

**Table 1: Descriptions of AGS Survey Locations**

AGS #	Features Present	Area (Ft <sup>2</sup> ) Estimates from AGS 2003	Mineralization	Oxidation	Wetlands	Erosion	Discharge
15	Prospect pits, dump	2000	Pyrite	Heavily Oxidized	Present	Minor Rills	None
16	Collapsed adit and dumps	1000	Pyrite, Quartz, Sericite	Heavily Oxidized	Present	Minor Rills	None
17	Adit and dumps	1000	Pyrite	Heavily Oxidized	Not Present	Minor Rills	0 - 5 gpm
18	Collapsed adit	1000	Pyrite	Heavily Oxidized	Present	Minor Rills	0 - 5 gpm
19	Exploration adit	1000	Pyrite, Quartz, Sericite	Heavily Oxidized	Not Present	None	0 - 5 gpm
20	Exploration adit	1000	Pyrite, Sphalerite	Heavily Oxidized	Not Present	None	0 - 5 gpm
22	Open adit, dump	1000	Pyrite, Quartz, Sericite	Heavily Oxidized	Present	Minor Rills	0 - 5 gpm
23	Open adit and dump	1000	Pyrite	Heavily Oxidized	Present	Minor Rills	0 - 5 gpm
33	Mill/tailings	2000	Pyrite	Heavily Oxidized	Not Present	Minor Rills	None
35	Collapsed adit/small dump	500	Pyrite, Sericite	Heavily Oxidized	Not Present	None	None
44	Collapsed adit, dump	3000	Pyrite, Galena, Quartz	Heavily Oxidized	Present	Minor Rills	0 - 5 gpm
45	4 collapsed shafts, large dumps	10000	Pyrite, Galena	Heavily Oxidized	Not Present	Minor Rills	None
51	Collapsed adit, dump, discharge pond	15000	Pyrite, Galena	Heavily Oxidized	Present	None	> 15 gpm
63	Dump, collapsed prospect pits	500	Pyrite, Quartz, Sericite	Heavily Oxidized	Present	None	None
107	Adit discharge point from treatment shed	2500	Pyrite	Heavily Oxidized	Present	None	6 - 15 gpm
108	Collapsed crusher/stamp mill?	4000	Pyrite	Heavily Oxidized	Present	Minor Rills	None
109	Closed Adit	100	Pyrite	Heavily Oxidized	Present	Minor Rills	None
110	Dump	1800	Pyrite	Heavily Oxidized	Present	Minor Rills	None
111	Mill, crusher-stamp mil, tails	3000	Pyrite, Galena, Chalcopyrite	Heavily Oxidized	Not Present	None	None
113	Dump	1000	Pyrite, Chalcopyrite, Galena	Heavily Oxidized	Not Present	None	None
114	Adit, dam, vent raiser pipe	500	Pyrite, Chalcopyrite, Galena, Sphalerite	Heavily Oxidized	Not Present	None	6 - 15 gpm
115	Dump above mill	500	Pyrite, Chalcopyrite, Galena, Sphalerite	Heavily Oxidized	Not Present	None	None
116	Toe of tailings pond	2000	Pyrite, Chalcopyrite, Galena, Sphalerite	Heavily Oxidized	Not Present	None	None
117	Dump	5000	Pyrite, Chalcopyrite, Galena, Sphalerite	Heavily Oxidized	Not Present	None	None
118	Dump	10000	Pyrite, Chalcopyrite, Galena, Sphalerite	Heavily Oxidized	Not Present	None	None
119	Collapsed adit	1000	Pyrite, Chalcopyrite	Unutilized	Not Present	None	None
120	Shaft and dump	2000	Pyrite, Chalcopyrite	Unutilized	Not Present	None	None
128	Open/Partly Collapsed Adit, dump	1200	Quartz, Sericite, Pyrite	Heavily Oxidized	Not Present	Minor Rills	None
130	Dog Hole, dump	200	Quartz, Pyrite, Sericite	Heavily Oxidized	Not Present	Minor Rills	None
131	Dog Hole, dump	300	Quartz, Pyrite, Sericite	Heavily Oxidized	Not Present	Minor Rills	None
132	Dog Hole, dump	700	Quartz, Pyrite, Sericite	Heavily Oxidized	Not Present	Minor Rills	None
133	Dog Hole, dump	225	Quartz, Pyrite, Sericite	Heavily Oxidized	Present	None	None
134	Collapsed Adit (Shaft?), dump	1200	Quartz, Sericite, Pyrite, Galena	Weakly Oxidized	Not Present	Minor Rills	None
135	Collapsed Shaft (?), dump	900	Quartz, Sericite, Pyrite	Heavily Oxidized	Not Present	Minor Rills	None
136	Dog Hole, dump	450	Quartz, Sericite, Pyrite	Heavily Oxidized	Not Present	Minor Rills	None
137	Collapsed Adit, dump	2400	Quartz, Pyrite, Sericite, Galena, Sphalerite	Heavily Oxidized	Not Present	Minor Rills	None
138	Trench, dump	1125	Quartz, Sericite, Pyrite	Heavily Oxidized	Not Present	Minor Rills	None

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<b>AGS #</b>	<b>Features Present</b>	<b>Area (Ft<sup>2</sup>) Estimates from AGS 2003</b>	<b>Mineralization</b>	<b>Oxidation</b>	<b>Wetlands</b>	<b>Erosion</b>	<b>Discharge</b>
148	Collapsed Adit, Teetering Collar, dump	4200	Quartz, Sericite, Pyrite, Galena	Heavily Oxidized	Not Present	Severe Rills and Gullies	None
149	Open Adit, dump	3300	Quartz, Sericite, Pyrite, Galena, Sphalerite, Clay	Heavily Oxidized	Not Present	Severe Rills and Gullies	0 - 5 gpm
151	Old Trench, dump	270	Quartz, Sericite, Pyrite	Weakly Oxidized	Not Present	None	0 - 5 gpm
152	Open Adit, dump	1390	Quartz, Sericite, Pyrite, Galena	Heavily Oxidized	Not Present	Minor Rills	None
174	Collapsed adit with small dump	600	Quartz, Sericite, Pyrite	Weakly Oxidized	Not Present	Minor Rills	None
178	Collapsed shaft, dump, and two pits	5300	Quartz, Sericite, Pyrite, Chalcopyrite	Heavily Oxidized	Not Present	Minor Rills	None
213	Adit, dump, rail	5950	Quartz, Sericite	Heavily Oxidized	Not Present	Severe Rills and Gullies	None

Table 2: Mine Waste and Mine Seep and Adit Discharge Samples

Sample ID	Mine Claim or USFS Land	Mine Grouping Area	Soil and/or Water	Soil Samples Collected	Water Samples Collected	Flow Measurement	Sample Event
AGS12	USFS	USFS	Comp	1	0	No	Aug/Sept-2007
AGS16	Lucky	Silver	Comp	3	0	No	Aug/Sept-2007
AGS17	Black Crow	Silver	Comp/Grab	1	1	Yes	Aug/Sept-2007
AGS18	Delaware Extension.	Silver	Comp/Grab	1	1	Yes	Aug/Sept-2007
AGS19	Lucky Dutchman	Silver	Comp/Grab	1	1	Yes	Aug/Sept-2007
AGS19D	Lucky Dutchman	Silver	Comp/Grab	1	1	Yes	Aug/Sept-2007
AGS20	Lucky Dutchman	Silver	Comp/Grab	1	1	Yes	Aug/Sept-2007
AGS22	Delaware Extension	Silver	Comp/Grab	1	1	Yes	Aug/Sept-2007
AGS23	Black Crow	Silver	Comp	1	0	No	Aug/Sept-2007
AGS33	Tram Mill	Tram Mill	Comp	4	0	No	Aug/Sept-2007
AGS51	Annex	Delaware	Comp/Grab	4	2	Yes	Aug/Sept-2007
AGS108	El Jebel	El Jebel	Comp	1	0	No	Aug/Sept-2007
AGS109	USFS	El Jebel	Comp	2	0	No	Aug/Sept-2007
AGS110	El Jebel	El Jebel	Comp	4	0	No	Aug/Sept-2007
AGS111	Forest City	Brittle	Comp/Grab	2	1	Yes	Aug/Sept-2007
AGS113	Forest City	Brittle	Comp	2	0	No	Aug/Sept-2007
AGS114	Badger	Penn Mine	Comp/Grab	2	1	Yes	Aug/Sept-2007
AGS114D	Badger	Penn Mine	Comp/Grab	2	1	Yes	Aug/Sept-2007
AGS115	Giant Mill	Penn Mine	Comp	2	0	No	Aug/Sept-2007
AGS117	Giant Mill	Penn Mine	Comp	2	0	No	Aug/Sept-2007
AGS118	Giant Mill	Brittle	Comp	2	0	No	Aug/Sept-2007
AGS120	Evergreen Tunnel	USFS	Comp	1	0	No	Aug/Sept-2007
SS1	Lucky	Silver	Comp/Grab	0	1	Yes	Aug/Sept-2007
RB	Rinsate Blank	NA	Grab	0	3	No	Aug/Sept-2007
FB	Field Blank	NA	Grab	0	1	No	Aug/Sept-2007

**Table 3: Peru Creek Water Quality Sampling Locations**

Sampling Location	Latitude	Longitude	Elevation (HAE)	Description:	Field Parameters		Water Quality	Biology			Sediment Quality
					GPS	Temp, Cond, pH, DO, and Flow	Total and Dissolved Metals, Alk + SO4 + Cl, DOC)	Tox Testing	Macro-invertebrates	Fish	Sediment Metals
<b>Snake River Stations (downstream to upstream):</b>											
SW-082	39 36 19.30 N	105 56 36.06 W	9281	Snake River downstream of the North Fork of Snake River at USGS gage. From large parking lot, drive toward the resort and turn left at the River Lodge sign. Pass the first set of condos, turn right and drive across a large parking lot with telephone poles.	No	Yes	Yes	Yes - 100%	Yes	Yes	Yes
SW-117	39 36 19.00 N	105 56 30.08 W	9288	Snake River upstream of the North Fork of Snake River. From Montezuma Road, turn right on Hunki Dori Road. Drive to the end and turn right into Hunki Dori parking lot. Sample upstream of walking bridge at the base of the gondola.	No	Yes	Yes	Yes - 100%, 90%, 75%, 50%, 25%, 12.5%, 0%	No	Yes	Yes
SW-050	39 35 57.29 N	105 53 00.04 W	9710	Snake River downstream of Peru Creek. Site is approximately 1/4 to 1/2 mile upstream of EPA site 39355710553. Sample upstream of where Montezuma Road crosses the Snake at the concrete blocks.	No	Yes	Yes	Yes - 100%, 90%, 75%, 50%, 25%, 12.5%, 6.25%, 0%	Yes	Yes	Yes
SW-047	39 35 29.46 N	105 52 17.47 W	9948	Snake River upstream of Peru Creek. Site is in the same location as EPA location 39353010521.	No	Yes	Yes	Yes - 100%, 75%, 56.3%, 42.2%, 31.6%, 0%	Yes	Yes	Yes
SW-045	39 33 50.29 N	105 51 38.80 W	10518	Snake River downstream of Deer Creek confluence. Sample at USGS staff gage downstream of the road. Make sure sample is well-mixed.	No	Yes	Yes	No	No	No	Yes
SW-044	39 33 49.50 N	105 51 37.21 W	10522	Snake River upstream of Deer Creek confluence. Sample at the USGS staff gage.	No	Yes	Yes	No	No	No	Yes
<b>Snake River Tributaries (downstream to upstream):</b>											

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					GPS	Temp, Cond, pH, DO, and Flow	Total and Dissolved Metals, Alk + SO4 + Cl, DOC)	Tox Testing	Macro-invertebrates	Fish	Sediment Metals
SW-083	39 36 28.26 N	105 56 27.10 W	9315	North Fork of Snake River upstream of the confluence with Snake River. Sample where Montezuma Road crosses the creek near the large Keystone Parking lot.	No	Yes	Yes	No	No	No	Yes
EPA-12345	39 34 53.97N	105 52 16.46 W	10236	Saints John Creek just upstream of confluence with the snake river.	No	Yes	Yes	No	No	Yes	Yes
EPA-SJA2	39 34 24.69 N	105 52 46.81 W	10635	Saints John mine adit just upstream of confluence with Saints John Creek. Sample taken at road crossing downstream of where the adit flow combines with clean-looking seep water.	No	Yes	Yes	No	No	No	Yes
EPA-SJ2	39 34 12.67 N	105 52 53.91 W	10770	Saints John Creek upstream of confluence with adit flow at road crossing. Sample taken across from cabin "The Berry Home - 1869."	No	Yes	Yes	No	No	Yes	Yes
SW-043	39 33 47.49 N	105 51 37.52 W	10536	Deer Creek upstream of confluence with Snake River. Sample in wooded area near the USGS gage about 100+ yards upstream of confluence.	No	Yes	Yes	No	No	Yes low Priority	Yes
<b>Peru Creek (downstream to upstream):</b>											
SW-049	39 35 57.26 N	105 51 27.60 W	10138	Peru Creek 1/2 mile upstream of confluence with the Snake River. Sample where Peru Creek road crosses the creek at the USGS gage. Same location as EPA site 39355710551.	No	Yes	Yes	Yes - 100%, 50%, 25%, 12.5%, 6.25%, 0%	Yes	Yes	Yes

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					GPS	Temp, Cond, pH, DO, and Flow	Total and Dissolved Metals, Alk + SO4 + Cl, DOC)	Tox Testing	Macro-invertebrates	Fish	Sediment Metals
<b>SW-085</b>	39 36 00.38 N	105 50 40.58 W	10336	Peru Creek upstream of Chihuahua Gulch confluence. Access site at the new 1-room cabin that is on the right side of the road going upstream. Sample beside the old mine building and upstream of the waterfall.	No	Yes	Yes	Yes – 100%, 50%, 25%, 12.5%, 6.25%, 0%	No	No	Yes
<b>SW-158</b>	39 35 53.96 N	105 49 41.72 W	10594	Peru Creek midway between Warden and Cinnamon Gulch. Sample just upstream of the "canyon" waterfall area where creek is beside the road. Sample downstream of the beaver ponds.	No	Yes	Yes	No	No	No	Yes
<b>PC-4</b>	39 36 04.56 N	105 49 05.84 W	10736	Peru Creek downstream of Pennsylvania Mine discharge and upstream of Cinnamon Gulch confluence. Access site approximately 200+ meters upstream of an old mine shack on stream right. Site is immediately downstream of a beaver dam with a 4-foot waterfall.	No	Yes	Yes	Yes - 100%, 50%, 25%, 12.5%, 6.25%, 0%	Yes	No	Yes
<b>SW-140</b>	39 36 08.40 N	105 48 41.49 W	10845	Peru Creek upstream of confluence with Pennsylvania Mine discharge. Sample upstream of road crossing.	No	Yes	Yes	Yes – 100%	Yes	Yes	Yes
<b>PC-6</b>	39 36 14.69 N	105 48 20.44 W	10924	Peru Creek upstream of confluence with Shoe Basin and Pennsylvania Mine discharges. Sample where stone house is located beside the road.	No	Yes	Yes	No	No	No	Yes
<b>Peru Creek Tributaries (downstream to upstream):</b>											
<b>SW-Chi</b>	39 36 04.91 N	105 50 36.10 W	10376	Chihuahua Gulch upstream of confluence with Peru Creek. Sample downstream of Peru Creek road crossing.	No	Yes	Yes	No	No	No	Yes
<b>Warden Gulch (downstream to upstream):</b>											
<b>SW-168</b>	39 35 55.91 N	105 49 56.38 W	10485	Warden Gulch upstream of confluence with Peru Creek. Access site beyond the grave and where the power poles cross the road. Look for a flat area just downstream of "the canyon" that has lots of rocks/scree alongside the road. Park here and walk downhill to the site.	Yes	Yes	Yes	No	No	No	Yes

