FINAL

Site Investigation Report

Smoky Canyon Mine, Caribou County, Idaho

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APPENDIX B

APPENDIX B
SITE INVESTIGATION DATA

The Appendix B data tables provide field and laboratory measurement data for all environmental samples collected in support of the Site Investigation.

Tables are included for each of the different sample or media types, as follows:

- Groundwater
- Surface water
- Sediment
- Soil
- Vegetation
- Terrestrial tissues
- Aquatic tissues

These data tables provide the following information for each sample:

- Location identifier
- Sample description (sample type, depth, species, etc.)
- Date and time of sample collection
- Field measurement data, if any
- Laboratory reported concentration for each parameter measured
- Validation qualifiers assigned to results for the Constituents of Potential Concern

As described in detail in Section 5 of the Site Investigation Report, data validation was performed for the COPC analyses. Validation qualifiers are reported with individual sample results for the COPCs. The validation qualifiers assigned are defined as follows:

- U = Not detected above MDL;
- UJ = not confirmed present at or above MDL and value reported is estimated quantity (true detection limit uncertain);
- J = result is an estimated quantity and may be biased low (J-) or high (J+); and
- R = result rejected for project data uses.

<u>Electronic data tables</u>

All field and laboratory measurement results collected in support of the Site Investigation, and reported in the Site Investigation Report, are provided on the attached compact disc (CD). The CD contains a set of raw data tables, with a separate table for each measurement or sample type, as follows:

- Groundwater water levels (elevations) and water quality data
- Surface water flow measurements and water quality data
- Sediment sample analyses
- Soil sample descriptions (depth range, etc.) and sample analyses

- Vegetation sample descriptions (vegetation type, etc.) and sample analyses
- Terrestrial tissue sample analyses
- Aquatic tissue sample analyses

Each data table, as listed above, includes the following information for each record:

- Location
- Location description
- Location coordinates (x,y UTM coordinates)
- Measurement or sample date and time
- Field sample identification number
- Measurement or sample type
- Measurement units
- Measurement parameter
- Laboratory analysis method
- Result
- Laboratory qualifier
- Method detection limit
- Laboratory reporting limit (when provided)
- Validation status
- Validation qualifier
- Comments (if any relevant to data quality, data use or documentation)

Electronic Data Tables
On CD in the back of Volume 2

Appendix B

Groundwater Chemistry - Shallow Groundwater

Sample Location	Overburden Backfill Well (Well 11)			GW-15					GW-19a		
Sample Date	10/30/2003	5/9/2004	7/25/2004	10/29/2003	2/4/2004	5/9/2004	7/25/2004	11/8/2004	10/30/2003	5/8/2004	7/21/2004
COPCs											
Selenium, Total (mg/L)	0.421	1.22 (4.1)	0.576	0.309	0.317	1.33 (1.1)	0.61 J	0.664	0.0016	0.0045 (0.002 J)	0.0014 U
Selenium, Dissolved (mg/L)	1.01	1.06 (4.2)	0.299	0.311	0.304	1.05 (1.4)	0.317 J	0.608	0.0009	0.00084 U (0.001 J)	0.00063 J
Selenium, +6 (mg/L)		(4.7)				(1.39)				(0.001 U)	
Selenium, +4 (mg/L)		(0.004 J)				(0.001 U)				(0.001 U)	
Selenium, organic (mg/L)		(0.001 U)				(0.012)				(0.001 J)	
Cadmium, Total (mg/L)	0.259	0.661	0.234 J	0.0019	0.001	0.0021	0.0022 J	0.0014	0.0015	0.0056	0.0011
Cadmium, Dissolved (mg/L)	0.0836	0.128 J	0.172	0.00007 J	0.0001 U	0.0001 UJ	0.0001 U	0.0001 U	0.00006 UJ	0.0001 UJ	0.0001 U
Chromium, Total (mg/L)	0.308	0.613	0.0757	0.0645	0.0429	0.0722	0.0849	0.0449 J	0.0536	0.122	0.0297
Chromium, Dissolved (mg/L)	0.0004	0.00066 J	0.0011 J	0.0003 U	0.0003 U	0.00041 J	0.00046 J	0.0005 J	0.0003 U	0.0003 U	0.0003 U
Copper, Total (mg/L)	0.0626	0.0984	0.0159	0.0562	0.0332	0.0592	0.0743	0.0374	0.0405	0.0963	0.0195
Copper, Dissolved (mg/L)	0.003	0.0021 U	0.0022 J	0.0026 U	0.0021 U	0.0021 U	0.0021 U	0.0032	0.0026 U	0.0021 U	0.0021 U
Nickel, Total (mg/L)											
Nickel, Dissolved (mg/L)	0.449	0.816	0.558	0.0036	0.0056 U	0.0013 U	0.0016 U	0.0017 J	0.0174	0.0209	0.0038 U
Vanadium, Total (mg/L)											
Vanadium, Dissolved (mg/L)	0.0679	0.0765	0.0754	0.00025	0.0002	0.00037 J	0.00041 U	0.0005 J	0.00042	0.0002 U	0.00041 U
Zinc, Total (mg/L)											
Zinc, Dissolved (mg/L)	3.85	4.32 J	4.54	0.0018	0.0019 U	0.0002 UJ	0.0002 U	0.0011 U	0.0018 U	0.0016 U	0.0006 U
Field Parameters											
pH (SU)	6.5	6.64	6.77	7.62	7.4	7.52	7.36	7.59	7.46	7.32	7.41
Conductivity at 25° C (µmhos/cm)	1691	1889	2778	462	397	795	780	749	331	333	500
Temperature (C)	6.9	10.89	15.2	7	6.8	7.55	7.69	6	7.3	6.74	14.9
Oxygen, Dissolved (mg/L)	5.57	5	5.13	7.6	5.48	7.46	8.17	7.68	6.91	2.62	3.02
Turbidity (NTU)	1000 >	1000 >		1000 >	1000 >	1000 >		1000 >	1000 >	1000 >	569
ORP (mV)	157.1	229.6	225.6	93.3	102.7	134.9	217.5		20.4	67.1	221.3
DTW (Feet)	100.25	100.21	99	38.83	40.49	8.19	12.58		8.15	4.95	5.09
Major Ions											
TDS (mg/L)	2470 J	2546		475 J	405 U	908	520	579	298 J	293	293
TSS (mg/L)											
Calcium, Total (mg/L)											
Calcium, Dissolved (mg/L)	618	585		110	93	210	133	149	76	75.5	72.3
Magnesium, Total (mg/L)											
Magnesium, Dissolved (mg/L)	118	94.4		21.7	18.9	37.2	23.9	26	17.1	16.8	16.8
Sodium, Total (mg/L)											
Sodium, Dissolved (mg/L)	16.6	19.7		5.36	4.31	5.24	3.82	4.41	7.96	7.34	7.11
Potassium, Total (mg/L)											
Potassium, Dissolved (mg/L)	2.2	2.27		2.23	1.13	1.44	0.898	1.27	0.959	0.892	0.731
Hardness as CaCO3 (mg/L)											
Alkalinity, as CaCO3 (mg/L)	198 J	254		218 J	226	266	288	253.88	236 J	257	265.39
Bicarbonate as CaCO3 (mg/L)	198 J	254		218 J	226	266	288	253.88	236 J	257	265.39
Carbonate as CaCO3 (mg/L)	1 UJ	1 U		1 UJ	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U
Hydroxide as CaCO3 (mg/L)	1 UJ	1 U		1 UJ	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U
Fluoride (mg/L)	0.5 UJ	0.39		0.166 J	0.201	0.224	0.219	0.18	0.108 J	0.139	0.136
Chloride (mg/L)	109 J	104		3.86 J	2.47	5.76	2.29	2.57	3.96 J	3.33	3.57
Sulfate (as SO4) (mg/L)	1666 J	1484		147 J	109	430	184	219	30.5 J	27.7	30.7

Appendix B

Groundwater Chemistry - Shallow Groundwater

Sample Location	Overburden Backfill Well (Well 11)			GW-15					GW-19a		
Sample Date	10/30/2003	5/9/2004	7/25/2004	10/29/2003	2/4/2004	5/9/2004	7/25/2004	11/8/2004	10/30/2003	5/8/2004	7/21/2004
Nutrients											
Ammonia (as N) (mg/L)											
Nitrate + Nitrite (as N) (mg/L)	0.16 J	0.15		0.34 J	0.31 U	0.27	0.03	0.09	0.25 J	0.4	0.31
Nitrate (as N) (mg/L)											
Nitrite (as N) (mg/L)											
Orthophosphate (as P) (mg/L)											
Phosphorus, Total (mg/L)	38.1 J	16.4		4.23 J	1.95	4.73	22.986	3.22	2.31 J	4.88	1.169
Trace Elements											
Aluminum, Total (mg/L)											
Aluminum, Dissolved (mg/L)	0.022	0.0277	0.006 U	0.0097 U	0.012	0.0177 J	0.006 U	0.0066 U	0.0097 U	0.0117 J	0.006 U
Antimony, Total (mg/L)											
Antimony, Dissolved (mg/L)											
Arsenic, Total (mg/L)											
Arsenic, Dissolved (mg/L)											
Barium, Total (mg/L)											
Barium, Dissolved (mg/L)											
Beryllium, Total (mg/L)											
Beryllium, Dissolved (mg/L)											
Boron, Total (mg/L)											
Boron, Dissolved (mg/L)											
Cobalt, Total (mg/L)											
Cobalt, Dissolved (mg/L)											
Iron, Total (mg/L)	3.3	26.7	3.88	3.3	32.2	58.1	75.5		3.3	122	20.6
Iron, Dissolved (mg/L)	0.0045 U	0.0124 U	0.0124 U	0.0045 U	0.013 U	0.0124 U	0.0124 U	0.011 U	0.0045 U	0.0124 U	0.0124 U
Iron, Ferrous (mg/L)	3.3			3.3	2.19				3.3		
Lead, Total (mg/L)											
Lead, Dissolved (mg/L)											
Manganese, Total (mg/L)											
Manganese, Dissolved (mg/L)	0.0108	0.0068	0.0058	0.0663	0.0422 J	0.0026	0.0015 J	0.193	0.0054	0.894	0.0526
Mercury, Total (mg/L)											
Mercury, Dissolved (mg/L)											
Molybdenum, Total (mg/L)											
Molybdenum, Dissolved (mg/L)											
Silver, Total (mg/L)											
Silver, Dissolved (mg/L)											
Thallium, Total (mg/L)											
Thallium, Dissolved (mg/L)											

Appendix B

Groundwater Chemistry - Shallow Groundwater

Sample Location	GW-19b				GW-20			GW-22			
Sample Date	10/29/2003	2/5/2004	5/8/2004	7/22/2004	10/30/2003	5/8/2004	7/21/2004	8/9/2004	11/8/2004 (35'	11/8/2004 (93'	11/8/2004 (190'
COPCs											
Selenium, Total (mg/L)	0.0016	0.0012 U	0.00085 U (0.006)	0.0024 U	0.00083	0.00034 U (0.001 U)	0.00052 U	0.0172	0.0122	0.0841	0.0197
Selenium, Dissolved (mg/L)	0.00083	0.0015	0.00095 U (0.006)	0.0028	0.00071	0.0003 U (0.001 U)	0.0003 U	0.0114	0.0126	0.0797	0.024
Selenium, +6 (mg/L)			(0.006)			(0.001 U)					
Selenium, +4 (mg/L)			(0.001 U)			(0.001 U)					
Selenium, organic (mg/L)			(0.001 U)			(0.001 U)					
Cadmium, Total (mg/L)	0.0009	0.00016	0.00029	0.00032	0.00006 U	0.0001 U	0.0001 UJ	0.0011	0.0001 U	0.0001 U	0.0001 U
Cadmium, Dissolved (mg/L)	0.00006 U	0.0001 U	0.0001 UJ	0.0001 UJ	0.00006 UJ	0.0001 UJ	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U
Chromium, Total (mg/L)	0.0375	0.0115	0.0127	0.01	0.00042 U	0.0003 U	0.0003 U	0.0192 J	0.0022 J	0.0012 J	0.0014 J
Chromium, Dissolved (mg/L)	0.0011	0.0015	0.00075 U	0.00061 J	0.0003 U	0.0003 U	0.0003 U	0.0012 J	0.0013 J	0.0012 J	0.0014 J
Copper, Total (mg/L)	0.029	0.0054	0.0071	0.0062	0.0026 U	0.0021 U	0.0021 U	0.0155	0.0014 U	0.0014 U	0.0014 U
Copper, Dissolved (mg/L)	0.0026 U	0.0021 U	0.0021 U	0.0021 U	0.0026 U	0.0021 U	0.0021 U	0.0021 U	0.0014 U	0.0014 U	0.0015 J
Nickel, Total (mg/L)											
Nickel, Dissolved (mg/L)	0.0036	0.0053 U	0.0013 U	0.0035 U	0.001 U	0.0013 U	0.0017 U	0.003 U	0.0017 U	0.0017 U	0.0017 U
Vanadium, Total (mg/L)											
Vanadium, Dissolved (mg/L)	0.00052	0.00068	0.00063 J	0.0007 U	0.0008	0.00065 J	0.0006 U	0.00031 U	0.00062 J	0.0005 J	0.00065 J
Zinc, Total (mg/L)											
Zinc, Dissolved (mg/L)	0.0018 U	0.0002 U	0.00072 U	0.00021 U	0.0018 U	0.0002 UJ	0.0002 U	0.0002 U	0.0011 U	0.0011 U	0.0011 U
Field Parameters											
pH (SU)	7.8	7.33	7.41	7.39	6.9	7.31	7.23	7.53	7.46	7.52	7.54
Conductivity at 25° C (µmhos/cm)	290	287	306	500	380	395	568	426	353	364	318
Temperature (C)	5.9	5.2	8.54	9.05	6.8	9.17	8.17	8.42	7.97	7.62	7.14
Oxygen, Dissolved (mg/L)	3.99	5.34	5.37	7.02	2.24	1.66	3	9.51	8.54	9.81	9.69
Turbidity (NTU)	1000 >	83.6	183	156	8.8	2.12			0.94	0.32	0.76
ORP (mV)	144.8	93.9	153.2	194.3	148.5	102.4	153.5	89.2			
DTW (Feet)	18.19	18.3	17.85	16.93	11.03	11.14	10.49	29.65	33.71	33.71	33.71
Major Ions											
TDS (mg/L)	282 J	251 U	273	277	307 J	320	245	233	216	230	202
TSS (mg/L)											
Calcium, Total (mg/L)											
Calcium, Dissolved (mg/L)	63.1	66.8	71.7	76	87	89.5	71.2	63.8	60.9	63.6	57.8
Magnesium, Total (mg/L)											
Magnesium, Dissolved (mg/L)	10.4	10.5	10.8	12	21.1	21.3	17.2	9.46	9.83	10.7	9.4
Sodium, Total (mg/L)											
Sodium, Dissolved (mg/L)	8.15	8.37	9.01	8.35	6.98	7.1	5.47	8.42	4.75	3.95	4.11
Potassium, Total (mg/L)											
Potassium, Dissolved (mg/L)	0.802	0.762	0.675	0.607	0.753	0.63	0.433	0.585	0.658	0.628	0.624
Hardness as CaCO3 (mg/L)											
Alkalinity, as CaCO3 (mg/L)	195 J	199	225	235	289 J	319	228	210.87	185	171	172
Bicarbonate as CaCO3 (mg/L)	195 J	199	225	235	289 J	319	228	210.87	185	171	172
Carbonate as CaCO3 (mg/L)	1 UJ	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U
Hydroxide as CaCO3 (mg/L)	1 UJ	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U
Fluoride (mg/L)	0.1 UJ	0.119	0.103	0.124	0.185 J	0.231	0.177	0.17	0.171	0.1 U	0.1 U
Chloride (mg/L)	3.82 J	3.46	3.85	4.11	4.72 J	3.65	4.34	1.59	1.28	1.77	2.02
Sulfate (as SO4) (mg/L)	22.8 J	25.9	21	44.5	23.6 J	24.5	23.7	36.6	13.7	30.4	11.9

Appendix B

Groundwater Chemistry - Shallow Groundwater

Sample Location	GW-19b				GW-20			GW-22			
Sample Date	10/29/2003	2/5/2004	5/8/2004	7/22/2004	10/30/2003	5/8/2004	7/21/2004	8/9/2004	11/8/2004 (35'	11/8/2004 (93'	11/8/2004 (190'
Nutrients											
Ammonia (as N) (mg/L)											
Nitrate + Nitrite (as N) (mg/L)	0.96 J	0.99 U	2.69	1.3	0.46 J	0.43	0.3	0.45	0.48	0.97	1.28
Nitrate (as N) (mg/L)											
Nitrite (as N) (mg/L)											
Orthophosphate (as P) (mg/L)											
Phosphorus, Total (mg/L)	1.92 J	0.35 J	0.47	0.394	0.07 J	0.02	0.01 U	0.71	0.03	0.02	0.02
Trace Elements											
Aluminum, Total (mg/L)											
Aluminum, Dissolved (mg/L)	0.0097 U	0.0067	0.0081 J	0.006 U	0.0097 UJ	0.0103 J	0.006 U	0.0262	0.0066 U	0.0066 U	0.0066 U
Antimony, Total (mg/L)											
Antimony, Dissolved (mg/L)											
Arsenic, Total (mg/L)											
Arsenic, Dissolved (mg/L)											
Barium, Total (mg/L)											
Barium, Dissolved (mg/L)											
Beryllium, Total (mg/L)											
Beryllium, Dissolved (mg/L)											
Boron, Total (mg/L)											
Boron, Dissolved (mg/L)											
Cobalt, Total (mg/L)											
Cobalt, Dissolved (mg/L)											
Iron, Total (mg/L)	3.3	6.54	7.72	6.77	0.07	0.0124 U	0.0155 J	9.02			
Iron, Dissolved (mg/L)	0.0074	0.013 U	0.0124 U	0.0124 U	0.0045 U	0.0124 U	0.0124 U	0.0124 U	0.011 U	0.011 U	0.011 U
Iron, Ferrous (mg/L)	3.3	0.55			0.05						
Lead, Total (mg/L)											
Lead, Dissolved (mg/L)											
Manganese, Total (mg/L)											
Manganese, Dissolved (mg/L)	0.0021	0.001 UJ	0.0015 J	0.001 U	0.0012 J	0.001 U	0.001 U	0.0042	0.00061 J	0.0006 U	0.0006 U
Mercury, Total (mg/L)											
Mercury, Dissolved (mg/L)											
Molybdenum, Total (mg/L)											
Molybdenum, Dissolved (mg/L)											
Silver, Total (mg/L)											
Silver, Dissolved (mg/L)											
Thallium, Total (mg/L)											
Thallium, Dissolved (mg/L)											

Appendix B

Groundwater Chemistry - Wells Formation

Sample Location	GW-CW				GW-16				
Sample Date	9/16/2003	2/6/2004	5/10/2004	11/9/2004	10/29/2003	2/3/2004	5/9/2004	7/25/2004	11/8/2004
COPCs									
Selenium, Total (mg/L)	0.0136 J-	0.0133	0.0206 (0.022 J)	0.0173	0.447	0.536	0.539 (0.45)	0.64 (0.43)	0.552
Selenium, Dissolved (mg/L)	0.0106 J-	0.013	0.015 J- (0.027 J)		0.464	0.53	0.476 (0.43)	0.585 (0.54)	0.681
Selenium, +6 (mg/L)			(0.028 J)				(0.53)	(0.56)	
Selenium, +4 (mg/L)			(0.001 U)				(0.001 U)	(0.001 U)	
Selenium, organic (mg/L)			(0.001 U)				(0.001 U)	(0.001 U)	
Cadmium, Total (mg/L)	0.00082	0.00023	0.00037	0.00054	0.00013 J	0.0001 UJ	0.0001 U	0.0001 U	0.0001 U
Cadmium, Dissolved (mg/L)	0.0017	0.00023	0.00011 J		0.00006 U	0.0001 UJ	0.0001 UJ	0.0001 U	0.0001 U
Chromium, Total (mg/L)	0.00058	0.00074 U	0.00032 J	0.0003 U	0.0017	0.0018 U	0.0013 J	0.00056 J	0.00039 J
Chromium, Dissolved (mg/L)	0.0003	0.00031	0.0003 U		0.00038	0.00056	0.001 U	0.00042 J	0.0003 UJ
Copper, Total (mg/L)	0.0026 U	0.0021 U	0.0021 U	0.0014 J	0.0026 U	0.0021 U	0.0021 U	0.0021 U	0.0014 U
Copper, Dissolved (mg/L)	0.0026 U	0.0021 U	0.0021 UJ		0.0026 U	0.0021 U	0.0021 U	0.0021 U	0.0014 U
Nickel, Total (mg/L)									
Nickel, Dissolved (mg/L)		0.0142	0.0083 J-		0.0034	0.0058 U	0.0013 U	0.0017 U	0.0017 U
Vanadium, Total (mg/L)									
Vanadium, Dissolved (mg/L)		0.0097	0.0114 J-		0.0002 U	0.0002 U	0.00041 J	0.00072 U	0.00052 J
Zinc, Total (mg/L)									
Zinc, Dissolved (mg/L)		0.0695	0.0448 J		0.002	0.0002 U	0.0002 UJ	0.00023 U	0.0011 U
Field Parameters									
pH (SU)	7.48	7.65	7.29	8	8.21	7.53	7.18	7.13	7.43
Conductivity at 25° C (µmhos/cm)	538	330	338	479	453	649	534	802	745
Temperature (C)	9	8.9	8.84	8.95	4.7	8.8	8.61	7.18	5.35
Oxygen, Dissolved (mg/L)		4.11	3.57	5.98	10.19	4.78	7.35	8.89	7.5
Turbidity (NTU)		1.5	11	5.89	31.5	3.13	1.37	1.08	1.8
ORP (mV)		102.4	117.2		144.8	96.8	89.6	225.6	
DTW (Feet)					220.21	222.29	220.85	216.1	220.31
Major Ions									
TDS (mg/L)	316 J	280 U	307	305	432 J	1260	564	563	560
TSS (mg/L)	5 UJ	5 UJ	5 U	5 U					
Calcium, Total (mg/L)									
Calcium, Dissolved (mg/L)		69.8	68.7		85.1	110	123	125	131
Magnesium, Total (mg/L)									
Magnesium, Dissolved (mg/L)		23.6	23.1		24.2	27.8	28.2	28.9	29.7
Sodium, Total (mg/L)									
Sodium, Dissolved (mg/L)		3.52	3.2		13.3	8.31	5.13	8.46	10.4
Potassium, Total (mg/L)									
Potassium, Dissolved (mg/L)		0.533	0.376		2.16	1.15	0.752	0.793	1.14
Hardness as CaCO3 (mg/L)									
Alkalinity, as CaCO3 (mg/L)		219	233		192 J	218	228	241	218
Bicarbonate as CaCO3 (mg/L)		219	233		192 J	218	228	241	218
Carbonate as CaCO3 (mg/L)		1 U	1 U		1 UJ	1 U	1 U	1 U	1 U
Hydroxide as CaCO3 (mg/L)		1 U	1 U		1 UJ	1 U	1 U	1 U	1 U
Fluoride (mg/L)	0.2 J	0.253	0.205	0.193	0.114 J	0.112	0.166	0.1 U	0.1 U
Chloride (mg/L)		3.72	3.6		3.06 J	2.89	2.97	3.56	3.37
Sulfate (as SO4) (mg/L)	78.1 J	56.5	50.3	60.2	157 J	188	215	235	229

Appendix B

Groundwater Chemistry - Wells Formation

Sample Location	GW-CW				GW-16				
Sample Date	9/16/2003	2/6/2004	5/10/2004	11/9/2004	10/29/2003	2/3/2004	5/9/2004	7/25/2004	11/8/2004
Nutrients									
Ammonia (as N) (mg/L)									
Nitrate + Nitrite (as N) (mg/L)		0.13 U	0.18	0.16	0.45 J	0.36 U	0.54	0.58	0.57
Nitrate (as N) (mg/L)	0.221 J								
Nitrite (as N) (mg/L)	0.05 UJ								
Orthophosphate (as P) (mg/L)	0.01 J	0.03 J	0.03	0.03					
Phosphorus, Total (mg/L)		0.03	0.02		0.11 J	0.01	0.01 U	0.01 U	0.02
Trace Elements									
Aluminum, Total (mg/L)									
Aluminum, Dissolved (mg/L)		0.0089	0.0116 J		0.0108	0.009	0.0141 J	0.006 U	0.0066 U
Antimony, Total (mg/L)	0.0044 U	0.0008 U	0.0003 U	0.0003 U					
Antimony, Dissolved (mg/L)	0.0044 U								
Arsenic, Total (mg/L)	0.0067 U	0.0014	0.00088 J	0.0015 J					
Arsenic, Dissolved (mg/L)	0.0067 U								
Barium, Total (mg/L)	0.0286	0.0759	0.0809	0.0635					
Barium, Dissolved (mg/L)	0.0282								
Beryllium, Total (mg/L)	0.00006 U	0.0002 U	0.0002 U	0.00007 U					
Beryllium, Dissolved (mg/L)	0.00006 U								
Boron, Total (mg/L)									
Boron, Dissolved (mg/L)									
Cobalt, Total (mg/L)									
Cobalt, Dissolved (mg/L)									
Iron, Total (mg/L)		0.107 U	0.0341		0.38	0.0367	0.0124 U	0.0124 U	
Iron, Dissolved (mg/L)		0.0163	0.0124 U		0.0045 U	0.013 U	0.0124 U	0.0124 U	0.011 U
Iron, Ferrous (mg/L)		0.04			0.24	0.04			
Lead, Total (mg/L)	0.0013 U	0.001 U	0.0004 U	0.00046 J					
Lead, Dissolved (mg/L)	0.0013 U								
Manganese, Total (mg/L)	0.0249			0.0118					
Manganese, Dissolved (mg/L)	0.0236	0.017 J	0.0096		0.0416	0.0119 J	0.0089	0.0027	0.0006 U
Mercury, Total (mg/L)	0.0001 U	0.0002 UJ	0.0002 U	0.0002 U					
Mercury, Dissolved (mg/L)	0.0001 U								
Molybdenum, Total (mg/L)									
Molybdenum, Dissolved (mg/L)									
Silver, Total (mg/L)									
Silver, Dissolved (mg/L)									
Thallium, Total (mg/L)	0.0005 U	0.0004 U	0.0003 U	0.00043 J					
Thallium, Dissolved (mg/L)	0.0005 U								

Appendix B

Groundwater Chemistry - Wells Formation

Sample Location	GW-18					GW-CO					GW-IW	
Sample Date	10/30/2003	2/5/2004	5/9/2004	7/25/2004	11/9/2004	9/16/2003	2/6/2004	5/18/2004	7/26/2004	10/4/2004	10/31/2003	7/25/2004
COPCs												
Selenium, Total (mg/L)	0.004	0.005	0.0029 U (0.003 J)	0.0033 (0.005 J)	0.0036	0.0035 J-	0.006	0.0044 (0.004 J)	0.0041 (0.003 J)	0.0048	0.0105	0.012 (0.012)
Selenium, Dissolved (mg/L)	0.0041	0.0046	0.0032 (0.003 J)	0.0028 (0.004 J)	0.0032	0.0035 J-	0.0069	0.0043 (0.004 J)	0.0033 (0.005)		0.0115	0.0112 (0.015)
Selenium, +6 (mg/L)			(0.004 J)	(0.005)				(0.004 J)	(0.005 J)			(0.013)
Selenium, +4 (mg/L)			(0.001 U)	(0.001 U)				(0.001 U)	(0.001 U)			(0.001 U)
Selenium, organic (mg/L)			(0.001 U)	(0.001 U)				(0.001 U)	(0.001 U)			(0.002 J)
Cadmium, Total (mg/L)	0.00006 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0002 U	0.0001 U	0.0001 U	0.0001 UJ	0.0001 U	0.00011 J	0.00015
Cadmium, Dissolved (mg/L)	0.00006 U	0.0001 U	0.0001 UJ	0.0001 U	0.0001 U	0.00077	0.0001	0.0001 U	0.00017		0.0001	0.0001
Chromium, Total (mg/L)	0.0013	0.0014 U	0.00092 J	0.00056 J	0.00049 J	0.0037	0.0038 U	0.0032 J	0.0036 J	0.0037 J	0.00033 U	0.00036 J
Chromium, Dissolved (mg/L)	0.00041	0.00078	0.0003 U	0.00036 J	0.0003 UJ	0.0032	0.0033	0.0031 J	0.0031 J		0.0003 U	0.0003 U
Copper, Total (mg/L)	0.0026 U	0.0021 U	0.0021 U	0.0021 U	0.0023 J	0.0026 U	0.0021 U	0.0021 U	0.0021 U	0.0021 U	0.0026 U	0.0021 U
Copper, Dissolved (mg/L)	0.0026 U	0.0021 U	0.0021 U	0.0021 U	0.0039	0.0026 U	0.0021 U	0.0021 U	0.0021 U		0.0026 U	0.0021 U
Nickel, Total (mg/L)												
Nickel, Dissolved (mg/L)	0.0026	0.005 U	0.0013 U	0.0025 U	0.0017 U		0.0042 U	0.0044 U	0.0013 U		0.0034 U	0.0028 U
Vanadium, Total (mg/L)												
Vanadium, Dissolved (mg/L)	0.001	0.0014	0.0014 J	0.0015 J	0.0015 J		0.0178	0.0172	0.0184		0.0096	0.0107
Zinc, Total (mg/L)												
Zinc, Dissolved (mg/L)	0.0018 U	0.00045 U	0.00033 U	0.0011 U	0.0011 U		0.0034	0.0028 U	0.0029 J		0.0136	0.0284
Field Parameters												
pH (SU)	7.91	7.79	7.48	7.45	7.65	7.68	7.84	6.65	7.66		7.47	7.26
Conductivity at 25° C (µmhos/cm)	298	296	302	433	411	379	255	253	360		308	443
Temperature (C)	9.7	8.3	11.59	12.33	9.79	8.2	7.5	7.13	9.3		9.4	9.5
Oxygen, Dissolved (mg/L)	5.08	4.31	4.08	4.88	5.07		6.16	6.65	7.44		4.75	4.26
Turbidity (NTU)	6.3	3.22	1.93	6.55	1.49		0.65	3.13	4.22		1.27	0.75
ORP (mV)	128.3	93.3	103.8	95.5			106.1	199.7	130.8		91.2	95.9
DTW (Feet)	44.91	46.09	45.31	43.84	45.13	586	593.8	585.5	588.2		-9999.99	-9999.99
Major Ions												
TDS (mg/L)	254 J	239 U	263	248	256	196 J	182 U	310	206	211	245 J	243
TSS (mg/L)						5 UJ	5 UJ	5 U	5 U	5 U		5 U
Calcium, Total (mg/L)												
Calcium, Dissolved (mg/L)	54.6	57.1	57	54.4	56.6		53.1	50.8	51.4		55.5	55.9
Magnesium, Total (mg/L)												
Magnesium, Dissolved (mg/L)	19.9	21.3	21	20.3	20.3		15.6	15.1	15.3		22.8	24.1
Sodium, Total (mg/L)												
Sodium, Dissolved (mg/L)	6.78	7.17	7.28	6.74	7.2		3.15	3.14	2.97		2.93	2.85
Potassium, Total (mg/L)												
Potassium, Dissolved (mg/L)	0.737	0.703	0.614	0.516	0.786		0.534	0.399	0.347		0.525	0.36
Hardness as CaCO3 (mg/L)												
Alkalinity, as CaCO3 (mg/L)	197 J	200	210	211	194		188	198	203		222 J	234
Bicarbonate as CaCO3 (mg/L)	197 J	200	210	211	194		188	198	198		222 J	234
Carbonate as CaCO3 (mg/L)	1 UJ	1 U	1 U	1 U	1 U		1 U	1 U	4.68		1 UJ	1 U
Hydroxide as CaCO3 (mg/L)	1 UJ	1 U	1 U	1 U	1 U		1 U	1 U	1 U		1 UJ	1 U
Fluoride (mg/L)	0.256 J	0.302	0.297	0.3	0.29	0.178 J	0.196	0.191	0.206	0.145	0.108 J	0.164
Chloride (mg/L)	6.63 J	6.24	5.93	6.35	6.09		4.74	5.22	5.42		2.49 J	2.3
Sulfate (as SO4) (mg/L)	36.7 J	36.7	37.9	38.1	37.1	8.14 J	7.81	7.85	8.21	8.04	31.4 J	35.3

