed by [Signature] Date 1/26/09

Carrier name: FedEx ☐ UPS ☐ Courier ☐ Client ☐ US Mail ☐ Other ☐

Shipping container/cooler in good condition? Yes ☒ No ☐ Not Present ☐

Custody seals intact on shipping container/cooler? Yes ☐ No ☐ Not Present ☒

Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☒

Container/Temp Blank temperature in compliance? ($4^{\circ}\text{C} \pm 2$)* Yes ☒ No ☐

Cooler #1 4.2 Cooler #2 ☐ Cooler #3 ☐ Cooler #4 ☐ Cooler #5 ☐ Cooler #6 ☐

Chain of custody present? Yes ☒ No ☐

Chain of custody signed when relinquished and received? Yes ☒ No ☐

Chain of custody agrees with sample labels? Yes ☒ No ☐

Samples in proper container/bottle? Yes ☒ No ☐

Sample containers intact? Yes ☒ No ☐

Sufficient sample volume for indicated test? Yes ☒ No ☐

All samples received within holding time? Yes ☒ No ☒ BAW 1/15/09

Was TAT marked on the COC? Yes ☒ No ☐

Proceed with Standard TAT as per project history? Yes ☐ No ☐ Not Applicable ☐

Water - VOA vials have zero headspace? No VOA vials submitted ☒ Yes ☐ No ☐

Water - pH acceptable upon receipt? Yes ☒ No ☐ Not Applicable ☐

Adjusted? ☐ Checked by ☐

Sample Condition: Good ☒ Other(Explain) ☐

(For diffusive samples or AIHA lead) Is a known blank included? Yes ☐ No ☒

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

CLIENT: Oneida Total Integrated Enterprises
Project: Barite Hills Removal
Lab Order: 0909I96

CASE NARRATIVE

Sample Receiving Nonconformance:

Samples for Ferrous Iron, Ferric Iron, Dissolved Metals, and pH were all received outside of their method designated holding times. Proceed with analysis per project history.

Dissolved Metals Analysis by Method 6020A:

Matrix spike and/or matrix spike duplicate analyses were not performed with Batch 119253 due to insufficient sample volume.

Ferrous Iron by Method SM3500FE D:**Ferrous:Total Iron Ratio:**

Please note the Ferrous Iron (Dissolved) value is reported as slightly greater than Total Iron (Dissolved) value for sample 0909I96-002C. The value is within the expected reproducibility limits for the test methods used and the result is suspected to be due to differences between the sample aliquots used for analysis. The data indicates that all iron present is in the Ferrous oxidation state.

Samples 0909I96-001C and -002C were received and analyzed outside the method specified holding time of 24 hours.

Analytical Environmental Services, Inc.

Date: 05-Oct-09

CLIENT: Oneida Total Integrated Enterprises
Project: Barite Hills Removal
Lab ID: 0909I96-001

Client Sample ID: BHR-MPS-016
Collection Date: 9/24/2009 10:10:00 AM
Matrix: AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed
T. ORGANIC CARBON(TOC)(E415.1/SM5310B)							
Organic Carbon, Total	27.5	1.0		mg/L		1	Analyst: GAR 10/2/2009 12:02 PM
CARBON DIOXIDE SM4500-CO2							
Bicarbonate Alkalinity	133	3.00		mg/L		1	Analyst: TL 9/28/2009 12:00 AM
TOTAL METALS BY ICP/MS SW6020A (SW3005A)							
Copper	0.00957	0.00200		mg/L	119087	1	Analyst: DJ 9/29/2009 9:23 PM
Iron	0.571	0.100		mg/L	119087	1	9/29/2009 9:23 PM
Manganese	8.11	0.0250		mg/L	119087	5	9/30/2009 5:04 PM
Potassium	45.3	0.100		mg/L	119087	1	9/30/2009 4:03 PM
Selenium	BRL	0.00500		mg/L	119087	1	9/29/2009 9:23 PM
Sodium	279	2.50		mg/L	119087	5	9/30/2009 5:04 PM
Zinc	BRL	0.0100		mg/L	119087	1	9/29/2009 9:23 PM
DISSOLVED METALS BY ICP/MS SW6020A (SAMP_FILT)							
Copper	0.00649	0.00200		mg/L	119253	1	Analyst: DJ 9/30/2009 7:00 PM
Iron	BRL	0.100		mg/L	119253	1	9/30/2009 7:00 PM
Manganese	6.72	0.0250		mg/L	119253	5	10/1/2009 2:33 PM
Selenium	BRL	0.00500		mg/L	119253	1	9/30/2009 7:00 PM
Zinc	BRL	0.0100		mg/L	119253	1	9/30/2009 7:00 PM
HYDROGEN ION (PH)(E150.1/SM4500 H+ B)							
pH	7.34	0.01	H	pH Units		1	Analyst: CG 9/25/2009 6:25 PM
RESIDUE, DISS.(TDS)(E160.1/SM2540C) (E160.1)							
Residue, Dissolved (TDS)	3340	20		mg/L	119254	1	Analyst: ML 9/29/2009 2:30 PM
FERROUS IRON SM3500-FE-D							
Iron, as Ferric (Fe+3)	BRL	0.100	H	mg/L		1	Analyst: CG 9/25/2009 6:30 PM
Iron, as Ferrous (Fe+2)	BRL	0.100	H	mg/L		1	9/25/2009 6:30 PM

Qualifiers:	*	Value exceeds Maximum Contaminant Level	E	Estimated (Value above quantitation range)
	BRL	Below Reporting Limit	S	Spike Recovery outside limits due to matrix
	H	Holding times for preparation or analysis exceeded	Narr	See Case Narrative
	N	Analyte not NELAC certified	NC	Not Confirmed
	B	Analyte detected in the associated Method Blank	<	Less than Result value
	>	Greater than Result value		

Analytical Environmental Services, Inc.