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					GPS	Temp, Cond, pH, DO, and Flow	Total and Dissolved Metals, Alk + SO4 + Cl, DOC)	Tox Testing	Macro-invertebrates	Fish	Sediment Metals
<b>WG-SE</b>	39 35 39.36 N	105 50 00.17 W	10808	Southeast tributary to Warden Gulch. From WGM-1, hike upstream 150+ yards and sample tributary that flows in on stream right. Be sure to sample far enough upstream so flow from a spring located between Warden and the east fork is not collected in the sample.	No	Yes	Yes	No	No	No	Yes
<b>WG-2</b>	39 35 29.88 N	105 50 06.31 W	11033	Warden Gulch upstream of SE tributary at first road crossing. Sample upstream of the road.	No	Yes	Yes	No	No	No	Yes
<b>WG-3</b>	39 35 11.46 N	105 50 06.27 W	11357	East branch of Warden Gulch at road crossing. Continue up the road from WG-2 and sample the first branch at the road crossing. Flow here appears to be less than the west branch.	No	Yes	Yes	No	No	No	Yes
<b>WG-4</b>	39 35 11.05 N	105 50 08.23 W	11353	Western branch of Warden Gulch at road crossing. Continue up the road about 100 meters past WG-3 to access this site. Sample upstream of the road.	No	Yes	Yes	No	No	No	Yes
<b>WG-Source</b>				Upstream headwater location on Warden Gulch. Site yet to be determined.	Yes	Yes	Yes	No	No	No	Yes
<b>Cinnamon Gulch (downstream to upstream):</b>											
<b>SW-Cina</b>	39 35 56.69 N	105 48 57.32 W	10913	Cinnamon Gulch ups. of confluence with Peru Creek. Access site by driving Penn Mine road past the concrete house and settling ponds. Stop at the first stream crossing and hike uphill past the Brittle Silver mine dumps and sample upstream of the flow split at the top of a rocky section of hill.	No	Yes	Yes	No	No	No	Yes
<b>SW-Up Cinn</b>	39 35 34.41 N	105 48 49.18 W	11349	Cinnamon Gulch upstream of mine adit flow. Site is downstream of a small inflow that enters on stream right but about 100 yards upstream of old cribbing across the creek.	No	Yes	Yes	No	No	No	Yes

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					GPS	Temp, Cond, pH, DO, and Flow	Total and Dissolved Metals, Alk + SO4 + Cl, DOC)	Tox Testing	Macro-invertebrates	Fish	Sediment Metals
<b>SW-ECinn</b>	39 35 34.08 N	105 48 49.02 W	11349	East fork of Cinnamon Gulch just upstream of confluence with Cinnamon Gulch. Site is just upstream of where the road crosses Cinnamon and is about 100 yards upstream of the mine cribbing / dam structure. Flow enters Cinnamon on stream right.	No	Yes	Yes	No	No	No	Yes
<b>SW-Cinn3</b>	39 35 34.03 N	105 48 49.31 W	11350	Cinnamon Gulch upstream of the confluence with the East Fork of Cinnamon.	No	Yes	Yes	No	No	No	Yes
<b>SS-1</b>	39 35 13.79 N	105 48 55.37 W	11683	Silver Spoon Mine Adit as it comes out of the ground. Site is located at the top of Cinnamon Gulch Road and serves as the headwaters to Cinnamon Gulch.	No	Yes	Yes	No	No	No	No
<b>SW-116</b>	39 36 00.59 N	105 48 45.21 W	10856	Pennsylvania Mine discharge upstream of confluence with Peru Creek. Sample in May 2006 was taken beside the newly constructed concrete building. Location could be moved downstream of the holding pond for future sampling events.	No	Yes	Yes	No	No	No	No
<b>Total Number of Samples:</b>					<b>1</b>	<b>29</b>	<b>29</b>	<b>6 Def Tests +2 Profiles 42 Test Conc.</b>	<b>6</b>	<b>9</b>	<b>27</b>

**Table 4: Field Parameters for Peru Creek Water Quality and Ground Water Samples**

Variable, Units	Method	Container Type and Preservative	Holding Time	Reporting Limits
Flow, cfs	EPA R8 SOP 722	NA	Field	0.1 cfs
Temperature, °C	EPA 170.1	NA	Field	0.1 °C
Specific Conductance, μSiemens/cm	EPA 120.1	NA	Field	1 μSiemens/cm
pH, standard units	EPA 150.1	NA	Field	0.01 su
Dissolved Oxygen, mg/l	EPA 360.1	NA	Field	0.1 mg/l

**Table 5: Dissolved Metals Peru Creek Water Quality and Ground Water Samples**

Variable, Units	Method	Container Type and Preservative	Holding Time	Required Reporting Limits
Aluminum, μg/l	EPA 200.7	250 ml HDPE Bottle, HNO <sub>3</sub> to pH 2	6 months	30 μg/l
Arsenic, μg/l	EPA 200.8	250 ml HDPE Bottle, HNO <sub>3</sub> to pH 2	6 months	5 μg/l
Cadmium, μg/l	EPA 200.8	250 ml HDPE Bottle, HNO <sub>3</sub> to pH 2	6 months	0.2 μg/l
Calcium, mg/l	EPA 200.7	250 ml HDPE Bottle, HNO <sub>3</sub> to pH 2	6 months	200 μg/l
Chromium, μg/l	EPA 200.7	250 ml HDPE Bottle, HNO <sub>3</sub> to pH 2	6 months	2 μg/l
Copper, μg/l	EPA 200.7	250 ml HDPE Bottle, HNO <sub>3</sub> to pH 2	6 months	10 μg/l
Iron, μg/l	EPA 200.7	250 ml HDPE Bottle, HNO <sub>3</sub> to pH 2	6 months	200 μg/l
Lead, μg/l	EPA 200.8	250 ml HDPE Bottle, HNO <sub>3</sub> to pH 2	6 months	1 μg/l
Magnesium, mg/l	EPA 200.7	250 ml HDPE Bottle, HNO <sub>3</sub> to pH 2	6 months	200 μg/l
Manganese, μg/l	EPA 200.7	250 ml HDPE Bottle, HNO <sub>3</sub> to pH 2	6 months	4 μg/l
Nickel, μg/l	EPA 200.8	250 ml HDPE Bottle, HNO <sub>3</sub> to pH 2	6 months	0.5 μg/l
Potassium, mg/l	EPA 200.7	250 ml HDPE Bottle, HNO <sub>3</sub> to pH 2	6 months	1000 μg/l
Selenium, μg/l	EPA 200.8	250 ml HDPE Bottle, HNO <sub>3</sub> to pH 2	6 months	1 μg/l
Silver, μg/l	EPA 200.7	250 ml HDPE Bottle, HNO <sub>3</sub> to pH 2	6 months	2 μg/l
Sodium, mg/l	EPA 200.7	250 ml HDPE Bottle, HNO <sub>3</sub> to pH 2	6 months	500 μg/l
Zinc, μg/l	EPA 200.7	250 ml HDPE Bottle, HNO <sub>3</sub> to pH 2	6 months	10 μg/l
Hardness, mg/l	EPA 200.7	Calc. from dissolved Ca and Mg	6 months	0.2 mg/l

Note: "Dissolved Metals" means those metals which will pass through a 0.45 micron membrane filter. The specific method of sample treatment and analysis is defined in Section 4.1.1 of "Methods for Chemical Analysis of Water and Waste," EPA-600/4-79-020, Revised March 1983. Environmental Monitoring and Support Laboratory, U.S. Environmental Protection Agency, Cincinnati, OH.

**Table 6: Total Recoverable Metals Peru Creek Water Quality and Ground Water Samples**

Variable, Units	Method	Container Type and Preservative	Holding Time	Required Reporting Limits
Aluminum, µg/l	EPA 200.7	125 ml LDPE Bottle HNO <sub>3</sub> to pH 2	6 months	30 µg/l
Arsenic, µg/l	EPA 200.8	125 ml LDPE Bottle HNO <sub>3</sub> to pH 2	6 months	5 µg/l
Cadmium, µg/l	EPA 200.8	125 ml LDPE Bottle HNO <sub>3</sub> to pH 2	6 months	0.2 µg/l
Chromium, µg/l	EPA 200.7	125 ml LDPE Bottle HNO <sub>3</sub> to pH 2	6 months	2 µg/l
Copper, µg/l	EPA 200.7	125 ml LDPE Bottle HNO <sub>3</sub> to pH 2	6 months	10 µg/l
Iron, µg/l	EPA 200.7	125 ml LDPE Bottle HNO <sub>3</sub> to pH 2	6 months	200 µg/l
Lead, µg/l	EPA 200.8	125 ml LDPE Bottle HNO <sub>3</sub> to pH 2	6 months	1 µg/l
Manganese, µg/l	EPA 200.7	125 ml LDPE Bottle HNO <sub>3</sub> to pH 2	6 months	4 µg/l
Nickel, µg/l	EPA 200.8	125 ml LDPE Bottle HNO <sub>3</sub> to pH 2	6 months	0.5 µg/l
Selenium, µg/l	EPA 200.8	125 ml LDPE Bottle HNO <sub>3</sub> to pH 2	6 months	1 µg/l
Silver, µg/l	EPA 200.7	125 ml LDPE Bottle HNO <sub>3</sub> to pH 2	6 months	2 µg/l
Zinc, µg/l	EPA 200.7	125 ml LDPE Bottle HNO <sub>3</sub> to pH 2	6 months	10 µg/l
<b>Digestion Procedure:</b>				
Total Recoverable Metals - Hotplate	EPA 200.2	"Sample Preparation Procedure for Spectrochemical Determination of Total Recoverable Elements", Methods for the Determination of Metals in Environmental Samples, EPA/600/4-91/0100, June 1991		

Note: "Total Recoverable Metals" means the concentration of metals in an unfiltered sample following treatment with hot dilute mineral acid as described in Section 4.1.4 of "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020, Revised March 1983. Environmental Monitoring and Support Laboratory, U.S. Environmental Protection Agency, Cincinnati, OH. If the analytical laboratory is unable to do hotplate digestion, a microwave digestion procedure will also be considered acceptable.

**Table 7: Alkalinity, Chloride, Sulfate, and Dissolved Organic Peru Creek Water Quality Samples**

Variable, Units	Method	Container Type and Preservative	Holding Time	Required Reporting Limits
Alkalinity, mg/l	EPA 310.1	250 ml HDPE Bottle - Ice to 4C	14 Days	4 mg/l
Chloride, mg/l	EPA 300.0	250 ml HDPE Bottle - Ice to 4C	28 Days	1.0 mg/l
Sulfate, mg/l	EPA 300.0	250 ml HDPE Bottle - Ice to 4C	28 Days	1.0 mg/l
DOC, mg/l	EPA 415.1	250 ml HDPE Bottle, H <sub>3</sub> PO <sub>4</sub> to pH2	28 Days	1.0 mg/l

**Table 8: Macroinvertebrate and Toxicity Testing Peru Creek Water Quality Samples**

Variable, Units	Method	Container Type and Preservative	Holding Time	Required Reporting Limits
96-Hr Acute Toxicity Tests with Rainbow Trout (LC50 in %)	See Below	8 1-Gallon Cubitainers (32 Liters minimum) chilled to 4°C	24 Hours	NA
Macroinvertebrates	EPA R8 Laboratory SOP #705	500 ml to 1000 ml plastic, 70% ETOH	NA	NA

Methods for 48-hr acute toxicity tests will follow procedures outlined in:

“Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms” Fourth Edition, August 1993, Environmental Monitoring Systems Laboratory, U.S. Environmental Protection Agency, Cincinnati, OH, EPA/600/4-90/027F.

Note: Toxicity samples will be tested in a definitive series of 100, 50, 25, 12.5, 6.25, and 0 %. If excessive mortality is experienced in the lowest sample dilution within the first 24 hours of the test, the test will be restarted at a lower dilution series.

**Table 9: Total Recoverable Metals Peru Creek Sediment and Soil Samples**

Variable, Units	Method	Container Type and Preservative	Holding Time	Required Reporting Limits
<b>Aluminum</b> , mg/kg	EPA 200.7	60 ml HDPE Bottle, Ice to 4 C	6 months	100 mg/kg
<b>Arsenic</b> , mg/kg	EPA 200.7	60 ml HDPE Bottle, Ice to 4 C	6 months	10 mg/kg
<b>Cadmium</b> , mg/kg	EPA 200.7	60 ml HDPE Bottle, Ice to 4 C	6 months	1 mg/kg
<b>Chromium</b> , mg/kg	EPA 200.7	60 ml HDPE Bottle, Ice to 4 C	6 months	2 mg/kg
<b>Copper</b> , mg/kg	EPA 200.7	60 ml HDPE Bottle, Ice to 4 C	6 months	10 mg/kg
<b>Iron</b> , mg/kg	EPA 200.7	60 ml HDPE Bottle, Ice to 4 C	6 months	200 mg/kg
<b>Lead</b> , mg/kg	EPA 200.7	60 ml HDPE Bottle, Ice to 4 C	6 months	5 mg/kg
<b>Manganese</b> , mg/kg	EPA 200.7	60 ml HDPE Bottle, Ice to 4 C	6 months	4 mg/kg
<b>Nickel</b> , mg/kg	EPA 200.7	60 ml HDPE Bottle, Ice to 4 C	6 months	3 mg/kg
<b>Selenium</b> , mg/kg	EPA 200.7	60 ml HDPE Bottle, Ice to 4 C	6 months	10 mg/kg
<b>Silver</b> , mg/kg	EPA 200.7	60 ml HDPE Bottle, Ice to 4 C	6 months	2 mg/kg
<b>Zinc</b> , mg/l	EPA 200.7	60 ml HDPE Bottle, Ice to 4 C	6 months	10 mg/kg
<b>Digestion Procedure:</b>				
Total Recoverable Metals - Hotplate	EPA 200.2	“Sample Preparation Procedure for Spectrochemical Determination of Total Recoverable Elements”, Methods for the Determination of Metals in Environmental Samples, EPA/600/4-91/0100, June 1991		

Table 10  
Soil Samples - Total Metals Results  
Lower Cinnamon Gulch

Sample ID	BLM Open Space Cleanup Guidance Values - On-Site Worker - Surveyor	Reference Dose Screening Concentration	Cancer Risk Screening Concentration	Worker CSEV	AGS12 S1	AGS108 S1	AGS109 S1	AGS109 S2	AGS110 S1	AGS110 S2	AGS110 S3	AGS110 S4	AGS111 S1	AGS111 S2	AGS113 S1	AGS113 S2			
Claim Name or USFS					USFS Land	El Jebel Claim	USFS Land	USFS Land	El Jebel Claim	El Jebel Claim	El Jebel Claim	El Jebel Claim	El Jebel Claim	Forest City Claim	Forest City Claim	Forest City Claim	Forest City Claim		
Laboratory					Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP
Estimated Area (Ft²)					5,800	7,800	13,100	8,000	8,000	7,700	160,000	160,000	3,500	3,500	4,600	2,800			
CLP Sample ID																			
Sampling Date																			
Analyses																			
Units																			
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg			
Aluminum	--	--	--	900,000	4,570	2,270	6,040	8,480	1,850	3,700	2,110	853	738	1,130	1,150	1,920			
Arsenic	100	23	0.43	1.6	169	153	11.1	8.7	75.8	85.2	93.7	20.8	95.8	251	114	35.4			
Cadmium	800	39	--	810	6.6	22.1	1.1	0.79	27.6	10.9	6.9	12.3	47.9	49.7	0.62	0.35 J			
Chromium	--	230	--	1,500,000	23.2	6	13.5	17.1	10.1	11.2	5.3	1.4 J	1.9	3.1	1.1 J	2.4			
Copper	59,000	--	--	41,000	56.8	1,470	162	108	723	713	409	913	1,000	1,820	17.5	21.8			
Iron	--	--	--	310,000	44,200	34,400	16,100	19,700	53,700	59,000	27,200	10,500	26,300	31,600	50,000	37,800			
Lead	2,000	--	--	800	5,960	46,000	578	311	12,200	7,960	13,700	1,910	21,500	83,500	2,440	851			
Magnesium	--	--	--	--	2,430	67.1 J	2,020	4,010	616	1,090	462 J	72.9 J	125 J	198 J	135 J	495 J			
Manganese	220,000	1100	--	16,000	486	51.1	813	1,180	128	227	64.5	45.7	80.4	41.7	302	584			
Mercury	480	23	--	310	0.13	1.4	0.059 J	0.069 J	0.71	0.35	0.24	0.16 U	0.37	0.47	0.26	0.077 J			
Nickel	32,000	1600	--	20,000	10.2	1.9 J	7.6	10.1	12.5	8.3	3.4 J	14	3.8 J	3.7 J	0.93 J	1 J			
Selenium	8,000	3900	--	5,100	0.98 J	0.62 J	3.8 U	3.6 U	1 J	1.3 J	1.1 J	5.9 U	0.73 J	0.95 J	0.95 J	0.29 J			
Silver	8,000	3900	--	5,100	74.5	108	8.4	2.6	128	115	140	18	122	120	8	4.2			
Zinc	480,000	23000	--	310,000	2,100	8,400	345	198	7,920	3,640	2,300	2,170	17,300	16,100	321	103			

Shaded cell indicates that either CDPHE Worker CSEV, BLM Open Space Human Risk Management Criteria, SCDM RDSC or CRSC were exceeded  
 J Estimated value - detected at or below the contract required detection limit  
 U Not detected at the reported value.

