TABLES

Table 1. Selected Information on Mines and Processing-Related Facilities Included in the Monte Cristo Mining Area EECA
Table 2. Surface Water Analytical Results
Table 3. Adit Drainage and Waste Rock Dump Seep Water Analytical Results
Table 4. Pore Water Analytical Results
Table 5. Sediment Analytical Results
Table 6. Waste Rock and Soil Analytical Results
Table 7. Background Soil Analytical Results
Table 8. Toxicity Characteristic Leaching Procedure and Synthetic Precipitation Leaching Procedure Results for Tailings and Waste Rock Samples
Table 9. Quality Assurance and Quality Control Analytical Results
Table 10. Removal Action Technology Screening Summary
Table 11. Surface Water ARARs and Proposed Cleanup Goals
Table 12. Mine Water ARARs and Proposed Cleanup Goals
Table 13. Sediment ARARs and Proposed Cleanup Goals
Table 14. Waste Rock ARARs and Proposed Cleanup Goals
Table 15. Comparative Analysis of Removal Action Alternatives – Pride of the Mountains Mine
Table 16. Comparative Analysis of Removal Action Alternatives – New Discovery Mine
Table 17. Comparative Analysis of Removal Action Alternatives – Pride of the Woods Mine
Table 18. Comparative Analysis of Removal Action Alternatives – Mystery Mine
Table 19. Comparative Analysis of Removal Action Alternatives – Golden Cord Mine
Table 20. Comparative Analysis of Removal Action Alternatives – Justice Mine
Table 21. Comparative Analysis of Removal Action Alternatives – Rainy Mine
Table 22. Comparative Analysis of Removal Action Alternatives – Ore Collector
Table 23. Comparative Analysis of Removal Action Alternatives – Haulage Ways
Table 24. Comparative Analysis of Removal Action Alternatives – Concentrator
Table 25. Comparative Analysis of Removal Action Alternatives – Assay Shack
Table 26. Comparative Analysis of Removal Action Alternatives – Boston-American Mine
Table 27. Comparative Analysis of Removal Action Alternatives – Sheridan Mine
Table 28. Comparative Analysis of Removal Action Alternatives – Sidney Mine
Table 29. Cost Summaries for Mine Waste and Adit/Seep Water Alternatives
Table 30. Cost Summary of Recommended Removal Action Alternatives

Table 1. **Selected Information on Mines and Processing-Related Facilities**
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Mines & Processing-Related Facilities Monte Cristo Mining Area EECA-SI	LOCATION, ACCESS, & OWNERSHIP									SI / EECA-DGI INFORMATION ON MINES AND PROCESSING FACILITIES					
	Township & Range (Willamette Meridian)	Section & Parcel	Longitude, west (D-M-S)	Latitude, north (D-M-S)	Longitude (decimal degrees)	Latitude (decimal degrees)	Elevation (feet)	Access from FS Cabins at Monte Cristo Townsite	Ownership - Administration	Workings / Features	Waste Rock (WR), Soil (S), Tailings (T), Volume (bcy)		Waste Rock / Soil Samples (SI / EECA-DGI)	Adit/Seep Flow (gpm)	Adit/Seep Water Samples (SI / EECA-DGI)
Upper Glacier Creek (Glacier Basin) Area															
Pride of the Mountains Mine (POTM)	T 29 N, R 11 E	Sec 23 SW¼	121° 21' 31''	47° 58' 49"	-121.35889	47.98056	4,860	Forest Service Trail 719, 2.5 mi up and across Glacier Creek then 1,000 ft east up a talus slope.	Forest Service; HMJ Wilderness	5 adits (2 partially caved and 3 caved); 1 x inclined shaft (mostly caved); 1 large waste rock dump.	5,000	WR	MCEE-WR-PM-01, -02, -03	Adit drainage (1.8)	MCEE-DW-PM-01
New Discovery Mine	T 29 N, R 11 E	Sec 23 SW¼	121° 21' 44''	47° 58' 52"	-121.36225	47.98114	4,590	Forest Service Trail 719, 1.5 mi up and across Glacier Creek then 500 ft east to the portals.	Forest Service; HMJ Wilderness	3 adits (open); 3 waste rock dumps (1 barren).	2,400	WR	MCEE-WR-ND-01, -02, -03	Adit drainage (<4.5)	MCEE-DW-ND-01
Pride of the Woods Mine (POTW)	T 29 N, R 11 E	Sec 23 SW¼	121° 21' 53''	47° 58' 53"	-121.36473	47.98157	4,350	Forest Service Trail 719, 1.75 mi up Glacier Creek; trail crosses toe of dump.	Forest Service; HMJ Wilderness	1 adit (partially caved); 1 waste rock dump.	900	WR	MCEE-WR-PW-01, -02	Dump seep (0.045)	MCEE-DW-PW-01
										Sub Total Waste Materials :	**8,300**	**bcy**			
Mystery Ridge/Basin Area near Glacier Creek															
Mystery Mine	T 29 N, R 11 E	Sec 22 SE¼	121° 22' 11''	47° 58' 50"	-121.36989	47.98069	4,015 (adit 3) to 4,290 (adit 1)	Forest Service Trail 719, 0.8 mi east up Glacier Creek then southeast 1,800 ft cross country up a steep talus slope to the Mystery No. 3 portal.	Mixed Forest Service and Private ? ?	3 adits (1 open; 2 caved); 1 open stope (large); 2 waste rock dumps; 1 waste rock dump small, dispersed and partially covered.	32,000	WR	MCEE-WR-MY-01, -02, -03, -04	Adit drainage (4.5 to 40); dump seep (0.045 to 4.5)	MM-AS-01; MCEE-DW-MY-01, -02
Golden Cord Mine	T 29 N, R 11 E	Sec 22 SE¼	121° 22' 26''	47° 58' 50''	-121.37405	47.98057	4,110 (lower adit) to 4,210 (upper adit)	Forest Service Trail 719, 0.9 mi up Glacier Creek to Justice Mine portal, then overland with difficulty 0.1 mi southeast.	Forest Service	3 adits (all caved); 2 waste rock dumps; 1 dispersed waste rock dump.	3,500	WR	MCEE-WR-GC-01, -02	None	NA
Justice Mine	T 29 N, R 11 E	Sec 22 SE¼	121° 22' 33''	47° 58' 52"	-121.37608	47.98127	3,800	Forest Service Trail 719, 0.9 mi southeast up Glacier Creek.	Forest Service	2 adits (1 open; 1 caved); 1 waste rock dump.	14,000	WR	MCEE-WR-JU-01, 02, -03, -04, -05, -06	Adit drainage (<4.5 to 90); dump seep (1.35)	JM-AS-01; MCEE-DW-JU-01, -02
										Sub Total Waste Materials :	**49,500**	**bcy**			
Lower Glacier Creek and Monte Cristo Townsite Area															
Rainy Mine	T 29 N, R 11 E	Sec 22 SW¼	121° 22' 59''	47° 59' 02"	-121.38332	47.98410	2,960	2,500 ft southeast on Forest Service Trail 719 up and across Glacier Creek.	Mixed Forest Service and Private ? ?	1 adit (open); 2 shafts (caved or covered); 1 x 2-level waste rock dump.	3,300	WR	MCEE-WR-RY-01, -02	Adit drainage (0.045)	MCEE-DW-RY-01
Ore Collector	T 29 N, R 11 E	Sec 22 SW¼	121° 23' 02"	47° 59' 01"	-121.38396	47.98359	3,005	About 0.5 mi southeast on Forest Service Trail 719 and 170 ft south of Glacier Creek.	Private	Stone, concrete, brick, and wood ruins.	2,500	WR	COL-01 to -11 (SI)	None	NA
Haulage Ways	T 29 N, R 11 E	Sec 21 SE¼, Sec 22 SW¼	Variable; linear feature	Variable; linear feature	Variable; linear feature	Variable; linear feature	2,880 to 3,005	Trail about 0.1 to 0.4 mi southeast (part of Townsite trail system).	Mixed Forest Service and Private ? ?	Estimate 2,500 ft of road and rail routes connect Ore Collector, Concentrator, and Assay Shack.	200	S	HW-01 to -05 (SI)	None	NA
Concentrator (United Mines) **and Tailings**	T 29 N, R 11 E	Sec 21 SE¼	121° 23' 21"	47° 59' 04"	-121.38904	47.98444	2,880	Forest Service Trail 719 about 0.4 mi southeast and about 400 ft south of Glacier Creek.	Mixed Forest Service and Private ? ?	Stone, concrete, brick, and wood ruins.	8,200	S + T	CON-01 to -19 (SI)	None	NA
Assay Shack	T 29 N, R 11 E	Sec 21 SE¼	121° 23' 26''	47° 59' 00"	-121.39072	47.98335	2,910	Trail 1,200 ft southeast, in Townsite area.	Forest Service	Broken glass and bricks.	200	S	AS-02 to -04 (SI)	None	NA
Boston-American Mine	T 29 N, R 11 E	Sec 21 NW¼SE¼	121° 23' 44''	47° 59' 05"	-121.39556	47.98472	2,895	Trail 700 ft southwest.	Mixed Private and Forest Service ? ?	1 adit (open, steel door closure); 1 x 2-level waste rock dump.	6,000	WR	MCEE-WR-BA-01, -02	Adit drainage (1.35); dump seep (0.135)	MCEE-DW-BA-01, 02
										Sub Total Waste Materials :	**20,400**	**bcy**			
Seventysix Creek Area															
Sheridan Mine	T 29 N, R 11 E	Sec 27 NW¼	121° 23' 08''	47° 58' 33"	-121.38567	47.97597	3,395	Crude trail 0.8 mi southeast up Seventysix Creek, then west 200 ft cross country.	Forest Service; HMJ Wilderness	1 adit (open); 1 waste rock dump.	650	WR	MCEE-WR-SH-01, -02	None	NA
Sidney Mine	T 29 N, R 11 E	Sec 27 NW¼	121° 23' 09''	47° 58' 38"	-121.38587	47.97742	3,290	Crude trail and cross country about 0.7 mi southeast up Seventysix Creek, then east 200 ft across creek.	Forest Service; HMJ Wilderness	1 adit (open); 1 waste rock dump.	425	WR	MCEE-WR-SY-01, -02	Adit drainage (1.35)	MCEE-DW-SY-01
										Sub Total Waste Materials :	**1,075**	**bcy**			

NOTE:
Abbreviations of measure: bcy = bank cubic yards; D-M-S = degrees, minutes, seconds; EECA-DGI = Engineering Evaluation / Cost Analysis - Data Gap Investigation; ft = feet or foot;
gpm = gallons per minute (1 gpm = 0.00223 cubic foot per second); WR = waste rock; S = soil; T = tailings; HMJ - Henry M. Jackson Wilderness; mi = mile.

70,675	**= Mine Waste Rock (bcy)**
8,600	**= Tailings and Soil Wastes (bcy)**
79,275	**= TOTAL WASTE MATERIALS (bcy)**

Table 2. Surface Water Analytical Results
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Sample I.D.	Location / Comment	Sample Date	Sampling Group (CES, WADNR, Forest Service, Ecology)	Aluminum, TR EPA M200.7	Antimony, TR EPA M200.7	Arsenic (III), TR EPA M1632 Mod.	Arsenic (V), TR Calculated	Arsenic Total, TR EPA M200.8	Barium, TR EPA M200.7	Beryllium, TR EPA M200.7	Cadmium, TR EPA M200.7	Calcium, TR EPA M200.7	Chromium VI, Total Field	Chromium, TR EPA M200.7	Cobalt, TR EPA M200.7	Copper, TR EPA M200.7	Iron, TR EPA M200.7	Lead, TR EPA M200.8	Magnesium, TR EPA M200.7	Manganese, TR EPA M200.7	Mercury, Total EPA M245.1	Mercury, Total, UltraTrace EPA M1631, Rev. E	Mercury, Methyl, UltraTrace EPA M1630	Nickel, TR EPA M200.7	Potassium, TR EPA M200.7	Selenium, TR EPA M200.8	Silver, TR EPA M200.7	Sodium, TR EPA M200.7	Thallium, TR EPA M200.8	Vanadium, TR EPA M200.7	Zinc, TR EPA M200.7
				Results in µg/L																											
Glacier Creek																															
DOE_GC_LowFlo	background	8/2000	Ecology	NA	NA	NA	NC	4.52	NA	NA	NA	NA	NM	NA	NA	0.264	NA	0.032	NA	NA	NA	< 0.002	NA	NA	NA	NA	NA	NA	NA	NA	1.8 B
DOE_GC_HiFlo	background	6/2001	Ecology	NA	NA	NA	NC	0.28	NA	NA	NA	NA	NM	NA	NA	< 0.02	NA	< 0.02	NA	NA	NA	0.0042	NA	NA	NA	NA	NA	NA	NA	NA	< 0.2
SHA-3394090	background	9/25/2003	Ecology	NA	1.8 B	NA	NC	1.7	NA	< 0.10	< 0.10	NA	NM	< 0.5	NA	< 0.5	NA	< 0.10	NA	NA	< 0.05	NA	NA	< 0.5	NA	NA	< 0.10	NA	< 0.10	NA	< 5.0
GC-SW1	background	6/2/2005	CES-SI	< 30	< 20	0.041	< 2.959	< 3.0	6.2	< 2	< 2	2,910	10	< 6	< 6	< 10	< 60	< 3	476	< 4	< 0.2	0.00289	NA	< 10	< 500	< 3	< 5	< 500	< 2	< 5	< 10
MC-GC-9	background	8/2/2006	Forest Service	NA	3.5	NA	NC	< 0.37	NA	NA	< 0.037	NA	NM	NA	NA	1.0 J	NA	0.21 J	NA	NA	NA	NA	NA	0.35 J	NA	NA	NA	NA	NA	NA	5.2
MCEE-SW-GC-01	background	8/22/2008	CES-EECA	NA	0.7 B	NA	NC	1.6	NA	NA	< 0.1	2,700	NM	< 10	NA	< 10	NA	0.2 B	200 B	NA	NA	0.0039	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
GC-SW2	background	6/2/2005	CES-SI	< 30	< 20	NA	NC	< 3.0	10.1	< 2	< 2	3,050	ND	< 6	< 6	< 10	< 60	< 3	434	< 4	< 0.2	0.00218	NA	< 10	< 500	< 3	< 5	< 500	< 2	< 5	< 10
MCEE-SW-GC-02	background	8/22/2008	CES-EECA	NA	1.2 B	NA	NC	1.3	NA	NA	< 0.1	4,800	NM	< 10	NA	< 10	NA	< 0.1	300 B	NA	NA	0.0015	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
SHA-3394091	near POTM	9/25/2003	Ecology	NA	1.9 B	NA	NC	3.8	NA	< 0.10	< 0.10	NA	NM	< 0.5	NA	< 0.5	NA	0.14	NA	NA	< 0.05	NA	NA	< 0.5	NA	NA	< 0.10	NA	< 0.10	NA	< 5.0
SHA-3394094	near POTM	9/25/2003	Ecology	NA	1.9 B	NA	NC	3.6	NA	< 0.10	< 0.10	NA	NM	< 0.5	NA	< 0.5	NA	0.10	NA	NA	< 0.05	NA	NA	< 0.5	NA	NA	< 0.10	NA	< 0.10	NA	< 5.0
MC-GC-5	below POTM, above New Discovery	8/2/2006	Forest Service	NA	4.0	NA	NC	1.6 J	NA	NA	< 0.037	NA	NM	NA	NA	0.44 J	NA	0.08 J	NA	NA	NA	NA	NA	0.39 J	NA	NA	NA	NA	NA	NA	3.1 J
MC-GC-3	below New Discovery, above POTW	8/2/2006	Forest Service	NA	5.5	NA	NC	6.0	NA	NA	< 0.037	NA	NM	NA	NA	0.53 J	NA	0.14 J	NA	NA	NA	NA	NA	0.55 J	NA	NA	NA	NA	NA	NA	3.7 J
MC-GC-1	below POTW	8/2/2006	Forest Service	NA	4.2	NA	NC	2.0	NA	NA	< 0.037	NA	NM	NA	NA	1.6 J	NA	0.14 J	NA	NA	NA	NA	NA	1.4 J	NA	NA	NA	NA	NA	NA	4.6 J
GC-SW3	below POTW	6/2/2005	CES-SI	< 30	< 20	0.125	4.375	4.5	8.5	< 2	< 2	3,100	ND	< 6	< 6	< 10	< 60	< 3	415	< 4	< 0.2	0.00088	NA	< 10	< 500	< 3	< 5	< 500	< 2	< 5	< 10
MCEE-SW-GC-03	below POTW	8/22/2008	CES-EECA	NA	1.3 B	NA	NC	4.0	NA	NA	< 0.1	2,300	NM	< 10	NA	< 10	NA	0.2 B	< 200	NA	NA	0.0012	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
GC-SW4	below POTW	6/2/2005	CES-SI	< 30	< 20	NA	NC	5.7	8.3	< 2	< 2	2,990	ND	< 6	< 6	< 10	< 60	< 3	407	< 4	< 0.2	0.00179	NA	< 10	< 500	< 3	< 5	< 500	< 2	< 5	< 10
MCEE-SW-GC-04	below POTW	8/19/2008	CES-EECA	NA	1.5 B	NA	NC	4.0	NA	NA	< 0.1	2,600	NM	< 10	NA	< 10	NA	< 0.1	500 B	NA	NA	0.0016	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
GC-SW5	below Collector and Rainy	6/1/2005	CES-SI	< 30	< 20	NA	NC	7.7	5.9	< 2	< 2	2,660	ND	< 6	< 6	< 10	< 60	< 3	357	< 4	< 0.2	0.00090	NA	< 10	< 500	< 3	< 5	< 500	< 2	< 5	< 10
MCEE-SW-GC-05	below Collector and Rainy	8/19/2008	CES-EECA	NA	1.4 B	NA	NC	5.3	NA	NA	< 0.1	2,100	NM	< 10	NA	< 10	NA	< 0.1	< 200	NA	NA	0.0011	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
SHA-3374084	below Concentrator	9/12/2003	Ecology	NA	1.3	NA	NC	7.89	NA	< 0.10	< 0.10	NA	NM	< 0.5	NA	0.67	NA	0.13	NA	NA	< 0.05	NA	NA	< 0.5	NA	NA	< 0.10	NA	< 0.10	NA	< 5.0
SHA-3394093	below Concentrator	9/25/2003	Ecology	NA	1.9 B	NA	NC	12.2	NA	< 0.10	< 0.10	NA	NM	< 0.5	NA	0.55	NA	0.29	NA	NA	< 0.05	NA	NA	< 0.5	NA	NA	< 0.10	NA	< 0.10	NA	6.2
Seventysix Creek																															
SHA-3374080	background	9/11/2003	Ecology	NA	0.48	NA	NC	< 0.5	NA	< 0.10	< 0.10	NA	NM	< 0.5	NA	0.18	NA	0.12	NA	NA	< 0.05	NA	NA	< 0.5	NA	NA	< 0.10	NA	< 0.10	NA	< 5.0
76G-SW1	background	6/3/2005	CES-SI	< 30	< 20	0.058	< 2.942	< 3	3.6	< 2	< 2	2,270	NM	< 6	< 6	< 10	< 60	< 3	150	< 4	< 0.2	0.00078	NA	< 10	< 500	< 3	< 5	< 500	< 2	< 5	< 10
76G-SW1 (200.8)	background	6/3/2005	CES-SI	NA	< 5	NA	NC	0.45	NA	NA	< 0.12	NA	NM	NA	NA	< 1	NA	< 0.55	NA	NA	NA	NA	NA	< 5	NA	NA	NA	NA	< 1	NA	NA
MC-76-1	background	8/3/2006	Forest Service	NA	3.8	NA	NC	5.8	NA	NA	< 0.037	NA	NM	NA	NA	1.3 J	NA	0.23 J	NA	NA	NA	NA	NA	4.7	NA	NA	NA	NA	NA	NA	7.9
MCEE-SW-76G-01	background	8/21/2008	CES-EECA	NA	< 0.4	NA	NC	< 0.5	NA	NA	< 0.1	1,500	NM	< 10	NA	< 10	NA	0.2 B	< 200	NA	NA	0.0027	NA	NA	NA	< 0.10	< 0.05	NA	NA	NA	< 10
SHA-3374081	near Sidney Mine	9/11/2003	Ecology	NA	2.22	NA	NC	9.64	NA	< 0.10	< 0.10	NA	NM	< 0.5	NA	0.26	NA	0.19	NA	NA	< 0.05	NA	NA	< 0.5	NA	NA	< 0.10	NA	< 0.10	NA	< 5.0
MC-76-3	near Sidney Mine	8/3/2006	Forest Service	NA	3.1	NA	NC	< 0.37	NA	NA	< 0.037	NA	NM	NA	NA	0.6 J	NA	0.34 J	NA	NA	NA	NA	NA	0.28 J	NA	NA	NA	NA	NA	NA	5.2
76G-SW2	lower Seventysix Creek	6/3/2005	CES-SI	< 30	< 20	NA	NC	9.5	< 2	< 2	< 2	3,140	NM	< 6	< 6	< 10	< 60	< 3	279	< 4	< 0.2	0.00051	NA	< 10	< 500	< 3	< 5	< 500	< 2	< 5	< 10
76G-SW2 (200.8)	lower Seventysix Creek	6/3/2005	CES-SI	NA	< 5	NA	NC	NA	NA	NA	< 0.12	NA	NM	NA	NA	< 1	NA	0.68	NA	NA	NA	NA	NA	< 5	NA	NA	NA	NA	< 1	NA	NA
MCEE-SW-76G-02	lower Seventysix Creek	8/21/2008	CES-EECA	NA	2.0	NA	NC	7.7	NA	NA	< 0.1	2,500	NM	< 10	NA	< 10	NA	0.3 B	< 200	NA	NA	0.0021	NA	NA	NA	< 0.10	< 0.05	NA	NA	NA	< 10
South Fork Sauk River																															
DOE_SFSR - No ID High Flow)	below Glacier and Seventysix confluence	6/2001	Ecology	NA	NA	NA	NC	7.37	NA	NA	NA	NA	NM	NA	NA	0.31	NA	0.02	NA	NA	NA	0.0058	NA	NA	NA	NA	NA	NA	NA	NA	5.04
DOE_SFSR - 348076/77 (Low Flow	below Glacier and Seventysix confluence	8/2000	Ecology	NA	NA	NA	NC	9.24	NA	NA	NA	NA	NM	NA	NA	0.27	NA	< 0.02	NA	NA	NA	< 0.002	NA	NA	NA	NA	NA	NA	NA	NA	5.58
SFSR-SW1	below Glacier and Seventysix confluence	6/1/2005	CES-SI	< 30	< 20	0.147	9.253	9.4	4	< 2	< 2	2,750	NM	< 6	< 6	< 10	< 60	< 3	309	< 4	< 0.2	0.00077	NA	< 10	< 500	< 3	< 5	< 500	< 2	< 5	< 10
SFSR-SW1 (200.8)	below Glacier and Seventysix confluence	6/1/2005	CES-SI	NA	< 5	NA	NC	NA	NA	NA	< 0.12	NA	NM	NA	NA	< 1	NA	< 0.55	NA	NA	NA	NA	NA	< 5	NA	NA	NA	NA	< 1	NA	NA
MCEE-SW-SFSR-01	below Glacier and Seventysix confluence	8/19/2008	CES-EECA	NA	1.7 B	NA	NC	8.6	NA	NA	< 0.1	2,300	NM	< 10	NA	< 10	NA	< 0.1	< 200	NA	NA	0.0007	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
SFSR-SW2	Sauk River Campground	6/1/2005	CES-SI	< 30	< 20	NA	NC	11.3	3.7	< 2	< 2	2,780	NM	< 6	< 6	< 10	< 60	< 3	313	< 4	< 0.2	0.00045	NA	< 10	< 500	< 3	< 5	510	< 2	< 5	< 10
SFSR-SW2 (200.8)	Sauk River Campground	6/1/2005	CES-SI	NA	< 5	NA	NC	NA	NA	NA	< 0.12	NA	NM	NA	NA	< 1	NA	< 0.55	NA	NA	NA	NA	NA	< 5	NA	NA	NA	NA	< 1	NA	NA
MCEE-SW-SFSR-02	Sauk River Campground	8/19/2008	CES-EECA	NA	2.0 B	NA	NC	10.1	NA	NA	< 0.1	2,300	NM	< 10	NA	< 10	NA	< 0.1	< 200	NA	NA	0.0006	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
SFSR-SW3	between Silvertip and Hops Hill Cmpgrd	6/1/2005	CES-SI	< 30	< 20	0.243	12.157	12.4	3.4	< 2	< 2	3,280	NM	< 6	< 6	< 10	< 60	< 3	309	< 4	< 0.2	0.00042	< 0.000020	< 10	< 500	< 3	< 5	550	< 2	< 5	< 10
SFSR-SW3 (200.8)	between Silvertip and Hops Hill Cmpgrd	6/1/2005	CES-SI	NA	< 5	NA	NC	NA	NA	NA	< 0.12	NA	NM	NA	NA	< 1	NA	< 0.55	NA	NA	NA	NA	NA	< 5	NA	NA	NA	NA	< 1	NA	NA
MCEE-SW-SFSR-03	between Silvertip and Hops Hill Cmpgrd	8/19/2008	CES-EECA	NA	2.3	NA	NC	8.0	NA	NA	< 0.1	2,800	NM	< 10	NA	< 10	NA	< 0.1	< 200	NA	NA	0.0005	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
MCEE-SW-SFSR-04	below Weden and near Twin Bridges	8/27/2008	CES-EECA	NA	1.4 B	NA	NC	5.2	NA	NA	< 0.1	2,400	NM	< 10	NA	10 B	NA	0.1 B	400 B	NA	NA	0.0016	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
MCEE-SW-SFSR-05	below Twin Bridges	8/27/2008	CES-EECA	NA	2.3	NA	NC	7.3	NA	NA	< 0.1	3,000	NM	< 10	NA	< 10	NA	0.2 B	400 B	NA	NA	0.0014	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
MCEE-SW-SFSR-06	Barlow Summit	8/26/2008	CES-EECA	NA	3.1	NA	NC	8.9	NA	NA	< 0.1	3,400	NM	< 10	NA	< 10	NA	< 0.1	500 B	NA	NA	0.0010	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
MCEE-SW-SFSR-07	Mowich Camp	8/26/2008	CES-EECA	NA	3.1 B	NA	NC	9.0	NA	NA	< 0.2	3,700	NM	< 10	NA	< 20	NA	< 0.2	500 B	NA	NA	0.0010	NA	NA	NA	< 0.2	< 0.10	NA	NA	NA	< 20
MCEE-SW-SFSR-08	above Monte Cristo Lake	8/25/2008	CES-EECA	NA	2.9	NA	NC	8.5	NA	NA	< 0.1	3,700	NM	< 10	NA	< 10	NA	< 0.1	500 B	NA	NA	0.0010	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
SHA-3374085	Monte Cristo Lake	9/12/2003	Ecology	NA	5.44	NA	NC	27.4	NA	< 0.10	< 0.10	NA	NM	< 0.5	NA	1.41	NA	0.63	NA	NA	< 0.05	NA	NA	< 0.5	NA	NA	< 0.10	NA	< 0.10	NA	< 5.0
MCEE-SW-SFSR-09	below Monte Cristo Lake	8/25/2008	CES-EECA	NA	4.4	NA	NC	20.0	NA	NA	< 0.1	3,900	NM	< 10	NA	< 10	NA	0.8	600 B	NA	NA	0.0011	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
Monte Cristo Lake																															
MCEE-SW-MCL-01	Monte Cristo Lake	8/26/2008	CES-EECA	NA	2.9	NA	NC	68.5	NA	NA	< 0.10	3,500	NM	< 10	NA	< 10	NA	0.8	800 B	NA	NA	0.0023	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
Background																															
DOE_GC_(Background) LowFlo	background	8/2000	Ecology	NA	NA	NA	NC	4.52	NA	NA	NA	NA	NM	NA	NA	0.264	NA	0.032	NA	NA	NA	< 0.002	NA	NA	NA	NA	NA	NA	NA	NA	1.8 B
DOE_GC_(Background) HiFlo	background	6/2001	Ecology	NA	NA	NA	NC	0.28	NA	NA	NA	NA	NM	NA	NA	< 0.02	NA	< 0.02	NA	NA	NA	0.0042	NA	NA	NA	NA	NA	NA	NA	NA	< 0.2
SHA-3394090	background	9/25/2003	Ecology	NA	1.8 B	NA	NC	1.7	NA	< 0.10	< 0.10	NA	NM	< 0.5	NA	< 0.5	NA	< 0.10	NA	NA	< 0.05	NA	NA	< 0.5	NA	NA	< 0.10	NA	< 0.10	NA	< 5.0
GC-SW1	background	6/2/2005	CES-SI	< 30	< 20	0.041	< 2.959	< 3.0	6.2	< 2	< 2	2,910	10	< 6	< 6	< 10	< 60	< 3	476	< 4	< 0.2	0.00289	NA	< 10	< 500	< 3	< 5	< 500	< 2	< 5	< 10
MC-GC-9	background	8/2/2006	Forest Service	NA	3.5	NA	NC	< 0.37	NA	NA	< 0.037	NA	NM	NA	NA	1.0 J	NA	0.21 J	NA	NA	NA	NA	NA	0.35 J	NA	NA	NA	NA	NA	NA	5.2
MCEE-SW-GC-01	background	8/22/2008	CES-EECA	NA	0.7 B	NA	NC	1.6	NA	NA	< 0.1	2,700	NM	< 10	NA	< 10	NA	0.2 B	200 B	NA	NA	0.0039	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
GC-SW2	background	6/2/2005	CES-SI	< 30	< 20	NA	NC	< 3.0	10.1	< 2	< 2	3,050	NM	< 6	< 6	< 10	< 60	< 3	434	< 4	< 0.2	0.00218	NA	< 10	< 500	< 3	< 5	< 500	< 2	< 5	< 10
MCEE-SW-GC-02	background	8/22/2008	CES-EECA	NA	1.2 B	NA	NC	1.3	NA	NA	< 0.1	4,800	NM	< 10	NA	< 10	NA	< 0.1	300 B	NA	NA	0.0015	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
SHA-3374080	background	9/11/2003	Ecology	NA	0.48	NA	NC	< 0.5	NA	< 0.10	< 0.10	NA	NM	< 0.5	NA	0.18	NA	0.12	NA	NA	< 0.05	NA	NA	< 0.5	NA	NA	< 0.10	NA	< 0.10	NA	< 5.0
76G-SW1	background	6/3/2005	CES-SI	< 30	< 5	0.058	0.392	0.45	3.6	< 2	< 0.12	2,270	NM	< 6	< 6	< 1	< 60	< 0.55	150	< 4	< 0.2	0.00078	NA	< 5	< 500	< 3	< 5	< 500	< 1	< 5	< 10
MC-76-1	background	8/3/2006	Forest Service	NA	3.8	NA	NC	5.8	NA	NA	< 0.037	NA	NM	NA	NA	1.3 J	NA	0.23 J	NA	NA	NA	NA	NA	4.7	NA	NA	NA	NA	NA	NA	7.9
MCEE-SW-76G-01	background	8/21/2008	CES-EECA	NA	< 0.4	NA	NC	< 0.5	NA	NA	< 0.1	1,500	NM	< 10	NA	< 10	NA	0.2 B	< 200	NA	NA	0.0027	NA	NA	NA	< 0.10	< 0.05	NA	NA	NA	< 10
Background Mean				< 30	3.42	0.050	0.936	1.63	6.6	< 1.24	< 0.47	2,872	NC	< 6.13	< 6	2.38	< 60	0.36	277	< 4	< 0.07	0.0024	NC	2.58	< 500	< 0.78	< 0.96	< 500	0.52	< 5	4.17
Standards, corrected for hardness where applicable (used			8.23	mg/L average for surface water samples, excluding portal and other seeps)																											
Washington - Aquatic Life (Chronic)[1]				NS	NS	NS	NS	190	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.012	0.012	NS	30.8	NS	5	NS	NS	NS	NS	12.77
Washington - Human Health[1]				NS	14	NS	NS	0.018	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.14	0.14	NS	610	NS	170	NS	NS	1.7	NS	NS
Washington Drinking Water Criteria[1]				NS	6	NS	NS	10	2,000	4	5	NS	NS	100	NS	NS	300	NS	NS	50	2	2	NS	100	NS	50	100	NS	2	NS	50,000
EPA - Aquatic Life (CCC)[4]				87	NS	NS	NS	150	NS	NS	0.043	NS	11	NS	NS	1.1	1,000	0.13	NS	NS	0.91	0.91	NS	6.3	NS	5	NS	NS	NS	NS	14.64
EPA - Human Health (Water+Organism)[5]				NS	5.6	NS	NS	0.018	1,000	NS	NS	NS	NS	NS	NS	1,300	300	NS	NS	50	NS	NS	NS	610	NS	170	NS	NS	1.7	NS	7,400
ORNL - Surface Water PRGs[6]				87	30	190	3.1	NS	4	0.66	1.10	NS	11	NS	23	12	1,000	3.20	NS	120	1.3	1.3	0.0026	160	NS	0.39	0.36	NS	9	20	110