Date: 05-Oct-09

CLIENT: Oneida Total Integrated Enterprises
Project: Barite Hills Removal
Lab ID: 0909196-002

Client Sample ID: BHR-MPB-016
Collection Date: 9/24/2009 9:30:00 AM
Matrix: AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed
T. ORGANIC CARBON(TOC)(E415.1/SM5310B)							
Organic Carbon, Total	47.8	1.0		mg/L		1	Analyst: GAR 10/2/2009 12:14 PM
CARBON DIOXIDE SM4500-CO2							
Bicarbonate Alkalinity	101	3.00		mg/L		1	Analyst: TL 9/28/2009 12:00 AM
TOTAL METALS BY ICP/MS SW6020A (SW3005A)							
Copper	0.0202	0.00200		mg/L	119087	1	Analyst: DJ 9/29/2009 9:29 PM
Iron	137	0.500		mg/L	119087	5	9/30/2009 5:10 PM
Manganese	12.7	0.0250		mg/L	119087	5	9/30/2009 5:10 PM
Potassium	44.6	0.100		mg/L	119087	1	9/30/2009 4:09 PM
Selenium	BRL	0.00500		mg/L	119087	1	9/29/2009 9:29 PM
Sodium	178	2.50		mg/L	119087	5	9/30/2009 5:10 PM
Zinc	0.0148	0.0100		mg/L	119087	1	9/29/2009 9:29 PM
DISSOLVED METALS BY ICP/MS SW6020A (SAMP_FILT)							
Copper	0.00255	0.00200		mg/L	119253	1	Analyst: DJ 9/30/2009 7:05 PM
Iron	35.8	0.100		mg/L	119253	1	9/30/2009 7:05 PM
Manganese	10.2	0.0250		mg/L	119253	5	10/1/2009 2:39 PM
Selenium	0.00646	0.00500		mg/L	119253	1	9/30/2009 7:05 PM
Zinc	BRL	0.0100		mg/L	119253	1	9/30/2009 7:05 PM
HYDROGEN ION (PH)(E150.1/SM4500 H+ B)							
pH	5.17	0.01	H	pH Units		1	Analyst: CG 9/25/2009 6:27 PM
RESIDUE, DISS.(TDS)(E160.1/SM2540C) (E160.1)							
Residue, Dissolved (TDS)	3290	20		mg/L	119254	1	Analyst: ML 9/29/2009 2:30 PM
FERROUS IRON SM3500-FE-D							
Iron, as Ferric (Fe+3)	BRL	0.100	H	mg/L		1	Analyst: CG 9/25/2009 6:30 PM
Iron, as Ferrous (Fe+2)	48.6	2.50	H	mg/L		25	9/25/2009 6:30 PM

Qualifiers: * Value exceeds Maximum Contaminant Level
BRL Below Reporting Limit
H Holding times for preparation or analysis exceeded
N Analyte not NELAC certified
B Analyte detected in the associated Method Blank
> Greater than Result value

E Estimated (Value above quantitation range)
S Spike Recovery outside limits due to matrix
Narr See Case Narrative
NC Not Confirmed
< Less than Result value

Analytical Environmental Services, Inc.

Date: 05-Oct-09

CLIENT: Oneida Total Integrated Enterprises**Client Sample ID:** BHR-S0-016**Project:** Barite Hills Removal**Collection Date:** 9/24/2009 10:55:00 AM**Lab ID:** 0909196-003**Matrix:** AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed
TOTAL METALS BY ICP/MS SW6020A					(SW3005A)		Analyst: DJ
Copper	6.66	0.0100		mg/L	119087	5	9/30/2009 5:16 PM
Iron	19.0	0.100		mg/L	119087	1	9/29/2009 9:35 PM
Manganese	8.10	0.0250		mg/L	119087	5	9/30/2009 5:16 PM
Potassium	4.64	0.100		mg/L	119087	1	9/30/2009 4:59 PM
Selenium	0.0118	0.00500		mg/L	119087	1	9/29/2009 9:35 PM
Sodium	30.8	0.500		mg/L	119087	1	9/29/2009 9:35 PM
Zinc	6.10	0.0500		mg/L	119087	5	9/30/2009 5:16 PM
HYDROGEN ION (PH)(E150.1/SM4500 H+ B)							Analyst: CG
pH	3.08	0.01	H	pH Units		1	9/25/2009 6:35 PM
RESIDUE, DISS.(TDS)(E160.1/SM2540C)					(E160.1)		Analyst: ML
Residue, Dissolved (TDS)	929	10		mg/L	119254	1	9/29/2009 2:30 PM