Table 11  
Soil Samples - Total Metals Results  
Pennsylvania Mine Area

Sample ID	Claim Name or USFS Land	Laboratory	Estimated Area (F <sup>2</sup> )	CLP Sample ID	Sample Date	analasys Units	BLM Open Space Cleanup Guidance Values - On-Site Worker - Surveyor	Reference Dose Screening Concentration	Cancer Risk Screening Concentration	Worker CSEV	AGS114 S1	AGS114 S2	AGS115 S1	AGS115 S2	AGS117 S1	AGS117 S2	AGS118 S1	AGS118 S2	AGS120 S1
											Badger Claim	Badger Claim	Giant Mill Site	Giant Mill Site	Giant Mill Site	Giant Mill Site	Giant Mill Site	Giant Mill Site	Giant Mill Site
											Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP
											1,750	2,300	4,000	3,600	11,200	25,000	11,200	11,100	3,200
											MH21Y8	MH21Y9	MH21Z3	MH21Z4	MH21Z8	MH21Z9	MH2200	MH2201	MH2203
											8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007
											Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals
											mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	--	--	--	900,000	3,860	4,130	3,010	1,080	2,120	7,860	1,670	669	7,260						
Arsenic	100	23	0.43	1.6	25.3	53.5	279	123	65.7	58.2	88.7	87.6	3.1						
Cadmium	800	39	--	810	0.64	2.9	9.2	11.4	4.8	1.2	9.2	14.3	0.87						
Chromium	--	230	--	1,500,000	27.3	14.5	5.4	2.8	6.1	31	2.6	0.83 J	22.1						
Copper	59,000	--	--	41,000	47.8	226	263	165	266	186	103	483	35.8						
Iron	--	--	--	310,000	47,800	95,200	173,000	24,800	31,400	98,600	28,200	25,200	31,200						
Lead	2,000	--	--	800	973	1,380	2,420	9,620	5,780	474	6,370	9,480	111						
Magnesium	--	--	--	--	2,690	1,770	574 J	298 J	933	3,310	643	57.8 J	3,320						
Manganese	220,000	1100	--	16,000	132	186	3,910	77	261	538	61	19	1,740						
Mercury	480	23	--	310	0.082 J	0.16	0.22	1	0.59	0.12 U	0.7	0.93	0.34						
Nickel	32,000	1600	--	20,000	8.5	6.2	48.9	1.6 J	5	13	1.5 J	0.78 J	14.6						
Selenium	8,000	3900	--	5,100	0.92 J	1.2 J	0.98 J	0.75 J	0.68 J	0.93 J	0.5 J	0.56 J	3.7 U						
Silver	8,000	3900	--	5,100	3.4	14.9	23.4	51.2	38.9	2.6	37.5	118	0.62 J						
Zinc	480,000	23000	--	310,000	152	585	2,300	3,590	1,450	158	2,380	4,490	196						

Shaded cell indicates that either CDPHE Worker CSEV, BLM Open Space Human Risk Management Criteria, SCDM RDSC or CRSC were exceeded

J Estimated value - detected at or below the contract required detection limit

U Not detected at the reported value.

Table 12  
Soil Samples - Total Metals Results  
Middle Cinnamon Gulch

Sample ID	BLM Open Space Cleanup Guidance Values - On-Site	Reference Dose Screening Concentration	Cancer Risk Screening Concentration	Worker CSEV	AGS33 S1	AGS33 S2	AGS33 S3	AGS33 S4	AGS51 S1	AGS51 S2	AGS51 S3	AGS51 S4
Claim Name or USFS Land					Tram Mill Site	Tram Mill Site	Tram Mill Site	Tram Mill Site	Annex Claim	Annex Claim	Annex Claim	Annex Claim
Laboratory					Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP
Estimated Area (Ft <sup>2</sup> )					15,000	25,000	11,200	16,500	42,000	17,000	1,300	3,300
CLP Sample ID					MH2219	MH2220	MH2221	MH2222	MH2228	MH2229	MH2230	MH2231
Sampling Date	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007				
Analays	Total Metals		Total Metals		Total Metals		Total Metals					
Units	Worker - Surveyor	Concentration	Concentration	Worker CSEV	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	--	--	--	900,000	2,550	2,170	7,100	4,120	3,690	3,960	4,460	4,540
Arsenic	100	23	0.43	1.6	110	150	333	152	42.2	130	33.6	167
Cadmium	800	39	--	810	3.8	15.7	1.8	32.6	1.1	19.2	0.56	1.1
Chromium	--	230	--	1,500,000	7.3	7.3	17	15.4	18.7	15.2	39.9	23.7
Copper	59,000	--	--	41,000	803	906	300	1,670	116	480	67.9	150
Iron	--	--	--	310,000	26,900	26,100	109,000	28,900	35,500	30,900	31,500	76,900
Lead	2,000	--	--	800	20,200	16,400	1,310	37,300	8,330	13,800	2,010	4,200
Magnesium	--	--	--	--	140 J	297 J	2,220	470 J	2,580	2,270	4,570	1,440
Manganese	220,000	1100	--	16,000	13.3	17.8	365	55.8	126	104	579	1,340
Mercury	480	23	--	310	0.5	1.2	0.16	0.47	0.15	0.24	0.23	0.4
Nickel	32,000	1600	--	20,000	1.2 J	2.2 J	7.2	7.3	8	6.6	24.2	7.1
Selenium	8,000	3900	--	5,100	0.35 J	0.82 J	4.4 U	0.4 J	3.7 U	3.7 U	0.57 J	3.9 U
Silver	8,000	3900	--	5,100	132	159	16.2	123	22.4	128	7.8	28.1
Zinc	480,000	23000	--	310,000	1,090	4,260	282	12,200	348	5,950	211	247

Shaded cell indicates that either CDPHE Worker CSEV, BLM Open Space Human Risk Management Criteria, SCDM RDSC or CRSC were exceeded  
 J Estimated value - detected at or below the contract required detection limit  
 U Not detected at the reported value.

Table 13  
Soil Samples - Total Metals Results  
Upper Cinnamon Gulch

Sample ID	Claim Name or USFS Land	Property Owner	Estimated Area (Ft)	CLP Sample ID	Sample Date	analaysys	Units	BLM Open Space Cleanup Guidance Values - On-Site Worker - Surveyor	Reference Dose Screening Concentration	Cancer Risk Screening Concentration	Worker CSEV	AGS16 S1	AGS16 S2	AGS16 S3	AGS17 S1	AGS18 S1	AGS19 S1	AGS19 S1D	AGS20 S1	AGS22 S1	AGS23 S1
												Lucky Claim Liberty CLP	Lucky Claim Liberty CLP	Lucky Claim Liberty CLP	Black Crow Claim Liberty CLP	Delaware Extension Claim Liberty CLP	Lucky Dutchman Claim Liberty CLP	Lucky Dutchman Claim Liberty CLP	Lucky Dutchman Claim Liberty CLP	Delaware Extension Claim Liberty CLP	Black Crow Claim Liberty CLP
												4,700	6,000	3,000	1,900	700	500	500	1,500	700	2,000
												MH2204	MH2205	MH2206	MH2207	MH2209	MH2213	MH2248	MH2214	MH2216	MH2218
												8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007
												Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals
												mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	--	--	--	--	--	--	900,000	--	--	--	1.6	2,340	665	2,660	2,340	11,600	18,300	20,700	4,440	3,460	13,900
Arsenic	100	23	0.43	--	--	--	1.6	105	1,720	293	128	36.4	15	16.3	44.1	182	3.1	1.8	3.6		
Cadmium	800	39	--	--	--	--	810	51.3	60.8	2.8	34.8	0.32 J	0.46 J	0.78 J	0.96	1.8	3.6				
Chromium	--	230	--	--	--	--	1,500,000	7.5	1.6	4.6	6.4	36.6	178	205.5	16.6	17.4	31				
Copper	59,000	--	--	--	--	--	41,000	127	364	299	348	74.1	106	109.5	380	54.7	97.7				
Iron	--	--	--	--	--	--	310,000	51,900	220,000	42,700	37,600	54,200	54,600	58,050	79,300	58,500	219,000				
Lead	2,000	--	--	--	--	--	800	11,100	16,300	21,100	24,900	1,030	738	744	15,000	4,150	579				
Magnesium	--	--	--	--	--	--	--	758	150 J	755	694	6,700	16,800	18,600	1,800	1,760	7,720				
Manganese	220,000	1100	--	--	--	--	16,000	59	384	68.4	130	375	1,390	1,640	96.8	307	3,480				
Mercury	480	23	--	--	--	--	310	0.74	1.4	1.4	0.17	0.075 J	0.083 J	0.095 J	1.8	0.98	0.44				
Nickel	32,000	1600	--	--	--	--	20,000	9.6	22.1	2 J	6.3	18	55.5	61.45	6.8	5.8	19.6				
Selenium	8,000	3900	--	--	--	--	5,100	0.78 J	3.6 U	3.6 U	0.31 J	3.9 U	3.9 U	4.1 U	4 U	0.6 J	4 U				
Silver	8,000	3900	--	--	--	--	5,100	113	126	161	157	7.5	3.9	4.9	41.3	47.8	5.8				
Zinc	480,000	23000	--	--	--	--	310,000	11,700	22,300	1,060	10,500	87	216	210	279	444	236				

Shaded cell indicates that either CDPHE Worker CSEV, BLM Open Space Human Risk Management Criteria, SCDM RDSC or CRSC were exceeded  
 J Estimated value - detected at or below the contract required detection limit  
 U Not detected at the reported value.

**Table 14**  
**SPLP Results and Acid Base Accounting**  
**Soil Samples - Lower Cinnamon Gulch**

Sample ID		AGS12 S1	AGS108 S1	AGS109 S1	AGS109 S2	AGS110 S1	AGS110 S2	AGS110 S3	AGS110 S4	AGS111 S1	AGS111 S2	AGS113 S1	AGS113 S2
Claim Name or USFS Land		USFS Land	El Jebel Claim	USFS Land	USFS Land	El Jebel Claim	El Jebel Claim	El Jebel Claim	El Jebel Claim	Forest City Claim	Forest City Claim	Forest City Claim	Forest City Claim
Laboratory		A4 CLP	A4 CLP	A4 CLP	A4 CLP	A4 CLP	A4 CLP	A4 CLP	A4 CLP	A4 CLP	A4 CLP	A4 CLP	A4 CLP
Estimated Area (Ft²)		5,800	7,800	13,100	8,000	8,000	7,700	160,000	160,000	3,500	3,500	4,600	2,800
EPA CLP ID		MH2275	MH2256	MH2257	MH2258	MH2259	MH2260	MH2261	MH2262	MH2263	MH2264	MH2265	MH2266
Sampling Date	CDPHE MCL's for Comparison to SPLP Data - ug/l	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007
Analyses	SPLP	SPLP	SPLP	SPLP	SPLP	SPLP	SPLP	SPLP	SPLP	SPLP	SPLP	SPLP	SPLP
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Aluminum	5,000	879	1,240	5,780	3,870	1,920	4,305	2,090	706	2,160	1,310	295	1,010
Arsenic	50	10 U	36.3	5.7 J	10 U	19.7	35.55	9.2 J	37.5	21.4	10.8	10 U	10 U
Cadmium	5	8.4	7	3.5 J	4.8 J	7.4	16.95	7.7	25.2	12.7	27	5 U	5 U
Chromium	50	10 U	10 U	3.8 J	3.5 J	10 U	3.2 J	10 U	10 U	10 U	10 U	10 U	10 U
Copper	200	27.9	512	624	134	572	1,490	659	147	846	872	25 U	8.1 J
Iron	300	398	8,690	3,810	3,440	8,060	12,950	2,200	330	5,120	5,700	1,210	3,670
Lead	50	6,630	14,800	687	133	10,800	12,200	8,470	4,220	12,400	9,710	35	579
Magnesium	--	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U
Manganese	50	2,670	149	814	1,040	110	139	701	1,270	753	199	1,610	842
Mercury	2	0.068 J	0.13 J	0.052 J	0.07 J	0.092 J	0.0545 J	0.055 J	0.2 U	0.094 J	0.056 J	0.056 J	0.2 U
Nickel	100	40 U	40 U	40 U	40 U	40 U	40 U	40 U	125	40 U	40 U	40 U	40 U
Selenium	20	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U
Silver	50	10 U	47	10 U	10 U	42.1	61.25	28.8	3.4 J	47.9	10.3	10 U	10 U
Zinc	2,000	2,300	2,260	387	405	2,460	4,405	1,890	26,700	4,940	8,900	343	116

Shaded cell indicates that concentration detected was greater than CDPHE Drinking Water MCL.  
 J Estimated value - detected at or below the contract required detection limit  
 U Not detected at the reported value.