Appendix B

Groundwater Chemistry - Wells Formation

Sample Location	GW-18					GW-CO					GW-IW	
Sample Date	10/30/2003	2/5/2004	5/9/2004	7/25/2004	11/9/2004	9/16/2003	2/6/2004	5/18/2004	7/26/2004	10/4/2004	10/31/2003	7/25/2004
Nutrients												
Ammonia (as N) (mg/L)												
Nitrate + Nitrite (as N) (mg/L)	0.19 J	0.18 U	0.2	0.22	0.2		0.33 U	0.34	0.34	0.33	0.1 J	0.12
Nitrate (as N) (mg/L)						0.358 J						
Nitrite (as N) (mg/L)						0.05 UJ						
Orthophosphate (as P) (mg/L)						0.04 J	0.05 J	0.05	0.031	0.05		0.01 U
Phosphorus, Total (mg/L)	0.01 UJ	0.02	0.01	0.01 U	0.02		0.05	0.04	0.01 U		0.02 J	0.01 U
Trace Elements												
Aluminum, Total (mg/L)												
Aluminum, Dissolved (mg/L)	0.0097 U	0.0076	0.0078 J	0.006 U	0.0066 U		0.0079	0.0123 J	0.006 U		0.0115	0.006 U
Antimony, Total (mg/L)						0.0044 U	0.0008 U	0.0005 U	0.0005 U	0.0041 U		0.0005 U
Antimony, Dissolved (mg/L)						0.0044 U						
Arsenic, Total (mg/L)						0.0067 U	0.0015	0.0006 U	0.0006 U	0.0058 U		0.00086 J
Arsenic, Dissolved (mg/L)						0.0067 U						
Barium, Total (mg/L)						0.0296	0.028	0.0282	0.03	0.0297		0.153
Barium, Dissolved (mg/L)						0.0297						
Beryllium, Total (mg/L)						0.00006 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U		0.0002 U
Beryllium, Dissolved (mg/L)						0.00006 U						
Boron, Total (mg/L)												
Boron, Dissolved (mg/L)												
Cobalt, Total (mg/L)												
Cobalt, Dissolved (mg/L)												
Iron, Total (mg/L)	0.06	0.0406	0.0125 J	0.0124 U			0.013 U	0.0257	0.0124 U		0.04	0.0269
Iron, Dissolved (mg/L)	0.0045 U	0.013 U	0.0124 U	0.0124 U	0.011 U		0.013 U	0.0124 U	0.0124 U		0.0045 U	0.0124 U
Iron, Ferrous (mg/L)	0.05	0.03					0.03				0.02	
Lead, Total (mg/L)						0.0013 U	0.001 U	0.0007 U	0.001 U	0.0015 U		0.0035
Lead, Dissolved (mg/L)						0.0013 U						
Manganese, Total (mg/L)						0.0019 U				0.001 U		
Manganese, Dissolved (mg/L)	0.0046	0.001 UJ	0.0013 J	0.008	0.0006 U	0.0025 U	0.001 UJ	0.001 U	0.004		0.0026	0.001 U
Mercury, Total (mg/L)						0.0001 U	0.0002 UJ	0.0002 U	0.0001 U	0.0002 U		0.0001 U
Mercury, Dissolved (mg/L)						0.0001 U						
Molybdenum, Total (mg/L)												
Molybdenum, Dissolved (mg/L)												
Silver, Total (mg/L)												
Silver, Dissolved (mg/L)												
Thallium, Total (mg/L)						0.0005 U	0.0004 U	0.0004 U	0.0004 U	0.0004 U		0.0004 U
Thallium, Dissolved (mg/L)						0.0005 U						

Appendix B

Flow Measurement Locations and Results

Location ID	Location Description	UTM Coordinates (m)		Flow Measurements (cfs)						
				October	May	October	February	May	June	July
		Northing	Easting	2002	2003	2003	2004	2004	2004	2004
Smoky Creek (upstream to downstream)										
USm	Upper Smoky Creek	4,728,194	488,913	0.47	0.83	0.03		0.26		0.19
MSm	Middle Smoky Creek	4,729,894	491,029		Dry	Dry				
LSmS	Lower Smoky Spring	4,729,871	491,170	0.54	0.19	0.03		0.02		0.03
LSm-A	Lower Smoky Creek just upstream of beaver ponds	4,729,987	491,363		0.58					
LSm-B	Lower Smoky Creek downstream of beaver ponds	4,730,316	491,685		0.93					
LSm-C	Lower Smoky Creek approximately 0.2 miles downstream of LSm-B	4,730,563	491,896		0.89					
LSm-D	Lower Smoky Creek between the two main northern tributaries	4,730,818	492,094		0.97					
LSm-E	Lower Smoky Creek downstream of the two main northern tributaries	4,731,214	492,674		0.96					
LSm	Lower Smoky Creek	4,731,246	493,162	0.44	0.94	0.68		0.15		0.29
Roberts Creek and Tygee Creek (upstream to downstream)										
UR-2	Upper Roberts Creek just downstream of the confluence of the two springs near the U.S. Forest Service boundary	4,728,591	491,652		0.20	0.16		0.18		0.11

Appendix B

Flow Measurement Locations and Results

Location ID	Location Description	UTM Coordinates (m)		Flow Measurements (cfs)						
				October	May	October	February	May	June	July
		Northing	Easting	2002	2003	2003	2004	2004	2004	2004
UP-A	Upper Pole Canyon Creek at small spring near headwaters	4,725,374	487,437		0.02	Dry				
UP-B	Upper Pole Canyon Creek just upstream of large spring area	4,725,387	487,617		0.08	Dry				
UP-C	Upper Pole Canyon Creek spring area containing numerous springs	4,725,371	487,798		Numerous springs, no flow measurement					
UP-D	Upper Pole Canyon Creek just downstream of large spring area	4,725,327	487,896		1.01	0.03				
UP-E	Upper Pole Canyon Creek just upstream of north and south tributaries located approximately 0.75 miles upstream of the pile	4,725,212	488,106		1.59	0.04				
UP-F	Upper Pole Canyon Creek just downstream of north and south tributaries located approximately 0.75 miles upstream of the pile	4,725,155	488,192		2.73	0.07				
UP-G	Upper Pole Canyon Creek approximately 500 feet upstream of the UP station	4,725,099	488,446		2.92	0.07				
UP	Upper Pole Canyon Creek routine monitoring station near the small park upstream of the pile	4,725,149	489,242	0.08	2.57	0.05		1.75		0.43
UP-H	Upper Pole Canyon Creek approximately 150 feet upstream of the pile	4,725,151	489,216		3.28	0.09		2.01		0.70
LP-1	Lower Pole Canyon Creek where creek emanates from toe of pile	4,725,145	490,598			0.01	0.002	1.08		0.26
LP	Lower Pole Canyon Creek routine monitoring station at the U.S. Forest Service boundary	4,725,147	490,600	Dry	1.76	Dry		0.99	0.90	0.19
LP-A	Pole Canyon Creek just upstream of culvert in Sage Valley	4,724,888	491,355						0.61	
LP-B	Pole Canyon Creek just upstream of fence line in Sage Valley	4,724,453	491,654						0.41	
LP-C	Pole Canyon Creek along eastern diversion within pasture area just west of North Fork Sage Creek	4,724,370	491,938						0.01	
North Fork Sage Creek (upstream to downstream)										
SVS-3	Sage Valley Spring #3: located in northern tip of Sage Valley	4,726,674	491,705					Water ponded, no flow measurment		Dry
SVS-2	Sage Valley Spring #2: located in northwestern portion of Sage Valley	4,726,264	491,506					Dry		Dry
SVS-1	Sage Valley Spring #1: wetland/marsh area in Sage Valley east of Panel D	4,723,671	491,039			Dry		Dry		
NSV-2	North Sage Valley Spring; Petersons Spring - fenced pond fed by spring	4,724,714	492,250			Dry		0.02		0.02
NSV-3	North Sage Valley Creek; North Sage Creek near Petersons Spring	4,724,684	492,200	0.01		0.01		0.002		Dry
NSV-4	North Sage Valley Creek; Flow from Petersons spring to North Sage Creek	4,724,646	492,235	0.07		0.01		0.01		
NSV-5	North Sage Creek above most Pole Creek inflow (historical site ST188)	4,724,361	492,267		0.01	0.08		0.02		0.03
NSV-6	North Sage Creek above ranch and below most Pole Creek inflow (historical site ST187)	4,722,563	492,148	0.05	0.05	0.15		0.05		0.27

Appendix B

Flow Measurement Locations and Results

Location ID	Location Description	UTM Coordinates (m)		Flow Measurements (cfs)						
				October	May	October	February	May	June	July
		Northing	Easting	2002	2003	2003	2004	2004	2004	2004
US	Upper Sage Creek	4,723,211	488,450	2.74	18.82	2.63		11.75		5.72
SV-0	Sage Valley irrigation diversion ditch where the ditch branches from Sage Creek	4,723,109	489,545		3.75	0.90		2.68		2.54
SV-1	Sage Valley irrigation diversion ditch, north of LS sampling location	4,723,246	490,362	10.84						
LS	Lower Sage Creek	4,722,894	490,366	0.94	13.19	0.68		8.90		2.47
LSV	Sage Creek just downstream of the Sage Creek and North Fork Sage Creek confluence	4,721,387	491,662		0.94	0.63				
LSV-1	Lower Sage Creek below North Fork Sage Creek	4,720,997	491,496	0.25	0.82	0.60		1.60		1.40
ID-1	Irrigation Ditch inflow to Sage Creek upstream of Hoopes Spring inflow	4,720,933	491,432		0.34	0.21				
LSV-1a	Lower Sage Valley Sage Creek just upstream of Hoopes Spring Creek	4,720,647	491,345		1.43	0.47				
LSV-1b	Lower Sage Valley Sage Creek just downstream of Hoopes Spring Creek	4,720,511	491,301		8.01	7.25				
LSV-2	Lower Sage Creek below Hoopes Spring	4,720,039	491,370	5.65	7.72	7.57		8.08		7.48
LSV-SP1	Lower Sage Valley Spring #1	4,720,000	491,370		0.17	0.16				
LSV-SP2	Lower Sage Valley Spring #2	4,719,929	491,390			0.04				
LSV-2a	Lower Sage Valley Sage Creek just upstream of South Fork Sage Creek	4,719,667	491,236		7.55	6.83				
LSV-3	Lower Sage Creek below South Fork Sage Creek	4,719,509	491,172	10.47	17.31	12.41		13.10		11.64
LSV-T1	Tributary #1 to Lower Sage Valley Sage Creek along road leading to Crow Creek	4,719,355	491,048		0.03	0.06				
LSV-T2	Tributary #2 to Lower Sage Valley Sage Creek along road leading to Crow Creek	4,718,964	490,992		Dry	Dry				
LSV-T3	Tributary #3 to Lower Sage Valley Sage Creek along road leading to Crow Creek	4,718,890	491,007		0.02	0.01				
LSV-3a	Lower Sage Valley Sage Creek downstream of southern tributaries	4,718,857	491,109		18.02	12.13				
LSV-D1	Lower Sage Valley Diversion Ditch #1 approximately 100 feet north of LSV-4, water is diverted approximately 500 feet upstream of LSV-4	4,718,647	491,634		2.27	0.002		1.05		0.63
LSV-D2	Lower Sage Valley Diversion Ditch #2 approximately 100 feet south of LSV-4, water is diverted approximately 500 feet upstream of LSV-4	4,718,620	491,609					0.19		1.16
LSV-4	Lower Sage Creek just above bridge for main Crow Creek road	4,718,606	491,632	14.32	16.33	10.26	10.92	13.45		11.65

Appendix B

Flow Measurement Locations and Results

Location ID	Location Description	UTM Coordinates (m)		Flow Measurements (cfs)						
				October	May	October	February	May	June	July
		Northing	Easting	2002	2003	2003	2004	2004	2004	2004
HS	Hoopes Spring	4,721,513	490,545	2.32	1.35	1.65	1.36	1.38		1.48
HS-2	Hoopes Spring downstream of TRC-HS at old ranch house	4,721,133	490,773	5.44						
HS-3	Hoopes Spring drainage channel downstream of spring inflow	4,720,624	491,197	4.60	7.37	6.09		6.69		5.96
South Fork Sage Creek (upstream to downstream)										
USS-2	Upper South Fork Sage Creek just downstream of the southern headwater tributary	4,719,175	485,855		2.60					
USS-2a	Upper South Fork Sage Creek approximately 0.3 miles downstream of USS-2	4,719,527	486,693		2.62					
USS-2b	Upper South Fork Sage Creek approximately 0.3 miles downstream of USS-2a	4,719,930	487,013		3.07					
USS-2c	Upper South Fork Sage Creek approximately 0.3 miles downstream of USS-2b	4,720,546	487,693		5.05					
USS-1a	Upper South Fork Sage Creek just downstream of the southern tributary located just west of the Simplot lease boundary	4,720,586	488,422		7.17					
USS	Upper South Fork Sage Creek	4,720,746	488,842		4.82	0.02		2.90		0.36
LSS-1c	South Fork Sage Creek downstream of historic tributary located within the E-Panel mine	4,720,773	489,456		4.07	Dry				
LSS-1b	South Fork Sage Creek approximately 500 feet upstream of road leading up to Panel E	4,720,788	489,809		2.89	Dry				
LSS-1a	South Fork Sage Creek just upstream of spring area	4,720,795	490,193		2.90	Dry		1.13		0.15
LSS-SP1a	Spring on northern side of South Fork Sage Creek just downstream of fence	4,720,734	490,352			0.003				
LSS-SP1b	Spring on southern side of South Fork Sage Creek located southeast of LSS-SP1a	4,720,702	490,365			0.25				
LSS-SP1	Lower South Fork Sage Creek Spring	4,720,662	490,359	0.06		0.30		Diffuse flow, no flow measurement		Diffuse flow, no flow measurement
LSS-SP2	Lower South Fork Sage Creek Spring	4,720,643	490,409	0.17		0.15		Diffuse flow, no flow measurement		Diffuse flow, no flow measurement
LSS	Lower South Fork Sage Creek	4,720,582	490,595	6.46	7.76	4.44	4.72	5.82		5.37
LSS-2a	Lower South Fork Sage Creek approximately 0.25 miles downstream of LSS	4,720,396	490,799		8.05	4.48				
LSS-2b	Lower South Fork Sage Creek approximately 0.25 miles upstream of the mouth	4,720,114	490,938		7.76	4.11				
LSS-2	Lower South Fork Sage Creek just upstream of the mouth	4,719,558	491,198		10.47	4.64				
Crow Creek										
CC-2	Crow Creek above Sage Creek	4,718,879	492,541		23.23	18.71		12.57		12.97
CC-1	Crow Creek below Sage Creek	4,719,011	492,567	23.27	41.64	28.49		18.81		28.98

Appendix B

Flow Measurement Locations and Results

Location ID	Location Description	UTM Coordinates (m)		Flow Measurements (cfs)						
				October	May	October	February	May	June	July
		Northing	Easting	2002	2003	2003	2004	2004	2004	2004
CS-1	Panel C Spring located west of haul road	4,729,114	489,235			1.00 gpm		0.45 gpm		
ES-1	Panel E1 Spring located in the northwestern portion of the panel just south of Sage Creek	4,722,522	489,002			1.00 gpm		3.59 gpm		8.98 gpm
Overburden Seeps										
AS-2	Panel A External Overburden seep located on the northeastern toe	4,726,478	490,040		1.80 gpm	Dry		Dry		Dry
AS-2a	Panel A External Overburden seep located just north of seep AS-2	4,726,522	490,024		2.50 gpm					
DS-7	South seep of D Panel External Overburden Disposal Area	4,723,894	490,403		5.50 gpm	0.84 gpm		4.49 gpm		3.14 gpm
ES-3	North seep of E Panel External Overburden Disposal Area	4,722,306	490,104	13.46 gpm	4.30 gpm	Dry		0.90 gpm		0.90 gpm
ES-4	Central seep of E Panel External Overburden Disposal Area	4,721,773	490,233	4.49 gpm	2.00 gpm	1.02 gpm		0.90 gpm	0.90 gpm	0.45 gpm
ES-5	South seep of E Panel External Overburden Disposal Area	4,721,378	490,144	22.44 gpm	6.01 gpm	2.33 gpm		5.83 gpm		4.49 gpm

Note:

1. UTM coordinates are approximate and have a NAD83 datum.
2. m = meters
3. cfs = cubic feet per second, gpm = gallons per minute.

Appendix B

Surface Water Quality
Tygee Creek
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	ET		LT-3			UT-1			
Sample Date	5/24/2003	5/17/2004	5/24/2003	10/28/2003	5/17/2004	10/18/2002	5/24/2003	10/28/2003	5/17/2004
Sample Time	15:20	10:57	14:10	17:49	14:00	10:00	16:35	16:59	9:30
Field Parameters									
pH (su)	8.09	8.89	8.14	7.74	8.33	6.78	8.29	8.29	9.18
Specific Conductivity (uS/cm)	535	430	566	448	445	238	434	300	340
Temperature (oC)	15.9	12	16.6	8.4	9.8	0.79	25.4	9.9	12
Oxygen, Dissolved	4.44	7.1	4.11	6.2	7.8	11.93	3.48	7.4	7.8
Turbidity (NTU)	343	1.01	4.51	7.58	1.67	2.1	6.01	19.6	17.6
COPCs									
Cadmium, Dissolved	0.0001 U	0.0001 U	0.0001 U	0.00006 UJ	0.0001 U		0.0001 U	0.00006 UJ	0.0001 U
Cadmium, Total						0.0001 U			
Chromium, Dissolved	0.0002 J	0.0003 U	0.0002 J	0.0002 U	0.0003 U		0.0003 J	0.0002 U	0.0003 U
Chromium, Total						0.0002 U			
Copper, Dissolved	0.0013 J	0.0021 UJ	0.0012 J	0.0011 U	0.0021 U		0.0008 J	0.0011 U	0.0021 UJ
Copper, Total						0.0014 U			
Nickel, Dissolved	0.0046	0.0013 U	0.0045	0.0011 U	0.0013 U		0.0033	0.0011 U	0.0029 J
Nickel, Total						0.001 U			
Selenium, Dissolved	0.001 U	0.0003 U	0.004 J	0.0002 UJ	0.0003 J	0.001 U	0.001 U	0.0002 UJ	0.0003 U
Selenium, Total	0.001 J	0.00061 J	0.002 J	0.0002 UJ	0.00046 J	0.001 U	0.001 U	0.0002 UJ	0.0003 U
Vanadium, Dissolved	0.005 J		0.005 U				0.005 U		
Vanadium, Total						0.005 U			
Zinc, Dissolved	0.01 U	0.0002 U	0.01 U	0.0017 U	0.0015 U		0.01 U	0.0017 U	0.0007 J
Zinc, Total						0.01 U			
Major Ions									
TDS	350	351	370	391 J	367	260	270	241 J	254
TSS	136	5	5 U	14 J	5 U	5 U	110	16 J	18
Calcium, Dissolved	90.2	88.6	86.1	90.3 J	89	61.1	65.9	60 J	62.4
Magnesium, Dissolved	21.2	21.6	14.3	14.5	14.8	14.8	14	14	14
Sodium, Dissolved		12	30.7	32.6	28.8	20.1		17.7	19.8
Potassium, Dissolved						0.9 J			
Hardness	313	310	274	285	283	214	222	223	213
Alkalinity	287	281	229	222 J	247	213	233	213 J	238
Bicarbonate as CaCO3	287	268	229	222 J	247	213	233	209 J	229
Carbonate as CaCO3	2 U	12.7	2 U	1 UJ	1 U	2 U	2 U	3.44 J	8.64
Hydroxide as CaCO3	2 U	1 U	2 U	1 UJ	1 U	2 U	2 U	1 UJ	1 U
Fluoride						0.2 U			
Chloride		11	42	48.4 J	37.3	23		21.8 J	22.9
Sulfate	50	53.1	60	65.8 J	71.3	10 U	10 J	6.7 J	5.81

Appendix B

Surface Water Quality
Tygee Creek
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	ET		LT-3			UT-1			
Sample Date	5/24/2003	5/17/2004	5/24/2003	10/28/2003	5/17/2004	10/18/2002	5/24/2003	10/28/2003	5/17/2004
Sample Time	15:20	10:57	14:10	17:49	14:00	10:00	16:35	16:59	9:30
Nutrients									
Ammonia (as N)	0.1 U		0.1 U			0.05 U	0.1 U		
Nitrate + Nitrite (as N)		0.02 U		0.02 UJ	0.27	0.02 U		0.02 UJ	0.02 U
Nitrate, Dissolved (as N)						0.02 U			
Nitrite, Dissolved (as N)						0.01 U			
Orthophosphate (as P)						0.02 J			
Phosphorus, Total	0.52		0.07			0.03 J	0.23		
TOC									
Trace Elements									
Aluminum, Dissolved									
Aluminum, Total						0.03 U			
Arsenic, Dissolved	0.0019 J	0.0011 J	0.0009 J	0.00038 U	0.00077 J		0.0014 J	0.00074 UJ	0.0007 U
Arsenic, Total						0.0006 J			
Barium, Dissolved	0.224		0.099				0.082		
Barium, Total						0.077			
Boron, Dissolved						0.01 U			
Cobalt, Dissolved									
Cobalt, Total						0.01 U			
Iron, Dissolved									
Iron, Total						0.02 U			
Lead, Dissolved	0.0001 U	0.0007 U	0.0001 U	0.0004 U	0.0007 U		0.0001 U	0.0004 U	0.0007 U
Lead, Total						0.0001 U			
Manganese, Dissolved	0.146		0.066				0.018 J		
Manganese, Total						0.005 U			
Mercury, Dissolved		0.0002 U		0.0001 U	0.0002 U			0.0001 U	0.0002 U
Mercury, Total						0.0002 U			
Silver, Dissolved	0.00005 U	0.0001 U	0.00005 U	0.0001 U	0.0001 U		0.00005 U	0.0001 U	0.0001 U
Silver, Total						0.00005 U			

Appendix B

Surface Water Quality
Smoky Creek Drainage
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	USm					LSmS				
Sample Date	10/18/2002	5/24/2003	10/29/2003	5/17/2004	7/27/2004	10/18/2002	5/24/2003	10/29/2003	5/17/2004	7/27/2004
Sample Time	16:50	6:50	12:40	9:00	16:00	16:26	7:55	13:20	10:18	14:45
Field Parameters										
pH (su)		7.96	8.35	8.4	8.402		7.45	8.16	8.3	8.179
Specific Conductivity (uS/cm)	222	364	300	245	270	243	366	270	280	300
Temperature (oC)	3.09	4.5	2	4	10.8	6.8	8.6	5.6	8.5	8.9
Oxygen, Dissolved	10.43	6.35	9.6	9.5	9	8.08	4.19	8.8	6.6	5
Turbidity (NTU)	1.7	7.1	2.01	1.35	1.16	1.5	1.7	1.17	0.33	1.06
COPCs										
Cadmium, Dissolved		0.0001 U	0.00006 U	0.0001 U	0.0001 U		0.0001 U	0.00006 U	0.0001 U	0.0001 U
Cadmium, Total	0.0001 U					0.0001 U				
Chromium, Dissolved		0.0003 J	0.0002 U	0.0003 U	0.00033 J		0.0004 J	0.0002 U	0.0003 U	0.00035 J
Chromium, Total	0.0005 U					0.0007 U				
Copper, Dissolved		0.0007 J	0.0011 U	0.0021 U	0.0014 R		0.001 U	0.0011 U	0.0021 U	0.0014 R
Copper, Total	0.0015 U					0.0015 U				
Nickel, Dissolved		0.0026	0.0011 U	0.0013 U	0.0017 U		0.0029	0.0011 U	0.0013 U	0.0017 U
Nickel, Total	0.0012 U					0.0011 U				
Selenium, Dissolved	0.001 U	0.001 U	0.0002 UJ	0.0003 U	0.0003 U	0.001 U	0.001 U	0.0002 UJ	0.0003 U	0.0003 U
Selenium, Total	0.001 U	0.001 U	0.00036 J	0.0003 U	0.0003 U	0.003 J	0.001 U	0.0002 U	0.0003 U	0.0003 U
Vanadium, Dissolved		0.005 U	0.00033 J	0.0002 U	0.00047 J		0.005 U	0.0003 U	0.00046 J	0.00046 J
Vanadium, Total	0.005 U					0.005 U				
Zinc, Dissolved		0.01 U	0.0017 U	0.0002 U	0.0011 U		0.01 U	0.0017 U	0.00059 U	0.0027 U
Zinc, Total	0.01 J					0.01 U				
Major Ions										
TDS	220	200	220	205	200	220	210	228	223	217
TSS	8 J	16 J	64	5 U	5 U	5 U	5 U	12	5 U	5 U
Calcium, Dissolved	57.9	55.2	55.5 J	54.8	55	53.5	48.2	49.1 J	49.5	51.8
Magnesium, Dissolved	17	15.5	16.2	15.8	15.4	17.7	19.1	19.6	19.5	20.2
Sodium, Dissolved	4.8		4.28 J	3.98	4.04	5.5	5.7	5.9 J	6.3	6.85
Potassium, Dissolved	0.6 J		0.745 J	0.632	0.599	0.5 J	0.7 J	1.04	0.661	0.917
Hardness	215	202	205	202	201	206	199	203	204	212
Alkalinity	203	198	197	211	219	195	185	187	199	202
Bicarbonate as CaCO3	203	198	197	211	214	195	185	187	199	202
Carbonate as CaCO3	2 U	2 U	1 U	1 U	5.5	2 U	2 U	1 U	1 U	1 U
Hydroxide as CaCO3	2 U	2 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U	1 U
Fluoride	0.1 U		0.1 U	0.123	0.145	0.1 U		0.1 U	0.135	0.154
Chloride	1 J		1.2	1.18	1.16	4 J	6 ERI	6.18	13.2	19.6
Sulfate	20	10 J	154	14.7	15.6	30	20	22	22	22.2

Appendix B

Surface Water Quality
Smoky Creek Drainage
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	LSm				
Sample Date	10/18/2002	5/24/2003	10/29/2003	5/17/2004	7/27/2004
Sample Time	16:50	12:55	13:45	11:00	13:45
Field Parameters					
pH (su)		8.74	8.33	9.2	8.375
Specific Conductivity (uS/cm)	262	400	275	305	345
Temperature (oC)	7.18	18.3	4.5	9.5	16.4
Oxygen, Dissolved	9.15	4.19	8.8	8.2	7.8
Turbidity (NTU)	17.7	135	3.84	13.2	4.96
COPCs					
Cadmium, Dissolved		0.0001 U	0.00006 U	0.0001 U	0.0001 U
Cadmium, Total	0.0005 J				
Chromium, Dissolved		0.0003 J	0.0002 U	0.0003 U	0.0003 U
Chromium, Total	0.0058				
Copper, Dissolved		0.0008 J	0.0011 U	0.0021 U	0.0014 R
Copper, Total	0.005 U				
Nickel, Dissolved		0.0033	0.0011 U	0.0021 U	0.0017 U
Nickel, Total	0.0051				
Selenium, Dissolved	0.001 U	0.001 U	0.0002 UJ	0.0003 U	0.0003 U
Selenium, Total	0.001 U	0.002 U	0.0002 U	0.0003 U	0.0003 U
Vanadium, Dissolved		0.005 U	0.00054 J	0.00073 J	0.0012 J
Vanadium, Total	0.005 U				
Zinc, Dissolved		0.01 U	0.0017 U	0.00092 UJ	0.0011 U
Zinc, Total	0.03 J				
Major Ions					
TDS	230	240	253	236	209
TSS	76	122	5 U	5 U	8
Calcium, Dissolved	61.9	61.4	59.3 J	60	55.6
Magnesium, Dissolved	17.3	17.2	16.5	16.7	16.8
Sodium, Dissolved	6.6	5.8	5.67 J	6.18	6
Potassium, Dissolved	0.8 J	0.7 J	1.51	0.634	0.811
Hardness	226	224	216	218	208
Alkalinity	210	211	200	216	213.12
Bicarbonate as CaCO3	210	211	200	211	200.74
Carbonate as CaCO3	2 U	2 U	1 U	5.74	12.38
Hydroxide as CaCO3	2 U	2 U	1 U	1 U	1 U
Fluoride	0.2 U		0.1 U	0.16	0.163
Chloride	7	9 ERI	7.57	11.5	9.1
Sulfate	20	20	19.3	19.7	19.5

Appendix B

Surface Water Quality
Smoky Creek Drainage
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	USm					LSmS				
Sample Date	10/18/2002	5/24/2003	10/29/2003	5/17/2004	7/27/2004	10/18/2002	5/24/2003	10/29/2003	5/17/2004	7/27/2004
Sample Time	16:50	6:50	12:40	9:00	16:00	16:26	7:55	13:20	10:18	14:45
Nutrients										
Ammonia (as N)	0.05 U	0.1 U	0.01 U	0.48	0.03	0.05 U	0.1 U	0.01 U	0.03	0.03
Nitrate + Nitrite (as N)	0.02 U		0.02 U	0.05	0.02 U	0.06 U		0.1	0.2	0.15
Nitrate, Dissolved (as N)	0.02 U					0.06 J				
Nitrite, Dissolved (as N)	0.01 U					0.01 U				
Orthophosphate (as P)	0.01 U		0.01 UJ	0.02	0.01	0.01 U		0.01 UJ	0.02	0.01 U
Phosphorus, Total	0.03 J	0.03 J				0.05	0.02 J			
TOC			1.3	1 U	1.4			1 U	1.03	4.4
Trace Elements										
Aluminum, Dissolved			0.0086 U	0.0095 J	0.0066 U			0.0086 U	0.006 U	0.0066 U
Aluminum, Total	0.14 U					0.05 U				
Arsenic, Dissolved		0.0005 U	0.0006 U	0.0007 U	0.00006 U		0.001 U	0.0006 U	0.0007 U	0.00014 J
Arsenic, Total	0.0006 J					0.001 J				
Barium, Dissolved		0.02	0.0234	0.0204	0.0238		0.013	0.0146	0.0144	0.0162
Barium, Total	0.026					0.022				
Boron, Dissolved	0.02 U					0.02 U				
Cobalt, Dissolved										
Cobalt, Total	0.01 U					0.01 U				
Iron, Dissolved			0.0035 U	0.0124 U	0.011 U			0.0035 U	0.0124 U	0.011 U
Iron, Total	0.27					0.1 U				
Lead, Dissolved		0.0001 U	0.0004 U	0.0007 U	0.001 U		0.0002 U	0.0004 U	0.0007 U	0.001 U
Lead, Total	0.0003 J					0.0001 J				
Manganese, Dissolved		0.005 U	0.0137	0.0038	0.0059		0.005 U	0.0026	0.0024	0.0022
Manganese, Total	0.043 U					0.037 U				
Mercury, Dissolved			0.0001 U		0.0001 U			0.0001 U	0.0002 U	0.0001 U
Mercury, Total	0.0002 U					0.0002 U				
Silver, Dissolved		0.00005 U	0.0001 UJ	0.0001 U	0.0001 U		0.00005 U	0.0001 UJ	0.0001 U	0.0001 U
Silver, Total	0.00005 U					0.00005 U				

Appendix B

Surface Water Quality
Smoky Creek Drainage
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	LSm				
Sample Date	10/18/2002	5/24/2003	10/29/2003	5/17/2004	7/27/2004
Sample Time	16:50	12:55	13:45	11:00	13:45
Nutrients					
Ammonia (as N)	0.05 U	0.1 U	0.01 U	0.31	0.1
Nitrate + Nitrite (as N)	0.02 U		0.02 U	0.05	0.02 U
Nitrate, Dissolved (as N)	0.02 J				
Nitrite, Dissolved (as N)	0.01 U				
Orthophosphate (as P)	0.02 J		0.014 J	0.03	0.05
Phosphorus, Total	0.33	0.66			
TOC			5	1 U	6.4
Trace Elements					
Aluminum, Dissolved			0.0086 U	0.0097 J	0.0066 U
Aluminum, Total	2.93				
Arsenic, Dissolved		0.0006 J	0.0006 U	0.0007 U	0.00032 J
Arsenic, Total	0.001 J				
Barium, Dissolved		0.034	0.0253	0.0254	0.0263
Barium, Total	0.046				
Boron, Dissolved	0.02 U				
Cobalt, Dissolved					
Cobalt, Total	0.01 U				
Iron, Dissolved			0.0118 U	0.0131 J	0.011 U
Iron, Total	3.29				
Lead, Dissolved		0.0001 U	0.0004 U	0.0007 U	0.001 U
Lead, Total	0.0019				
Manganese, Dissolved		0.194	0.0259	0.0564	0.0178
Manganese, Total	0.21				
Mercury, Dissolved			0.0001 U	0.0002 U	0.0001 U
Mercury, Total	0.0002 U				
Silver, Dissolved		0.00005 U	0.0001 UJ	0.0001 U	0.0001 U
Silver, Total	0.0001 U				