Qualifiers: * Value exceeds Maximum Contaminant Level
BRL Below Reporting Limit
H Holding times for preparation or analysis exceeded
N Analyte not NELAC certified
B Analyte detected in the associated Method Blank
> Greater than Result value

E Estimated (Value above quantitation range)
S Spike Recovery outside limits due to matrix
Narr See Case Narrative
NC Not Confirmed
< Less than Result value

9910356

SD

CHAIN-OF-CUSTODY RECORD

COC NUMBER:

PROJECT NAME:		PROJECT NUMBER:		LAB NAME AND CONTACT:		FAX AND MAIL REPORTS SENT TO: RECIPIENT 1 (Name and Company):		RECIPIENT 1 (Address, Tel No., and Fax No.):	
Barite Hills Removal		1116		AES James Forrest					
PROJECT PHASE/SITE/TASK:		CTO OR DO NUMBER:		LAB PO NUMBER:		FAX AND MAIL REPORTS SENT TO: RECIPIENT 2 (Name and Company):		RECIPIENT 2 (Address, Tel No., and Fax No.):	
2005148-1116A									
PROJECT CONTACT:		PROJECT TEL NO AND FAX NO:		LAB TEL NO AND FAX NO:		FAX AND MAIL REPORTS SENT TO: RECIPIENT 3 (Name and Company):		RECIPIENT 3 (Address, Tel No., and Fax No.):	
Russell Henderson				770-457-8177					

ITEM	SAMPLE IDENTIFIER	SAMPLE DESCRIPTION/LOCATION	MATRIX (see codes on SOP)	DATE COLLECTED	TIME COLLECTED	DATA PROLEVEL (see codes on SOP)	TAT (calendar days)	ANALYSES REQUIRED (Include Method Numbers)										LAB ID (for lab's use)	
								TAL Metals	Dissolved Metals	TOC	pH	Bicarbonate	Ferri/Ferrous Speciation	TDS	Ammonia, Nitrate, Sulfate	Total Alkalinity	SAMPLE TYPE (see codes on SOP)		COMMENTS/ SCREENING READINGS
1	BHR-MW1-003	Monitor well 1 downhill right side facing water	1	10/02/09	9:30	II	5 Day	X			X	X	X	X					
2	BHR-MW2-001	Monitor well 2 downhill left side facing water	1	10/02/09	10:15	II	5 Day	X			X	X	X	X					
3																			
4																			
5																			
6																			
10																			

COURIER AND SHIPPING NUMBER:

SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):

RELINQUISHED BY		DATE		TIME		RECEIVED BY		DATE		TIME	
Printed Name and Signature:		10/5/09		11:15		Printed Name and Signature:		10/5/09		2:05	
Printed Name and Signature:		10-5-09		2:05		Printed Name and Signature:		10/5/09		2:05	
Printed Name and Signature:						Printed Name and Signature:					

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client OTIE

Work Order Number 0910356

Checklist completed by E. J. J. J. 10/5/09
Signature Date

Carrier name: FedEx ☐ UPS ☐ Courier ☐ Client ☒ US Mail ☐ Other ☐

Shipping container/cooler in good condition? Yes ☒ No ☐ Not Present ☐

Custody seals intact on shipping container/cooler? Yes ☐ No ☐ Not Present ☒

Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☒

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ☒ No ☐

Cooler #1 3, 4, 5 Cooler #2 ☐ Cooler #3 ☐ Cooler #4 ☐ Cooler #5 ☐ Cooler #6 ☐

Chain of custody present? Yes ☒ No ☐

Chain of custody signed when relinquished and received? Yes ☒ No ☐

Chain of custody agrees with sample labels? Yes ☒ No ☐

Samples in proper container/bottle? Yes ☒ No ☐

Sample containers intact? Yes ☒ No ☐

Sufficient sample volume for indicated test? Yes ☒ No ☐

All samples received within holding time? Yes ☐ No ☒

Was TAT marked on the COC? Yes ☒ No ☐

Proceed with Standard TAT as per project history? Yes ☐ No ☐ Not Applicable ☒

Water - VOA vials have zero headspace? No VOA vials submitted ☒ Yes ☐ No ☐

Water - pH acceptable upon receipt? Yes ☐ No ☒ Not Applicable ☐

Adjusted? ☐ Checked by EA
Sample Condition: Good ☒ Other(Explain) ☐

(For diffusive samples or AIHA lead) Is a known blank included? Yes ☐ No ☒

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

CLIENT: Oneida Total Integrated Enterprises
Project: Barite Hills Removal
Lab Order: 0910356

CASE NARRATIVE

Sample Receiving Nonconformance:

Samples were received did not meet method specified pH range for the requested test method. No attempt to further adjust the pH was made due to sample matrix.

Samples for Ferrous Iron, Ferric Iron, Nitrate, and pH were all received outside of their method designated holding times. Proceed with analysis per project history.

Ion Scan Analysis by Method 300:

Due to sample matrix, samples 0910356-001C and -002C required dilution during preparation and/or analysis resulting in elevated reporting limits.

Ferrous Iron by Method SM3500FE D:

Ferrous:Total Iron Ratio:

Please note the Ferrous Iron value is reported as slightly greater than Total Iron value for sample 0910356-002B. The value is within the expected reproducibility limits for the test methods used and the result is suspected to be due to differences between the sample aliquots used for analysis. The data indicates that all iron present is in the Ferrous oxidation state.