Sample ID	Units / Interpretation Standard	AGS12 S1	AGS108 S1	AGS109 S1	AGS109 S2	AGS110 S1	AGS110 S2	AGS110 S3	AGS110 S4	AGS111 S1	AGS111 S2	AGS113 S1	AGS113 S2
Laboratory	--	Analytica	Analytica	Analytica	Analytica	Analytica	Analytica	Analytica	Analytica	Analytica	Analytica	Analytica	Analytica
Sulfate	mg/l	560	650	79	49	330	300	880	490	470	1,000	1,500	280
Neutralization Potential	t/kt / NA	1.2	13	7	12	5.8	2.9	1.7	5.2	20	17	0	0
Acid Potential	t/kt / NA	22	55	3.2	2.2	27	23	52	140	64	160	37	19
Acid Base Potential or Net Neutralization Potential	t/kt / <20*	-21	-42	4	10	-21	-21	-51	-140	-44	-150	-37	-19
Neutralization Potential Ratio	NA / <4*	-1.0	-0.8	1.3	4.5	-0.8	-0.9	-1.0	-1.0	-0.7	-0.9	-1.0	-1.0
Sulfur Total	% / NA	0.81	2	0.12	0.08	0.97	0.86	1.7	4.6	2.4	5.64	1.36	0.7
Sulfur, Hot Water Extractable	% / NA	0.11	0.23	0.02	<0.01	0.1	0.11	0.02	0.02	0.36	0.42	0.18	0.1
Sulfur, HCL Extractable	% / NA	0.19	0.18	0.02	0.01	0.18	0.21	0.29	0.24	0.24	0.76	0.36	0.18
Sulfur, HNO3 Extractable	% / NA	0.42	1.09	0.08	0.05	0.6	0.39	1.21	3.38	1.29	1.02	0.78	0.4
Sulfur, Residual	% / NA	0.10	0.5	<0.01	<0.01	0.1	0.15	0.18	0.97	0.5	3.43	0.05	0.02

Shaded cell indicates that soils are acid generating.  
 \* USGS Acid Base Accounting Interpretation - June 2003

Table 15  
SPLP Results and Acid Base Accounting  
Soil Samples - Pennsylvania Mine Area

Sample ID		AGS114 S1	AGS114 S2	AGS115 S1	AGS115 S2	AGS117 S1	AGS117 S2	AGS118 S1	AGS118 S2	AGS120 S1
Claim Name or USFS Land		Badger Claim	Badger Claim	Giant Mill Site	Giant Mill Site	Giant Mill Site	Giant Mill Site	Giant Mill Site	Giant Mill Site	Evergreen Tunnel Lode
Property Owner		A4 CLP	A4 CLP	A4 CLP	A4 CLP	A4 CLP	A4 CLP	A4 CLP	A4 CLP	A4 CLP
Estimated Area (Ft <sup>2</sup> )		1,750	2,300	4,000	3,600	11,200	25,000	11,200	11,100	3,200
EPA CLP ID		MH2267	MH2268	MH2269	MH2270	MH2271	MH2272	MH2273	MH2274	MH2276
Sampling Date	CDPHE MCL's for Comparison to SPLP	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007
Analaysys		SPLP	SPLP	SPLP	SPLP	SPLP	SPLP	SPLP	SPLP	SPLP
Units		Data - ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Aluminum	5,000	2,040	2,020	12,700	899	2,800	1,450	1,280	1,090	1,040
Arsenic	50	4.1 J	11.3	86.1	6.9 J	23.2	6 J	10.2	10.2	10 U
Cadmium	5	2.1 J	6.7	5.7	3.5 J	13	5 U	5.8	8.9	3.8 J
Chromium	50	5.1 J	10 U	19.7	10 U	5 J	10 U	10 U	10 U	10 U
Copper	200	57.7	457	267	53.8	212	110	37.3	159	9.9 J
Iron	300	9,590	13,100	38,000	1,700	16,900	6,070	4,050	7,140	100 U
Lead	50	367	2,030	4,780	9,240	13,300	50	9,590	9,250	10 U
Magnesium	--	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U	1,780 J
Manganese	50	249	1,690	21,600	1,020	1,670	385	459	80.4	1,210
Mercury	2	0.055 J	0.078 J	0.2 U	1.6	0.28	0.2 U	2.1	0.23	0.05 J
Nickel	100	40 U	40 U	19.8 J	40 U	13.8 J	40 U	40 U	40 U	40 U
Selenium	20	35 U	35 U	12.6 J	35 U	35 U	35 U	35 U	35 U	35 U
Silver	50	10 U	8.2 J	8.7 J	4 J	22	10 U	6.2 J	11.9	10 U
Zinc	2,000	345	1,290	1,740	1,020	2,250	187	1,610	2,510	430

Shaded cell indicates that concentration detected was greater than CDPHE Drinking Water MCL

J Estimated value - detected at or below the contract required detection limit

U Not detected at the reported value.

Sample ID	Units / Interpretation Standard	AGS114 S1	AGS114 S2	AGS115 S1	AGS115 S2	AGS117 S1	AGS117 S2	AGS118 S1	AGS118 S2	AGS120 S1
Laboratory	--	Analytica	Analytica	Analytica	Analytica	Analytica	Analytica	Analytica	Analytica	Analytica
Sulfate	mg/l	220	1,900	2,500	400	1,200	330	740	1,100	100
Neutralization Potential	t/kt / NA	0.0	0	1.2	5.2	1.2	0	4.6	1.7	8.1
Acid Potential	t/kt / NA	13	27	110	29	43	19	28	54	6.1
Acid Base Potential or Net Neutralization Potential	t/kt / <20*	-13	-27	-110	-24	-42	-19	-23	-52	2
Neutralization Potential Ratio	NA / <4*	-1.0	-1.0	-1.0	-0.8	-1.0	-1.0	-0.8	-1.0	0.3
Sulfur Total	% / NA	0.48	1.07	3.86	1.13	1.46	0.65	1.01	1.85	0.22
Sulfur, Hot Water Extractable	% / NA	0.06	0.21	0.19	0.2	0.07	0.04	0.12	0.13	0.03
Sulfur, HCL Extractable	% / NA	0.19	0.46	<0.01	0.07	0.41	0.16	0.19	0.26	0.04
Sulfur, HNO3 Extractable	% / NA	0.22	0.37	3.27	0.69	0.78	0.45	0.54	1.16	0.15
Sulfur, Residual	% / NA	<0.01	0.03	0.39	0.16	0.2	<0.01	0.17	0.31	<0.01

Shaded cell indicates that soils are acid generating.

\* USGS Acid Base Accounting Interpretation - June 2003

Table 16  
SPLP Results and Acid Base Accounting  
Soil Samples - Middle Cinnamon Gulch

Sample ID		AGS33 S1	AGS33 S2	AGS33 S3	AGS33 S4	AGS51 S1	AGS51 S2	AGS51 S3	AGS51 S4
Claim Name or USFS Land		Tram Mill Site	Tram Mill Site	Tram Mill Site	Tram Mill Site	Annex Claim	Annex Claim	Annex Claim	Annex Claim
Laboratory		A4 CLP	A4 CLP	A4 CLP	A4 CLP	A4 CLP	A4 CLP	A4 CLP	A4 CLP
Estimated Area (Ft <sup>2</sup> )		15,000	25,000	11,200	16,500	42,000	17,000	1,300	3,300
EPA CLP ID		MH2286	MH2287	MH2288	MH2289	MH2291	MH2292	MH2293	MH2290
Sampling Date	CDPHE MCL's for Comparison to SPLP	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007
Analaysis		SPLP	SPLP	SPLP	SPLP	SPLP	SPLP	SPLP	SPLP
Units		Data - ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Aluminum	5,000	539	435	2,740	538	1,010	848	829	2,390
Arsenic	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cadmium	5	1.5 J	4.3 J	4.8 J	5.6	2.3 J	5.3	5 U	2.5 J
Chromium	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Copper	200	77.2	52.2	1,030	187	41.3	258	51.6	134
Iron	300	726	1,540	228	985	392	275	351	37.6 J
Lead	50	5,920	9,310	222	9,700	9,930	8,860	21	1,840
Magnesium	--	5,000 U	5,000 U	1,840 J	5,000 U	2,050 J	2,010 J	1,810 J	5,000 U
Manganese	50	53.9	67.2	881	147	426	151	88.6	1,260
Mercury	2	0.16 J	1.5	0.2 U	0.056 J	0.22	0.096 J	0.2 U	0.2 U
Nickel	100	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Selenium	20	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U
Silver	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Zinc	2,000	377	1,310	847	1,660	603	1,710	152	159

Shaded cell indicates that concentration detected was greater than CDPHE Drinking Water MCL

J Estimated value - detected at or below the contract required detection limit

U Not detected at the reported value.

Sample ID	Units / Interpretation Standard	AGS33 S1	AGS33 S2	AGS33 S3	AGS33 S4	AGS51 S1	AGS51 S2	AGS51 S3	AGS51 S4
Laboratory	--	Analytica	Analytica	Analytica	Analytica	Analytica	Analytica	Analytica	Analytica
Sulfate	mg/l	440	360	420	430	250	910	160	190
Neutralization Potential	t/kt / NA	1.2	0	0	0	0	0	2.3	1.7
Acid Potential	t/kt / NA	30	36	20	48	14	31	13	17
Acid Base Potential or Net Neutralization Potential	t/kt / <20*	-29	-35	-20	-47	-14	-31	-11	-15
Neutralization Potential Ratio	NA / <4*	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-0.8	-0.9
Sulfur Total	% / NA	1.02	1.24	0.68	1.69	0.57	1.3	0.56	0.58
Sulfur, Hot Water Extractable	% / NA	0.06	0.1	0.05	0.16	0.11	0.29	0.15	0.04
Sulfur, HCL Extractable	% / NA	0.27	0.41	0.37	0.4	0.12	0.35	0.12	0.11
Sulfur, HNO3 Extractable	% / NA	0.54	0.48	0.24	0.68	0.27	0.45	0.29	0.42
Sulfur, Residual	% / NA	0.14	0.25	0.01	0.44	0.06	0.2	<0.01	0.01

Shaded cell indicates that soils are acid generating.

\* USGS Acid Base Accounting Interpretation - June 2003

Table 17  
SPLP Results and Acid Base Accounting  
Soil Samples - Upper Cinnamon Gulch

Sample ID		AGS16 S1	AGS16 S2	AGS16 S3	AGS17 S1	AGS18 S1	AGS19 S1	AGS19 S1D	AGS20 S1	AGS22 S1	AGS23 S1
Claim Name or USFS Land		Lucky Claim	Lucky Claim	Lucky Claim	Black Crow Claim	Delaware Extension Claim	Lucky Dutchman Claim	Lucky Dutchman Claim	Lucky Dutchman Claim	Delaware Extension Claim	Black Crow Claim
Laboratory		A4 CLP	A4 CLP	A4 CLP	A4 CLP	A4 CLP	A4 CLP	A4 CLP	A4 CLP	A4 CLP	A4 CLP
Estimated Area (Ft²)		4,700	6,000	3,000	1,900	700	500	500	1,500	700	2,000
EPA CLP ID		MH2277	MH2278	MH2279	MH2280	MH2281	MH2282	MH2294	MH2283	MH2284	MH2285
Sampling Date	CDPHE MCL's for Comparison to SPLP Data - ug/l	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007
Analyses		SPLP	SPLP	SPLP	SPLP	SPLP	SPLP	SPLP	SPLP	SPLP	SPLP
Units		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Aluminum	5,000	3,060	1,030	1,450	1,560	3,980	2,200	2,190	1,520	1,030	1,280
Arsenic	50	10 U	19.3	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cadmium	5	5.1	8.3	2.8 J	8.6	5 U	5 U	5 U	5 U	5 U	5 U
Chromium	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Copper	200	42.4	61.6	62.6	79	15.7 J	36.7	33.4	147	18.3 J	25 U
Iron	300	4,580	14,600	180	1,720	69.7 J	42.25 J	100 U	332	1,010	120
Lead	50	6,960	7,490	9,340	9,690	57.9	4.05 J	2.9 J	14,700	8.8 J	35
Magnesium	--	5,000 U	5,000 U	2,310 J	1,720 J	1,860 J	1,590 J	5,000 U	1,540 J	5,000 U	5,000 U
Manganese	50	859	60.3	84.7	992	63.6	1,455	1,300	94.9	94.7	1,640
Mercury	2	0.2 U	0.2 U	0.092 J	0.061 J	0.2 U	0.2 U	0.2 U	0.58	0.2 U	0.2 U
Nickel	100	24.6 J	40 U	40 U	16.7 J	40 U	40 U	40 U	40 U	40 U	40 U
Selenium	20	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U
Silver	50	6.2 J	3.4 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Zinc	2,000	1,690	2,970	956	2,410	66.3	127	102	192	99	65.6

Shaded cell indicates that concentration detected was greater than CDPHE Drinking Water MCL  
 J Estimated value - detected at or below the contract required detection limit  
 U Not detected at the reported value.

Sample ID	Units / Interpretation Standard	AGS16 S1	AGS16 S2	AGS16 S3	AGS17 S1	AGS18 S1	AGS19 S1	AGS19 S1D	AGS20 S1	AGS22 S1	AGS23 S1
Laboratory	--	Analytica	Analytica	Analytica	Analytica	Analytica	Analytica	Analytica	Analytica	Analytica	Analytica
Sulfate	mg/l	1,000	1,600	290	810	57	110	100	140	450	110
Neutralization Potential	t/kt / NA	1.7	0	0	3.5	7	6.4	3.5	0	2.3	
Acid Potential	t/kt / NA	150	450	31	66	11	9.3	8.2	21	20	14
Acid Base Potential or Net Neutralization Potential	t/kt / <20*	-150	-450	-31	-63	-4	-2	-2	-18	-20	-11
Neutralization Potential Ratio	NA / <4*	-1.0	-1.0	-1.0	-1.0	-0.4	-0.2	-0.2	-0.9	-1.0	-0.8
Sulfur Total	% / NA	4.92	14.4	1.18	2.26	0.39	0.32	0.32	0.71	0.79	0.48
Sulfur, Hot Water Extractable	% / NA	0.12	0.01	0.2	0.14	0.03	0.02	0.06	0.03	0.13	0.04
Sulfur, HCL Extractable	% / NA	0.19	0.24	0.21	0.25	0.05	0.07	0.04	0.19	0.11	0.22
Sulfur, HNO3 Extractable	% / NA	4.06	10.7	0.62	1.07	0.3	0.22	0.22	0.38	0.52	0.2
Sulfur, Residual	% / NA	0.54	3.47	0.15	0.8	<0.01	0.01	<0.01	0.11	0.02	0.03

Shaded cell indicates that soils are acid generating.  
 \* USGS Acid Base Accounting Interpretation - June 2003