Appendix B

Surface Water Quality
Roberts Creek Drainage
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	UR-2			
Sample Date	5/24/2003	10/29/2003	5/17/2004	7/27/2004
Sample Time	17:50	7:30	12:25	12:10
Field Parameters				
pH (su)	7.72	7.97	9.15	8.115
Specific Conductivity (uS/cm)	646	600	575	500
Temperature (oC)	17.1	8.3	9.9	9.9
Oxygen, Dissolved	3.76	6.8	7.2	7.8
Turbidity (NTU)	1.11	0.62	0.76	1.55
COPCs				
Cadmium, Dissolved	0.0001 U	0.00006 U	0.0001 U	0.0001 U
Cadmium, Total				
Chromium, Dissolved	0.0007 J	0.0002 U	0.0003 U	0.0003 U
Chromium, Total				
Copper, Dissolved	0.001 J	0.0011 U	0.0021 U	0.0014 R
Copper, Total				
Nickel, Dissolved	0.0045	0.0011 U	0.0013 U	0.0017 U
Nickel, Total				
Selenium, Dissolved	0.003 J	0.0002 UJ	0.0003 U	0.0003 U
Selenium, Total	0.001 U	0.00048 J	0.0003 U	0.0014 U
Vanadium, Dissolved	0.005 U			
Vanadium, Total				
Zinc, Dissolved	0.01 U	0.0017 U	0.0002 U	0.0011 U
Zinc, Total				
Major Ions				
TDS	460	434	408	420
TSS	26	5	5 U	5 U
Calcium, Dissolved	75.4	70.6 J	70.4	65.4
Magnesium, Dissolved	27.9	27	26.3	25.7
Sodium, Dissolved		36.5 J	37.5	37.6
Potassium, Dissolved				
Hardness	303	288	284	269
Alkalinity	185	184	194	200.78
Bicarbonate as CaCO3	185	184	194	200.78
Carbonate as CaCO3	2 U	1 U	1 U	1 U
Hydroxide as CaCO3	2 U	1 U	1 U	1 U
Fluoride				
Chloride		74.3	66.7	66.1
Sulfate	110	102	107	103

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Surface Water Quality
Roberts Creek Drainage
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	UR-2			
Sample Date	5/24/2003	10/29/2003	5/17/2004	7/27/2004
Sample Time	17:50	7:30	12:25	12:10
Nutrients				
Ammonia (as N)	0.1 U			
Nitrate + Nitrite (as N)		0.08	0.04	0.04
Nitrate, Dissolved (as N)				
Nitrite, Dissolved (as N)				
Orthophosphate (as P)				
Phosphorus, Total	0.02 J			
TOC				
Trace Elements				
Aluminum, Dissolved				
Aluminum, Total				
Arsenic, Dissolved	0.001 U	0.0006 U	0.0007 U	0.00056 J
Arsenic, Total				
Barium, Dissolved	0.04			
Barium, Total				
Boron, Dissolved				
Cobalt, Dissolved				
Cobalt, Total				
Iron, Dissolved				
Iron, Total				
Lead, Dissolved	0.0002 U	0.0004 U	0.0007 U	0.001 U
Lead, Total				
Manganese, Dissolved	0.005 U			
Manganese, Total				
Mercury, Dissolved		0.0001 U	0.0002 U	0.0001 U
Mercury, Total				
Silver, Dissolved	0.00005 U	0.0001 UJ	0.0001 U	0.0001 U
Silver, Total				

Appendix B

Surface Water Quality
Pole Canyon Creek Drainage
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	UP					UP-H	
Sample Date	10/17/2002	5/23/2003	10/29/2003	5/7/2004	7/20/2004	5/7/2004	7/20/2004
Sample Time	18:00	16:00	8:40	6:50	10:55	7:55	11:55
Field Parameters							
pH (su)	7.49	7.3	8.43	7.56	8.21	7.91	8.27
Specific Conductivity (uS/cm)	185	332	220	238	338	224	352
Temperature (oC)	1.51	7.8	4.1	3.7	8.37	3.9	9.64
Oxygen, Dissolved	9.94	7.19	8.8	9.94	9.48	9.69	8.84
Turbidity (NTU)	1.2	22.7	0.52	26.3	1.71	19.8	3.45
COPCs							
Cadmium, Dissolved		0.0001 U	0.00006 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U
Cadmium, Total	0.0001 U						
Chromium, Dissolved		0.0007	0.0002 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U
Chromium, Total	0.0008 U						
Copper, Dissolved		0.0005 U	0.0011 U	0.0021 U	0.0014 UJ	0.0021 U	0.0014 UJ
Copper, Total	0.0012 U						
Nickel, Dissolved		0.0016	0.0011 U	0.0023 J	0.0017 U	0.0013 U	0.0017 U
Nickel, Total	0.0043						
Selenium, Dissolved	0.001 J	0.001 U	0.0002 UJ	0.0003 U	0.00036 J	0.00059 J	0.0003 U
Selenium, Total	0.001 J	0.001 U	0.0002 U	0.00052 J-	0.0003 U	0.0003 U	0.0005 U
Vanadium, Dissolved		0.005 U	0.00031 J	0.00025 J	0.0003 J	0.00021 J	0.00036 J
Vanadium, Total	0.005 U						
Zinc, Dissolved		0.01 U	0.0017 U	0.00038 J	0.0011 U	0.0005 J	0.0011 U
Zinc, Total	0.01 J						
Major Ions							
TDS	200	210	207	200	195	175	172
TSS	5 U	5 U	5 U	5 U	5 U	24	5
Calcium, Dissolved	54.1	58.4	56.8 J	56.4	56.7	57.5	56.6
Magnesium, Dissolved	12	10.5	12.4	10.6	10.9	11.5	12.1
Sodium, Dissolved	3.2	2.7	3.21 J	2.65	3	2.96	3.27
Potassium, Dissolved	0.5 J	0.7 J	0.767 J	0.485	0.537	0.518	0.606
Hardness	185	189	193		186	191	191
Alkalinity	183	182	184	189	195	191	198
Bicarbonate as CaCO3	183	178	184	182	185.41	187	191
Carbonate as CaCO3	2 U	4 J	1 U	7.36	9.46	4.6	7.3
Hydroxide as CaCO3	2 U	2 U	1 U	1 U	1 U	1 U	1 U
Fluoride	0.1 U	0.1 J	0.1 U	0.157	0.136	0.124	0.136
Chloride	1 J	1 J	1.2	0.899	0.955	0.698	0.999
Sulfate	20	10 J	17	11.4	13.6	12	14.3

Appendix B

Surface Water Quality
Pole Canyon Creek Drainage
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	LP-1					LP				LP-A	LP-B	LP-C
Sample Date	10/28/2003	2/4/2004	5/7/2004	7/20/2004	11/8/2004	5/24/2003	5/7/2004	6/4/2004	7/20/2004	6/4/2004	6/4/2004	6/4/2004
Sample Time	14:05	12:30	8:55	13:45	18:15	20:55	9:30	15:25	12:50	16:30	17:20	18:15
Field Parameters												
pH (su)	7.25	8.02	6.99	6.87	7.65	7.18	7.21	7.49	7.85	8.49	8.53	8.45
Specific Conductivity (uS/cm)		962	749	730	994	771	734	455	731	409	442	450
Temperature (oC)	8.7	3.5	7.31	7.49	5.38	10.6	8.01	7.76	12.01	14.25	17.87	21.97
Oxygen, Dissolved	6	6.7	6.97	7.61	7.94	6.52	8.24	10.78	8.67	9.66	8.37	5.66
Turbidity (NTU)	1.21	1.69	4.32		0.41	8.19		1.11	0.88	0.57	0.84	1.14
COPCs												
Cadmium, Dissolved	0.0146 J	0.0088	0.0088		0.0123	0.0081		0.0058	0.0069	0.0049	0.0041	0.00052 J
Cadmium, Total					0.0119							
Chromium, Dissolved	0.0011 U	0.0014 J	0.00061 J		0.0003 UJ	0.001		0.0003 U	0.00081 J	0.0003 U	0.0003 U	0.0003 U
Chromium, Total					0.00049 J							
Copper, Dissolved	0.0012 J	0.0032	0.0025 J		0.0014 U	0.0018 J		0.0021 U	0.0014 UJ	0.0021 U	0.0021 U	0.0021 U
Copper, Total					0.0014 U							
Nickel, Dissolved	0.186	0.105	0.153		0.167	0.12		0.0923	0.0985	0.0796	0.0668	0.0512
Nickel, Total												
Selenium, Dissolved	0.723 J-	1.5 J-	0.505 J-		0.787	0.64		0.308	0.356	0.156	0.102	0.13
Selenium, Total	0.872 J-	1.5	1.22 J-		0.789	0.58		0.44	0.368	0.25	0.164	0.217
Vanadium, Dissolved	0.0035 J	0.0035 J	0.0038 J		0.0033 J	0.005 U		0.0031 J	0.0036 J	0.0033 J	0.0036 J	0.0039 J
Vanadium, Total												
Zinc, Dissolved	0.706	0.232	0.592		0.566	0.48		0.346	0.402	0.24	0.156	0.0576
Zinc, Total												
Major Ions												
TDS	939 J	1204	756		809	640		453	436	440	442	466
TSS	5 UJ	5 U	5 U			5 U		5 U	24	5 U	5 U	5 U
Calcium, Dissolved	246 J	291	191		200	155		123	136	123	123	122
Magnesium, Dissolved	43.4	54.8	33.7		35	26.7		20.8	20.8	20.8	20.9	20.9
Sodium, Dissolved	4.89	6.09	4.61		4.83	4		3.54	3.72	3.56	3.55	3.56
Potassium, Dissolved	1.76 J	1.72	1.08		1.42	1		0.815	1.03	0.805	0.81	0.888
Hardness	793	953				497		393	424	394	394	392
Alkalinity	309 J	272	290		297	262		275	298	276	274	271
Bicarbonate as CaCO3	309 J	272	290		297	262		275	298	260	254	257
Carbonate as CaCO3	1 UJ	1 U	1 U		1 U	2 U		1 U	1 U	16.7	20.5	14.6
Hydroxide as CaCO3	1 UJ	1 U	1 U		1 U	2 U		1 U	1 U	1 U	1 U	1 U
Fluoride	0.548 J	0.418	0.346		0.43	0.5 J		0.422	0.423	0.425	0.421	0.429
Chloride	3.17 J	3.56	4.28		2.87	3 J		1.89	1.99	1.88	1.87	1.91
Sulfate	459 J	682	368		356	230		154	145	154	155	156

Appendix B

Surface Water Quality
Pole Canyon Creek Drainage
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	UP					UP-H	
Sample Date	10/17/2002	5/23/2003	10/29/2003	5/7/2004	7/20/2004	5/7/2004	7/20/2004
Sample Time	18:00	16:00	8:40	6:50	10:55	7:55	11:55
Nutrients							
Ammonia (as N)	0.05 U	0.2 J	0.01 U	0.01 U	0.01 U	0.01	0.05
Nitrate + Nitrite (as N)	0.04 UJ	0.04 J	0.05	0.04	0.06	0.03	0.03
Nitrate, Dissolved (as N)	0.04 J						
Nitrite, Dissolved (as N)	0.01 J						
Orthophosphate (as P)	0.01 J		0.01 UJ	0.01 U	0.01 U	0.01	0.01 U
Phosphorus, Total	0.01 J	0.05					
TOC		3 J	1.7	2.25	4.5	3.82	3.7
Trace Elements							
Aluminum, Dissolved		0.03 U	0.0086 U	0.0111 J	0.0066 U	0.0209	0.0066 U
Aluminum, Total	0.05 UJ						
Arsenic, Dissolved		0.0005 U	0.0006 U	0.0006 U	0.0006 U	0.00006 U	0.0006 U
Arsenic, Total	0.0005 J						
Barium, Dissolved		0.031	0.0306	0.0302	0.0309	0.0291	0.0302
Barium, Total	0.028						
Boron, Dissolved	0.01 U						
Cobalt, Dissolved							
Cobalt, Total	0.01 U						
Iron, Dissolved		0.01 U	0.0035 U	0.0124 U	0.011 U	0.0124 U	0.011 U
Iron, Total	0.04 UJ						
Lead, Dissolved		0.0001 U	0.0004 U	0.0007 U	0.001 U	0.00041 J	0.001 U
Lead, Total	0.0001 U						
Manganese, Dissolved		0.005 U	0.0004 J	0.0029	0.0016 J	0.0058	0.0075
Manganese, Total	0.005 U						
Mercury, Dissolved			0.0001 U				
Mercury, Total	0.0002 U						
Silver, Dissolved		0.00005 U	0.0001 UJ	0.0001 U	0.0001 U	0.0001 U	0.0001 U
Silver, Total	0.00005 U						

Appendix B

Surface Water Quality
Pole Canyon Creek Drainage
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	LP-1					LP				LP-A	LP-B	LP-C
Sample Date	10/28/2003	2/4/2004	5/7/2004	7/20/2004	11/8/2004	5/24/2003	5/7/2004	6/4/2004	7/20/2004	6/4/2004	6/4/2004	6/4/2004
Sample Time	14:05	12:30	8:55	13:45	18:15	20:55	9:30	15:25	12:50	16:30	17:20	18:15
Nutrients												
Ammonia (as N)	0.01 UJ	0.12	0.01 U			0.1 U		0.01 U	0.01	0.11	0.13	0.02
Nitrate + Nitrite (as N)	0.09 J	0.12	0.04		0.06	0.04 J		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Nitrate, Dissolved (as N)												
Nitrite, Dissolved (as N)												
Orthophosphate (as P)	0.011 J	0.024 J	0.02					0.01 U	0.01	0.01 U	0.01 U	0.016
Phosphorus, Total					0.04	0.13						
TOC	3.4 J	8.5	1 U			2 J		1.13	1.6	1 U	1 U	5.76
Trace Elements												
Aluminum, Dissolved	0.0086 U	0.0181 J	0.0188 J		0.0066 U	0.03 U		0.0131 J	0.0066 U	0.006 U	0.0063 J	0.0088 J
Aluminum, Total												
Arsenic, Dissolved	0.00006 U	0.0006 U	0.0006 U			0.0005 U		0.0006 U	0.00079 J	0.0006 U	0.0006 U	0.0006 U
Arsenic, Total												
Barium, Dissolved	0.0328	0.0283 J	0.021			0.016		0.014	0.0175	0.0157	0.0164	0.0174
Barium, Total												
Boron, Dissolved												
Cobalt, Dissolved												
Cobalt, Total												
Iron, Dissolved	0.0035 U	0.013 U	0.0174 J		0.011 U	0.02 U		0.0124 U	0.011 U	0.0124 U	0.0124 U	0.0124 U
Iron, Total												
Lead, Dissolved	0.0004 U	0.001 U	0.0007 U			0.0001 U		0.00056 J	0.001 U	0.0004 U	0.0004 U	0.0004 U
Lead, Total												
Manganese, Dissolved	0.0027	0.0047	0.0036		0.0006 U	0.005 U		0.0046	0.0008 J	0.0044	0.0048	0.003
Manganese, Total												
Mercury, Dissolved	0.0001 U		0.0002 U						0.0001 U			
Mercury, Total												
Silver, Dissolved	0.0001 U	0.0001 U	0.0001 U			0.00005 U		0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U
Silver, Total												

Appendix B

Surface Water Quality
Sage Creek Drainage
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	US					SV-1	LS				
Sample Date	10/18/2002	5/23/2003	10/28/2003	5/7/2004	7/20/2004	10/17/2002	10/17/2002	5/23/2003	10/28/2003	5/7/2004	7/20/2004
Sample Time	14:10	17:35	15:20	10:25	14:45	13:40	13:54	19:30	10:00	17:05	19:20
Field Parameters											
pH (su)	7.43	7.44	8.2	8.27	8.15	7.42	7.75	8	8.25	8.17	8.13
Specific Conductivity (uS/cm)	220	326	230	230	328	218	237	334	160	231	335
Temperature (oC)	5.56	7.9	7	5.88	10.77	5.06	7.05	10.1	4.1	11.4	14.6
Oxygen, Dissolved	10.17	7.07	7.9	8.93	8.95	10.78	10.42	6.67	4.2	7.39	7.71
Turbidity (NTU)	1.8	19	0.98	7.09	2.78	2.6	2.7	24.4	3.6	13.8	4.32
COPCs											
Cadmium, Dissolved		0.0001 U	0.00006 UJ	0.0001 U	0.0001 U			0.0001 U	0.00006 UJ	0.0001 U	0.0001 U
Cadmium, Total	0.0001 U					0.0001 U	0.0001 U				
Chromium, Dissolved		0.0006	0.0002 U	0.0003 U	0.0003 U			0.0006	0.0002 U	0.0003 U	0.0003 U
Chromium, Total	0.0004 U					0.0013 U	0.0014 U				
Copper, Dissolved		0.0005 U	0.0011 U	0.0021 U	0.0014 UJ			0.0005 U	0.0011 U	0.0021 U	0.0014 UJ
Copper, Total	0.0014 U					0.0011 U	0.0012 U				
Nickel, Dissolved		0.0016	0.0016 J	0.0013 U	0.0017 U			0.0017	0.0011 U	0.0013 U	0.0017 U
Nickel, Total	0.001 U					0.0044	0.0048				
Selenium, Dissolved	0.001 U	0.001 U	0.0002 UJ	0.0003 U	0.0003 U	0.001 U	0.001 U	0.001 U	0.0002 UJ	0.0003 U	0.0003 U
Selenium, Total	0.001 U	0.001 U	0.0002 UJ	0.0003 U	0.0003 U	0.001 U	0.001 U	0.001 U	0.002 J-	0.00063 J	0.0003 U
Vanadium, Dissolved		0.005 U	0.0003 U	0.00036 J	0.00032 J			0.005 U	0.00034 J	0.00069 J	0.00057 J
Vanadium, Total	0.005 U					0.005 U	0.005 U				
Zinc, Dissolved		0.01 U	0.0017 U	0.00069 J	0.0011 U			0.01 U	0.0017 U	0.00044 J	0.0011 J
Zinc, Total	0.01 U					0.01 J	0.01 U				
Major Ions											
TDS	210	190	194 J	177	174	200	220	210	193 J	173	74
TSS	5 U	10 J	5 UJ	5 U	5 U	5 U	5 U	16 J	5 UJ	11	8
Calcium, Dissolved	56.9	56	54.4 J	54.9	51.5	50.5	53.2	57.3	58.6 J	55	51.4
Magnesium, Dissolved	15.2	10.8	14.4	11	12.3	14.2	14.6	11.8	15.1	11.8	12.5
Sodium, Dissolved	3.5	2.3	3.1	2.5	2.78	3.2	3.4	2.5	3.2	2.69	2.86
Potassium, Dissolved	0.4 J	0.6 J	0.525 J	0.437	0.545	0.5 J	0.6 J	0.5 J	0.587 J	0.498	0.555
Hardness	205	184	195	183	179	185	193	192	208	186	180
Alkalinity	177	179	179 J	186	188	184	176	181	186 J	186	187
Bicarbonate as CaCO3	177	175	174 J	179	179	184	176	178	182 J	178	182
Carbonate as CaCO3	2 U	4 J	4.78 J	6.64	8.94	2 U	2 U	3 J	4.46 J	7.08	5.46
Hydroxide as CaCO3	2 U	2 U	1 UJ	1 U	1 U	2 U	2 U	2 U	1 UJ	1 U	1 U
Fluoride	0.1 U	0.1 J	0.1 UJ	0.1 U	0.137	0.1 U	0.1 U	0.1 J	0.1 UJ	0.112	0.135
Chloride	1 J	1 U	1.18 J	0.669	0.99	1 J	1 J	1 J	1.23 J	0.659	0.991
Sulfate	30	20	21.3 J	9.81	12.5	20	30	10 J	23.2 J	12.4	13.7

Appendix B

Surface Water Quality
Sage Creek Drainage
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	US					SV-1	LS				
Sample Date	10/18/2002	5/23/2003	10/28/2003	5/7/2004	7/20/2004	10/17/2002	10/17/2002	5/23/2003	10/28/2003	5/7/2004	7/20/2004
Sample Time	14:10	17:35	15:20	10:25	14:45	13:40	13:54	19:30	10:00	17:05	19:20
Nutrients											
Ammonia (as N)	0.05 U	0.1 U	0.01 UJ	0.01 U	0.04	0.05 U	0.05 J-	0.1 J	0.01 UJ	0.01 U	0.06
Nitrate + Nitrite (as N)	0.11 U	0.11	0.11 J	0.12	0.08	0.07 UJ	0.04 UJ	0.07 J	0.07 J	0.06	0.02 U
Nitrate, Dissolved (as N)	0.11					0.07 J	0.04 J				
Nitrite, Dissolved (as N)	0.01 U					0.01 J	0.01 J				
Orthophosphate (as P)	0.01 U		0.01 UJ	0.02	0.01 U	0.01 J	0.01 J		0.01 UJ	0.02	0.01 U
Phosphorus, Total	0.01 J	0.05 J				0.02 J	0.02 J	0.12			
TOC		3 J	4.6 J	1 U	3.7			4 J	3.3 J	2.34	1 U
Trace Elements											
Aluminum, Dissolved		0.03 U	0.0086 U	0.0457	0.0066 U			0.03 U	0.0086 U	0.0162 J	0.0066 U
Aluminum, Total	0.03 U					0.06 UJ	0.03 U				
Arsenic, Dissolved		0.0005 U	0.00028 UJ	0.00006 U	0.0006 U			0.0005 U	0.00006 U	0.00006 U	0.00065 J
Arsenic, Total	0.0005 U					0.0005 U	0.0008 J				
Barium, Dissolved		0.031	0.0278	0.0302	0.0292			0.032	0.0281	0.0304	0.03
Barium, Total	0.026					0.029	0.03				
Boron, Dissolved	0.01 U					0.01 U	0.01 J				
Cobalt, Dissolved											
Cobalt, Total	0.01 U					0.01 U	0.01 U				
Iron, Dissolved		0.01 U	0.0035 U	0.0174 J	0.011 U			0.01 U	0.0035 U	0.0124 U	0.011 U
Iron, Total	0.01 U					0.04 J	0.11				
Lead, Dissolved		0.0001 U	0.0004 U	0.0004 U	0.001 U			0.0001 U	0.0004 U	0.0011 J	0.001 U
Lead, Total	0.0001 U					0.0001 U	0.0002 U				
Manganese, Dissolved		0.005 U	0.0003 U	0.0109	0.0018 J			0.021 J	0.0041	0.0185	0.0101
Manganese, Total	0.005 U					0.005 U	0.016 U				
Mercury, Dissolved			0.0001 U						0.0001 U	0.0002 U	0.0001 U
Mercury, Total	0.0002 U					0.0002 U	0.0002 U				
Silver, Dissolved		0.00005 U	0.0001 U	0.0001 U	0.0001 U			0.00005 U	0.0001 U	0.0001 U	0.0001 U
Silver, Total	0.00005 U					0.00005 U	0.00005 U				

Appendix B

Surface Water Quality
Hoopes Spring Drainage
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	HS							HS-2	HS-3		
Sample Date	10/17/2002	5/20/2003	10/28/2003	2/5/2004	5/7/2004	7/21/2004	11/9/2004	10/17/2002	10/17/2002	5/22/2003	10/27/2003
Sample Time	13:00	17:45	9:15	14:00	17:25	10:55	10:30	12:15	10:30	12:10	9:55
Field Parameters											
pH (su)	7.04	7.08	7.55	7.74	7.5	7.51	7.79	7.74	8.28	7.9	8.5
Specific Conductivity (uS/cm)	335	424	260	297	322	463	425	329	320	399	294
Temperature (oC)	12.07	12.2	11.8	11.8	11.84	12.19	11.58	13.07	12.22	16.4	9.8
Oxygen, Dissolved	5.02	2.53	5.4	4.79	3.96	4.9	6.3	8.83	9.53	6.89	11.08
Turbidity (NTU)	0.3	1.41	0.25	0.72	0.75	0.36	0.62	0.8	1.7	1.59	1.1
COPCs											
Cadmium, Dissolved		0.0001 U	0.00006 UJ	0.0001 U	0.0001 U	0.0001 U	0.0001 U			0.0001 U	0.00006 U
Cadmium, Total	0.0001 U						0.0001 U	0.0001 J	0.0001 U		
Chromium, Dissolved		0.0005	0.00038 U	0.00048 J	0.00032 J	0.0003 U	0.0003 UJ			0.0006	0.0003 U
Chromium, Total	0.0015 U						0.0003 UJ	0.0017 U	0.0017 U		
Copper, Dissolved		0.0005 U	0.0011 U	0.0021 U	0.0021 U	0.0014 R	0.0014 U			0.0005 U	0.0026 U
Copper, Total	0.0015 U						0.0014 U	0.0011 U	0.0012 U		
Nickel, Dissolved		0.0019	0.0011 U	0.0037 U	0.0013 U	0.0017 U	0.0017 U			0.0017	0.0016 U
Nickel, Total	0.0048							0.0044	0.0048		
Selenium, Dissolved	0.009	0.013	0.0116 J-	0.0106 J-	0.008	0.0116 J+	0.0118	0.008	0.009	0.011	0.0056
Selenium, Total	0.013	0.015	0.0067 J	0.0119	0.0097	0.0134	0.0126	0.009	0.009	0.011	0.0094
Vanadium, Dissolved		0.005 U	0.0016 J	0.0016 J	0.0016 J	0.0014 U	0.0016 J			0.005 U	0.0009 U
Vanadium, Total	0.005 U							0.005 U	0.005 U		
Zinc, Dissolved		0.02 J	0.0017 U	0.0028 J	0.0006 J	0.0011 U	0.0011 U			0.01 U	0.0018 U
Zinc, Total	0.01 U							0.01 U	0.01 U		
Major Ions											
TDS	270	260	284 J	246	250	279	252	250	260	260	
TSS	5 U	5 U	5 UJ	5 U	5 U	5 U		5 U	5 U	5 U	
Calcium, Dissolved	57.7	64	59.8 J	57	59.4	56.3	58.4	54.1	55.7	61.7	56
Magnesium, Dissolved	22.4	23.6	22.3	22	22.5	21.4	21.5	20.3	20.5	21.9	20.2 J
Sodium, Dissolved	7.9	8.6	7.31	7.58	8.1	8.11	7.68	7	7.1	7.3	6.74
Potassium, Dissolved	0.6 J	0.9 J	0.842 J	0.796 J	0.614	0.725	0.836	0.6 J	0.8 J	0.6 J	0.731 J
Hardness	236	257	241	233	241	229		219	224	244	223
Alkalinity	200	196	196 J	200	209	212	194	199	199	198	
Bicarbonate as CaCO3	200	196	196 J	200	209	212	194	199	199	198	
Carbonate as CaCO3	2 U	2 U	1 UJ	1 U	1 U	1 U	1 U	2 U	2 U	2 U	
Hydroxide as CaCO3	2 U	2 U	1 UJ	1 U	1 U	1 U	1 U	2 U	2 U	2 U	
Fluoride	0.5 J	0.4 J	0.382 J	0.416	0.425	0.438	0.402	0.4 U	0.4 U	0.4 J	
Chloride	8	8	8.04 J	7.46	7.37	7.45	7.25	7	7	7	
Sulfate	50	70	44.7 J	46.1	47.6	46.3	45.7	40	70	50	

Appendix B

Surface Water Quality
Hoopes Spring Drainage
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	HS							HS-2	HS-3		
Sample Date	10/17/2002	5/20/2003	10/28/2003	2/5/2004	5/7/2004	7/21/2004	11/9/2004	10/17/2002	10/17/2002	5/22/2003	10/27/2003
Sample Time	13:00	17:45	9:15	14:00	17:25	10:55	10:30	12:15	10:30	12:10	9:55
Nutrients											
Ammonia (as N)	0.05 U	0.1 U	0.01 UJ	0.16	0.15	0.01 U		0.16 J-	0.05 J-	0.1 U	
Nitrate + Nitrite (as N)	0.14 UJ	0.11	0.18 J	0.14	0.14	0.14	0.17	0.09 UJ	0.08 UJ	0.02 U	
Nitrate, Dissolved (as N)	0.14							0.09 J	0.08 J		
Nitrite, Dissolved (as N)	0.01 J							0.01 J	0.01 J		
Orthophosphate (as P)	0.01 J		0.01 UJ	0.01 UJ	0.01 U	0.01 U		0.01 J	0.01 J		
Phosphorus, Total	0.01 J	0.01 J					0.01	0.01 J	0.02 J	0.01 U	
TOC		2 J	5.3 J	3.4	1 U	1.3				2 J	
Trace Elements											
Aluminum, Dissolved		0.03 U	0.0086 U	0.006 U	0.0089 J	0.0066 U	0.0066 U			0.03 U	0.0097 U
Aluminum, Total	0.03 R							0.03 U	0.07 U		
Arsenic, Dissolved		0.0005 U	0.00006 U	0.0006 U	0.00006 U	0.0006 U				0.0006 J	
Arsenic, Total	0.0015 J							0.0006 J	0.0014 J		
Barium, Dissolved		0.049	0.0494	0.0446 J	0.0461	0.0496				0.045	0.0397
Barium, Total	0.046							0.046	0.047		
Boron, Dissolved	0.01 J							0.01 U	0.01 J		
Cobalt, Dissolved											
Cobalt, Total	0.01 U							0.01 U	0.01 U		
Iron, Dissolved		0.01 U	0.0035 U	0.013 U	0.0124 U	0.011 U	0.011 U			0.01 U	0.0045 U
Iron, Total	0.01 UJ							0.01 J+	0.05 J		
Lead, Dissolved		0.0001 U	0.0004 U	0.001 U	0.00073 J	0.001 U				0.0001 U	
Lead, Total	0.0001 U							0.0001 U	0.0002 U		
Manganese, Dissolved		0.005 U	0.0003 U	0.0105	0.002	0.0006 U	0.0006 U			0.005 U	0.0018 J
Manganese, Total	0.005 U							0.005 U	0.005 U		
Mercury, Dissolved			0.0001 U		0.0002 U	0.0001 U					
Mercury, Total	0.0002 U							0.0002 U	0.0002 U		
Silver, Dissolved		0.00005 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U				0.00005 U	
Silver, Total	0.00005 U							0.00005 U	0.00005 U		

Appendix B

Surface Water Quality
South Fork Sage Creek Drainage
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	USS-1a	USS						LSS-1a
Sample Date	5/20/2003	5/20/2003	5/21/2003	5/22/2003	10/26/2003	5/7/2004	7/20/2004	5/21/2003
Sample Time	14:10	15:15	7:10	7:15	17:00	13:00	16:40	10:20
Field Parameters								
pH (su)	7.49	7.56	7.79	7.83	8.47	8.15	8.41	6.71
Specific Conductivity (uS/cm)	221	189	235	229	246	150	335	241
Temperature (oC)	5.7	6.5	2.1	2.7	2.4	7.84	15.59	5.5
Oxygen, Dissolved	7.12	6.33	8.11	8.56	10.77	8.23	7.63	8.82
Turbidity (NTU)	9.87	43.5	7.69	8.42	1.24	4.32		8.03
COPCs								
Cadmium, Dissolved			0.0001 U	0.0001 U	0.00006 U	0.0001 U	0.0001 U	0.0001 U
Cadmium, Total								
Chromium, Dissolved			0.0003 J	0.0003 J	0.0003 U	0.0003 U	0.00032 U	0.0004 J
Chromium, Total								
Copper, Dissolved			0.0005 U	0.0005 U	0.0026 U	0.0021 U	0.0014 UJ	0.0005 J
Copper, Total								
Nickel, Dissolved			0.0011	0.0008 J	0.0032 U	0.0013 U	0.0017 U	0.0012
Nickel, Total								
Selenium, Dissolved			0.001 U	0.001 U	0.0002 U	0.0003 U	0.0003 U	0.001 U
Selenium, Total			0.001 U	0.001 U	0.0002 U	0.00088 J	0.0003 U	0.001 U
Vanadium, Dissolved			0.005 U	0.005 U	0.0002 U	0.00032 J	0.00034 J	0.005 U
Vanadium, Total								
Zinc, Dissolved			0.01 J	0.01 U	0.0018 U	0.001 J	0.0011 U	0.01 U
Zinc, Total								
Major Ions								
TDS			120	130	200 J	125	132	140
TSS			8 J	5 U	5 UJ	5 U	66	5 U
Calcium, Dissolved			37.2	36.4	44.9	34.4	43.4	37.9
Magnesium, Dissolved			10.5	9.9	15.4 J	9.99	14.2	10.8
Sodium, Dissolved			2.5	2.2	3.56	2.4	3.06	2.5
Potassium, Dissolved			0.6 J	0.5 J	0.783 J	0.517	0.668	0.6 J
Hardness			136	132	176	127	167	139
Alkalinity			123	119	184 J	130	126	128
Bicarbonate as CaCO3			123	119	182 J	130	126	128
Carbonate as CaCO3			2 U	2 U	1.62 J	1 U	1 U	2 U
Hydroxide as CaCO3			2 U	2 U	1 UJ	1 U	1 U	2 U
Fluoride			0.1 J	0.1 J	0.1 UJ	0.112	0.1 U	0.1 J
Chloride			1 J	1 U	1.04 J	0.851	0.9	1 J
Sulfate			10 U	10 U	13.2 J	6.1	9.01	10 U