Metals Analysis by Method 6010B:

Due to sample matrix, samples 0910356-001A and 2A required dilutions for thallium during analysis resulting in elevated reporting limits. Sample 0910356-002A also required a dilution for selenium.

Analytical Environmental Services, Inc.

Date: 13-Oct-09

CLIENT: Oneida Total Integrated Enterprises

Client Sample ID: BHR-MW1-003

Project: Barite Hills Removal

Collection Date: 10/2/2009 9:30:00 AM

Lab ID: 0910356-001

Matrix: AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed
INORGANIC ANIONS BY IC E300.0							Analyst: GAR
Nitrogen, Nitrate (As N)	BRL	25.0	H	mg/L		100	10/6/2009 10:07 AM
Sulfate	14300	500		mg/L		500	10/6/2009 1:52 PM
NITROGEN, AMMONIA (AS N) E350.1					(E350.1)		Analyst: LAV
Nitrogen, Ammonia (As N)	4.69	2.00		mg/L	119562	10	10/9/2009 9:24 AM
METALS, TOTAL SW6010C					(SW3010A)		Analyst: JY
Aluminum	393	2.00		mg/L	119544	10	10/8/2009 5:36 PM
Antimony	BRL	0.0200		mg/L	119544	1	10/8/2009 5:18 PM
Arsenic	0.664	0.0500		mg/L	119544	1	10/8/2009 5:18 PM
Barium	0.0400	0.0200		mg/L	119544	1	10/8/2009 5:18 PM
Beryllium	0.0106	0.0100		mg/L	119544	1	10/8/2009 5:18 PM
Cadmium	1.15	0.0050		mg/L	119544	1	10/8/2009 5:18 PM
Calcium	458	1.00		mg/L	119544	10	10/8/2009 5:36 PM
Chromium	0.228	0.0100		mg/L	119544	1	10/8/2009 5:18 PM
Cobalt	1.62	0.0200		mg/L	119544	1	10/8/2009 5:18 PM
Copper	252	0.100		mg/L	119544	10	10/8/2009 5:36 PM
Iron	2920	10.0		mg/L	119544	100	10/8/2009 5:39 PM
Lead	0.181	0.0100		mg/L	119544	1	10/8/2009 5:18 PM
Magnesium	225	1.00		mg/L	119544	10	10/8/2009 5:36 PM
Manganese	14.3	0.0150		mg/L	119544	1	10/8/2009 5:18 PM
Nickel	0.784	0.0200		mg/L	119544	1	10/8/2009 5:18 PM
Potassium	13.1	0.500		mg/L	119544	1	10/8/2009 5:18 PM
Selenium	BRL	0.0200		mg/L	119544	1	10/8/2009 5:18 PM
Silver	BRL	0.0100		mg/L	119544	1	10/8/2009 5:18 PM
Sodium	435	10.0		mg/L	119544	10	10/8/2009 5:36 PM
Thallium	BRL	1.00		mg/L	119544	50	10/9/2009 10:13 AM
Vanadium	0.557	0.0100		mg/L	119544	1	10/8/2009 5:18 PM
Zinc	53.8	0.200		mg/L	119544	10	10/8/2009 5:36 PM
MERCURY, TOTAL SW7470A					(SW7470)		Analyst: MAW
Mercury	BRL	0.00020		mg/L	119526	1	10/7/2009 5:26 PM
HYDROGEN ION (PH)(E150.1/SM4500 H+ B)							Analyst: LW
pH	3.05	0.01	H	pH Units		1	10/5/2009 5:30 PM
RESIDUE, DISS.(TDS)(E160.1/SM2540C)					(E160.1)		Analyst: ML
Residue, Dissolved (TDS)	16400	100		mg/L	119554	1	10/6/2009 2:00 PM
ACIDITY (E305.1/SM2310 B)							Analyst: AZS
Acidity	15800	200		mg/L		20	10/9/2009 11:30 AM
FERROUS IRON SM3500-FE-D							Analyst: CG

Qualifiers: * Value exceeds Maximum Contaminant Level
 BRL Below Reporting Limit
 H Holding times for preparation or analysis exceeded
 N Analyte not NELAC certified
 B Analyte detected in the associated Method Blank
 > Greater than Result value

E Estimated (Value above quantitation range)
 S Spike Recovery outside limits due to matrix
 Narr See Case Narrative
 NC Not Confirmed
 < Less than Result value

Analytical Environmental Services, Inc.

Date: 13-Oct-09

CLIENT: Oneida Total Integrated Enterprises**Client Sample ID:** BHR-MW1-003**Project:** Barite Hills Removal**Collection Date:** 10/2/2009 9:30:00 AM**Lab ID:** 0910356-001**Matrix:** AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed
FERROUS IRON							Analyst: CG
SM3500-FE-D							
Iron, as Ferric (Fe+3)	371	0.100	H	mg/L		1	10/6/2009 10:40 AM
Iron, as Ferrous (Fe+2)	2550	250	H	mg/L		2500	10/6/2009 10:40 AM

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- BRL Below Reporting Limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated Method Blank
- > Greater than Result value

- E Estimated (Value above quantitation range)
- S Spike Recovery outside limits due to matrix
- Narr See Case Narrative
- NC Not Confirmed
- < Less than Result value

Analytical Environmental Services, Inc.