**Table 18**  
**Mine Adit and Seep Water Samples - Total Metals Results**  
**Pennsylvania Mine and Cinnamon Gulch**

Sample ID	CDPHE Drinking Water MCL's - ug/l	SS1	AGS17 W1	AGS18 W1	AGS19 W1	AGS20 W1	AGS22 W1	AGS51 W1	AGS51 W2	AGS111 W1	ASS114 W1	AGS114 W1D	CG RB1	CG RB2	CG RB3	FB1	
Claim Name or USFS Land		Lucky Claim	Black Crow Claim	Delaware Extension Claim	Lucky Dutchman Claim	Lucky Dutchman Claim	Delaware Extension Claim	Annex Claim	Annex Claim	Forest City Claim	Badger Claim	Badger Claim	NA	NA	NA	NA	
Laboratory		Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP
EPA CLP ID		MH22P8	MH22P2	MH22P9	MH22P3	MH22P6	MH22N7	MH22P4	MH22P5	MH22N4	MH22N5	MH22N6	MH22N8	MH22N9	MH22P0	MH22P7	
Sample Date		8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/30/2007
Analyses		Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals
Flow (gpm)		7.55	0.56	0.56	0.68	1.1	0.56	6.13	2.72	3.8	126	126	NA	NA	NA	NA	
Flow (cfs)		0.17	0.00125	0.00125	0.0015	0.00245	0.00125	0.0136	0.00605	0.00845	0.28	0.28	NA	NA	NA	NA	
Temperature °C		3.1	7.42	2.93	5.35	3.27	3.22	3.77	4.03	5.09	3.66	3.66	NA	NA	NA	NA	
pH		3.12	2.93	3.34	3.62	4.35	3.2	4.45	6.65	5.29	5.29	5.29	NA	NA	NA	NA	
Conductivity (ms/cm)		0.597	0.8	0.773	0.106	0.696	0.487	0.624	0.235	0.111	1.81	1.81	NA	NA	NA	NA	
DO (mg/l)		7.8	6.4	5.9	7.6	7	7.3	10.12	9.32	--	1.2	1.2	NA	NA	NA	NA	
Units		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Hardness		65	111	135	20	109	90	304	87	38	507	511	NA	NA	NA	NA	
Alkalinity		--	1,200 U	1,200 U	1,200 U	1,200 U	1,200 U	1,200 U	1,200 U	1,200 U	1,200 U	1,200 U	1,200 U	1,200 U	1,200 U	1,200 U	1,200 U
Bicarbonate		--	1,500 U	1,500 U	1,500 U	1,500 U	1,500 U	1,500 U	1,500 U	1,500 U	1,500 U	1,500 U	1,500 U	1,500 U	1,500 U	1,500 U	1,500 U
Carbonate	--	1,200 U	1,200 U	1,200 U	1,200 U	1,200 U	1,200 U	1,200 U	1,200 U	1,200 U	1,200 U	1,200 U	1,200 U	1,200 U	1,200 U	1,200 U	
Hydroxide	--	1,500 U	1,500 U	1,500 U	1,500 U	1,500 U	1,500 U	1,500 U	1,500 U	1,500 U	1,500 U	1,500 U	1,500 U	1,500 U	1,500 U	1,500 U	
Chloride	--	1,400	42 U	1,700	42 U	1,200	1,400	42 U	42 U	1,900	1,400	42 U	42 U	42 U	42 U		
Sulfate	--	280,000	330,000	460,000	50,000	340,000	270,000	360,000	110,000	42	1,300,000	1,200,000	2,900	110 U	2,900	110 U	
Aluminum	5,000	13,900	8,740	23,500	3,360	18,100	20,900	1,340	1,490	215	33,900	34,100	200 U	200 U	200 U	200 U	
Arsenic	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	8.3 J	9.9 J	10 U	10 U	10 U	3.7 J	
Cadmium	5	45.3	45.3	60.4	5.4	46.9	32.6	26.5	9.4	1.8 J	237	240	0.53 J	5 U	5 U	5 U	
Chromium	50	5.5 J	1 J	1.9 J	10 U	3.3 J	10 U	10 U	10 U	10 U	7.7 J	7.6 J	10 U	10 U	10 U	10 U	
Copper	200	1,050	70.7	384	106	1,210	386	183	60.5	0.76 J	9,360	9,360	25 U	25 U	25 U	25 U	
Iron	300	33,800	31,400	68,300	45.1 J	11,900	6,630	19,100	6,310	289	40,500	41,000	100 U	17.1 J	40.1 J	100 U	
Lead	50	342	693	29.6	3.8 J	212	35.4	98.4	269	3.9 J	97.6	97.6	5.6 J	6.5 J	4.8 J	10 U	
Magnesium	--	9,050	12,700	21,600	2,660 J	16,800	15,100	17,600	6,590	2,070 J	51,000	51,500	7.3 J	5,000 U	4.8 J	5,000 U	
Manganese	50	17,300	11,400	19,500	1,600	18,700	14,500	6,620	3,260	1,340	58,100	59,600	15 U	15 U	15 U	15 U	
Mercury	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	
Nickel	100	81.9	89.2	150	14.1 J	117	109	50.3	19.7 J	40 U	236	239	1.4 J	40 U	40 U	40 U	
Selenium	20	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	2.7 J	35 U	35 U	
Silver	50	1.6 J	1.9 J	1.2 J	10 U	3.3 J	0.98 J	0.46 J	10 U	10 U	4.2 J	4.1 J	10 U	10 U	10 U	10 U	
Zinc	2,000	10,700	8,720	10,100	871	8,930	6,760	5,880	1,040	589	47,200	48,400	4.3 J	2.9 J	60 U	60 U	

Shaded cell indicates that concentration detected was greater than CDPHE Drinking Water MCL  
 J Estimated value - detected at or below the contract required detection limit  
 U Not detected at the reported value.

**Mine Adit and Seep Water Samples - Total Metals Loading Results**  
**Pennsylvania Mine and Cinnamon Gulch**

Sample ID	CDPHE Drinking Water MCL's - ug/l	SS1	AGS17 W1	AGS18 W1	AGS19 W1	AGS20 W1	AGS22 W1	AGS51 W1	AGS51 W2	AGS111 W1	ASS114 W1	AGS114 W1D	CG RB1	CG RB2	CG RB3	FB1	
Claim Name or USFS Land		Lucky Claim	Black Crow Claim	Delaware Extension Claim	Lucky Dutchman Claim	Lucky Dutchman Claim	Delaware Extension Claim	Annex Claim	Annex Claim	Forest City Claim	Badger Claim	Badger Claim	NA	NA	NA	NA	
EPA CLP ID		MH22P8	MH22P2	MH22P9	MH22P3	MH22P6	MH22N7	MH22P4	MH22P5	MH22N4	MH22N5	MH22N6	MH22N8	MH22N9	MH22P0	MH22P7	
Sample Date		8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/30/2007
Analyses		Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals	Total Metals
Flow (gpm)		7.55	0.56	0.56	0.68	1.1	0.56	6.13	2.72	3.8	126	126	NA	NA	NA	NA	
Flow (cfs)		0.17	0.00125	0.00125	0.0015	0.00245	0.00125	0.0136	0.00605	0.00845	0.28	0.28	NA	NA	NA	NA	
Units		lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Aluminum		NA	12.7	0.06	0.16	0.03	0.24	0.14	0.10	0.05	0.01	51.2	51.5	NA	NA	NA	NA
Arsenic		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.01	0.01	NA	NA	NA	NA
Cadmium		NA	0.04	0.0003	0.0004	0.00004	0.0006	0.0002	0.002	0.0003	0.00008	0.4	0.4	NA	NA	NA	NA
Chromium		NA	0.005	0.00001	0.00001	NA	0.00004	NA	NA	NA	NA	0.01	0.01	NA	NA	NA	NA
Copper		NA	1.0	0.0005	0.003	0.001	0.0005	0.003	0.01	0.002	0.00003	14.1	14.1	NA	NA	NA	NA
Iron		NA	31.0	0.2	0.5	0.0004	0.2	0.04	1.4	0.21	0.01	61.2	61.9	NA	NA	NA	NA
Lead		NA	0.3	0.005	0.0002	0.00003	0.003	0.0002	0.007	0.009	0.0002	0.1	0.1	NA	NA	NA	NA
Magnesium		NA	8.3	0.09	0.1	0.02	0.2	0.1	1.3	0.2	0.09	77.0	77.8	NA	NA	NA	NA
Manganese	NA	15.9	0.08	0.1	0.01	0.2	0.1	0.5	0.1	0.06	87.8	90.0	NA	NA	NA	NA	
Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Nickel	NA	0.08	0.001	0.001	0.0001	0.002	0.001	0.0037	0.0006	NA	0.4	0.4	NA	NA	NA	NA	
Selenium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Silver	NA	0.001	0.00001	0.00001	NA	0.00004	0.00001	0.00003	NA	NA	0.006	0.006	NA	NA	NA	NA	
Zinc	NA	9.8	0.06	0.07	0.007	0.12	0.05	0.43	0.03	0.03	71.3	73.1	NA	NA	NA	NA	

NA - Analyte not detected, therefore no loading calculations are applicable

**Table 19**  
**Mine Adit and Seep Water Samples - Dissolved Metals Results**  
**Pennsylvania Mine and Cinnamon Gulch**

Sample ID		SS1	AGS17 W1	AGS18 W1	AGS19 W1	AGS20 W1	AGS22 W1	AGS51 W1	AGS51 W2	AGS111 W1	ASS114 W1	AGS114 W1D	CG RB1	CG RB2	CG RB3	FB1
Claim Name or USFS Land		Lucky Claim	Black Crow Claim	Delaware Extension Claim	Lucky Dutchman Claim	Lucky Dutchman Claim	Delaware Extension Claim	Annex Claim	Annex Claim	Forest City Claim	Badger Claim	Badger Claim	NA	NA	NA	NA
Laboratory		Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP	Liberty CLP
EPA CLP ID		MH22P8	MH22P2	MH22P9	MH22P3	MH22P6	MH22N7	MH22P4	MH22P5	MH22N4	MH22N5	MH22N6	MH22N8	MH22N9	MH22P0	MH22P7
Sample Date		8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/30/2007
analasys		Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals
Flow (gpm)		7.55	0.56	0.56	0.68	1.1	0.56	6.13	2.72	3.8	126	126	NA	NA	NA	NA
Flow (cfs)		0.17	0.00125	0.00125	0.0015	0.00245	0.00125	0.0136	0.00605	0.00845	0.28	0.28	NA	NA	NA	NA
Temperature - C		3.1	7.42	2.93	5.35	3.27	3.22	3.77	4.03	5.09	3.66	3.66	NA	NA	NA	NA
pH		3.12	2.93	3.34	4.35	3.2	3.62	5.84	6.65	4.45	5.29	5.29	NA	NA	NA	NA
Conductivity (ms/cm)		0.597	0.8	0.773	0.106	0.696	0.487	0.624	0.235	0.111	1.81	1.81	NA	NA	NA	NA
DO (mg/l)		7.8	6.4	5.9	7.6	7	7.3	10.12	9.32	--	1.2	1.2	NA	NA	NA	NA
Units	CDPHE Drinking Water MCL's - ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Hardness		65	111	135	20	109	90	304	87	38	507	511	NA	NA	NA	NA
DOC		300 U	300 U	300 U	300 U	300 U	1,100	300 U	300 U	300 U	300 U	300 U	300 U	300 U	300 U	300 U
Aluminum	5,000	14,500	9,170	23,500	3,470	19,100	20,900	1,150	560	247	35,700	36,200	200 U	200 U	200 U	200 U
Arsenic	50	4 J	10 U	1.9 J	10 U	10 U	10 U	1.5 J	10 U	10 U	23.3	21.7	10 U	10 U	10 U	10 U
Cadmium	5	46.7	47.7	62.2	5.3	48.5	31.9	28.3	9.3	1.7 J	248	249	5 U	5 U	5 U	5 U
Chromium	50	5.6 J	1.3 J	2.4 J	10 U	10 U	4.2 J	10 U	10 U	10 U	8.6 J	9.6 J	10 U	10 U	10 U	10 U
Copper	200	1,070	71.9	374	106	1,240	377	167	52.4	25 U	9,580	9,710	0.68 J	25 U	25 U	25 U
Iron	300	34,700	32,900	57,900	100 U	12,500	6,000	17,000	5,910	62.7 J	41,400	41,200	9.4 J	100 U	13.3 J	100 U
Lead	50	342	711	28.1	2.8 J	215	35	25.7	220	1.7 J	100	100	10 U	1.9 J	1.2 J	10 U
Magnesium	--	9,430	13,500	21,700	2,770 J	17,800	15,200	19,200	6,670	2,210 J	53,900	54,300	5000 U	5000 U	5000 U	5000 U
Manganese	50	17,300	11,500	18,900	1,610	19,000	13,900	6,920	3,180	1370	62,900	62,800	15 U	0.24 J	15 U	15 U
Mercury	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	75	84.2	140	6.2 J	112	99.4	44.3	10.8 J	40 U	241	241	40 U	40 U	40 U	40 U
Selenium	20	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	35 U	2.3 J	35 U
Silver	50	10 U	1.5 J	0.69 J	10 U	2.7 J	10 U	10 U	10 U	10 U	1.9 J	2.5 J	10 U	10 U	10 U	10 U
Zinc	2,000	10,700	9,010	9,810	803	9,080	6,620	6,300	986	485	53,400	53,500	2.4 J	3.2 J	60 U	60 U

Shaded cell indicates that concentration detected was greater than CDPHE Drinking Water MCL  
 J Estimated value - detected at or below the contract required detection limit  
 U Not detected at the reported value.

**Mine Adit and Seep Water Samples - Dissolved Metals Loading Results**  
**Pennsylvania Mine and Cinnamon Gulch**

Sample ID		SS1	AGS17 W1	AGS18 W1	AGS19 W1	AGS20 W1	AGS22 W1	AGS51 W1	AGS51 W2	AGS111 W1	ASS114 W1	AGS114 W1D	CG RB1	CG RB2	CG RB3	FB1
Claim Name or USFS Land		Lucky Claim	Black Crow Claim	Delaware Extension Claim	Lucky Dutchman Claim	Lucky Dutchman Claim	Delaware Extension Claim	Annex Claim	Annex Claim	Forest City Claim	Badger Claim	Badger Claim	NA	NA	NA	NA
EPA CLP ID		MH22P8	MH22P2	MH22P9	MH22P3	MH22P6	MH22N7	MH22P4	MH22P5	MH22N4	MH22N5	MH22N6	MH22N8	MH22N9	MH22P0	MH22P7
Sample Date		8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/29/2007	8/30/2007
analasys		Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals	Dissolved Metals
Flow (gpm)		7.55	0.56	0.56	0.68	1.1	0.56	6.13	2.72	3.8	126	126	NA	NA	NA	NA
Flow (cfs)		0.17	0.00125	0.00125	0.0015	0.00245	0.00125	0.0136	0.00605	0.00845	0.28	0.28	NA	NA	NA	NA
Units	CDPHE Drinking Water MCL's - ug/l	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Aluminum	NA	13.3	0.06	0.16	0.03	0.25	0.14	0.08	0.02	0.01	53.9	54.7	NA	NA	NA	NA
Arsenic	NA	0.004	NA	0.00001	NA	NA	NA	0.00011	NA	NA	0.04	0.03	NA	NA	NA	NA
Cadmium	NA	0.04	0.003	0.0004	0.0004	0.001	0.0002	0.002	0.0003	0.00008	0.4	0.4	NA	NA	NA	NA
Chromium	NA	0.005	0.00001	0.00002	NA	0.00006	0.00001	NA	NA	NA	0.01	0.01	NA	NA	NA	NA
Copper	NA	1.0	0.0005	0.003	0.001	0.016	0.003	0.012	0.002	NA	14.5	14.7	NA	NA	NA	NA
Iron	NA	31.8	0.22	0.4	NA	0.17	0.04	1.2	0.193	0.003	62.5	62.2	NA	NA	NA	NA
Lead	NA	0.3	0.005	0.0002	0.00002	0.003	0.00024	0.002	0.007	0.00008	0.151	0.15	NA	NA	NA	NA
Magnesium	NA	8.6	0.09	0.15	0.02	0.24	0.1	1.4	0.22	0.1	81.4	82.0	NA	NA	NA	NA
Manganese	NA	15.9	0.08	0.13	0.01	0.25	0.09	0.51	0.1	0.06	95.0	94.9	NA	NA	NA	NA
Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	NA	0.07	0.001	0.001	0.00005	0.001	0.001	0.003	0.00035	NA	0.36	0.36	NA	NA	NA	NA
Selenium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	NA	NA	0.00001	0.00005	NA	0.00004	NA	NA	NA	NA	0.003	0.004	NA	NA	NA	NA
Zinc	NA	9.8	0.06	0.07	0.006	0.12	0.04	0.5	0.03	0.02	80.7	80.8	NA	NA	NA	NA