Table 2. Surface Water Analytical Results (continued)
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Sample I.D.	Location / Comment	Sample Date	Sampling Group (CES, WADNR, Forest Service, Ecology)	Flow Rate	Temperature (Field)	pH (Field)	pH (Lab) EPA M150.1	Turbidity (Field)	Conductivity (Field)	Conductivity @25C (Lab) EPA M120.1	Dissolved Oxygen (Field)	Oxygen Reduction Potential (Field)	Hardness as $CaCO_3$, TR EPA M2340B	TDS (Field)	TDS, Residue, Filterable @180C EPA M160.1	TSS, Residue, Non-Filterable @105C EPA M160.2	Cyanide-Total EPA M335.2	Cyanide-WAD EPA M45001	Sulfate EPA M300.0
				cfs	°C	s.u.	s.u.	NTU	µS/cm	µS/cm	mg/L	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Glacier Creek																			
DOE_GC_HiFlo	background	6/2001	Ecology	32	2.2	7.33	NA	NM	18	NA	NM	NM	8.13	NM	NA	NA	NA	NA	NA
DOE_GC_LowFlo	background	8/2000	Ecology	7.5	3.3	6.78	NA	NM	19	NA	NM	NM	6.92	NM	NA	NA	NA	NA	NA
SHA-3394090	background	9/25/2003	Ecology	NM	7.14	7.21	NA	NM	NM	18	10.16	NM	8.15	NM	12	NA	NA	NA	1.16
GC-SW1	background	6/2/2005	CES-SI	3.7	2.52	6.7	7.02	20	23	24.0	11.53	243	9.15	10	< 10	< 5.0	< 0.01	< 0.01	1.57
MC-GC-9	background	8/2/2006	Forest Service	NM	7.9	6.91	NA	5	51	NA	11.49	178	8.0	30	NA	NA	NA	NA	1.3
MCEE-SW-GC-01	background	8/22/2008	CES-EECA	2.5	3.76 S	2.38 S	7.5	NM	IM	20	IM	IM	8	NM	< 10	< 5	NA	NA	2 B
GC-SW2	background	6/2/2005	CES-SI	15.1	3.4	6.9	6.99	3	24	24.0	11.45	248	9.66	20	13	< 5.0	NA	NA	1.72
MCEE-SW-GC-02	background	8/22/2008	CES-EECA	4.5	3.91 S	0.92 S	7.1	NM	IM	19	IM	IM	13	NM	20	< 5	NA	NA	< 1
SHA-3394091	near POTM	9/25/2003	Ecology	NM	7.43	7.06	NA	NM	NM	18	9.71	NM	8.48	NM	NA	NA	NA	NA	NA
SHA-3394094	near POTM	9/25/2003	Ecology	NM	4.74	6.91	NA	NM	NM	21	8.98	NM	8.44	NM	NA	NA	NA	NA	NA
MC-GC-5	above New Discovery, below POTM	8/2/2006	Forest Service	NM	9.1	6.65	NA	3	36	NA	10.96	191	7.0	20	NA	NA	NA	NA	1.6
MC-GC-3	above POTW, below New Discovery	8/2/2006	Forest Service	NM	9.6	6.44	NA	2	45	NA	11.49	213	8.0	30	NA	NA	NA	NA	1.7
MC-GC-1	below POTW	8/2/2006	Forest Service	NM	6.8	7.11	NA	3	39	NA	12.44	164	9.0	30	NA	NA	NA	NA	1.8
GC-SW3	below POTW	6/2/2005	CES-SI	14.1	3.1	6.7	7.04	14	25	22.0	11.56	183	9.75	20	< 10	< 5.0	NA	NA	1.82
MCEE-SW-GC-03	below POTW	8/22/2008	CES-EECA	5.7	3.88 S	3.04 S	7.4	NM	IM	17	IM	IM	6	NM	< 10	< 5	NA	NA	< 1
GC-SW4	below POTW	6/2/2005	CES-SI	NM	3.32	6.6	7.03	25	24	21.0	11.88	224	9.71	20	< 10	< 5.0	NA	NA	1.92
MCEE-SW-GC-04	below POTW	8/19/2008	CES-EECA	13.1	4.36 S	4.66 S	7.4	NM	IM	16	IM	IM	9	NM	< 10	< 5	NA	NA	< 1
GC-SW5	below Collector & Rainy	6/1/2005	CES-SI	37.7	6.26	6.8	6.98	20	22	20.0	11.15	240	8.38	10	< 10	< 5.0	NA	NA	2.48
MCEE-SW-GC-05	below Collector & Rainy	8/19/2008	CES-EECA	54.3	6.85 S	4.36 S	7.3	NM	IM	17	IM	IM	5 B	NM	20 B	< 5	NA	NA	< 1
SHA-3374084	below Concentrator	9/12/2003	Ecology	NM	NM	NM	NA	NM	NM	NA	NM	NM	7.92	NM	NA	NA	NA	NA	NA
SHA-3394093	below Concentrator	9/25/2003	Ecology	NM	NM	NM	NA	NM	NM	NA	NM	NM	9.46	NM	NA	NA	NA	NA	NA
WADNR - 348076/77	background - Low Flow	8/2000	WADNR	20	7.2	7.02	NA	NM	19	NA	NM	NM	6.80	NM	NA	NA	NA	NA	NA
WADNR - No ID	background - High Flow	6/2001	WADNR	83	7.2	7.15	NA	NM	19	NA	NM	NM	7.38	NM	NA	NA	NA	NA	NA
Seventysix Creek																			
SHA-3374080	background	9/11/2003	Ecology	NM	NM	NM	NA	NM	NM	NM	NM	NM	4.83	NM	NA	NA	NA	NA	NA
76G-SW1	background	6/3/2005	CES-SI	0.7	4.58	6.9	7.00	19	NM	16.0	11.08	214	6.13	10	< 10	< 5.0	< 0.01	< 0.01	0.48
MC-76-1	background	8/3/2006	Forest Service	NM	6.4	5.98	NA	1	NM	40.0	11.94	288	9	30	NA	NA	NA	NA	1.6
MCEE-SW-76G-01	background	8/21/2008	CES-EECA	15.2	5.43 S	3.65 S	7.2	NM	IM	10.0	IM	IM	4	NM	< 10	< 5	NA	NA	< 1
SHA-3374081	near Sidney Mine	9/11/2003	Ecology	NM	NM	NM	NA	NM	NM	NM	NM	NM	9.48	NM	NA	NA	NA	NA	NA
MC-76-3	near Sidney Mine	8/3/2006	Forest Service	NM	7.0	6.37	NA	1	NM	40.0	12.05	266	8	30	NA	NA	NA	NA	1.8
76G-SW2	lower Seventysix Creek	6/3/2005	CES-SI	11.2	4.88	6.6	6.69	21	NM	24.0	12.05	217	9.19	20	< 10	< 5.0	NA	NA	1.70
MCEE-SW-76G-02	lower Seventysix Creek	8/21/2008	CES-EECA	63.5	6.13 S	3.84 S	7.3	NM	IM	18.0	IM	IM	6 B	NM	10 B	< 5	NA	NA	< 1
South Fork Sauk River																			
SFSR-SW1	below Glacier & Seventysix confluence	6/1/2005	CES-SI	54.7	6.04	6.8	6.58	57	NM	22.0	11.29	201	7.83	10	< 10	< 5	< 0.01	< 0.01	2
MCEE-SW-SFSR-01	below Glacier & Seventysix confluence	8/19/2008	CES-EECA	IM	7.63 S	IM S	7.3	NM	IM	17	IM	IM	6 B	NM	< 10	< 5	NA	NA	< 1
SFSR-SW2	Sauk River Campground	6/1/2005	CES-SI	41.2	6.42	6.7	6.72	18	NM	22.0	11.12	234	8.14	10	< 10	< 5	NA	NA	3
MCEE-SW-SFSR-02	Sauk River Campground	8/19/2008	CES-EECA	48.3	8.11 S	IM S	7.3	NM	IM	17	IM	IM	6 B	NM	10 B	< 5	NA	NA	< 1
SFSR-SW3	between Silvertip & Hops Hill Cmpgrd	6/1/2005	CES-SI	76.1	6.84	6.0	6.91	72	NM	26.0	11.69	217	9.43	20	< 10	< 5	< 0.01	< 0.01	3
MCEE-SW-SFSR-03	between Silvertip & Hops Hill Cmpgrd	8/19/2008	CES-EECA	70.1	8.03 S	IM S	7.3	NM	IM	21	IM	IM	7	NM	10 B	< 5	NA	NA	1 B
MCEE-SW-SFSR-04	below Weden & near Twin Bridges	8/27/2008	CES-EECA	244.9	IM	IM	7.1	NM	IM	17	IM	IM	8	IM	210	< 5	NA	NA	< 1
MCEE-SW-SFSR-05	below Twin Bridges	8/27/2008	CES-EECA	341.5	IM	IM	7.3	NM	IM	21	IM	IM	9	IM	180	< 5	NA	NA	< 1
MCEE-SW-SFSR-06	Barlow Summit	8/26/2008	CES-EECA	63.5	IM	IM	7.3	NM	IM	25	IM	IM	11	IM	1510	< 5	NA	NA	< 1
MCEE-SW-SFSR-07	Mowich Camp	8/26/2008	CES-EECA	247.7	9.94	5.78	7.4	25.4	33	25	9.76	170	11	20	2260	< 5	NA	NA	1 B
MCEE-SW-SFSR-08	above Monte Cristo Lake	8/25/2008	CES-EECA	108.2	9.55	6.24	7.4	13.6	32	25	9.91	213	11	20	150	< 5	NA	NA	< 1
SHA-3374085	Monte Cristo Lake	9/12/2003	Ecology	NM	11.19	7.04	NA	NM	NM	NM	9.44	NM	12.1	NM	NA	NA	NA	NA	NA
MCEE-SW-SFSR-09	below Monte Cristo Lake	8/25/2008	CES-EECA	1.7	10.53	7.4	7.5	15.5	40	25	10.27	94	12	30	250	< 5	NA	NA	< 1
Monte Cristo Lake																			
MCEE-SW-MCL-01	Monte Cristo Lake	8/26/2008	CES-EECA	NA	13.45	7.05	7.2	26.5	0.037	26	9.37	230	12	20	250	< 5	NA	NA	< 1
Standards																			
Washington - Aquatic Life (Chronic)[1]				NS	12	6.5-8.5	6.5-8.5	5x>Bkg	NS	NS	9.5	NS	NS	NS	NS	NS	NS	0.0052	NS
Washington - Human Health[2]				NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.7	NS	NS
Washington Drinking Water Criteria[3]				NS	NS	6.5-8.5	6.5-8.5	NS	700	700	NS	NS	NS	500	500	NS	0.2	NS	250
EPA - Aquatic Life (CCC)[4]				NS	NS	6.5-9	6.5-9	NS	NS	NS	9.5	NS	NS	NS	NS	NS	NS	0.0052	NS
EPA - Human Health (Water+Organism)[5]				NS	NS	5-9	5-9	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.7	NS	NS
ORNL - Surface Water PRGs[6]				NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.0052	NS	NS

GENERAL NOTES:

All CES samples (except Arsenic (III,) Mercury, UltraTrace, & Mercury, Methyl) were conducted by SVL Analytical, Inc., Kellogg, ID following digestion by M200.2.
All CES-EECA sample analyses were conducted by ACZ Laboratories, Inc., Steamboat Springs, CO.
Arsenic (III), Mercury, UltraTrace, & Mercury, Methyl analyses were conducted by Brooks Rand, Seattle, WA
Arsenic (V) was calculated from the difference between Arsenic, TR and Arsenic (III), TR
Bolding indicates an exceedence of background mean (Note - background samples that exceed the mean background concentration are not bolded)
Shaded cells indicate that the value exceeds one or more standard; corresponding criteria also shaded.
Italic values indicate that the MDL exceeds the lowest standard
Abbreviations: (200.8) = Second analyses of selected elements by low level detection ICP-MS, < value = Analyte not detected above Method Detection Limit (MDL), µg/L = micrograms per liter, B = Analyte detected between MDL and Practical Quantification Limit (PQL) therefore concentration is estimated, oC = degrees centigrade, µS/cm = microSiemans per centimeter,
cfs = cubic feet per second (1 cfs = 448.8 gpm), CES = Cascade Earth Sciences, Ecology = Department of Ecology, EECA = Engineering Evaluation / Cost Analysis, Forest Service = U.S. Forest Service, Region 6, IM = instrument malfunction, IM = instrument malfunction, J = Analyte detected between MDL and Practical Quantification Limit (PQL) therefore concentration is estimated,
mg/L = milligrams per liter, Mv = millivolts, NA = not analyzed, NC = not calculated, ND = not detected (no MDL provided), NM = not measured, NTU = nephelometric turbidity units , POTM = Pride of the Mountains Mine, POTW = Pride of the Woods Mine, S = suspect measurement, SI = Site Inspection, s.u. = standard units,
WADNR = Washington Department of Natural Resources Results (Wolff, McKay, and Norman, 2003).

STANDARD NOTES

1 - State of Washington Aquatic Life criteria (WAC 173-201A, DOE 2007), underline - corrected for hardness
2 - State of Washington criteria for protection of human health (CLARC-Part IIIf, DOE 2007)
3 - State of Washington drinking water criteria (WAC 246-290)
4 - EPA recommended chronic ambient water quality criteria for freshwater aquatic life used (EPA, 2002), underline - corrected for hardness
5 - EPA recommended ambient water quality criteria for protection of human consumption of water and fish (EPA, 2002 NTR)
6 - ORNL Preliminary Remediation Goals for Ecological Endpoints (ORNL, 1997), underline - corrected for an assumed hardness of 100 mg/L
NS = No Standard

Table 3. Adit Drainage and Waste Rock Dump Seep Water Analytical Results
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Sample I.D.	Location / Comment	Sample Date	Sampling Group (CES, WADNR, Forest Service, Ecology)	Aluminum, TR EPA M200.7	Antimony, TR EPA M200.7	Arsenic (III), TR EPA M1632 Mod.	Arsenic (V), TR Calculated	Arsenic Total, TR EPA M200.8	Barium, TR EPA M200.7	Beryllium, TR EPA M200.7	Cadmium, TR EPA M200.7	Calcium, TR EPA M200.7	Chromium VI, Total Field	Chromium, TR EPA M200.7	Cobalt, TR EPA M200.7	Copper, TR EPA M200.7	Iron, TR* EPA M200.7	Lead, TR EPA M200.8	Magnesium, TR EPA M200.7	Manganese, TR* EPA M200.7	Mercury, Total EPA M245.1	Mercury, Total, UltraTrace EPA M1631, Rev. E	Mercury, Methyl, UltraTrace EPA M1630	Nickel, TR EPA M200.7	Potassium, TR EPA M200.7	Selenium, TR EPA M200.8	Silver, TR EPA M200.7	Sodium, TR EPA M200.7	Thallium, TR EPA M200.8	Vanadium, TR EPA M200.7	Zinc, TR EPA M200.7
				Results in mg/L																											
Water Samples from Adit Drainage and Waste Rock Dump Seeps																															
Boston-American Mine																															
MCEE-DW-BA-01	adit drainage	8/20/2008	CES-EECA	NA	0.7 B	NA	NC	7.3	NA	NA	< 0.1	61,000	NM	< 10	NA	10 B	30 B	0.1 B	1,900	< 5	NA	0.0039	NA	NA	NA	0.2 B	< 0.05	NA	NA	NA	< 10
MCEE-DW-BA-02	seep near toe upper dump	8/20/2008	CES-EECA	NA	< 0.4	NA	NC	1.8	NA	NA	0.1 B	3,900	NM	< 10	NA	< 10	160	0.8	< 200	13 B	NA	0.0210	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
Justice Mine																															
WADNR - WJUS1	adit drainage	4/2003	WADNR	NA	NA	NA	NC	200	NA	NA	NA	NA	NM	NA	NA	< 100	< 1,000	< 100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 100
SHA-3374082	adit drainage	9/12/2003	Ecology	NA	11.3	NA	NC	235	NA	< 0.10	0.14	NA	NM	< 0.5	NA	4.22	NA	1.26	NA	NA	< 0.05	NA	NA	0.92	NA	NA	< 0.10	NA	< 0.10	NA	21
JM-AS-01	adit drainage	9/10/2005	CES-SI	< 30	10.3	1.08 H	204.9	206	2.8	< 0.66	0.15	33,900	NM	< 6	< 6	< 3	< 60	< 0.6	4,010	12.4	< 0.2	NA	NA	< 10	630	< 0.62	< 0.12	4,240	< 0.24	< 5	19
MCEE-DW-JU-01	adit drainage	8/20/2008	CES-EECA	NA	9.1	NA	NC	196	NA	NA	0.4 B	21,200	NM	< 10	NA	< 10	60	0.9	2,200	11 B	NA	0.0010	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	60
SHA-3374083	toe WR dump	9/12/2003	Ecology	NA	11.6	NA	NC	264	NA	< 0.10	0.48	NA	NM	< 0.5	NA	2.83	NA	0.74	NA	NA	< 0.05	NA	NA	1.19	NA	NA	< 0.10	NA	< 0.10	NA	56.8
MCEE-DW-JU-02	toe WR dump	8/20/2008	CES-EECA	NA	9.5	NA	NC	186	NA	NA	0.5 B	20,400	NM	< 10	NA	10 B	40 B	0.5 B	2,100	< 5	NA	0.0012	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	40 B
Mystery Mine																															
WADNR - WMYS2	adit 3 drainage	4/2003	WADNR	NA	NA	NA	NC	3,300	NA	NA	NA	NA	NM	NA	NA	710	48,000	110	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6,100
MM-AS-01	adit 3 drainage	9/9/2005	CES-SI	1,160	31.2	1.70 H	1,358.3	1,360	2.5	< 0.66	30.3	69,200	NM	< 6	15	675	16,400	37.5	25,200	4,230	< 0.2	NA	NA	< 10	1,210	< 0.62	0.22	4,420	0.36	< 5	6,590
MCEE-DW-MY-01	adit 3 drainage	8/20/2008	CES-EECA	NA	15.4	NA	NC	439	NA	NA	14.5	22,200	NM	< 10	NA	360	6,230	28.3	7,900	1,590	NA	0.0034	NA	NA	NA	< 0.2	0.20 B	NA	NA	NA	2,590
WADNR - WMYS1	toe WR dump	4/2003	WADNR	NA	NA	NA	NC	1,100	NA	NA	NA	NA	NM	NA	NA	700	12,000	< 100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6,000
MCEE-DW-MY-02	adit 3 drainage at toe WR dump	8/20/2008	CES-EECA	NA	7.5	NA	NC	240	NA	NA	13.1	18,900	NM	< 10	NA	390	2,920	27.6	6,400	1,370	NA	0.0019	NA	NA	NA	< 0.1	0.18 B	NA	NA	NA	2,340
New Discovery Mine																															
MC-GC-4	seep into GC below New Discovery	8/2/2006	Forest Service	NA	4.9	NA	NC	2.8	NA	NA	< 0.037	NA	NM	NA	NA	0.77 J	NA	0.05 J	NA	NA	NA	NA	NA	0.51 J	NA	NA	NA	NA	NA	NA	7.9
WADNR - NEWDISCH20	adit 2 drainage	4/2003	WADNR	NA	NA	NA	NC	30	NA	NA	< 5	NA	NM	NA	NA	< 10	729	11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	225
MCEE-DW-ND-01	southwest adit drainage	8/23/2008	CES-EECA	NA	4.2	NA	NC	31.6	NA	NA	4.5	28,400	NM	< 10	NA	< 10	1,350	4.4	9,300	696	NA	0.0111	NA	NA	NA	< 0.1	0.08 B	NA	NA	NA	850
Pride of the Mountains Mine																															
MC-GC-6	Main adit (1) drainage	8/2/2006	Forest Service	NA	30	NA	NC	1,100	NA	NA	11	NA	NM	NA	NA	560	NA	100	NA	NA	NA	NA	NA	1.3 J	NA	NA	NA	NA	NA	NA	1,600
WADNR - PR-MTS	Main adit (1) drainage	4/2003	WADNR	NA	NA	NA	NC	6,350	NA	NA	40	NA	NM	NA	NA	2,640	17,700	562	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5,170
MCEE-DW-PM-01	Main adit (1) drainage	8/22/2008	CES-EECA	NA	12.3	NA	NC	162	NA	NA	4.2	17,000	NM	< 10	NA	90	500	15.8	3,200	108	NA	0.0038	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	830
Pride of the Woods Mine																															
MCEE-DW-PW-01	seep at toe WR dump	8/23/2008	CES-EECA	NA	25.0	NA	NC	4,060	NA	NA	7.7	2,800	NM	< 10	NA	410	22,900	125.0	1,100	522	NA	0.820	NA	NA	NA	0.3 B	3.82	NA	NA	NA	1220
Rainy Mine																															
MCEE-DW-RY-01	adit drainage ponded near portal	8/21/2008	CES-EECA	NA	0.8 B	NA	NC	14.0	NA	NA	< 0.1	5,600	NM	< 10	NA	< 10	140	0.9	900 B	17 B	NA	0.0060	NA	NA	NA	0.1 B	< 0.05	NA	NA	NA	< 10
Sidney Mine																															
MC-76-2	adit drainage	8/3/2006	Forest Service	NS	1.5 J	NA	NC	19	NA	NA	< 0.037	NA	NM	NA	NA	0.74 J	NA	0.1 J	NA	NA	NA	NA	NA	0.32 J	NA	NA	NA	NA	NA	NA	4.9 J
MCEE-DW-SY-01	adit drainage	9/30/2008	CES-EECA	NA	0.6 B	NA	NC	28.8	NA	NA	< 0.1	5,100	NM	< 10	NA	< 10	60	< 0.1	300 B	< 5	< 0.2	NA	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
Standards, corrected for hardness where applicable (used . . . . . 8.23 mg/L average for surface water samples, excluding portal and other seeps)																															
Washington - Aquatic Life (Chronic)[1]				NS	NS	NS	NS	190	NS	NS	0.16	NS	10	NS	NS	1.4	NS	0.13	NS	NS	0.012	0.012	NS	30.8	NS	5	NS	NS	NS	NS	12.77
Washington - Human Health[2]				NS	14	NS	NS	0.018	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.14	0.14	NS	610	NS	170	NS	NS	1.7	NS	NS
Washington Drinking Water Criteria[3]				NS	6	NS	NS	10	2,000	4	5	NS	NS	100	NS	NS	300	NS	NS	50	2	2	NS	100	NS	50	100	NS	2	NS	50,000
EPA - Aquatic Life (CCC)[4]				87	NS	NS	NS	150	NS	NS	0.043	NS	11	NS	NS	1.1	1,000	0.13	NS	NS	0.91	0.91	NS	6.3	NS	5	NS	NS	NS	NS	14.64
EPA - Human Health (Water+Organism)[5]				NS	5.6	NS	NS	0.018	1,000	NS	NS	NS	NS	NS	NS	1,300	300	NS	NS	50	NS	NS	NS	610	NS	170	NS	NS	1.7	NS	7,400
ORNL - Surface Water PRGs[6]				87	30	190	3.1	NS	4	0.66	1.10	NS	11	NS	23	12	1,000	3.20	NS	120	1.3	1.3	0.0026	160	NS	0.39	0.36	NS	9	20	110

Table 3. Adit Drainage and Waste Rock Dump Seep Water Analytical Results (continued)
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Sample I.D.	Location / Comment	Sample Date	Sampling Group (CES, WADNR, Forest Service, Ecology)	Flow Rate	Temperature (Field)	pH (Field)	pH (Lab) EPA M150.1	Turbidity (Field)	Conductivity (Field)	Conductivity @25 C (Lab) EPA M120.1	Dissolved Oxygen (Field)	Oxygen Reduction Potential (Field)	Hardness as $CaCO_3$, TR EPA M2340B	TDS (Field)	TDS, Residue, Filterable @180C EPA M160.1	TSS, Residue, Non-Filterable @105C EPA M160.2	Cyanide-Total EPA M335.2	Cyanide-WAD EPA M45001	Sulfate EPA M300.0
				gpm	°C	s.u.	s.u.	NTU	µS/cm	µS/cm	mg/L	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Water Samples from Adit Drainage and Waste Rock Dump Seeps																			
Boston-American Mine																			
MCEE-DW-BA-01	adit drainage	8/20/2008	CES-EECA	1.35	6.34 S	7.71 S	8.1	NM	IM	26	IM	IM	160	NM	240	5 B	NA	NA	129
MCEE-DW-BA-02	seep near toe upper dump	8/20/2008	CES-EECA	0.135	8.01 S	7.36 S	7.1	NM	IM	414	IM	IM	10	NM	20	< 5	NA	NA	7
Justice Mine																			
WADNR - WJUS1	adit drainage	4/2003	WADNR	< 4.5	11.70	5.0	NA	NM	NM	NA	NM	NM	60	NM	NA	NA	NA	NA	NA
SHA-3374082	adit drainage	9/12/2003	Ecology	NM	4.87	8.12	NA	NM	NM	NM	10.85	NM	104	NM	NA	NA	NA	NA	NA
JM-AS-01	adit drainage	9/10/2005	CES-SI	45	3.20	3.81	3.5	NM	NM	NM	NM	465	278	NM	470	32	NA	NA	302
MCEE-DW-JU-01	adit drainage	8/20/2008	CES-EECA	90	4.82 S	IM	8.0	NM	IM	33	IM	IM	62	NM	90	< 5	NA	NA	31
SHA-3374083	toe WR dump	9/12/2003	Ecology	NM	NM	NM	NA	NM	NM	NM	NM	NM	99.5	NM	NA	NA	NA	NA	NA
MCEE-DW-JU-02	toe WR dump	8/20/2008	CES-EECA	1.35	4.15 S	IM	8.1	NM	IM	149	IM	IM	60	NM	60	< 5	NA	NA	30
Mystery Mine																			
WADNR - WMYS2	adit 3 drainage	4/2003	WADNR	40	4.4	4.4	NA	NM	NM	570	NM	NM	240	NM	NA	NA	NA	NA	NA
MM-AS-01	adit 3 drainage	9/9/2005	CES-SI	4.5	3.2	3.81	3.5	NM	NM	NM	9.1	465	278	NM	470	32	NA	NA	302
MCEE-DW-MY-01	adit 3 drainage near portal	8/20/2008	CES-EECA	4.5	4.15 S	IM	3.9	NM	IM	141	IM	IM	88	NM	160	14 B	NA	NA	90
WADNR - WMYS1	toe WR dump	4/2003	WADNR	4.5	10.5	4.4	NA	NM	NM	578	NM	NM	250	NM	NA	NA	NA	NA	NA
MCEE-DW-MY-02	adit 3 drainage at toe WR dump	8/20/2008	CES-EECA	0.045	10.50 S	IM	4.0	NM	IM	319	IM	IM	74	NM	70	< 5	NA	NA	76
New Discovery Mine																			
MC-GC-4	seep into GC below New Discovery	8/2/2006	Forest Service	NM	6.1	6.81	NA	3	NM	49.0	12.94	173	9.0	30	NA	NA	NA	NA	NA
WADNR - NEWDISCH20	adit 2 drainage	4/2003	WADNR	< 4.5	7.8	6.7	NA	NM	NM	NM	NM	NM	130	NM	NA	NA	NA	NA	NA
MCEE-DW-ND-01	southwest adit drainage	8/23/2008	CES-EECA	NM	NM	NM	7.0	NM	NM	267	NM	NM	109	NM	180	< 5	NA	NA	99
Pride of the Mountain																			
MC-GC-6	Main adit (1) drainage	8/2/2006	Forest Service	NM	5.2	6.6	NA	3	NM	316.0	13.25	208	99	200	NA	NA	NA	NA	NA
WADNR - PR-MTS	Main adit (1) drainage	4/2003	WADNR	< 4.5	7.8	7.7	NA	NM	NM	NM	NM	NM	160	NM	NA	NA	NA	NA	NA
MCEE-DW-PM-01	Main adit (1) drainage	8/22/2008	CES-EECA	1.8	4.69 S	IM	7.5	NM	IM	201	IM	IM	56	NM	80	< 5	NA	NA	37
Pride of the Woods Mine																			
MCEE-DW-PW-01	seep at toe WR dump	8/23/2008	CES-EECA	0.045	NM	NM	3.8	NM	NM	130	NM	NM	12	NM	140	219	NA	NA	40
Rainy Mine																			
MCEE-DW-RY-01	adit drainage ponded near portal	8/21/2008	CES-EECA	0.045	5.14 S	IM	7.2	NM	IM	198	IM	IM	18	NM	30	5 B	NA	NA	8
Sidney Mine																			
MC-76-2	adit drainage	8/3/2006	Forest Service	NM	5.6	6.42	NA	7	54	54.0	12.24	263	9	40	NA	NA	NA	NA	NA
MCEE-DW-SY-01	adit drainage	9/30/2008	CES-EECA	1.35	4.5	5.5	7.3	NM	25	25	17.7	262	14	NM	10	< 5 H	NA	NA	3 B
Standards																			
Washington - Aquatic Life (Chronic)[1]				NS	12	6.5-8.5	6.5-8.5	5x>Bkg	NS	NS	9.5	NS	NS	NS	NS	NS	NS	0.0052	NS
Washington - Human Health[2]				NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.7	NS	NS
Washington Drinking Water Criteria[3]				NS	NS	6.5-8.5	6.5-8.5	NS	700	700	NS	NS	NS	500	500	NS	0.2	NS	250
EPA - Aquatic Life (CCC)[4]				NS	NS	6.5-9	6.5-9	NS	NS	NS	9.5	NS	NS	NS	NS	NS	NS	0.0052	NS
EPA - Human Health (Water+Organism)[5]				NS	NS	5-9	5-9	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.7	NS	NS
ORNL - Surface Water PRGs[6]				NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.0052	NS	NS

GENERAL NOTES:

All CES samples (except Arsenic (III,) Mercury, UltraTrace, & Mercury, Methyl) were conducted by SVL Analytical, Inc., Kellogg, ID following digestion by M200.2.
All CES-EECA sample analyses were conducted by ACZ Laboratories, Inc., Steamboat Springs, CO.
Arsenic (III), Mercury, UltraTrace, & Mercury, Methyl analyses were conducted by Brooks Rand, Seattle, WA
Arsenic (V) was calculated from the difference between Arsenic, TR and Arsenic (III), TR
Bolding indicates an exceedence of background mean (Note - background samples that exceed the mean background concentration are not bolded)
Shaded cells indicate that the value exceeds one or more standard; corresponding criteria also shaded.
Italic values indicate that the MDL exceeds the lowest standard
Abbreviations: (200.8) = Second analyses of selected elements by low level detection ICP-MS, oC = degrees centigrade, µg/L = micrograms per liter, µS/cm = microSiemans per centimeter, < value = Analyte not detected above Method Detection Limit (MDL), B = Analyte detected between MDL and Practical Quantification Limit (PQL) therefore concentration is estimated,
CES = Cascade Earth Sciences, Ecology = Department of Ecology, EECA = Engineering Evaluation / Cost Analysis, gpm = gallons per minute (1 gpm = 0.00223 cfs), Forest Service = U.S. Forest Service, Region 6, gpm = gallons per minute (1 gpm = 0.00223 cfs), H = molding time exceeded., IM = instrument malfunction, J = Analyte detected between MDL and Practical Quantification Limit (PQL) therefore concentration is estimated, mg/L = milligrams per liter, mV = milliVolts, NA = not analyzed, NM = not measured, NTU = nephelometric turbidity units , S = suspect measurement, SI = Site Inspection, s.u. = standard units, WADNR = Washington Department of Natural Resources Results (Wolff, McKay, and Norman, 2003), WR = waste rock.

STANDARD NOTES

1 - State of Washington Aquatic Life criteria (WAC 173-201A, DOE 2007)underline- corrected for hardness
2 - State of Washington criteria for protection of human health (CLARC-Part IIIf, DOE 2007)
3 - State of Washington drinking water criteria (WAC 246-290)
4 - EPA recommended chronic ambient water quality criteria for freshwater aquatic life used (EPA, 2002)underline- corrected for hardness
5 - EPA recommended ambient water quality criteria for protection of human consumption of water and fish (EPA, 2002 NTR)
6 - ORNL Preliminary Remediation Goals for Ecological Endpoints (ORNL, 1997)underline- corrected for an assumed hardness of 100 mg/L
NS = No Standard