Appendix B

Surface Water Quality
South Fork Sage Creek Drainage
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	LSS-SP1						LSS-SP2					
Sample Date	10/17/2002	5/21/2003	10/26/2003	2/5/2004	5/7/2004	7/20/2004	10/17/2002	5/21/2003	10/26/2003	2/5/2004	5/7/2004	7/20/2004
Sample Time	15:00	12:15	11:40	15:30	15:45	18:25	15:15	12:20	11:50	15:45	16:00	18:40
Field Parameters												
pH (su)	6.94	6.38	7.42	7.88	7.73	7.37	7.03	6.78	7.38	7.68	7.56	7.31
Specific Conductivity (uS/cm)	273	382	269	266	286	402	280	389	278	273	290	415
Temperature (oC)	10.38	12.5	11.9	11.6	11.95	11.72	10.26	12.1	11.9	11.9	11.85	11.83
Oxygen, Dissolved	6.46	3.41	6.11	4.54	3.55	4.1	6.34	3.8	5.01	4.45	3.63	3.95
Turbidity (NTU)	0.4	1.14	0.42	0.76	0.77		1.5	0.73	0.52	0.61	0.48	0.84
COPCs												
Cadmium, Dissolved		0.0001 U	0.00006 U	0.0001 U	0.0001 U	0.0001 U		0.0001 U	0.00006 U	0.0001 U	0.0001 U	0.0001 U
Cadmium, Total	0.0001 U						0.0001 U					
Chromium, Dissolved		0.0007	0.00052 J	0.00056 J	0.00035 J	0.00071 U		0.0007	0.00033 J	0.00051 J	0.00043 J	0.0005 J
Chromium, Total	0.0017 U						0.0012 U					
Copper, Dissolved		0.0005 U	0.0026 U	0.0021 U	0.0021 U	0.0014 UJ		0.0005 U	0.0026 U	0.0021 U	0.0021 U	0.0014 UJ
Copper, Total	0.0009 U						0.0009 U					
Nickel, Dissolved		0.0017	0.001 U	0.0027 U	0.0013 U	0.0017 U		0.0017	0.0026 U	0.0026 U	0.0013 U	0.0017 U
Nickel, Total	0.004						0.004					
Selenium, Dissolved	0.008	0.001 U	0.0014	0.0012 J-	0.0015	0.001	0.004 J	0.001 U	0.0014	0.00093 J	0.0013	0.0012
Selenium, Total	0.008	0.001 U	0.0015	0.00092 J	0.0016	0.0014 U	0.005 J	0.001 U	0.0016	0.00098 J	0.00096 J	0.0015 U
Vanadium, Dissolved		0.005 U	0.00033 U	0.0012 J	0.0012 J	0.0011 J		0.005 U	0.00051 U	0.0011 J	0.0012 J	0.0011 J
Vanadium, Total	0.005 U						0.005 U					
Zinc, Dissolved		0.01 U	0.0018 U	0.0013 J	0.00096 J	0.0011 U		0.01 J	0.0018 U	0.0015 U	0.0014 J	0.0011 U
Zinc, Total	0.01 U						0.01 J					
Major Ions												
TDS	220	220	221 J	212	208	239	220	230	224 J	212	202	221
TSS	5 U	5 U	5 UJ	5 U	5 U	7	5 U	5 U	5 UJ	5 U	5 U	5 U
Calcium, Dissolved	47.9	54.6	47.6	49.3	51.4	50.6	49.1	54.9	47.4	49.6	51.2	50.5
Magnesium, Dissolved	19.1	23	20.3 J	21.6	22.1	21.8	20	23.7	20.6 J	22.4	22.4	22.3
Sodium, Dissolved	4.3	6.1	5.36	5.66	6.09	5.8	4.8	6.3	5.35	5.77	6.06	5.84
Potassium, Dissolved	0.6 J	0.8 J	0.867 J	0.851 J	0.723	0.82	0.6 J	1.7	0.895 J	0.876 J	0.731	0.876
Hardness	198	231	202	212	219	216	205	235	203	216	220	218
Alkalinity	203	207	202 J	206	215	211	202	209	205 J	208	222	224
Bicarbonate as CaCO3	203	207	202 J	206	215	211	202	209	205 J	208	222	224
Carbonate as CaCO3	2 U	2 U	1 UJ	1 U	1 U	1 U	2 U	2 U	1 UJ	1 U	1 U	1 U
Hydroxide as CaCO3	2 U	2 U	1 UJ	1 U	1 U	1 U	2 U	2 U	1 UJ	1 U	1 U	1 U
Fluoride	0.3 U	0.4 J	0.369 J	0.401	0.365	0.388	0.4 U	0.4 J	0.317 J	0.383	0.387	0.381
Chloride	4 J	6	6.75 J	6.15	5.79	6.22	4 J	7	6.82 J	6.26	5.98	6.17
Sulfate	20	10 J	14.4 J	13.9	13.8	14.2	20	10 J	15.9 J	15.6	15.5	15.5

Appendix B

Surface Water Quality
South Fork Sage Creek Drainage
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	LSS						LSS-2			
Sample Date	10/17/2002	5/21/2003	10/26/2003	2/5/2004	5/7/2004	7/20/2004	5/21/2003	5/22/2003	10/26/2003	10/27/2003
Sample Time	14:40	13:00	13:00	14:55	14:50	17:25	16:00	15:50	16:15	14:10
Field Parameters										
pH (su)	7.55	7.48	7.87	8.22	7.98	7.6	8.16	7.6	8.41	8.57
Specific Conductivity (uS/cm)	282	318	262	257	247	384	301	289	259	254
Temperature (oC)	11.65	11.9	13	10.6	12.53	11.87	15.1	16	10.7	11.1
Oxygen, Dissolved	8.74	6.35	7.12	8.35	7.03	7.59	6.1	6.67	10.68	10.56
Turbidity (NTU)	0.6	3.62	0.87	1.8	3.19		8.5	8.98	1.8	1
COPCs										
Cadmium, Dissolved		0.0001 U	0.00006 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.00006 U	0.00006 U
Cadmium, Total	0.0001 U									
Chromium, Dissolved		0.0005	0.0003 U	0.00058 J	0.00048 J	0.00084 U	0.0006	0.0005	0.00048 J	0.00039 J
Chromium, Total	0.0016 U									
Copper, Dissolved		0.0005 U	0.0026 U	0.0021 U	0.0021 U	0.0014 UJ	0.0005 U	0.0005 U	0.0026 U	0.0026 U
Copper, Total	0.0009 U									
Nickel, Dissolved		0.001	0.0035 U	0.0032 U	0.0036 J	0.0017 U	0.0014	0.0011	0.001 U	0.0027 U
Nickel, Total	0.0042									
Selenium, Dissolved	0.002 J	0.001 U	0.0021	0.0027 J-	0.0003 U	0.0024	0.001 J	0.001 J	0.0018	0.0022
Selenium, Total	0.002 J	0.001 U	0.0023	0.002	0.00068 J-	0.003 U	0.001 U	0.001 U	0.0022	0.0042
Vanadium, Dissolved		0.005 U	0.00076 U	0.0015 J	0.0013 J	0.0013 J	0.005 U	0.005 U	0.00081 U	0.0013 U
Vanadium, Total	0.005 U									
Zinc, Dissolved		0.02 U	0.0018 U	0.0029 J	0.0016 J	0.0011 U	0.01 U	0.01 U	0.0018 U	0.0018 U
Zinc, Total	0.01 J									
Major Ions										
TDS	220	180	221 J	219	205	213	170	180		
TSS	5 U	6 J	5 UJ	5 U	5 U	9	8 J	6 J		
Calcium, Dissolved	50	45.9	47.3	49	46.3	50.3	46	46.5	47.8	46.9
Magnesium, Dissolved	20.4	16.6	18.7 J	20	18.1	20.1	16.3	15.7	18.9 J	18.8 J
Sodium, Dissolved	4.9	3.8	4.38	4.68	4.42	4.74	3.9	3.5	4.47	4.52
Potassium, Dissolved	0.7 J	0.6 U	0.787 J	0.798 J	0.574	0.783	0.7 J	0.6 J	0.831 J	0.796 J
Hardness	209	183	195	205		209	182	181	197	195
Alkalinity	204	173	198 J	202	199	196	165	163		
Bicarbonate as CaCO3	204	173	198 J	202	199	196	165	157		
Carbonate as CaCO3	2 U	2 U	1 UJ	1 U	1 U	1 U	2 U	6 J		
Hydroxide as CaCO3	2 U	2 U	1 UJ	1 U	1 U	1 U	2 U	2 U		
Fluoride	0.3 U	0.3 J	0.262 J	0.33	0.31	0.304	0.3 J	0.2 J		
Chloride	5 J	3 J	4.86 J	4.45	3.73	4.24	3 J	3 J		
Sulfate	20	10 J	13.6 J	12.9	11.6	12.6	20	10 U		

Appendix B

Surface Water Quality
South Fork Sage Creek Drainage
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	**USS-1a**	**USS**						**LSS-1a**
Sample Date	5/20/2003	5/20/2003	5/21/2003	5/22/2003	10/26/2003	5/7/2004	7/20/2004	5/21/2003
Sample Time	14:10	15:15	7:10	7:15	17:00	13:00	16:40	10:20
Nutrients								
Ammonia (as N)			0.1 U	0.2 J	0.01 UJ	0.1	0.01 U	0.1 U
Nitrate + Nitrite (as N)			0.09 J	0.08 J	0.02 UJ	0.1	0.02 U	0.07 J
Nitrate, Dissolved (as N)								
Nitrite, Dissolved (as N)								
Orthophosphate (as P)					0.01 UJ	0.02	0.01 U	
Phosphorus, Total			0.04 J	0.04 J				0.04 J
TOC			3 J	2 J	2.3 J	1 U		3 J
Trace Elements								
Aluminum, Dissolved			0.03 U	0.03 U	0.0097 U	0.0175 J	0.0066 U	0.05 J
Aluminum, Total								
Arsenic, Dissolved			0.0005 U	0.0005 U	0.0004 U	0.00006 U	0.0006 U	0.0005 U
Arsenic, Total								
Barium, Dissolved			0.02	0.018	0.0253	0.0199	0.0292	0.02
Barium, Total								
Boron, Dissolved								
Cobalt, Dissolved								
Cobalt, Total								
Iron, Dissolved			0.01 J	0.01 U	0.0045 U	0.0124 U	0.011 U	0.06
Iron, Total								
Lead, Dissolved			0.0001 U	0.0001 U	0.0004 U	0.0004 U	0.001 U	0.0002 J
Lead, Total								
Manganese, Dissolved			0.005 U	0.005 U	0.0032	0.0059	0.0006 U	0.013 J
Manganese, Total								
Mercury, Dissolved					0.0001 U			
Mercury, Total								
Silver, Dissolved			0.00005 U	0.00005 U	0.0001 U	0.0001 U	0.0001 U	0.00005 U
Silver, Total								

Appendix B

Surface Water Quality
South Fork Sage Creek Drainage
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	LSS-SP1						LSS-SP2					
Sample Date	10/17/2002	5/21/2003	10/26/2003	2/5/2004	5/7/2004	7/20/2004	10/17/2002	5/21/2003	10/26/2003	2/5/2004	5/7/2004	7/20/2004
Sample Time	15:00	12:15	11:40	15:30	15:45	18:25	15:15	12:20	11:50	15:45	16:00	18:40
Nutrients												
Ammonia (as N)	0.17 J	0.1 U	0.01 UJ	0.18	0.02	0.01 U	0.26 J	0.1 U	0.01 UJ	0.03 J	0.01 U	0.01 U
Nitrate + Nitrite (as N)	0.16 UJ	0.13	0.16 J	0.16	0.15	0.16	0.15 UJ	0.22	0.17 J	0.15	0.18	0.02 U
Nitrate, Dissolved (as N)	0.16						0.15					
Nitrite, Dissolved (as N)	0.01 J						0.01 J					
Orthophosphate (as P)	0.01 J		0.01 UJ	0.01 UJ	0.01 U	0.01 U	0.01 J		0.01 UJ	0.01 UJ	0.01 U	0.01 U
Phosphorus, Total	0.02 J	0.01 U					0.01 J	0.02 J				
TOC		2 J	12.2 J	7.8	1 U	7		3 J	1 UJ	8.1	1 U	3.3
Trace Elements												
Aluminum, Dissolved		0.03 U	0.0097 U	0.006 U	0.008 J	0.0066 U		0.03 U	0.0097 U	0.006 U	0.0152 J	0.0066 U
Aluminum, Total	0.03 R						0.03 R					
Arsenic, Dissolved		0.0005 U	0.0004 U	0.0006 U	0.00006 U	0.0006 U		0.0005 U	0.0004 U	0.0006 U	0.00006 U	0.0006 U
Arsenic, Total	0.0017 J						0.0006 J					
Barium, Dissolved		0.044	0.0453	0.0432 J	0.0444	0.0468		0.047	0.0411	0.0438 J	0.0454	0.0468
Barium, Total	0.041						0.044					
Boron, Dissolved	0.01 U						0.01 U					
Cobalt, Dissolved												
Cobalt, Total	0.01 U						0.01 U					
Iron, Dissolved		0.01 U	0.0045 U	0.013 U	0.0124 U	0.011 U		0.01 U	0.0045 U	0.013 U	0.0124 U	0.011 U
Iron, Total	0.01 J+						0.03 UJ					
Lead, Dissolved		0.0001 U	0.0004 U	0.001 U	0.0009 J	0.001 U		0.0001 U	0.0004 U	0.001 U	0.00082 J	0.001 U
Lead, Total	0.0001 U						0.0002 U					
Manganese, Dissolved		0.005 U	0.0042	0.001 U	0.001 U	0.0011 J		0.005 U	0.0007 U	0.001 U	0.001 U	0.0042
Manganese, Total	0.005 U						0.005 U					
Mercury, Dissolved												
Mercury, Total	0.0002 U						0.0002 U					
Silver, Dissolved		0.00005 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U		0.00005 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U
Silver, Total	0.00005 U						0.00005 U					

Appendix B

Surface Water Quality
South Fork Sage Creek Drainage
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	LSS						LSS-2			
Sample Date	10/17/2002	5/21/2003	10/26/2003	2/5/2004	5/7/2004	7/20/2004	5/21/2003	5/22/2003	10/26/2003	10/27/2003
Sample Time	14:40	13:00	13:00	14:55	14:50	17:25	16:00	15:50	16:15	14:10
Nutrients										
Ammonia (as N)	0.05 U	0.1 U	0.01 UJ	0.02	0.01 U	0.03	0.1 U	0.1 U		
Nitrate + Nitrite (as N)	0.14 UJ	0.07 J	0.14 J	0.13	0.09	0.08	0.02 J	0.02 U		
Nitrate, Dissolved (as N)	0.14									
Nitrite, Dissolved (as N)	0.01 J									
Orthophosphate (as P)	0.01 J		0.01 UJ	0.011 J	0.01	0.01 U				
Phosphorus, Total	0.01 J	0.03 J					0.04 J	0.04 J		
TOC		2 J	1 UJ	3.8	1 U	1 U	2 J	3 J		
Trace Elements										
Aluminum, Dissolved		0.03 U	0.0097 U	0.006 J	0.0139 J	0.0087 J	0.03 U	0.03 U	0.0097 U	0.0097 U
Aluminum, Total	0.03 R									
Arsenic, Dissolved		0.0005 U	0.0004 U	0.0006 U	0.0006 U	0.0006 U	0.0005 U	0.0005 U		
Arsenic, Total	0.0005 U									
Barium, Dissolved		0.034	0.04	0.0422 J	0.0374	0.0449	0.033	0.032	0.0447	0.0392
Barium, Total	0.044									
Boron, Dissolved	0.01 U									
Cobalt, Dissolved										
Cobalt, Total	0.01 U									
Iron, Dissolved		0.02 U	0.0045 U	0.013 U	0.0124 U	0.011 U	0.02 J	0.01 U	0.0045 U	0.0045 U
Iron, Total	0.03 UJ									
Lead, Dissolved		0.0001 U	0.0004 U	0.001 U	0.0007 U	0.0021 J	0.0001 U	0.0001 U		
Lead, Total	0.0001 U									
Manganese, Dissolved		0.005 U	0.0049 J	0.0025	0.0048	0.002	0.006 J	0.005 J	0.0064	0.0075
Manganese, Total	0.005 U									
Mercury, Dissolved			0.0001 U		0.0002 U	0.0001 U				
Mercury, Total	0.0002 U									
Silver, Dissolved		0.00005 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.00005 U	0.00005 U		
Silver, Total	0.00005 U									

Appendix B

Surface Water Quality
North Fork Sage Creek and North Sage Valley
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	NSV-1	NSV-2		NSV-3			NSV-4		
Sample Date	5/19/2004	5/19/2004	7/22/2004	10/18/2002	10/28/2003	5/19/2004	10/18/2002	10/28/2003	5/19/2004
Sample Time	10:20	7:45	12:15	12:25	13:25	9:35	12:40	12:55	9:10
Field Parameters									
pH (su)	8.78	8.98	8.48	7.07	7.83	8.33	7.45	8.18	8.74
Specific Conductivity (uS/cm)	435	245	371	254	310	420	283	1200	260
Temperature (oC)	15	7	18.33	7.3	11.3	10	11.29	12.8	4.2
Oxygen, Dissolved	5.8	3.5	9.42	5.77	6.6	6.4	7.39	4.6	9
Turbidity (NTU)	7.46	2.59	6.97	1.1	8.25	3.28	13.6	12	5.59
COPCs									
Cadmium, Dissolved	0.00027	0.0001 UJ	0.0001 U		0.00006 U	0.0001 U		0.00006 U	0.0001 U
Cadmium, Total				0.0001 U			0.0002 J		
Chromium, Dissolved	0.00054 J	0.0003 U	0.0003 U		0.0002 U	0.0003 U		0.0002 U	0.0003 U
Chromium, Total				0.0002 U			0.0005 U		
Copper, Dissolved	0.015	0.0021 U	0.0014 UJ		0.0011 U	0.0021 U		0.0011 U	0.0021 U
Copper, Total				0.0011 U			0.0022 U		
Nickel, Dissolved	0.0166	0.0013 U	0.0017 U		0.0011 U	0.0013 U		0.0011 U	0.0013 U
Nickel, Total				0.0008 U			0.0013 U		
Selenium, Dissolved	0.0011	0.0003 U	0.0003 U	0.001 U	0.0002 UJ	0.0027	0.001 U	0.0002 UJ	0.0003 U
Selenium, Total	0.003	0.00039 J	0.0003 U	0.001 U	0.0002 UJ	0.0037	0.001 U	0.0002 UJ	0.0003 U
Vanadium, Dissolved	0.0234	0.00055 J	0.0005 J		0.001 J	0.0028 J		0.0022 J	0.00061 J
Vanadium, Total				0.005 U			0.005 U		
Zinc, Dissolved	0.0048 U	0.001 U	0.0011 U		0.0017 U	0.00041 U		0.0017 U	0.0013 U
Zinc, Total				0.01 U			0.01 J		
Major Ions									
TDS	600	205	219	220	226 J	399	240	230 J	218
TSS	4730	5 U	20	5 U	52 J	294	28	15 J	35
Calcium, Dissolved	71.8	42.7	45.3	53.8	55.3 J	104	55	55.2 J	44.4
Magnesium, Dissolved	20	15.3	15.8	15.6	15.5	12.5	15.9	15.4	15.3
Sodium, Dissolved	16.6	9.45	10.4	10.1	9.44	7.99	10.5	9.42	9.45
Potassium, Dissolved	7.56	0.693	1.45	0.9 J	4.64 J	2.61	1.5	5.15 J	0.867
Hardness	262	170	17.2	199	202	312	203	202	174
Alkalinity	234	169	185	192	196 J	272	184	189 J	176
Bicarbonate as CaCO3	234	165	185	192	196 J	272	184	189 J	176
Carbonate as CaCO3	1 U	3.16	1 U	2 U	1 UJ	1 U	2 U	1 UJ	1 U
Hydroxide as CaCO3	1 U	1 U	1 U	2 U	1 UJ	1 U	2 U	1 UJ	1 U
Fluoride	0.544	0.183	0.174	0.2 U	0.148 J	0.187	0.2 U	0.146 J	0.164
Chloride	25.4	6.26	7.22	7	8.57 J	13.6	7	8.6 J	6.46
Sulfate	26.9	23.5	21.5	30	23.7 J	55.8	30	24.4 J	23.6

Appendix B

Surface Water Quality
North Fork Sage Creek and North Sage Valley
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	NSV-5					NSV-6				
Sample Date	10/18/2002	5/24/2003	10/28/2003	5/19/2004	7/22/2004	10/18/2002	5/24/2003	10/28/2003	5/19/2004	7/22/2004
Sample Time	11:45	19:55	12:30	7:15	12:40	11:10	18:45	11:45	6:15	13:40
Field Parameters										
pH (su)		7.79	8.09	9.02	7.31	8.75	8.24	8.27	9.02	8.05
Specific Conductivity (uS/cm)		388	800	220	596	512	626	350	400	664
Temperature (oC)		17.7	8.7	2	19.5	0.15	21.4	4.4	2.2	15.89
Oxygen, Dissolved		2.6	2.8	6.8	1.4	10.6	3.61	8.1	7.8	5.6
Turbidity (NTU)		13.8	11.3	4.42	1000 >	3.7	5.84	1.01	28.3	2.08
COPCs										
Cadmium, Dissolved		0.0001 U	0.00006 U	0.0001 U	0.0005 U		0.0001 U	0.00006 UJ	0.0001 U	0.0001 U
Cadmium, Total	0.0005 J					0.0001 U				
Chromium, Dissolved		0.0005	0.0002 U	0.0003 U	0.0003 U		0.0007	0.0002 U	0.0003 U	0.0003 U
Chromium, Total	0.0034 U					0.0003 U				
Copper, Dissolved		0.0008 J	0.0011 U	0.0021 U	0.0014 R		0.0017 J	0.0011 U	0.0021 U	0.0014 UJ
Copper, Total	0.005 U					0.0049 U				
Nickel, Dissolved		0.0025	0.0011 U	0.006 U	0.0017 U		0.0046	0.0011 U	0.0013 U	0.0017 U
Nickel, Total	0.0036					0.0038				
Selenium, Dissolved	0.001 U	0.001 U	0.0002 UJ	0.0003 U	0.0003 U	0.001 U	0.001 U	0.0002 UJ	0.00046 J	0.00045 J
Selenium, Total	0.001 U	0.001 U	0.00032 J-	0.0003 U	0.0013 U	0.001 U	0.001 U	0.001 J-	0.0005 J	0.00043 J
Vanadium, Dissolved		0.005 U	0.0021 J	0.00089 J	0.0011 U		0.005 U	0.0007 J	0.00086 J	0.00079 J
Vanadium, Total	0.008 J					0.005 U				
Zinc, Dissolved		0.01 U	0.0017 U	0.0019 U	0.0011 U		0.02 J	0.0017 U	0.0002 U	0.0011 U
Zinc, Total	0.03 J					0.01 U				
Major Ions										
TDS	230	260	228 J	247	453	730	530	553 J	462	405
TSS	72	10 J	25 J	45	274	5 U	5 U	5 UJ	5 U	5 U
Calcium, Dissolved	50.9	59.8	56.2 J	49.9	55.7	189	135	153 J	125	122
Magnesium, Dissolved	14.9	15.5	15.4	15.3	19.1	26.1	19.5	22.2	18.3	18.1
Sodium, Dissolved	9.9	9.9	9.38	9.57	12.7	8.2	7.1	6.69	6.4	6.21
Potassium, Dissolved	1.5	1.6	4.75 J	0.866	44.2	1.7	0.8 J	1.34 J	0.3 J	0.848
Hardness	188	213	206	188	218	580	418	390	387	379
Alkalinity	172	201	191 J	185	305	296	292	314 J	309	370
Bicarbonate as CaCO3	172	201	191 J	185	305	296	287	314 J	309	370
Carbonate as CaCO3	2 U	2 U	1 UJ	1 U	1 U	2 U	5 J	1 UJ	1 U	1 U
Hydroxide as CaCO3	2 U	2 U	1 UJ	1 U	1 U	2 U	2 U	1 UJ	1 U	1 U
Fluoride	0.2 U	0.2 J	0.161 J	0.163	0.206	0.1 U	0.2 J	0.1 UJ	0.192	0.143
Chloride	7	7	8.59 J	8.94	18	7	8	5.86 J	6.06	3.3
Sulfate	30	30	24.8 J	25.2	11.8	310	130	159 J	109	34.9

Appendix B

Surface Water Quality
North Fork Sage Creek and North Sage Valley
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	SVP-1			SVP-2	SVP-3	SVS-3
Sample Date	10/29/2003	5/8/2004	7/22/2004	5/8/2004	5/8/2004	5/8/2004
Sample Time	10:00	15:25	11:00	16:35	17:30	16:00
Field Parameters						
pH (su)	8.38	8.35	7.79	7.77	8.2	7.69
Specific Conductivity (uS/cm)	265	241	349	210	430	74
Temperature (oC)	5.2	21.57	19.21	20.41	20.01	22.73
Oxygen, Dissolved	8.52	5.03	5.34	4.51	5.91	6.92
Turbidity (NTU)	14.6	6.88	2.45	1000 >	12.1	176
COPCs						
Cadmium, Dissolved	0.00006 UJ	0.0001 U	0.0001 U	0.00012	0.0001 U	0.0001 U
Cadmium, Total						
Chromium, Dissolved	0.0003 U	0.0003 U	0.0003 U	0.00033 J	0.0003 U	0.00091 J
Chromium, Total						
Copper, Dissolved	0.0026 U	0.0021 U	0.0014 UJ	0.008	0.0021 U	0.0033
Copper, Total						
Nickel, Dissolved	0.0031 U	0.0013 U	0.0017 U	0.007 J	0.0033 J	0.0022 J
Nickel, Total						
Selenium, Dissolved	0.0002 U	0.0003 U	0.0003 U	0.00071 J	0.00055 J-	0.0003 U
Selenium, Total	0.0002 U	0.0003 U	0.0003 U	0.0022	0.00062 J-	0.0003 U
Vanadium, Dissolved	0.00094 J	0.0028 J	0.0012 J	0.012	0.0013 J	0.0115
Vanadium, Total						
Zinc, Dissolved	0.0018 U	0.003 J	0.0011 U	0.0015 J	0.001 J	0.0031 J
Zinc, Total						
Major Ions						
TDS	227 J	194	194	190	422	126
TSS	12 J	5 U	5 U	380	8	133
Calcium, Dissolved	52.6	54.5	51.1	40.1	113	9.8
Magnesium, Dissolved	15.2	11.6	13.6	7.67	14.4	2.71
Sodium, Dissolved	3.45	2.84	2.87	10.1	7.38	3.23
Potassium, Dissolved	1.01	1.11	0.818	6.89	5.37	6.72
Hardness	194	184	184	132		35.6
Alkalinity	177 J	180	189	113	367	35.1
Bicarbonate as CaCO3	177 J	179	189	113	362	35.1
Carbonate as CaCO3	1 UJ	1 U	1 U	1 U	4.62	1 U
Hydroxide as CaCO3	1 UJ	1 U	1 U	1 U	1 U	1 U
Fluoride	0.1 UJ	0.154	0.136	0.319	0.189	0.228
Chloride	1.56 J	1.13	0.825	15.1	5.29	8.27
Sulfate	23.1 J	11.6	13.1	25	18.3	6.3

Appendix B

Surface Water Quality
North Fork Sage Creek and North Sage Valley
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	NSV-1	NSV-2		NSV-3			NSV-4		
Sample Date	5/19/2004	5/19/2004	7/22/2004	10/18/2002	10/28/2003	5/19/2004	10/18/2002	10/28/2003	5/19/2004
Sample Time	10:20	7:45	12:15	12:25	13:25	9:35	12:40	12:55	9:10
Nutrients									
Ammonia (as N)	0.44	0.08	0.02	0.05 U	0.13 J	0.17	0.17 U	0.14 J	0.6
Nitrate + Nitrite (as N)	0.02 U	0.02 U	0.02 U	0.02 U	0.02 UJ	0.75	0.02 U	0.02 UJ	0.02 U
Nitrate, Dissolved (as N)				0.02 U			0.02 U		
Nitrite, Dissolved (as N)				0.01 U			0.01 U		
Orthophosphate (as P)	2.44	0.02	0.08	0.01 U	0.154 J	0.15	0.04 J	0.154 J	0.03
Phosphorus, Total				0.01 J			0.12		
TOC	66.3	5.57	7.8		13.4 J	11.8		24 J	2.6
Trace Elements									
Aluminum, Dissolved	0.041	0.006 U	0.0066 U		0.0086 U	0.006 U		0.0086 U	0.006 U
Aluminum, Total				0.03 U			0.48		
Arsenic, Dissolved	0.0148	0.0006 U	0.0006 U		0.00022 U	0.0014 J		0.00045 U	0.0006 U
Arsenic, Total				0.0009 J			0.0008 J		
Barium, Dissolved	0.148	0.0085	0.0254		0.0506	0.0712		0.0524	0.0142
Barium, Total				0.031			0.041		
Boron, Dissolved				0.02 U			0.02 U		
Cobalt, Dissolved									
Cobalt, Total				0.01 U			0.01 U		
Iron, Dissolved	0.0272	0.0128 J	0.011 U		0.0493	0.0438		0.0346	0.0242
Iron, Total				0.01 U			0.53 U		
Lead, Dissolved	0.0007 U	0.0007 U	0.001 U		0.0004 U	0.0007 U		0.0004 U	0.0007 U
Lead, Total				0.0001 U			0.0005 J		
Manganese, Dissolved	0.0883	0.0063	0.0006 U		0.0644	0.68		0.0599	0.0218
Manganese, Total				0.005 U			0.041 U		
Mercury, Dissolved									
Mercury, Total				0.0002 U			0.0002 U		
Silver, Dissolved	0.0001 U	0.0001 U	0.0001 U		0.0001 U	0.0001 U		0.0001 U	0.0001 U
Silver, Total				0.00005 U			0.00005 U		

Appendix B

Surface Water Quality
North Fork Sage Creek and North Sage Valley
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	NSV-5					NSV-6				
Sample Date	10/18/2002	5/24/2003	10/28/2003	5/19/2004	7/22/2004	10/18/2002	5/24/2003	10/28/2003	5/19/2004	7/22/2004
Sample Time	11:45	19:55	12:30	7:15	12:40	11:10	18:45	11:45	6:15	13:40
Nutrients										
Ammonia (as N)	0.28 U	0.2 J	0.09 J	0.14	4.17	0.05 U	0.1 U	0.01 UJ	0.3	0.06
Nitrate + Nitrite (as N)	0.02 U	0.02 U	0.04 J	0.07	0.02 U	0.02 U	0.02 U	0.09 J	0.02 U	0.02 U
Nitrate, Dissolved (as N)	0.02 U					0.02 U				
Nitrite, Dissolved (as N)	0.01 U					0.01 U				
Orthophosphate (as P)	0.01 U		0.124 J	0.06	2.84	0.02 J		0.012 J	0.08	0.09
Phosphorus, Total	0.24	0.21				0.05 J	0.1			
TOC		9	25.5 J	1.99	60.5		8	5.3 J	2.3	9.2
Trace Elements										
Aluminum, Dissolved		0.03 U	0.0086 U	0.006 U	0.0181 J		0.03 U	0.0086 U	0.006 U	0.0066 U
Aluminum, Total	2.63					0.08 U				
Arsenic, Dissolved		0.0013 J	0.00052 U	0.0006 U	0.0018 J		0.0014 J	0.00076 UJ	0.0015 J	0.001 J
Arsenic, Total	0.002 J					0.0016 J				
Barium, Dissolved		0.038	0.0544	0.0259	0.0619		0.057	0.054	0.0281	0.0219
Barium, Total	0.06					0.064				
Boron, Dissolved	0.02 U					0.02 U				
Cobalt, Dissolved										
Cobalt, Total	0.01 U					0.01 U				
Iron, Dissolved		0.05 J	0.0321 U	0.0382	0.447		0.02 U	0.0037 U	0.0146 J	0.011 U
Iron, Total	2.51					0.13 U				
Lead, Dissolved		0.0001 U	0.0004 U	0.0007 U	0.001 U		0.0001 U	0.0004 U	0.0007 U	0.001 U
Lead, Total	0.0019					0.0001 J				
Manganese, Dissolved		0.069	0.035	0.0407	0.749		0.59	0.0734	0.914	0.0453
Manganese, Total	0.086					0.353				
Mercury, Dissolved										
Mercury, Total	0.0002 U					0.0002 U				
Silver, Dissolved		0.00005 U	0.0001 U	0.0001 U	0.0001 U		0.00005 U	0.0001 U	0.0001 U	0.0001 U
Silver, Total	0.0001 U					0.00005 U				