NA - Analyte not detected, therefore no loading calculations are applicable



**Table 21**  
**Surface Water Quality - Peru Creek and Snake River – July 9, 2007**  
**Dissolved Metals Results**

Sample Location	CDPHE DW MCL	Environmental or SCDM Acute CMC	Environmental or SCDM Chronic CCC	Snake River Sampling Locations (upstream to downstream):						Snake River Tributaries (upstream to downstream):						Peru Creek Sampling Locations (upstream to downstream):								
				Snake River						Snake River Tributaries						Peru Creek								
				Snake River upstrm of Deer Creek Confluence	Snake River downstrm of Deer Creek Confluence	Snake River upstrm of Peru Creek	Snake River downstrm of Peru Creek	Snake River upstrm of N. Fork of Snake River	Snake River downstrm of N. Fork of Snake River	Deer Creek upstrm of confluence with Snake River	Saints John Creek upstream of adit flow	Saints John mine adit as it comes out of ground	Saints John mine adit upstream of confluence with Saints John Creek	Saints John Creek upstream of confluence with Snake River	N. Fork Snake River upstream of confluence with Snake River	Peru Creek at largest outflow from upper beaver ponds. Upgradient of Shoe Basin Mine	Peru Creek above confluence with Shoe Basin Mine	Peru Creek above Pennsylvania Mine adit flow confluence	Peru Creek below Pennsylvania Mine adit flow confluence	Peru Creek between Warden Gulch and Cinnamon Gulch	Peru Creek upstream of confluence with Chihuahua Gulch	Peru Creek 0.5 miles upstream of confluence with Snake River		
SW-044	SW-045	SW-047	SW-050	SW-117	SW-082	SW-043	EPA-SJ2	EPA-SJA	EPA-SJA2	EPA-12345	SW-083	PC-10	PC-6	SW-140	PC-4	SW-158	SW-085	SW-049						
Laboratory	--	--	--	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA					
Date	--	--	--	7/9/07	7/9/07	7/9/07	7/9/07	7/9/07	7/9/07	7/9/07	7/9/07	7/9/07	7/9/07	7/9/07	7/9/07	7/9/07	7/9/07	7/9/07	7/9/07					
Time	--	--	--	13:45	14:15	13:15	13:45	13:45	12:00	11:00	13:30	12:00	12:25	13:00	11:15	11:30	17:10	15:30	15:10	14:15	14:15	13:30	12:40	11:00
Flow (cfs)	--	--	--	12.3	27.6	43.3	78.5	93.9	143	15.2	7.91	0.676	0.697	8.27	34.6	----	10.6	11.1	15.4	20.4	24.4	38.3		
Temp (°C)	--	--	--	7.4	11.6	9.5	10.1	8.4	7.1	10.1	8.7	2.8	7.2	8.4	6.8	11.6	12.5	11.1	11.3	10.5	9.1	7.7		
Cond (µS/cm)	--	--	--	186	108	112	135	130	101	56	52	988	541	109	72	73	162	150	217	200	221	166		
pH	--	--	--	3.96	5.53	7.47	7.06	7.72	7.91	7.69	7.56	6.27	7.38	7.47	8.13	7.19	5.96	6.12	4.73	4.83	4.65	5.46		
DO (mg/l)	--	--	--	7.6	8.1	8.0	8.5	7.9	8.9	7.8	8.0	5.0	8.2	8.2	8.5	5.4	6.9	6.8	6.7	7.0	7.3	7.7		
Hardness (mg/l)	--	--	--	46.83	37.75	45.54	54.33	52.18	41.28	28.30	26.95	601.56	299.35	53.89	29.65	32.89	68.01	61.17	78.07	70.08	73.81	63.52		
Aluminum (ug/l)	--	750	87	3,580	450	<50.0	<50.0	85	<50.0	<50.0	<50.0	185	<50.0	<50.0	<50.0	<50.0	210	114	2,200	2,220	3,350	865		
Arsenic (ug/l)	10	340	150	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			
Cadmium (ug/l)	5	2	0.25	3.25	1.58	1.22	3.33	2.58	1.42	<0.2	<0.2	31.3	6.66	0.556	<0.02	<0.02	2.37	1.82	10.1	8.61	9.97	5.87		
Chromium (ug/l)	50	--	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0			
Copper (ug/l)	50	13	9	18.9	8.21	<5.0	25	11.1	6.07	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	20.2	12.4	238	191	146	80.4		
Iron (ug/l)	300	--	100	790	297	<250	<250	<250	<250	<250	<250	2,140	<250	<250	<250	<250	652	444	403	403	<250			
Lead (ug/l)	15	65	2.5	0.993	0.347	<0.2	0.724	0.281	<0.2	<0.2	<0.2	3.29	1.61	1.88	<0.2	<0.2	4.25	5.39	8.05	7.77	4.51			
Magnesium (ug/l)	--	--	--	5,250	3,450	3,360	4,160	3,820	2,810	1,670	1,390	32,100	15,400	2,780	1,690	2,410	6,270	5,520	7,380	6,350	6,710	5,120		
Manganese (ug/l)	50	--	--	994	504	364	832	646	354	<5.0	<5.0	12,400	2,180	222	<5.0	<5.0	890	644	2,140	1,890	2,420	1,400		
Nickel (ug/l)	100	470	520	17	9.38	6.1	8.97	7.1	3.9	<1.0	<1.0	56	11.4	1.42	<1.0	<1.0	14	10.6	21.5	18.7	22	12.1		
Selenium (ug/l)	50	--	5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			
Silver (ug/l)	100	3.2	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5				
Zinc (ug/l)	5,000	120	120	691	354	351	848	675	343	<5.00	<5.00	6,900	1,970	202	<20.0	<20.0	462	365	2,240	1,950	2,340	1,420		
<b>Metals Loading</b>				lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day		
Aluminum (lbs/day)	--	750	87	237	67	--	--	43	--	--	--	1	--	--	--	--	NC	12	7	163	245	440	179	
Arsenic (lbs/day)	10	340	150	--	--	--	--	--	--	--	--	--	--	--	--	--	NC	--	--	--	--	--		
Cadmium (lbs/day)	5	2	0.25	0.22	0.24	0.29	1.41	1.31	1.10	--	--	0.11	0.03	0.02	--	--	NC	0.14	0.11	0.84	0.95	1.31	1.21	
Chromium (lbs/day)	50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NC	--	--	--	--	--		
Copper (lbs/day)	50	13	9	1.3	1.2	--	10.6	5.6	4.7	--	--	--	--	--	--	--	NC	1.2	0.7	19.8	21.1	19.2	16.6	
Iron (lbs/day)	300	--	100	52	44	--	--	--	--	--	--	8	--	--	--	--	NC	--	--	54	49	53	--	
Lead (lbs/day)	15	65	2.5	0.07	0.05	--	0.31	0.14	--	--	--	0.01	0.01	0.08	--	--	NC	0.40	0.25	0.45	0.89	1.02	0.93	
Magnesium (lbs/day)	--	--	--	348	514	785	1,936	2,168	137	59	117	58	124	316	316	316	NC	300	330	613	700	882	1,058	
Manganese (lbs/day)	50	--	--	66	75	85	352	327	273	--	--	45	8	10	--	--	NC	51	38	178	208	318	289	
Nickel (lbs/day)	100	470	520	1.13	1.40	1.43	3.80	3.60	3.01	--	--	0.20	0.04	0.06	--	--	NC	0.80	0.63	1.79	2.06	2.89	2.50	
Selenium (lbs/day)	50	--	5	--	--	--	--	--	--	--	--	--	--	--	--	--	NC	--	--	0	0	0	--	
Silver (lbs/day)	100	3.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NC	--	--	--	--	--		
Zinc (lbs/day)	5,000	120	120	46	53	82	359	342	265	--	--	25	7	9	--	--	NC	27	22	186	215	307	293	

Sample Location	CDPHE DW MCL	Environmental or SCDM Acute CMC	Environmental or SCDM Chronic CCC	Source Water Characterization: Peru Creek Tributaries (upstream to downstream):												
				Cinnamon Gulch						Warden Gulch						Chihuahua Gulch
				Pennsylvania Mine Adit discharge	Silver Spoon Mine adit discharge	Cinnamon Gulch upstream of confluence with East Fork of Cinnamon Gulch	East for of Cinnamon Gulch upstream of Delaware Mine	Cinnamon Gulch upstream of Delaware Mine Adit	Cinnamon Gulch upstream of confluence with Peru Creek	Headwaters of Warden Gulch	Western branch of Warden Gulch at road crossing	East branch of Warden Gulch at road crossing	Warden Gulch upstream of SE Tributary	Southeast Tributary to Warden Gulch	Warden Gulch upstream of confluence with Peru Creek	
SW-116	SS-1	SW-Cinn3	SW-ECinn	SW-Up Cinn	SW-Cina	WG-Source	WG-4	WG-3	WG-2	WG-SE	SW-168	SW-Chi				
Laboratory	--	--	--	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA		
Date	--	--	--	7/9/07	7/9/07	7/9/07	7/9/07	7/9/07	7/9/07	7/9/07	7/9/07	7/9/07	7/9/07	7/9/07		
Time	--	--	--	11:15	14:40	13:00	13:20	13:45	12:00	15:23	14:40	14:20	12:35	11:15	12:00	
Flow (cfs)	--	--	--	0.203	0.042	1.55	0.231	1.56	3.12	0.285	1.342	0.459	2.459	0.367	----	
Temp (°C)	--	--	--	2.8	3.2	7.6	9.4	8.8	9.0	2.0	3.8	1.9	4.7	3.5	8.3	
Cond (µS/cm)	--	--	--	2050	483	187	300	208	198	157	337	271	248	303	281	115
pH	--	--	--	2.79	3.17	3.97	4.33	4.06	4.02	4.14	4.22	5.22	4.43	3.72	3.92	7.66
DO (mg/l)	--	--	--	0.4	6.9	7.5	6.9	6.9	7.1	10.8	11.3	10.4	11.7	10.0	7.4	
Hardness (mg/l)	--	--	--	553.62	49.31	42.64	111.01	55.53	51.55	38.26	108.93	113.84	86.64	74.55	84.13	50.13
Aluminum (ug/l)	--	750	87	61,800	12,100	4,410	3,990	4,330	4,090	3,100	4,520	856	2,410	11,700	5,990	<50.0
Arsenic (ug/l)	10	340	150	19.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Cadmium (ug/l)	5	2	0.25	279	33.9	5.77	7.2	6.02	5.82	22.1	44.8	21.2	25.7	8.97	19.9	<0.2
Chromium (ug/l)	50	--	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
Copper (ug/l)	50	13	9	10500	820	197	123	185	174	133	111	12	57	28.3	43.5	<5.0
Iron (ug/l)	300	--	100	89,200	26,700	<250	<250	<250	<250	<250	<250	<250	500	1,100	<250	
Lead (ug/l)	15	65	2.5	23.7	295	7.15	5.56	7.05	8.35	1.29	3.71	<2.0	1.87	<0.2	0.981	<0.2
Magnesium (ug/l)	--	--	--	61,100	7,170	4,390	8,770	5,240	4,880	3,860	13,300	11,400	9,340	8,670	3,080	
Manganese (ug/l)	50	--	--	45,000	11,100	2,380	3,070	2,490	2,320	4,380	14,600	1,350	7,300	2,210	5,540	<5.0
Nickel (ug/l)	100	470	520	367	67.3	18.2	24	18.5	18.3	101	89.9	60.3	11.7	43.2	<0.2	
Selenium (ug/l)	50	--	5	12.5	<0.5	0.6	0.7	<0.5	0.6	0.8	<0.5	<0.5	0.9	1.4	1.2	<0.5
Silver (ug/l)	100	3.2	--	<10.0	<0.5	<0.5	<0.5	<0.5								

**Table 22**  
**Surface Water Quality - Peru Creek and Snake River – September 26, 2007**  
**Total Metals Results**

Sample Location	CDPHE DW MCL	Environmental or SCDM Acute CMC	Environmental or SCDM Chronic CCC	Snake River Sampling Locations (upstream to downstream):						Snake River Tributaries (upstream to downstream):						Peru Creek Sampling Locations (upstream to downstream):						
				Snake River upstream of Deer Creek Confluence	Snake River upstream of Deer Creek Confluence	Snake River upstream of Peru Creek	Snake River upstream of Peru Creek	Snake River upstream of N. Fork of Snake River	Snake River upstream of N. Fork of Snake River	Deer Creek upstream of confluence with Snake	Saints John Creek upstream of confluence with adit flow	Saints John mine adit as it comes out of ground	Saints John mine adit upstream of confluence with Saints John Creek	Saints John Creek upstream of confluence with Snake River	N. Fork Snake River upstream of confluence with Snake River	Peru Creek at largest outflow from upper beaver ponds. Upgradient of Shoe Basin Mine	Peru Creek above confluence with Shoe Basin Mine	Peru Creek above Pennsylvania Mine adit flow confluence	Peru Creek below Pennsylvania Mine adit flow confluence	Peru Creek Warden Gulch and Cinnamon Gulch	Peru Creek upstream of confluence with Chihuahua Gulch	Peru Creek 0.5 miles upstream of confluence with Snake River
Laboratory	MCL	Acute CMC	Chronic CCC	SW-044 EPA	SW-045 EPA	SW-047 EPA	SW-050 EPA	SW-117 EPA	SW-082 EPA	SW-043 EPA	EPA-SJ2 EPA	EPA-SJA EPA	EPA-SJA2 EPA	EPA-12345 EPA	SW-083 EPA	PC-10 EPA	PC-6 EPA	SW-140 EPA	PC-4 EPA	SW-158 EPA	SW-085 EPA	SW-049 EPA
Date	--	--	--	9/26/07	9/26/07	9/26/07	9/26/07	9/26/07	9/26/07	9/26/07	9/26/07	9/26/07	9/26/07	9/26/07	9/26/07	9/26/07	9/26/07	9/26/07	9/26/07	9/26/07	9/26/07	9/26/07
Time	--	--	--	13:35	13:20	14:00	13:05	11:55	10:45	13:50	11:30	11:00	12:00	13:00	11:30	13:30	13:00	15:30	13:53	14:35	15:25	14:40
Flow (cfs)	--	--	--	2.38	3.45	7.1	23.9	24.5 J	34	1.37 J	1.1 J	0.3	0.607	3.02 J	6.9	--	2.6	3.38	4.19 J	5.56 J	6.3 J	9.88 J
Temp (°C)	--	--	--	5.53	5.59	6.56	4.94	5.37	3.22	6.54	2.99	2.99	3.55	5.74	2.59	5.36	6.68	6.99	6.81	7.93	7.71	7.26
Cond (µS/cm)	--	--	--	335	194	204	217	196	145	98	100	1,067	751	280	108	97	189	178	294	281	309	248
pH	--	--	--	3.81	4.75	6.70	5.58	6.67	7.51	6.78	7.28	6.00	7.26	7.70	7.92	6.59	6.20	4.00	4.58	4.68	4.12	4.96
DO (mg/l)	--	--	--	10.3	10.3	8.3	8.7	8.8	9.1	9.8	11.4	7.8	10.7	10.3	9.5	--	8.8	7.9	8.9	8.7	8.7	8.1
F (mg/l)	--	--	--	0.66	0.42	0.3	0.3	0.22	<0.2	<0.2	<0.2	0.33	0.21	<0.5	4.2	<0.2	<0.5	<0.5	0.62	0.59	0.6	0.43
Cl (mg/l)	--	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	2	<0.5	<0.5	0.6	<0.5	<0.2	4.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SO4 (mg/l)	--	--	--	137	83.2	78.9	87	74.5	45.2	14	13.5	505	332	95.4	6.9	27.3	73.2	67.4	128	121	135	104
Alk (mg/l)	--	--	--	<5	<5	5.05	<5	5.55	18.9	31.3	35.9	100	57.2	39.9	38.3	18.3	5.59	<5.0	<5.0	<5.0	<5.0	<5.0
DOC (mg/l)	--	--	--	0.4	0.7	0.7	0.5	0.3	0.4	1.1	0.5	<0.2	0.2	0.4	0.8	1.1	0.4	0.4	0.5	0.3	0.2	0.4
Hardness (mg/l)	--	--	--	73.4	60.9	80.5	82.3	76.4	61.9	42.7	46.7	580	394	132	42.6	44.0	82.5	75.1	104	98.4	95.7	84.7
Aluminum (ug/l)	--	750	87	8,990	5,250	2,480	2,780	1,980	1,110	<100	<100	2,090	887	114	<100	391	1,010	435	3,490	3,580	6,190	3,900
Arsenic (ug/l)	10	340	150	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Cadmium (ug/l)	5	2	0.25	7.2	4.7	3.7	6.0	4.5	2.7	<0.2	<0.2	45.2	18.1	3.5	<0.2	2.1	2.1	1.5	19	15.7	15.1	9.7
Chromium (ug/l)	50	--	--	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Copper (ug/l)	50	13	9	34	20	11	74	53	30	<10	<10	11	<10	<10	<10	<10	14	<10	396	327	226	148
Iron (ug/l)	300	--	100	1,450	920	511	454	322	211	117	<100	2,110	609	206	<100	2,320	<100	<100	974	563	633	427
Lead (ug/l)	15	65	2.5	1.2	<1.0	3.6	5.6	4.0	2.5	0.9	<1.0	28	19.1	6.4	<1.0	11.3	4.5	2.4	10.0	12.0	13.0	10.4
Manganese (ug/l)	50	--	--	2,280	1,340	1,050	1,410	1,050	594	<10	<10	15,600	5,930	1,380	947	947	522	319	3,570	3,080	2,930	1,960
Nickel (ug/l)	100	470	520	40.3	22.3	13.9	14.0	10.5	6.4	9	<1.0	<1.0	60.6	24.6	6.1	2.9	13.7	10.2	27.1	23.9	20.5	15.4
Selenium (ug/l)	50	--	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	<1.0	1.1	<1.0
Silver (ug/l)	100	3.2	--	<0.5 UJ	<0.5 UJ	0.6 J	<0.5 UJ	<0.5 UJ	0.9 J	<0.5	<0.5	<0.5	<0.5 UJ	<0.5 UJ	<0.5 UJ	0.8 U	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Zinc (ug/l)	5,000	120	120	1,210	699	772	1,370	1,070	582	<40	<40	7,870	3,750	776	<40	123	393	298	3,300	2,890	2,730	1,940
Metals Loading				lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Aluminum (lbs/day)	--	--	--	115	98	95	358	262	204	--	--	3	3	2	--	NC	14	8	79	107	210	208
Arsenic (lbs/day)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NC	--	--	--	--	--	--
Cadmium (lbs/day)	--	--	--	0.09	0.09	0.14	0.77	0.59	0.50	--	--	0.07	0.06	0.06	--	NC	0.03	0.03	0.43	0.47	0.51	0.52
Chromium (lbs/day)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	NC	--	--	--	--	--	--
Copper (lbs/day)	--	--	--	0.44	0.37	0.42	9.54	7.00	5.50	--	--	0.02	--	--	--	NC	0.20	--	8.95	9.81	7.68	7.89
Iron (lbs/day)	--	--	--	19	20	59	43	39	39	0.9	--	3.4	2.0	3.4	--	NC	--	--	22	17	22	23
Lead (lbs/day)	--	--	--	0.02	0.14	0.72	0.53	0.46	0.53	--	--	0.05	0.06	0.10	--	NC	0.06	0.04	0.23	0.36	0.44	0.55
Manganese (lbs/day)	--	--	--	29	25	40	182	139	109	0.07	0.02	25	19	22	--	NC	7	8	81	93	100	104
Nickel (lbs/day)	--	--	--	0.52	0.42	0.53	1.80	1.39	1.17	--	--	0.10	0.08	0.10	--	NC	0.19	0.19	0.61	0.72	0.70	0.82
Selenium (lbs/day)	--	--	--	--	--	--	--	--	--	--	--	0.003	--	--	--	NC	--	--	0.02	--	0.04	--
Silver (lbs/day)	--	--	--	--	0.02	--	--	0.17	--	--	--	--	--	--	--	NC	--	--	--	--	--	--
Zinc (lbs/day)	--	--	--	16	13	30	177	141	107	--	--	13	12	13	--	NC	6	5	75	87	93	103