Table 4. Pore Water Analytical Results
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Sample I.D.	Location / Comment	Sample Date	Sampling Group	Aluminum, Dis. EPA M200.7	Antimony, Dis. EPA M200.7	Arsenic (III), TR EPA M1632 Mod.	Arsenic (V), TR Calculated	Arsenic Total, Diss EPA M200.8	Barium, Diss. EPA M200.7	Beryllium, Dis. EPA M200.7	Cadmium, Dis. EPA M200.7	Calcium, Dis. EPA M200.7	Chromium VI, Diss. Field	Chromium, Dis. EPA M200.7	Cobalt, Diss. EPA M200.7	Copper, Dis. EPA M200.7	Iron, Dis.* EPA M200.7	Lead, Dis. EPA M200.8	Magnesium, Dis. EPA M200.7	Manganese, Dis.* EPA M200.7	Mercury, Dis. EPA M245.1	Mercury, Dis., UltraTrace EPA M1631, Rev. E	Mercury, Methyl, UltraTrace EPA M1630	Nickel, Dis. EPA M200.7	Potassium, Dis. EPA M200.7	Selenium, Dis. EPA M200.8	Silver, Dis EPA M200.7	Sodium, Dis. EPA M200.7	Thallium, Diss. EPA M200.8	Vanadium, Diss. EPA M200.7	Zinc, Dis. EPA M200.7
				Results in µg/L																											
Glacier Creek																															
GC-PW1	background	6/2/2005	CES-SI	< 30	< 20	< 0.008	< 2.992	< 3.0	8.4	< 2	< 2	3,410	10	< 6	< 6	< 10	< 60	< 3	510	< 4.0	< 0.2	0.00216	NA	< 10	< 500	< 3	< 5	< 500	< 2	< 5	< 10
GC-PW2	background	6/2/2005	CES-SI	< 30	< 20	NA	NC	< 3.0	42.3	< 2	< 2	4,550	10	< 6	< 6	< 10	< 60	< 3	522	5.8	< 0.2	0.00070	NA	< 10	< 500	< 3	< 5	670	< 2	< 5	18
GC-PW3	below POTW	6/2/2005	CES-SI	< 30	< 20	**0.021** B	**3.779**	**3.8**	9.6	< 2	< 2	3,030	**20**	< 6	< 6	< 10	< 60	< 3	384	< 4.0	< 0.2	0.00087	NA	< 10	< 500	< 3	< 5	< 500	< 2	< 5	< 10
GC-PW5	below Collector & Rainy	6/1/2005	CES-SI	< 30	< 20	**0.138**	**7.462**	**7.6**	5.7	< 2	< 2	2,620	NM	< 6	< 6	< 10	< 60	< 3	363	< 4.0	< 0.2	0.00043	NA	< 10	< 500	< 3	< 5	< 500	< 2	< 5	< 10
Seventysix Creek																															
76G-PW1	background	6/3/2005	CES-SI	< 30	< 20	< 0.008	< 2.992	< 3.0	3.8	< 2	< 2	2,240	NM	< 6	< 6	< 10	< 60	< 3	149	< 4.0	< 0.2	0.00078	NA	< 10	< 500	< 3	< 5	< 500	< 2	< 5	< 10
76G-PW1 (200.8)	background	6/3/2005	CES-SI	NA	< 5	NA	NC	NA	NA	NA	< 0.05	NA	NM	NA	NA	< 0.1	NA	NA	NA	NA	NA	NA	NA	< 5	NA	NA	NA	NA	NA	NA	NA
76G-PW2	lower Seventysix Creek	6/3/2005	CES-SI	< 30	< 20	< 0.008	< 10.59	**10.6**	< 2	< 2	< 2	3,060	NM	< 6	< 6	< 10	< 60	< 3	266	< 4.0	< 0.2	0.00037	NA	< 10	< 500	< 3	< 5	< 500	< 2	< 5	< 10
76G-PW2 (200.8)	lower Seventysix Creek	6/3/2005	CES-SI	NA	< 5	NA	NC	NA	NA	NA	< 0.05		NM	NA	NA	< 0.1	NA	NA	NA	NA	NA	NA	NA	< 5	NA	NA	NA	NA	NA	NA	NA
South Fork Sauk River																															
SFSR-PW1	below Glacier and Seventysix confluence	6/1/2005	CES-SI	< 30	< 20	**0.016** B	**10.284**	**10.3**	4.9	< 2	< 2	2,510	NM	< 6	< 6	< 10	< 60	< 3	287	< 4.0	< 0.2	0.00098	NA	< 10	< 500	< 3	< 5	< 500	< 2	< 5	< 10
SFSR-PW1 (200.8)	below Glacier and Seventysix confluence	6/1/2005	CES-SI	NA	< 5	NA	NC	NA	NA	NA	< 0.05	NA	NM	NA	NA	< 0.1	NA	NA	NA	NA	NA	NA	NA	< 5	NA	NA	NA	NA	NA	NA	NA
SFSR-PW2	Sauk River Campground	6/1/2005	CES-SI	45	< 20	NA	NC	**14.3**	3.7	< 2	< 2	2,530	NM	< 6	< 6	< 10	< 60	< 3	297	< 4.0	< 0.2	0.00101	NA	< 10	< 500	< 3	< 5	**510**	< 2	< 5	< 10
SFSR-PW2 (200.8)	Sauk River Campground	6/1/2005	CES-SI	NA	< 5	NA	NC	NA	NA	NA	< 0.05	NA	NM	NA	NA	< 0.1	NA	NA	NA	NA	NA	NA	NA	< 5	NA	NA	NA	NA	NA	NA	NA
SFSR-PW3	between Silvertip and Hops Hill Cmpgrd	6/1/2005	CES-SI	< 30	< 20	< 0.008	< 15.79	**15.8**	3.3	< 2	< 2	3,030	NM	< 6	< 6	< 10	< 60	< 3	287	< 4.0	< 0.2	0.00032	< 0.00002	< 10	< 500	< 3	< 5	**530**	< 2	< 5	< 10
SFSR-PW3 (200.8)	between Silvertip and Hops Hill Cmpgrd	6/1/2005	CES-SI	NA	< 5	NA	NC	NA	NA	NA	< 0.05	NA	NM	NA	NA	< 0.1	NA	NA	NA	NA	NA	NA	NA	< 5	NA	NA	NA	NA	NA	NA	NA
MCEE-PW-SFSR-04	below Weden and & near Twin Bridges	8/27/2008	CES-EECA	NA	2.6	NA	NA	**9.4**	NA	NA	< 0.10	**3,500**	NA	< 10	NA	< 10	NA	< 0.1	**600** B	NA	NA	0.0010	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
MCEE-PW-SFSR-05	below Twin Bridges	8/27/2008	CES-EECA	NA	3.2	NA	NA	**10.3**	NA	NA	< 0.10	**3,400**	NA	< 10	NA	< 10	NA	< 0.1	**500** B	NA	NA	0.0007	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
MCEE-PW-SFSR-06	Barlow Summit	8/26/2008	CES-EECA	NA	3.2	NA	NA	**7.9**	NA	NA	< 0.10	**3,500**	NA	< 10	NA	< 10	NA	< 0.1	**500** B	NA	NA	**0.0014**	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
MCEE-PW-SFSR-07	Mowich Camp	8/26/2008	CES-EECA	NA	3.1	NA	NA	**8.6**	NA	NA	< 0.10	**3,600**	NA	< 10	NA	< 10	NA	< 0.1	**500** B	NA	NA	0.0010	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
MCEE-PW-SFSR-08	above Monte Cristo Lake	8/25/2008	CES-EECA	NA	3.0	NA	NA	**8.1**	NA	NA	< 0.10	**3,800**	NA	< 10	NA	< 10	NA	< 0.1	**500** B	NA	NA	0.0011	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
MCEE-PW-SFSR-09	below Monte Cristo Lake	8/25/2008	CES-EECA	NA	4.2	NA	NA	**13.5**	NA	NA	< 0.10	**4,300**	NA	< 10	NA	< 10	NA	< 0.1	**600** B	NA	NA	0.0009	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
Monte Cristo Lake																															
MCEE-PW-MCL-01	Monte Cristo Lake	8/26/2008	CES-EECA	NA	6.3	NA	NA	**2,820**	NA	NA	< 0.10	**7,200**	NA	< 10	NA	< 10	NA	0.2 B	**1,500**	NA	NA	0.0011	NA	NA	NA	< 0.1	< 0.05	NA	NA	NA	**10** B
Background																															
GC-PW1 (Background)	background	6/2/2005	CES-SI	< 30	< 20	< 0.008	< 2.992	< 3.0	8.4	< 2	< 2	3,410	10	< 6	< 6	< 10	< 60	< 3	510	< 4.0	< 0.2	0.00216	NA	< 10	< 500	< 3	< 5	< 500	< 2	< 5	< 10
GC-PW2 (Background)	background	6/2/2005	CES-SI	< 30	< 20	NA	NC	< 3.0	42.3	< 2	< 2	4,550	10	< 6	< 6	< 10	< 60	< 3	522	5.8	< 0.2	0.00070	NA	< 10	< 500	< 3	< 5	670	< 2	< 5	18
76G-PW1 (Background)	background	6/3/2005	CES-SI	< 30	< 5	< 0.008	< 2.992	< 3.0	3.8	< 2	< 0.05	2,240	NM	< 6	< 6	< 0.05	< 60	< 3	149	< 4.0	< 0.2	0.00078	NA	< 0.05	< 500	< 3	< 5	< 500	< 2	< 5	< 10
Background Mean				< 30	< 5	< 0.008	< 2.992	< 3.0	18.2	< 2	< 0.05	3,400	10	< 6	< 6	< 0.05	< 60	< 3	394	3.3	< 0.2	0.00121	NC	< 0.05	< 500	< 3	< 5	390	< 2	< 5	9.3
Standards, corrected for hardness where applicable (used				**10.81**	**mg/L average for surface water samples, excluding portal seeps)**																										
Washington - Aquatic Life (Chronic)[3]				NS	NS	NS	NS	190	NS	NS	0.20	NS	10	NS	NS	1.7	NS	0.21	NS	NS	0.012	0.012	NS	38.7	NS	5	NS	NS	NS	NS	15.87
Washington Drinking Water Criteri[2]				NS	6	NS	NS	10	2,000	4	5	NS	NS	100	NS	NS	300	NS	NS	50	2	2	NS	100	NS	50	100	NS	2	NS	50,000
EPA - Aquatic Life (CCC)[3]				NS	NS	NS	NS	150	NS	NS	0.052	NS	NS	NS	NS	1.3	NS	0.21	NS	NS	0.77	0.77	NS	7.9	NS	4.61	NS	NS	NS	NS	17.94
ORNL - Surface Water PRGs[4]				87	30	190	3.1	NS	4	0.66	1.10	NS	NS	NS	23	12	1,000	3.20	NS	120	1.30	1.30	0.0000028	160	NS	5.00	0.36	NS	12	20	110

Table 4. Pore Water Analytical Results (continued)
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Sample I.D.	Location / Comment	Sample Date	Sampling Group	Temperature (Field)	pH (Field)	pH (Lab)	Turbidity	Conductivity (Field)	Conductivity @25C (Lab) EPA M120.1	Dissolved Oxygen (Field)	Oxygen Reduction Potential (Field)	Hardness as $CaCO_3$, TR EPA M2340B	TDS (Field)	TDS, Residue, Filterable @180 EPA M160.1	Cyanide,Total EPA M335.2	Cyanide, WAD EPA M4500I	Sulfate EPA M300.0
				°C	s.u.	s.u.	NTU	µmhos/cm	µmhos/cm	mg/L	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Glacier Creek																	
GC-PW1	background	6/2/2005	CES-SI	3.57	7.0	**6.52**	47	26	28.0	11.01	254	10.6	20	11.0	< 0.01	< 0.01	1.62
GC-PW2	background	6/2/2005	CES-SI	4.00	**6.0**	**6.21**	9	34	33.0	4.00	250	13.5	20	< 10.0	< 0.01	< 0.01	1.84
GC-PW3	below POTW	6/2/2005	CES-SI	4.54	6.9	**6.63**	17	25	22.0	9.90	233	9.16	20	< 10.0	NA	NA	1.89
GC-PW5	below Collector and Rainy	6/1/2005	CES-SI	7.9	7.1	6.79	17	22	20.0	10.76	128	8.02	10	< 10.0	NA	NA	
Seventysix Creek																	
76G-PW1	background	6/3/2005	CES-SI	6.06	7.2	7.00	46	17	15.0	9.39	229	6.21	10	< 10.0	NA	NA	0.51
76G-PW2	lower Seventysix Creek	6/3/2005	CES-SI	5.35	7.0	6.85	10	24	20.0	11.61	230	8.72	20	< 10.0	NA	NA	1.70
South Fork Sauk River																	
SFSR-PW1	below Glacier and Seventysix confluence	6/1/2005	CES-SI	7.74	6.8	**6.72**	40	23	20.0	7.81	205	7.46	20	< 10.0	< 0.01	< 0.01	2.26
SFSR-PW2	Sauk River Campground	6/1/2005	CES-SI	7.38	7.0	6.89	20	22	20.0	10.73	131	7.54	10	< 10.0	NA	NA	2.45
SFSR-PW3	between Silvertip and Hops Hill Cmpgrd	6/1/2005	CES-SI	7.55	6.8	6.92	24	26	24.0	11.00	215	8.75	20	< 10.0	< 0.01	< 0.01	2.70
MCEE-PW-SFSR-04	below Weden and near Twin Bridges	8/27/2008	CES-EECA	IM	NM	7.2 H	NM	NM	25.0	NM	NM	11	NM	120	NM	NM	< 1
MCEE-PW-SFSR-05	below Twin Bridges	8/27/2008	CES-EECA	NM	NM	7.2 H	NM	NM	23.0	NM	NM	11	NM	120	NM	NM	< 1
MCEE-PW-SFSR-06	Barlow Summit	8/26/2008	CES-EECA	NM	NM	7.2 H	NM	NM	24.0	NM	NM	11	NM	190	NM	NM	2 B
MCEE-PW-SFSR-07	Mowich Camp	8/26/2008	CES-EECA	11.17	6.64	7.2 H	30.2	34.0	27.0	8.98	117	11	20	380	NM	NM	1 B
MCEE-PW-SFSR-08	above Monte Cristo Lake	8/25/2008	CES-EECA	IM	IM	7.2 H	IM	IM	26.0	IM	IM	12	IM	120	NM	NM	1 B
MCEE-PW-SFSR-09	below Monte Cristo Lake	8/25/2008	CES-EECA	11.91	**6.14**	7.2 H	38.3	149	28.0	10.12	176	13	100	290	NM	NM	1 B
Monte Cristo Lake																	
MCEE-PW-MCL-01	Monte Cristo Lake	8/26/2008	CES-EECA	16.29	6.2	6.9 H	957	154	52.0	5.79	24	24	90	120	NM	NM	< 10
Background:																	
GC-PW1	background	6/2/2005	CES-SI	3.57	7	6.52	47	26	28.0	11.01	254	10.6	20	11.0	< 0.01	< 0.01	1.62
GC-PW2	background	6/2/2005	CES-SI	4	6	6.21	9	34	33.0	4.00	250	13.5	20	< 10.0	< 0.01	< 0.01	1.84
76G-PW1	background	6/3/2005	CES-SI	6.06	7.2	7.00	46	17	15.0	9.39	229	6.21	10	< 10.0	NA	NA	0.51
Background Mean				4.5433	6.5	6.73	34	26	25.3	8.13	244	10.10	17	7.0	< 0.01	< 0.01	1.32
Standards																	
Washington - Aquatic Life (Chronic)[1]				12	6.5-8.5	6.5-8.5	NS	NS	NS	9.5	NS	NS	NS	NS	NS	0.0052	NS
Washington Drinking Water Criteri[2]				NS	6.5-8.5	6.5-8.5	NS	700	700	NS	NS	NS	500	500	0.2	NS	250
EPA - Aquatic Life (CCC)[1]				NS	6.5-9	6.5-9	NS	NS	NS	9.5	NS	NS	NS	NS	NS	0.0052	NS
ORNL - Surface Water PRGs[4]				NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.0052	NS	NS

GENERAL NOTES:

All CES samples (except Arsenic (III,) Mercury, UltraTrace, & Mercury, Methyl) were conducted by SVL Analytical, Inc., Kellogg, ID following digestion by M200.2.

All CES-EECA sample analyses were conducted by ACZ Laboratories, Inc., Steamboat Springs, CO.

Arsenic (III), Mercury, UltraTrace, & Mercury, Methyl anlyses were conducted by Brooks Rand, Seattle, WA

Arsenic (V) was calculated from the difference between Arsenic, TR and Arsenic (III), TR

Bolding indicates an exceedence of background mean (Note - background samples that exceed the mean background concentration are not bolded)

Shaded cells indicate that the value exceeds one or more standard; corresponding criteria also shaded.

Italic values indicate that the MDL exceeds the lowest standard

Abbreviations: (200.8) = Second analyses of selected elements by low level detection ICP-MS, < value = Analyte not detected above Method Detection Limit (MDL), µg/L = micrograms per liter, µS/cm = microSiemans per centimeter, B = Analyte detected between MDL and Practical Quantification Limit (PQL) therefore concentration is estimated,
CES = Cascade Earth Sciences, EECA = Engineering Evaluation / Cost Analysis, H = Holding time exceeded., IM = Instrument malfunction, mg/L = milligrams per liter, NA = not analyzed, NC = not calculated, NM = not measured, oC = degrees centigrate, POTW = Pride of the Woods Mine, SI = Site Inspection, s.u. = standard units.

STANDARD NOTES

1 - State of Washington Aquatic Life criteria (WAC 173-201A, DOE 2007), underline - corrected for hardness, *italics* - expressed as Dissolved

2 - State of Washington drinking water criteria (WAC 246-290)

3 - EPA recommended chronic ambient water quality criteria for freshwater aquatic life used (EPA, 2002), underline - corrected for hardness, *italics* - expressed as Dissolved

4 - ORNL Preliminary Remediation Goals for Ecological Endpoints (ORNL, 1997), underline - corrected for an assumed hardness of 100 mg/L

NS = No Standard

Table 5. Sediment Analytical Results
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Sample ID	Location / Comment	Sample Date	Sampling Group (CES, WADNR, Forest Service, Ecology)	Aluminum, Total EPA M6010B	Antimony, Total EPA M6010B	Arsenic (III), TR EPA M1632 Mod.	Arsenic (V), TR Calculated	Arsenic, Total EPA M6010B	Barium, Total EPA M6010B	Beryllium, Total EPA M6010B	Cadmium, Total EPA M6010B	Calcium, Total EPA M6010B	Chromium, Total EPA M6010B	Cobalt, Total EPA M6010B	Copper, Total EPA M6010B	Cyanide, Total EPA M9012A	Cyanide-WAD EPA M4500I	Iron, Total EPA M6010B	Lead, Total EPA M6010B	Magnesium, Total EPA M6010B	Manganese, Total EPA M6010B	Mercury, Total EPA M7471A	Mercury, Methyl, Trace EPA M1630	Nickel, Total EPA M6010B	Potassium, Total EPA M6010B	Selenium, Total EPA M7740	Silver, Total EPA M6010B	Sodium, Total EPA M6010B	Thallium, Total EPA M7841	Vanadium, Total EPA M6010B	Zinc, Total EPA M6010B
				mg/kg																											
Glacier Creek																															
SHA-3394095	background	9/25/2003	WADNR	NA	0.43	NA	NC	122	NA	0.18	0.65	NA	16.4	NA	21.7	NA	NA	NA	26.3	NA	NA	0.874	NA	12.1	NA	< 5.00	0.18	NA	0.14	NA	123
GC-SS1	background	6/2/2005	CES-SI	11,500	5.7	0.000207	52.000	52.0	96.3	< 0.20	0.96	4,110	67.1	8.62	20.6	< 0.50	< 0.50	24,200	8.44	6,180	1,350	NA	< 0.000012	12.2	1,540	0.34	< 0.50	649	< 0.20	51.4	72.8
MCEE-SS-GC-01	background	8/22/2008	CES-EECA	NA	5.8	NA	NC	42.1	NA	NA	0.25 B	NA	15	NA	13	NA	NA	NA	7.88	NA	NA	0.33	NA	NA	NA	< 0.05	0.06 B	NA	NA	NA	66
GC-SS2	background	6/2/2005	CES-SI	10,800	9.9	0.001082	226.999	227.0	109.0	< 0.20	1.55	3,030	49.6	9.39	50.0	< 0.50	< 0.50	24,900	104	5,760	1,600	NA	NA	11.2	1,910	0.36	< 0.50	529	0.263	47.0	163
MCEE-SS-GC-02	background	8/22/2008	CES-EECA	NA	4.8	NA	NC	75.1	NA	NA	0.44	NA	16	NA	16	NA	NA	NA	19.60	NA	NA	0.46	NA	NA	NA	0.11 B	0.18	NA	NA	NA	90
GC-SS3	below POTW	6/2/2005	CES-SI	9,960	11.6	**0.00144**	**249.999**	**250.0**	**98.4**	**0.23**	**1.71**	3,020	**48.9**	**9.56**	**41.0**	NA	NA	25,200	**84.8**	5,220	**1,510**	NA	NA	11.5	**1,680**	0.41	< 0.50	468	**0.280**	47.7	**163**
MCEE-SS-GC-03	below POTW	8/22/2008	CES-EECA	NA	8.3	NA	NC	**133**	NA	NA	0.63	NA	12	NA	**26**	NA	NA	NA	**37.5**	NA	NA	**4.6**	NA	NA	NA	0.08 B	0.21	NA	NA	NA	115
GC-SS4	below POTW	6/2/2005	CES-SI	11,900	7.9	**0.003142**	**366.997**	**367.0**	**94.0**	**0.21**	**1.91**	**3,910**	**48.5**	**10.00**	**67.5**	NA	NA	25,500	**69.3**	5,530	**1,350**	NA	NA	11.7	**1,780**	0.46	< 0.50	**711**	**0.248**	**49.4**	**185**
MCEE-SS-GC-04	below POTW	8/19/2008	CES-EECA	NA	**16.3**	NA	NC	**255**	NA	NA	**1.17**	NA	15	NA	**48**	NA	NA	NA	**78.3**	NA	NA	0.26	NA	NA	NA	0.12 B	**0.52**	NA	NA	NA	**174**
GC-SS5	below Collector and Rainy	6/2/2005	CES-SI	**13,400**	3.8	**0.001536**	**290.998**	**291.0**	**88.4**	< 0.20	**1.79**	**4,230**	**53.5**	**12.50**	**117.0**	< 0.50	< 0.50	**28,800**	**48.2**	7,030	959	NA	NA	**15.8**	**2,360**	< 0.30	< 0.50	**628**	< 0.20	**66.2**	**156**
MCEE-SS-GC-05	below Collector and Rainy	8/19/2008	CES-EECA	NA	3.9	NA	NC	**210**	NA	NA	**0.89**	NA	18	NA	**99**	NA	NA	NA	33.20	NA	NA	0.16 B	NA	NA	NA	0.14 B	0.22	NA	NA	NA	**148**
Glacier Creek near Ore Collector																															
COL-SS-01	near Ore Collector	9/10/2005	CES-SI	NA	5.19	NA	NC	**330.0**	**90.1**	NA	**1.09**	NA	**49.0**	NA	**93.5**	NA	NA	**30,600**	**37.9**	NA	706	NA	NA	NA	NA	NA	NA	NA	NA	NA	**143**
COL-SS-02	near Ore Collector	9/10/2005	CES-SI	NA	5.84	NA	NC	**294.0**	**82.6**	NA	**1.23**	NA	**43.6**	NA	**111.0**	NA	NA	**29,400**	**43.6**	NA	868	NA	NA	NA	NA	NA	NA	NA	NA	NA	**166**
COL-SS-03	near Ore Collector	9/10/2005	CES-SI	NA	5.56	NA	NC	**331.0**	**85.5**	NA	**1.10**	NA	**43.5**	NA	**93.4**	NA	NA	**30,200**	**37.5**	NA	705	NA	NA	NA	NA	NA	NA	NA	NA	NA	**143**
COL-SS-04	near Ore Collector	9/10/2005	CES-SI	NA	3.92	NA	NC	**112.0**	**91.9**	NA	**1.14**	NA	**45.1**	NA	**78.8**	NA	NA	**27,900**	32.1	NA	790	NA	NA	NA	NA	NA	NA	NA	NA	NA	**120**
COL-SS-05	near Ore Collector	9/10/2005	CES-SI	NA	**14.5**	NA	NC	**469.0**	79.5	NA	**1.22**	NA	**36.7**	NA	**97.6**	NA	NA	**29,100**	**72.6**	NA	821	NA	NA	NA	NA	NA	NA	NA	NA	NA	**165**
Glacier Creek near Concentrator																															
CON-SS-01	near Concentrator	9/10/2005	CES-SI	NA	10.6	NA	NC	**160.0**	**90.6**	NA	**0.89**	NA	**41.2**	NA	**30.5**	NA	NA	24,500	**55.3**	NA	**1,230**	NA	NA	NA	NA	NA	NA	NA	NA	NA	**123**
CON-SS-02	near Concentrator	9/10/2005	CES-SI	NA	4.01	NA	NC	**130.0**	**91.8**	NA	**1.12**	NA	**52.6**	NA	**74.7**	NA	NA	**30,000**	35.1	NA	864	NA	NA	NA	NA	NA	NA	NA	NA	NA	**138**
CON-SS-03	near Concentrator	9/10/2005	CES-SI	NA	5.08	NA	NC	**282.0**	**92.4**	NA	**1.23**	NA	**48.6**	NA	**92.1**	NA	NA	**31,200**	**46.1**	NA	799	NA	NA	NA	NA	NA	NA	NA	NA	NA	**150**
CON-SS-04	near Concentrator	9/10/2005	CES-SI	NA	14.1	NA	NC	**267.0**	**106.0**	NA	**1.19**	NA	**48.2**	NA	**82.8**	NA	NA	**31,400**	30	NA	715	NA	NA	NA	NA	NA	NA	NA	NA	NA	**143**
CON-SS-05	near Concentrator	9/10/2005	CES-SI	NA	3.44	NA	NC	**197.0**	**84.6**	NA	**0.92**	NA	**44.9**	NA	**75.8**	NA	NA	**28,800**	29.5	NA	616	NA	NA	NA	NA	NA	NA	NA	NA	NA	**122**
Seventysix Creek																															
76G-SS1	background	6/2/2005	CES-SI	15,200	< 2.0	< 0.000075	< 16.800	16.8	39.1	0.20	1.30	3,670	42.6	10.60	15.6	NA	NA	28,700	9.8	10,600	657	NA	NA	14.6	1,020	0.39	< 0.50	287	< 0.20	48.9	77.4
MCEE-SS-76G-01	background	8/21/2008	CES-EECA	NA	2.6	NA	NC	27.3	NA	NA	0.33	NA	21	NA	12	NA	NA	NA	20.80	NA	NA	0.10 B	NA	NA	NA	0.08 B	0.17	NA	NA	NA	81.0
76G-SS2	lower Seventysix Creek	6/2/2005	CES-SI	**17,100**	11.2	**0.00082**	**275.999**	**276.0**	52.8	< 0.20	**2.91**	**4,730**	**41.5**	**10.50**	**34.2**	NA	NA	**30,600**	**89.5**	**9,200**	950	NA	< 0.000012	10.2	**1,880**	< 0.30	< 0.50	**761**	< 0.20	**61.9**	**295**
MCEE-SS-76G-02	lower Seventysix Creek	8/21/2008	CES-EECA	NA	12.1	NA	NC	**311**	NA	NA	**1.71**	NA	19	NA	**29**	NA	NA	NA	**172**	NA	NA	0.12 B	NA	NA	NA	0.09 B	**0.58**	NA	NA	NA	**285**
South Fork Sauk River																															
SFSR-SS1	below Glacier and Seventysix confluence	6/1/2005	CES-SI	**15,300**	7.1	**0.002675**	**268.997**	**269.0**	62.8	**0.20**	**1.90**	3,510	**46.1**	**10.60**	**79.5**	< 0.50	< 0.50	**29,500**	**65.4**	**8,720**	688	NA	0.000017 B	**16.1**	**1,840**	0.46	< 0.50	**518**	< 0.20	**58.5**	**177**
MCEE-SS-SFSR-01	below Glacier and Seventysix confluence	8/19/2008	CES-EECA	NA	10.5	NA	NC	**239**	NA	NA	**1.04**	NA	23	NA	**56**	NA	NA	NA	**96**	NA	NA	0.18 B	NA	NA	NA	0.14 B	0.27	NA	NA	NA	**192**
SFSR-SS2	Sauk River Campground	6/1/2005	CES-SI	**15,300**	**13.5**	**0.002411**	**543.998**	**544.0**	66.8	**0.22**	**1.99**	**3,630**	**56.9**	**11**	**115**	NA	NA	**28,400**	**136**	**7,740**	747	NA	NA	**15.4**	**2,020**	0.33	< 0.50	**624**	< 0.20	**56.2**	**206**
MCEE-SS-SFSR-02	Sauk River Campground	8/19/2008	CES-EECA	NA	**12.8**	NA	NC	**453**	NA	NA	**1.17**	NA	26	NA	**92**	NA	NA	NA	**101**	NA	NA	0.23	NA	NA	NA	0.19 B	**0.63**	NA	NA	NA	**222**
SFSR-SS3	between Silvertip and Hops Hill Cmpgrd	6/1/2005	CES-SI	**15,700**	**17.3**	**0.004274**	**479.996**	**480.0**	57.6	**0.23**	**2.02**	**3,610**	**61.5**	**10.90**	**116.0**	< 0.50	< 0.50	**28,400**	**156**	**8,450**	715	NA	< 0.000012	**17.7**	**1,910**	0.34	< 0.50	**618**	< 0.20	**50.7**	**192**
MCEE-SS-SFSR-03	between Silvertip and Hops Hill Cmpgrd	8/19/2008	CES-EECA	NA	10.3	NA	NC	**194**	NA	NA	0.61	NA	24	NA	**68**	NA	NA	NA	**60**	NA	NA	0.21	NA	NA	NA	0.22 B	**0.47**	NA	NA	NA	**127**
MCEE-SS-SFSR-04	below Weden and near Twin Bridges	8/27/2008	CES-EECA	NA	**24.2**	NA	NC	**315**	NA	NA	**0.87**	NA	41	NA	**95**	NA	NA	NA	**105**	NA	NA	< 0.05	NA	NA	NA	0.18 B	**0.73**	NA	NA	NA	**172**
MCEE-SS-SFSR-05	below Twin Bridges	8/27/2008	CES-EECA	NA	**20.7**	NA	NC	**187**	NA	NA	0.77	NA	38	NA	**89**	NA	NA	NA	**90.9**	NA	NA	< 0.05	NA	NA	NA	0.15 B	**0.53**	NA	NA	NA	**165**
MCEE-SS-SFSR-06	Barlow Summit	8/26/2008	CES-EECA	NA	10.6	NA	NC	**383**	NA	NA	**0.90**	NA	**49**	NA	**81**	NA	NA	NA	**145**	NA	NA	< 0.05	NA	NA	NA	0.25 B	**1.38**	NA	NA	NA	**165**
MCEE-SS-SFSR-07	Mowich Camp	8/26/2008	CES-EECA	NA	**51**	NA	NC	**384**	NA	NA	**1.34**	NA	**45**	NA	**83**	NA	NA	NA	**171**	NA	NA	< 0.05	NA	NA	NA	0.25 B	**1.35**	NA	NA	NA	**157**
MCEE-SS-SFSR-08	above Monte Cristo Lake	8/25/2008	CES-EECA	NA	**47**	NA	NC	**348**	NA	NA	**0.96**	NA	**54**	NA	**79**	NA	NA	NA	**111**	NA	NA	0.12 B	NA	NA	NA	0.23 B	**1.16**	NA	NA	NA	**172**
SHA-3374088	near Monte Cristo Lake	9/12/2003	Ecology	NA	**15.7**	NA	NC	**1,090**	NA	**0.17**	**3.90**	NA	**36.6**	NA	**207**	NA	NA	NA	**278**	NA	NA	0.091	NA	**96.5**	NA	< 0.50	**6.94**	NA	**0.17**	NA	**806**
MCEE-SS-SFSR-09	below Monte Cristo Lake	8/25/2008	CES-EECA	NA	**18.0**	NA	NC	**408**	NA	NA	**0.81**	NA	**43**	NA	**70**	NA	NA	NA	**109**	NA	NA	< 0.05	NA	NA	NA	0.17 B	**0.99**	NA	NA	NA	**193**
Monte Cristo Lake																															
MCEE-SS-MCL-01	Monte Cristo Lake	8/26/2008	CES-EECA	NA	10.3	NA	NC	**338**	NA	NA	**0.99**	NA	**65**	NA	**94**	NA	NA	NA	**89.5**	NA	NA	0.15 B	NA	NA	NA	0.46	**1.44**	NA	NA	NA	**147**
MCEE-SS-MCL-02	Monte Cristo Lake	8/26/2008	CES-EECA	NA	**41**	NA	NC	**541**	NA	NA	**0.95**	NA	**42**	NA	**87**	NA	NA	NA	**158**	NA	NA	< 0.05	NA	NA	NA	0.17 B	**3.90**	NA	NA	NA	**197**
MCEE-SS-MCL-03	Monte Cristo Lake	8/26/2008	CES-EECA	NA	**36.0**	NA	NC	**418**	NA	NA	0.78	NA	**43**	NA	**69**	NA	NA	NA	**111**	NA	NA	< 0.05	NA	NA	NA	0.16 B	**0.83**	NA	NA	NA	**191**
MCEE-SS-MCL-04	Monte Cristo Lake	8/26/2008	CES-EECA	NA	**24.2**	NA	NC	**656**	NA	NA	**1.07**	NA	**40**	NA	**76**	NA	NA	NA	**146**	NA	NA	< 0.05	NA	NA	NA	0.14 B	**1.98**	NA	NA	NA	**250**
MCEE-SS-MCL-05	Monte Cristo Lake	8/26/2008	CES-EECA	NA	**16.1**	NA	NC	**413**	NA	NA	**1.22**	NA	**57**	NA	**92**	NA	NA	NA	**111**	NA	NA	0.11 B	NA	NA	NA	0.35	**1.26**	NA	NA	NA	**193**
MCEE-SS-MCL-06	Monte Cristo Lake	8/26/2008	CES-EECA	NA	0.0085	NA	NC	0.2810	NA	NA	**1.25**	NA	**56**	NA	**100**	NA	NA	NA	**133**	NA	NA	0.19 B	NA	NA	NA	0.35	**2.21**	NA	NA	NA	**202**
Background Mean				12,500	14.36	0.00044	95.8	80.33	81.5	0.15	0.78	3,603	32.53	9.54	21.27	< 0.50	< 0.50	25,933	28.12	7,513	1,202	0.44	NC	12.5	1,490	0.54	0.19	488	0.15	49.1	96.17
Standards																															
WA - Freshwater (under development) [1]				NS	0.6	NS	NS	51	NS	NS	1	NS	100	NS	830	NS	NS	NS	430	NS	NS	0.75	NS	70	NS	NS	2.5	NS	NS	NS	160
WA - Marine [2]				NS	NS	NS	NS	57	NS	NS	5.1	NS	260	NS	390	NS	NS	NS	450	NS	NS	0.41	NS	NS	NS	NS	6.1	NS	NS	NS	410
EPA - Freshwater TEL [3]				NS	NS	NS	NS	5.9	NS	NS	0.596	NS	37.3	NS	35.7	NS	NS	NS	35	NS	NS	0.174	NS	18	NS	NS	NS	NS	NS	NS	123.1
EPA - Freshwater PEL [4]				NS	NS	NS	NS	17	NS	NS	3.53	NS	90	NS	197	NS	NS	NS	91.3	NS	NS	0.486	NS	35.9	NS	NS	NS	NS	NS	NS	315
ORNL - Freshwater [5]				NS	NS	NS	NS	42	NS	NS	4.2	NS	159	NS	77.7	NS	NS	NS	110	NS	NS	0.7	NS	38.5	NS	NS	1.8	NS	NS	NS	270

Table 5. Sediment Analytical Results (continued)
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Sample ID	Description of Location	Sample Date	Sampling Group (CES, WADNR, Forest Service, Ecology)	Total Organic Carbon Leco Furnace	Size Fraction by Hydrometer ASA #9			Solids (Brooks Rand LLC) CLP SOW/398, PART F, D-98	Percent Solids	Texture Classification ASTM D-422
					Clay	Sand	Silt			
				%	%			%	%	
Glacier Creek										
SHA-3394095	background	9/25/2003	WADNR	NA	NA	NA	NA	NA	NA	NA
GC-SS1	background	6/2/2005	CES-SI	0.130	0.0	100.0	0.0	82.22	83.0	Sand
MCEE-SS-GC-01	background	8/22/2008	CES-EECA	NA	NA	NA	NA	NA	NA	NA
GC-SS2	background	6/2/2005	CES-SI	0.130	0.0	98.0	2.0	74.86	78.0	Sand
MCEE-SS-GC-02	background	8/22/2008	CES-EECA	NA	NA	NA	NA	NA	NA	NA
GC-SS3	below POTW	6/2/2005	CES-SI	0.300	2.0	88.0	10.0	70.81	79.0	Sand
MCEE-SS-GC-03	below POTW	8/22/2008	CES-EECA	NA	NA	NA	NA	NA	NA	NA
GC-SS4	below POTW	6/2/2005	CES-SI	0.280	2.0	90.0	8.0	77.33	85.0	Sand
MCEE-SS-GC-04	below POTW	8/19/2008	CES-EECA	NA	NA	NA	NA	NA	NA	NA
GC-SS5	below Collector and Rainy	6/2/2005	CES-SI	0.330	2.0	94.0	4.0	86.61	89.0	Sand
MCEE-SS-GC-05	below Collector and Rainy	8/19/2008	CES-EECA	NA	NA	NA	NA	NA	NA	NA
Glacier Creek near Ore Collector										
COL-SS-01	near Ore Collector	9/10/2005	CES-SI	NA	NA	NA	NA	NA	84.5	NA
COL-SS-02	near Ore Collector	9/10/2005	CES-SI	NA	NA	NA	NA	NA	76.1	NA
COL-SS-03	near Ore Collector	9/10/2005	CES-SI	NA	NA	NA	NA	NA	84.5	NA
COL-SS-04	near Ore Collector	9/10/2005	CES-SI	NA	NA	NA	NA	NA	77.5	NA
COL-SS-05	near Ore Collector	9/10/2005	CES-SI	NA	NA	NA	NA	NA	89.7	NA
Glacier Creek near Concentrator										
CON-SS-01	near Concentrator	9/10/2005	CES-SI	NA	NA	NA	NA	NA	81.3	NA
CON-SS-02	near Concentrator	9/10/2005	CES-SI	NA	NA	NA	NA	NA	79.3	NA
CON-SS-03	near Concentrator	9/10/2005	CES-SI	NA	NA	NA	NA	NA	83.2	NA
CON-SS-04	near Concentrator	9/10/2005	CES-SI	NA	NA	NA	NA	NA	81.9	NA
CON-SS-05	near Concentrator	9/10/2005	CES-SI	NA	NA	NA	NA	NA	82.1	NA
Seventysix Creek										
76G-SS1	background	6/2/2005	CES-SI	0.140	0.0	98.0	2.0	79.73	82.0	Sand
MCEE-SS-76G-01	background	8/21/2008	CES-EECA	NA	NA	NA	NA	NA	NA	NA
76G-SS2	lower Seventysix Creek	6/2/2005	CES-SI	0.220	0.0	96.0	4.0	85.35	88.0	Sand
MCEE-SS-76G-02	lower Seventysix Creek	8/21/2008	CES-EECA	NA	NA	NA	NA	NA	NA	NA
South Fork Sauk River										
SFSR-SS1	below Glacier and Seventysix confluence	6/1/2005	CES-SI	0.340	2.0	94.0	4.0	76.63	81.0	Sand
MCEE-SS-SFSR-01	below Glacier and Seventysix confluence	8/19/2008	CES-EECA	NA	NA	NA	NA	NA	NA	NA
SFSR-SS2	Sauk River Campground	6/1/2005	CES-SI	0.270	0.0	96.0	4.0	76.73	76.0	Sand
MCEE-SS-SFSR-02	Sauk River Campground	8/19/2008	CES-EECA	NA	NA	NA	NA	NA	NA	NA
SFSR-SS3	between Silvertip and Hops Hill Cmpgrd	6/1/2005	CES-SI	0.190	0.0	98.0	2.0	81.65	80.0	Sand
MCEE-SS-SFSR-03	between Silvertip and Hops Hill Cmpgrd	8/19/2008	CES-EECA	NA	NA	NA	NA	NA	NA	NA
MCEE-SS-SFSR-04	below Weden and near Twin Bridges	8/27/2008	CES-EECA	NA	NA	NA	NA	NA	NA	NA
MCEE-SS-SFSR-05	below Twin Bridges	8/27/2008	CES-EECA	NA	NA	NA	NA	NA	NA	NA
MCEE-SS-SFSR-06	Barlow Summit	8/26/2008	CES-EECA	NA	NA	NA	NA	NA	NA	NA
MCEE-SS-SFSR-07	Mowich Camp	8/26/2008	CES-EECA	NA	NA	NA	NA	NA	NA	NA
MCEE-SS-SFSR-08	above Monte Cristo Lake	8/25/2008	CES-EECA	NA	NA	NA	NA	NA	NA	NA
SHA-3374088	near Monte Cristo Lake	9/12/2003	WADNR	NA	NA	NA	NA	NA	NA	NA
MCEE-SS-SFSR-09	below Monte Cristo Lake	8/25/2008	CES-EECA	NA	NA	NA	NA	NA	NA	NA
Monte Cristo Lake										
MCEE-SS-MCL-01	Monte Cristo Lake	8/26/2008	CES-EECA	NA	NA	NA	NA	NA	NA	NA
MCEE-SS-MCL-02	Monte Cristo Lake	8/26/2008	CES-EECA	NA	NA	NA	NA	NA	NA	NA
MCEE-SS-MCL-03	Monte Cristo Lake	8/26/2008	CES-EECA	NA	NA	NA	NA	NA	NA	NA
MCEE-SS-MCL-04	Monte Cristo Lake	8/26/2008	CES-EECA	NA	NA	NA	NA	NA	NA	NA
MCEE-SS-MCL-05	Monte Cristo Lake	8/26/2008	CES-EECA	NA	NA	NA	NA	NA	NA	NA
MCEE-SS-MCL-06	Monte Cristo Lake	8/26/2008	CES-EECA	NA	NA	NA	NA	NA	NA	NA

GENERAL NOTES:

All CES samples (except Arsenic (III,) Mercury, UltraTrace, & Mercury, Methyl) were conducted by SVL Analytical, Inc., Kellogg, ID following digestion by M200.2.
All CES-EECA sample analyses were conducted by ACZ Laboratories, Inc., Steamboat Springs, CO.
Arsenic (III), Mercury, UltraTrace, & Mercury, Methyl analyses were conducted by Brooks Rand, Seattle, WA
Arsenic (V) was calculated from the difference between Arsenic, TR and Arsenic (III), TR
Bolding indicates an exceedence of background mean (Note - background samples that exceed the mean background concentration are not bolded)
Shaded cells indicate that the value exceeds one or more standard; corresponding criteria also shaded.
Italic values indicate that the MDL exceeds the lowest standard
Abbreviations: (200.8) = Second analyses of selected elements by low level detection ICP-MS, % = percent, < value = Analyte not detected above Method Detection Limit (MDL), B = Analyte detected between MDL and Practical Quantification Limit (PQL) therefore concentration is estimated, CES = Cascade Earth Sciences, Ecology = Department of Ecology, EECA = Engineering Evaluation / Cost Analysis, H = Holding time exceeded., IM = instrument malfunction, mg/kg = milligrams per kilogram, NA = not analyzed, NM = not measured, POTW = Pride of the Woods Mine, SI = Site Inspection, WADNR = Washington Department of Natural Resources Results (Wolff, McKay, and Norman, 2003).