Appendix B

Surface Water Quality
North Fork Sage Creek and North Sage Valley
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	SVP-1			SVP-2	SVP-3	SVS-3
Sample Date	10/29/2003	5/8/2004	7/22/2004	5/8/2004	5/8/2004	5/8/2004
Sample Time	10:00	15:25	11:00	16:35	17:30	16:00
Nutrients						
Ammonia (as N)	0.02 U	0.01	0.06	0.93	0.2	0.13
Nitrate + Nitrite (as N)	0.02 J	0.02 U	0.02 U	0.28	0.02 U	0.02 U
Nitrate, Dissolved (as N)						
Nitrite, Dissolved (as N)						
Orthophosphate (as P)	0.04 J	0.05	0.07	0.61	0.14	0.31
Phosphorus, Total						
TOC	1 UJ	3.02	5.6	36.6	15.9	12.1
Trace Elements						
Aluminum, Dissolved	0.0097 U	0.0251	0.0066 U	0.0828	0.0112 J	0.457
Aluminum, Total						
Arsenic, Dissolved	0.0006 U	0.00006 U	0.0006 U	0.0035	0.0035	0.0027 J
Arsenic, Total						
Barium, Dissolved	0.0338	0.0403	0.0311	0.0709	0.0634	0.0245
Barium, Total						
Boron, Dissolved						
Cobalt, Dissolved						
Cobalt, Total						
Iron, Dissolved	0.0108 J	0.0209	0.0259	0.0502	0.0241	0.269
Iron, Total						
Lead, Dissolved	0.0004 U	0.0004 U	0.001 U	0.0004 U	0.0007 U	0.0004 U
Lead, Total						
Manganese, Dissolved	0.0317	0.0185	0.102	0.0718	0.0507	0.118
Manganese, Total						
Mercury, Dissolved						
Mercury, Total						
Silver, Dissolved	0.0001 U	0.0001 U	0.0001 U	0.00012	0.0001 U	0.0001 U
Silver, Total						

Appendix B

Surface Water Quality
Lower Sage Valley
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	LSV-1					ID-1		LSV-1a		LSV-1b	
Sample Date	10/17/2002	5/22/2003	10/27/2003	5/8/2004	7/21/2004	5/22/2003	10/27/2003	5/22/2003	10/27/2003	5/22/2003	10/27/2003
Sample Time	11:00	10:15	8:30	7:45	12:40	11:00	8:45	11:40	9:35	12:45	10:55
Field Parameters											
pH (su)	7.38	7.48	8.26	7.91	8.32	7.96	8.4	8.07	8.47	7.71	8.41
Specific Conductivity (uS/cm)	263	443	336	307	444	387	318	414	338	396	293
Temperature (oC)	4.26	10.4	1.5	4.37	17.44	16.3	0.1	15.4	1	17.8	9.7
Oxygen, Dissolved	12.5	7.13	12.73	7.89	8.71	5.97	14.33	7.44	6.06	6.8	8.71
Turbidity (NTU)	1.7	5.41	0.7	1.65	0.67	33.2	10.6	3.3	1	5.09	0.9
COPCs											
Cadmium, Dissolved		0.0001 U	0.00006 U	0.0001 U	0.0001 U	0.0001 U	0.00006 U	0.0001 U	0.00006 U	0.0001 U	0.00006 U
Cadmium, Total	0.0001 U										
Chromium, Dissolved		0.0002 J	0.0003 U	0.0003 U	0.0003 U	0.0006	0.0003 U	0.0003 J	0.0003 U	0.0005 J	0.0003 U
Chromium, Total	0.0008 U										
Copper, Dissolved		0.0006 J	0.0026 U	0.0021 U	0.0014 R	0.0005 U	0.0026 U	0.0006 J	0.0026 U	0.0005 U	0.0026 U
Copper, Total	0.0014 U										
Nickel, Dissolved		0.0017	0.0023 U	0.0016 J	0.0017 U	0.0016	0.001 U	0.0016	0.0015 U	0.0015	0.002 U
Nickel, Total	0.0059										
Selenium, Dissolved	0.001 U	0.002 J	0.0011	0.00077 J-	0.00081 J+	0.002 J	0.0013	0.002 J	0.0011	0.009	0.0072
Selenium, Total	0.001 U	0.001 U	0.0013	0.002 J-	0.0036	0.001 U	0.0014	0.001 J	0.0013	0.008	0.0091
Vanadium, Dissolved		0.005 U	0.0002 U	0.00041 J	0.00056 U	0.005 U	0.0002 U	0.005 U	0.0002 U	0.005 U	0.0012 U
Vanadium, Total	0.005 U										
Zinc, Dissolved		0.02 U	0.0018 U	0.0002 U	0.0011 U	0.01 J	0.0018 U	0.01 J	0.0018 U	0.01 J	0.0018 U
Zinc, Total	0.01 U										
Major Ions											
TDS	260	290	291 J	247	257	260		280		270	
TSS	5 U	5 U	5 UJ	5 U	5 U	32		5 U		5 U	
Calcium, Dissolved	70.3	78.5	71.7	70.5	70.7	69.6	66.6	74.6	70	62	56.3
Magnesium, Dissolved	15.2	16.6	14.9 J	14.6	14.1	17.4	16.2 J	17	15.3 J	21	19 J
Sodium, Dissolved	5.7	6.7	5.83	5.1	5.37	4.9	4.31	6.3	5.64	7	6.45
Potassium, Dissolved	0.9 J	0.6 U	0.945 J	0.528	0.542	0.4 J	0.687 J	0.6 J	0.901 J	0.5 J	0.725 J
Hardness	238	264	240		235	246	233	256	238	241	219
Alkalinity	230	224	227 J	232	239.65	223		218		198	
Bicarbonate as CaCO3	230	224	227 J	232	230	223		218		198	
Carbonate as CaCO3	2 U	2 U	1 UJ	1 U	9.54	2 U		2 U		2 U	
Hydroxide as CaCO3	2 U	2 U	1 UJ	1 U	1 U	2 U		2 U		2 U	
Fluoride	0.1 U	0.1 J	0.104 J	0.135	0.144	0.2 J		0.1 J		0.3 J	
Chloride	3 J	4 J	3.93 J	3.18	2.7	3 J		4 J		6	
Sulfate	30	40	33 J	30.7	28.8	20		40		40	

Appendix B

Surface Water Quality
Lower Sage Valley
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	LSV-2					LSV-SP1		LSV-2a	
Sample Date	10/17/2002	5/22/2003	10/27/2003	5/8/2004	7/21/2004	5/22/2003	10/27/2003	5/22/2003	10/27/2003
Sample Time	10:00	13:30	12:05	9:20	15:00	14:20	12:35	15:15	13:40
Field Parameters									
pH (su)	8.28	7.92	8.57	8.35	8.41	5.27	7.36	7.97	8.59
Specific Conductivity (uS/cm)	298	393	285	300	478	436	330	379	276
Temperature (oC)	9.68	19.1	9.7	10.08	20.15	7.9	8.4	21.1	11
Oxygen, Dissolved	9.69	6.46	12.82	7.83	7.65	3.86	4.86	6.47	11.79
Turbidity (NTU)	3.1	3.73	1.2	2.25	2.01	0.34	1.3	7.2	0.8
COPCs									
Cadmium, Dissolved		0.0001 U	0.00006 U	0.0001 U	0.0001 U	0.0001 U	0.00006 U	0.0001 U	0.00006 U
Cadmium, Total	0.0001 U								
Chromium, Dissolved		0.0004 J	0.0003 U	0.0003 U	0.0003 U	0.0006	0.0003 U	0.0005 J	0.0003 U
Chromium, Total	0.0012 U								
Copper, Dissolved		0.0005 U	0.0026 U	0.0021 U	0.0014 R	0.0005 J	0.0026 U	0.0005 U	0.0026 U
Copper, Total	0.0012 U								
Nickel, Dissolved		0.0014	0.0019 U	0.0017 J	0.0017 U	0.0017	0.0033 U	0.0014	0.0021 U
Nickel, Total	0.0047								
Selenium, Dissolved	0.009	0.008	0.0069	0.0048 J-	0.0068 J+	0.001 U	0.0013	0.011	0.008
Selenium, Total	0.007	0.008	0.0088	0.0052 J-	0.0088	0.001 U	0.0012	0.008	0.0084
Vanadium, Dissolved		0.005 U	0.0013 U	0.0015 J	0.0017 J	0.005 U	0.0002 U	0.005 U	0.0014 U
Vanadium, Total	0.005 U								
Zinc, Dissolved		0.02 U	0.0018 U	0.0002 U	0.0011 U	0.01 J	0.0018 U	0.02 U	0.0018 U
Zinc, Total	0.01 J								
Major Ions									
TDS	260	260	240 J	244	282	270		260	
TSS	5 U	5 U	5 UJ	5 U	5 U	5 U		5 U	
Calcium, Dissolved	55.9	56.2	54.1	58.8	60.5	69.2	61.1	55.1	51.3
Magnesium, Dissolved	19.8	19	19 J	19.4	19.5	16.7	15.1 J	18.7	18.6 J
Sodium, Dissolved	6.8	6.4	6.48	6.65	7.06	14.6	12.8	6.6	6.75
Potassium, Dissolved	0.6 J	0.6 U	0.728 J	0.408	0.901	0.8 J	0.938 J	0.6 U	0.738 J
Hardness	221	219	213		231	242	215	215	205
Alkalinity	200	196	178 J	215	224	216		195	
Bicarbonate as CaCO3	200	196	178 J	207	212	216		186	
Carbonate as CaCO3	2 U	2 U	1 UJ	8.3	12.4	2 U		9 J	
Hydroxide as CaCO3	2 U	2 U	1 UJ	1 U	1 U	2 U		2 U	
Fluoride	0.4 U	0.3 J	0.333 J	0.332	0.355	0.2 J		0.4 J	
Chloride	6	6	6.59 J	5.64	5.67	6		6	
Sulfate	40	40	39.3 J	39.9	37.4	30		40	

Appendix B

Surface Water Quality
Lower Sage Valley
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	LSV-3					LSV-3a	
Sample Date	10/17/2002	5/22/2003	10/27/2003	5/8/2004	7/21/2004	5/22/2003	10/27/2003
Sample Time	9:20	16:20	14:45	12:45	17:25	18:40	17:25
Field Parameters							
pH (su)	8.14	7.87	8.56	8.46	8.43	8.02	8.33
Specific Conductivity (uS/cm)	256	324	265	268	414	323	276
Temperature (oC)	7.84	18	10.8	15.71	18.1	16.9	10.1
Oxygen, Dissolved	10.37	6.63	11.22	6.54	7.81	6.25	10.08
Turbidity (NTU)	1.3	6.98	1.1	4.6	0.72	7.91	1.2
COPCs							
Cadmium, Dissolved		0.0001 U	0.00006 U	0.0001 U	0.0001 U	0.0001 U	0.00006 U
Cadmium, Total	0.0001 U						
Chromium, Dissolved		0.0005 J	0.0003 U	0.00044 J	0.0003 U	0.0005	0.00058 J
Chromium, Total	0.0015 U						
Copper, Dissolved		0.0005 U	0.0026 U	0.0021 U	0.0014 R	0.0005 U	0.0026 U
Copper, Total	0.0009 U						
Nickel, Dissolved		0.0011	0.0022 U	0.002 J	0.0017 U	0.0011	0.001 U
Nickel, Total	0.0043						
Selenium, Dissolved	0.003 J	0.004 J	0.006	0.0027 J-	0.0045 J+	0.003 J	0.0052
Selenium, Total	0.003 J	0.004 J	0.006	0.0033 J-	0.0068	0.004 J	0.0054
Vanadium, Dissolved		0.005 U	0.0013 U	0.0019 J	0.0016 J	0.005 U	0.00094 U
Vanadium, Total	0.005 U						
Zinc, Dissolved		0.06	0.0018 U	0.0012 J	0.0011 U	0.01 J	0.0018 U
Zinc, Total	0.01 U						
Major Ions							
TDS	220	220	230 J	232	237	220	253 J
TSS	5 U	5 U	5 UJ	6	5 U	5 U	5 UJ
Calcium, Dissolved	50.9	53	49.5	53.3	52.9	50.8	50.7
Magnesium, Dissolved	19.7	17.8	18.8 J	19.1	19	17.4	19.1 J
Sodium, Dissolved	5.5	5.2	5.9	6.01	6.23	5.1	5.94
Potassium, Dissolved	0.6 J	0.6 J	0.77 J	0.537	0.785	0.6 J	0.852 J
Hardness	208	206	201		210	199	205
Alkalinity	203	176	187 J	201	214	172	194 J
Bicarbonate as CaCO3	203	169	177 J	189	201	166	189 J
Carbonate as CaCO3	2 U	8 J	9.32 J	12.7	13.1	6 J	4.24 J
Hydroxide as CaCO3	2 U	2 U	1 UJ	1 U	1 U	2 U	1 UJ
Fluoride	0.4 U	0.3 J	0.27 J	0.325	0.347	0.3 J	0.319 J
Chloride	5	4 J	5.92 J	4.89	5.13	4 J	6.02 J
Sulfate	20	30	28.6 J	27.1	28	20	28.5 J

Appendix B

Surface Water Quality
Lower Sage Valley
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	LSV-4						
Sample Date	10/17/2002	10/18/2002	5/22/2003	10/27/2003	2/5/2004	5/8/2004	7/21/2004
Sample Time	8:12	7:30	19:20	18:20	8:30	13:40	18:15
Field Parameters							
pH (su)	7.67		7.8	8.3	8.29	8.52	8.37
Specific Conductivity (uS/cm)	258		329	286	300	273	414
Temperature (oC)	4.84		16.6	9.7	2.8	16.34	19.57
Oxygen, Dissolved	9.87		6.17	7.33	5.9	6.61	7.26
Turbidity (NTU)	1.6		11.7	1.5	5.71	7.1	0.88
COPCs							
Cadmium, Dissolved			0.0001 U	0.00006 U	0.0001 U	0.0001 U	0.0001 U
Cadmium, Total	0.0001 U	0.0001 U					
Chromium, Dissolved			0.0005 J	0.00051 J	0.0003 U	0.0003 U	0.0003 U
Chromium, Total	0.0013 U	0.0005 U					
Copper, Dissolved			0.0005 U	0.0026 U	0.0021 U	0.0021 U	0.0014 R
Copper, Total	0.001 U	0.0014 U					
Nickel, Dissolved			0.0011	0.001 U	0.0041 U	0.0026 J	0.0017 U
Nickel, Total	0.0045	0.0009 U					
Selenium, Dissolved	0.005 J	0.004 J	0.003 J	0.0054	0.005 J-	0.0016 J-	0.0049
Selenium, Total	0.005 J	0.005 J	0.004 J	0.0053	0.0061	0.0031 J-	0.0049
Vanadium, Dissolved			0.005 U	0.00078 U	0.0014 J	0.0017 J	0.0015 U
Vanadium, Total	0.005 U	0.005 U					
Zinc, Dissolved			0.01 U	0.0018 U	0.0002 U	0.0002 J	0.0011 U
Zinc, Total	0.01 U	0.01 J					
Major Ions							
TDS	250	250	220	248 J	224	225	243
TSS	5 U	5 U	14 J	5 UJ	11	5	5 U
Calcium, Dissolved	54.6	57.5	52	49.5	55.5	51.5	51.7
Magnesium, Dissolved	20.1	20.7	17.7	18.9 J	19.7	18.8	19.4
Sodium, Dissolved	7.8	8.1	5.7	6.55	6.99	6.8	7.34
Potassium, Dissolved	0.7 J	0.8 J	0.7 J	0.854 J	0.844 J	0.524	0.894
Hardness	219	229	203	209	220		209
Alkalinity	206	207	174	193 J	204	199	208.8
Bicarbonate as CaCO3	206	207	168	190 J	204	186	200.72
Carbonate as CaCO3	2 U	2 U	6 J	2.9 J	1 U	12.8	8.08
Hydroxide as CaCO3	2 U	2 U	2 U	1 UJ	1 U	1 U	1 U
Fluoride	0.4 U	0.4 U	0.3 J	0.316 J	0.33	0.326	0.336
Chloride	7	7	5 J	6.82 J	6.46	5.8	6.19
Sulfate	30	40	20	30.4 J	30.9	28.5	28.9

Appendix B

Surface Water Quality
Lower Sage Valley
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	LSV-1					ID-1		LSV-1a		LSV-1b	
Sample Date	10/17/2002	5/22/2003	10/27/2003	5/8/2004	7/21/2004	5/22/2003	10/27/2003	5/22/2003	10/27/2003	5/22/2003	10/27/2003
Sample Time	11:00	10:15	8:30	7:45	12:40	11:00	8:45	11:40	9:35	12:45	10:55
Nutrients											
Ammonia (as N)	0.05 U	0.2 J	0.01 UJ	0.26	0.04	0.1 J		0.1 U		0.1 U	
Nitrate + Nitrite (as N)	0.02 J	0.02 U	0.02 UJ	0.05	0.02 U	0.02 U		0.02 U		0.02 U	
Nitrate, Dissolved (as N)	0.02 U										
Nitrite, Dissolved (as N)	0.01 J										
Orthophosphate (as P)	0.01 J		0.01 UJ	0.01	0.01 U						
Phosphorus, Total	0.01 J	0.03 J				0.11		0.03 J		0.02 J	
TOC		2 J	11.7 J	1 U	2	3 J		3 J		1 U	
Trace Elements											
Aluminum, Dissolved		0.03 U	0.0097 U	0.0279	0.0066 U	0.03 U	0.0273	0.03 U	0.0097 U	0.03 U	0.0097 U
Aluminum, Total	0.11 UJ										
Arsenic, Dissolved		0.0005 U	0.0004 U	0.0006 U	0.0006 U	0.0007 J		0.0008 J		0.0005 U	
Arsenic, Total	0.0018 J										
Barium, Dissolved		0.035	0.0356	0.0338	0.0386	0.04	0.0347	0.037	0.0334	0.044	0.0383
Barium, Total	0.037										
Boron, Dissolved	0.01 U										
Cobalt, Dissolved											
Cobalt, Total	0.01 U										
Iron, Dissolved		0.02 U	0.0045 U	0.034	0.011 U	0.01 U	0.0045 U	0.12	0.0045 U	0.01 U	0.0045 U
Iron, Total	0.12										
Lead, Dissolved		0.0001 U	0.0004 U	0.0007 U	0.001 U	0.0001 U		0.0001 U		0.0001 U	
Lead, Total	0.0002 U										
Manganese, Dissolved		0.065	0.0096	0.0834	0.0188	0.082	0.132	0.073	0.0064	0.012 J	0.002 J
Manganese, Total	0.031 U										
Mercury, Dissolved											
Mercury, Total	0.0002 U										
Silver, Dissolved		0.00005 U	0.0001 U	0.0001 U	0.0001 U	0.00005 U		0.00005 U		0.00005 U	
Silver, Total	0.00005 U										

Appendix B

Surface Water Quality
Lower Sage Valley
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	LSV-2					LSV-SP1		LSV-2a	
Sample Date	10/17/2002	5/22/2003	10/27/2003	5/8/2004	7/21/2004	5/22/2003	10/27/2003	5/22/2003	10/27/2003
Sample Time	10:00	13:30	12:05	9:20	15:00	14:20	12:35	15:15	13:40
Nutrients									
Ammonia (as N)	0.05 U	0.1 U	0.01 UJ	0.13	0.21	0.1 U		0.1 U	
Nitrate + Nitrite (as N)	0.05 UJ	0.02 U	0.02 UJ	0.02 U	0.02 U	0.23		0.02 U	
Nitrate, Dissolved (as N)	0.05 J								
Nitrite, Dissolved (as N)	0.01 J								
Orthophosphate (as P)	0.01 J		0.01 UJ	0.01 U	0.02				
Phosphorus, Total	0.02 J	0.02 J				0.01 U		0.03 J	
TOC		2 J	6 J	1 U	3.2	2 J		3 J	
Trace Elements									
Aluminum, Dissolved		0.03 U	0.0097 U	0.0125 J	0.0066 U	0.03 U	0.0097 U	0.03 U	0.0097 U
Aluminum, Total	0.06 UJ								
Arsenic, Dissolved		0.0005 U	0.0004 U	0.0006 U	0.0006 U	0.0005 U		0.0007 J	
Arsenic, Total	0.001 J								
Barium, Dissolved		0.044	0.0358	0.0395	0.0479	0.03	0.0281	0.043	0.0352
Barium, Total	0.045								
Boron, Dissolved	0.01 J								
Cobalt, Dissolved									
Cobalt, Total	0.01 U								
Iron, Dissolved		0.02 U	0.0045 U	0.0124 U	0.011 U	0.01 U	0.0045 U	0.02 U	0.0045 U
Iron, Total	0.05 UJ								
Lead, Dissolved		0.0001 U	0.0004 U	0.0007 U	0.001 U	0.0001 U		0.0001 U	
Lead, Total	0.0002 U								
Manganese, Dissolved		0.009 J	0.005	0.0155	0.0133	0.005 U	0.0039	0.011 J	0.0064
Manganese, Total	0.007 U								
Mercury, Dissolved									
Mercury, Total	0.0002 U								
Silver, Dissolved		0.00005 U	0.0001 U	0.0001 U	0.0001 U	0.00005 U		0.00005 U	
Silver, Total	0.00005 U								

Appendix B

Surface Water Quality
Lower Sage Valley
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	LSV-3					LSV-3a	
Sample Date	10/17/2002	5/22/2003	10/27/2003	5/8/2004	7/21/2004	5/22/2003	10/27/2003
Sample Time	9:20	16:20	14:45	12:45	17:25	18:40	17:25
Nutrients							
Ammonia (as N)	0.05 U	0.1 U	0.01 UJ	0.05	0.01 U	0.1 J	0.01 UJ
Nitrate + Nitrite (as N)	0.09 UJ	0.02 U	0.02 UJ	0.08	0.02 U	0.02 J	0.02 UJ
Nitrate, Dissolved (as N)	0.09 J						
Nitrite, Dissolved (as N)	0.01 J						
Orthophosphate (as P)	0.01 J		0.01 UJ	0.01 U	0.01 U		0.01 UJ
Phosphorus, Total	0.01 J	0.04 J				0.05 J	
TOC		3 J	11.9 J	1 U	2.7	3 J	3.5 J
Trace Elements							
Aluminum, Dissolved		0.03 U	0.0097 U	0.0504	0.0066 U	0.03 U	0.0097 U
Aluminum, Total	0.03 R						
Arsenic, Dissolved		0.0007 J	0.0004 U	0.0006 U	0.0006 U	0.0007 J	0.0004 U
Arsenic, Total	0.0005 U						
Barium, Dissolved		0.037	0.0364	0.0418	0.0442	0.035	0.0428
Barium, Total	0.042						
Boron, Dissolved	0.01 U						
Cobalt, Dissolved							
Cobalt, Total	0.01 U						
Iron, Dissolved		0.01 U	0.0045 U	0.0492	0.011 U	0.01 U	0.0045 U
Iron, Total	0.03 J						
Lead, Dissolved		0.0001 U	0.0004 U	0.0007 U	0.001 U	0.0001 U	0.0004 U
Lead, Total	0.0001 U						
Manganese, Dissolved		0.007 J	0.008	0.0184	0.007	0.009 J	0.009
Manganese, Total	0.005 U						
Mercury, Dissolved			0.0001 U	0.0002 U	0.0001 U		
Mercury, Total	0.0002 U						
Silver, Dissolved		0.00005 U	0.0001 U	0.00016	0.0001 U	0.00005 U	0.0001 U
Silver, Total	0.00005 U						

Appendix B

Surface Water Quality
Lower Sage Valley
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	LSV-4						
Sample Date	10/17/2002	10/18/2002	5/22/2003	10/27/2003	2/5/2004	5/8/2004	7/21/2004
Sample Time	8:12	7:30	19:20	18:20	8:30	13:40	18:15
Nutrients							
Ammonia (as N)	0.05 J-	0.05 U	0.1 U	0.01 UJ	0.04	0.17	0.06
Nitrate + Nitrite (as N)	0.07 UJ	0.07 U	0.02 U	0.02 UJ	0.12	0.02 U	0.02 U
Nitrate, Dissolved (as N)	0.07 J	0.07 J					
Nitrite, Dissolved (as N)	0.01 J	0.01 U					
Orthophosphate (as P)	0.01 J	0.01 U		0.01 UJ	0.01 UJ	0.01 U	0.01 U
Phosphorus, Total	0.01 J	0.02 J	0.06				
TOC			2 J	10.9 J	4.2	1 U	1.8
Trace Elements							
Aluminum, Dissolved			0.03 U	0.0097 U	0.0076 J	0.006 U	0.0066 U
Aluminum, Total	0.03 R	0.03 U					
Arsenic, Dissolved			0.0009 J	0.0004 U	0.0006 U	0.0006 U	0.0006 U
Arsenic, Total	0.0009 J	0.0013 J					
Barium, Dissolved			0.036	0.0433	0.0423 J	0.0397	0.0446
Barium, Total	0.044	0.044					
Boron, Dissolved	0.01 J	0.01 U					
Cobalt, Dissolved							
Cobalt, Total	0.01 U	0.01 U					
Iron, Dissolved			0.01 U	0.0045 U	0.013 U	0.0124 U	0.011 U
Iron, Total	0.03 J	0.03 U					
Lead, Dissolved			0.0001 U	0.0004 U	0.001 U	0.0007 U	0.001 U
Lead, Total	0.0001 U	0.0001 U					
Manganese, Dissolved			0.01 J	0.0087	0.0113	0.0137	0.0078
Manganese, Total	0.01 U	0.009 U					
Mercury, Dissolved							
Mercury, Total	0.0002 U	0.0002 U					
Silver, Dissolved			0.00005 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U
Silver, Total	0.00005 U	0.00005 U					

Appendix B

Surface Water Quality
Crow Creek
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	CC-2				CC-1				
Sample Date	5/25/2003	10/29/2003	5/17/2004	7/27/2004	10/18/2002	5/25/2003	10/29/2003	5/17/2004	7/27/2004
Sample Time	14:10	15:15	15:50	19:47	18:00	14:40	16:15	16:20	19:01
Field Parameters									
pH (su)	8.33	8.48	9.34	8.786		8.78	8.5	9.3	8.762
Specific Conductivity (uS/cm)	512	900	424	800	365	453	380	370	600
Temperature (oC)	19.5	6.4	15.2	22.3	9.54	19.1	6.8	15.7	22
Oxygen, Dissolved	5.71	9.2	5.5	6.4	9.18	5.39	7.4	6	6.6
Turbidity (NTU)	10.8	2.16	3.05	1.17	2.5	11.2	2.63	3.41	1.34
COPCs									
Cadmium, Dissolved	0.0001 U	0.00006 U	0.0001 U	0.0001 U		0.0001 U	0.00006 U	0.0001 U	0.0001 U
Cadmium, Total					0.0001 U				
Chromium, Dissolved	0.0004 J	0.0002 U	0.0003 U	0.0003 U		0.0004 J	0.0002 U	0.0003 U	0.0003 U
Chromium, Total					0.0014 U				
Copper, Dissolved	0.0009 J	0.0011 U	0.0021 U	0.0014 R		0.0006 J	0.0011 U	0.0021 U	0.0014 R
Copper, Total					0.0011 U				
Nickel, Dissolved	0.0034	0.0011 U	0.0013 U	0.0017 U		0.0028	0.0011 U	0.0013 U	0.0017 U
Nickel, Total					0.0046				
Selenium, Dissolved	0.002 J	0.0002 UJ	0.0003 U		0.002 J	0.002 J	0.00092 J-	0.0003 U	0.00043 J
Selenium, Total	0.001 U	0.0002 U	0.0003 U	0.0003 U	0.002 J	0.002 U	0.00099 J	0.0003 U	0.00066 U
Vanadium, Dissolved	0.005 U	0.0016 J	0.0022 J	0.003 J		0.005 U	0.0015 J	0.0021 J	0.0023 J
Vanadium, Total					0.005 U				
Zinc, Dissolved	0.01 U	0.0017 U	0.00059 U	0.0011 U		0.01 U	0.0017 U	0.0002 U	0.0011 U
Zinc, Total					0.01 U				
Major Ions									
TDS	300	342	337	270	300	300	297	277	288
TSS	10 J	5 U	5 U	6	5 U	5 U	5 U	5 U	6
Calcium, Dissolved	59.4	57.2 J	56.4	41.3	54.4	56.7	58.4 J	53.1	45.1
Magnesium, Dissolved	15.5	16.3	15.9	16.6	18.6	16.8	17.9	16.7	17.6
Sodium, Dissolved	40.3	37.8 J	41.7	64.3	32.4	28.9	25.7 J	31.4	39.7
Potassium, Dissolved	1 J	1.07	0.605	1.03	0.8 J	0.8 J	1.04	0.599	1.11
Hardness	212	210	206		212	211	220	201	185
Alkalinity	198	205	203	157	192	193	204	204	184
Bicarbonate as CaCO3	189	205	186	139	192	180	204	186	169.61
Carbonate as CaCO3	9 J	1 U	16.52	18.58	2 U	13	1 U	16.7	14.56
Hydroxide as CaCO3	2 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U	1 U
Fluoride	0.2 J	0.179	0.208	0.191	0.3 U	0.2 J	0.239	0.245	0.285
Chloride	64	65.9	61.8	89.3	49	45	41	46.7	52.3
Sulfate	30	20.3	24.3	44.2	30	30	24.7	24.6	38.2

Appendix B

Surface Water Quality
Crow Creek
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	CC-2				CC-1				
Sample Date	5/25/2003	10/29/2003	5/17/2004	7/27/2004	10/18/2002	5/25/2003	10/29/2003	5/17/2004	7/27/2004
Sample Time	14:10	15:15	15:50	19:47	18:00	14:40	16:15	16:20	19:01
Nutrients									
Ammonia (as N)	0.2 J	0.01 U	0.57	0.02	0.05 J-	0.1 U	0.01 U	0.31	0.09
Nitrate + Nitrite (as N)	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 J	0.02 U	0.02 U	0.02 U
Nitrate, Dissolved (as N)					0.02 U				
Nitrite, Dissolved (as N)					0.01 U				
Orthophosphate (as P)		0.01 U	0.02	0.01 U	0.01 U		0.01 U	0.01	0.01 U
Phosphorus, Total	0.07				0.01 U	0.04 J			
TOC	4 J	3.9	2.2	6.5		3 J	3.2	1.87	9.1
Trace Elements									
Aluminum, Dissolved	0.03 U	0.0086 U	0.0123 J	0.0066 U		0.03 U	0.0086 U	0.0074 J	0.0066 U
Aluminum, Total					0.03 U				
Arsenic, Dissolved	0.0007 J	0.0006 U	0.0007 U	0.0015 J		0.0005 J	0.0006 U	0.0007 U	0.0012 J
Arsenic, Total					0.0013 J				
Barium, Dissolved	0.05	0.048	0.0483	0.0544		0.047	0.0466	0.0458	0.0507
Barium, Total					0.047				
Boron, Dissolved					0.02 J				
Cobalt, Dissolved									
Cobalt, Total					0.01 U				
Iron, Dissolved	0.01 U	0.0046 U	0.0124 U	0.011 U		0.01 U	0.0035 U	0.0124 U	0.011 U
Iron, Total					0.05 J				
Lead, Dissolved	0.0001 U	0.0004 U	0.0007 U	0.001 U		0.0001 U	0.0004 U	0.0007 U	0.001 U
Lead, Total					0.0001 U				
Manganese, Dissolved	0.031	0.0147	0.0206	0.0066		0.025 J	0.0119	0.0185	0.0085
Manganese, Total					0.016 U				
Mercury, Dissolved									
Mercury, Total					0.0002 U				
Silver, Dissolved	0.00005 U	0.0001 UJ	0.0001 U	0.0001 U		0.00005 U	0.0001 UJ	0.0001 U	0.0001 U
Silver, Total					0.00005 U				

Appendix B

Surface Water Quality
A Panel
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	AP-2		AS-2	
Sample Date	5/25/2003	7/22/2004	5/25/2003	5/18/2004
Sample Time	7:50	19:05	7:35	10:25
Field Parameters				
pH (su)	9.24	9.28	7.85	7.81
Specific Conductivity (uS/cm)	875	772	1325	1098
Temperature (oC)	13.2	23.75	6.7	10.17
Oxygen, Dissolved	5.54	6.99	6.61	5.93
Turbidity (NTU)	59.7	56.7	3.39	7.23
COPCs				
Cadmium, Dissolved	0.0003 J	0.00024	0.0054	0.0042
Cadmium, Total				
Chromium, Dissolved	0.0071	0.0104	0.0059	0.0027 J
Chromium, Total				
Copper, Dissolved	0.0048	0.0071 J-	0.0036	0.0025 J
Copper, Total				
Nickel, Dissolved	0.0105	0.0126	0.054	0.0402
Nickel, Total				
Selenium, Dissolved	1.07	0.0941	3.15	3.78
Selenium, Total	2.1	0.101	3.1	3.62
Vanadium, Dissolved	0.022 J	0.0464	0.016 J	0.0189
Vanadium, Total				
Zinc, Dissolved	0.02 J	0.0011 U	0.15	0.103
Zinc, Total				
Major Ions				
TDS	880	587	1500	1478
TSS	18 J	91	40	7
Calcium, Dissolved	185	133	312	301
Magnesium, Dissolved	36.8	21.3	61.8	59.3
Sodium, Dissolved	3.2	3.66	4.5	4.63
Potassium, Dissolved	3.5	9.02	1.4	1.47
Hardness	614	420	1030	995
Alkalinity	81	82.8	191	224
Bicarbonate as CaCO3	81	82.8	191	224
Carbonate as CaCO3	2 U	1 U	2 U	1 U
Hydroxide as CaCO3	2 U	1 U	2 U	1 U
Fluoride	0.4 J	0.479	0.5 J	0.439
Chloride	1 J	6.21	1 J	1.16
Sulfate	540	334	820	798