Sample Location	CDPHE DW MCL	Environmental or SCDM Acute CMC	Environmental or SCDM Chronic CCC	Source Water Characterization: Peru Creek Tributaries (upstream to downstream):												
				Cinnamon Gulch			Warden Gulch				Chihuahua Gulch			Chihuahua Gulch		
Laboratory	MCL	Acute CMC	Chronic CCC	Pennsylvania Mine Adit discharge	Silver Spoon Mine Adit discharge	Cinnamon Gulch upstream of confluence with East Fork of Cinnamon Gulch	East for of Cinnamon Gulch upstream of Delaware Mine	Cinnamon Gulch upstream of Delaware Mine Adit	Cinnamon Gulch upstream of confluence with Peru Creek	Headwaters of Warden Gulch	Western branch of Warden Gulch at road crossing	East branch of Warden Gulch at road crossing	Warden Gulch upstream of SE Tributary	Southeast Tributary to Warden Gulch	Warden Gulch upstream of confluence with Peru Creek	Chihuahua Gulch upstream of confluence with Peru Creek
Date	--	--	--	SW-116 EPA	SS-1 EPA	SW-Cinn3 EPA	SW-Up Cinn EPA	SW-Cina EPA	WG-Source EPA	WG-4 EPA	WG-3 EPA	WG-2 EPA	WG-SE EPA	SW-168 EPA	SW-Chi EPA	
Time	--	--	--	15:10	14:30	13:40	13:30	13:15	11:15	NS	NS	14:15	13:45	13:00	10:56	15:00
Flow (cfs)	--	--	--	0.224	0.022	0.499	0.17	0.673 J	0.61 J	NS	NS	0.2	0.002 J	0.204	0.7174 J	2.63 J
Temp (°C)	--	--	--	2.73	4.2	8.7	8.3	8.6	1.66	NS	NS	2.44	5.29	3.17	2.08	7.21
Cond (µS/cm)	--	--	--	1,538	632	425	377	412	396	NS	NS	415	191	384	394	158
pH	--	--	--	3.33	3.25	3.72	4.07	3.78	3.60	NS	NS	5.27	4.85	3.50	3.73	7.01
DO (mg/l)	--	--	--	4.3	9.7	9.3	9.6	9.2	11.3	NS	NS	7.8	7.1	7.9	8.1	8.9
F (mg/l)	--	--	--	3.45	0.58	0.82	0.94	0.88	0.82	NS	NS	0.54	0.3	0.67	0.7	<0.2
Cl (mg/l)	--	--	--	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	NS	NS	<0.5	<0.5	<0.5	<0.5	<0.5
SO4 (mg/l)	--	--	--	927	243	167	167	184	172	NS	NS	196	85.4	189	190	47.4
Alk (mg/l)	--	--	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	NS	NS	<5.0	<5.0	<5.0	<5.0	20.7
DOC (mg/l)	--	--	--	0.2	<0.2	0.4	0.6	0.4	0.4	NS	NS	0.3	0.2	0.9	0.5	0.7
Hardness (mg/l)	--	--	--	561	66.4	90.2	112	96.7	93.0	NS	NS	172	76.8	87.4	88.0	66.9
Aluminum (ug/l)	--	750	87	30,400	13,800	14,700	7,660	13,200	12,000	NS	NS	1,050	915	16,800	16,200	<100
Arsenic (ug/l)	10	340	150	13.2	4.1	<4.0	<4.0	<4.0	<4.0	NS	NS	<4.0	<4.0	<4.0	<4.0	<4.0
Cadmium (ug/l)	5	2	0.25	215	37.9	13	12.2	<0.2	<0.2	NS	NS	<0.2	<0.2	14.4	13.3	<0.2
Chromium (ug/l)	50	--	--	<2	2	<2	<2	<2	<2	NS	NS	<2	<2	<2	<2	<2
Copper (ug/l)	50	13	9	7760	1040	566	175	441	390	NS	NS	17	14	31	22	<10
Iron (ug/l)	300	--	100	37,200	28,900	553	324	470	372	NS</						

**Table 23**  
**Surface Water Quality Data - Peru Creek and Snake River – September 26, 2007**  
**Dissolved Metals Results**

				Snake River Sampling Locations (upstream to downstream):					
				Snake River					
	CDPHE DW MCL	Environmental or SCDM Acute CMC	Environmental or SCDM Chronic CCC	Snake River upstrm of Deer Creek Confluence	Snake River upstrm of Deer Creek Confluence	Snake River upstrm of Peru Creek	Snake River downstrm of Peru Creek	Snake River upstrm of N. Fork of Snake River	Snake River downstrm of N. Fork of Snake River
Sample Location	MCL	Acute CMC	Chronic CCC	SW-044	SW-045	SW-047	SW-050	SW-117	SW-082
Laboratory	--	--	--	EPA	EPA	EPA	EPA	EPA	EPA
Date	--	--	--	9/26/07	9/26/07	9/26/07	9/26/07	9/26/07	9/26/07
Time	--	--	--	13:35	13:20	14:00	13:05	11:55	10:45
Flow (cfs)	--	--	--	2.38	3.45	7.1	23.9	24.5 J	34
Temp (°C)	--	--	--	5.53	5.59	6.56	4.94	5.37	3.22
Cond (µS/cm)	--	--	--	335	194	204	217	196	145
pH	--	--	--	3.81	4.75	6.70	5.58	6.67	7.51
DO (mg/l)	--	--	--	10.3	10.3	8.3	8.7	8.8	9.1
F (mg/l)	--	--	--	0.66	0.42	<0.2	0.3	0.22	<0.2
Cl (mg/l)	--	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	2
SO4 (mg/l)	--	--	--	137	83.2	78.9	87	74.5	46.2
Alk (mg/l)	--	--	--	<5	<5	5.05	<5	5.55	18.9
DOC (mg/l)	--	--	--	0.4	0.7	0.7	0.5	0.3	0.4
Hardness (mg/l)	--	--	--	73.4	60.9	80.5	82.3	76.4	61.9
Aluminum (ug/l)	--	750	87	9,140	4,620	<100	766	<100	<100
Arsenic (ug/l)	10	340	150	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Cadmium (ug/l)	5	2	0.25	7.6	4.3	3.4	6.0	4.6	2.5
Chromium (ug/l)	50	--	--	<2	<2	<2	<2	<2	<2
Copper (ug/l)	50	13	9	33	19	<10	68	32	14
Iron (ug/l)	300	--	--	1,410	558	144	178	<100	<100
Lead (ug/l)	15	65	2.5	1.1	<1.0	<1.0	3.5	<1.0	<1.0
Magnesium (ug/l)	--	--	--	9,340	6,490	6,150	6,280	5,580	4,250
Manganese (ug/l)	50	--	--	2,340	1,370	1,070	1,440	1,070	593
Nickel (ug/l)	100	470	520	32.6	21	12.8	12.8	10.1	6
Selenium (ug/l)	50	--	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silver (ug/l)	100	3.2	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Zinc (ug/l)	5,000	120	120	1,260	739	784	1,390	1,080	588
<b>Metals Loading</b>				<b>lbs/day</b>	<b>lbs/day</b>	<b>lbs/day</b>	<b>lbs/day</b>	<b>lbs/day</b>	<b>lbs/day</b>
Aluminum (lbs/day)	--	--	--	117	86	--	99	--	--
Arsenic (lbs/day)	--	--	--	0.10	0.08	0.13	0.77	0.61	0.46
Cadmium (lbs/day)	--	--	--	0.42	0.35	--	8.77	4.23	2.57
Chromium (lbs/day)	--	--	--	18	10	6	23	--	--
Copper (lbs/day)	--	--	--	0.01	--	--	0.45	--	--
Iron (lbs/day)	--	--	--	120	121	236	810	737	780
Lead (lbs/day)	--	--	--	30	25	41	186	141	109
Magnesium (lbs/day)	--	--	--	0.42	0.39	0.49	1.65	1.33	1.10
Manganese (lbs/day)	--	--	--	--	--	--	--	--	--
Nickel (lbs/day)	--	--	--	--	--	--	--	--	--
Selenium (lbs/day)	--	--	--	--	--	--	--	--	--
Silver (lbs/day)	--	--	--	--	--	--	--	--	--
Zinc (lbs/day)	--	--	--	16	14	30	179	143	108

Snake River Tributaries (upstream to downstream)					
Snake River Tributaries					
Deer Creek upstrm of confluence with Snake River	Saints John Creek upstrm of confluence with adit flow	Saints John mine adit as it comes out of ground	Saints John mine adit upstrm of confluence with Saints John Creek	Saints John Creek upstrm of confluence with Snake River	N. Fork Snake River upstrm of confluence with Snake River
SW-043	EPA-SJ2	EPA-SJA	EPA-SJA2	EPA-12345	SW-083
EPA	EPA	EPA	EPA	EPA	EPA
9/26/07	9/26/07	9/26/07	9/26/07	9/26/07	9/26/07
13:50	11:30	11:00	12:00	13:00	11:30
1.37 J	1.1 J	0.5	0.607	3.02 J	6.9
6.54	2.59	2.99	3.55	5.74	2.59
98	100	1067	751	280	108
6.78	7.28	6.00	7.26	7.70	7.92
9.8	11.4	7.8	10.7	10.3	9.5
<0.2	<0.2	0.33	0.21	<0.5	<0.2
<0.5	<0.5	0.6	<0.5	<0.2	4.2
14	13.5	505	332	95.4	6.9
31.3	35.9	100	57.2	39.9	38.3
1.1	0.5	<0.2	0.2	0.4	0.8
42.7	46.7	580	394	132	42.6
<100	<100	452	<100	<100	<100
<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
<0.2	<0.2	45.6	17.5	3.2	<0.2
<2	<2	<2	<2	<2	<2
<10	<10	<10	<10	<10	<10
<100	<100	1,980	<100	<100	<100
<1.0	<1.0	7.9	<1.0	1.3	<1.0
2,420	2,420	32,400	21,100	7,050	2,410
7	4	16,200	6,000	1,390	<2
<1.0	<1.0	53.1	24.2	5.2	<1.0
<1.0	<1.0	1.5	<1.0	<1.0	<1.0
<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
<40	<40	8,420	3,610	814	<40
lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
--	--	1	--	--	--
--	--	0.07	0.06	0.05	--
--	--	--	--	--	--
--	--	--	--	--	--
--	--	3	--	--	--
--	--	0.01	0.02	--	--
18	14	52	68	115	90
0.05	0.02	26	20	10.66	--
--	--	0.09	0.08	0.08	--
--	--	0.002	--	--	--
--	--	--	--	--	--
--	--	14	12	13	--

Peru Creek Sampling Locations (upstream to downstream)						
Peru Creek						
Peru Creek at largest outflow from upper beaver ponds. Upgradient of Shoe Basin Mine	Peru Creek above confluence with Shoe Basin Mine	Peru Creek above Pennsylvania Mine adit flow confluence	Peru Creek below Pennsylvania Mine adit flow confluence	Peru Creek Warden Gulch and Cinnamon Gulch	Peru Creek above confluence with Chihuahua Gulch	Peru Creek 0.5 miles upstream of confluence with Snake River
PC-10	PC-6	SW-140	PC-4	SW-158	SW-085	SW-049
EPA	EPA	EPA	EPA	EPA	EPA	EPA
9/26/07	9/26/07	9/26/07	9/26/07	9/26/07	9/26/07	9/26/07
13:30	13:00	15:30	13:53	14:35	15:25	14:40
--	2.6	3.38	4.19 J	5.56 J	6.3 J	9.88 J
5.36	6.68	6.99	6.81	7.93	7.71	7.26
97	189	178	280	294	309	248
6.59	6.20	4.00	4.58	4.68	4.12	4.96
--	8.8	7.9	8.9	8.7	8.7	8.1
<0.2	<0.2	<0.2	0.62	0.59	0.6	0.43
<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
27.3	73.2	67.4	128	121	135	104
18.3	5.59	<5.0	<5.0	<0.5	<0.5	<0.5
1.1	0.4	0.4	0.5	0.3	0.2	0.4
44.0	82.5	75.1	104	98.4	95.7	84.7
<100	<100	<100	3,290	3,470	6,240	3,250
<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
<0.2	1.9	1.3	18.1	15.3	13.7	9.1
<2	<2	<2	<2	<2	<2	<2
<10	<10	<10	392	321	222	142
<100	<100	<100	360	233	452	241
<1.0	1.3	<1.0	6.8	8.8	10.0	8.0
3,420	6,890	6,170	9,340	8,550	8,320	6,620
<2	538	330	3,670	3,220	3,030	1,960
<1.0	12.9	9	28.9	25.5	22.8	15.2
<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0
<0.5	<0.5	<0.5	3.510	<0.5	<0.5	<0.5
<40	441	333	3,510	3,170	2,930	1,970
lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
NC	--	--	74	104	212	173
NC	--	--	--	--	--	--
NC	0.03	0.02	0.41	0.46	0.47	0.49
NC	--	--	--	--	--	--
NC	--	--	8.86	9.63	7.54	7.57
NC	--	--	8	7	15	13
NC	0.02	--	0.15	0.26	0.34	0.43
NC	97	113	211	256	283	353
NC	7.5	6.0	63	97	103	104
NC	0.18	0.16	0.65	0.76	0.77	0.81
NC	--	--	0.023	--	--	--
NC	--	--	--	--	--	--
NC	6	6	79	95	100	105