Date: 13-Oct-09

CLIENT: Oneida Total Integrated Enterprises

Client Sample ID: BHR-MW2-001

Project: Barite Hills Removal

Collection Date: 10/2/2009 10:15:00 AM

Lab ID: 0910356-002

Matrix: AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed
INORGANIC ANIONS BY IC E300.0							
Nitrogen, Nitrate (As N)	BRL	25.0	H	mg/L		100	Analyst: GAR 10/6/2009 10:22 AM
Sulfate	37400	500		mg/L		500	10/6/2009 2:07 PM
NITROGEN, AMMONIA (AS N) E350.1							
Nitrogen, Ammonia (As N)	7.08	2.00		mg/L	(E350.1) 119562	10	Analyst: LAV 10/9/2009 9:25 AM
METALS, TOTAL SW6010C							
Aluminum	1910	20.0		mg/L	(SW3010A) 119544	100	Analyst: JY 10/8/2009 5:45 PM
Antimony	BRL	0.0200		mg/L	119544	1	10/8/2009 5:23 PM
Arsenic	2.10	0.0500		mg/L	119544	1	10/8/2009 5:23 PM
Barium	0.0349	0.0200		mg/L	119544	1	10/8/2009 5:23 PM
Beryllium	BRL	0.0100		mg/L	119544	1	10/8/2009 5:23 PM
Cadmium	2.89	0.0050		mg/L	119544	1	10/8/2009 5:23 PM
Calcium	586	1.00		mg/L	119544	10	10/8/2009 5:42 PM
Chromium	1.18	0.0100		mg/L	119544	1	10/8/2009 5:23 PM
Cobalt	3.50	0.0200		mg/L	119544	1	10/8/2009 5:23 PM
Copper	1160	1.00		mg/L	119544	100	10/8/2009 5:45 PM
Iron	7210	20.0		mg/L	119544	200	10/9/2009 10:09 AM
Lead	0.173	0.0100		mg/L	119544	1	10/8/2009 5:23 PM
Magnesium	685	1.00		mg/L	119544	10	10/8/2009 5:42 PM
Manganese	30.2	0.150		mg/L	119544	10	10/8/2009 5:42 PM
Nickel	1.48	0.0200		mg/L	119544	1	10/8/2009 5:23 PM
Potassium	2.91	0.500		mg/L	119544	1	10/8/2009 5:23 PM
Selenium	BRL	0.200		mg/L	119544	10	10/8/2009 5:42 PM
Silver	BRL	0.0100		mg/L	119544	1	10/8/2009 5:23 PM
Sodium	27.7	1.00		mg/L	119544	1	10/8/2009 5:23 PM
Thallium	BRL	2.00		mg/L	119544	100	10/8/2009 5:45 PM
Vanadium	0.880	0.0100		mg/L	119544	1	10/8/2009 5:23 PM
Zinc	140	0.200		mg/L	119544	10	10/8/2009 5:42 PM
MERCURY, TOTAL SW7470A							
Mercury	0.00049	0.00020		mg/L	(SW7470) 119526	1	Analyst: MAW 10/7/2009 5:28 PM
HYDROGEN ION (PH)(E150.1/SM4500 H+ B)							
pH	2.26	0.01	H	pH Units		1	Analyst: LW 10/5/2009 6:10 PM
RESIDUE, DISS.(TDS)(E160.1/SM2540C)							
Residue, Dissolved (TDS)	46400	100		mg/L	(E160.1) 119554	1	Analyst: ML 10/6/2009 2:00 PM
ACIDITY (E305.1/SM2310 B)							
Acidity	45200	1000		mg/L		100	Analyst: AZS 10/9/2009 11:30 AM
FERROUS IRON SM3500-FE-D							
							Analyst: CG

Qualifiers: * Value exceeds Maximum Contaminant Level
 BRL Below Reporting Limit
 H Holding times for preparation or analysis exceeded
 N Analyte not NELAC certified
 B Analyte detected in the associated Method Blank
 > Greater than Result value

E Estimated (Value above quantitation range)
 S Spike Recovery outside limits due to matrix
 Narr See Case Narrative
 NC Not Confirmed
 < Less than Result value

Analytical Environmental Services, Inc.

Date: 13-Oct-09

CLIENT: Oneida Total Integrated Enterprises**Client Sample ID:** BHR-MW2-001**Project:** Barite Hills Removal**Collection Date:** 10/2/2009 10:15:00 AM**Lab ID:** 0910356-002**Matrix:** AQUEOUS

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed
FERROUS IRON							Analyst: CG
SM3500-FE-D							
Iron, as Ferric (Fe+3)	BRL	0.100	H	mg/L		1	10/6/2009 10:40 AM
Iron, as Ferrous (Fe+2)	7280	500	H	mg/L		5000	10/6/2009 10:40 AM

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- BRL Below Reporting Limit
- H Holding times for preparation or analysis exceeded
- N Analyte not NELAC certified
- B Analyte detected in the associated Method Blank
- > Greater than Result value

- E Estimated (Value above quantitation range)
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- Narr See Case Narrative
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ATTACHMENT D
HASP