STANDARD NOTES:

1 - State of Washington, Development of Freshwater Sediment Quality Values (DOE csl recommendations, Sept 2003)
2 - State of Washington, Marine Sediment Management Standards (WAC 172-204-320)
3 - EPA Threshold Effects Level (NOAA, 1999)
4 - EPA Probable Effects Level (NOAA, 1999)
5 - ORNL ecological screening level values for freshwater, lowest chronic value used (ORNL, 1997)
NS = No Standard

Table 6. Waste Rock and Soil Analytical Results
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Sample ID	Location / Comment	Sample Date	Sampling Group (CES, WADNR, Forest Service, Ecology)	Sample Depth	Percent Solids	Soil pH EPA M9045C	Aluminum, Total EPA M6010B	Antimony, Total EPA M6010B	Arsenic III EPA M 1632 (mod)	Arsenic V (calculated)	Arsenic, Total EPA M6010B	Barium, Total EPA M6010B	Beryllium, Total EPA M6010B	Cadmium, Total EPA M6010B	Calcium, Total EPA M6010B	Chromium, Total EPA M6010B	Cobalt, Total EPA M6010B	Copper, Total EPA M6010B	Cyanide, Total EPA M9012A	Cyanide-WAD EPA M4500I	Iron, Total EPA M6010B	Lead, Total EPA M6010B	Magnesium, Total EPA M6010B	Manganese, Total EPA M6010B	Mercury, Total EPA M7471	Mercury, Methyl, Total EPA M1630 Mod.	Nickel, Total EPA M6010B	Potassium, Total EPA M6010B	Selenium, Total EPA M7740	Silver, Total EPA M6010B	Sodium, Total EPA M6010B	Thallium, Total EPA M6010B or M7841	Vanadium, Total EPA M6010B	Zinc, Total EPA M6010B	Sulfur Forms EPA M600/LECO: Sulfur, Total	Sulfur, Pyritic	Sulfur, Non-Extractable	Sulfur, Sulfate	ABAs M600: Acid Generation Potential	Acid Neutralization Potential	Acid-Base Potential
				feet	%	s.u.	mg/kg																												%				t $CaCO_3$/Kt		
Boston-American Mine																																									
MCEE-WR-BA-01	upper WR dump	8/20/2008	CES-EECA	0-0.5	92.0	4.1	NA	0.5 B	NA	NA	72.6	NA	NA	< 0.05	NA	< 1	NA	8	NA	NA	NA	6.24	NA	NA	0.89	NA	NA	NA	0.93	0.20	NA	NA	NA	5	NA	NA	NA	NA	NA	NA	NC
MCEE-WR-BA-02	lower WR dump	8/20/2008	CES-EECA	0-0.5	95.4	7.2	NA	0.4 B	NA	NA	226	NA	NA	0.45	NA	16	NA	131	NA	NA	NA	23.3	NA	NA	0.20 B	NA	NA	NA	0.10 B	0.46	NA	NA	NA	114	0.38	0.19	0.18	0.01 B	12	23	11
Comet Terminal Tram Bunker																																									
SHA - 3394098	bunker soil	9/25/2003	Ecology	0.5	NA	NA	NA	168	NA	NA	31,200	NA	0.15	9.12	NA	11.0	NA	212	NA	NA	NA	7,340	NA	NA	2.28	NA	11.3	NA	< 5.00	17	NA	0.17	NA	180	NA	NA	NA	NA	NA	NA	NC
SHA - 3374087	bunker south soil	9/25/2003	Ecology	0.5	NA	NA	NA	719	NA	NA	14,700	NA	0.11	2.29	NA	11.1	NA	78	NA	NA	NA	1,950	NA	NA	0.368	NA	12.1	NA	< 0.50	5.39	NA	0.12	NA	435	NA	NA	NA	NA	NA	NA	NC
Golden Cord Mine																																									
MCEE-WR-GC-01	upper adit WR dump	8/22/2008	CES-EECA	0-0.5	86.0	4.2	NA	970	NA	NA	33,600	NA	NA	< 10	NA	29 B	NA	383	NA	NA	NA	10,000	NA	NA	1.80	NA	NA	NA	< 10	16 B	NA	NA	NA	450	NA	NA	NA	NA	NA	NA	NC
MCEE-WR-GC-02	lower WR dump	8/22/2008	CES-EECA	0-0.5	85.2	5.4	NA	190	NA	NA	14,300	NA	NA	55	NA	27 B	NA	801	NA	NA	NA	2,790	NA	NA	0.36	NA	NA	NA	< 5	7 B	NA	NA	NA	3550	0.09 B	0.01 B	0.05	0.03 B	3	6	3
Justice Mine																																									
SHA - 10531	WR dump	9/12/2003	Ecology	0.5	NA	NA	NA	12	NA	NA	4,900	NA	< 0.07	6.75	NA	< 0.232	NA	93.3	NA	NA	NA	228	NA	NA	0.61	NA	15.7	NA	< 3.01	< 0.232	NA	0.92	NA	312	NA	NA	NA	NA	NA	NA	NC
MCEE-WR-JU-01	main adit WR dump, middle top	8/21/2008	CES-EECA	0-0.5	83.3	4.4	NA	62	NA	NA	7,320	NA	NA	< 2	NA	28	NA	175	NA	NA	NA	360	NA	NA	0.25	NA	NA	NA	< 2	3 B	NA	NA	NA	382	0.34	0.10	0.18	0.06 B	11	5	-6
MCEE-WR-JU-02	main adit WR dump, southwest top	8/21/2008	CES-EECA	0-0.5	89.4	5.3	NA	4.2	NA	NA	732	NA	NA	1.0 B	NA	217	NA	187	NA	NA	NA	45.2	NA	NA	0.05 B	NA	NA	NA	< 0.2	0.3 B	NA	NA	NA	236	NA	NA	NA	NA	NA	NA	NC
MCEE-WR-JU-03	main adit WR dump, northeast top	8/21/2008	CES-EECA	0-0.5	79.6	4.3	NA	280	NA	NA	39,400	NA	NA	< 10	NA	33	NA	1,660	NA	NA	NA	1,660	NA	NA	0.53	NA	NA	NA	< 10	15 B	NA	NA	NA	557	0.91	0.43	0.37	0.11	28	4	-24
MCEE-WR-JU-04	main adit WR dump, center middle	8/21/2008	CES-EECA	0-0.5	57.1	4.4	NA	110	NA	NA	10,200	NA	NA	< 5	NA	25 B	NA	242	NA	NA	NA	1,370	NA	NA	0.22	NA	NA	NA	< 5	8 B	NA	NA	NA	392	NA	NA	NA	NA	NA	NA	NC
MCEE-WR-JU-05	main adit WR dump, southwest middle	8/21/2008	CES-EECA	0-0.5	93.1	4.4	NA	50 B	NA	NA	7,780	NA	NA	< 5	NA	79	NA	682	NA	NA	NA	369	NA	NA	0.27	NA	NA	NA	< 5	17	NA	NA	NA	269	NA	NA	NA	NA	NA	NA	NC
MCEE-WR-JU-06	main adit WR dump, southwest lower	8/21/2008	CES-EECA	0-0.5	92.3	4.7	NA	50 B	NA	NA	11,700	NA	NA	< 5	NA	56	NA	128	NA	NA	NA	290	NA	NA	0.11 B	NA	NA	NA	< 5	< 3	NA	NA	NA	367	NA	NA	NA	NA	NA	NA	NC
Mystery Mine																																									
WADNR - Mystery Adit 3 Dump	adit 3 WR dump	4/1/2003	WADNR	0.5	NA	NA	NA	NA	NA	NC	14,000	NA	NA	NA	NA	NA	NA	500	NA	NA	230,000	1,700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,100	NA	NA	NA	NA	NA	NA	NC
MM-01-0.5'	adit 1 WR dump	9/9/2005	CES-SI	0.5	88.9	3.36	1,590	4,460	NA	NC	24,300	21	< 0.20	7.41	136	18.6	2.54	691	NA	NA	48,600	8,190	241.0	103	1.78	NA	19.3	1,500	1.54	251	< 50	1.9	9.88	884	1.34	0.17	0.3	0.87	5.31	< 0.3	-5.31
MM-01-1.0'	adit 1 WR dump	9/9/2005	CES-SI	1.0	89.9	3.70	1,270	3,750	NA	NC	24,000	19.4	< 0.20	26.4	91.6	22.1	1.51	1,040	NA	NA	45,500	7,030	116.0	55.9	2.05	NA	17.5	1,600	1.39	94.6	< 50	1.8	5.94	3,540	2.13	0.43	0.51	1.19	13.4	< 0.3	-13.4
MM-02-0.5'	adit 3 WR dump	9/9/2005	CES-SI	0.5	58.6	3.57	1,630	320	NA	NC	17,000	81	< 0.20	11.1	333	28.5	1.70	345	NA	NA	272,000	815	307.0	301	0.590	NA	82.7	< 1,000	< 0.60	7.2	< 50	< 1.5	15.60	278	NA	NA	NA	NA	NA	NA	NC
MM-03-0.5'	adit 3 WR dump	9/9/2005	CES-SI	0.5	86.4	3.34	4,230	650	NA	NC	21,400	32.4	< 0.20	11.2	782	24.0	7.85	823	NA	NA	121,000	2,350	1,420	203	0.832	NA	38.8	2,300	1.67	46.6	< 50	3.5	30.7	1,360	5.2	2.8	0.41	1.99	87.5	< 0.3	-87.5
MM-04-0.5'	adit 3 WR dump	9/9/2005	CES-SI	0.5	87.8	6.18	7,370	20.4	NA	NC	2,480	23.6	0.25	7.11	5,580	11.1	21.20	139	NA	NA	52,500	198	3,000	4,820	0.370	NA	30.3	3,370	< 0.60	4.6	294	5.8	73.9	1,180	NA	NA	NA	NA	NA	NA	NC
MCEE-WR-MY-01	adit 1 WR dump	8/22/2008	CES-EECA	0-0.5	87.2	3.9	NA	900 B	NA	NC	11,700	NA	NA	2.97	NA	4 B	NA	256	NA	NA	NA	2,105	NA	NA	0.64	NA	NA	NA	1.35	292	NA	NA	NA	301	NA	NA	NA	NA	NA	NA	NC
MCEE-WR-MY-02	adit 3 WR dump, near top	8/22/2008	CES-EECA	0-0.5	80.3	4.1	NA	51	NA	NC	4,660	NA	NA	2.25	NA	< 5	NA	129	NA	NA	NA	286	NA	NA	0.85	NA	NA	NA	0.19 B	7.66	NA	NA	NA	566	0.11	0.01 B	0.03	0.07 B	3	0	-3
MCEE-WR-MY-03	adit 3 WR dump, near middle	8/22/2008	CES-EECA	0-0.5	84.6	1.7	NA	8,800	NA	NC	5,290	NA	NA	1.62	NA	< 5	NA	407	NA	NA	NA	89,200	NA	NA	3.06	NA	NA	NA	17.4	307	NA	NA	NA	159	NA	NA	NA	NA	NA	NA	NC
MCEE-WR-MY-04	adit 3 WR dump, near toe	8/22/2008	CES-EECA	0-0.5	85.5	4.2	NA	310	NA	NC	9,690	NA	NA	5.68	NA	7	NA	626	NA	NA	NA	887	NA	NA	0.69	NA	NA	NA	1.40	23.4	NA	NA	NA	1,300	NA	NA	NA	NA	NA	NA	NC
MCEE-WR-MY-05	adit 3 WR dump, duplicate	8/22/2008	CES-EECA	0-0.5	79.6	4.2	NA	60	NA	NC	4,710	NA	NA	1.93	NA	4 B	NA	132	NA	NA	NA	296	NA	NA	0.87	NA	NA	NA	0.10 B	7.48	NA	NA	NA	520	NA	NA	NA	NA	NA	NA	NC
New Discovery Mine																																									
MCEE-WR-ND-01	Northwest adit WR dump	8/22/2008	CES-EECA	0-0.5	79.7	3.7	NA	107	NA	NC	7,170	NA	NA	9 B	NA	19 B	NA	844	NA	NA	NA	1,030	NA	NA	2.41	NA	NA	NA	< 2	17	NA	NA	NA	1180	2.89	1.64	0.81	0.44	90	13	-77
MCEE-WR-ND-02	Southwest adit WR dump	8/22/2008	CES-EECA	0-0.5	84.1	4.1	NA	120 B	NA	NC	22,100	NA	NA	< 10	NA	18 B	NA	268	NA	NA	NA	3,460	NA	NA	0.80	NA	NA	NA	< 10	15 B	NA	NA	NA	1,770	NA	NA	NA	NA	NA	NA	NC
MCEE-WR-ND-03	Barren adit WR dump	8/22/2008	CES-EECA	0-0.5	89.4	5.8	NA	1.0 B	NA	NC	42.6	NA	NA	0.6	NA	3 B	NA	83	NA	NA	NA	14.8	NA	NA	1.69	NA	NA	NA	< 0.1	0.20 B	NA	NA	NA	117	NA	NA	NA	NA	NA	NA	NC
Pride of the Mountain Mine																																									
WADNR - POM Adit 1 Dump	adit 1 (main adit) WR dump	4/1/2003	WADNR	0.5	NA	NA	NA	NA	NA	NC	17,300	NA	NA	7.29	NA	NA	NA	1,010	NA	NA	66,700	7,040	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	941	NA	NA	NA	NA	NA	NA	NC
SHA - 3394096	WR dump	9/25/2003	Ecology	0.5	NA	NA	NA	0.57 J	NA	NC	332	NA	0.17	1.89	NA	9.71	NA	48	NA	NA	NA	130	NA	NA	0.528	NA	7.9	NA	< 5	0.45	NA	0.22	NA	328	NA	NA	NA	NA	NA	NA	NC
MCEE-WR-PM-01	WR dump, top	8/22/2008	CES-EECA	0-0.5	83.2	3.4	NA	40 B	NA	NC	11,700	NA	NA	< 5	NA	9 B	NA	227	NA	NA	NA	1,590	NA	NA	0.60	NA	NA	NA	< 5	8.0 B	NA	NA	NA	250	NA	NA	NA	NA	NA	NA	NC
MCEE-WR-PM-02	WR dump, middle	8/22/2008	CES-EECA	0-0.5	87.8	4.1	NA	52	NA	NC	7,870	NA	NA	5 B	NA	6	NA	397	NA	NA	NA	1,560	NA	NA	0.62	NA	NA	NA	< 2	10	NA	NA	NA	712	1.34	0.76	0.5	0.08 B	42	18	-24
MCEE-WR-PM-03	WR dump, near toe	8/22/2008	CES-EECA	0-0.5	81.9	3.8	NA	103	NA	NC	5,170	NA	NA	5 B	NA	5	NA	630	NA	NA	NA	1,190	NA	NA	0.70	NA	NA	NA	< 2	12	NA	NA	NA	1120	NA	NA	NA	NA	NA	NA	NC
Pride of the Woods Mine																																									
WADNR - POW Dump	WR dump	4/1/2003	WADNR	0.5	NA	NA	NA	NA	NA	NC	15,300	NA	NA	< 1.11	NA	NA	NA	195	NA	NA	55,900	1,450	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	113	NA	NA	NA	NA	NA	NA	NC
SHA - 3394097	WR dump	9/25/2003	Ecology	0.5	NA	NA	NA	416	NA	NC	41,400	NA	0.18	2.42	NA	12.1	NA	517	NA	NA	NA	2,760	NA	NA	8.61	NA	< 5.0	NA	< 5.00	49.1	NA	5.42	NA	271	NA	NA	NA	NA	NA	NA	NC
MCEE-WR-PW-01	WR dump, top	8/22/2008	CES-EECA	0-0.5	86.0	2.9	NA	250	NA	NC	3,980	NA	NA	< 0.05	NA	< 1	NA	70	NA	NA	NA	1,260	NA	NA	1.31	NA	NA	NA	0.74	42.5	NA	NA	NA	21	NA	NA	NA	NA	NA	NA	NC
MCEE-WR-PW-02	WR dump, middle	8/22/2008	CES-EECA	0-0.5	79.9	4.1	NA	170	NA	NC	5,880	NA	NA	0.69	NA	11	NA	221	NA	NA	NA	411	NA	NA	3.72	NA	NA	NA	0.88	19.0	NA	NA	NA	184	0.85	0.30	0.28	0.27	27	0	-27
Rainy Mine																																									
MCEE-WR-RY-01	WR, lower dump	8/21/2008	CES-EECA	0-0.5	88.9	3.5	NA	10.3	NA	NC	7,510	NA	NA	0.33	NA	32	NA	127	NA	NA	NA	232	NA	NA	0.99	NA	NA	NA	0.97	6.33	NA	NA	NA	141	2.02	0.92	0.69	0.41	63	0	-63
MCEE-WR-RY-02	WR, upper dump	8/21/2008	CES-EECA	0-0.5	88.9	3.5	NA	< 80	NA	NC	73,400	NA	NA	1.87	NA	8	NA	523	NA	NA	NA	880	NA	NA	0.76	NA	NA	NA	1.22	16.9	NA	NA	NA	352	NA	NA	NA	NA	NA	NA	NC
Sheridan Mine																																									
MCEE-WR-SH-01	WR dump, top	8/23/2008	CES-EECA	0-0.5	92.5	5.8	NA	< 2	NA	NC	1,720	NA	NA	1.34	NA	27	NA	69	NA	NA	NA	26.0	NA	NA	0.31	NA	NA	NA	0.18 B	0.64	NA	NA	NA	245	NA	NA	NA	NA	NA	NA	NC
MCEE-WR-SH-02	WR dump, middle	8/23/2008	CES-EECA	0-0.5	91.8	3.6	NA	3 B	NA	NC	2,120	NA	NA	4.23	NA	4 B	NA	44	NA	NA	NA	129	NA	NA	0.99	NA	NA	NA	0.75	3.69	NA	NA	NA	971	2.29	0.52	1.23	0.54	72	0	-72
Sidney Mine																																									
MCEE-WR-SY-01	WR dump, south top	8/23/2008	CES-EECA	0-0.5	94.4	4.0	NA	12.5	NA	NC	28,100	NA	NA	1.25	NA	5 B	NA	2,460	NA	NA	NA	105	NA	NA	0.29	NA	NA	NA	1.20	14.9	NA	NA	NA	289	8.54	3.79	4.17	0.58	267	13	-254
MCEE-WR-SY-02	WR dump, north top	8/23/2008	CES-EECA	0-0.5	91.9	4.0	NA	< 40	NA	NC	38,400	NA	NA	1.70	NA	7	NA	1,140	NA	NA	NA	117	NA	NA	0.51	NA	NA	NA	1.13	8.74	NA	NA	NA	337	NA	NA	NA	NA	NA	NA	NC
Haulage Ways																																									
SHA - 10532	unknown	9/25/2003	Ecology	0.5	NA	NA	NA	133	NA	NC	8,450	NA	< 0.072	8.33	NA	< 0.24	NA	1,160	NA	NA	NA	20,400	NA	NA	4.47	NA	< 0.481	NA	< 3.13	320	NA	0.4 J	NA	882	NA	NA	NA	NA	NA	NA	NC
HW-01	near Ore Collector	7/20/2006	CES-SI	0.5	NA	5.47	18,100	0.9	NA	NC	647	61.5	< 2.00	< 2.0	4,410	93.9	12.50	35	NA	NA	28,300	107	8,020.0	503	0.06	NA	21.2	1,900	0.90	1.02	831	< 0.8	71.6	150	NA	NA	NA	NA	NA	NA	NC
HW-02	between Ore Collector and Concentrator	7/20/2006	CES-SI	0.5	NA	3.98	22,100	90	209	10,791	11,000	51.3	< 2.00	2.2	5,520	142.0	11.90	220	NA	NA	59,800	1,120	7,710.0	483	0.61	NA	50.0	1,350	1.30	9.5	1,130	< 2.0	64.7	233	2.21	1.67	<0.01	0.54	52.2	20.6	-31.6
HW-03	between Ore Collector and Concentrator	7/20/2006	CES-SI	0.5	NA	4.18	15,000	4	NA	NC	143	41.2	0.22	0.5	1,270	32.3	5.45	44	NA	NA	14,400	74	1,850.0	549	0.17	NA	9.3	491	< 0.6	0.88	118	< 0.8	32.4	62	NA	NA	NA	NA	NA	NA	NC
HW-04	nearest to Concentrator	7/20/2006	CES-SI	0.5	NA	4.47	13,100	570	NA	NC	22,600	52	< 2.00	5.5	1,970	48.2	9.90	2,880	NA	NA	68,500	2,990	5,150.0	510	0.58	NA	29.0	1,040	1.50	102	< 500	< 4.0	41.4	970	NA	NA	NA	NA	NA	NA	NC
HW-05	near Assay Shack	7/20/2006	CES-SI	0.5	NA	5.90	20,500	< 2	3	60	63	1,170	2.93	< 2.0	14,300	74.2	9.34	68	NA	NA	15,800	23	2,480.0	284	0.03	NA	12.6	561	1.10	0.6	878	< 0.8	104	33	<0.01	<0.01	<0.01	<0.01	<0.3	41.1	41.1
Ore Collector																																									
ORE COLLECTOR	Ore Collector	6/1/2005	Forest Service	0.5-1.0	82.8	3.58	2,350	1,680	NA	NC	28,100	35.2	< 0.20	7.58	250	4.33	1.13	417	NA	NA	58,200	8,460	960	169	2.40	NA	< 1.0	1,750	4.14	72.4	85	< 0.20	14.0	213	NA	NA	NA	NA	NA	NA	NC
COL-01-0.5'	south portion	9/10/2005	CES-SI	0.5	75.2	4.11	10,700	204	NA	NC	41,600	66.8	< 0.20	5.79	1,690	39.60	11.00	1,840	NA	NA	68,200	2,720	4,460	506	8.70	NA	22.3	1,710	2.34	40.2	< 50	< 1.50	41.7	969	2.15	0.6	0.16	1.39	18.8	< 0.3	-18.8
COL-01-2'	south portion	9/10/2005	CES-SI	2	81.0	4.60	7,500	183	NA	NC	37,100	46.7	< 0.20	9.26	3,240	35.90	12.60	896	NA	NA	71,500	3,720	3,690	1,220	3.83	NA	18.3	2,220	2.03	36.2	< 50	< 1.50	26.8	1,350	NA	NA	NA	NA	NA	NA	NC
COL-01-3'	south portion	9/10/2005	CES-SI	3	79.9	4.92	7,350	328	NA	NC	71,600	36.0	< 0.20	15.9	5,130	41.80	12.90	1,760	NA	NA	87,100	2,480	3,830	1,330	5.38	NA	19.4	1,620	3.18	34.1	< 50	< 1.50	34.1	2,130	NA	NA	NA	NA	NA	NA	NC
COL-02-0.5'	south portion	9/10/2005	CES-SI	0.5	85.4	3.49	599	9,860	NA	NC	14,000	26.2	< 0.20	13.7	22.8	29.70	< 0.60	509	NA	NA	33,400	22,500	29.8	29.6	5.45	NA	8.6	1,820	3.23	415	< 50	5.60	1.94	814	NA	NA	NA	NA	NA	NA	NC
COL-02-2'	south portion	9/10/2005	CES-SI	2	88.4	3.53	763	3,240	NA	NC	11,500	30.2	< 0.20	5.95	22.5	29.30	< 0.60	318	NA	NA	32,000	16,000	38.2	18.0	7.75	NA	7.7	1,850	3.91	214	< 50	4.90	2.4	298	NA	NA	NA	NA	NA	NA	NC
COL-03-0.5'	south portion	9/10/2005	CES-SI	3	84.0	3.25	807	3,270	NA	NC	13,200	113	< 0.20	6.06	43.5	25.00	< 0.60	329	NA	NA	40,500	14,700	52	21.2	5.85	NA	10.0	2,450	3.34	182	< 50	4.60	2.66	256	NA	NA	NA	NA	NA	NA	NC
COL-03-2'	south portion	9/10/2005	CES-SI	2	89.2	3.75	1,100	6,640	NA	NC	23,200	30.7	< 0.20	19.5	49.9	35.20	1.39	348	NA	NA	59,000	20,800	59	40.4	6.22	NA	12.5	2,280	3.05	180	< 50	4.10	3.42	2,150	5.01	1.28	0.22	3.51	40.0	< 0.3	-40.0
COL-04	south portion	7/19/2006	CES-SI	3-5.5	NA	3.63	860	3,190	38	10,862	10,900	35.3	< 2.00	10.1	80	38.40	< 6.00	302	NA	NA	47,000	12,400	< 60	23.3	0.27	NA	< 20.0	2,630	3.20	133	< 500	3.40	< 5	317	2.19	0.6	<0.01	1.59	18.8	< 0.3	-18.8
COL-05	south portion	7/19/2006	CES-SI	0.5-1.0	NA	3.03	2,180	2,490	NA	NC	88,700	19.2	< 2.00	< 2.0	150	13.90	< 6.00	51	NA	NA	149,000	720	910	57.9	0.42	NA	< 100.0	750	4.40	9.8	< 500	< 10.00	24.3	38	NA	NA	NA	NA	NA	NA	NC
COL-06	south portion	7/19/2006	CES-SI	6-6.5	NA	5.65	4,340	20	NA	NC	2,160	61.1	< 2.00	7.2	2,020	53.80	9.80	635	NA	NA	51,700	2,220	2,160	340.0	0.41	NA	11.0	3,690	< 0.60	16.2	< 500	< 2.00	27.6	995	NA	NA	NA	NA	NA	NA	NC
COL-07	*sample data missing*	7/19/2006	CES-SI	1-2	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM	DM
COL-08	south portion	7/19/2006	CES-SI	1-7	NA	3.56	3,130	40	NA	NC	21,400	36.0	< 2.00	114	2,790	33.00	7.00	1,200	NA	NA	85,400	11,100	2,000	514.0	0.93	NA	< 50.0	3,500	< 0.60	53.0	< 500	< 10.00	16.2	17,400	NA	NA	NA	NA	NA	NA	NC
COL-09	composite across south spillage area	7/19/2006	CES-SI	6-6.5	NA	3.66	3,870	170	NA	NC	19,200	88.9	2.00	9.8	880	60.30	< 6.00	1,140	NA	NA	65,000	5,210	1,010	532.0	0.40	NA	< 50.0	3,860	1.20	60.2	< 500	< 4.00	27.3	1,730	NA	NA	NA	NA	NA	NA	NC
COL-10	north portion	7/19/2006	CES-SI	0-0.5	NA	4.02	4,990	340	NA	NC	18,600	58.8	< 2.00	2.2	800	59.70	< 6.00	309	NA	NA	85,800	3,580	1,490	409.0	1.01	NA	< 50.0	4,280	1.20	29.7	< 500	< 4.00	25.9	397	NA	NA	NA	NA	NA	NA	NC
COL-11	below fine ore bins	7/19/2006	CES-SI	0.5-1.5	NA	3.33	660	8,770	NA	NC	42,000	22.5	< 2.00	39.8	50	81.50	< 6.00	647	NA	NA	62,500	18,900	< 60	43.9	0.66	NA	< 100.0	1,240	4.30	257	< 500	4.90	< 5	5,160	NA	NA	NA	NA	NA	NA	NC
Concentrator																																									
SHA - 10529	Level 1, West Soil	9/12/2003	Ecology	0.5	NA	NA	NA	1,365	NA	NC	3,460	NA	< 0.07	4.13	NA	2.44	NA	378	NA	NA	NA	9,580	NA	NA	8.5	NA	< 0.469	NA	< 3.05	126	NA	7.5	NA	149	NA	NA	NA	NA	NA	NA	NC
SHA - 10530	Level 1, East Soil	9/12/2003	Ecology	0.5	NA	NA	NA	4,582	NA	NC	34,900	NA	< 0.088	11.4	NA	5.74	NA	516	NA	NA	NA	7,000	NA	NA	7.07	NA	0.604	NA	< 3.80	115	NA	5.3	NA	852	NA	NA	NA	NA	NA	NA	NC
SHA - 3374086	Level 2, West Soil	9/12/2003	Ecology	0.5	NA	NA	NA	3,990	NA	NC	14,600	NA	< 0.10	1.54	NA	1.5	NA	1,340	NA	NA	NA	16,300	NA	NA	4.33	NA	3.26	NA	1.4 J	118	NA	9	NA	471	NA	NA	NA	NA	NA	NA	NC
UPPER MILL	upper mill	6/1/2005	Forest Service	0.5-1.0	75.4	3.32	2,000	2,240	NA	NC	31,300	53.8	< 0.20	8.54	448	6.84	2.71	591	< 0.50	< 0.50	73,000	7,890	1,570	530	2.13	NA	< 1.0	952	2.87	62.4	84	< 2.00	13.5	943	NA	NA	NA	NA	NA	NA	NC
LOWER MILL	lower mill	6/1/2005	Forest Service	0.5-1.0	70.6	3.86	990	4,170	NA	NC	15,000	31.1	< 0.20	7.03	237	2.19	< 0.60	329	< 0.50	< 0.50	49,700	8,800	227	205	1.68	NA	< 1.0	1,050	1.85	91.4	107	< 1.00	11.5	401	NA	NA	NA	NA	NA	NA	NC
CON-01-0.5'	Concentrator ruins	9/10/2005	CES-SI	0.5	91.3	3.48	529	6,460	NA	NC	5,610	28.8	< 0.20	4.43	25.1	37.0	< 0.60	1,080	NA	NA	47,600	21,400	17.1	24.2	6.20	NA	18.1	940	< 6.00	376	< 50	15.8	0.92	452	1.87	1.05	0.02	0.80	32.8	< 0.3	-32.8
CON-01-1.5'	Concentrator ruins	9/10/2005	CES-SI	1.5	80.0	3.40	1,590	10,700	NA	NC	21,700	47.0	< 0.20	12.9	194	33.7	1.20	899	NA	NA	45,600	20,800	490	37.2	3.95	0.040	20.3	1,000	6.77	294	< 50	4.3	9.4	1,290	NA	NA	NA	NA	NA	NA	NC
CON-02-0.5'	probable concentrate storage tank	9/10/2005	CES-SI	0.5	68.0	3.69	5,430	1,130	NA	NC	18,000	445	0.22	2.87	1,420	40.1	3.78	586	NA	NA	60,000	7,370	2,260	235	0.82	NA	33.4	< 1,000	1.36	63.3	< 50	< 1.5	32.8	205	NA	NA	NA	NA	NA	NA	NC
CON-02-1.5'	probable concentrate storage tank	9/10/2005	CES-SI	1.5	79.2	3.45	4,750	4,780	NA	NC	53,300	239	0.60	76.3	2,060	20.2	10.90	4,240	NA	NA	142,000	11,200	444.0	219	1.38	0.018 B	45.6	< 2,500	< 6.00	186	< 50	4.9	21.2	11,600	8.98	7.33	0.6	1.05	229	< 0.3	-229
CON-03-0.5'	tailings, north end	9/10/2005	CES-SI	0.5	89.6	3.39	2,120	3,960	NA	NC	14,500	25.5	< 0.20	7.94	335	32.3	1.93	497	NA	NA	48,200	6,140	459.0	249	1.27	NA	19.5	1,690	0.80	74.0	< 50	1.5	12.3	912	NA	NA	NA	NA	NA	NA	NC
CON-03-1.5'	tailings, north end	9/10/2005	CES-SI	1.5	79.3	3.32	2,690	3,420	NA	NC	11,800	26.5	< 0.20	6.33	509	33.4	1.61	635	NA	NA	47,000	5,170	556	193	1.52	0.020 B	20.9	1,700	0.61	74.6	< 50	< 1.5	14.8	850	NA	NA	NA	NA	NA	NA	NC
CON-04-0.5'	above Concentrator ruins	9/10/2005	CES-SI	0.5	86.6	3.45	1,610	430	NA	NC	41,300	25.7	< 0.20	7.51	142	21.8	0.65	114	NA	NA	68,800	3,580	68.3	170	1.34	NA	26.3	1,500	1.22	23.9	< 50	< 1.5	11.5	441	NA	NA	NA	NA	NA	NA	NC
CON-05-0.5'	Concentrator ruins	9/10/2005	CES-SI	0.5	82.3	3.26	840	6,040	NA	NC	22,600	266	< 0.20	14.4	42.9	17.7	0.65	1,770	NA	NA	38,700	20,800	42.4	44.0	3.28	NA	15.3	1,330	< 6.00	360	< 50	3.4	2.5	1,740	NA	NA	NA	NA	NA	NA	NC
CON-06-0.5'	east of Concentrator ruins and tailings	9/10/2005	CES-SI	0.5	69.0	5.02	23,600	7.6	NA	NC	446	84.4	0.24	1.87	1,920	62.8	12.10	57.7	NA	NA	30,000	84.7	8,440	830	0.108	NA	40.1	2,170	< 0.60	1.01	278	< 1.5	64.4	176	NA	NA	NA	NA	NA	NA	NC
CON-07-0.5'	Haulage Way west of Concentrator ruins & tailings	9/10/2005	CES-SI	0.5	70.1	3.36	3,020	4,300	NA	NC	46,400	125	< 0.20	5.81	476	27.0	6.13	734	NA	NA	86,700	17,200	1,020	133	1.56	NA	35.9	< 2,500	< 6.00	113	< 50	2.2	20.3	549	NA	NA	NA	NA	NA	NA	NC
CON-08-0.5'	tailings	9/10/2005	CES-SI	0.5	89.5	3.02	1,230	5,490	NA	NC	34,600	93.2	< 0.20	6.64	254	23.1	< 0.60	501	NA	NA	72,200	8,860	184	50.9	2.43	NA	26.2	1,500	1.59	118	< 50	2.5	7.72	719	NA	NA	NA	NA	NA	NA	NC
CON-09-0.5'	tailings	9/10/2005	CES-SI	0.5	79.2	3.00	1,080	6,630	NA	NC	92,100	30.2	< 0.20	16.3	12.4	18.5	1.53	1,390	NA	NA	82,900	17,900	33.7	16.6	8.35	NA	30.7	< 2,500	< 6.00	229	< 50	5.6	3.37	1,850	3.39	1.68	0.3	1.41	52.5	< 0.3	-52.5
CON-10	tailings	7/19/2006	CES-SI	1	NA	3.70	3,130	3,900	116	14,784	14,900	27.8	< 0.20	8.0	1,090.0	56.1	4.22	569	NA	NA	57,500	6,200	1,140	298	0.21	NA	3.4	1,900	< 0.60	52.0	86	< 8.0	15.2	1,210	1.11	0.33	<0.01	0.78	10.3	7.2	-3.1
CON-11	tailings	7/19/2006	CES-SI	1	NA	4.45	24,000	140	NA	NC	9,160	47.1	0.28	0.2	1,140	94.5	7.22	292	NA	NA	46,200	955	6,290	383	0.29	NA	18.1	1,240	1.00	12.8	183	< 8.0	71.3	135	NA	NA	NA	NA	NA	NA	NC
CON-12	reworked tailings	7/19/2006	CES-SI	1	NA	4.34	7,440	620	NA	NC	6,640	19.9	< 0.20	< 0.2	750	83.8	1.99	258	NA	NA	37,000	2,760	1,240	131	0.08	NA	5.6	1,120	< 0.60	24.9	328	< 8.0	40.7	64	NA	NA	NA	NA	NA	NA	NC
CON-13	tailings	7/19/2006	CES-SI	1	NA	4.2	10,400	1,210	NA	NC	9,460	22.4	< 0.20	0.3	568	76.2	1.49	231	NA	NA	41,900	3,270	1,270	95.1	0.27	NA	3.3	1,690	< 0.60	55.1	126	< 8.0	32.5	209	NA	NA	NA	NA	NA	NA	NC
CON-14	reworked tailings	7/19/2006	CES-SI	1	NA	4.49	21,600	110	NA	NC	1,760	235	1.32	1.8	3,810	69.2	28.10	452	NA	NA	22,200	857	2,140	1,810	0.18	NA	10.8	769	1.30	17.7	363	< 8.0	88	180	NA	NA	NA	NA	NA	NA	NC
CON-15	tailings	7/19/2006	CES-SI	1	NA	NA	4,350	1,300	110	12,490	12,600	37.1	< 0.20	6.2	692	64.6	4.39	396	NA	NA	58,700	3,530	970	515.0	0.38	NA	5.0	1,930	< 0.60	35.9	130	< 8.0	23.5	900	0.86	0.29	<0.01	0.57	9.1	23.1	14.1
CON-16 (0-1)	tailings	7/19/2006	CES-SI	0-1	NA	4.08	3,320	1,650	NA	NC	14,400	30.9	< 0.20	6.4	468	49.8	5.86	273	NA	NA	55,900	3,980	1,150	908	0.64	NA	3.9	1,780	< 1.50	36.2	55	< 8.0	18.1	570	NA	NA	NA	NA	NA	NA	NC
CON-16 (1-1.5)	tailings	7/19/2006	CES-SI	1-1.5	NA	4.09	2,770	4,790	NA	NC	41,600	30.1	< 0.20	114.0	6,580	20.7	21.00	2,620	NA	NA	117,000	11,800	4,150	7,210	0.22	NA	7.4	1,880	< 1.50	150	93	< 8.0	16.3	18,500	NA	NA	NA	NA	NA	NA	NC
CON-17	tailings	7/19/2006	CES-SI	1	NA	4.56	14,100	500	NA	NC	8,850	19.6	< 0.20	0.6	652	69.4	< 0.60	1,250	NA	NA	85,100	2,570	304	43	0.11	NA	2.1	495	2.40	22.2	605	< 8.0	28.9	160	NA	NA	NA	NA	NA	NA	NC
CON-18 (0-1)	reworked tailings	7/19/2006	CES-SI	0-1	NA	4.57	20,700	50	NA	NC	2,150	522	1.85	1.3	7,390	62.3	6.44	203	NA	NA	19,800	699	2,640	294	0.16	NA	11.4	707	1.10	10.1	883	< 8.0	90.5	139	NA	NA	NA	NA	NA	NA	NC
CON-18 (2-3.0')	reworked tailings	7/19/2006	CES-SI	2-3.0	NA	4.69	25,800	< 2	NA	NC	137	53.3	0.32	< 0.2	1,480	64.6	3.61	30	NA	NA	21,000	37	4,130	161	0.05	NA	9.5	578	0.90	0.56	314	< 8.0	70.8	59	NA	NA	NA	NA	NA	NA	NC
CON-19	tailings	7/19/2006	CES-SI	1	NA	NA	6,470	2,800	204	35,896	36,100	319	0.26	1.4	1,270	50.0	4.80	504	NA	NA	86,800	9,490	2,310	217	0.64	NA	6.6	1,500	< 1.50	131	234	< 8.0	43.9	310	0.89	0.21	0.02	0.66	6.6	5.1	-1.4
Assay Shack																																									
ASSAY SHACK	northwest	6/1/2005	Forest Service	0.5-1.0	73.2	4.69	3,290	2,220	NA	NC	20,600	69.2	< 0.20	4.33	2,340	3.96	2.24	338	< 0.50	NA	55,100	10,200	509	199	36.30	NA	< 1.0	1,060	2.11	48.0	123	1.13	21.4	353	NA	NA	NA	NA	NA	NA	NC
AS-02	middle	7/19/2006	CES-SI	0.5-1.0	NA	4.01	1,370	400	NA	NC	6,980	23.9	< 0.20	3.47	773	54.3	3.6	305	NA	NA	33,200	4,940	276	76	15.30	NA	3.1	261	< 0.6	26.9	488	< 8.00	32.2	644	NA	NA	NA	NA	NA	NA	NC
AS-03	middle	7/19/2006	CES-SI	1.5-2	NA	2.98	980	4,500	437	85,363	85,800	26.2	< 0.20	1.62	260	37.7	2.4	202	NA	NA	121,000	3,310	184	72	0.33	NA	2.7	562	< 3	32.5	392	< 8.00	21.1	450	1.63	0.68	0.02	0.93	21.3	< 0.3	-21.3
AS-04	southeast	7/19/2006	CES-SI	0.5-1.0	NA	3.03	1,510	1,290	NA	NC	32,100	203	< 0.20	1.60	315	27.6	4.4	243	NA	NA	58,400	6,300	198	163	0.25	NA	5.2	1,730	1.9	57.9	127	< 8.00	28.4	320	NA	NA	NA	NA	NA	NA	NC
Mean Background					NC	3.33	18,783	5.04	NC	NC	137.5	48.3	0.21	0.64	2,412	49.5	7.83	29.5	NC	NC	28,740	23.8	6,017	656	0.233	NC	22.2	1,401	0.51	0.32	412	0.75	61.8	74.2	NC	NC	NC	NC	NC	NC	NC
90% UCL - Background					NC	3.48	23,762	7.3	NC	NC	236	62.1	0.28	0.77	3,170	57.5	10.3	40.3	NC	NC	31,692	30.3	8,089	865	0.379	NC	27.6	1,904	0.71	0.39	508	0.75	69.7	93.9	NC	NC	NC	NC	NC	NC	NC
Standards																																									
WA - Method A Indust. Soil Cleanup Levels - Human Receptors[1]					NS	<2 or >12.5	NS	NS	NS	NS	20	NS	NS	2	NS	NS	NS	NS	NS	NS	NS	1,000	NS	NS	2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
WA - Ecological Receptors (p = plant, b = soil biota, w = wildlife[2])					NS	NS	50 *p	5 p	7 w	10 p	NS	102 w	10 p	4 p	NS	42 bp	20 p	50 b	NS	NS	NS	50 p	NS	1,100 p	0.1 b	NS	30	NS	0.3 w	2 p	NS	1 p	2 p	86 p	NS	NS	NS	NS	NS	NS	NS
EPA Indust. PRGs - Human Receptors[3]					NS	NS	990,000	410	NS	NS	1.6	190,000	2,000	810	NS	1400	300	41,000	NS	NS	720,000	800	NS	NS	310	100	20,000 *	NS	5,100	5,100	NS	66	5,200	310,000	NS	NS	NS	NS	NS	NS	NS
EPA - Ecological Receptors (m = mammal, b = bird, i = invertebrate, p = plant[4])					NS	NS	NS	21 m	NS	NS	37 p	NS	NS	29 p	NS	5 p	32 b	61 i	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	120 i	NS	NS	NS	NS	NS	NS	NS
ORNL - Ecological Receptors[5]					NS	NS	NS	5	NS	NS	9.9	283	10	4	NS	0.4	20	60	NS	NS	NS	40.5	NS	NS	0.00051	NS	30	NS	0.21	2	NS	1	2	8.5	NS	NS	NS	NS	NS	NS	NS