	CDPHE DW MCL	Environmental or SCDM Acute CMC	Environmental or SCDM Chronic CCC
Sample Location	MCL	Acute CMC	Chronic CCC
Laboratory	--	--	--
Date	--	--	--
Time	--	--	--
Flow (cfs)	--	--	--
Temp (°C)	--	--	--
Cond (µS/cm)	--	--	--
pH	--	--	--
DO (mg/l)	--	--	--
F (mg/l)	--	--	--
Cl (mg/l)	--	--	--
SO4 (mg/l)	--	--	--
Alk (mg/l)	--	--	--
DOC (mg/l)	--	--	--
Hardness (mg/l)	--	--	--
Aluminum (ug/l)	--	750	87
Arsenic (ug/l)	10	340	150
Cadmium (ug/l)	5	2	0.25
Chromium (ug/l)	50	--	--
Copper (ug/l)	50	13	9
Iron (ug/l)	300	--	100
Lead (ug/l)	15	65	2.5
Magnesium (ug/l)	--	--	--
Manganese (ug/l)	50	--	--
Nickel (ug/l)	100	470	520
Selenium (ug/l)	50	--	5
Silver (ug/l)	100	3.2	--
Zinc (ug/l)	5,000	120	120
<b>Metals Loading</b>			
Aluminum (lbs/day)	--	--	--
Arsenic (lbs/day)	--	--	--
Cadmium (lbs/day)	--	--	--
Chromium (lbs/day)	--	--	--
Copper (lbs/day)	--	--	--
Iron (lbs/day)	--	--	--
Lead (lbs/day)	--	--	--
Magnesium (lbs/day)	0.073	0.037	0.043
Manganese (lbs/day)	69	1.2	28
Nickel (lbs/day)	63	1.80	17
Selenium (lbs/day)	0.29	0.01	0.14
Silver (lbs/day)	0.0140	0.0002	0.0043
Zinc (lbs/day)	49.1	1.0	7.6

Source Water Characterization: Peru Creek Tributaries (upstream to downstream):													
Cinnamon Gulch						Warden Gulch				Chihuahua Gulch			
Pennsylvania Mine Adit discharge	Silver Spoon Mine Adit discharge	Cinnamon Gulch upstream of confluence with East Fork of Cinnamon Gulch	East for of Cinnamon Gulch upstream of Delaware Mine	Cinnamon Gulch upstream of Delaware Mine Adit	Cinnamon Gulch upstream of confluence with Peru Creek	Headwaters of Warden Gulch	Western branch of warden Gulch at road crossing	East branch of Warden Gulch at road crossing	Warden Gulch SE Tributary	Southeast Tributary to Warden Gulch	Warden Gulch upstream of confluence with Peru Creek	Chihuahua Gulch upstream of confluence with Peru Creek	
SW-116	SS-1	SW-Cinn3	SW-ECinn										

**Table 24**  
**Ground Water Well Analytical Data**  
**Total Metals - All Concentrations in ug/l or or parts per billion**

Sample ID	--	GW1	GW2	GW3	GW4	GW5	GW7	GW10	GW10-D	GW11	GWC1	GWE6	GWE7	GW-FB1
Description	--	Waste Rock below Penn Mine Discharge	Tailings below Constructed Wetlands	Immediately Upgradient of Confluence of Penn Mine Discharge and Peru Creek	Adjacent to Concrete Building at Settling Pond	In Tailings Immediately North of Constructed Wetlands	In Tailings downgradient of Mill Building	Shallow Well in Alluvium of Upper Cinnamon Gulch - Completed to Bedrock	Duplicate of GW10	Deeper Well in Alluvium of Upper Cinnamon Gulch - Completed to Bedrock	Revegetated Tailings on Far North West End	Revegetated Tailings in Center Portion	Revegetated Tailings in North Eastern Portion	Field Blank
Laboratory	--	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA
Sample Date	--	10/2/07	10/2/07	10/3/07	10/2/07	10/2/07	10/2/07	10/1/07	10/1/07	10/1/07	10/2/07	10/2/07	10/2/07	10/1/07
Well Depth	--	40.00	13.00	17.63	27.80	12.70	11.50	17.50	Duplicate	32.40	5.20	5.20	5.40	Field Blank
Screened Interval (bgs)	--	18- 38	5- 10	5- 15	15- 25	5- 10	5- 10	5- 15	--	10- 30	1- 5	1- 5	1- 5	--
Depth to Ground Water	--	38.40	3.50	7.25	16.55	7.80	2.00	8.50	--	21.20	1.50	1.50	0.10	--
<b>Field Parameters</b>														
Temperature - C	--	2.30	4.46	3.17	6.23	7.00	5.63	6.56	6.56	4.08	6.68	7.07	7.61	--
pH (ms/cm)	--	0.17	3.70	3.29	4.23	4.10	3.40	4.60	4.60	5.18	4.12	3.89	3.84	--
Conductivity	--	1.84	0.83	0.19	0.77	1.06	0.76	0.02	0.02	0.09	1.05	0.82	1.16	--
DO	--	6.86	7.64	9.16	6.89	6.02	7.19	5.64	5.64	8.55	7.00	1.58	6.10	--
ORP	--	568	456	371	384	275	428	--	--	--	247	--	396	--
Metals Analysis	CDPHE Drinking Water MCL's - ug/l	GW1	GW2	GW3	GW4	GW5	GW7	GW10	GW10-D	GW11	GWC1	GWE6	GWE7	GW-FB1
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Hardness	5,000	588	216	72	220	315	191	29	29	6	356	261	391	--
Aluminum	5,000	52,700	41,900	411	29,900	32,900	35,600	135	142	<100	29,400	27,100	43,600	<100
Arsenic	50	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	4.5	<4.0	<4.0	<4.0
Cadmium	5	243	85.7	4.5	97.9	147	85.1	<0.2	<0.2	<0.2	1.1	0.5	561	<0.2
Chromium	50	7	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Copper	200	10,200	2,730	<10	2,780	3,810	3,060	<10	<10	<10	<10	<10	3,960	<10
Iron	300	4,630	<100	<100	393	715	231	<100	<100	<100	1,070	16,700	1,840	<100
Lead	50	2.4 J	3 J	<1.0	65.1 J	5.5 J	26.3 J	6.1	3.8	3 J	5.2 J	3.7 J	30.6 J	<1.0
Magnesium	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	50	63,100	25,600	87	27,400	39,600	23,900	47	48	10	45,200	27,200	35,400	<2
Mercury	2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	100	270	188	19.6	146	191	153	1.6	1.6	<1.0	175	128	234	<1.0
Selenium	20	9.7	4.9	<1.0	3.3	5.5	3.9	<1.0	<1.0	<1.0	4.4	1.8	7.8	<1.0
Silver	50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.1 U	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Zinc	2,000	56,000	15,800	2,570	21,500	30,700	18,900	<40	<40	<40	26,400	2,430	41,100	<40

Shaded cell indicates that concentration detected was greater than CDPHE Drinking Water MCL  
 J Estimated value - detected at or below the contract required detection limit  
 U Not detected at the reported value.

**Table 25**  
**Ground Water Well Analytical Data**  
**Dissolved Metals - All Concentrations in ug/l or or parts per billion**

Sample ID	--	GW1	GW2	GW3	GW4	GW5	GW7	GW10	GW10-D	GW11	GW11	GWC1	GWE6	GWE7	GW-FB1
Description	--	Waste Rock below Penn Mine Discharge	Tailings below Constructed Wetlands	Immediately Upgradient of Confluence of Penn Mine Discharge and Peru Creek	Adjacent to Concrete Building at Settling Pond	In Tailings Immediately North of Constructed Wetlands	In Tailings downgradient of Mill Building	Shallow Well in Alluvium of Upper Cinnamon Gulch - Completed to Bedrock	Duplicate of GW10	Deeper Well in Alluvium of Upper Cinnamon Gulch - Completed to Bedrock	Revegetated Tailings on Far North West End	Revegetated Tailings in Center Portion	Revegetated Tailings in North Eastern Portion	Field Blank	
Laboratory	--	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA	EPA
Sample Date	--	10/2/07	10/2/07	10/3/07	10/2/07	10/2/07	10/2/07	10/1/07	10/1/07	10/1/07	10/2/07	10/2/07	10/2/07	10/2/07	10/1/07
Well Depth	--	40.00	13.00	17.63	27.80	12.70	11.50	17.50	Duplicate	32.40	5.20	5.20	5.40	--	
Screened Interval (bgs)	--	18- 38	5- 10	5- 15	15- 25	5- 10	5- 10	5- 15	--	10- 30	1- 5	1- 5	1- 5	--	
Depth to Ground Water	--	38.40	3.50	7.25	16.55	7.80	2.00	8.50	--	21.20	1.50	1.50	0.10	--	
<b>Field Parameters</b>															
Temperature - C	--	2.30	4.46	3.17	6.23	7.00	5.63	6.56	6.56	4.08	6.68	7.07	7.61	--	
pH (ms/cm)	--	0.17	3.70	3.29	4.23	4.10	3.40	4.60	4.60	5.18	4.12	3.89	3.84	--	
Conductivity	--	1.84	0.83	0.19	0.77	1.06	0.76	0.02	0.02	0.09	1.05	0.82	1.16	--	
DO	--	6.86	7.64	9.16	6.89	6.02	7.19	5.64	5.64	8.55	7.00	1.58	6.10	--	
ORP	--	568	456	371	384	275	428	--	--	247	--	--	396	--	
Metals Analysis	CDPHE Drinking Water MCL's - ug/l	GW1	GW2	GW3	GW4	GW5	GW7	GW10	GW10-D	GW11	GWC1	GWE6	GWE7	GW-FB1	
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	
Hardness	5,000	588	216	72	220	315	191	29	29	6	356	261	391	--	
Aluminum	5,000	46,800	38,400	358	26,300	31,900	31,800	137	122	<100	25,700	24,300	38,400	<100	
Arsenic	50	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	5.8	<4.0	<4.0	4.3	<4.0	
Cadmium	5	231	92.8	4.9	108	163	96.5	<0.2	<0.2	1.7	<0.2	0.9	575	<0.2	
Chromium	50	5	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Copper	200	9,820	2,670	<10	2,700	4,030	2,960	<10	<10	<10	<10	<10	3,980	<10	
Iron	300	4,240	<100	<100	<100	<100	204	<100	<100	1,040	16,300	1,010	<100	<100	
Lead	50	<1.0	2 J	<1.0	47.0	<1.0	21.5	<1.0	<1.0	4.1 J	<1.0	<1.0	31.6 J	<1.0	
Magnesium	--	63,300	33,900	5,580	25,400	33,700	26,000	1,910	1,890	374	35,400	32,000	42,000	<50	
Manganese	50	62,100	25,200	86	28,400	33,100	23,100	47	46	9	43,600	26,900	34,100	<2	
Mercury	2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Nickel	100	296	234	21.5	168	196	180	1.7	1.8	<1	189	144	266	<1	
Selenium	20	13.1	7.5	<1	5.4	8.3	5.9	<1	<1	7	2.8	12.8	<1	<1	
Silver	50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Zinc	2,000	53,000	14,400	2,410	20,300	27,700	17,300	<40	<40	<40	24,900	2,350	38,400	<40	

Shaded cell indicates that concentration detected was greater than CDPHE Drinking Water MCL.  
 J Estimated value - detected at or below the contract required detection limit  
 U Not detected at the reported value.

**Table 26: Pennsylvania Mine Site – Site Specific Toxicity Testing Results - September 2007- February 2008\***

Site	Species	Date Sampled	pH	Hardness (mg/L CaCO <sub>3</sub> )	LC50 (% site water)	Estimated LC50 (µg/L)**				
						Cd	Cu	Mn	Zn	
<b>Peru Creek</b>										
<b>SW-140</b> (upgradient)	RBT	September	4.00	75.1	100	( <i>&gt;1.30</i> )	( <i>&gt;10</i> )	( <i>&gt;330</i> )	( <i>&gt;333</i> )	
<b>SW-049</b>	RBT	September	4.96	84.7	64	<b>5.82</b>	<b>90.9</b>	<b>1254</b>	<b>1261</b>	
<b>Snake River</b>										
<b>SW-050</b>	RBT	September	5.58	82.3	94.9	<b>5.69</b>	<b>64.5</b>	<b>1366</b>	<b>1319</b>	
	BT	January	5.99	88	62.7	<b>3.07</b>	<b>23.8</b>	<b>665</b>	<b>847</b>	
	BKT	February	5.72	87.2	95.8	<b>4.31</b>	<b>31.6</b>	<b>944</b>	<b>1254</b>	
<b>SW-050D</b>	RBT	September	5.58	82.3	94.9	<b>5.69</b>	<b>64.5</b>	<b>1366</b>	<b>1319</b>	
	BT	January	5.99	88	62.7	<b>2.95</b>	<b>23.4</b>	<b>640</b>	<b>837</b>	
	BKT	February	5.72	87.2	95.8	<b>4.43</b>	<b>31.5</b>	<b>972</b>	<b>1280</b>	
<b>SW-117</b>	RBT	September	6.67	76.4	100	( <i>&gt;4.60</i> )	( <i>&gt;32.0</i> )	( <i>&gt;1070</i> )	( <i>&gt;1080</i> )	
	BT	January	6.75	78.2	100	( <i>&gt;2.80</i> )	( <i>&gt;10</i> )	( <i>&gt;595</i> )	( <i>&gt;846</i> )	
	BKT	February	6.44	78.3	100	( <i>&gt;2.80</i> )	( <i>&gt;10</i> )	( <i>&gt;594</i> )	( <i>&gt;857</i> )	
<b>SW-082</b>	RBT	September	7.51	61.9	100	( <i>&gt;2.50</i> )	( <i>&gt;14.0</i> )	( <i>&gt;593</i> )	( <i>&gt;588</i> )	
	BT	January	6.88	64.4	100	( <i>&gt;1.50</i> )	( <i>&gt;10</i> )	( <i>&gt;328</i> )	( <i>&gt;455</i> )	
	BKT	February	6.35	65.8	100	( <i>&gt;1.70</i> )	( <i>&gt;10</i> )	( <i>&gt;356</i> )	( <i>&gt;486</i> )	
<b>Reference†</b>	RBT	September	7	50	---	---	---	---	<b>303</b>	
	BT	January	7	50	---	---	---	---	<b>878</b>	
	BKT	February	7	50	---	---	---	---	<b>966</b>	

RBT= Rainbow Trout; BT= Brown Trout, BKT= Brook Trout

\* Static-renewal toxicity tests were conducted in the EPA Region 8 Laboratory for 3 different salmonid species using site-water collected in the Snake River.

\*\*LC50 values for individual metals were derived by multiplying the percentage of site water lethal to 50% of exposed fish by individual, measured dissolved metals concentrations in 100% site waters. Values presented in (*Italic*) indicate that no mortality was observed at the concentrations tested (i.e., the actual LC50 concentration was greater than the reported value).

†Zinc reference toxicity testing was also conducted with 3 different species of salmonid using standardized zinc sulfate and laboratory-reconstituted soft waters (pH ~ 7, hardness ~ 50 mg/L CaCO<sub>3</sub>).