HEALTH AND SAFETY PLAN FORM TN&Associates Health and Safety Program			<i>This document is for the exclusive use of TN&Associates its subcontractors, and EPA.</i>			TN & ASSOCIATES Site Name: Barite Hill Nevada Goldfields																																
PROJECT NAME: Barite Hill Nevada Goldfields PROJECT#: 2005148 LOCATION: McCormick, South Carolina			DATE: 6/10/2008 CLIENT: EPA EPA CONTACT/PHONE #: Leo Francendese, 404-562-8772 LOCAL/SITE CONTACT PHONE #:																																			
INCIDENT DESCRIPTION: The OSC tasked START with conducting water sampling of the main pit lake and the creek to monitor metal concentrations and water quality parameters.			SOURCE OF PRELIMINARY INFORMATION: ER Action Memo/ initial POLREP from epaosc.net website																																			
ANTICIPATED TASKS: (e.g. collect surface soil samples): Take water quality measurements and samples of the liquid in the main pit and creek.			TYPE: <i>Check as many as applicable</i> <table border="0"> <tr> <td>Active</td> <td>()</td> <td>Landfill</td> <td>()</td> <td>Spill</td> <td>()</td> </tr> <tr> <td>Inactive</td> <td>(X)</td> <td>Uncontrolled</td> <td>()</td> <td>Fire</td> <td>()</td> </tr> <tr> <td>Secure</td> <td>(X)</td> <td>Industrial</td> <td>()</td> <td>Military</td> <td>()</td> </tr> <tr> <td>Unsecure</td> <td>()</td> <td>Recovery</td> <td>(X)</td> <td>Unknown</td> <td>()</td> </tr> <tr> <td>Enclosed space</td> <td>()</td> <td>Well Field</td> <td>()</td> <td>Other (specify)</td> <td>()</td> </tr> </table>						Active	()	Landfill	()	Spill	()	Inactive	(X)	Uncontrolled	()	Fire	()	Secure	(X)	Industrial	()	Military	()	Unsecure	()	Recovery	(X)	Unknown	()	Enclosed space	()	Well Field	()	Other (specify)	()
Active	()	Landfill	()	Spill	()																																	
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Secure	(X)	Industrial	()	Military	()																																	
Unsecure	()	Recovery	(X)	Unknown	()																																	
Enclosed space	()	Well Field	()	Other (specify)	()																																	
DESCRIPTION AND FEATURES: <i>Include principal operations and unusual features (containers, buildings, dikes, power lines, hillslopes, rivers, etc.)</i> The Barite Hill Nevada Goldfields site is located approximately 3 miles south of McCormick, SC between US 378 and US 221 on the northern side of Road 30 in McCormick County, SC. The mine site is relatively remote; there are no buildings, homes, or commercial buildings within 0.5 miles of the boundary. The site actively mined gold from 1991 to 1995. The site is located along a topographic high ridge area forming the headwaters of an unnamed tributary to Hawes Creek. The topography of the area consists of rolling hills with ridgelines at an elevation of about 500 feet. Within the site, the ridgeline comprising the site has a high point of about 510 feet and an average elevation of approximately 480 feet. Storm water run on and runoff are not controlled at the site. The Main Pit from the mining operations remains. The pit contains approximately 60 million gallons of water with an historic low pH of 2 and high dissolved metal content.																																						
□ □																																						
SURROUNDING POPULATION: () Residential () Industrial () Commercial (X) Rural () Urban () Other:																																						

HEALTH AND SAFETY PLAN FORM TN & Associates Health and Safety Program		<i>This document is for the exclusive use of TN&Associates its subcontractors, and EPA.</i>	TN & ASSOCIATES Site Name: Barite Hill Nevada Goldfields
<p>HISTORY: <i>Summarize conditions that relate to hazard. Include citizen complaints, spills, previous investigations or agency actions, known injuries, etc.</i></p> <p>The site actively mined gold from 1991 to 1995. From 1995 until Nevada Goldfields filed for Chapter 7 Bankruptcy in 1999, the reclamation of the site was being addressed by Nevada Goldfields. On July 7, 1999 Nevada Goldfields handed the facility's keys to SCDHEC and abandoned the site. The facility used a cyanide solution in a heap leach process to extract gold from ore. There are 7 processing ponds onsite containing an unknown amount of free-liquids. Three large, multi-acre, waste rock piles contaminated with cyanide are left onsite. Each waste rock pile has the potential for producing acid. Storm water run on and runoff are not controlled at the site. The Main Pit from the mining operations remains. The pit contains approximately 60 million gallons of water with a pH of 2 ~ 2.2 and a high dissolved metal content. Seeps from the main pit containing acidic water with high dissolved metal content are being released to the northern unnamed tributaries of Hawes Creek which borders the pit. □</p>			
WASTE TYPES: <input checked="" type="checkbox"/> Liquid <input checked="" type="checkbox"/> Solid <input type="checkbox"/> Sludge <input type="checkbox"/> Gas <input type="checkbox"/> Unknown <input type="checkbox"/> Other: _____			
WASTE CHARACTERISTICS: <i>Check as many as applicable.</i> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <input checked="" type="checkbox"/> Corrosive <input type="checkbox"/> Flammable <input type="checkbox"/> Radioactive <input checked="" type="checkbox"/> Toxic <input type="checkbox"/> Volatile <input checked="" type="checkbox"/> Reactive <input type="checkbox"/> Inert Gas <input type="checkbox"/> Unknown <input type="checkbox"/> Other, Specify: _____ </div> <div style="width: 65%;"></div> </div>		WORK ZONES: <i>Describe the Exclusion, Contamination Reduction, and Support Zones in terms on-site personnel will recognize</i> <div style="height: 100px;"></div>	
HAZARDS OF CONCERN: <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <input checked="" type="checkbox"/> Heat Stress <i>attach guidelines</i> <input checked="" type="checkbox"/> Cold Stress <i>attach guidelines</i> <input type="checkbox"/> Explosive/Flammable <input type="checkbox"/> Oxygen Deficient <input type="checkbox"/> Radiological <input type="checkbox"/> Biological <input type="checkbox"/> Other, Specify: _____ </div> <div style="width: 50%;"> <input type="checkbox"/> Noise <input checked="" type="checkbox"/> Inorganic Chemicals <input type="checkbox"/> Organic Chemicals <input type="checkbox"/> Motorized Traffic <input type="checkbox"/> Heavy Machinery <input checked="" type="checkbox"/> Slips, Trips, & Falls </div> </div>		FACILITY'S PAST AND PRESENT DISPOSAL METHODS AND PRACTICES: None found	