GENERAL NOTES:

All CES samples (except Arsenic (III,) Mercury, UltraTrace, & Mercury, Methyl) were conducted by SVL Analytical, Inc., Kellogg, ID following digestion by M200.2.
All CES-EECA sample analyses were conducted by ACZ Laboratories, Inc., Steamboat Springs, CO.
Arsenic (III), Mercury, UltraTrace, & Mercury, Methyl analyses were conducted by Brooks Rand, Seattle, WA
Arsenic (V) was calculated from the difference between Arsenic, TR and Arsenic (III), TR
Bolding indicates an exceedence of background mean (Note - background samples that exceed the mean background concentration are not bolded)
Shaded cells indicate that the value exceeds one or more standard; corresponding criteria also shaded.
Italic values indicate that the MDL exceeds the lowest standard
(200.8) = Second analyses of selected elements by low level detection ICP-MS

STANDARD NOTES:

1 = Washington Department of Ecology MTCA (WAC 173-340) Industial criteria, Table 745-1 (Ecology, 2007).
2 = Washington Department of Ecology MTCA (WAC 173-340) Industial criteria, Table 749-3 (Ecology, 2007).
3 - EPA Region 9 Industrial Preliminary Remediation Goals - (EPA, 2008).
4 - EPA Ecological Soil Screening Levels - Lowest Criteria Listed (EPA, 2000)
5 - ORNL = Oak Ridge National Laboratory Preliminary Remediation Goals for Ecological Endpoints August 1997
* = As soluble salt only
NS = No standard
Paste pH criteria is a Dangerous Waste/RCRA Hazardous Waste designation under the standards

Abbreviations: , % = percent, < value = Analyte not detected above Method Detection Limit (MDL), B = Analyte detected between MDL and Practical Quantification Limit (PQL) therefore concentration is estimated, CES = Cascade Earth Sciences, DM = Data Missing, Ecology = Department of Ecology, EECA = Engineering Evaluation / Cost Analysis, Forest Service = U.S. Forest Service, Region 6,
J = Analyte detected between MDL and Practical Quantification Limit (PQL) therefore concentration is estimated, mg/kg = milligrams per kilogram, NC = not calculated, SI = Site Inspection, s.u. = standard units, t $CaCO_3$/Kt = tons of calcium carbonate needed to neutralize a kiloton of waste, WADNR = Washington Department of Natural Resources Results (Wolff, McKay, and Norman, 2003), WR = waste rock.
Mean and 90%UCL pH values were calculated using the hydrogen ion concentrations.

Table 7. Background Soil Analytical Results
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Sample ID	Location / Comment	Sample Date	Sampling Group	Sample Depth	Percent Solids Solids (SVL)	Paste pH EPA ASA M9	Aluminum, Total EPA M6010B	Antimony, Total EPA M7041	Arsenic, Total EPA M6010B	Barium, Total EPA M6010B	Beryllium, Total EPA M6010B	Cadmium, Total EPA M6010B	Calcium, Total EPA M6010B	Chromium, Total EPA M6010B	Cobalt, Total EPA M6010B	Copper, Total EPA M6010B	Iron, Total EPA M6010B	Lead, Total EPA M6010B	Magnesium, Total EPA M6010B	Manganese, Total EPA M6010B	Mercury, Total EPA M7471	Nickel, Total EPA M6010B	Potassium, Total EPA M6010B	Selenium, Total EPA M7740	Silver, Total EPA M6010B	Sodium, Total EPA M6010B	Thallium, Total EPA M6010B	Vanadium, Total EPA M6010B	Zinc, Total EPA M6010B
				feet	%	s.u.	mg/kg																						
BKG-01-0.5'	Seventysix Creek, upper	9/8/2005	CES-SI	0.5	89.7	4.19	16,900	4.03	110	24.4	< 0.20	0.77	2,680	42.7	13.3	18.5	33,900	28.2	10,800	699	0.177	21.2	1,090	< 0.6	< 0.5	258	< 1.5	62.3	99.1
BKG-02-0.5'	Seventysix Creek, upper	9/8/2005	CES-SI	0.5	87.0	4.20	15,500	4.28	127	70.7	0.30	0.95	2,350	40.9	16.1	78.7	35,800	34.6	9,020	986	0.0683	36.7	3,290	< 0.6	< 0.5	240	< 1.5	56.5	132
BKG-03-0.5'	Glacier Basin, upper	9/8/2005	CES-SI	0.5	90.5	4.39	9,440	2.39	44.7	84.1	0.33	0.45	1,040	42.8	9.35	16.0	27,300	11.6	4,920	783	0.720	33.0	1,540	< 0.6	< 0.5	137	< 1.5	35.3	63.6
BKG-04-0.5'	Glacier Basin, upper	9/8/2005	CES-SI	0.5	95.6	5.43	14,000	6.25	69.9	65.8	0.21	0.61	4,710	47.4	10.7	24.2	30,400	11.0	8,220	1,500	0.773	22.9	1,290	< 0.6	< 0.5	605	< 1.5	66.3	72.7
BKG-05-0.5'	Glacier Basin, upper	9/8/2005	CES-SI	0.5	94.3	5.00	14,000	16.70	74.8	40.2	< 0.20	0.59	3,640	48.9	9.24	22.4	27,700	13.9	8,310	1,010	0.338	22.4	1,280	< 0.6	< 0.5	568	< 1.5	70.4	75.5
BKG-06-0.5'	Mystery Ridge, saddle	9/8/2005	CES-SI	0.5	63.3	4.21	14,800	2.51	23.3	9.7	< 0.20	0.25	797	49.9	1.2	8.2	16,200	14.6	395	101	< 0.0330	7.2	250	0.78	< 0.5	512	< 1.5	42.5	14.4
BKG-07-0.5'	above Justice Mine	9/8/2005	CES-SI	0.5	73.1	3.97	24,900	8.23	700	58.8	0.28	1.13	3,620	39.2	5.29	53.6	29,700	52.3	5,030	403	0.0583	15.9	1,850	0.70	0.54	472	< 1.5	50.7	110
BKG-08-0.5'	ridge between Glacier and Seventysix Creeks	9/8/2005	CES-SI	0.5	70.7	3.72	7,290	1.65	81.5	34.2	< 0.20	0.39	423	53.2	2.3	19.7	22,800	18.3	1,150	323	0.0333	14.1	319	< 0.6	< 0.5	269	< 1.5	67.4	29.6
BKG-09-0.5'	ridge between Glacier and Seventysix Creeks	9/8/2005	CES-SI	0.5	86.8	4.81	39,000	1.90	78.9	83.1	0.49	0.73	3,930	93.5	9.1	40.1	35,500	21.5	11,600	466	0.0583	38.6	2,750	< 0.6	< 0.5	738	< 1.5	89.0	114.0
BKG-10-0.5'	above Concentrator	9/8/2005	CES-SI	0.5	67.1	4.08	32,000	2.43	64.5	12.1	< 0.20	0.54	925	36.0	1.61	13.3	28,100	32.4	723	291	0.147	10.2	354	1.5	0.66	320	< 1.5	77.4	30.6
Mean					81.8	4.19	18,783	5.04	137.5	48.3	0.21	0.64	2,412	49.5	7.83	29.5	28,740	23.8	6,017	656	0.239	22.2	1,401	0.51	0.32	412	0.75	61.8	74.2
Mean/90% UCL					87.7	4.45	23,762	7.31	236.1	62.1	0.28	0.77	3,170	57.5	10.3	40.3	31,692	30.3	8,089	865	0.379	27.6	1,904	0.71	0.39	508	0.75	69.7	93.9
Standards																													
WA - Method A Indust. Soil Cleanup Levels - Human Receptors[1]						<2 or >12.5	NS	NS	20	NS	NS	2	NS	NS	NS	NS	NS	1,000	NS	NS	2	NS	NS	NS	NS	NS	NS	NS	NS
WA - Ecological Receptors (p = plant, b = soil biota, w = wildlife)[2]						NS	50 p	5 p	NS	102 w	10 p	4 p	NS	42 bp	20 p	50 b	NS	50 p	NS	1,100 p	0.1 b	30	NS	0.3 w	2 p	NS	1 p	2 p	86 p
EPA Indust. PRGs - Human Receptors[3]						NS	990,000	410	1.6	190,000	2,000	810	NS	1400	300	41,000	720,000	800	NS	NS	310	20,000 *	NS	5,100	5,100	NS	66	5,200	310,000
EPA - Ecological Receptors (m = mammal, b = bird, i = invertebrate, p = plant)[4]						NS	NS	21 m	37 p	NS	NS	29 p	NS	5 p	32 b	61 i	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	120 i
ORNL - Ecological Receptors[5]						NS	NS	5	9.9	283	10	4	NS	0.4	20	60	NS	40.5	NS	NS	0.00051	30	NS	0.21	2	NS	1	2	8.5

GENERAL NOTES:

Analyses of all CES-SI samples were conducted by SVL Analytical, Inc., Kellogg, ID following digestion by M3050B

Shaded cells indicate that the value exceeds one or more standard; corresponding criteria also shaded.

Mean an 90% UCL values calculated using one half the MDL if results were below the MDL.

Abbreviations: < value = Analyte not detected above indicated Method Detection Limit (MDL)., CES = Cascade Earth Sciences, mg/kg = milligrams per kilogram, SI = Site Inspection, s.u. = standard units.

Mean and 90%UCL pH values were calculated using the hydrogen ion concentrations.

STANDARD NOTES:

1 = Washington Department of Ecology MTCA (WAC 173-340) Industrial criteria, Table 745-1 (Ecology, 2007).

2 = Washington Department of Ecology MTCA (WAC 173-340) Industrial criteria, Table 749-3 (Ecology, 2007).

3 - EPA Region 9 Industrial Preliminary Remediation Goals - (EPA, 2008).

4 - EPA Ecological Soil Screening Levels - Lowest Criteria Listed (EPA, 2000)

5 - ORNL = Oak Ridge National Laboratory Preliminary Remediation Goals for Ecological Endpoints August 1997

* = As soluble salt only

NS = No standard

Paste pH criteria is a Dangerous Waste/RCRA Hazardous Waste designation under the standards

Table 8. Toxicity Characteristic Leaching Procedure & Synthetic Precipitation Leaching Procedure Results For Tailings and Waste Rock Samples
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Sample ID	Location / Comment	Sample Date	Sampling Group	Sample Depth	Arsenic, TCLP EPA M6010B	Arsenic, SPLP EPA M6010B	Barium, TCLP EPA M6010B	Barium, SPLP EPA M6010B	Cadmium, TCLP EPA M6010B	Cadmium, SPLP EPA M6010B	Chromium, TCLP EPA M6010B	Chromium, SPLP EPA M6010B	Copper, TCLP EPA M6010B	Copper, SPLP EPA M6010B	Lead, TCLP EPA M6010B	Lead, SPLP EPA M6010B	Mercury, TCLP EPA M7470	Mercury, SPLP EPA M7470A	Selenium, TCLP EPA M6010B	Selenium, SPLP EPA M6010B	Silver, TCLP EPA M6010B	Silver, SPLP EPA M6010B	Zinc, TCLP EPA M6010B	Zinc SPLP EPA M6010B
				feet	mg/L																			
Boston-American Mine																								
MCEE-WR-BA-02	lower WR dump	8/20/2008	CES-EECA	0-0.5	< 0.04	0.17 B	0.195	0.004 B	< 0.005	< 0.005	< 0.01	< 0.01	0.05	0.01 B	< 0.04	< 0.04	< 0.0002	< 0.0002	< 0.04	< 0.04	< 0.01	< 0.01	0.24	0.03 B
Golden Cord Mine																								
MCEE-WR-GC-02	lower WR dump	8/22/2008	CES-EECA	0-0.5	0.57	0.66	0.016 B	< 0.003	0.057	< 0.005	< 0.01	< 0.01	0.83	0.01 B	< 0.04	< 0.04	< 0.0002	< 0.0002	< 0.04	< 0.04	< 0.01	< 0.01	15.60	0.34
Justice Mine																								
MCEE-WR-JU-01	main adit WR dump, middle top	8/??/2008	CES-EECA	0-0.5	< 0.04	< 0.04	0.105	0.006 B	0.007 B	< 0.005	< 0.01	< 0.01	0.06	0.01 B	< 0.04	< 0.04	< 0.0002	< 0.0002	< 0.04	< 0.04	< 0.01	< 0.01	0.26	0.10
MCEE-WR-JU-03	main adit WR dump, northeast top	8/??/2008	CES-EECA	0-0.5	1.75	0.38	0.068	0.004 B	< 0.005	< 0.005	< 0.01	< 0.01	0.06	0.04 B	< 0.04	< 0.04	< 0.0002	< 0.0002	< 0.04	< 0.04	< 0.01	< 0.01	0.09	0.21
Mystery Mine																								
MM-01-0.5'	adit 1 WR dump	9/10/2005	CES-SI	0.5	0.538	0.236	0.0146	0.0147	< 0.002	0.0026	< 0.006	< 0.006	NA	NA	0.07	0.105	0.00024	0.00075	< 0.04	< 0.04	< 0.005	< 0.005	NA	NA
MM-01-1.0'	adit 1 WR dump	9/10/2005	CES-SI	1.0	0.503	0.276	0.0170	0.0127	0.0023	0.0028	< 0.006	< 0.006	NA	NA	0.1	0.151	0.00028	0.00053	< 0.04	< 0.04	< 0.005	< 0.005	NA	NA
MM-03-0.5'	adit 3 WR dump	9/10/2005	CES-SI	0.5	0.358	0.328	0.0207	0.0183	< 0.002	0.0020	< 0.002	< 0.006	NA	NA	0.0	0.041	< 0.0002	< 0.0002	< 0.04	< 0.04	< 0.005	< 0.005	NA	NA
MCEE-WR-MY-02	adit 3 WR dump, near top	8/22/2008	CES-EECA	0-0.5	< 0.04	< 0.04	0.059	0.006 B	< 0.005	< 0.005	< 0.01	< 0.01	0.03 B	0.02 B	< 0.04	< 0.04	< 0.0002	< 0.0002	< 0.04	< 0.04	< 0.01	< 0.01	0.32	0.20
New Discovery Mine																								
MCEE-WR-ND-01	Northwest adit WR dump	8/22/2008	CES-EECA	0-0.5	< 0.04	0.15 B	0.029	0.005 B	0.032	0.036	< 0.01	< 0.01	0.38	0.40	< 0.04	< 0.04	< 0.0002	< 0.0002	< 0.04	< 0.04	< 0.01	< 0.01	2.23	3.21
Pride of the Mountains Mine																								
MCEE-WR-PM-02	WR dump, middle	8/22/2008	CES-EECA	0-0.5	< 0.04	0.06 B	0.084	0.015 B	0.015 B	0.009 B	< 0.01	< 0.01	0.31	0.15	< 0.04	< 0.04	< 0.0002	< 0.0002	< 0.04	< 0.04	< 0.01	< 0.01	1.80	1.05
Pride of the Woods Mine																								
MCEE-WR-PW-02	WR dump, middle	8/22/2008	CES-EECA	0-0.5	0.04 B	0.08 B	0.034	0.018 B	< 0.005	< 0.005	< 0.01	< 0.01	< 0.01	0.03 B	< 0.04	< 0.04	< 0.0002	< 0.0002	< 0.04	< 0.04	< 0.01	< 0.01	0.04 B	0.08
Rainy Mine																								
MCEE-WR-RY-01	WR, lower dump	8/21/2008	CES-EECA	0-0.5	0.08 B	0.43	0.055	0.053	< 0.005	< 0.005	< 0.01	< 0.01	0.04 B	0.15	< 0.0	0.10 B	< 0.0002	< 0.0002	< 0.04	< 0.04	< 0.01	< 0.01	0.08	0.14
Sheridan Mine																								
MCEE-WR-SH-02	WR dump, middle	8/23/2008	CES-EECA	0-0.5	< 0.04	0.07 B	0.025	0.018 B	< 0.005	0.009 B	< 0.01	< 0.01	< 0.01	0.03 B	< 0.04	< 0.04	< 0.0002	< 0.0002	< 0.04	< 0.04	< 0.01	< 0.01	0.41	1.37
Sidney Mine																								
MCEE-WR-SY-01	WR dump, south top	8/23/2008	CES-EECA	0-0.5	0.51	1.85	0.060	0.022	< 0.005	< 0.005	< 0.01	< 0.01	0.03 B	0.08	< 0.04	< 0.04	< 0.0002	< 0.0002	< 0.04	< 0.04	< 0.01	< 0.01	0.04 B	0.06
Haulage Ways																								
HW-02	between Ore Collector and Concentrator	7/20/2006	CES-SI	0.5	0.629	0.10	< 1.00	0.0185	< 0.0100	0.0059	< 0.05	< 0.006	NA	NA	0.19	0.012	< 0.002	< 0.0001	< 0.05	< 0.04	< 0.05	< 0.005	NA	NA
HW-05	near Assay Shack	7/20/2006	CES-SI	0.5	< 0.05	< 0.025	1.53	< 0.0020	< 0.0100	< 0.0020	< 0.05	< 0.006	NA	NA	< 0.008	< 0.008	< 0.002	< 0.0001	< 0.05	< 0.04	< 0.05	< 0.005	NA	NA
Ore Collector																								
COL-04	south portion	7/19/2006	CES-SI	3-5.5	0.307	0.232	< 1.00	0.0177	0.0123	0.0169	< 0.05	< 0.006	NA	NA	1.1	0.677	< 0.002	< 0.0001	< 0.05	< 0.04	< 0.05	< 0.005	NA	NA
COL-09	composite across south spillage area	7/19/2006	CES-SI	6-6.5	0.361	2.31	< 1.00	0.0478	0.0174	0.0163	< 0.05	< 0.006	NA	NA	0.38	0.441	< 0.002	< 0.0001	< 0.05	< 0.04	< 0.05	< 0.005	NA	NA
Concentrator																								
CON-01-0.5'	Concentrator ruins	9/10/2005	CES-SI	0.5	< 0.025	< 0.025	0.0657	0.642	< 0.002	< 0.002	< 0.006	< 0.006	NA	NA	2.15	2.61	< 0.0002	< 0.0002	< 0.04	< 0.04	< 0.005	< 0.005	NA	NA
CON-02-1.5'	probable concentrate storage tank	9/10/2005	CES-SI	0.5	0.401	0.145	0.108	0.129	0.0076	0.0109	< 0.006	< 0.006	NA	NA	1.81	3.08	< 0.0002	< 0.0002	< 0.04	< 0.04	< 0.005	< 0.005	NA	NA
CON-09-0.5'	tailings	9/10/2005	CES-SI	0.5	6.58	12.2	0.147	0.0383	0.0368	0.0411	< 0.006	< 0.006	NA	NA	49.7	6.60	< 0.0002	< 0.0002	< 0.04	< 0.04	< 0.005	< 0.005	NA	NA
CON-010 -1.0	tailings	7/19/2006	CES-SI	1.0	0.22	0.30	< 1.00	< 0.0020	0.0108	0.0093	< 0.05	< 0.006	NA	NA	0.228	0.139	< 0.002	< 0.0001	< 0.05	< 0.04	< 0.05	< 0.005	NA	NA
CON-15	tailings	7/19/2006	CES-SI	1.0	0.34	0.06	< 1.00	0.0098	< 0.0100	0.0030	< 0.05	< 0.006	NA	NA	0.431	0.119	< 0.002	< 0.0001	< 0.05	< 0.04	< 0.05	< 0.005	NA	NA
CON-19	tailings	7/19/2006	CES-SI	1.0	0.20	< 0.03	< 1.00	0.1840	< 0.0100	0.0033	< 0.05	< 0.006	NA	NA	0.089	0.197	< 0.002	< 0.0001	< 0.05	< 0.04	< 0.05	< 0.005	NA	NA
CON-20	tailings - duplicate of COL-10	7/19/2006	CES-SI	1.0	0.247	0.136	< 1.00	< 0.0020	< 0.0100	0.0098	< 0.05	< 0.006	NA	NA	0.2	0.039	< 0.002	< 0.0001	< 0.05	< 0.04	< 0.05	< 0.005	NA	NA
Assay Shack																								
AS-03 (1.5-2)	middle	7/19/2006	CES-SI	1.5-2	0.771	0.674	< 1.00	0.0432	< 0.0100	< 0.0020	< 0.05	< 0.006	NA	NA	< 0.1	0.219	< 0.002	0.00019	< 0.05	< 0.04	< 0.05	< 0.005	NA	NA
Applicable Standards																								
RCRA TCLP Disposal Limits					5		100		1		5				5		0.2		1		5		5	

GENERAL NOTES:

Analyses of all CES-SI samples were conducted by SVL Analytical, Inc., Kellogg, ID, and analyses of all CES-EECA samples were conducted by ACZ Laboratories, Inc., Steamboat Springs, CO.

Shaded cells indicate that the value exceeds criteria; corresponding criteria also shaded.

Abbreviations: < value = Analyte not detected above Method Detection Limit (MDL), B = Analyte detected between MDL and Practical Quantification Limit (PQL), CES = Cascade Earth Sciences, EECA = Engineering Evaluation / Cost Analysis, mg/L = milligrams per liter, SI = Site Inspection, WR = Waste Rock.