Appendix B

Surface Water Quality
A Panel
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	AP-2		AS-2	
Sample Date	5/25/2003	7/22/2004	5/25/2003	5/18/2004
Sample Time	7:50	19:05	7:35	10:25
Nutrients				
Ammonia (as N)	0.1 J	0.06	0.1 U	0.4
Nitrate + Nitrite (as N)	0.02 U	0.02 U	2.06	1.51
Nitrate, Dissolved (as N)				
Nitrite, Dissolved (as N)				
Orthophosphate (as P)		0.07		0.11
Phosphorus, Total	0.79		0.09	
TOC	6	19	5 J	7.15
Trace Elements				
Aluminum, Dissolved	0.03 U	0.083	0.03 U	0.0205
Aluminum, Total				
Arsenic, Dissolved	0.005 U	0.0052	0.005 U	0.0013 J
Arsenic, Total				
Barium, Dissolved	0.043	0.052	0.026	0.0277
Barium, Total				
Boron, Dissolved				
Cobalt, Dissolved				
Cobalt, Total				
Iron, Dissolved	0.02 U	0.011 U	0.02 U	0.0124 U
Iron, Total				
Lead, Dissolved	0.0001 U	0.001 U	0.0001 U	0.0007 U
Lead, Total				
Manganese, Dissolved	0.005 U	0.0016 J	0.007 J	0.0092
Manganese, Total				
Mercury, Dissolved				
Mercury, Total				
Silver, Dissolved	0.00005 U	0.0001 U	0.00005 U	0.0001 U
Silver, Total				

Appendix B

C Panel
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	CS-1		
Sample Date	10/30/2003	5/6/2004	7/22/2004
Sample Time	8:25	12:30	8:05
Field Parameters			
pH (su)	8.34	8.09	8.34
Specific Conductivity (uS/cm)	256	267	338
Temperature (oC)	0.7	21.8	17
Oxygen, Dissolved	8.06	5.78	5.85
Turbidity (NTU)	692	11.3	22.9
COPCs			
Cadmium, Dissolved	0.00006 UJ	0.0001 U	0.0001 U
Cadmium, Total			
Chromium, Dissolved	0.00098 J	0.0005 J	0.00068 U
Chromium, Total			
Copper, Dissolved	0.0026 U	0.0021 U	0.0014 UJ
Copper, Total			
Nickel, Dissolved	0.0036 U	0.0032 J	0.0017 U
Nickel, Total			
Selenium, Dissolved	0.00088 J	0.0003 U	0.0003 U
Selenium, Total	0.00088 J	0.00054 J-	0.00032 U
Vanadium, Dissolved	0.0017 J	0.00038 J	0.0003 U
Vanadium, Total			
Zinc, Dissolved	0.0018 U	0.0012 J	0.0011 U
Zinc, Total			
Major Ions			
TDS	215 J	192	180
TSS	112 J	5 U	29
Calcium, Dissolved	45.8	47	42.6
Magnesium, Dissolved	16.9	19.9	20
Sodium, Dissolved	4.71	4.06	4.15
Potassium, Dissolved	1.64	0.996	1.31
Hardness	184		
Alkalinity	171 J	199	190
Bicarbonate as CaCO3	171 J	199	190
Carbonate as CaCO3	1 UJ	1 U	1 U
Hydroxide as CaCO3	1 UJ	1 U	1 U
Fluoride	0.156 J	0.175	0.175
Chloride	1.88 J	1.31	1.59
Sulfate	24.7 J	18.4	18.6

Appendix B

C Panel
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	CS-1		
Sample Date	10/30/2003	5/6/2004	7/22/2004
Sample Time	8:25	12:30	8:05
Nutrients			
Ammonia (as N)	0.02 J	0.01 U	0.01 U
Nitrate + Nitrite (as N)	0.02 UJ	0.02 U	0.02 U
Nitrate, Dissolved (as N)			
Nitrite, Dissolved (as N)			
Orthophosphate (as P)	0.05 J	0.01 U	0.01 U
Phosphorus, Total			
TOC	1 UJ	1 U	6.3
Trace Elements			
Aluminum, Dissolved	0.0097 U	0.0122 J	0.0066 U
Aluminum, Total			
Arsenic, Dissolved	0.0006 U	0.0006 U	0.0006 U
Arsenic, Total			
Barium, Dissolved	0.007	0.0067	0.0074
Barium, Total			
Boron, Dissolved			
Cobalt, Dissolved			
Cobalt, Total			
Iron, Dissolved	0.0114 J	0.0124 U	0.011 U
Iron, Total			
Lead, Dissolved	0.0004 U	0.0007 U	0.001 U
Lead, Total			
Manganese, Dissolved	0.0062	0.0038	0.0006 U
Manganese, Total			
Mercury, Dissolved			
Mercury, Total			
Silver, Dissolved	0.0001 U	0.0001 U	0.0001 U
Silver, Total			

Appendix B

Surface Water Quality
D Panel
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	DP-7		DS-7					DP-10				DS-10
Sample Date	5/25/2003	7/22/2004	10/18/2002	5/25/2003	10/29/2003	5/18/2004	7/22/2004	5/25/2003	10/29/2003	5/7/2004	7/22/2004	5/25/2003
Sample Time	11:40	18:25	15:10	11:05	10:50	16:15	18:10	9:55	11:30	20:10	17:35	9:20
Field Parameters												
pH (su)	7.63	8.04	6.91	6.87	7.77	6.97	7.17	8.27	8.26	8.51	8.52	8.31
Specific Conductivity (uS/cm)	1484	1872	2033	1698	1500	1515	2130	1529	1600	1608	2051	2700
Temperature (oC)	17.8	21.56	9.46	9.8	6.3	16.11	20.8	14.6	4.9	14.11	21.31	21.2
Oxygen, Dissolved	6.21	5.63	10.19	0.57	4.8	5.53	7.62	7.2	6.6	8.34	6.46	3.95
Turbidity (NTU)	3.91	11.8	10	2.86	3.16	9.11	13.9	8.93	13.1	7.24	1.51	2.04
COPCs												
Cadmium, Dissolved	0.0004 J	0.00022		0.0222	0.00045	0.0167	0.0107 J	0.0001 U	0.00013	0.00035	0.0008	0.0012
Cadmium, Total			0.0007 J									
Chromium, Dissolved	0.001	0.0003 U		0.0015	0.0011 U	0.0003 U	0.0003 U	0.0044	0.0014 U	0.0038 J	0.0013 J	0.0081
Chromium, Total			0.0024 U									
Copper, Dissolved	0.005	0.0014 R		0.005	0.0018 U	0.0022 J	0.0014 R	0.003	0.0022 J	0.0038	0.0014 UJ	0.0024 J
Copper, Total			0.009									
Nickel, Dissolved	0.101	0.0588		0.166	0.151	0.154	0.14	0.0318	0.0212	0.0377	0.0223	0.0158
Nickel, Total			0.024									
Selenium, Dissolved	2.9	0.0906	0.27	2.3	0.588 J-	3.66	0.302 J+	2.28	0.0267 J-	0.309 J-	0.0738	1.09
Selenium, Total	3	0.247	0.29	2.3	0.986	3.86	0.346	2.2	0.0359	0.412 J-	0.338	1.05
Vanadium, Dissolved	0.005 U	0.006		0.014 J	0.0101	0.0095	0.0118	0.005 U	0.0011 J	0.0024 J	0.0043 J	0.005 U
Vanadium, Total			0.005 U									
Zinc, Dissolved	0.05	0.0011 U		0.43	0.316	0.377	0.311	0.01 U	0.0017 U	0.0278	0.0255	0.02 J
Zinc, Total			0.03 J									
Major Ions												
TDS	1970	1577	2100	2130	1794	2060	1790	1430	1964	1470	1284	920
TSS	8 J	12	16 J	70	42	14	78	5 U	26	6	28	36
Calcium, Dissolved	444	364	237	501	476 J	474	437	203	269 J	244	199	182
Magnesium, Dissolved	62	54.1	96.4	60.3	59.1	62	56.3	54.9	88.1	58.4	51.7	34.1
Sodium, Dissolved	12.2	11.4	117	11	11 J	11.8	12.1	156	208 J	166	134	413
Potassium, Dissolved	2.5	3.96	5.9	2.4	2.88	2.33	3.08	3.8	7.18	5.07	4.8	3.3
Hardness	1360	1130	989	1500	1430	1440	436	733	1030		710	595
Alkalinity	203	207.54	77	335	369	352	364	92	64	89.2	86	162
Bicarbonate as CaCO3	203	207.54	77	335	369	352	364	92	64	89.2	84.6	158
Carbonate as CaCO3	2 U	1 U	2 U	2 U	1 U	1 U	1 U	2 U	1 U	1 U	1.64	4 J
Hydroxide as CaCO3	2 U	1 U	2 U	2 U	1 U	1 U	1 U	2 U	1 U	1 U	1 U	2 U
Fluoride	0.2 J	0.132	0.5 J	0.2 J	0.586	0.553	0.137	0.4 J	0.527	0.284	0.316	0.4 J
Chloride	39	43.6	680	31	138	47.9	53.1	332	648	338	319	810
Sulfate	1100	934	450	1120	862	1040	962	460	616	453	334	150

Appendix B

Surface Water Quality
D Panel
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	DP-7		DS-7					DP-10				DS-10
Sample Date	5/25/2003	7/22/2004	10/18/2002	5/25/2003	10/29/2003	5/18/2004	7/22/2004	5/25/2003	10/29/2003	5/7/2004	7/22/2004	5/25/2003
Sample Time	11:40	18:25	15:10	11:05	10:50	16:15	18:10	9:55	11:30	20:10	17:35	9:20
Nutrients												
Ammonia (as N)	0.1 J	0.01	0.05 U	0.1 J	0.01 U	0.19	0.04	0.1 U	0.03	0.17	0.06	0.1 J
Nitrate + Nitrite (as N)	0.02 U	0.02 U	0.11 U	0.44	0.24	0.82	0.55	2.35	0.02 U	365.9	44.54	4.2
Nitrate, Dissolved (as N)			0.11									
Nitrite, Dissolved (as N)			0.01 U									
Orthophosphate (as P)		0.01 U	0.01 U		0.01 UJ	0.01	0.01 U		0.01 UJ	0.01 U	0.03	
Phosphorus, Total	0.03 J		0.13	0.9				0.05 J				0.31
TOC	6	4.9		6	1.5	3.71	9.4	6	13.1	4.88	5.3	5 J
Trace Elements												
Aluminum, Dissolved	0.03 U	0.0066 U		0.03 U	0.0086 U	0.0243	0.0066 U	0.03 U	0.0086 U	0.0387	0.0066 U	0.06 J
Aluminum, Total			0.15 U									
Arsenic, Dissolved	0.0005 J	0.0006 U		0.005 U	0.0006 U	0.0006 U	0.0006 U	0.005 U	0.00073 J	0.0006 U	0.00093 J	0.0005 U
Arsenic, Total			0.005									
Barium, Dissolved	0.053	0.0486		0.076	0.0789	0.0629	0.0632	0.06	0.108	0.0777	0.0758	0.122
Barium, Total			0.097									
Boron, Dissolved			0.4									
Cobalt, Dissolved												
Cobalt, Total			0.01 U									
Iron, Dissolved	0.02 U	0.011 U		0.02 U	0.027 U	0.0124 U	0.011 U	0.02 U	0.0035 U	0.0124 U	0.011 U	0.02 U
Iron, Total			0.37									
Lead, Dissolved	0.0001 U	0.001 U		0.0002 U	0.0004 UJ	0.0007 U	0.001 U	0.0001 U	0.0004 UJ	0.00074 J	0.001 U	0.0001 U
Lead, Total			0.0002 U									
Manganese, Dissolved	0.13	0.273		2.41	1.53	1.22	1.26	0.005 U	0.14	0.0093	0.0054	0.032
Manganese, Total			0.064									
Mercury, Dissolved												
Mercury, Total			0.0002 U									
Silver, Dissolved	0.00005 U	0.00023		0.0001 U	0.0001 UJ	0.00015	0.0001 U	0.00005 U	0.0001 UJ	0.00015	0.0001 U	0.00005 U
Silver, Total			0.0001 U									

Appendix B

Surface Water Quality
E Panel
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	ES-1			EP-3		ES-3				EP-4	
Sample Date	10/30/2003	5/6/2004	7/22/2004	5/21/2003	7/23/2004	10/17/2002	5/21/2003	5/18/2004	7/23/2004	5/21/2003	7/23/2004
Sample Time	12:35	14:45	9:20	18:40	19:15	16:15	18:10	14:00	18:50	19:00	17:00
Field Parameters											
pH (su)	8.09	4.82	7.48	9.57	7.62	7.11	7.25	7.28	7.83	9.62	10.11
Specific Conductivity (uS/cm)	331	340	478	227	731	481	698	602	908	959	1003
Temperature (oC)	0.7	9.4	9.6	18.8	21.7	5.5	6	12.89	20.34	17.8	25.99
Oxygen, Dissolved	7.94	7.29	8.62	6.08	2.93	7.72	7.84	6.73	6.64	7.48	12.95
Turbidity (NTU)	53.4	55.9	0.5	4.17	26	6.2	10.9	11.8	31.5	3.38	28.5
COPCs											
Cadmium, Dissolved	0.00006 UJ	0.0001 U	0.0001 U	0.0001 U	0.00084		0.0001 U	0.00047 J	0.00039	0.0001 U	0.00011
Cadmium, Total						0.0015					
Chromium, Dissolved	0.0003 U	0.0003 U	0.00058 U	0.0017	0.0012 U		0.0015	0.00068 J	0.0011 U	0.004	0.00038 U
Chromium, Total						0.0309					
Copper, Dissolved	0.0026 U	0.0021 U	0.0014 UJ	0.0018 J	0.003 R		0.0012 J	0.0021 U	0.0014 UJ	0.0036	0.0014 UJ
Copper, Total						0.009					
Nickel, Dissolved	0.0016 U	0.0025 J	0.0017 U	0.0031	0.0071 J		0.0061	0.0056 U	0.0054 J	0.0093	0.0041 J
Nickel, Total						0.0407					
Selenium, Dissolved	0.0003 J	0.0003 U	0.0003 U	0.001 U	0.00034 J+	0.025	0.001 U	0.0003 U	0.0003 U	7.2	1.69
Selenium, Total	0.00072 J	0.0003 U	0.0003 U	0.001 U	0.00045 U	0.023	0.001 U	0.00055 J	0.00037 U	6.9	2.27
Vanadium, Dissolved	0.0002 U	0.0002 U	0.0003 U	0.005 U	0.0079		0.005 U	0.0024 J	0.0054	0.007 J	0.0064
Vanadium, Total						0.016 J					
Zinc, Dissolved	0.0018 U	0.0002 U	0.0011 U	0.01 J	0.0011 U		0.01 J	0.0064 U	0.0011 U	0.02 U	0.0011 U
Zinc, Total						0.08					
Major Ions											
TDS	247 J	244	253	170	480	460	560	676	595	996	810
TSS	20 J	54	5 U	5 U	21	96	5 U	11	131	5 U	33
Calcium, Dissolved	58.1	57	58.4	35.3	62.8	108	133	145	155	205	159
Magnesium, Dissolved	26.7	26.4	26.4	6.1	18.6	14.6	14	15.6	19.5	36.4	27.5
Sodium, Dissolved	5.42	5.26	5.18	3.8	33.2	6.3	5.6	5.9	6.71	6.9	7.23
Potassium, Dissolved	0.928 J	0.802	0.928	3.8	11.6	4.8	3.5	4.07	7.76	2.1	14.4
Hardness	255		254	113	234	330	390	426	468	662	510
Alkalinity	249 J	265	266	49	95.9	213	222	327	343	27	39
Bicarbonate as CaCO3	249 J	265	266	32	95.9	213	222	327	343	27	28.6
Carbonate as CaCO3	1 UJ	1 U	1 U	17	1 U	2 U	2 U	1 U	1 U	2 U	10.4
Hydroxide as CaCO3	1 UJ	1 U	1 U	2 U	1 U	2 U	2 U	1 U	1 U	2 U	1 U
Fluoride	0.1 UJ	0.13	0.121	0.3 J	0.299	0.2 U	0.3 J	0.2	0.186	0.2 J	0.301
Chloride	1.28 J	1.38	1.2	37	152	87	80	70.3	78.4	12	12.5
Sulfate	17.6 J	16.3	16.3	20	24	30	30	24.7	26.5	550	473

Appendix B

Surface Water Quality
E Panel
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	ES-4						EP-5		ES-5				
Sample Date	10/17/2002	5/21/2003	10/29/2003	5/18/2004	6/7/2004	7/23/2004	5/21/2003	7/23/2004	10/17/2002	5/21/2003	10/29/2003	5/7/2004	7/23/2004
Sample Time	16:30	19:25	9:40	13:10	11:15	16:10	20:45	18:10	16:55	20:15	10:15	19:20	17:30
Field Parameters													
pH (su)	7.83	7.72	7.96	7.92	7.78	7.82	9.95	9.57	7.88	7.33	7.96	7.57	7.85
Specific Conductivity (uS/cm)	788	1500	900	1149	925	1624	133	436	767	994	900	859	1263
Temperature (oC)	6.7	7.5	6.8	12.39	21	17.26	19	26.14	10.53	10.1	6.8	10.19	20.45
Oxygen, Dissolved	6.87	7.01	5.2	6.31	8.39	7.03	6.44	8.42	7.13	4.63	6.2	5.28	4.91
Turbidity (NTU)	8.7	3.13	0.52	9.86		89.9	22	31.4	5.5	18.2	1.59	1.11	2.95
COPCs													
Cadmium, Dissolved		0.0013	0.00064 J	0.0012		0.00026 J	0.0001 U	0.0001 U		0.0015	0.0012	0.00098	0.00056
Cadmium, Total	0.002								0.0024				
Chromium, Dissolved		0.0056	0.0033 J	0.0041 J		0.0039 U	0.0004 J	0.0003 U		0.0033	0.0018 J	0.0025 J	0.0021 J
Chromium, Total	0.0288								0.0061 U				
Copper, Dissolved		0.0051	0.0017 U	0.0021 J		0.0014 R	0.0024 J	0.0014 R		0.0025 J	0.0014 U	0.0026 J	0.0014 UJ
Copper, Total	0.0098								0.0052				
Nickel, Dissolved		0.039	0.0131	0.0212 U		0.0215	0.002	0.0025 J		0.0236	0.0147	0.017	0.0154
Nickel, Total	0.0361								0.0346				
Selenium, Dissolved	3.13	12	7.8 J-	13.3		11.4 J+	0.083	0.0898	1	1.51	1.67 J-	1.61 J-	2.62
Selenium, Total	3.4	12.4	10.6	13.6		12.5	0.096	0.101	1.21	1.43	1.62	1.66 J-	3.26
Vanadium, Dissolved		0.016 J	0.0139	0.0148		0.016	0.007 J	0.0043 J		0.018 J	0.0149	0.0159	0.015
Vanadium, Total	0.028 J								0.022 J				
Zinc, Dissolved		0.03 J	0.0239	0.0375		0.053	0.02 J	0.0011 U		0.06	0.0372	0.0393	0.0347
Zinc, Total	0.06								0.09				
Major Ions													
TDS	890	1560	1183	1484		1340	100	372	770	870	854	871	935
TSS	122	20	9	5		152	18 J	66	42	174	5 U	5 U	9
Calcium, Dissolved	220	356	284 J	326		323	17.3	55.9	208	228	226 J	237	231
Magnesium, Dissolved	33.4	50.1	41.2	48.5		44.7	3.2	13.1	27.9	28.2	29	31.5	30.9
Sodium, Dissolved	7	7.7	6.84 J	8.09		8.21	1.7	5.36	7.2	6.8	6.46 J	6.81	7.07
Potassium, Dissolved	5	2.3	5.58	3.56		4.28	4.7	14.7	2.3	1.6	3.59	0.116 J	2.57
Hardness	687	1100	879	1010		990	56	194	635	686	684		705
Alkalinity	246	217	302	274		304	36	75.69	327	290	316	306	316
Bicarbonate as CaCO3	246	217	302	274		304	36	70.49	327	290	316	306	316
Carbonate as CaCO3	2 U	2 U	1 U	1 U		1 U	2 U	5.2	2 U	2 U	1 U	1 U	1 U
Hydroxide as CaCO3	2 U	2 U	1 U	1 U		1 U	2 U	1 U	2 U	2 U	1 U	1 U	1 U
Fluoride	0.3 U	0.3 J	0.287	0.657		0.178	0.2 J	0.487	0.3 U	0.3 J	0.335	0.191	0.207
Chloride	11	12	9.8	11.6		11.1	2 J	9.61	10	11	10.2	8.49	10.6
Sulfate	450	830	540	714		639	20	133	280	310	298	376	374

Appendix B

Surface Water Quality
E Panel
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	ES-1			EP-3		ES-3				EP-4	
Sample Date	10/30/2003	5/6/2004	7/22/2004	5/21/2003	7/23/2004	10/17/2002	5/21/2003	5/18/2004	7/23/2004	5/21/2003	7/23/2004
Sample Time	12:35	14:45	9:20	18:40	19:15	16:15	18:10	14:00	18:50	19:00	17:00
Nutrients											
Ammonia (as N)	0.01 UJ	0.01 U	0.01 U	0.2 J	0.79	0.05 U	0.1 J	0.53	0.14	0.1 U	0.13
Nitrate + Nitrite (as N)	0.1 J	0.26	0.12	0.13	0.37	2.56 UJ	7.3	6.43	6.13	14.2	0.78
Nitrate, Dissolved (as N)						2.54					
Nitrite, Dissolved (as N)						0.02 J					
Orthophosphate (as P)	0.02 J	0.01 U	0.01 U		0.16	0.01 J		0.11	0.07		0.59
Phosphorus, Total				0.07		1.45 J	0.14			0.06	
TOC	1 UJ	1 U	5.2	10	18.6		6	5.6	10	7	26.2
Trace Elements											
Aluminum, Dissolved	0.0097 U	0.009 J	0.0066 U	0.03 J	0.0386		0.03 U	0.0102 J	0.0066 U	0.03 U	0.0066 U
Aluminum, Total						1.81 R					
Arsenic, Dissolved	0.0006 U	0.0006 U	0.0006 U	0.0015 J	0.0053		0.0012 J	0.0006 U	0.0006 U	0.0005 U	0.0025 J
Arsenic, Total						0.0035					
Barium, Dissolved	0.0118	0.0122	0.0125	0.024	0.103		0.061	0.107	0.0936	0.063	0.0901
Barium, Total						0.073					
Boron, Dissolved						0.03 J					
Cobalt, Dissolved											
Cobalt, Total						0.01 U					
Iron, Dissolved	0.0045 U	0.0124 U	0.011 U	0.07	0.0177 J		0.01 U	0.0124 U	0.011 U	0.02 U	0.011 U
Iron, Total						3.52 J+					
Lead, Dissolved	0.0004 U	0.0007 U	0.001 U	0.0001 U	0.001 U		0.0001 U	0.00081 J	0.001 U	0.0001 U	0.001 U
Lead, Total						0.0016					
Manganese, Dissolved	0.0041	0.0104	0.0016 J	0.04	0.828		0.005 U	0.101	0.37	0.005 U	0.0103
Manganese, Total						0.33					
Mercury, Dissolved											
Mercury, Total						0.0002 U					
Silver, Dissolved	0.0001 U	0.0001 U	0.0001 U	0.00005 U	0.0001 U		0.00005 U	0.0001 U	0.0001 U	0.00005 U	0.0001 U
Silver, Total						0.00016 J					

Appendix B

Surface Water Quality
E Panel
Field and Laboratory Results
(mg/L unless otherwise noted)

Station Location	ES-4						EP-5		ES-5				
Sample Date	10/17/2002	5/21/2003	10/29/2003	5/18/2004	6/7/2004	7/23/2004	5/21/2003	7/23/2004	10/17/2002	5/21/2003	10/29/2003	5/7/2004	7/23/2004
Sample Time	16:30	19:25	9:40	13:10	11:15	16:10	20:45	18:10	16:55	20:15	10:15	19:20	17:30
Nutrients													
Ammonia (as N)	0.05 U	0.2 J	0.03	0.13		0.04	0.1 J	0.18	0.05 U	0.1 U	0.01 U	0.21	0.05
Nitrate + Nitrite (as N)	7.7 J	13	10.35	13.66		14.06	0.02 U	0.02 U	11 J	17.2	15.16	14.98	15.81
Nitrate, Dissolved (as N)	7.6								11				
Nitrite, Dissolved (as N)	0.03 J								0.1 J				
Orthophosphate (as P)	0.05 J		0.045 J	0.07		0.07		0.01 U	0.1 J		0.01 UJ	0.01 U	0.01 U
Phosphorus, Total	0.55 J	0.18					0.48		0.12 J	0.32			
TOC		8	2.5	4.99		6.9	19	40		6	17.8	1 U	6.6
Trace Elements													
Aluminum, Dissolved		0.03 U	0.0086 U	0.0179 J		0.0066 U	0.07 J	0.0142 J		0.03 U	0.0086 U	0.0099 J	0.0066 U
Aluminum, Total	3.22 R								1.75				
Arsenic, Dissolved		0.0362	0.00092 J	0.00074 J		0.0006 U	0.0022 J	0.0064		0.0036	0.0006 U	0.0006 U	0.0006 U
Arsenic, Total	0.0005 U								0.0005 U				
Barium, Dissolved		0.083	0.0853	0.0936		0.0961	0.033	0.118		0.06	0.0753	0.0636	0.0803
Barium, Total	0.118								0.082				
Boron, Dissolved	0.01 J								0.02 J				
Cobalt, Dissolved													
Cobalt, Total	0.01 U								0.01 U				
Iron, Dissolved		0.02 U	0.0035 U	0.0124 U		0.011 U	0.03 J	0.011 U		0.01 U	0.007 U	0.0124 U	0.011 U
Iron, Total	3.29 J+								1.29				
Lead, Dissolved		0.0001 U	0.0004 U	0.0007 U		0.001 U	0.0001 U	0.001 U		0.0001 U	0.0004 U	0.0007 U	0.001 U
Lead, Total	0.0023								0.0009 U				
Manganese, Dissolved		0.016 J	0.04	0.0423		0.0932	0.005 U	0.0328		0.024 J	0.0399	0.0161	0.0713
Manganese, Total	0.194								0.097				
Mercury, Dissolved													
Mercury, Total	0.0002 U								0.0002 U				
Silver, Dissolved		0.00005 U	0.0001 UJ	0.0001 U		0.0001 U	0.00005 U	0.0001 U		0.00005 U	0.0001 UJ	0.00012	0.0001 U
Silver, Total	0.00016 J								0.00005 U				

Appendix B
Sediment COPC Concentrations
(+ total phosphorous and percent solids)
(mg/Kg dry wt.)

Station Location	Cadmium	Chromium	Copper	Nickel	Selenium	Vanadium	Zinc	Phosphorus, Total	Solids, Percent (%)	Estimated Volume (CY)
Detention Ponds - A Panel										
AP-1	12.5	260	55.6	164	13.5	176	579	11,300	100	278
AP-2	26.1	454 J+	87.6	237	43.6	375	999 J	18,400	100	97
AP-3	35.6	442	104	312	43.7	434	1,540	18,800	100	169
AP-4	30.7	414	101	255	41.8	332	1,120	21,900	100	44
AP-5	31.3	603	76.2	205	22.7	917	1,170	24,700	100	833
AP-6	10.1	171	36.5	99.7	6.4	108	362	12,200	100	556
AP-7	18.2	292	52.8	110	10.2	299	514	23,700	100	79
AP-9A	36	530	94.7	293	12	1,230	1,960	41,800	100	56
Detention Ponds - D Panel										
DP-1	32.2	466	104	265	39.5	368	1,180	29,000	100	347
DP-2	17.2	262	65.1	197	17.2	231	785	12,200	100	741
DP-3	13.8	210 J+	51	134	10.7	182	549 J	12,200	100	93
DP-4	11.5	154	52.5	161	15.4	151	638	7,770	100	30
DP-5	0.92	47.4 J+	35	58	0.58	34.5	205 J	2,660	100	11
DP-6	14.6	272 J+	66.7	220	20.7	199	799 J	10,800	100	30
DP-7	16.5	134	41.2	125	592	116	471	14,000	100	474
DP-8	10.5	263 J+	53.1	149	10	166	492 J	12,100	100	37
DP-9	19.3	373	68.6	183	22.5	254	743	21,200	100	56
DP-10	9.7	113 J+	24.3	74.2	35.8	87	327 J	18,400	100	178
DP-11	12.8	155	43.5	109	18.7	133	493	11,700	100	37
DP-13	12	259	56.7	155	11.1	166	554	12,500	100	111
DP-14	23.8	235	51.5	131	29.8	186	600	29,400	100	28
DP-15	3.8	49	30.5	52.8	1.1	50.6	230	3,100	100	44
Detention Ponds - E Panel										
EP-1	4.8	79.5 J+	30.5	62.4	1.2	74.3	242 J	4,950	100	67
EP-2	11.6	304 J+	61.8	177	12.6	196	617 J	12,400	100	370
EP-3	2.5	43.3 J+	16	31.5	0.71	45.2	120 J	2,700	100	69
EP-4	3.7	51 J+	19.8	36.9	154	54.7	164 J	2,900	100	278
EP-5	0.96	28.4 J+	14.4	21.8	25.5	31.5	98.7 J	769	100	93
EP-6	19.6	328 J+	74.4	181	8.3	283	840 J	13,600	100	67
EP-7	44.2	763	127	327	31.4	653	1,630	28,700	100	44
EP-9	8.8	153 J+	46.7	107	3.4	144	444 J	6,220	100	185
Smoky Creek										
USm	0.89	24.4	23	27.3	0.51	30.3	99.5	2,570	100	
LSmS	5.3	54.3	22.5	33.3	1.3	56.3	167	5,940	100	
LSm	3.2	34.5	19.6	23.2	1.8	38.2	119	5,160	100	
Roberts Creek										
UR-3	4.9	63.7	5.9 J+	11.3	0.3	37.7	78.7	18,100	100	
Pole Canyon Creek										
UP	0.65	22.9	20.6	24.3	0.46	29.7	91.5	1,210	100	
LP	26.5	158	40	204	58.1	130	1,170	23,000	100	
Sage Creek										
US	0.85	18.8	13.5	16.7	0.78	20.9	75.2	1,560	100	
US-4	2.1	24.9	15.6	23	0.68	34.7	94.7	4,790	100	
LS	3	36.7	16.8	30.8	1.8	37.6	148	3,880	100	
LSV-4	2	24.4	8.3	12.7	3.3	25.6	64.7	7,060	100	
North Fork Sage Creek										
NSV-5	1.8	22.3	29.8	16.5	0.37	32.8	86.5	4,800	100	
Hoopes Spring										
HS	1.1	16.6	3.5 J+	5.6	2.1	13.7	22.9	4,800	100	
South Fork Sage Creek										
USS	2.8	28.2	16.8	23.5	0.47	34.2	107	4,640	100	
LSS	2.9	26.8	11.3	16.9	1.2	29.1	112	5,680	100	