HEALTH AND SAFETY PLAN FORM		<i>This document is for the exclusive</i>		TN & ASSOCIATES	
TN&Associates Health and Safety Program		<i>use of TN&Associates its subcontractors, and EPA.</i>		Site Name: Barite Hill Nevada Goldfields	
HAZARDOUS MATERIAL SUMMARY: <i>Circle waste type and estimate amounts by category.</i>					
CHEMICALS: <i>Amount/Units:</i>	SOLIDS: <i>Amount/Units:</i> Metals unknown	SLUDGES: <i>Amount/Units:</i> Inorganic unknown	SOLVENTS: <i>Amount/Units:</i>	OILS: <i>Amount/Units:</i>	OTHER: <i>Amount/Units:</i>
OVERALL HAZARD EVALUATION: <input type="checkbox"/> High <input checked="" type="checkbox"/> Medium <input type="checkbox"/> Low <input type="checkbox"/> Unknown JUSTIFICATION: Stabilization of Main Pit lake for pyrite contact with liquid.					
FIRE/EXPLOSION POTENTIAL: <input type="checkbox"/> High <input type="checkbox"/> Medium <input type="checkbox"/> Low <input checked="" type="checkbox"/> Unknown					
INFORMATION COMPLETE: <input type="checkbox"/> Complete <input type="checkbox"/> Incomplete <input checked="" type="checkbox"/> Best Available at Current Time					

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TN & Associates Health and Safety Program				Site Name: Barite Hill Nevada Goldfields			
KNOWN CONTAMINANTS	NIOSH REL (ST if Available) <i>ppm or mg/m3 (specify)</i>	OSHA PEL (ST if Available) <i>ppm or mg/m3 (specify)</i>	IDLH <i>ppm or mg/m3 (specify)</i>	SYMPTOMS & EFFECTS OF ACUTE EXPOSURE	PHOTO IONIZATION POTENTIAL		
NA = Not Available		NE = None Established		U = Unknown			
S = Soil A = Air		SW = Surface Water GW = Ground Water		T = Tailings SL = Sludge			
				W = Waste D = Drums			
				SD = Sediment OFF = Off-Site			

HEALTH AND SAFETY PLAN FORM		This document is for the exclusive use of TN&Associates its subcontractors, and EPA.		TN & ASSOCIATES Site Name: Barite Hill Nevada Goldfields	
Task Description / PPE / Personnel & Responsibilities (attach additional sheets as necessary)					
Task 1 Description	Site liquid sampling/In-situ monitoring			Type Intrusive	Hazard Schedule High
Primary Level Modified D	Respiratory: APR combo Eyewear: Safety Glasses Hard Hat Boots: Steel-Toe Latex Bootie Gloves: Inner: Nitrile Outer:	Contingency Level Modified D To C	Respiratory: APR combo Eyewear: Safety Glasses Hard Hat Boots: Steel-Toe Latex Bootie Gloves: Inner: Nitrile Outer:		
PPE:	Clothing: Tyvek Coverall	PPE:	Clothing: Tyvek Coverall		
Task 2 Description				Type	Hazard Schedule
Primary Level	Respiratory: _____ Eyewear: _____ Boots: _____ Gloves: _____	Contingency Level	Respiratory: _____ Eyewear: _____ Boots: _____ Gloves: _____		
PPE:	Clothing: _____	PPE:	Clothing: _____		
Task 3 Description				Type	Hazard Schedule
Primary Level	Respiratory: _____ Eyewear: _____ Boots: _____ Gloves: _____	Contingency Level	Respiratory: _____ Eyewear: _____ Boots: _____ Gloves: _____		
PPE:	Clothing: _____	PPE:	Clothing: _____		
Task 4 Description				Type	Hazard Schedule
Primary Level	Respiratory: _____ Eyewear: _____ Boots: _____ Gloves: _____	Contingency Level	Respiratory: _____ Eyewear: _____ Boots: _____ Gloves: _____		
PPE:	Clothing: _____	PPE:	Clothing: _____		
PERSONNEL AND RESPONSIBILITIES					
Name	Company/Agency	Training	Responsibilities		
Jorge Sanchez	TN&A	OSHA	Safety and Health		
Russell Henderson	TN&A	OSHA	Safety and Health		
Dannena Bowman	TN&A	OSHA	Safety and Health		