Table 9. Quality Assurance and Quality Control Analytical Results
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Sample I.D.	Location / Comment	Sample Date	Sampling Group	Aluminum, TR or Diss. EPA M200.7	Antimony, TR or Diss. EPA M200.7	Arsenic (III), TR or Diss. EPA M1632 Mod.	Arsenic (V), TR or Diss. Calculated	Arsenic Total, TR or Diss. EPA M200.8	Barium, TR or Diss. EPA M200.7	Beryllium, TR or Diss. EPA M200.7	Cadmium, TR or Diss. EPA M200.7	Calcium, TR or Diss. EPA M200.7	Chromium, TR or Diss. EPA M200.7	Cobalt, TR or Diss. EPA M200.7	Copper, TR or Diss. EPA M200.7	Iron, TR or Diss. EPA M200.7	Lead, TR or Diss. EPA M200.8	Magnesium, TR or Diss. EPA M200.7	Manganese, TR or Diss. EPA M200.7	Mercury, Total, TR or Diss. EPA M245.1	Mercury, Total, UltraTrace, TR or Diss. EPA M1631, Rev. E	Nickel, TR or Diss. EPA M200.7	Potassium, TR or Diss. EPA M200.7	Selenium, TR or Diss. EPA M200.8	Silver, TR or Diss., EPA M200.7	Sodium, TR or Diss. EPA M200.7	Thallium, TR or Diss. EPA M200.8	Vanadium, TR or Diss. EPA M200.7	Zinc, TR or Diss. EPA M200.7
				Results in µg/L																										
PHASE I																														
Duplicates - Water samples																														
SFSR-SW1 (TR)		6/1/2005	CES-SI	< 30	< 20	0.147	9.25	9.4	4	< 2	< 2	2,750	< 6	< 6	< 10	< 60	< 3	309	< 4	< 0.2	0.000770	< 10	< 500	< 3	< 5	< 500	< 2	< 5	< 10
SFSR-SW4 (TR)		6/1/2005	CES-SI	< 30	< 20	NA	NC	< 3	11.1	< 2	< 2	3,100	< 6	< 6	< 10	< 60	< 3	431	< 4	< 0.2	0.000620	< 10	< 500	< 3	< 5	< 500	< 2	< 5	< 10
% Difference				0%	0%	NC	NC	145%	94%	0%	0%	12%	0%	0%	0%	0%	0%	33%	0%	0%	22%	0%	0%	0%	0%	0%	0%	0%	0%
SFSR-SW1 (200.8) (TR)		6/1/2005	CES-SI	NA	< 5	NA	NA	NA	NA	NA	< 0.12	NA	NA	NA	< 1	NA	< 0.55	NA	NA	NA	NA	< 5	NA	NA	NA	NA	< 1	NA	NA
SFSR-SW4 (200.8) (TR)		6/1/2005	CES-SI	NA	< 5	NA	NA	< 2.11	NA	NA	< 0.12	NA	NA	NA	< 1	NA	< 0.55	NA	NA	NA	NA	< 5	NA	NA	NA	NA	< 1	NA	NA
% Difference				NC	0%	NC	NC	NC	NC	NC	0%	NC	NC	NC	0%	NC	0%	NC	NC	NC	NC	0%	NC	NC	NC	NC	0%	NC	NC
SFSR-PW1 (Diss.)		6/1/2005	CES-SI	< 30	< 20	0.016 B	NA	10.3	4.9	< 2	< 2	2,510	< 6	< 6	< 10	< 60	< 3	287	< 4.0	< 0.2	0.000980	< 10	< 500	< 3	< 5	< 500	< 2	< 5	< 10
SFSR-PW4 (Diss.)		6/1/2005	CES-SI	54	< 20	NA	NA	9.5	4.3	< 2	< 2	2,630	< 6	< 6	< 10	< 60	< 3	298	< 4.0	< 0.2	0.000870	< 10	< 500	< 3	< 5	< 500	< 2	< 5	< 10
% Difference				113%	0%	NC	NC	8%	13%	0%	0%	5%	0%	0%	0%	0%	0%	4%	0%	0%	12%	0%	0%	0%	0%	0%	0%	0%	0%
SFSR-PW1 (200.8) (Diss.)		6/1/2005	CES-SI	NA	< 5	NA	NA	NA	NA	NA	< 0.05	NA	NA	NA	< 0.1	NA	NA	NA	NA	NA	NA	< 5	NA	NA	NA	NA	NA	NA	NA
SFSR-PW4 (200.8) (Diss.)		6/1/2005	CES-SI	NA	< 5	NA	NA	NA	NA	NA	< 0.05	NA	NA	NA	< 0.1	NA	NA	NA	NA	NA	NA	< 5	NA	NA	NA	NA	NA	NA	NA
% Difference				NC	0%	NC	NC	NC	NC	NC	0%	NC	NC	NC	0%	NC	NC	NC	NC	NC	NC	0%	NC	NC	NC	NC	NC	NC	NC
Rinsate Blanks																														
SFSR-PW-05 (Diss.)		6/3/2005	CES-SI	< 30	< 20	NA	NC	< 3.0	< 2	< 2	< 2	< 40	< 6	< 6	< 10	< 60	< 3	< 60	< 4.0	< 0.2	0.003680	< 10	< 500	< 3	< 5	< 500	< 2	< 5	< 10
SFSR-PW-05 (200.8) (Diss.)		6/3/2005	CES-SI	NA	< 5	NA	NC	NA	NA	NA	< 0.05	NA	NA	NA	< 0.1	NA	NA	NA	NA	NA	NA	< 5	NA	NA	NA	NA	NA	NA	NA
SFSR-SW-06 (TR)		6/1/2005	CES-SI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.000100	NA	NA	NA	NA	NA	NA	NA	NA
PHASE II																														
Duplicate - Waste Rock/Soil																														
MM-AS-01		9/9/2005	CES-SI	1,160	31.2	1.700 H	1,358.3	1,360	2.5	< 0.66	30.3	69,200	< 6	15	675	16,400	37.5	25,200	4,230	< 0.2	NA	< 10	1,210	< 0.62	0.22	4,420	0.36	< 5	6,590
MM-AS-02		9/9/2005	CES-SI	1,120	29.4	1.500 H	1,248.5	1,250	2.5	< 0.66	29.40	66,300	< 6	14	640	15,700	35.1	24,100	4,060	< 0.2	NA	< 10	1,160	< 0.62	0.23	4,220	0.39	< 5	6,520
% Difference				4%	6%	13%	8%	8%	0%	0%	3%	4%	0%	4%	5%	4%	7%	4%	4%	0%	NC	0%	4%	0%	4%	5%	8%	0%	1%
Rinsate Blank																														
JM-AS-02		9/10/2005	CES-SI	< 30	< 5.6	NA	NC	< 0.43	< 2	< 0.66	< 0.12	72	< 6	< 6	< 3	< 60	< 0.6	< 60	< 4	< 0.2	NA	< 10	< 500	< 0.62	< 0.12	800	< 0.24	< 5	< 10
PHASE III																														
				Results in mg/kg Following EPA Method 3050 Digestion																										
CON-10		7/19/2006	CES-SI	3,130	3,900	116	14,784	14,900	27.8	< 0.20	8.0	1,090.0	56.1	4.22	569	57,500	6,200	1,140	298	0.21	NA	3.4	1,900	< 0.60	52	86	< 8.0	15.2	1,210
CON-20		7/19/2006	CES-SI	3,350	3,900	135	15,765	15,900	26.6	< 0.20	9.5	533	49.2	4.71	598	57,300	5,820	822	360	0.24	NA	5.2	1,830	< 0.60	54	95	< 8.0	13.2	1,350
% Difference				7%	0%	15%	6%	6%	4%	0%	17%	69%	13%	11%	5%	0%	6%	32%	19%	15%	NC	42%	4%	0%	3%	10%	0%	14%	11%
EECA																														
				Results in µg/L																										
Duplicates																														
MCEE-SW-SFSR-03	between Silvertip and Hops Hill Cmpgrd	8/19/2008	CES-EECA	NA	2.3	NA	NC	8.0	NA	NA	< *0.1*	2,800	< 10	NA	< *10*	NA	< 0.1	< 200	NA	NA	0.0005	NA	NA	< 0.1	< 0.05	NA	NA	NA	< 10
MCEE-SW-DP-02	South Fork Sauk River # 3	8/19/2008	CES-EECA	NA	2.4	NA	NC	8.4	NA	NA	< 0.1	2,800	< 10	NA	< *10*	NA	< 0.1	< 200	NA	NA	0.0004	NA	NA	< 1.0	< 0.05	NA	NA	NA	< 10
% Difference				NC	4%	NC	NC	5%	NC	NC	0%	0%	0%	NC	0%	NC	0%	0%	NC	NC	22%	NC	NC	164%	0%	NC	NC	NC	0%
MCEE-DW-MY-01	adit 3 drainage	8/20/2008	CES-EECA	NA	15.4	NA	NA	439	NA	NA	14.5	22,200	< 10	NA	360	6,230	28.3	7,900	1,590	NA	0.0034	NA	NA	< 0.2	0.20 B	NA	NA	NA	2,590
MCEE-SW-DP-01	adit 3 drainage	8/20/2008	CES-EECA	NA	15.9	NA	NA	452	NA	NA	14.9	22,200	< 10	NA	370	6470	28.4	7,900	1,630	NA	0.0034	NA	NA	< 0.2	0.18 B	NA	NA	NA	2,660
% Difference				NC	3%	NC	NC	3%	NC	NC	3%	0%	0%	NC	3%	4%	0%	0%	2%	NC	0%	NC	NC	0%	11%	NC	NC	NC	3%
				Results in mg/kg Following EPA Method 3050 Digestion																										
MCEE-SS-SFSR-03	between Silvertip and Hops Hill Cmpgrd	8/19/2008	CES-EECA	NA	10.3	NA	NC	194	NA	NA	0.61	NA	24	NA	68	NA	60	NA	NA	0.21	NA	NA	NA	0.22 B	0.47	NA	NA	NA	127
MCEE-SS-DP-02	South Fork Sauk River # 3	8/19/2008	CES-EECA	NA	12.4	NA	NC	207	NA	NA	0.59	NA	25	NA	72	NA	63	NA	NA	0.15	NA	NA	NA	0.24	0.45	NA	NA	NA	126
% Difference				NC	19%	NC	NC	6%	NC	NC	3%	NC	4%	NC	6%	NC	5%	NC	NC	33%	NC	NC	NC	9%	4%	NC	NC	NC	1%
MCEE-WR-MY-02	adit 3 WR dump, near top	8/22/2008	CES-EECA	NA	51	NA	NC	4,660	NA	NA	2.25	NA	< *5*	NA	129	NA	286	NA	NA	0.85	NA	NA	NA	0.19 B	7.66	NA	NA	NA	566
MCEE-WR-MY-05	adit 3 WR dump, duplicate	8/22/2008	CES-EECA	NA	60	NA	NC	4,710	NA	NA	1.93	NA	4 B	NA	132	NA	296	NA	NA	0.87	NA	NA	NA	0.10 B	7.48	NA	NA	NA	520
% Difference				NC	16%	NC	NC	1%	NC	NC	15%	NC	22%	NC	2%	NC	3%	NC	NC	2%	NC	NC	NC	62%	2%	NC	NC	NC	8%
				Results in µg/L																										
Rinsate Blanks																														
MCEE-RB-01	Air blank low Hg - POTW	8/23/2008	CES-EECA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.02	NA	NA	NA	NA	NA	NA	NA	NA
MCEE-PW-01	PW equipment blank	8/27/2008	CES-EECA	NA	< 0.0004	NA	NA	< 0.0005	NA	NA	< 0.0001	< 0.2	< 0.01	NA	< 0.01	NA	< 0.0001	< 0.2	NA	NA	0.4	NA	NA	< 0.0001	< 0.00005	NA	NA	NA	< 0.01

GENERAL NOTES:

All CES-SI sample analyses except Arsenic (III) & Mercury, UltraTrace were conducted by SVL Analytical, Inc., Kellogg, ID following digestion by M200.2

All CES-EECA sample analyses were conducted by ACZ Laboratories, Inc., Steamboat Springs, CO.

Arsenic (III) and Mercury, UltraTrace analyses were conducted by Brooks Rand, Seattle, WA

Arsenic (V) was calculated from difference between Arsenic, TR and Arsenic (III)

JM-AS-02 is a sample trowel rinsate blank.

SFSR-PW-05 is an equipment blank on pore water sampling gear.

SFSR-SW-06 is an atmospheric blank.

Abbreviations: < value = analyte not detected above method detection limit (MDL), µg/L = micrograms per liter, B = Analyte detected between MDL and Practical Quantification Limit (PQL), CES = Cascade Earth Sciences, EECA = Engineering Evaluation / Cost Analysis, H = Holding time exceeded for sample, NA = not analyzed, NC = not calculated, PW = pore water, SI = Site Inspection, WR = waste rock.

Table 10. Removal Action Technology Screening Summary
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Technology Class	Process Option	Description	Effectiveness	Implementability	Cost	Operation and Maintenance	Land Impacts	Pros	Cons	Retained?
No Action										
No Action	**No Action**	**No Action**	**NA**	**NA**	**NA**	**NA**	**None**	**No Cost**	**Does not address risk**	**Yes**
Institutional Controls										
Access Restrictions	Fencing	Security fences installed around contaminated areas to limit access	Medium	High	Medium	Medium - due to vandalism	Minimal impact to undisturbed areas	Exposure reduced, exist on-site	High potential for vandalism	Yes
	Warning Signs	Post signs at mines & facilities to warn public of physical and chemical hazards	Low	High	Low	Medium – due to vandalism	Minimal	Simple to install	High potential for vandalism	**Yes**
	Land Use Controls	Legal restrictions to control current and future land use	Medium	Medium	Low	None	None	Low cost	Difficult to implement	No
Physical Hazards										
Access Restrictions	Backfill Workings	Backfill stopes, open stopes, adits, etc.	High	Low	High	Low – subject to subsidence	Moderate – clearing and grubbing and access roads/helipads	Removes physical hazards	Removes potential bat habitat	No
	Adit/Shaft/Stope Plugs	Install concrete or polyurethane foam plugs in adits, shafts, and stopes	Medium	Medium	High	Medium	Moderate – clearing and grubbing and access roads/helipads	Removes physical hazards	Removes potential bat habitat, underground working development may be needed for competent rock	No
	Bat Gates / Bat Culverts	**Install bat-friendly gates / culverts / netting**	**High**	**High**	**Low**	**Medium - due to vandalism**	**Minimal**	**Reduces human and ecological exposure, maintains bat habitat**	**Potential for vandalism**	**Yes**
	Land Use Controls	Legal restrictions to control current and future land use	Medium	Medium	Low	None	None	Low cost	Difficult to implement	No
Engineering Controls										
Solid Waste Cover / Containment	Water- Balanced Soil Cover	Apply soil and establish vegetation to cover contaminant source	High	High	Medium	Low - Inspect for erosion	**Would impact 3-5acres of undisturbed areas for stockpile and access**	Easily implementable, surface infiltration controlled by evapotranspiration	Not effective in high rainfall areas such as the MCMA	No
	Soil Cover	**Soil cover with rock capillary barrier**	**High**	**High**	**Medium**	**Low - Inspect for erosion**		**Easily implementable, control erosion of waste.**	**Does not control infiltration into waste material**	**Yes**
	Geosynthetic Cover	**Multilayer with geomembrane, soil and seed**	**High**	**High**	**High**	**Low - Inspect for erosion**		**Surface infiltration controlled**	**Difficult to install and test**	**Yes**
	Multi-Layered RCRA Cap	Compacted clay layer covered with soil and vegetation in contaminated surface areas	High	High	High	Low - Inspect for erosion		Effective for isolated wastes, surface infiltration would be significantly reduced	High cost	No
Water Containment / Control	**Diversion/ Infiltration**	**Divert adit water to a constructed infiltration system (talus slope), using pipelines or open channels**	**High**	**High**	**Medium**	**Low – pipe/channel cleaning**	**Minimal**	**Diversion, control, and treatment of drainage**	**Added cost & maintenance**	**Yes**
	Adit Plugs	Install concrete or polyurethane plugs to stop flowing water	Uncertain (inadequate information)	High	High	Medium - Inspection for leaks	Minimal impact to undisturbed areas	Potential to eliminate point source discharge	Inadequate information; potential to cause non point source discharge; may reduce flow with ecological ramifications	No
	Underground Control / Reroute	Reroute portions of the underground water away from sulfide deposits and metal loads	Uncertain (inadequate information)	Medium	High	Medium Inspect for leaks	Minimal impact to undisturbed areas	Reduces the metal load to surface water bodies with or without the need for ponds or wetlands	Inadequate information; assessment of underground workings would be first, cost and risk would be very high.	No
Surface Controls	**Grading**	**Level waste rock to reduce slopes for managing runoff, erosion and surface infiltration**	**Medium**	**High**	**Low**	**Low - Inspect for erosion**	**Would impact 3-5 acres of undisturbed areas**	**Easily implemented, offsite transport of waste greatly reduced**	**Effectiveness dependent on combining with other options, limited surface area**	**Yes**
	Revegetation	**Add amendments to waste rock and seed to promote vegetation for controlling water infiltration & erosion**	**Medium**	**High**	**Medium**	**Low - Inspect for erosion**	**Minimal impact to undisturbed areas**	**Easily implemented, offsite transport of waste greatly reduced**	**Effectiveness dependent on combining with other options, highly dependent on amount of topsoil.**	**Yes**
	Erosion Protection/ Run-on Control	**Erosion resistant materials, commercial fabrics placed on steep slopes; run-on diversions to channel water.**	**Medium**	**High**	**Medium**	**Low - Inspect for erosion**	**Minimal impact to undisturbed areas**	**Easily implemented, offsite transport of waste greatly reduced**	**Effectiveness dependent on combining with other options, exposure to human and terrestrial receptors not reduced**	**Yes**

Table 10. Removal Action Technology Screening Summary
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Technology Class	Process Option	Description	Effectiveness	Implementability	Cost	Operation and Maintenance	Land Impacts	Pros	Cons	Retained?
Land Disposal										
On-Site Disposal	**Constructed Repository**	**Excavate waste rock and place in on-Site repository with cover**	**Medium**	**High**	**Medium**	**Medium – inspect stability of cap and leachate collection**	**Would impact 2-5 acres of forest for suitable location**	**Risk and exposure reduced**	**Moderate cost, suitable on-Site location uncertain, long term liability**	**Yes**
		Excavate waste rock and place in on-Site repository with full containment	**High**	**High**	**Medium-High**	**Medium – inspect stability of cap and leachate collection**	**Would impact 2-5 acres of forest for suitable location**	**Risk and exposure greatly reduced**	**Medium-high cost, suitable on-Site location uncertain, long term liability**	**Yes**
Off-Site Disposal	**RCRA Landfill**	**Excavate waste rock and disposed in RCRA-C landfill**	**High**	**High**	**High**	**None – material hauled off Site**	**Minor impacts to transport material off Site**	**Easily implementable, risk and exposure eliminated**	**High transport and disposal costs**	**Yes**
	Solid Waste Landfill	Excavate waste rock and disposed in Subtitle D landfill	High	High	High	None – material hauled off Site	Minor impacts to transport material off Site	Easily implementable, risk and exposure eliminated	High transport costs, Subtitle D likely not to accept waste material	No
Treatment										
Solid Treatment	Reprocessing - Milling And Smelting	Shipping waste material to operating mill and/or smelter facility for extraction of metals	Medium	Low	High	Low – Inspect for erosion	Minor impact to transport material to be processed or process at mine	Risk and exposure eliminated	High Costs, difficult to locate a facility willing to accept material, spent material must be disposed	No
	Thermal Treatment	Thermal treatment of waste material in place	High	Medium	High	Low – Inspect for erosion	Minor impact to transport thermal unit to location	Risk and exposure eliminated	High Cost and spent material must be disposed	No
	Cement/ Pozzolan Additive	Ore/waste rock are solidified with non-leachable cement or pozzolan	High	High	High	Low – Inspect for erosion	Minor impact to transport material to be processed or process at mine	Toxicity and mobility reduced, proven technology	Volume of material will increase, need to be combined with water balance cap to control infiltration	No
	Physical/ Chemical Stabilization	Waste material treated in place when injected with stabilizing agent(s)	Medium	Low	High	Medium – may need to re inject agent	Minor impact to transport material to be processed or process at mine	Toxicity and mobility reduced	Difficult to implement and mix thoroughly, need to be combined with water balance cap	No
Water Treatment / Control	**Settling Pond / Rapid Infiltration Basin**	**Construct settling pond to reduce suspended solids from the adit/seep water**	**Medium**	**High**	**Medium**	**Medium – Excavate and dispose sludge every 3-5 years**	**Minimal < 0.1 acres**	**Passive system that reduces sediment load to surface water bodies, no pumps and motors**	**Only reduces sediments and precipitates formed on air contact. Sludge removal required. Limited area to construct settling ponds in remote locations**	**Yes**
	Anaerobic Wetland	Anaerobic wetlands to reduce metals from the adit/seep water	Low	Low	Medium	Medium – Dredge and replace media every 5-10 years & baffles every 2 years	~ 0.2 – 0.5 acres	Passive system that reduces metal load, no pumps and motors	Prone to plugging, less effective in winter, size requirement	No
	Aerobic Wetland	Aerobic wetlands to reduce metals from the adit/seep water	Medium	Low	Medium	Low – Inspect for erosion and sludge build-up	~ 0.3 acres	Passive system that reduces metal load, no pumps and motors	Less effective in winter	No
	Polyacrylamide logs (FlocLogs)	**Installation of FlocLogs in adit/seep diversion to either settling pond or infiltration basin.**	**Medium**	**High**	**Low**	**Low - Annual replacement of FlocLogs**	**Minimal**	**Passive system that reduced metal load through enhanced flocculation and filtration.**	**Bench/pilot studies needed, operation in winter conditions unknown**	**Yes**
	Nano-Composite Polymer	High capacity nano-composite polymer particle engineered to remove arsenic and other metals from water.	High	Unknown	Unknown	Unknown	Minimal	Very promising treatment technology that can remove arsenic and other metals from water.	Not in full scale production yet. Many unknowns about the long-term viability, costs, maintenance, and removal efficiencies. Bench/pilot testing needed.	TBC

NOTES:
Bold items retained for evaluation.
NA – Not Applicable
TBC – To be considered

Table 11. Surface Water ARARs and Proposed Cleanup Goals (total recoverable µg/L)
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Analyte	Apparent Background Concentration[a]	Mean Concentration	Maximum Detected Concentration	State of Washington		Federal		Human Health Risk-Based Criteria[d]	Proposed Surface Water Cleanup Goal[e]	Comments/Justification[e]
				WAC 173-201A	WAC 246-290	Clean Water Act Section 304				
				Protection of Aquatic Life, Chronic[b]	Drinking Water criteria	Human Health Consumption of Water+Organism[b]	Freshwater Chronic[b]			
Arsenic (As)	1.63	7.52	68.5	190	10	0.018	150	0.0008	150	Lowest enforceable ecological criteria
Barium (Ba)	6.6	5.47	10.1	NS	2,000	1,000	NS	NC	--	No enforceable ecological criteria
Cadmium (Cd)	<MDL (0.037 - 2)	<MDL (0.037 - 2)	<2	0.16	5	NS	0.043	NC	--	Surface water does not appear to be impacted with cadmium
Copper (Cu)	2.38	3.35	10	1.4	NS	1,300	1.1	NC	2.38	Apparent background
Iron (Fe)	<60	<60	<60	NS	300	300	1,000	NC	1,000	Lowest enforceable ecological criteria
Lead (Pb)	0.36	0.46	0.8	0.13	NS	NS	0.13	NC	0.36	Apparent background
Mercury (Hg)	0.0024	0.0016	0.0058	0.012	2	NS	0.91	NC	--	Apparent background is lower than lowest enforceable ecological criteria
Silver (Ag)	<MDL (0.1 - 5)	<MDL (0.1 - 5)	<5	NS	100	NS	NS	NC	--	Surface water does not appear to be impacted with silver
Zinc (Zn)	4.17	4.6	6.2	12.77	50,000	7,400	14.44	NC	12.77	Lowest enforceable ecological criteria

NOTES:

µg/L = Microgram per liter

NS = No standard; NC = Not calculated

-- = No Proposed Cleanup Goal

< = results not detected above the method detection limit (MDL), highest MDL listed for maximum concentration.

a - Based on a total of 12 background surface water samples ; 8 from Glacier Creek and 4 from Seventysix Creek. Average concentration listed, additional background surface water sampling may be needed to calculate MTCA background concentratic

b - Hardness dependent criteria adjusted based on an apparent background hardness of 8.23 mg/L; also converted to total recoverable metals as appropriate

c - Oak Ridge National Laboratory PRGs are for reference only, they are not enforceable standards or criteria.

d - From MCMA Streamlined Human Health and Ecological Risk Assessment (CES 2009). Values calculated using human health risk equations, site-specific exposure factors, and an allowable non-carcinogenic hazard index of 1 and a carcinogenic risk of 1.E-05.

e - Proposed Cleanup Goals are ecological-based since the human health risk assessment identified arsenic as the only COPC that exhibited unacceptable risk, and human exposure can be controlled with institutional controls. Additional site-specific ecological risk assessment is needed to further assess and determine ecological risks and finalize the proposed cleanup goal.

ARAR = Applicable or relevant and appropriate requirement

PRG = Preliminary Remediation Goal

WAC = Washington Administrative Code

Table 12. Mine Water ARARs and Proposed Cleanup Goals (total recoverable µg/L)
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Analyte	Apparent Background Concentration[a]	Mean Concentration	Maximum Detected Concentration	State of Washington		Federal		Human Health Risk-Based Criteria[d]	Proposed Surface Water Cleanup Goal[e]	Comments/Justification[e]
				WAC 173-201A	WAC 246-290	Clean Water Act Section 304				
				Protection of Aquatic Life, Chronic[b]	Drinking Water criteria	Human Health Consumption of Water+Organism[b]	Freshwater Chronic[b]			
Arsenic (As)	1.63	849	6,350	190	10	0.018	150	NC	150	Lowest enforceable ecological criteria
Barium (Ba)	6.6	2.7	2.8	NS	2,000	1,000	NS	NC	--	No enforceable ecological criteria
Cadmium (Cd)	<MDL (0.037 - 2)	6.5	40	0.13	5	NS	0.043	NC	--	Surface water does not appear to be impacted with cadmium
Copper (Cu)	2.38	293	2,640	1.4	NS	1,300	1.1	NC	2.38	Apparent background
Iron (Fe)	<60	7,238	48,000	NS	300	300	1,000	NC	1,000	Lowest enforceable ecological criteria
Lead (Pb)	0.36	49	562	0.13	15	NS	0.13	NC	0.36	Apparent background
Manganese (Mn)	<4	660	4,230	NS	50	50	NS	NC	--	Surface water does not appear to be impacted with manganese
Mercury (Hg)	0.0024	0.0873	0.820	0.012	2	NS	0.91	NC	--	Surface water does not appear to be impacted with mercury
Silver (Ag)	<MDL (0.1 - 5)	0.32	3.82	NS	100	NS	NS	NC	--	Surface water does not appear to be impacted with silver
Zinc (Zn)	4.17	1,469	6,590	12.77	50,000	7,400	14.44	NC	12.77	Lowest enforceable ecological criteria

NOTES:

µg/L = Microgram per liter

NS = No standard; NC = Not calculated

-- = No Proposed Cleanup Goal

< = results not detected above the method detection limit (MDL), highest MDL listed for maximum concentration.

a - Based on a total of 12 background surface water samples ; 8 from Glacier Creek and 4 from Seventysix Creek. Average concentration listed, additional background surface water sampling may be needed to calculate MTCA background concentrati

b - Hardness dependent criteria adjusted based on an apparent background hardness of 8.23 mg/L; also converted to total recoverable metals as appropriate

c - Oak Ridge National Laboratory PRGs are for reference only, they are not enforceable standards or criteria.

d - From MCMA Streamlined Human Health and Ecological Risk Assessment (CES 2009). Values calculated using human health risk equations, site-specific exposure factors, and an allowable non-carcinogenic hazard index of 1 and a carcinogenic risk of 1.E-05.

e - Proposed Cleanup Goals are ecological-based since the human health risk assessment identified arsenic as the only COPC that exhibited unacceptable risk, and human exposure can be controlled with institutional controls. Additional site-specific ecological risk assessment is needed to further assess and determine ecological risks and finalize the proposed cleanup goal.

ARAR = Applicable or relevant and appropriate requirement

CFR = Code of Federal Regulations

PRG = Preliminary Remediation Goal

WAC = Washington Administrative Code

Table 13. Sediment ARARs and Proposed Cleanup Goals (mg/kg)
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Analyte	Apparent Background Concentration[a]	Mean Concentration	Maximum Detected Concentration	State of Washington		Federal		Human Health Risk-Based Criteria[d]	Proposed Sediment Cleanup Goal[e]	Comments/Justification[e]
				WA Ecology	WAC 173-204-320	EPA / NOAA 1999				
				Freshwater Sediment Quality Standards (Recommended Only)	Marine Sediment Management Standards[b]	Threshold Effects Level	Probable Effects Level			
Aluminum (Al)	12,500	13,600	17,100	0.4	NS	NS	NS	NC	12,500	Apparent background
Antimony (Sb)	14.4	12.8	51	0.6	NS	NS	NS	NC	14.4	Apparent background
Arsenic (As)	80.33	293	1,090	51	57	59	17	0.01 (Near) 0.32 (Remote)	80.33	Apparent background
Cadmium (Cd)	0.78	1.2	3.90	1	5.1	0.596	3.53	NC	1	Ecology recommended sediment standard
Chromium (Cr)	32.5	40.6	67.1	100	260	37.3	90	NC	100	Ecology recommended sediment standard
Copper (Cu)	21.3	72.5	207	830	390	35.7	197	NC	830	Ecology recommended sediment standard
Lead (Pb)	28.1	81.9	278	430	450	35	91.3	NC	430	Ecology recommended sediment standard
Mercury (Hg)	0.44	0.35	4.6	0.75	0.41	0.174	0.486	NC	0.75	Ecology recommended sediment standard
Nickel (Ni)	12.5	20.4	96.5	70	NS	18	35.9	NC	70	Ecology recommended sediment standard
Silver (Ag)	0.19	0.90	6.94	2.5	6.1	NS	NS	NC	2.5	Ecology recommended sediment standard
Zinc (Zn)	96.2	176	806	160	410	123.1	315	NC	160	Ecology recommended sediment standard

NOTES:

mg/kg = Milligram per kilogram
NS = No standard; NC = Not calculated
-- = No Proposed Cleanup Goal
a - Based on seven background sediment samples. Average concentration listed, additional background sediment sampling may be needed to calculate MTCA background concentrations.
b - For reference only - not applicable
c - Oak Ridge National Laboratory PRGs are for reference only, they are not enforceable standards or criteria.
d - From MCMA Streamlined Human Health and Ecological Risk Assessment (CES 2009). Values calculated using human health risk equations, site-specific exposure factors, and an allowable non-carcinogenic hazard index of 1 and a carcinogenic risk of 1.E-05.
e - Proposed Cleanup Goals are ecological-based since the human health risk assessment identified arsenic as the only COPC that exhibited unacceptable risk, and human exposure can be controlled with institutional controls. Additional site-specific ecological risk assessment is needed to further assess and determine ecological risks and finalize the proposed cleanup goal.
ARAR = Applicable or relevant and appropriate requirement
EPA = U.S. Environmental Protection Agency
NOAA = National Oceanic and Atmospheric Administration
PRG = Preliminary Remediation Goal
WAC = Washington Administrative Code
WA Ecology = Washington Department of Ecology

Table 14. **Waste Rock, Soil, and Tailings ARARs and Proposed Cleanup Goals (mg/kg)**
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Analyte	Background Concentration [a]	Mean Concentration	Maximum Detected Concentration	State of Washington			Federal	Human Health Risk-Based Criteria [d]	Proposed Waste Rock, Soil, and Tailings Cleanup Goals [e]	Comments/Justification [e]
				WAC 173-340-740	WAC 173-340-7492	WAC 173-340-7493	EPA			
				MTCA Method A Industrial Soil (Table 745-1)	Method B Unrestricted Land Use (Table 749-2)	Method B Ecological Receptor [b] (Table 749-3)	Region 9 PRGs - Industrial Soil			
Aluminum (Al)	23,762	6,524	25,800	NS	NS	NS	990,000	NC	--	Not a significant ecological risk
Antimony (Sb)	7.3	1,755	10,700	NS	NS	NS	410	NC	--	Not a significant ecological risk
Arsenic (As)	236	19,332	92,100	20	NS	60 (As V) (s)	1.6	67 (Near) 659 (Remote)	236 (Near) 659 (Remote)	Natural background for Near Features Risk-based human for Remote Features
Barium (Ba)	62.1	101	1,170	NS	1,250	102 (w)	190,000	NC	102	Lowest enforceable ecological risk - wildlife
Cadmium (Cd)	0.77	9.0	114	2	25	14 (w)	810	NC	14	Lowest enforceable ecological risk - wildlife
Chromium (Cr)	57.5	33.1	217	19 (Cr VI)	42	42 (s)	1,400	NC	57.5	Natural background
Cobalt (Co)	10.3	5.49	28.1	NS	NS	NS	300	NC	10.3	Natural background
Copper (Cu)	40.3	601	4,240	NS	100	50 (s)	41,000	NC	50	Lowest enforceable ecological risk - soil biota
Iron (Fe)	31,692	66,974	272,000	NS	NS	NS	720,000	NC	31,692	Natural background
Lead (Pb)	30.3	6,188	89,200	1,000	220	118 (w)	800	NC	118	Lowest enforceable ecological risk - wildlife
Manganese (Mn)	865	520	7,210	NS	NS	1,500 (w)	NS	NC	1,500	Lowest enforceable ecological risk - wildlife
Mercury (Hg)	0.379	2.27	36.3	2	9	0.1 (s)	310	NC	0.379	Natural background
Nickel (Ni)	27.6	17.1	100	NS	100	200 (s)	20,000	NC	200	Lowest enforceable ecological risk - soil biota
Selenium (Se)	0.71	1.90	17.4	NS	0.8	0.3 (w)	5,100	NC	0.71	Natural background
Silver (Ag)	0.39	71.6	415	NS	NS	NS	5,100	NC	--	Not a significant ecological risk
Thallium (Th)	0.75	3.1	15.8	NS	NS	NS	66	NC	--	Not a significant ecological risk
Vanadium (Va)	69.7	28.6	104	NS	26	NS	5,200	NC	--	Not a significant ecological risk
Zinc (Zn)	93.9	1,168	18,500	NS	270	200 (s)	310,000	NC	200	Lowest enforceable ecological risk - soil biota

NOTES:

mg/kg = Milligram per kilogram
NS = No standard; NC = Not calculated
-- = No Proposed Cleanup Goal
a - Based on ten background soil samples, 90% Upper Confidence Limit (UCL) listed. Additional background soil sampling may modify this value.
b - Lowest value selected from soil biota(s) and wildlife(w) receptors. Note that (p) - plants values not listed because wasterock and tailings are generally void of vegetation.
c - Oak Ridge National Laboratory PRGs are for reference only, tl x
d - From MCMA Streamlined Human Health and Ecological Risk Assessment (CES 2009). Values calculated using human health risk equations, site-specific exposure factors, and an allowable non-carcinogenic hazard index of 1 and a carcinogenic risk of 1.E-05.
e - Proposed Cleanup Goals are either human or ecological. Additional site-specific ecological risk assessment is needed to further assess and determine ecological risks and finalize the proposed cleanup goal.
ARAR = Applicable or relevant and appropriate requirement
EPA = U.S. Environmental Protection Agency
MTCA = Model Toxics Control Act
ORNL = Oak Ridge National Laboratory
PRG = Preliminary Remediation Goal
WAC = Washington Administrative Code