Notes:
All sediment samples were collected during July 2004

Appendix B

Soil COPC and Nutrient Concentrations

Station Location	Area Type	Root Zone Sample Depth	Cadmium (mg/Kg)	Chromium (mg/Kg)	Copper (mg/Kg)	Nickel (mg/Kg)	Selenium (mg/Kg)	Vanadium (mg/Kg)	Zinc (mg/Kg)	Carbon, Total (%)	Nitrate + Nitrite (as N)	Nitrogen-TKN	Organic Matter (%)	pH (su)	Soil Color (Munsell)	Solids, Percent (%)
A Transect																
AT-1	Native	Surface	0.97	20.8	28 R	25.1	0.32	27.8	115 J	7.93	3.08	4100	17.96	7.17	10yr 4/2	100
		Root Zone	0.68	22.6	30.7 R	28	0.12	29.3	104 J	2.95	1.97	2180	9.49	6.75		100
AT-2	Native	Surface	0.49	22.1	26.1 R	27.1	0.08 J	28.1	102 J	2.43	0.2 U	1730	7.01	6.78	10yr 3/2	100
AT-3	Native	Surface	1.8	20.5	23.1 R	24.5	0.67	28.7	144 J	8.15	1	3880	18.35	6.49	7.5yr 3/1	100
		Surface	1.3	21.6	25.2 J+	22	0.36	29.5	129	6.63	3.34	3800	14.43	6.57		100
		Root Zone	0.61	20.3	23.7 R	25.2	0.09 J	25.9	96.6 J	1.92	0.94	1510	6.54	6.71		100
AT-4	Native	Surface	1.2	18.6	23.5 R	21.5	0.27	24.7	117 J	7.43	0.2 U	3280	17.85	6.61	7.5yr 4/1	100
		Root Zone	0.5	20.3	25.5 R	23.8	0.11	24.8	86.9 J	2.42	0.95	1680	7.55	6.75		100
AT-5	Overburden	Surface	0.98	21.1	22 R	26	0.2	29	94.3 J	2.03	3.38	1300	5.38	6.89	10yr 4/3	100
		Root Zone	0.63	23.1	22.3	23.9	0.25	31.5	89.7	1.98	1.77	1040	4.69	6.73		100
AT-6	Overburden	Surface	1.6	22.2	20.9 R	26.5	0.64	30.6	108 J	2.03	11.79	1180	6	7.43	10yr 4/2	100
		Root Zone	1.1	21	19.9 R	24.4	0.43	28.4	91.9 J	2.1	1.72	1030	4.26	7.3		100
AT-7	Overburden	Surface	40.4	408	82	178	13.4 J-	382	846	1.91	2.24	988	3.64	7.47	7.5yr 3/1	100
		Root Zone	54.6	551	117	281	24.1	553	1370	4.52	1.72	1500	8.55	7.27		100
AT-8	Overburden	Surface	32.3	486	140 J+	209	8.2	332	822	3.67	6.17	1560	7.14	7.17	10yr 3/1	100
		Root Zone	35.2	600	181 J+	247	10.1	394	852	4.32	2.5	1510	10.27	7.27		100
AT-9	Overburden	Surface	45	567	116 J+	258	27.2	401	1160	3.83	7.8	1290	7.53	7.61	7.5yr 2.5/1	100
		Root Zone	43	607	127 J+	267	29.8	388	1130	4.48	4.24	1300	9.33	7.62		100
AT-10	Native	Surface	3	13.5	14.6	11.7	0.3 J-	16.4	104	10.6	19.19	4700	17.67	6.59	7.5yr 3/2	100
		Root Zone	2.1	16.2	12.5 J+	14	0.21	18.2	84.5	3.95	4.38	1900	8.79	6.88		100
AT-11	Native	Surface	4.2	13.4	17.6 J+	10.8	0.33	16.2	142	15.3	4.23	5880	20.07	6.88	10yr4/1	100
		Root Zone	1.8	15.6	10.1 J+	12.4	0.16	19.2	82.2	2.75	0.94	1420	5.93	6.63		100
AT-12	Native	Surface	2.6	11.4	12.1	10.7	0.28 J-	16.4	79.6	7.85	1.69	3880	14.71	6.65	7.5yr 4/1	100
		Root Zone	1.2	14	9	12.4	0.27 J-	19.5	62.4	1.87	0.42	1070	3.99	6.35		100
Pole Canyon Dump Transect																
PT-1	Native	Surface	0.54	20.5	24.2	22.6 J	0.19	28.2	102	6.1	0.86	2560	15.23	6.91	10yr 3/2	100
		Root Zone	0.15 J	23.5	26.7	25.5 J	0.1	31.6	91.9	2.88	0.52	1330	6.12	6.63		100
PT-2	Native	Surface	0.69	21.6	25.3	23.4 J	0.2	28.9	112	8.43	2.52	3140	12.78	6.79	10yr 3/2	100
		Root Zone	0.38	23.3	26.9	24.5 J	0.14	31.4	105	3.87	1.56	2130	10.69	6.66		100
PT-3	Native	Surface	0.57	21.5	24.7	23.3 J	0.24	28.3	112	6.1	1.5	2820	13.18	6.7	10yr 3/3	100
		Root Zone	0.19 J	24.3	26.4	25.5 J	0.15	31.1	98.7	1.96	0.46	1440	6.19	6.59		100
PT-4	Native	Surface	0.25	22.8	25	23.6	0.27	28.3	128	4.02	1.25	2270	10.04	6.89	10yr 3/2	100
		Root Zone	0.19 J	23.3	25.8	24 J	0.14	29.2	106	2.11	0.98	1380	5.13	6.64		100
PT-5	Native	Surface	7.7	47.8	23	40.7	1.1	41.9	340	3.96	9.52	1580	11.24	6.78	10yr 3/2	100
		Root Zone	5.9	41.4	23.5	39.2	0.92	37.3	281	2.75	4.45	1220	11.12	6.88		100
PT-6	Native	Surface	3.5	37.3	18.4 R	25.8	1.5	34.3	160 J	5.39	3.55	2780	13.63	6.76	7.5yr 3/2	100
		Root Zone	3.5	35.8	18 R	27.4	0.58	33.5	163 J	3.32	3.43	1670	7.12	7.15		100
PT-7	Overburden	Surface	5.2	53.3	25.1 R	55	1.8	48.7	222 J	1.83	1.15	1150	3.91	7.45	10yr 4/2	100
		Root Zone	2.7	36.2	19.2	41	1.1	31.4	157	2.34	1.15	860	4.5	7.22		100

Appendix B

Soil COPC and Nutrient Concentrations

Station Location	Area Type	Root Zone Sample Depth	Cadmium (mg/Kg)	Chromium (mg/Kg)	Copper (mg/Kg)	Nickel (mg/Kg)	Selenium (mg/Kg)	Vanadium (mg/Kg)	Zinc (mg/Kg)	Carbon, Total (%)	Nitrate + Nitrite (as N)	Nitrogen-TKN	Organic Matter (%)	pH (su)	Soil Color (Munsell)	Solids, Percent (%)
Pole Canyon Dump Transect (continued)																
PT-8	Overburden	Surface	6.5	44.6	20 R	38.5	3.1	51.5	187 J	1.72	1.65	1020	4.1	7.65	7.5yr 4/2	100
		Root Zone	7.2	48.8	17.9	36.5	4.1 J-	59.6	178	1.69	1.16	1050	3.72	7.3		100
PT-9	Overburden	Surface	15.2	140	44.3 R	103	3.7	144	430 J	1.06	1.45	833	2.59	7.79	7.5yr 4/2	100
		Root Zone	16.4	209	48.4	111 J	3.2	187	471	1.29	0.77	861	3.55	7.34		100
PT-10	Overburden	Surface	64.5	537	87.9	201	14.4	728	1120	2.58	4.53	1230	5.01	7.61	7.5yr 4/1	100
		Root Zone	58	511	86.7	190 J	17.8	633	1060	3.19	1.11	1480	7.93	7.53		100
PT-11	Overburden	Surface	65.3	613	108	389	7.4	863	1690	2.34	2.14	983	5.54	7.59	10yr 4/2	100
		Root Zone	55.4	682	125	385 J	9.8	869	1570	2.7	0.28	1020	4.3	7.38		100
PT-12	Overburden	Surface	27.8	292	74.7	157	29 J-	238	694 J	2.65	1.89	1960	5.69	6.99	10yr 3/1	100
		Root Zone	30.8	441	106	252 J	148	301	1030	7.59	0.72	2300	10.3	7.45		100
PT-13	Overburden	Surface	26.1	336	63.2 R	157	20.2	244	725 J	2.85	14.18	1900	5.77	7.49	10yr 4/2	100
		Root Zone	28.9	430	69.2	191 J	28	283	780	2.87	12.8	1500	5.64	7.41		100
PT-14	Native	Surface	1.1	18.4	17.3	14.7	0.36 J-	19.7	64.2 J	4.81	1.79	3950	10.65	6.95	7.5yr 4/1	100
		Root Zone	0.77	18.2	15.5	13.7	0.16 J-	18.4	54.6 J	3.7	1.25	3100	8.05	7.01		100
PT-15	Native	Surface	1.1	25.4	11.3	15.6	0.72 J-	22.7	82.3 J	3.81	3.78	3200	9.41	6.84	7.5yr 4/1	100
		Root Zone	0.6	24	8.8	14	0.19 J-	20.5	67.5 J	2.72	3.03	2600	5.73	6.98		100
DT-30	Overburden	Surface	36.3	468	112	237	65.9 J-	345	1090 J	3.83	2.07	2290	7.24	7.16	10yr 4/1	100
		Root Zone	42.3	518	111	258	92.7 J-	359	1210 J	3.16	0.67	1760	1.66	7.47		100
DT-31	Overburden	Surface	19.8	165	41.6	88.2	40.9 J-	170	438 J	3.98	0.88	2390	9.6	7.03	10yr 4/2	100
		Root Zone	14.9	152	44.3	105	3.9 J-	141	486 J	2.28	0.51	1560	5.81	6.97		100
DT-32	Native	Surface	10.2	64.2	26.4 R	49	5.5	68.1	276 J	7.68	3.6	3900	14.21	7.46	10yr 3/2	100
		Root Zone	8.2	51.6	21.7	38.3	3.6 J-	58.7	243 J	5.88	2.23	3850	13.01	7.39		100
DT-33	Native	Surface	3.4	31.1	13.6	21.9	1.6 J-	33	145 J	5.2	2.37	3230	12.12	7.3	10yr 5/3	100
		Root Zone	2.6	36.1	12.4 R	27.1	2.7	34.3	158 J	2.85	1.06	1650	6.62	7.76		100
DT-34	Native	Surface	29.8	308	64.6 R	141	8.5	259	628 J	1.4	2.29	1000	2.94	7.88	10yr 4/2	100
		Root Zone	47	499	85.4	179 J	20	459	927	2.47	0.3	1040	4.22	7.61		100
D Transect North																
DT-1	Native	Surface	0.5	19.3	23.3	20	0.15 J-	26.1	112 J	5.33	1.11	3430	12.58	6.63	10yr 4/3	100
		Root Zone	0.11	21.1	22.3	22.5	0.07 J-	28.2	95 J	2.29	0.53	2040	7.09	6.51		100
DT-2	Native	Surface	0.78	19.5	23.6	20.9 J	0.2	26.7	125	6.05	2.24	3490	14.84	6.71	10yr 4/2	100
		Root Zone	0.22	21.7	23.2	24	0.11 J-	29.1	107 J	2.82	0.98	1170	7.28	6.51		100
DT-3	Native	Surface	0.54	20.4	26.6	23	0.22	28.1	129	6.21	1.66	3630	13.68	6.92	10yr 4/2	100
		Root Zone	0.3	22.8	27.3	25.1	0.16 J-	29.8	109 J	2.61	1.18	2130	7.55	6.84		100
DT-4	Native	Surface	0.55	17.7	20.1	19.4	0.23	24.9	162	5.35	0.98	3730	13.79	6.36	10yr 3/2	100
		Root Zone	0.3	21.6	21.2	24.2	0.15 J-	28.7	141 J	2.26	0.72	1640	6.16	6.37		100
DT-5	Overburden	Surface	9.8	95.1	35.6	75.5	1.7 J-	89.8	303 J	1.04	1.1	1190	3.41	7.38	10yr 5/3	100
		Root Zone	10.4	86.8	35.9	76.4	2.3 J-	101	301 J	1.13	1.5	898	4.22	7.1		100
DT-6	Overburden	Surface	12.6	139	46.1	89.3	6.2	107	390	1.69	0.88	905	2.95	7.51	10yr 4/2	100
		Root Zone	22.3	198	53.7	99.7	9.3	157	480	1.39	0.54	820	2.6	7.45		100
DT-7	Overburden	Surface	11.6	79.5	29.4	63.6	1.1 J-	105	324	1.42	1.23	613	2.55	7.63	10yr 5/2	100
		Root Zone	9.6	72	26	61.8	0.99 J-	88.4	309	1.24	1.24	638	2.74	7.35		100
DT-8	Overburden	Surface	22.6	211	61.9	147	15.1 J-	212	614 J	1.61	2.76	1110	3.21	7.41	10yr 4/2	100
		Root Zone	20.3	232	58.5	128	12.7 J-	215	558 J	1.73	1.03	1140	4.18	7.34		100

Appendix B

Soil COPC and Nutrient Concentrations

Station Location	Area Type	Root Zone Sample Depth	Cadmium (mg/Kg)	Chromium (mg/Kg)	Copper (mg/Kg)	Nickel (mg/Kg)	Selenium (mg/Kg)	Vanadium (mg/Kg)	Zinc (mg/Kg)	Carbon, Total (%)	Nitrate + Nitrite (as N)	Nitrogen-TKN	Organic Matter (%)	pH (su)	Soil Color (Munsell)	Solids, Percent (%)
D Transect North (continued)																
DT-9	Overburden	Surface	9.5	46.6	18.5	44	0.75 J-	57.8	281	2.02	3.33	1580	4.93	7.58	10yr 4/1	100
		Root Zone	13.5	56.3	20.5	46.9	10.5 J-	98.2	307	2.42	1.65	1610	5.08	7.57		100
DT-10	Overburden	Surface	17.5	161	47.8	112	8.1 J-	142	486	1.36	1.5	993	3.29	7.2	7.5yr 3/3	100
		Root Zone	17.1	172	47.7	115	9.4 J-	148	516	1.79	0.73	1100	3.37	7.24		100
DT-11	Overburden	Surface	9	104	42.5 R	79.3	6.4	96.7	319 J	1.81	0.92	928	4	7.67	10yr 5/2	100
		Root Zone	10.1	115	44.1	92.4	14.6	105	369	2.06	0.58	800	3.46	7.71		100
DT-12	Overburden	Surface	29.2	281	66.9	174	31.1	255	856	2.8	1.68	1380	10.5	7.55	10yr 3/2	100
		Root Zone	33.9	309	65.1	172	25.1	288	858	2.69	1.22	1980	4.23	7.53		100
DT-13	Overburden	Surface	36	395	96.2	217	19.8	292	912	2.52	0.76	1580	5.43	7.37	10yr 3/1	100
		Root Zone	40.1	391	92.8	211	16.6	303	955	2.91	1.11	1460	5.35	7.36		100
D Transect South																
DT-14	Native	Surface	1.3	18.4	18.2	17.4	0.45	21.7	110	7.06	5.03	3650	13.11	7.1	7.5yr 3/2	100
		Root Zone	0.86	19.7	16.5	20	0.4	23.4	81.4	3.45	2.28	1830	7.58	7.25		100
DT-15	Native	Surface	0.96	19.9	20.3	23.6	0.67 J-	21.9	100	5.92	9.43	3430	12.57	7.39	10yr 3/2	100
		Root Zone	0.95	25	26.6	33.3	0.66 J-	25.5	117	3.86	4.56	1490	6.29	7.48		100
DT-16	Native	Surface	29.5	138	37.3	67.8	2.4 J-	136	740	7.38	15.56	1010	16.85	6.83	10yr 3/1	100
		Root Zone	32.8	208	41.1	80	3 J-	202	748	3.71	7.02	2060	7.97	6.91		100
DT-17	Native	Surface	9	34.3	30.8	45.1	1.6	27.4	427	12	27.88	5900	18.84	6.74	7.5yr 3/1	100
		Root Zone	8.2	32.9	25.7	41.3	1.4	26	402	8.95	8.42	3750	12.92	6.78		100
DT-18	Overburden	Surface	13.2	193	47.3	93.5	3	126	399	1.31	4.1	990	3.29	6.82	10yr 4/1	100
		Root Zone	12.8	189	45.4	88.5	3.3 J-	121	380	1.53	0.96	953	3.48	7.01		100
DT-19	Overburden	Surface	52.4	406	65.2	172	7.1	462	1370	2.46	11.14	1290	5.74	7.18	10yr 3/2	100
		Root Zone	67.7	555	71.7	189	6	468	1550	2.79	5.25	1530	5.2	7.41		100
DT-20	Overburden	Surface	6.9	84.5	41.9	94.1	31.3	73	390	3.63	6.2	2600	7.29	7.49	7.5yr 3/1	100
		Root Zone	10.3	142	57.1	138	48.2	110	555	4.43	3.51	1750	6.44	7.26		100
DT-21	Overburden	Surface	13.3	136	32.6	68.3	2.7	127	346	1.76	2.31	1150	3.8	7.42	7.5yr 4/2	100
		Root Zone	16.6	150	38.1	87.7	53.6	137	409	2.21	2.22	1200	4.77	7.28		100
DT-22	Overburden	Surface	3.5	46.3	21.8	46.6	1.3	47.2	175	1.56	1.31	1000	3.73	7.43	10yr 5/2	100
		Root Zone	3	70	29.2	72.9	4.7	46.6	259	1.25	0.86	870	2.99	7.5		100
DT-23	Overburden	Surface	1.4	50.5	38.3	85.2	1.3	35.7	231	1.22	1.84	893	2.18	7.24	10yr 3/2	100
		Root Zone	1.6	66.1	41.1	91.8	1.6	36.6	261	1.15	0.44	900	2.29	7.62		100
DT-24	Overburden	Surface	4.7	52.4	27.4	52.1	1.7	50	211	1.65	1.49	1180	3.53	7.73	10yr 4/2	100
		Root Zone	4.5	51.6	28.6	52.7	1	56.5	205	1.5	0.57	1080	3.03	7.83		100
DT-25	Overburden	Surface	20.4	216	41.4	77.8	2.6	203	446	1.37	1	1030	3.42	7.34	10yr 3/4	100
		Root Zone	22.2	268	49.6	89.3	5.8	239	507	1.36	0.5	953	4.46	7.07		100
DT-26	Overburden	Surface	6.8	72.9	25.2	40.2	2.4	63.3	200	3.85	2.95	2550	6.82	6.5	7.5yr 3/2	100
		Root Zone	6.7	68.1	21.8	46.7	1.1	66.5	201	2.44	2.62	1830	4.11	6.78		100
DT-27	Native	Surface	1	29.1	13	13.4	0.19	28.1	67.8	2.69	2.47	1950	4.73	7.37	7.5yr 4/2	100
		Root Zone	0.74	28	11.3	12.7	0.25	26.4	54.7	3.29	2.75	1970	3.92	7.62		100

Appendix B

Soil COPC and Nutrient Concentrations

Station Location	Area Type	Root Zone Sample Depth	Cadmium (mg/Kg)	Chromium (mg/Kg)	Copper (mg/Kg)	Nickel (mg/Kg)	Selenium (mg/Kg)	Vanadium (mg/Kg)	Zinc (mg/Kg)	Carbon, Total (%)	Nitrate + Nitrite (as N)	Nitrogen-TKN	Organic Matter (%)	pH (su)	Soil Color (Munsell)	Solids, Percent (%)
D Transect South (continued)																
DT-28	Native	Surface	0.84	28	14.6	15.5	0.22	25.6	59.2	3.01	2.8	2300	6.48	7.51	7.5yr 3/3	100
		Root Zone	0.58	25.1	13.6	16.2	0.27 J-	24.1	51.7	3.18	2.83	1850	4.93	7.66		100
DT-29	Native	Surface	1	17.2	11.8	11.3	0.32 J-	18.7	53.7	3.51	4.69	2170	7.54	7.26	7.5yr 3/2	100
		Root Zone	0.62	17.7	9.4	10.6	0.27 J-	17.9	39.8	1.87	4.03	1240	3.52	7.42		100
DP-10 Soils																
DP10-S1	Native	Surface	1.1	12.7	8	15	0.45	17.2	47.9	1.94	4.82	1290	3.47	7.33		83.39
		Root Zone	0.51	9.7	6	11.1	0.17	13.4	27.8	0.92	2.55	675	1.76	7.24		85.48
DP10-S2	Native	Surface	1.9	15.4	8	17.1	2.9	21	66.6	1.75	6.51	1160	3.16	7.03		82.26
		Root Zone	1.4	14	6.8	13.6	0.45	19.1	47	0.84	2.75	611	1.8	7.11		84.09
DP10-S3	Native	Surface	6.4	29	12.4	30	1.3	33	162	3.18	6.31	1460	5.03	6.82		77.19
		Root Zone	3.5	22.3	7.7	19.5	0.67	26.1	117	1.14	3.13	655	2.03	7.35		82.21
DP10-S4	Native	Surface	6.4	40.1	13.2	42.7	1.5	39.7	209	2.92	2.33	1480	4.85	7.15		80.14
		Root Zone	2.9	26.5	8.8	18.8	0.75	25.5	95.2	1.09	1.95	888	2.39	7.08		85.07
DP10-S5	Native	Surface	5.1	29.1	11.5	22.2	1	30.2	123	3.4	3.31	1990	6.47	6.74		79.57
		Root Zone	2.3	20.8	8	16.4	0.26	21.7	83.7	1.48	2.31	868	2.41	6.73		83.92
DS-7 Soils																
DT-35	Native	Surface	1.7	14.3	18.1	13.3	0.24	20.9	73.8	4.77	5.06	3230	9.46	6.45	7.5yr 3/2	100
		Root Zone	1.1	14.8	14.8	14	0.14	20	53.2	2.51	3.17	1720	4.73	6.31		100
DT-36	Overburden	Surface	19.8	174	48.4	97.7	8.4	149	440	1.75	0.87	925	3.57	7.2	10yr 5/2	100
		Root Zone	15.7	113	35.2	62.7	2.9	107	305	1.1	0.49	625	1.98	7.2		100
DT-37	Native	Surface	9.9	83.2	32.1	61.2	8.5	94.9	319	3.12	1.67	2010	6.55	6.82	10yr 3/2	100
		Root Zone	4.8	34.8	18.6	24.9	1.7	36.8	172	2.57	2.45	2020	6.13	6.56		100
DT-38	Overburden	Surface	20.8	320 J+	53.7	147	11.1	188	572 J	2.38	3.17	1200	5.59	7.28	10yr 4/3	100
		Root Zone	35.7	484 J+	74.2	181	24.4	332	751 J	2.53	2.86	1090	5.51	7.28		100
North Sage Valley																
SV-1a	Pasture	Surface	5.4	44	30.7	37.9	1.9 J-	53.8	211						10yr 4/2	100
		Root Zone	1.8	27	23.9	24.2	0.42 J-	33.8	129							100
SV-2	Pasture	Surface	2.2	25.3	28.3	24.7	0.41 J-	35.7	141						10yr 4/2	100
		Root Zone	2	26.8	26.9	25.5	0.27 J-	37.2	130							100
SV-3	Pasture	Surface	2.9	26.8	28.3	24.1	0.29	35.3	141						10yr 4/2	100
		Root Zone	2.6	31.3	27.7	27.5	0.36 J-	42.7	132							100
SV-4	Pasture	Surface	4	36.6	25.4	23.6	0.58 J-	43.5	165						10yr 4/2	100
		Root Zone	3.4	38	29.1	27	0.51 J-	46.3	147							100
SV-5	Pasture	Surface	1.9	25.1	29.8	20.9	0.43 J-	32.8	157						10yr 4/3	100
		Root Zone	1.3	27.2	28.6	23.6	0.36 J-	35.7	138							100

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Soil COPC and Nutrient Concentrations

Station Location	Area Type	Root Zone Sample Depth	Cadmium (mg/Kg)	Chromium (mg/Kg)	Copper (mg/Kg)	Nickel (mg/Kg)	Selenium (mg/Kg)	Vanadium (mg/Kg)	Zinc (mg/Kg)	Carbon, Total (%)	Nitrate + Nitrite (as N)	Nitrogen-TKN	Organic Matter (%)	pH (su)	Soil Color (Munsell)	Solids, Percent (%)
North Sage Valley (continued)																
SV-6	Pasture	Surface	2	26.3	26.9	21.6	0.4 J-	35.1	141						10yr 3/2	100
		Root Zone	2.4	27.3	26.8	26.1	0.21 J-	35.7	139							100
SV-7	Pasture	Surface	1.8	26.5	25	21.8	0.29	34.4	125						10yr 4/2	100
		Root Zone	1.4	27.1	26	21.2	0.4 J-	34.9	126							100
SV-8	Pasture	Surface	1.9	22.9	20.5	16.8	0.23	30.2	103						10yr 4/2	100
		Root Zone	1.3	25.9	20.3	18.6	0.29 J-	33.1	92.6							100
SV-9	Pasture	Surface	1.8	25.6	24.5	23.4	0.31	33.4	123						10yr 4/2	100
		Root Zone	1.3	28.1	24.7	24.1	0.33 J-	36.7	123							100
SV-10	Pasture	Surface	1.2	26.7	25.1	25.4	0.56 J-	35.5	115						10yr 4/2	100
		Root Zone	1.8	27.9	26.9	27.2	0.45 J-	36.4	120							100
SV-11	Pasture	Surface	1.2	25.6	22.1	16	0.35 J-	30.5	96.6						10yr 4/2	100
		Root Zone	1.3	30.1	22.1	20.3	0.33 J-	36.3	107							100
SV-12	Pasture	Surface	1.3	19.3	22.6	12.9	0.41 J-	22.8	111						10yr 3/1	100
		Root Zone	1.5	28.3	27.2	18.9	0.31 J-	32.8	146							100
SV-13	Pasture	Surface	1.6	23.5	23.4	23.2	10.5 J-	29.4	125						10yr 4/2	100
		Root Zone	1.5	25.6	23.2	22.8	1.7	30	118							100
SV-14	Pasture	Surface	1.3	20.3	20.1	13.4	2.4	24.3	79						10yr 3/1	100
		Root Zone	1.7	28.9	21.8	18.8	0.47 J-	33.9	104							100
SV-15	Pasture	Surface	0.84	3.6	13.6	2.8	0.34 J-	5	37						10yr 3/1	100
		Root Zone	1.6	26.6	24.3	19.8	0.23	32.5	120							100
SV-16	Pasture	Surface	2.1	25.8	24.9	21.3	3.1 J-	29.5	131						10yr 3/2	100
		Root Zone	2	28.2	24.2	23.3	0.71 J-	32.8	134							100
SV-17	Pasture	Surface	1.8	23.4	23.7	18.3	0.24 J-	28.8	113						10yr 3/1	100
		Root Zone	1.9	23.9	22.7	19.6	0.39 J-	29.5	115							100
SV-18	Pasture	Surface	2.9	23.5	24.9	18.1	0.22 J-	29.4	140						10yr 3/2	100
		Root Zone	2.5	29.1	28	21.5	0.19 J-	34.6	154							100
SV-19	Pasture	Surface	1.4	8.7	21.6	9.3	0.61 J-	12.7	64.9						10yr 3/2	100
		Root Zone	1.9	26.1	21.7	18.7	0.51 J-	31.5	107							100
SV-20	Pasture	Surface	1.2	21.1	24.8	15.8	0.22	28.3	109						10yr 4/2	100
		Root Zone	1.4	24.2	26.5	18.6	0.15 J-	32.2	117							100
Seep Areas																
EP-3-R	Reference	Surface	1.1	16.5	10.2	11.1	0.14	23.7	61.3	3.37	7.31	2310	6.98	7.3	7.5yr 5/3	100
		Root Zone	0.79	16.5	9.4	10.8	0.11	23.7	53.7	2.32	3.71	1680	4.38	6.98		100
EP-3-I	Intermittent	Surface	0.4	17.3	7.4	10.8	0.13	24.5	42.7	1.02	1.49	816	2.37	7.96	2.5y 5/2	100
		Root Zone	0.51	19	8.3	11.7	0.25	25.3	47.4	0.913	2.5	765	2.33	7.35		100
EP-3-S	Saturated	Surface	3.3	30.4	14.1	27.4	0.7	33.7	128	1.88	5.9	1400	4.81	7.59	7.5yr 3/2	100
		Root Zone	2.6	23.6	11.5	19.6	0.28	27.1	99.8	1.39	2.65	1060	3.16	7.76		100
EP-4-R	Reference	Surface	1.3	21.9	11.4	14.7	0.17	27.8	69.4	1.61	23.28	1380	4.1	7.52	7.5yr 5/2	100
		Root Zone	0.52	18.7	9.3	12.3	0.11	24.9	52.7	1.31	5.54	1040	2.45	7.58		100
EP-4-I	Intermittent	Surface	4.6	32.9	13.5	21.7	35.1	36.3	126	1.58	11.65	1250	3.2	7.43	7.5yr 5/2	100
		Root Zone	4.6	31.2	12.9	20.3	5.4	36.3	117	1.16	3	941	2.37	7.59		100
EP-4-S	Saturated	Surface	7	52.5	16.6	33.9	28.5	55.4	158	1.75	1.18	1050	4.22	8.32	7.5yr 3/2	100
		Root Zone	7.4	43.1	14.5	29.7	27	50.8	148	1.24	0.69	789	2.09	8.43		100

Appendix B

Soil COPC and Nutrient Concentrations

Station Location	Area Type	Root Zone Sample Depth	Cadmium (mg/Kg)	Chromium (mg/Kg)	Copper (mg/Kg)	Nickel (mg/Kg)	Selenium (mg/Kg)	Vanadium (mg/Kg)	Zinc (mg/Kg)	Carbon, Total (%)	Nitrate + Nitrite (as N)	Nitrogen-TKN	Organic Matter (%)	pH (su)	Soil Color (Munsell)	Solids, Percent (%)
Seep Areas (continued)																
EP-5-1	Intermittent	Surface	2	21.1	16.2	13.5	0.31	20.6	108	3.37	2.56	2480	6.75	7.84	7.5yr 3/2	100
		Root Zone	1.8	22.6	15.1	15.1	0.23	22	101	1.76	1.97	1500	36.3	7.51		100
EP-5-2	Intermittent	Surface	2.8	21.1	16.9	15.4	6	23.6	125	3.71	8.36	3030	8.88	7.93	7.5yr 3/2	100
		Root Zone	2.3	20.6	15.2	15	1.8	22.9	113	2.39	5.68	1840	5.37	7.88		100
EP-5-3	Intermittent	Surface	2.7	20.5	18.2	13.7	0.48	24.9	123	4.12	4.81	2100	8.05	7.75	7.5yr 3/2	100
		Root Zone	2.4	23	17.1	15.5	0.71	28.4	125	2.16	3.19	1800	4.81	7.76		100
EP-5-4	Intermittent	Surface	2.6	20.4	16.7	12.7	0.28	22.1	121	3.86	3.26	2800	7.89	7.77	5yr 4/2	100
		Root Zone	2.6	23.7	16.7	17.4	0.42	26.2	133	2.38	2.55	1880	5.17	8.12		100
ES-5-R	Reference	Surface	0.83	17.2	12.1	12.9 J	0.21	21.9	59.6	2.68	3.7	1900	6.27	6.58	7.5yr 4/2	100
		Root Zone	0.88	17.1	12.1	12.8 J	0.16	21.7	62.3	2.34	17.59	1810	5.72	6.33		100
ES-5-I	Intermittent	Surface	2.3	19.7	16.2	13.8 J	0.39	23	120	2.26	9.34	1990	5.64	6.5	7.5yr 3/2	100
		Root Zone	2.3	21.8	17.7	15.7 J	0.2	24.8	127	2.05	2.44	1860	4.02	6.4		100
ES-5-S	Saturated	Surface	1.7	26.9	14.2	19.9 J	5.3	39.2	80.3	1.06	4.2	883	3.31	6.9	7.5yr 6/2	100
		Root Zone	0.72	19.7	11.8	15 J	1.3	28.1	55.9	0.58	0.91	553	6.67	6.88		100
Roadway Soils																
RW-1	Road	Surface	19.7	248	40.1	91.4	5.8 J-	222	441							100
RW-2	Road	Surface	15.2	216	32.1	89.1	5.9	190	350							100
RW-3	Road	Surface	81	564	151	286	77.1	524	1950							100
RW-4	Road	Surface	41.5	464	155	362	79.1 J-	193	1500							100
RW-5	Road	Surface	4.2	126	33.9	103	0.7	52.8	269							100
RW-6	Road	Surface	5.5	125	30.9	83	4.7	66	255							100
RW-7	Road	Surface	6.1	116	25.2	54.8	5	74.6	208							100
RW-8	Road	Surface	3.9	89.4	22.5	66.5	3.5 J-	52.6	224							100
RW-9	Road	Surface	2.6	62.6	25.5	55	1.1 J-	39.2	160							100
RW-10	Road	Surface	3.9	84.4	25.4	58.8	4.9	49.6	191							100
RW-11	Road	Surface	3.3	78	23.9	69.3	1.8 J-	47.6	191							100
RW-12	Road	Surface	5.9	115	28.7	76.7	2.5 J-	71.6	248							100
Additional D Panel Locations (USFS Selection)																
D-FS1		unknown	16.2	196	41.8	91.5	11.7	139	415							76.6
D-FS2		unknown	18.8	632	175	284	46.7	253	1020							94.7
D-FS3		unknown	25.8	507	95.2	227	66.6	262	998							84.4

Appendix B
Terrestrial Vegetation COPC Concentrations
(mg/Kg dry wt.)