HEALTH AND SAFETY PLAN FORM		<i>This document is for the exclusive use of TN&Associates its subcontractors, and EPA</i>		TN & ASSOCIATES
TN & Associates Health and Safety Program		Site Name: Barite Hill Nevada Goldfields		
Monitoring Equipment:		Specify by task. Indicate type as necessary. Attach additional sheets if needed.		
Tasks: 1	Instrument: pH Meter	Level:	Action Guidelines:	Comments:
Tasks:	Instrument:	Level:	Action Guidelines:	Comments:
Tasks:	Instrument:	Level:	Action Guidelines:	Comments:
Tasks:	Instrument:	Level:	Action Guidelines:	Comments:
Tasks:	Instrument:	Level:	Action Guidelines:	Comments:
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TN&Associates Health and Safety Program		Site Name: Barite Hill Nevada Goldfields																																													
EMERGENCY CONTACTS Site Telephone _____ EPA Release Report # _____ TN&Assoc 24-Hr Emergency # 678-255-5538 Facility Management _____ Other (specify) _____ CHEMTREC Emergency #: 1-800-424-9300		<table style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left; width: 60%;">EMERGENCY CONTACTS</th> <th style="text-align: left; width: 20%;">NAME</th> <th style="text-align: left; width: 20%;">PHONE</th> </tr> <tr> <td>Health and Safety Manager</td> <td>Bill Fink</td> <td>414-234-7845</td> </tr> <tr> <td>Project Manager</td> <td>Russell Henderson</td> <td>678-255-6156</td> </tr> <tr> <td>Site Safety Coordinator</td> <td>Jorge Sanchez</td> <td>678-255-5538</td> </tr> <tr> <td>Client Contact (EPA RPM)</td> <td></td> <td></td> </tr> <tr> <td>Other (EPA HRS coordinator)</td> <td></td> <td></td> </tr> <tr> <td>State Agency</td> <td></td> <td></td> </tr> <tr> <td>State Spill Number</td> <td></td> <td></td> </tr> <tr> <td>Fire Department</td> <td></td> <td>911</td> </tr> <tr> <td>Police Department</td> <td></td> <td>911</td> </tr> <tr> <td>State Police</td> <td></td> <td>911</td> </tr> <tr> <td>Health Department</td> <td></td> <td></td> </tr> <tr> <td>Poison Control Center</td> <td></td> <td>800-848-6946</td> </tr> <tr> <td>Occupational Physician</td> <td>Dr. Jerry Berke, Health Resources</td> <td>800-350-4511</td> </tr> </table>				EMERGENCY CONTACTS	NAME	PHONE	Health and Safety Manager	Bill Fink	414-234-7845	Project Manager	Russell Henderson	678-255-6156	Site Safety Coordinator	Jorge Sanchez	678-255-5538	Client Contact (EPA RPM)			Other (EPA HRS coordinator)			State Agency			State Spill Number			Fire Department		911	Police Department		911	State Police		911	Health Department			Poison Control Center		800-848-6946	Occupational Physician	Dr. Jerry Berke, Health Resources	800-350-4511
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CONTINGENCY PLANS: <i>Summarize below</i> Contact corporate Health and Safety officer, William Fink, at 414-234-7845		<table style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left; width: 80%;">MEDICAL EMERGENCY</th> <th style="text-align: left; width: 20%;">PHONE</th> </tr> <tr> <td>Hospital Name:</td> <td></td> </tr> <tr> <td>Hospital Address</td> <td></td> </tr> <tr> <td>Name of Contact at Hospital:</td> <td></td> </tr> <tr> <td>Name of 24-Hour Ambulance:</td> <td></td> </tr> <tr> <td>Route to Hospital:</td> <td>(see attached sheet)</td> </tr> </table>				MEDICAL EMERGENCY	PHONE	Hospital Name:		Hospital Address		Name of Contact at Hospital:		Name of 24-Hour Ambulance:		Route to Hospital:	(see attached sheet)																														
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HEALTH AND SAFETY PLAN APPROVALS Prepared by _____ Date _____ DHSC Signature _____ Date _____ HSM Signature _____ Date _____		Distance to Hospital _____																																													

HEALTH AND SAFETY PLAN SIGNATURE FORM

TN & Associates Health and Safety Program

All site personnel must sign this form indicating receipt of the H&SP. Keep this original on site. It becomes part of the permanent project files. Send a copy to the Health and Safety Manager (HSM).

SITE NAME/NUMBER: Barite Hill Nevada Goldfields / 2005148

DIVISION/LOCATION: T N & Associates, Marietta, GA.

DATE: _____

I understand, and agree to comply with, the provisions of the above referenced H&SP for work activities on this project. I agree to report any injuries, illnesses or exposure incidents to the site Health and Safety Coordinator (SHSC). I agree to inform the SHSC about any drugs (legal and illegal) that I take within three days of site work.

PRINTED NAME	SIGNATURE	DATE