Table 15. Comparative Analysis of Removal Action Alternatives - Pride of the Mountains Mine
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Assessment Criteria	Mine Waste Alternatives					Adit/Seep Water Alternatives		
	Alternative 1 - No Action	**Alternative 2 - Institutional Controls**	**Alternative 3 - Mine Waste Cover**	**Alternative 4 - Removal and Disposal in MCMA Repository**	**Alternative 5 - Removal and Off-Site Disposal**	**Alternative 1 - No Action**	**Alternative 2 - Diversion and Infiltration**	**Alternative 3 - Passive Treatment and Infiltration**
EFFECTIVENESS								
Compliance with Removal Action Goals and Objectives	Does not comply.	Complies, except ecological exposure.	Complies.	Complies.	Complies.	Does not comply	Complies.	Complies.
Overall Protective of Public Health and the Environment	No Additional Protection.	Provides human protection. No protection for ecological receptors.	Provides human and ecological (most) protection. Burrowing animals may be at risk.	Protective of human and ecological receptors.	Protective of human and ecological receptors.	No additional protection.	Will reduce the impact on surface water.	Will reduce the impact on surface water.
Compliance with ARARs	Does not comply.	Does not comply.	Partial compliance.	Complies	Complies.	Does not comply.	Does not comply with chemical-specific ARARs	Does not comply with chemical-specific ARARs
Long Term Effectiveness and Permanence	None.	Provides long-term effectiveness; minimal annual O&M required.	Provides long-term effectiveness; moderate annual O&M required.	Provides long-term effectiveness; moderate annual O&M required on repository.	Provides long-term effectiveness; minimal annual short-term O&M.	None.	Provides long-term effectiveness; minimal annual O&M required.	Provides long-term effectiveness; moderate annual O&M required.
Reduction of Toxicity, Mobility, or Volume	No reduction.	No reduction.	Reduction in mobility of metals by in-place cover; no reduction in volume or toxicity.	Reduction in mobility of metals by containment in repository; no reduction in volume or toxicity (transferred to repository).	Reduction in mobility of metals by off-Site disposal; no reduction in volume or toxicity (transferred off-Site).	None.	Reduction of mobility of metals by diversion, containment, and attenuation; no reduction in volume or toxicity (transferred to repository).	Reduction of mobility of metals by diversion, containment, and attenuation; no reduction in volume or toxicity (transferred to repository).
Short Term Effectiveness	None.	Easily implemented in one field season.	Possibly implemented in one field season.	Possibly implemented in one field season.	Possible implemented in one field season.	None.	Easily implemented in one field season.	Easily implemented in one field season.
IMPLEMENTABILITY								
Technical Feasibility	Not applicable.	Easily implemented.	Very difficult to implement due to steep terrain, remote location, and lack of cover material. Unknown if mine suitable.	Extremely difficult & dangerous to implement due to steep terrain and remote location.	Extremely difficult & dangerous to implement due to steep terrain and remote location.	Not applicable.	Difficult to implement due to steep terrain, remote location, and limited native soils. Need to design/build infiltration system. Unknown if mine suitable.	Difficult to implement due to steep terrain, remote location, and limited native soils. Need to design/build treatment system. Unknown if mine suitable.
Administrative Feasibility	Not applicable.	Easily implemented.	Unknown due to location in Wilderness area and potential historical significance.	Unknown due to location in Wilderness area and potential historical significance.	Unknown due to location in Wilderness area and potential historical significance.	Not applicable.	Unknown due to location in Wilderness area and potential historical significance.	Unknown due to location in Wilderness area and potential historical significance.
Availability of Services and Materials	Not applicable.	Services and materials are available within 45 miles; access by foot or helicopter only.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Limited cover soil material available at mine.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Limited cover soil material available at the MCMA.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Disposal facility not determined; may be 200+ miles to disposal facility.	Not applicable.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Minimum useable native materials at mine.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Water treatment materials must be hauled tomine. Minimum useable native materials at mine.
State and Community Acceptance	Not acceptable.	Probable acceptance due to remote and Wilderness location.	Possible acceptance due to Wilderness location.	Acceptable.	Acceptable.	Not acceptable.	Presumed acceptable.	Presumed acceptable.
COST								
Removal Action - Capital	$0	$56,660	$549,395	$2,284,668	$2,774,010	$0	$90,770	$96,170
Removal Action - Indirect (inc. 30 years O&M at i=3%)	$0	$72,308	$1,112,000	$358,634	$419,308	$0	$34,960	$59,801
Total NPV (30 years, i = 3%) (inc. 20% Contingency)	$0	$154,762	$1,993,674	$3,171,962	$3,831,981	$0	$150,876	$187,165

Table 16. Comparative Analysis of Removal Action Alternatives - New Discovery Mine
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Assessment Criteria	Mine Waste Alternatives					Adit/Seep Water Alternatives		
	Alternative 1 - No Action	Alternative 2 - Institutional Controls	Alternative 3 - Mine Waste Cover	Alternative 4 - Removal and Disposal in MCMA Repository	Alternative 5 - Removal and Off-Site Disposal	Alternative 1 - No Action	Alternative 2 - Diversion and Infiltration	Alternative 3 - Passive Treatment and Infiltration
EFFECTIVENESS								
Compliance with Removal Action Goals and Objectives	Does not comply.	Complies, except ecological exposure.	Complies.	Complies.	Complies.	Does not comply	Complies.	Complies.
Overall Protective of Public Health and the Environment	No Additional Protection.	Provides human protection. No protection for ecological receptors.	Provides human and ecological (most) protection. Burrowing animals may be at risk.	Protective of human and ecological receptors.	Protective of human and ecological receptors.	No additional protection.	Will reduce the impact on surface water.	Will reduce the impact on surface water.
Compliance with ARARs	Does not comply.	Does not comply.	Partial compliance.	Complies	Complies.	Does not comply.	Does not comply with chemical-specific ARARs	Does not comply with chemical-specific ARARs
Long Term Effectiveness and Permanence	None.	Provides limited long-term effectiveness due to possible avalanche hazard; minimal annual O&M required.	Provides long-term effectiveness; moderate annual O&M required.	Provides long-term effectiveness; moderate annual O&M required on repository.	Provides long-term effectiveness; minimal annual short-term O&M.	None.	Provides long-term effectiveness; minimal annual O&M required.	Provides long-term effectiveness; moderate annual O&M required.
Reduction of Toxicity, Mobility, or Volume	No reduction.	No reduction	Reduction in mobility of metals by in-place cover; no reduction in volume or toxicity.	Significant reduction in mobility of metals by containment in repository; no reduction in volume or toxicity (transferred to repository).	Significant reduction in mobility of metals by off-Site disposal; no reduction in volume or toxicity (transferred off-Site).	None.	Reduction of mobility of metals by diversion, containment, and attenuation; no reduction in volume or toxicity (transferred to repository).	Reduction of mobility of metals by diversion, containment, and attenuation; no reduction in volume or toxicity (transferred to repository).
Short Term Effectiveness	None.	Easily implemented in one field season.	Possibly implemented in one field season.	Possibly implemented in one field season.	Possibly implemented in one field season.	None.	Easily implemented in one field season.	Easily implemented in one field season.
IMPLEMENTABILITY								
Technical Feasibility	Not applicable.	Easily implemented.	Very difficult to implement due to steep terrain, remote location, and lack of cover material. Unknown if mine suitable.	Difficult to implement due to remote location.	Difficult to implement due to remote location.	Not applicable.	Difficult to implement due to steep terrain, remote location, and limited native soils. Need to design/build infiltration system. Unknown if mine suitable.	Difficult to implement due to steep terrain, remote location, and limited native soils. Need to design/build treatment system. Unknown if mine suitable.
Administrative Feasibility	Not applicable.	Easily implemented.	Unknown due to location in Wilderness area and potential historical significance.	Unknown due to location in Wilderness area and potential historical significance.	Unknown due to location in Wilderness area and potential historical significance.	Not applicable.	Unknown due to location in Wilderness area and potential historical significance.	Unknown due to location in Wilderness area and potential historical significance.
Availability of Services and Materials	Not applicable.	Services and materials are available within 45 miles; access by foot or helicopter only. Heavy lift helicopters not readily available; may be difficult to schedule. Limited cover soil material available.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Limited cover soil material available at mine.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Limited cover soil material available at the MCMA.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Disposal facility not determined; may be 200+ miles to disposal facility.	Not applicable.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Minimum useable native materials at mine.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Water treatment materials must be hauled to mine. Minimum useable native materials at mine.
State and Community Acceptance	Not acceptable.	Probable acceptance due to remote and Wilderness location.	Possible acceptance due to Wilderness location.	Acceptable.	Acceptable.	Not acceptable.	Presumed acceptable.	Presumed acceptable.
COST								
Removal Action - Capital	$0	$58,470	$310,837	$1,123,118	$1,358,002	$0	$66,770	$72,170
Removal Action - Indirect (inc. 30 years O&M at i=3%)	$0	$72,580	$609,006	$184,401	$206,906	$0	$31,360	$56,201
Total NPV (30 years, i = 3%) (inc. 20% Contingency)	$0	$157,260	$1,103,812	$1,569,023	$1,877,890	$0	$117,756	$154,045

Table 17. Comparative Analysis of Removal Action Alternatives - Pride of the Woods Mine
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Assessment Criteria	Mine Waste Alternatives					Adit/Seep Water Alternatives		
	Alternative 1 - No Action	**Alternative 2 - Institutional Controls**	**Alternative 3 - Mine Waste Cover**	**Alternative 4 - Removal and Disposal in MCMA Repository**	**Alternative 5 - Removal and Off-Site Disposal**	**Alternative 1 - No Action**	**Alternative 2 - Diversion and Infiltration**	**Alternative 3 - Passive Treatment and Infiltration**
EFFECTIVENESS								
Compliance with Removal Action Goals and Objectives	Does not comply.	Complies, except ecological exposure.	Complies.	Complies.	Complies.	Does not comply	Complies.	Complies.
Overall Protective of Public Health and the Environment	No Additional Protection.	Provides human protection. No protection for ecological receptors.	Provides human and ecological (most) protection. Burrowing animals may be at risk.	Protective of human and ecological receptors.	Protective of human and ecological receptors.	No additional protection	Will reduce the impact on surface water.	Will reduce the impact on surface water.
Compliance with ARARs	Does not comply.	Does not comply.	Partial compliance.	Complies	Complies.	Does not comply.	Does not comply with chemical-specific ARARs	Does not comply with chemical-specific ARARs
Long Term Effectiveness and Permanence	None.	Provides limited long-term effectiveness due to possible avalanche hazard; minimal annual O&M required.	Provides long-term effectiveness; moderate annual O&M required.	Provides long-term effectiveness; moderate annual O&M required on repository.	Provides long-term effectiveness; minimal annual short-term O&M.	None.	Provides long-term effectiveness; minimal annual O&M required.	Provides long-term effectiveness; moderate annual O&M required.
Reduction of Toxicity, Mobility, or Volume	No reduction.	No reduction	Reduction in mobility of metals by in-place cover; no reduction in volume or toxicity.	Significant reduction in mobility of metals by containment in repository; no reduction in volume or toxicity (transferred to repository).	Significant reduction in mobility of metals by off-Site disposal; no reduction in volume or toxicity (transferred off-Site).	None.	Reduction of mobility of metals by diversion, containment, and attenuation; no reduction in volume or toxicity (transferred to repository).	Reduction of mobility of metals by diversion, containment, and attenuation; no reduction in volume or toxicity (transferred to repository).
Short Term Effectiveness	None.	Easily implemented in one field season.	Possibly implemented in one field season.	Possibly implemented in one field season.	Possibly implemented in one field season.	None.	Easily implemented in one field season.	Easily implemented in one field season.
IMPLEMENTABILITY								
Technical Feasibility	Not applicable.	Easily implemented.	Very difficult to implement due to steep terrain, remote location, and lack of cover material. Unknown if mine suitable.	Difficult to implement due to remote location.	Difficult to implement due to remote location.	Not applicable.	Difficult to implement due to steep terrain, remote location, and limited native soils. Need to design/build infiltration system. Unknown if mine suitable.	Difficult to implement due to steep terrain, remote location, and limited native soils. Need to design/build treatment system. Unknown if mine suitable.
Administrative Feasibility	Not applicable.	Easily implemented.	Unknown due to location in Wilderness area, proximity to stream, and potential historical significance.	Unknown due to location in Wilderness area and potential historical significance.	Unknown due to location in Wilderness area and potential historical significance.	Not applicable.	Unknown due to location in Wilderness area, proximity to stream, and potential historical significance.	Unknown due to location in Wilderness area, proximity to stream, and potential historical significance.
Availability of Services and Materials	Not applicable.	Services and materials are available within 45 miles; access by foot or helicopter only. Heavy lift helicopters not readily available; may be difficult to schedule. Limited cover soil material available.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Limited cover soil material available at mine.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Limited cover soil material available at the MCMA.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Disposal facility not determined; may be 200+ miles to disposal facility.	Not applicable.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Minimum useable native materials at mine.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Water treatment materials must be hauled to mine. Minimum useable native materials at mine.
State and Community Acceptance	Not acceptable.	Probable acceptance due to remote and Wilderness location.	Possible acceptance due to Wilderness location.	Acceptable.	Acceptable.	Not acceptable.	Presumed acceptable.	Presumed acceptable.
COST								
Removal Action - Capital	$0	$19,980	$144,382	$419,400	$507,481	$0	$32,970	$38,370
Removal Action - Indirect (inc. 30 years O&M at i=3%)	$0	$66,806	$329,299	$78,844	$79,328	$0	$26,290	$51,131
Total NPV (30 years, i = 3%) (inc. 20% Contingency)	$0	$104,143	$568,417	$597,892	$704,172	$0	$71,112	$107,401

Table 18. Comparative Analysis of Removal Action Alternatives - Mystery Mine
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Assessment Criteria	Mine Waste Alternatives					Adit/Seep Water Alternatives		
	Alternative 1 - No Action	**Alternative 2 - Institutional Controls**	**Alternative 3 - Mine Waste Cover**	**Alternative 4 - Removal and Disposal in MCMA Repository**	**Alternative 5 - Removal and Off-Site Disposal**	**Alternative 1 - No Action**	**Alternative 2 - Diversion and Infiltration**	**Alternative 3 - Passive Treatment and Infiltration**
EFFECTIVENESS								
Compliance with Removal Action Goals and Objectives	Does not comply.	Complies, except ecological exposure.	Complies.	Complies.	Complies.	Does not comply	Complies.	Complies.
Overall Protective of Public Health and the Environment	No Additional Protection	Provides human protection. No protection for ecological receptors.	Provides human and ecological (most) protection. Burrowing animals may be at risk.	Protective of human and ecological receptors.	Protective of human and ecological receptors.	No additional protection.	Will reduce the impact on surface water.	Will reduce the impact on surface water.
Compliance with ARARs	Does not comply.	Does not comply.	Partial compliance.	Complies	Complies.	Does not comply.	Does not comply with chemical-specific ARARs	Does not comply with chemical-specific ARARs
Long Term Effectiveness and Permanence	None.	Provides long-term effectiveness; minimal annual O&M required.	Provides long-term effectiveness; moderate annual O&M required.	Provides long-term effectiveness; moderate annual O&M required on repository.	Provides long-term effectiveness; minimal annual short-term O&M.	None.	Provides limited long-term effectiveness due to snow avalanche hazard; minimal annual O&M required.	Provides limited long-term effectiveness due to snow avalanche hazard; moderate annual O&M required.
Reduction of Toxicity, Mobility, or Volume	No reduction.	Limited reduction of mobility and exposure to toxic metals in capped & signed areas; otherwise, no reduction in mobility, toxicity, or volume.	Reduction in mobility of metals by in-place cover; no reduction in volume or toxicity.	Significant reduction in mobility of metals by containment in repository; no reduction in volume or toxicity (transferred to repository).	Significant reduction in mobility of metals by off-Site disposal; no reduction in volume or toxicity (transferred off-Site).	None.	Reduction in mobility and toxicity of metals by attenuation in/through infiltration basin; no reduction in volume.	Reduction in mobility and toxicity of metals by treatment and attenuation in/through infiltration basin; no reduction in volume.
Short Term Effectiveness	None.	Easily implemented in one field season.	Possibly implemented in one field season.	Possibly implemented in two field seasons.	Possibly implemented in two field seasons.	None.	Possibly implemented in one field season.	Possibly implemented in one field season.
IMPLEMENTABILITY								
Technical Feasibility	Not applicable.	Easily implemented.	Very difficult to implement due to steep terrain, remote location, and lack of cover material. Unknown if mine suitable.	Extremely difficult and dangerous to implement due to steep terrain and remote location.	Extremely difficult and dangerous to implement due to steep terrain and remote location.	Not applicable.	Difficult to implement due to steep terrain, remote location, and limited native soils. Need to design/build pipeline and infiltration basin. Unknown if mine suitable.	Difficult to implement due to steep terrain, remote location, and limited native soils. Need to design/build pipeline and treatment system. Unknown if mine suitable.
Administrative Feasibility	Not applicable.	Easily implemented.	Unknown due to remote location and proximity to the Wilderness area, and potential historical significance.	Unknown due to remote location and proximity to the Wilderness area, and potential historical significance.	Unknown due to remote location and proximity to the Wilderness area, and potential historical significance.	Not applicable.	Unknown due to location near Wilderness area, possible road construction, and potential historical significance.	Unknown due to location near Wilderness area, possible road construction, and potential historical significance.
Availability of Services and Materials	Not applicable.	Services and materials are available within 45 miles; access by foot or helicopter only. Heavy lift helicopters not readily available; may be difficult to schedule. Limited cover soil material available.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Limited cover soil material available at mine.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Limited cover soil material available at the MCMA.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Disposal facility not determined; may be 200+ miles to disposal facility.	Not applicable.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule.
State and Community Acceptance	Not acceptable.	Probable acceptance due to remote location.	Probable acceptance due to remote location.	Acceptable.	Acceptable.	Not acceptable.	Presumed acceptable.	Presumed acceptable.
COST								
Removal Action - Capital	$0	$74,665	$1,155,819	$14,341,619	$17,473,409	$0	$101,570	$106,970
Removal Action - Indirect (inc. 30 years O&M at i=3%)	$0	$75,009	$2,358,644	$2,167,177	$2,624,217	$0	$36,580	$61,421
Total NPV (30 years, i = 3%) (inc. 20% Contingency)	$0	$179,609	$4,217,357	$19,810,555	$24,117,152	$0	$165,780	$202,069

Table 19. Comparative Analysis of Removal Action Alternatives - Golden Cord Mine
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Assessment Criteria	Mine Waste Alternatives				
	Alternative 1 - No Action	**Alternative 2 - Institutional Controls**	**Alternative 3 - Mine Waste Cover**	**Alternative 4 - Removal and Disposal in MCMA Repository**	**Alternative 5 - Removal and Off-Site Disposal**
EFFECTIVENESS					
Compliance with Removal Action Goals and Objectives	Does not comply.	Complies, except ecological exposure.	Complies.	Complies.	Complies.
Overall Protective of Public Health and the Environment	No Additional Protection	Provides human protection. No protection for ecological receptors.	Provides human and ecological (most) protection. Burrowing animals may be at risk.	Will reduce the impact on surface water.	Will reduce the impact on surface water.
Compliance with ARARs	Does not comply.	Does not comply.	Partial compliance.	Complies.	Complies.
Long Term Effectiveness and Permanence	None.	Provides long-term effectiveness; minimal annual O&M required.	Provides long-term effectiveness; moderate annual O&M required.	Provides long-term effectiveness; moderate annual O&M required on repository.	Provides long-term effectiveness; minimal annual short-term O&M.
Reduction of Toxicity, Mobility, or Volume	No reduction.	Limited reduction of mobility and exposure to toxic metals in capped & signed areas; otherwise, no reduction in mobility, toxicity, or volume.	Reduction in mobility of metals by in-place cover; no reduction in volume or toxicity.	Significant reduction in mobility of metals by containment in repository; no reduction in volume or toxicity (transferred to repository).	Significant reduction in mobility of metals by off-Site disposal; no reduction in volume or toxicity (transferred off-Site).
Short Term Effectiveness	None.	Easily implemented in one field season.	Possibly implemented in one field season.	Possibly implemented in one field season.	Possibly implemented in one field season.
IMPLEMENTABILITY					
Technical Feasibility	Not applicable.	Easily implemented	Very difficult to implement due to steep terrain, remote location, and lack of cover material. Unknown if mine suitable.	Extremely difficult and dangerous to implement due to steep terrain and remote location.	Extremely difficult and dangerous to implement due to steep terrain and remote location.
Administrative Feasibility	Not applicable.	Easily implemented	Unknown due to remote location and proximity to the Wilderness area, and potential historical significance.	Unknown due to remote location and proximity to the Wilderness area, and potential historical significance.	Unknown due to remote location and proximity to the Wilderness area, and potential historical significance.
Availability of Services and Materials	Not applicable.	Services and materials are available within 45 miles; access by foot or helicopter only. Heavy lift helicopters not readily available; may be difficult to schedule. Limited cover soil material available.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Limited cover soil material available at mine.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Limited cover soil material available at the MCMA.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Disposal facility not determined; may be 200+ miles to disposal facility.
State and Community Acceptance	Not acceptable.	Probable acceptance due to remote location	Probable acceptance due to remote location	Acceptable.	Acceptable.
COST					
Removal Action - Capital	$0	$5,855	$216,859	$1,562,354	$1,904,893
Removal Action - Indirect (inc. 30 years O&M at i=3%)	$0	$64,687	$509,915	$250,287	$288,940
Total NPV (30 years, i = 3%) (inc. 20% Contingency)	$0	$84,651	$872,129	$2,175,169	$2,632,600

Table 20. Comparative Analysis of Removal Action Alternatives - Justice Mine
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Assessment Criteria	Mine Waste Alternatives					Adit/Seep Water Alternatives		
	Alternative 1 - No Action	Alternative 2 - Institutional Controls	Alternative 3 - Mine Waste Cover	Alternative 4 - Removal and Disposal in MCMA Repository	Alternative 5 - Removal and Off-Site Disposal	Alternative 1 - No Action	Alternative 2 - Diversion and Infiltration	Alternative 3 - Passive Treatment and Infiltration
EFFECTIVENESS								
Compliance with Removal Action Goals and Objectives	Does not comply.	Complies, except ecological exposure.	Complies.	Complies.	Complies.	Does not comply	Complies.	Complies.
Overall Protective of Public Health and the Environment	No Additional Protection	Provides human protection. No protection for ecological receptors.	Provides human and ecological (most) protection. Burrowing animals may be at risk.	Protective of human and ecological receptors.	Protective of human and ecological receptors.	No additional protection.	Will reduce the impact on surface water.	Will reduce the impact on surface water.
Compliance with ARARs	Does not comply.	Does not comply.	Partial compliance.	Complies	Complies.	Does not comply.	Does not comply with chemical-specific ARARs	Does not comply with chemical-specific ARARs
Long Term Effectiveness and Permanence	None.	Provides long-term effectiveness; minimal annual O&M required.	Provides long-term effectiveness; moderate annual O&M required.	Provides long-term effectiveness; moderate annual O&M required on repository.	Provides long-term effectiveness; minimal annual short-term O&M.	None.	Provides limited long-term effectiveness due to snow avalanche hazard; minimal annual O&M required.	Provides limited long-term effectiveness due to snow avalanche hazard; moderate annual O&M required.
Reduction of Toxicity, Mobility, or Volume	No reduction.	No reduction.	Reduction in mobility of metals by in-place cover; no reduction in volume or toxicity.	Significant reduction in mobility of metals by containment in repository; no reduction in volume or toxicity (transferred to repository).	Significant reduction in mobility of metals by off-Site disposal; no reduction in volume or toxicity (transferred off-Site).	None.	Reduction in mobility and toxicity of metals by attenuation in/through infiltration basin; no reduction in volume.	Reduction in mobility and toxicity of metals by treatment and attenuation in/through infiltration basin; no reduction in volume.
Short Term Effectiveness	None.	Easily implemented in one field season.	Possibly implemented in one field season.	Possibly implemented in two field seasons.	Possibly implemented in two field seasons.	None.	Possibly implemented in one field season.	Possibly implemented in one field season.
IMPLEMENTABILITY								
Technical Feasibility	Not applicable.	Easily implemented.	Very difficult to implement due to steep terrain, remote location, and lack of cover material. Unknown if mine suitable.	Very difficult to implement due to steep terrain and remote location. Need to design and construct slusher excavator.	Very difficult to implement due to steep terrain and remote location. Need to design and construct slusher excavator.	Not applicable.	Difficult to implement due to steep terrain, remote location, and limited native soils. Need to design/build pipeline and infiltration basin. Unknown if mine suitable.	Difficult to implement due to steep terrain, remote location, and limited native soils. Need to design/build pipeline and treatment system. Unknown if mine suitable.
Administrative Feasibility	Not applicable.	Easily implemented.	Unknown due to remote location and proximity to the Wilderness area, and potential historical significance.	Unknown due to remote location and proximity to the Wilderness area, and potential historical significance.	Unknown due to remote location and proximity to the Wilderness area, and potential historical significance.	Not applicable.	Unknown due to location near Wilderness area, possible road construction, and potential historical significance.	Unknown due to location near Wilderness area, possible road construction, and potential historical significance.
Availability of Services and Materials	Not applicable.	Services and materials are available within 45 miles; access by foot or helicopter only. Heavy lift helicopters not readily available; may be difficult to schedule. Limited cover soil material available.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Limited cover soil material available at mine.	Equipment (i.e., excavation system) not readily available; may be difficult to schedule / design. Limited cover soil material available at the MCMA.	Equipment (i.e., excavation system) not readily available; may be difficult to schedule / design. Disposal facility not determined; may be 200+ miles to disposal facility.	Not applicable.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule.
State and Community Acceptance	Not acceptable	Probable acceptance due to remote location.	Probable acceptance due to remote location.	Acceptable.	Acceptable.	Not acceptable.	Presumed acceptable.	Presumed acceptable.
COST								
Removal Action - Capital	$0	$23,360	$831,666	$6,265,842	$7,636,001	$0	$125,570	$130,970
Removal Action - Indirect (inc. 30 years O&M at i=3%)	$0	$67,313	$1,772,875	$955,810	$1,148,606	$0	$40,180	$65,021
Total NPV (30 years, i = 3%) (inc. 20% Contingency)	$0	$108,808	$3,125,449	$8,665,983	$10,541,528	$0	$198,900	$235,189

Table 21. Comparative Analysis of Removal Action Alternatives - Rainy Mine
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Assessment Criteria	Mine Waste Alternatives					Adit/Seep Water Alternatives		
	Alternative 1 - No Action	**Alternative 2 - Institutional Controls**	**Alternative 3 - Mine Waste Cover**	**Alternative 4 - Removal and Disposal in MCMA Repository**	**Alternative 5 - Removal and Off-Site Disposal**	**Alternative 1 - No Action**	**Alternative 2 - Diversion and Infiltration**	**Alternative 3 - Passive Treatment and Infiltration**
EFFECTIVENESS								
Compliance with Removal Action Goals and Objectives	Does not comply.	Does not comply.	Complies.	Complies.	Complies.	Does not comply	Complies.	Complies.
Overall Protective of Public Health and the Environment	No Additional Protection.	Provides limited human protection; continued waste rock erosion by Glacier Creek. No protection for ecological receptors	Provides human and ecological (most) protection. Burrowing animals may be at risk.	Protective of human and ecological receptors.	Protective of human and ecological receptors.	No additional protection.	Will reduce the impact on surface water.	Will reduce the impact on surface water.
Compliance with ARARs	Does not comply.	Does not comply.	Partial compliance.	Complies	Complies.	Does not comply.	Does not comply with chemical-specific ARARs	Does not comply with chemical-specific ARARs
Long Term Effectiveness and Permanence	None.	Provides limited long-term effectiveness due to location in flood plain; minimal annual O&M required	Provides limited long-term effectiveness due to location in flood plain; moderate annual O&M required.	Provides long-term effectiveness; moderate annual O&M required on repository.	Provides long-term effectiveness; minimal annual short-term O&M.	None.	Provides limited long-term effectiveness due to location in flood plain; minimal annual O&M required.	Provides limited long-term effectiveness due to location in flood plain; moderate annual O&M required.
Reduction of Toxicity, Mobility, or Volume	No reduction.	No reduction.	Reduction in mobility of metals by in-place cover; no reduction in volume or toxicity.	Significant reduction in mobility of metals by containment in repository; no reduction in volume or toxicity (transferred to repository).	Significant reduction in mobility of metals by off-Site disposal; no reduction in volume or toxicity (transferred off-Site).	None.	Reduction in mobility and toxicity of metals by attenuation in/through infiltration basin; no reduction in volume.	Reduction in mobility and toxicity of metals by treatment and attenuation in/through infiltration basin; no reduction in volume.
Short Term Effectiveness	None.	Easily implemented in one field season.	Possibly implemented in one field season.	Possibly implemented in one field season.	Possibly implemented in one field season.	None.	Possibly implemented in one field season.	Possibly implemented in one field season.
IMPLEMENTABILITY								
Technical Feasibility	Not applicable.	Easily implemented.	Difficult to implement due to irregular terrain, stream crossing, remote location, and lack of cover material. Unknown if mine suitable.	Difficult to implement due to irregular terrain, stream crossing, and remote location.	Difficult to implement due to terrain, stream crossing, and remote location.	Not applicable.	Difficult to implement due to terrain, stream crossing, limited native soils, and remote location. Need to design/build infiltration system. Unknown if mine suitable.	Difficult to implement due to terrain, creek stream, limited native soils, and remote location. Need to design/build treatment system. Unknown if mine suitable.
Administrative Feasibility	Not applicable.	Easily implemented.	Moderately difficult to implemented due to complex ownership, public interest, historic preservation, and proximity to Glacier Creek.	Moderately difficult to implemented due to complex ownership, public interest, historic preservation, and proximity to Glacier Creek.	Moderately difficult to implemented due to complex ownership, public interest, historic preservation, and proximity to Glacier Creek.	Not applicable.	Unknown due to location near Wilderness area, ownership, possible road and bridge construction, and potential historical significance.	Unknown due to location near Wilderness area, ownership, possible road and bridge construction, and potential historical significance.
Availability of Services and Materials	Not applicable.	Services and materials are available within 45 miles; access by foot, ATV or helicopter only.	Equipment not readily available; may be difficult to schedule. Limited cover soil material available at the MCMA.	Equipment not readily available; may be difficult to schedule. Limited cover soil material available at the MCMA.	Equipment not readily available; may be difficult to schedule. Disposal facility not determined; may be 200+ miles to disposal facility.	Not applicable.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule.
State and Community Acceptance	Not acceptable.	Probably not acceptable.	Probably not acceptable.	Acceptable.	Acceptable.	Not acceptable.	Presumed acceptable.	Presumed acceptable.
COST								
Removal Action - Capital	$0	$34,315	$131,220	$241,940	$564,906	$0	$16,370	$21,770
Removal Action - Indirect (inc. 30 years O&M at i=3%)	$0	$60,607	$273,430	$52,225	$87,942	$0	$15,960	$40,800
Total NPV (30 years, i = 3%) (inc. 20% Contingency)	$0	$113,906	$485,580	$352,998	$783,417	$0	$38,796	$75,084

Table 22. Comparative Analysis of Removal Action Alternatives - Ore Collector
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Assessment Criteria	Mine Waste Alternatives				
	Alternative 1 - No Action	**Alternative 2 - Institutional Controls**	**Alternative 3 - Mine Waste Cover**	**Alternative 4 - Removal and Disposal in MCMA Repository (with historical preservation)**	**Alternative 5 - Removal and Off-Site Disposal (with historical preservation)**
EFFECTIVENESS					
Compliance with Removal Action Goals and Objectives	Does not comply.	Does not comply.	Complies.	Complies.	Complies.
Overall Protective of Public Health and the Environment	No Protection	Provides human and large animal protection. No protection for small ecological receptors.	Provides human and ecological protection, except for burrowing animals.	Protective of human and ecological receptors.	Protective of human and ecological receptors.
Compliance with ARARs	Does not comply.	Does not comply.	Partial compliance.	Complies.	Complies.
Long Term Effectiveness and Permanence	None.	Long-term effectiveness questionable; moderate annual O&M required.	Provides limited long-term effectiveness due to location in floodplain; moderate annual O&M required on containment.	Provides long-term effectiveness; moderate annual O&M required on repository.	Provides long-term effectiveness; minimal annual short-term O&M.
Reduction of Toxicity, Mobility, or Volume	No reduction.	No reduction.	Reduction in mobility of metals by in-place cover; no reduction in volume or toxicity	Significant reduction in mobility of metals by containment in repository; no reduction in volume or toxicity (transferred to repository)	Significant reduction in mobility of metals by off-Site disposal; no reduction in volume or toxicity (transferred off-Site)
Short Term Effectiveness	None.	Easily implemented in one field season.	Possibly implemented in one field season.	Possibly implemented in one field season.	Possible implemented in one field season.
IMPLEMENTABILITY					
Technical Feasibility	Not applicable.	Easily implemented.	Moderately difficult to implement due to limited access, limited cover soil, storage near Glacier Creek, and safe preservation issues. Unknown if location suitable.	Some difficulty with implementation due to limited access, excavation near Glacier Creek, and safe preservation issues.	Some difficulty with implementation due to limited access, excavation near Glacier Creek, safe preservation, and transportation issues.
Administrative Feasibility	Not applicable.	Easily implemented.	Moderately difficult to implemented due to complex ownership, public interest, and historic preservation.	Some difficulty with implementation due to complex ownership, public interest, and historic preservation.	Some difficulty with implementation due to complex ownership, public interest, and historic preservation.
Availability of Services and Materials	Not applicable.	Services and materials are available within 45 miles; access by foot, ATV, or helicopter only.	Services and materials are available within 45 miles. Limited cover soil material available at the MCMA.	Services and materials are available within 45 miles. Limited cover soil material available at the MCMA.	Most services and materials are available within 45 miles. Disposal facility not determined, may be 200+ miles to disposal facility.
State and Community Acceptance	Not acceptable.	Not acceptable.	Questionable acceptance.	Acceptable.	Acceptable.
COST					
Removal Action - Capital	$0	$1,570	$131,658	$172,385	$417,056
Removal Action - Indirect (inc. 30 years O&M at i=3%)	$0	$55,695	$318,935	$41,791	$65,764
Total NPV (30 years, i = 3%) (inc. 20% Contingency)	$0	$68,718	$540,711	$257,012	$579,385

Table 23. Comparative Analysis of Removal Action Alternatives - Haulage Ways
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Assessment Criteria	Mine Waste Alternatives				
	Alternative 1 - No Action	**Alternative 2 - Institutional Controls**	**Alternative 3 - Mine Waste Cover**	**Alternative 4 - Removal and Disposal in MCMA Repository (with historical preservation)**	**Alternative 5 - Removal and Off-Site Disposal (with historical preservation)**
EFFECTIVENESS					
Compliance with Removal Action Goals and Objectives	Does not comply.	Does not comply.	Complies.	Complies.	Complies.
Overall Protective of Public Health and the Environment	No Protection.	Provides limited human protection. No protection for ecological receptors.	Provides human and ecological protection, except for burrowing animals.	Protective of human and ecological receptors.	Protective of human and ecological receptors.
Compliance with ARARs	Does not comply.	Does not comply.	Partial compliance.	Complies.	Complies.
Long Term Effectiveness and Permanence	None.	Long-term effectiveness questionable; moderate annual O&M required.	Provides limited long-term effectiveness due to location in floodplain; moderate annual O&M required on containment.	Provides long-term effectiveness; moderate annual O&M required on repository.	Provides long-term effectiveness; minimal annual short-term O&M.
Reduction of Toxicity, Mobility, or Volume	No reduction.	No reduction.	Reduction in mobility of metals by in-place cover; no reduction in volume or toxicity	Significant reduction in mobility of metals by containment in repository; no reduction in volume or toxicity (transferred to repository).	Significant reduction in mobility of metals by off-Site disposal; no reduction in volume or toxicity (transferred off-Site).
Short Term Effectiveness	None.	Easily implemented in one field season.	Possibly implemented in one field season.	Easily implemented in one field season.	Easily implemented in one field season.
IMPLEMENTABILITY					
Technical Feasibility	Not applicable.	Easily implemented.	Moderately difficult to implement due to limited access, limited cover soil, storage near Glacier Creek, and safe preservation issues. Unknown if location suitable.	Can be implemented with limited access.	Can be implemented with limited access and transportation issues.
Administrative Feasibility	Not applicable.	Easily implemented.	Moderately difficult to implemented due to complex ownership, public interest, and historic preservation.	Some difficulty with implementation due to complex ownership, public interest, and historic preservation.	Some difficulty with implementation due to complex ownership, public interest, and historic preservation.
Availability of Services and Materials	Not applicable.	Services and materials are available within 45 miles; access by foot or helicopter only.	Services and materials are available within 45 miles. Limited cover soil material available at the MCMA.	Services and materials are available within 45 miles. Limited cover soil material available at the MCMA.	Most services and materials are available within 45 miles. Disposal facility not determined, may be 200+ miles to disposal facility.
State and Community Acceptance	Not acceptable.	Not acceptable.	Questionable acceptance.	Acceptable.	Acceptable.
COST					
Removal Action - Capital	$0	$4,325	$67,382	$14,073	$33,647
Removal Action - Indirect (inc. 30 years O&M at i=3%)	$0	$56,108	$197,512	$18,045	$8,253
Total NPV (30 years, i = 3%) (inc. 20% Contingency)	$0	$72,520	$317,873	$38,542	$50,280

Table 24. Comparative Analysis of Removal Action Alternatives - Concentrator and Tailings
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Assessment Criteria	Mine Waste Alternatives				
	Alternative 1 - No Action	**Alternative 2 - Institutional Controls**	**Alternative 3 - Mine Waste Cover**	**Alternative 4 - Removal and Disposal in MCMA Repository (with historical preservation)**	**Alternative 5 - Removal and Off-Site Disposal (with historical preservation)**
EFFECTIVENESS					
Compliance with Removal Action Goals and Objectives	Does not comply.	Does not comply.	Complies.	Complies.	Complies.
Overall Protective of Public Health and the Environment	No Protection.	Provides human and large animal protection. No protection for small ecological receptors.	Provides human and ecological protection, except for burrowing animals.	Protective of human and ecological receptors.	Protective of human and ecological receptors.
Compliance with ARARs	Does not comply.	Does not comply.	Partial compliance.	Complies, except for the 100 cy of dangerous waste.	Complies.
Long Term Effectiveness and Permanence	None.	Long-term effectiveness questionable; moderate annual O&M required.	Does not provide long-term effectiveness due to location in floodplain; moderate annual O&M required on containment.	Provides long-term effectiveness; moderate annual O&M required on repository.	Provides long-term effectiveness; minimal annual short-term O&M.
Reduction of Toxicity, Mobility, or Volume	No reduction.	No reduction.	Reduction of mobility of metals by in-place cover; no reduction in volume or toxicity.	Significant reduction of mobility of metals by containment in repository; no reduction in volume or toxicity (transferred to repository).	Significant reduction in mobility of metals by off-Site disposal; no reduction in volume or toxicity (transferred off-Site).
Short Term Effectiveness	None.	Easily implemented in one field season.	Possibly implemented in one field season.	Possibly implemented in one field season.	Possible implemented in one field season.
IMPLEMENTABILITY					
Technical Feasibility	Not applicable.	Easily implemented.	Moderately difficult to implement due to limited access, limited cover soil, storage near Glacier Creek, and safe preservation issues. Unknown if location suitable.	Some difficulty with implementation due to limited access, excavation near Glacier Creek, and safe preservation issues.	Some difficulty with implementation due to limited access, excavation near Glacier Creek, safe preservation, and transportation issues.
Administrative Feasibility	Not applicable.	Easily implemented.	Moderately difficult to implemented due to complex ownership, public interest, and historic preservation.	Some difficulty with implementation due to complex ownership, public interest, and historic preservation.	Some difficulty with implementation due to complex ownership, public interest, and historic preservation.
Availability of Services and Materials	Not applicable.	Services and materials are available within 45 miles; access by foot, ATV, or helicopter only.	Services and materials are available within 45 miles. Limited cover soil material available at the MCMA.	Services and materials are available within 45 miles. Limited cover soil material available at the MCMA.	Most services and materials are available within 45 miles. Disposal facility not determined, may be 200+ miles to disposal facility.
State and Community Acceptance	Not acceptable.	Not acceptable.	Questionable acceptance.	Acceptable.	Acceptable.
COST					
Removal Action - Capital	$0	$2,425	$450,282	$558,209	$1,423,780
Removal Action - Indirect (inc. 30 years O&M at i=3%)	$0	$55,823	$960,170	$99,665	$216,773
Total NPV (30 years, i = 3%) (inc. 20% Contingency)	$0	$69,898	$1,692,542	$789,449	$1,968,664

Table 25. Comparative Analysis of Removal Action Alternatives - Assay Shack
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Assessment Criteria	Mine Waste Alternatives				
	Alternative 1 - No Action	Alternative 2 - Institutional Controls	Alternative 3 - Mine Waste Cover	Alternative 4 - Removal and Disposal in MCMA Repository (with historical preservation)	Alternative 5 - Removal and Off-Site Disposal (with historical preservation)
EFFECTIVENESS					
Compliance with Removal Action Goals and Objectives	Does not comply.	Does not comply.	Complies.	Complies.	Complies.
Overall Protective of Public Health and the Environment	No Protection	Provides human and large animal protection. No protection for small ecological receptors.	Provides human and ecological protection, except for burrowing animals.	Protective of human and ecological receptors.	Protective of human and ecological receptors.
Compliance with ARARs	Does not comply.	Does not comply.	Partial compliance.	Complies.	Complies.
Long Term Effectiveness and Permanence	None.	Long-term effectiveness questionable, moderate annual O&M required.	Does not provide long-term effectiveness due to location in floodplain; moderate annual O&M required on containment.	Provides long-term effectiveness; moderate annual O&M required on repository.	Provides long-term effectiveness; minimal annual short-term O&M.
Reduction of Toxicity, Mobility, or Volume	No reduction.	No reduction.	Reduction in mobility of metals by in-place cover; no reduction in volume or toxicity.	Significant reduction in mobility of metals by containment in repository; no reduction in volume or toxicity (transferred to repository).	Significant reduction in mobility of metals by off-Site disposal; no reduction in volume or toxicity (transferred off-Site).
Short Term Effectiveness	None.	Easily implemented in one field season.	Possibly implemented in one field season.	Possibly implemented in one field season.	Possible implemented in one field season.
IMPLEMENTABILITY					
Technical Feasibility	Not applicable.	Easily implemented.	Moderately difficult to implement due to limited access, limited cover soil, and safe preservation issues. Unknown if location suitable.	Some difficulty with implementation due to limited access and safe preservation issues.	Some difficulty with implementation due to limited access, safe preservation, and transportation issues.
Administrative Feasibility	Not applicable.	Easily implemented.	Moderately difficult to implemented due to complex ownership, public interest, and historic preservation.	Moderately difficult to implemented due to complex ownership, public interest, and historic preservation.	Moderately difficult to implemented due to complex ownership, public interest, and historic preservation.
Availability of Services and Materials	Not applicable.	Services and materials are available within 45 miles; access by foot or helicopter only.	Services and materials are available within 45 miles. Limited cover soil material available at the MCMA.	Services and materials are available within 45 miles. Limited cover soil material available at the MCMA.	Most services and materials are available within 45 miles. Disposal facility not determined, may be 200+ miles to disposal facility.
State and Community Acceptance	Not acceptable.	Not acceptable.	Questionable acceptance.	Acceptable.	Acceptable.
COST					
Removal Action - Capital	$0	$1,380	$21,038	$22,992	$42,566
Removal Action - Indirect (inc. 30 years O&M at i=3%)	$0	$55,666	$85,895	$19,383	$9,591
Total NPV (30 years, i = 3%) (inc. 20% Contingency)	$0	$68,456	$128,320	$50,849	$62,588

Table 26. Comparative Analysis of Removal Action Alternatives - Boston-American Mine
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Assessment Criteria	Mine Waste Alternatives					Adit/Seep Water Alternatives		
	Alternative 1 - No Action	Alternative 2 - Institutional Controls	Alternative 3 - Mine Waste Cover	Alternative 4 - Removal and Disposal in MCMA Repository	Alternative 5 - Removal and Off-Site Disposal	Alternative 1 - No Action	Alternative 2 - Diversion and Infiltration	Alternative 3 - Passive Treatment and Infiltration
EFFECTIVENESS								
Compliance with Removal Action Goals and Objectives	Does not comply.	Complies, except ecological exposure.	Complies.	Complies.	Complies.	Does not comply	Complies.	Complies.
Overall Protective of Public Health and the Environment	No Additional Protection.	Provides human protection. No protection for ecological receptors.	Provides human and ecological (most) protection. Burrowing animals may be at risk.	Protective of human and ecological receptors.	Protective of human and ecological receptors.	No additional protection.	Will reduce the impact on surface water.	Will reduce the impact on surface water.
Compliance with ARARs	Does not comply.	Does not comply.	Partial compliance.	Complies	Complies.	Does not comply.	Does not comply with chemical-specific ARARs	Does not comply with chemical-specific ARARs
Long Term Effectiveness and Permanence	None.	Provides long-term effectiveness; minimal annual O&M required.	Provides limited long-term effectiveness due to possible flood and avalanche hazards; moderate annual O&M required.	Provides long-term effectiveness; moderate annual O&M required on repository.	Provides long-term effectiveness; minimal annual short-term O&M.	None.	Provides long-term effectiveness; minimal annual O&M required.	Provides long-term effectiveness; moderate annual O&M required.
Reduction of Toxicity, Mobility, or Volume	No reduction.	No reduction.	Reduction in mobility of metals by in-place cover; no reduction in volume or toxicity.	Significant reduction in mobility of metals by containment in repository; no reduction in volume or toxicity (transferred to repository).	Significant reduction in mobility of metals by off-Site disposal; no reduction in volume or toxicity (transferred off-Site).	None.	Reduction in mobility and toxicity of metals by attenuation in/through infiltration basin; no reduction in volume.	Reduction in mobility and toxicity of metals by treatment and attenuation in/through infiltration basin; no reduction in volume.
Short Term Effectiveness	None.	Easily implemented in one field season.	Possibly implemented in one field season.	Possibly implemented in one field season.	Possibly implemented in one field season.	None.	Possibly implemented in one field season.	Possibly implemented in one field season.
IMPLEMENTABILITY								
Technical Feasibility	Not applicable.	Easily implemented.	Moderately difficult to implement due to irregular terrain, remote location, and limited cover material. Unknown if mine suitable.	Moderately difficult to implement due to irregular terrain, remote location, and limited cover material.	Moderately difficult to implement due to irregular terrain, remote location, and limited cover material.	Not applicable.	Moderately difficult to implement due to irregular terrain, remote location, and limited native soils, and remote location. Need to design/build infiltration system. Unknown if mine suitable.	Moderately difficult to implement due to irregular terrain, remote location, and limited native soils, and remote location. Need to design/build infiltration system. Unknown if mine suitable.
Administrative Feasibility	Not applicable.	Easily implemented.	Unknown due to complex ownership, and potential historical significance.	Unknown due to complex ownership, and potential historical significance.	Unknown due to complex ownership, and potential historical significance.	Not applicable.	Unknown due to complex ownership, and potential historical significance.	Unknown due to complex ownership, and potential historical significance.
Availability of Services and Materials	Not applicable.	Services and materials are available within 45 miles; access by foot or helicopter only.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Limited cover soil material available at mine.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Limited cover soil material available at the MCMA.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Disposal facility not determined; may be 200+ miles to disposal facility.	Not applicable.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Minimum useable native materials at mine.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Water treatment materials must be hauled to site. Minimum useable native materials at mine.
State and Community Acceptance	Not acceptable.	Probable acceptance due to remote and Wilderness location.	Probable acceptance due to remote and Wilderness location.	Acceptable.	Acceptable.	Not acceptable.	Presumed acceptable.	Presumed acceptable.
COST								
Removal Action - Capital	$0	$0	$0	$0	$0	$0	$0	$0
Removal Action - Indirect (inc. 30 years O&M at i=3%)	$0	$58,221	$506,825	$76,677	$158,895	$0	$17,115	$41,955
Total NPV (30 years, i = 3%) (inc. 20% Contingency)	$0	$91,957	$880,658	$577,954	$1,436,189	$0	$49,422	$85,710

Table 27. Comparative Analysis of Removal Action Alternatives - Sheridan Mine
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Assessment Criteria	Mine Waste Alternatives				
	Alternative 1 - No Action	**Alternative 2 - Institutional Controls**	**Alternative 3 - Mine Waste Cover**	**Alternative 4 - Removal and Disposal in MCMA Repository**	**Alternative 5 - Removal and Off-Site Disposal**
EFFECTIVENESS					
Compliance with Removal Action Goals and Objectives	Does not comply.	Complies, except ecological exposure.	Complies.	Complies.	Complies.
Overall Protective of Public Health and the Environment	No Additional Protection.	Provides human protection. No protection for ecological receptors.	Provides human and ecological (most) protection. Burrowing animals may be at risk.	Protective of human and ecological receptors.	Protective of human and ecological receptors.
Compliance with ARARs	Does not comply.	Does not comply.	Partial compliance.	Complies.	Complies.
Long Term Effectiveness and Permanence	None.	Provides long-term effectiveness; minimal annual O&M required.	Provides limited long-term effectiveness due to location in flood plain; moderate annual O&M required.	Provides long-term effectiveness; moderate annual O&M required on repository.	Provides long-term effectiveness; minimal annual short-term O&M.
Reduction of Toxicity, Mobility, or Volume	No reduction.	No reduction.	Reduction in mobility of metals by in-place cover; no reduction in volume or toxicity.	Significant reduction in mobility of metals by containment in repository; no reduction in volume or toxicity (transferred to repository)	Significant reduction in mobility of metals by off-Site disposal; no reduction in volume or toxicity (transferred off-Site)
Short Term Effectiveness	None.	Easily implemented in one field season.	Possibly implemented in one field season.	Possibly implemented in one field season.	Possibly implemented in one field season.
IMPLEMENTABILITY					
Technical Feasibility	Not applicable.	Easily implemented.	Difficult to implement due to irregular terrain, stream crossing, remote location, and lack of cover material. Unknown if mine suitable.	Difficult to implement due to irregular terrain and remote location.	Difficult to implement due to irregular terrain and remote location.
Administrative Feasibility	Not applicable.	Easily implemented.	Unknown due to location in Wilderness area, possible road construction, and potential historical significance.	Unknown due to location in Wilderness area and potential historical significance	Unknown due to location in Wilderness area and potential historical significance
Availability of Services and Materials	Not applicable.	Services and materials are available within 45 miles; access by foot or helicopter only.	Equipment not readily available; may be difficult to schedule. Limited cover soil material available at the MCMA.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Limited cover soil material available at the MCMA.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Disposal facility not determined; may be 200+ miles to disposal facility.
State and Community Acceptance	Not acceptable.	Probable acceptance due to remote and Wilderness location	Probably not acceptable.	Acceptable.	Acceptable.
COST					
Removal Action - Capital	$0	$19,315	$87,834	$307,331	$370,945
Removal Action - Indirect (inc. 30 years O&M at i=3%)	$0	$66,706	$211,285	$62,033	$58,848
Total NPV (30 years, i = 3%) (inc. 20% Contingency)	$0	$103,226	$358,943	$443,237	$515,752

Table 28. Comparative Analysis of Removal Action Alternatives - Sidney Mine
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Assessment Criteria	Mine Waste Alternatives					Adit/Seep Water Alternatives		
	Alternative 1 - No Action	**Alternative 2 - Institutional Controls**	**Alternative 3 - Mine Waste Cover**	**Alternative 4 - Removal and Disposal in MCMA Repository**	**Alternative 5 - Removal and Off-Site Disposal**	**Alternative 1 - No Action**	**Alternative 2 - Diversion and Infiltration**	**Alternative 3 - Passive Treatment and Infiltration**
EFFECTIVENESS								
Compliance with Removal Action Goals and Objectives	Does not comply.	Complies, except ecological exposure.	Complies.	Complies.	Complies.	Does not comply	Complies.	Complies.
Overall Protective of Public Health and the Environment	No Additional Protection.	Provides human protection. No protection for ecological receptors.	Provides human and ecological (most) protection. Burrowing animals may be at risk.	Protective of human and ecological receptors.	Protective of human and ecological receptors.	No additional protection.	Will reduce the impact on surface water.	Will reduce the impact on surface water.
Compliance with ARARs	Does not comply.	Does not comply.	Partial compliance.	Complies	Complies.	Does not comply.	Does not comply with chemical-specific ARARs	Does not comply with chemical-specific ARARs
Long Term Effectiveness and Permanence	None.	Provides long-term effectiveness; minimal annual O&M required.	Provides limited long-term effectiveness due to possible flood and avalanche hazards; moderate annual O&M required.	Provides long-term effectiveness; moderate annual O&M required on repository.	Provides long-term effectiveness; minimal annual short-term O&M.	None.	Provides limited long-term effectiveness due to location in flood plain; minimal annual O&M required.	Provides limited long-term effectiveness due to location in flood plain; moderate annual O&M required.
Reduction of Toxicity, Mobility, or Volume	No reduction.	No reduction.	Reduction in mobility of metals by in-place cover; no reduction in volume or toxicity.	Significant reduction in mobility of metals by containment in repository; no reduction in volume or toxicity (transferred to repository).	Significant reduction in mobility of metals by off-Site disposal; no reduction in volume or toxicity (transferred off-Site).	None.	Reduction in mobility and toxicity of metals by attenuation in/through infiltration basin; no reduction in volume.	Reduction in mobility and toxicity of metals by treatment and attenuation in/through infiltration basin; no reduction in volume.
Short Term Effectiveness	None.	Easily implemented in one field season.	Possibly implemented in one field season.	Possibly implemented in one field season.	Possibly implemented in one field season.	None.	Possibly implemented in one field season.	Possibly implemented in one field season.
IMPLEMENTABILITY								
Technical Feasibility	Not applicable.	Easily implemented.	Very difficult to implement due to remote location, irregular terrain, proximity to stream, avalanche hazard, and limited cover material. Unknown if mine suitable.	Very difficult to implement due to irregular terrain, proximity to stream, and remote location.	Very difficult to implement due to irregular terrain, proximity to stream, and remote location.	Not applicable.	Difficult to implement due to terrain, proximity to stream, avalanche hazard, limited native soils, and remote location. Need to design/build infiltration system. Unknown if mine suitable.	Difficult to implement due to terrain, proximity to stream, avalanche hazard, limited native soils, and remote location. Need to design/build treatment system. Unknown if mine suitable.
Administrative Feasibility	Not applicable.	Easily implemented.	Unknown due to location in Wilderness area, proximity to stream, and potential historical significance.	Unknown due to location in Wilderness area, proximity to stream, and potential historical significance.	Unknown due to location in Wilderness area, proximity to stream, and potential historical significance.	Not applicable.	Unknown due to location in Wilderness area, proximity to stream, and potential historical significance.	Unknown due to location in Wilderness area, proximity to stream, and potential historical significance.
Availability of Services and Materials	Not applicable.	Services and materials are available within 45 miles; access by foot or helicopter only.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Limited cover soil material available at minee.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Limited cover soil material available at the MCMA.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Disposal facility not determined; may be 200+ miles to disposal facility.	Not applicable.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Minimum useable native materials at mine.	Equipment (i.e., heavy lift helicopters) not readily available; may be difficult to schedule. Water treatment materials must be hauled to mine. Minimum useable native materials at mine.
State and Community Acceptance	Not acceptable.	Probable acceptance due to remote and Wilderness location.	Probable acceptance due to remote and Wilderness location.	Acceptable.	Acceptable.	Not acceptable.	Presumed acceptable.	Presumed acceptable.
COST								
Removal Action - Capital	$0	$19,125	$67,703	$206,820	$248,414	$0	$40,170	$45,570
Removal Action - Indirect (inc. 30 years O&M at i=3%)	$0	$66,678	$169,180	$46,957	$40,468	$0	$27,370	$52,211
Total NPV (30 years, i = 3%) (inc. 20% Contingency)	$0	$102,964	$284,259	$304,532	$346,659	$0	$81,048	$117,337

Table 29. Cost Summaries for Mine Waste and Adit/Seep Water Alternatives
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Feature Name	Description	Mine Waste Alternatives				Adit/Seep Water Alternatives	
		Alternative 2 - Institutional Controls	Alternative 3 - Mine Waste Cover [1]	Alternative 4 - Removal and Disposal in MCMA Repository	Alternative 5 - Removal and Off-Site Disposal	Alternative 2 - Diversion and Infiltration	Alternative 3 - Passive Treatment and Infiltration
Pride of the Mountains Mine	Removal Action Subtotal =	$ 56,660	$ 549,395	$ 2,284,668	$ 2,774,010	$ 90,770	$ 96,170
	Indirect (Design/Oversight) Subtotal =	$ 8,499	$ 82,409	$ 342,700	$ 416,102	$ 13,616	$ 14,426
	30-Years Post RA O&M (NPV i=3%) =	$ 63,809	$ 1,029,591	$ 15,934	$ 3,206	$ 21,345	$ 45,375
	Contingency (20% Subtotal + Indirect) =	$ 25,794	$ 332,279	$ 528,660	$ 638,664	$ 25,146	$ 31,194
	REMOVAL ACTION TOTAL =	**$ 154,762**	**$ 1,993,674**	**$ 3,171,962**	**$ 3,831,981**	**$ 150,876**	**$ 187,165**
New Discovery Mine	Removal Action Subtotal =	$ 58,470	$ 310,837	$ 1,123,118	$ 1,358,002	$ 66,770	$ 72,170
	Indirect (Design/Oversight) Subtotal =	$ 8,771	$ 46,626	$ 168,468	$ 203,700	$ 10,016	$ 10,826
	30-Years Post RA O&M (NPV i=3%) =	$ 63,809	$ 562,381	$ 15,934	$ 3,206	$ 21,345	$ 45,375
	Contingency (20% Subtotal + Indirect) =	$ 26,210	$ 183,969	$ 261,504	$ 312,982	$ 19,626	$ 25,674
	REMOVAL ACTION TOTAL =	**$ 157,260**	**$ 1,103,812**	**$ 1,569,023**	**$ 1,877,890**	**$ 117,756**	**$ 154,045**
Pride of the Woods Mine	Removal Action Subtotal =	$ 19,980	$ 144,382	$ 419,400	$ 507,481	$ 32,970	$ 38,370
	Indirect (Design/Oversight) Subtotal =	$ 2,997	$ 21,657	$ 62,910	$ 76,122	$ 4,946	$ 5,756
	30-Years Post RA O&M (NPV i=3%) =	$ 63,809	$ 307,642	$ 15,934	$ 3,206	$ 21,345	$ 45,375
	Contingency (20% Subtotal + Indirect) =	$ 17,357	$ 94,736	$ 99,649	$ 117,362	$ 11,852	$ 17,900
	REMOVAL ACTION TOTAL =	**$ 104,143**	**$ 568,417**	**$ 597,892**	**$ 704,172**	**$ 71,112**	**$ 107,401**
Mystery Mine	Removal Action Subtotal =	$ 74,665	$ 1,155,819	$ 14,341,619	$ 17,473,409	$ 101,570	$ 106,970
	Indirect (Design/Oversight) Subtotal =	$ 11,200	$ 173,373	$ 2,151,243	$ 2,621,011	$ 15,236	$ 16,046
	30-Years Post RA O&M (NPV i=3%) =	$ 63,809	$ 2,185,272	$ 15,934	$ 3,206	$ 21,345	$ 45,375
	Contingency (20% Subtotal + Indirect) =	$ 29,935	$ 702,893	$ 3,301,759	$ 4,019,525	$ 27,630	$ 33,678
	REMOVAL ACTION TOTAL =	**$ 179,609**	**$ 4,217,357**	**$ 19,810,555**	**$ 24,117,152**	**$ 165,780**	**$ 202,069**
Golden Cord Mine	Removal Action Subtotal =	$ 5,855	$ 216,859	$ 1,562,354	$ 1,904,893	$ -	$ -
	Indirect (Design/Oversight) Subtotal =	$ 878	$ 32,529	$ 234,353	$ 285,734		
	30-Years Post RA O&M (NPV i=3%) =	$ 63,809	$ 477,386	$ 15,934	$ 3,206	$ -	$ -
	Contingency (20% Subtotal + Indirect) =	$ 14,108	$ 145,355	$ 362,528	$ 438,767	$ -	$ -
	REMOVAL ACTION TOTAL =	**$ 84,651**	**$ 872,129**	**$ 2,175,169**	**$ 2,632,600**	**$ -**	**$ -**
Justice Mine	Removal Action Subtotal =	$ 23,360	$ 831,666	$ 6,265,842	$ 7,636,001	$ 125,570	$ 130,970
	Indirect (Design/Oversight) Subtotal =	$ 3,504	$ 124,750	$ 939,876	$ 1,145,400	$ 18,836	$ 19,646
	30-Years Post RA O&M (NPV i=3%) =	$ 63,809	$ 1,648,125	$ 15,934	$ 3,206	$ 21,345	$ 45,375
	Contingency (20% Subtotal + Indirect) =	$ 18,135	$ 520,908	$ 1,444,331	$ 1,756,921	$ 33,150	$ 39,198
	REMOVAL ACTION TOTAL =	**$ 108,808**	**$ 3,125,449**	**$ 8,665,983**	**$ 10,541,528**	**$ 198,900**	**$ 235,189**
Rainy Mine	Removal Action Subtotal =	$ 34,315	$ 131,220	$ 241,940	$ 564,906	$ 16,370	$ 21,770
	Indirect (Design/Oversight) Subtotal =	$ 5,147	$ 19,683	$ 36,291	$ 84,736	$ 2,456	$ 3,266
	30-Years Post RA O&M (NPV i=3%) =	$ 55,459	$ 253,747	$ 15,934	$ 3,206	$ 13,505	$ 37,535
	Contingency (20% Subtotal + Indirect) =	$ 18,984	$ 80,930	$ 58,833	$ 130,570	$ 6,466	$ 12,514
	REMOVAL ACTION TOTAL =	**$ 113,906**	**$ 485,580**	**$ 352,998**	**$ 783,417**	**$ 38,796**	**$ 75,084**
Ore Collector	Removal Action Subtotal =	$ 1,570	$ 131,658	$ 172,385	$ 417,056	$ -	$ -
	Indirect (Design/Oversight) Subtotal =	$ 236	$ 19,749	$ 25,858	$ 62,558		
	30-Years Post RA O&M (NPV i=3%) =	$ 55,459	$ 299,186	$ 15,934	$ 3,206	$ -	$ -
	Contingency (20% Subtotal + Indirect) =	$ 11,453	$ 90,119	$ 42,835	$ 96,564	$ -	$ -
	REMOVAL ACTION TOTAL =	**$ 68,718**	**$ 540,711**	**$ 257,012**	**$ 579,385**	**$ -**	**$ -**
Haulage ways	Removal Action Subtotal =	$ 4,325	$ 67,382	$ 14,073	$ 33,647	$ -	$ -
	Indirect Costs Subtotal =	$ 649	$ 10,107	$ 2,111	$ 5,047	$ -	$ -
	30-Years Post RA O&M (NPV i=3%) =	$ 55,459	$ 187,405	$ 15,934	$ 3,206	$ -	$ -
	Contingency (20% Subtotal + Indirect) =	$ 12,087	$ 52,979	$ 6,424	$ 8,380	$ -	$ -
	REMOVAL ACTION TOTAL =	**$ 72,520**	**$ 317,873**	**$ 38,542**	**$ 50,280**	**$ -**	**$ -**
Concentrator & Tailings	Removal Action Subtotal =	$ 2,425	$ 450,282	$ 558,209	$ 1,423,780	$ -	$ -
	Indirect Costs Subtotal =	$ 364	$ 67,542	$ 83,731	$ 213,567	$ -	$ -
	30-Years Post RA O&M (NPV i=3%) =	$ 55,459	$ 892,627	$ 15,934	$ 3,206	$ -	$ -
	Contingency (20% Subtotal + Indirect) =	$ 11,650	$ 282,090	$ 131,575	$ 328,111	$ -	$ -
	REMOVAL ACTION TOTAL =	**$ 69,898**	**$ 1,692,542**	**$ 789,449**	**$ 1,968,664**	**$ -**	**$ -**
Assay Shack	Removal Action Subtotal =	$ 1,380	$ 21,038	$ 22,992	$ 42,566	$ -	$ -
	Indirect Costs Subtotal =	$ 207	$ 3,156	$ 3,449	$ 6,385	$ -	$ -
	30-Years Post RA O&M (NPV i=3%) =	$ 55,459	$ 82,739	$ 15,934	$ 3,206	$ -	$ -
	Contingency (20% Subtotal + Indirect) =	$ 11,409	$ 21,387	$ 8,475	$ 10,431	$ -	$ -
	REMOVAL ACTION TOTAL =	**$ 68,456**	**$ 128,320**	**$ 50,849**	**$ 62,588**	**$ -**	**$ -**
Boston-American Mine	Removal Action Subtotal =	$ 18,410	$ 227,057	$ 404,952	$ 1,037,929	$ 24,070	$ 29,470
	Indirect Costs Subtotal =	$ 2,762	$ 34,059	$ 60,743	$ 155,689	$ 3,611	$ 4,421
	30-Years Post RA O&M (NPV i=3%) =	$ 55,459	$ 472,766	$ 15,934	$ 3,206	$ 13,505	$ 37,535
	Contingency (20% Subtotal + Indirect) =	$ 15,326	$ 146,776	$ 96,326	$ 239,365	$ 8,237	$ 14,285
	REMOVAL ACTION TOTAL =	**$ 91,957**	**$ 880,658**	**$ 577,954**	**$ 1,436,189**	**$ 49,422**	**$ 85,710**
Sheridan Mine	Removal Action Subtotal =	$ 19,315	$ 87,834	$ 307,331	$ 370,945	$ -	$ -
	Indirect Costs Subtotal =	$ 2,897	$ 13,175	$ 46,100	$ 55,642		
	30-Years Post RA O&M (NPV i=3%) =	$ 63,809	$ 198,110	$ 15,934	$ 3,206	$ -	$ -
	Contingency (20% Subtotal + Indirect) =	$ 17,204	$ 59,824	$ 73,873	$ 85,959	$ -	$ -
	REMOVAL ACTION TOTAL =	**$ 103,226**	**$ 358,943**	**$ 443,237**	**$ 515,752**	**$ -**	**$ -**
Sidney Mine	Removal Action Subtotal =	$ 19,125	$ 67,703	$ 206,820	$ 248,414	$ 40,170	$ 45,570
	Indirect Costs Subtotal =	$ 2,869	$ 10,155	$ 31,023	$ 37,262	$ 6,026	$ 6,836
	30-Years Post RA O&M (NPV i=3%) =	$ 63,809	$ 159,024	$ 15,934	$ 3,206	$ 21,345	$ 45,375
	Contingency (20% Subtotal + Indirect) =	$ 17,161	$ 47,377	$ 50,755	$ 57,776	$ 13,508	$ 19,556
	REMOVAL ACTION TOTAL =	**$ 102,964**	**$ 284,259**	**$ 304,532**	**$ 346,659**	**$ 81,048**	**$ 117,337**
MCMA	**REMOVAL ACTION TOTALS =**	**$ 1,480,877**	**$ 16,569,724**	**$ 38,805,157**	**$ 49,448,257**	**$ 873,693**	**$ 1,163,999**

Table 30. Cost Summary of Recommended Removal Action
Monte Cristo Mining Area, Engineering Evaluation / Cost Analysis

Feature Name	Mine Waste Alternatives		Adit/Seep Water Alternatives		Subtotals Removal Action Construction Cost	Indirect Costs			Subtotals Indirect Costs	Contingency (20% Construction + Indirect)	Totals Removal Action Cost
	Total Cost Physical Hazard Reduction	Total Cost Alternative 4 - Removal & Disposal in MCMA Repository	Total Cost Alternative 2 - Diversion and Infiltration	Total Cost Alternative 3 - Passive Treatment and Infiltration		RA Design (5% of RA Subtotals)	RA Oversight (10% of RA Subtotals)	Post RA O&M (30-Year O&M NPV (i-3%))			
Pride of the Mountains Mine	$ 50,520	$ -	$ -	$ -	**$ 50,520**	$ 2,526	$ 5,052	$ 10,800	**$ 18,378**	$ 13,780	**$ 82,677**
New Discovery Mine	$ 50,520	$ -	$ -	$ -	**$ 50,520**	$ 2,526	$ 5,052	$ 10,800	**$ 18,378**	$ 13,780	**$ 82,677**
Pride of the Woods Mine	$ 16,840	$ 369,262	$ -	$ 38,370	**$ 424,472**	$ 21,224	$ 42,447	$ 45,375	**$ 109,046**	$ 106,704	**$ 640,221**
Mystery Mine	$ 72,265	$ -	$ -	$ -	**$ 72,265**	$ 3,613	$ 7,227	$ 10,800	**$ 21,640**	$ 18,781	**$ 112,686**
Golden Cord Mine	$ 5,855	$ -	ND	ND	**$ 5,855**	$ 293	$ 586	$ 10,800	**$ 11,678**	$ 3,507	**$ 21,040**
Justice Mine	$ 23,360	$ -	$ -	$ -	**$ 23,360**	$ 1,168	$ 2,336	$ 10,800	**$ 14,304**	$ 7,533	**$ 45,197**
Rainy Mine	$ 28,840	$ 91,008	$ -	$ -	**$ 119,848**	$ 5,992	$ 11,985	$ 10,800	**$ 28,777**	$ 29,725	**$ 178,349**
Ore Collector	$ -	$ 79,891	ND	ND	**$ 79,891**	$ 3,995	$ 7,989	$ -	**$ 11,984**	$ 18,375	**$ 110,249**
Haulage Ways	$ -	$ 6,674	ND	ND	**$ 6,674**	$ 334	$ 667	$ -	**$ 1,001**	$ 1,535	**$ 9,210**
Concentrator and Tailings	$ -	$ 254,828	ND	ND	**$ 254,828**	$ 12,741	$ 25,483	$ -	**$ 38,224**	$ 58,610	**$ 351,662**
Assay Shack	$ -	$ 15,592	ND	ND	**$ 15,592**	$ 780	$ 1,559	$ -	**$ 2,339**	$ 3,586	**$ 21,517**
Boston-American Mine	$ 16,840	$ -	$ -	$ -	**$ 16,840**	$ 842	$ 1,684	$ 10,800	**$ 13,326**	$ 6,033	**$ 36,199**
Sheridan Mine	$ 16,840	$ -	ND	ND	**$ 16,840**	$ 842	$ 1,684	$ 10,800	**$ 13,326**	$ 6,033	**$ 36,199**
Sidney Mine	$ 16,840	$ 174,256	$ -	$ 45,570	**$ 236,666**	$ 11,833	$ 23,667	$ 45,375	**$ 80,875**	$ 63,508	**$ 381,049**
Road Construction Cost [1]					**$ 735,144**	$ 73,514	$ 73,514	$ 44,885	**$ 191,914**	$ 185,411	**$ 1,112,469**
MCMA Repository Construction Cost					**$ 1,032,618**	$ 51,631	$ 103,262	$ 178,188	**$ 333,080**	$ 273,140	**$ 1,638,838**
Wilderness Boundary Warning Signage (replacement every 5 years under O&M)					**$ 2,570**	$ -	$ -	$ 10,075	**$ 10,075**	$ 2,529	**$ 15,174**
Data Gap Investigation - Removal Action Related					**$ 200,000**	$ -	$ -	$ -	**$ -**	$ 40,000	**$ 240,000**
Data Gap Investigation - Future Items					**$ 300,000**	$ -	$ -	$ -	**$ -**	$ 60,000	**$ 360,000**
TOTAL COST OF RECOMMENDED REMOVAL ACTION FOR MCMA =					**$ 3,644,501**	**$ 193,854**	**$ 314,193**	**$ 410,296**	**$ 918,343**	**$ 912,569**	**$ 5,475,413**

NOTES:
Abbreviations: NPV = Net Present Value; i = interest rate; ND = No Discharge.
1. Design costs for access road at 10%, not 5% indicated