Location	Station Type	Cover, Percent (%)	Biomass (g/m^2)	Litter (g/m^2)	Root Depth (in)	Vegetation Type	Species Included in the Sample	Cadmium	Chromium	Copper	Nickel	Selenium	Vanadium	Zinc	Moisture Content	Solids, Percent
A-Panel Transect																
AT-1	Upland	85	40	20	12											
AT-2	Upland	75	34.2	10	12	Browse	Aspen, snowberry	0.4	1 U	5	1 J	0.11 J	0.5 U	67	47	95.1
						Forage	Slender wheatgrass, Poa, Lupine, geranium	0.1 J	1 U	5 J	1 U	0.07 J	0.5 U	28	55	94.1
						Forb	Geranium	0.08 J	1 U	4 J	1 J	0.14 J	0.5 U	24	68	93.6
							Lupine	0.05 J	1 U	4 J	1 U	0.05 U	0.5 U	23	63	94.7
						Grass	Slender wheatgrass, Poa	0.05 U	1 U	3 J	1 U	0.05 J	0.5 U	25	51	95.1
AT-3	Upland	90	84.4	15	12											
AT-4	Upland	85	31.6	15	12											
AT-5	Overburden Dump	90	139.4	30	8	Forage	Brome, thickspike wheatgrass, alfalfa	0.06 J	1 U	5	1 U	0.27 J	0.5 U	20	49	94.5
						Forb	Alfalfa	0.1 J	1 U	7	2 J	0.19 J	0.5 U	26	68	93.9
						Grass	Brome, thickspike wheatgrass	0.05 U	1 U	4 J	1 U	0.25 J	0.5 U	17	51	94.4
AT-6		30	24.8	5	6											
AT-7	Overburden Dump	30	24.8	5	6	Forage	Brome, thickspike wheatgrass, alfalfa	3.51	2 J	4 J	10	62.5	1.4 J	77	53	94.4
						Forb	Alfalfa	5.58	2 J	5 J	12	213	1.2 J	88	55	93.7
						Grass	Brome, thickspike wheatgrass	1.16	3 J	4 J	12	18	1.9 J	79	42	94.6
AT-8	Overburden Dump	30	87.8	5	12	Forage	Brome, thickspike wheatgrass, western wheatgrass, alfalfa	1.56	1 J	3 J	3 J	6.47	0.7 J	44	62	94
						Forb	Alfalfa	2.04	1 J	2 J	3 J	8.76	1 J	52	62	93.7
						Grass	Brome, thickspike wheatgrass, western wheatgrass	0.38	1 J	3 J	2 J	0.47	0.7 J	27	49	94.4
AT-9	Overburden Dump	90	171.2	20	6	Forage	Brome, thickspike wheatgrass, western wheatgrass, alfalfa	1.91	1 U	8	13	11.6	0.5 U	142	54	94.2
						Forb	Alfalfa	1.8	1 U	4 J	5	30.5	0.5 U	54	60	94.1
						Grass	Brome, thickspike wheatgrass, western wheatgrass	1.01	1 U	10	11	12.8	0.5 U	152	51	94.5
AT-10	Upland	90	84.4	15	12	Forb	Lupine	0.09 J	1 U	5 J	2 J	0.29 J	0.5 U	19	69	95.5
AT-11	Upland	85	31.6	15	12	Browse	Aspen, snowberry	1.96	1 U	5	2 J	0.08 J	0.5 U	128	54	96
						Forage	Slender wheatgrass, brome, Poa, geranium, lupine	0.29 J	1 U	3 J	1 U	0.08 J	0.5 U	28	53	95.9
						Forb	Geranium	0.14 J	1 U	4 J	1 U	0.08 J	0.5 U	22	65	94.9
							Lupine	0.11 J	1 U	4 J	2 J	0.16 J	0.5 U	16	67	96.3
						Grass	Slender wheatgrass, brome, Poa	0.38	1 U	4 J	1 U	0.08 J	0.5 U	37	47	96.6

Appendix B
Terrestrial Vegetation COPC Concentrations
(mg/Kg dry wt.)

Location	Station Type	Cover, Percent (%)	Biomass (g/m^2)	Litter (g/m^2)	Root Depth (in)	Vegetation Type	Species Included in the Sample	Cadmium	Chromium	Copper	Nickel	Selenium	Vanadium	Zinc	Moisture Content	Solids, Percent
A-Panel Transect (continued)																
AT-12	Upland	90	67.2	10	12	Browse	Aspen, snowberry	0.81	1 U	4 J	1 J	0.1 J	0.5 U	41	44	95.8
						Forage	Slender wheatgrass, brome, Poa, geranium, lupine	0.39	1 U	3 J	1 U	0.05 J	0.5 U	25	50	94.2
						Forb	Geranium	0.11 J	1 U	3 J	1 U	0.1 J	0.5 U	21	60	95.3
							Lupine	0.07 J	1 U	5 J	1 J	0.21 J	0.5 U	13	62	95.5
						Grass	Slender wheatgrass, brome, Poa	0.38	1 U	3 J	1 U	0.11 J	0.5 U	27	46	96.2
D-Panel North Transect																
DT-1	Upland	85	41.8	30	12	Browse	Aspen, snowberry, woodrose	0.84	1 U	11	2 J	0.07 J	0.5 U	119	45	96.1
						Forage	Slender wheatgrass, Poa sp., geranium, lupine	0.15 J	1 U	6 J	1 U	0.14 J	0.6 J	35	58	89.7
						Forb	Geranium	0.06 J	1 U	5	1 J	0.14 J	0.5 U	25	57	95
							Lupine	0.05 U	1 U	4 J	1 U	0.06 J	0.5 U	20	63	94.8
						Grass	Slender wheatgrass, Poa sp.	0.05 U	1 U	4 J	1 U	0.1 J	0.5 U	33	44	96.6
DT-2	Upland	85	29.2	25	16	Browse	Aspen, snowberry	0.48	1 U	11	2 J	0.09 J	0.5 U	120	46	95.8
						Forage	Slender wheatgrass, geranium, Frageria	0.06 J	1 U	5	1 U	0.09 J	0.5 U	33	44	95.6
						Forb	Frageria	0.12 J	1 U	4 J	1 U	0.15 J	0.5 U	28	34	95
							Geranium	0.05 U	1 U	6	1 U	0.08 J	0.5 U	27	59	94.9
						Grass	Slender wheatgrass	0.05 U	1 U	5 J	1 U	0.15 J	0.5 U	22	45	96.5
DT-3	Upland	80	36.2	30	14	Browse	Snowberry	0.05 U	1 U	8	1 U	0.19 J	0.5 U	33	33	96.6
						Forage	Lupine, geranium, slender wheatgrass	0.07 J	1 U	4 J	1 U	0.17 J	0.5 U	33	44	96.7
						Forb	Geranium	0.05 U	1 U	6	1 U	0.18 J	0.5 U	21	56	95.8
							Lupine	0.05 U	1 U	3 J	1 U	0.27 J	0.5 U	28	63	95.8
						Grass	Slender wheatgrass	0.06 J	1 U	4 J	1 U	0.09 J	0.5 U	26	43	96.6
DT-4	Upland	90	49.8	20	14	Browse	Aspen, snowberry	0.56	1 U	7	1 J	0.13 J	0.5 U	110	44	96.6
						Forage	Lupine, geranium, slender wheatgrass	0.08 J	1 U	5 J	1 U	0.11 J	0.5 U	41	61	96.1
						Forb	Geranium	0.07 J	1 U	5	1 J	0.13 J	0.5 U	36	48	95.4
							Lupine	0.05 U	1 U	5 J	1 J	0.3 J	0.5 U	35	58	95.3
						Grass	Slender wheatgrass	0.05 U	1 U	5	1 U	0.12 J	0.5 U	40	34	96.7

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Location	Station Type	Cover, Percent (%)	Biomass (g/m^2)	Litter (g/m^2)	Root Depth (in)	Vegetation Type	Species Included in the Sample	Cadmium	Chromium	Copper	Nickel	Selenium	Vanadium	Zinc	Moisture Content	Solids, Percent
D-Panel North Transect (continued)																
DT-5	Overburden Dump	20	29.2	5	7	Forage	Yellow sweet clover, western wheatgrass, thickspike wheatgrass, timothy, streambank wheatgrass	0.88	1 U	3 J	1 J	4.51	0.5 U	20	49	95.8
						Forb	Yellow sweet clover	0.69	1 U	4 J	4 J	26.4	0.5 U	26	53	95.1
						Grass	Western wheatgrass, thickspike wheatgrass, timothy, streambank wheatgrass	0.46	1 U	3 J	2 J	1.83	0.5 U	28	47	96.3
						Hyper-accumulator	Astragalus	2.74	1 J	5	8	13.4	0.8 J	104	36	95.6
DT-6	Overburden Dump	40	48.4	5	6	Forage	Yellow sweet clover, thickspike wheatgrass, timothy, orchard grass, brome	0.91	1 J	3 J	2 J	0.97	0.5 U	26	51	95.5
						Forb	Alfalfa	2.24	1 U	3 J	4 J	0.72	0.5 U	46	52	94.9
							Yellow sweet clover	0.82	1 U	2 J	1 J	1.2	0.5 U	22	51	94.5
						Grass	Thickspike wheatgrass, timothy, orchard grass, brome	0.89	1 U	4 J	3 J	0.86	0.5 U	34	43	95.7
DT-7	Overburden Dump	30	46.8	5	8	Forage	Western wheatgrass, thickspike wheatgrass, alfalfa, yellow sweet clover	0.74	1 J	3 J	2 J	0.67	0.9 J	22	49	96.3
						Forb	Alfalfa	1.46	2 J	5 J	3 J	2.64	1.6 J	27	54	95.6
							Yellow sweet clover	0.99	1 U	5 J	3 J	0.69	0.5 U	26	48	95.7
						Grass	Western wheatgrass, thickspike wheatgrass	0.33	1 U	2 J	1 U	0.71	0.5 U	14	48	96.7
DT-8	Overburden Dump	40	72.8	5	6	Forage	Western wheatgrass, thickspike wheatgrass, brome, pubescent wheatgrass, yellow sweet clover, alfalfa	0.8	1 U	4 J	2 J	2.66	0.5 J	33	51	96.3
						Forb	Alfalfa	1.01	1 U	4 J	3 J	21.5	0.5 U	48	48	95.5
							Yellow sweet clover	1.76	1 U	4 J	3 J	8.68	0.6 J	32	54	95.6
						Grass	Western wheatgrass, thickspike wheatgrass, brome, pubescent wheatgrass	0.36	1 U	3 J	1 U	2.36	0.5 J	16	40	96.9
						Hyper-accumulator	Astragalus	2.5	1 J	5 J	6	52.5	1.1 J	64	55	95.9

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(mg/Kg dry wt.)

Location	Station Type	Cover, Percent (%)	Biomass (g/m^2)	Litter (g/m^2)	Root Depth (in)	Vegetation Type	Species Included in the Sample	Cadmium	Chromium	Copper	Nickel	Selenium	Vanadium	Zinc	Moisture Content	Solids, Percent
D-Panel North Transect (continued)																
DT-9	Overburden Dump	65	82.8	20	11	Forage	Alfalfa, brome, western wheatgrass, thickspike wheatgrass	1.22	1 U	3 J	3 J	6.18	0.5 U	37	40	96.2
						Forb	Alfalfa	2.23	1 U	3 J	6	27.5	0.5 U	63	43	96
						Grass	Brome, western wheatgrass, thickspike wheatgrass	0.25 J	1 U	2 J	1 U	2.67	0.5 U	19	31	96.6
DT-10	Overburden Dump	45	134.4	10	10	Forage	Brome, western wheatgrass, thickspike wheatgrass, yarrow, alfalfa	4.24	1 J	4 J	3 J	17.7	0.7 J	53	48	97.4
						Forb	Alfalfa	0.74	1 U	3 J	1 U	5.13	0.5 U	23	45	97
							Yarrow	4.16	1 J	6	5 J	6.74	0.7 J	26	42	97.1
						Grass	Brome, western wheatgrass, thickspike wheatgrass	0.76	1 U	3 J	1 U	5.1	0.5 U	24	38	97
						Hyper-accumulator	Astragalus	3.28	1 J	4 J	9	55.7	1 J	68	49	96.5
DT-11	Overburden Dump	50	34.6	15	11	Forage	Western wheatgrass, thickspike wheatgrass, brome, timothy, yellow sweetclover	1.16	1 U	3 J	2 J	11	0.5 U	40	41	96.7
						Forb	Yellow sweet clover	1.47	1 U	5 J	7	13.6	0.5 U	47	45	93.8
						Grass	Western wheatgrass, thickspike wheatgrass, brome, timothy	0.81	1 U	3 J	3 J	6.32	0.5 U	49	47	94.2
						Hyper-accumulator	Astragalus	3.42	1 J	3 J	5	9.21	0.9 J	75	47	96.6
DT-12	Overburden Dump	45	22.8	10	8	Forage	Timothy, brome, orchardgrass, western wheatgrass, yarrow	1.67	1 J	3 J	2 J	2.98	0.7 J	28	49	94.1
						Forb	Yarrow	5.65	2 J	5	4 J	3.21	1.2 J	30	46	94.6
						Grass	Timothy, brome, orchardgrass, western wheatgrass	0.53	1 U	3 J	1 U	3.8	0.5 U	23	39	94.5
DT-13	Overburden Dump	50	86.8	30	13	Forage	Western wheatgrass, brome, orchardgrass, timothy, yarrow	1.81	2 J	3 J	4 J	4.91	1.2 J	37	47	94.7
						Forb	Yarrow	6.57	6	8	14	8.69	5.6	75	57	93.9
						Grass	Western wheatgrass, brome, orchardgrass, timothy	0.58	1 U	3 J	1 J	3.95	0.5 U	30	43	94.7
						Hyper-accumulator	Astragalus	4.26	2 J	4 J	7	11.5	1.6 J	80	63	93.8

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Location	Station Type	Cover, Percent (%)	Biomass (g/m^2)	Litter (g/m^2)	Root Depth (in)	Vegetation Type	Species Included in the Sample	Cadmium	Chromium	Copper	Nickel	Selenium	Vanadium	Zinc	Moisture Content	Solids, Percent
D-Panel South Transect																
DT-14	Upland	60	34.6	15	8	Browse	Snowberry, gooseberry, dogwood, Lonicera	0.05 U	1 U	4 J	1 U	1.13	0.5 U	27	49	93.6
						Forage	Geranium, potentilla, slender wheatgrass, streambank wheatgrass, timothy, orchard grass	0.09 J	1 U	3 J	1 U	0.28 J	0.5 U	21	47	93.5
						Forb	Geranium	0.05 U	1 U	4 J	1 U	0.73	0.5 U	53	49	93
							Potentilla	0.07 J	1 U	5 J	1 U	0.31	0.5 U	32	37	93.7
						Grass	Slender wheatgrass, streambank wheatgrass, timothy, orchard grass	0.06 J	1 U	3 J	1 U	0.19 J	0.5 U	24	43	94.6
DT-15	Upland	65	96.6	15	8	Browse	Gooseberry, Lonicera	0.05 U	1 U	5	1 U	1.13	0.5 U	25	54	94.7
						Forage	Thistle, geranium, streambank wheatgrass, slender wheatgrass, brome	0.06 J	1 U	3 J	1 U	0.7	0.5 U	15	47	94.8
						Forb	Geranium	0.05 U	1 U	4 J	1 U	1.32	0.5 U	23	41	93.3
							Thistle	0.24 J	1 U	9	1 U	2.1	0.5 U	33	60	94.3
						Grass	Streambank wheatgrass, slender wheatgrass, brome	0.05 U	1 U	4 J	1 U	0.54	0.5 U	19	41	94.6
DT-16	Upland	60	77.8	15	12	Browse	Cherry, snowberry	0.4	1 U	8	1 J	0.41	0.5 U	35	58	95.2
						Forage	Lupine, arrow leaved balsamroot, slender wheatgrass, streambank wheatgrass, Poa, brome	1.79	1 U	9	4 J	1.69	0.5 U	47	39	95.2
						Forb	Arrow leaved balsamroot	2.05	1 U	8	3 J	1.87	0.5 U	44	41	94.3
							Lupine	0.65	1 U	3 J	6	3.19	0.5 U	70	45	95.6
						Grass	Slender wheatgrass, streambank wheatgrass, Poa, brome	1.76	1 U	4 J	1 J	1.82	0.5 U	68	20	95.6
DT-17	Upland	20	26	10	10	Browse	Cherry, snowberry, sage, wood rose, skunkbush	0.43	1 U	8	2 J	0.41	0.5 U	36	39	95.3
						Forage	Brome, western wheatgrass	0.25 J	1 U	8	1 U	0.17 J	0.5 U	51	20	95.8
						Grass	Brome, western wheatgrass	0.24 J	1 U	9	1 U	0.21 J	0.5 U	54	19	95.8
DT-18	Overburden Dump	35	53.6	5	6	Forage	Basin wildrye, western wheatgrass, brome, timothy, orchardgrass, yellow sweet clover	0.7	1 U	2 J	1 U	0.85	0.5 U	18	49	95.3
						Forb	Alfalfa	3.49	1 U	5 J	4 J	55.2	0.5 U	68		94.6
							Yellow sweet clover	2.28	1 U	4 J	4 J	0.71	0.5 U	32	53	94.8
						Grass	Basin wildrye, western wheatgrass, brome, timothy, orchardgrass	0.74	1 U	2 J	1 U	1.15	0.5 U	18	41	95.4

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D-Panel South Transect (continued)																
DT-19	Overburden Dump	25	61.8	10	6	Forage	Timothy, western wheatgrass, Lactuca	2.62	1 U	2 J	1 J	0.11 J	0.5 U	28	53	95.9
						Forb	Prickly lettuce (Lactuca)	7.79	1 J	5 J	2 J	0.94	1.2 J	103	56	94.4
						Grass	Timothy, western wheatgrass	0.32	1 U	3 J	1 J	0.18 J	0.5 U	24	47	96
DT-20	Overburden Dump	75	407.2	20	8	Forage	Western wheatgrass, brome, Lactuca	1.28	1 U	3 J	1 U	3.04	0.5 U	39	57	95
						Forb	Prickly lettuce (Lactuca)	1.27	1 U	3 J	1 U	1.92	0.5 U	41	64	94.5
						Grass	Western wheatgrass, brome	0.15 J	1 U	4 J	1 U	4.93	0.5 U	30	40	95.5
DT-21	Overburden Dump	40	61.6	10	9	Forage	Western wheatgrass, timothy, brome	0.68	1 U	3 J	1 U	5.16	0.5 U	22	44	97
						Grass	Western wheatgrass, timothy, brome	0.52	1 U	3 J	1 U	5.41	0.5 U	23	45	96.7
DT-22	Overburden Dump	35	26.2	5	10	Forage	Western wheatgrass, timothy, brome	0.32	1 U	3 J	1 U	1.13	0.5 U	20	41	95.9
						Grass	Western wheatgrass, timothy, brome	0.53	1 U	3 J	1 U	1.88	0.5 U	21	40	95.2
DT-23	Overburden Dump	30	64.8	5	7	Forage	Western wheatgrass, timothy, brome, orchardgrass, yellow sweetclover	0.25 J	1 U	4 J	4 J	2.39	0.5 U	22	43	95.2
						Forb	Yellow sweet clover	0.92	1 U	3 J	3 J	5.81	0.5 U	28	43	94.2
						Grass	Western wheatgrass, timothy, brome, orchardgrass	0.09 J	1 U	2 J	1 U	0.83	0.5 U	14	37	95.8
						Hyper-accumulator	Aster	0.73	1 J	11	2 J	0.6	1.2 J	65	39	95.2
DT-24	Overburden Dump	45	97	10	12	Forage	Western wheatgrass, timothy, brome, yarrow	0.78	1 U	3 J	1 U	7.24	0.5 U	17	44	96.6
						Forb	Yarrow	2.51	1 J	7	3 J	1.43	0.7 J	27	49	96.5
						Grass	Western wheatgrass, timothy, brome	0.21 J	1 U	2 J	1 U	6.37	0.5 U	14	38	96.2
						Hyper-accumulator	Astragalus	2.55	1 U	3 J	3 J	7.34	0.5 U	54	47	96.3
DT-25	Overburden Dump	40	31.2	5	8	Forage	Western wheatgrass, timothy, brome, thickspike wheatgrass, yarrow	2.79	1 J	2 J	1 J	1.98	1.2 J	28	42	96
						Forb	Yarrow	7.22	4 J	6	8	2.91	3.7	38	45	95.3
						Grass	Western wheatgrass, timothy, brome, thickspike wheatgrass	0.97	1 J	2 J	1 U	2.53	0.7 J	29	40	94.6

Appendix B
Terrestrial Vegetation COPC Concentrations
(mg/Kg dry wt.)

Location	Station Type	Cover, Percent (%)	Biomass (g/m^2)	Litter (g/m^2)	Root Depth (in)	Vegetation Type	Species Included in the Sample	Cadmium	Chromium	Copper	Nickel	Selenium	Vanadium	Zinc	Moisture Content	Solids, Percent
D-Panel South Transect (continued)																
DT-26	Overburden Dump	30	38.6	5	14	Forage	Orchardgrass, timothy, brome, thickspike wheatgrass	3.7	2 J	4 J	2 J	0.7	1.3 J	26	50	95.9
						Forb	Yarrow	6.85	3 J	6	3 J	0.63	1.8 J	34	47	96.5
						Grass	Orchardgrass, timothy, brome, thickspike wheatgrass	1.13	2 J	4 J	3 J	0.78	0.9 J	40	36	96.4
DT-27	Upland	45	49.8	10	12	Browse	Sagebrush, Purshia, snowberry	0.13 J	1 U	4 J	1 U	0.14 J	0.5 U	26	38	94.1
						Forage	Poa, Brome, Sitanion, slender wheatgrass, arrow leaved balsamroot, Eriogonum umbellatum	0.05 U	1 J	3 J	1 U	0.08 J	0.7 J	14	44	94.4
						Forb	Arrow leaved balsamroot	0.2 J	1 J	4 J	1 U	0.22 J	0.8 J	20	48	94.1
							Eriogonum umbellatum	0.05 U	1 U	2 J	1 U	0.08 J	0.5 U	25	46	94.3
						Grass	Poa, Brome, Sitanion, slender wheatgrass	0.05 U	1 U	3 J	1 U	0.07 J	0.5 U	14	30	94.6
						Hyper-accumulator	Aster	0.41	1 J	5	1 U	0.17 J	1.2 J	22	35	93.4
DT-28	Upland	60	36.8	10	16	Browse	Snowberry, sagebrush, Purshia	0.17 J	1 U	5	1 U	0.08 J	0.5 U	27	44	95.7
						Forage	Poa, Brome, Sitanion, slender wheatgrass, leafy aster, yarrow	0.32	1 J	4 J	1 U	0.07 J	0.8 J	22	41	95.8
						Forb	Leafy aster	0.27 J	1 U	6	1 U	0.08 J	0.5 U	26	48	94.7
							Yarrow	0.49	2 J	4 J	1 U	0.08 J	1 J	22	49	94.7
						Grass	Poa, Brome, Sitanion, slender wheatgrass	0.05 U	1 U	3 J	1 U	0.09 J	0.5 U	15	30	95.9
						Hyper-accumulator	Aster	0.31	1 J	5	1 U	0.1 J	0.9 J	21	36	95.1
DT-29	Upland	80	69	20	12	Browse	Snowberry, aspen	0.26 J	1 U	5	1 J	0.08 J	0.5 U	33	35	95.5
						Forage	Poa, Brome, Sitanion, fescue, leafy aster, Eriogonum umbellatum	0.13 J	1 U	3 J	1 U	0.07 J	0.5 U	17	31	95.7
						Forb	Leafy aster	0.59	1 U	7	1 U	0.1 J	0.5 U	27	52	95.3
							Eriogonum umbellatum	0.05 U	1 U	3 J	1 U	0.07 J	0.5 U	21	41	96.3
						Grass	Poa, Brome, Sitanion, fescue	0.05 U	1 U	3 J	1 U	0.07 J	0.5 U	12	31	96
						Hyper-accumulator	Aster	0.17 J	1 U	6	1 U	0.09 J	0.5 U	31	47	94.6

Appendix B
Terrestrial Vegetation COPC Concentrations
(mg/Kg dry wt.)

Location	Station Type	Cover, Percent (%)	Biomass (g/m^2)	Litter (g/m^2)	Root Depth (in)	Vegetation Type	Species Included in the Sample	Cadmium	Chromium	Copper	Nickel	Selenium	Vanadium	Zinc	Moisture Content	Solids, Percent
Seep DS-7																
DT-35	Upland	60	73.2	10	17	Browse	Snowberry, sage, rabbitbrush	0.35	1 U	14	2 J	0.16 J	0.5 U	41	48	95.1
						Forage	Eriogonum umbellatum, timothy, Poa, slender wheatgrass, Sitanion	0.07 J	1 U	4 J	1 J	0.11 J	0.5 U	21	38	96.1
						Forb	Eriogonum umbellatum	0.05 U	1 U	4 J	1 J	0.13 J	0.5 U	25	49	95.4
						Grass	Timothy, Poa, slender wheatgrass, Sitanion	0.11 J	1 U	3 J	1 U	0.14 J	0.6 J	25	30	96.6
						Hyper-accumulator	Aster	0.35	1 U	8	2 J	0.16 J	0.5 U	35	39	96.3
DT-36	Overburden Dump	65	137.2	25	11	Forage	Timothy, brome, western wheatgrass, Poa, thistle	0.99	1 U	2 J	2 J	15.8	0.5 U	24	57	96.3
						Forb	Thistle	3.13	1 U	6	2 J	6.39	0.5 U	28	58	96.3
						Grass	Timothy, brome, western wheatgrass, Poa	0.44	1 U	3 J	1 U	2.03	0.7 J	16	43	96.4
						Hyper-accumulator	Astragalus	3.23	2 J	4 J	3 J	10.5	1.7 J	48	56	95.7
DT-37	Upland	80	61	30	14	Browse	Snowberry, sage, rabbitbrush	1.42	1 U	13	2 J	3.17	0.5 U	47	45	94.1
						Forage	Brome, timothy, thickspike, slender wheatgrass, fringed sage, Eriogonum umbellatum	1.24	3 J	6	3 J	9	2.3 J	41	49	93.6
						Forb	Fringed sage	3.67	1 U	10	1 J	2.07	0.5 U	57	51	93.4
							Eriogonum umbellatum	0.05 U	1 U	5	1 U	2.14	0.5 U	41	49	94
						Grass	Brome, timothy, thickspike, slender wheatgrass	1.43	1 J	3 J	5	6.43	1.2 J	42	47	94
						Hyper-accumulator	Aster	1.66	4 J	15	5	23.7	4.7	112	41	93.5
DT-38-S	Overburden Dump	60	not measured	2	10	Forage	Poa, timothy, unknown forb	0.5	2 J	2 J	4 J	125	1.2 J	50	67	93.4
						Forb	Phlox	0.19 J	1 U	2 J	3 J	241	0.6 J	70	40	92.3
						Grass	Poa, Timothy	0.62	1 J	2 J	4 J	53.4	1.4 J	45	55	94.2

Appendix B
Terrestrial Vegetation COPC Concentrations
(mg/Kg dry wt.)

Location	Station Type	Cover, Percent (%)	Biomass (g/m^2)	Litter (g/m^2)	Root Depth (in)	Vegetation Type	Species Included in the Sample	Cadmium	Chromium	Copper	Nickel	Selenium	Vanadium	Zinc	Moisture Content	Solids, Percent
Seep ES-3																
EP-3-I	Seep (Inundated)	60	27	2	12	Forage	Brome, timothy, western wheatgrass, thistle	0.36	2 J	5	2 J	0.31	1 J	23	56	93.9
						Forb	Thistle	1.63	1 J	6	1 J	0.09 J	0.9 J	27	69	93.7
						Grass	Brome, timothy, western wheatgrass	0.19 J	1 J	5 J	1 U	0.21 J	0.9 J	23	51	94.4
EP-3-R	Seep (Reference)	50	24.6	1	10	Browse	Aspen, snowberry	0.57	1 U	8	3 J	0.13 J	0.5 U	47	55	95
						Forage	Brome, fescue, Poa, yarrow	0.83	2 J	5	2 J	0.19 J	1.1 J	22	49	94.4
						Forb	Yarrow	1.27	1 U	8	1 J	0.11 J	0.7 J	31	45	93.6
						Grass	Brome, fescue, Poa	0.17 J	1 U	4 J	1 J	0.09 J	0.6 J	18	52	94.4
EP-3-S	Seep (Saturated)	60	44.6	1	9	Forage	Brome, fescue, Poa, yarrow, thistle	1.8	4 J	7	4 J	0.31	3.2	30	52	94.1
						Forb	Thistle	5.12	10	11	8	0.43	7.8	44	64	94.2
							Yarrow	1.6	8	7	6	0.33	6	37	47	94.2
						Grass	Brome, fescue, Poa	0.71	8	6	5	0.38	5.6	36	49	94.5
Seep ES-4																
EP-4-I	Seep (Inundated)	75	49.4	3	10	Forage	Orchardgrass, timothy, brome, Rumex	0.77	1 J	5 J	2 J	113	0.7 J	19	59	93.9
						Forb	Rumex	0.9	1 U	5	2 J	129	0.5 U	22	55	92.8
						Grass	Orchardgrass, timothy, brome	0.43	1 U	6	2 J	109	0.5 U	29	59	93.5
						Hyper-accumulator	Astragalus	2.17	1 U	3 J	7	254	0.5 U	38	58	94.1
EP-4-R	Seep (Reference)	50	17.4	1	4	Forage	Poa, orchardgrass, timothy, brome, lupidium	1.84	1 U	6	1 U	1.93	0.5 U	22	65	93.5
						Forb	Lupidium (peppergrass)	2.02	1 U	5	1 U	1.9	0.5 U	20	52	92.9
						Grass	Poa, orchardgrass, timothy, brome	0.17 J	1 U	7	1 U	0.75	0.5 U	22	65	93.1
EP-4-S	Seep (Saturated)	65	40	3	10	Forage	Poa, orchardgrass, timothy, red clover, yarrow	1.43	1 J	5	3 J	118	0.9 J	33	55	93
						Forb	Red clover	0.84	2 J	9	4 J	178	2.2 J	40	64	93.2
							Yarrow	2.11	3 J	7	4 J	86.7	2.2 J	35	45	93.4
						Grass	Poa, orchardgrass, timothy	0.5	1 J	4 J	3 J	203	1.3 J	35	56	93.3

Appendix B
Terrestrial Vegetation COPC Concentrations
(mg/Kg dry wt.)

Location	Station Type	Cover, Percent (%)	Biomass (g/m^2)	Litter (g/m^2)	Root Depth (in)	Vegetation Type	Species Included in the Sample	Cadmium	Chromium	Copper	Nickel	Selenium	Vanadium	Zinc	Moisture Content	Solids, Percent
Seep ES-5																
EP-5-1	Lowland	50	30.4	1	12	Forb	Sagebrush	1.57	1 U	8	2 J	35	0.6 J	29		93.7
							Poa	0.58	2 J	6	2 J	19.5	2.3 J	30		94
							Yarrow	0.66	1 U	7	2 J	15	0.6 J	29	53	94.6
						Grass	Poa	0.57	2 J	6	2 J	18.3	2.6 J	30	42	95.1
EP-5-2	Lowland	80	50.4	5	12	Browse	Sagebrush	0.54	1 U	7	2 J	31.6	0.5 U	43	53	92.6
						Forage	Poa, slender wheatgrass	1.15	1 J	6	2 J	39.8	1.7 J	37	46	96.1
						Forb	Yarrow	1.05	1 U	5	1 J	30.6	0.5 U	31	60	94.6
						Grass	Poa, slender wheatgrass, yarrow	0.44	1 U	5 J	1 U	77.8	0.5 U	31	50	94.6
EP-5-3	Lowland	70	44.4	10	12	Forage	Streambank wheatgrass, Poa, brome, yarrow	0.5	1 U	6	1 U	19.2	0.5 U	27	32	96.2
						Forb	Yarrow	0.93	1 U	8	1 J	14.1	0.7 J	34	45	94.4
						Grass	Streambank wheatgrass, Poa, brome	0.37	1 U	5	1 U	23.6	0.5 U	23	39	95.8
EP-5-4	Lowland	85	37.4	5	10	Browse	Sagebrush	1.19	1 U	14	3 J	30.6	0.5 U	30	49	95.3
						Forage	Streambank wheatgrass, Poa, brome, yarrow	1.04	1 U	7	1 U	15.2	0.5 U	29	42	95
						Forb	Yarrow	1.28	1 U	7	1 U	19.6	0.7 J	30	45	94.7
						Grass	Streambank wheatgrass, Poa, brome	1.14	1 U	7	1 U	16.4	0.6 J	29	42	95.1
ES-5-I	Seep (Inundated)	60	21.8	1	12	Browse	Sagebrush, aspen	1.43	1 U	6	2 J	22.2	0.8 J	39	54	95
						Forage	Slender wheatgrass, Poa, brome	1.03	2 J	5	2 J	18.2	2.1 J	37	44	95.3
						Forb	Yarrow	0.93	1 U	4 J	1 J	21.1	0.8 J	27	51	95.2
						Grass	Slender wheatgrass, Poa, brome	1.08	2 J	5	2 J	19	2.2 J	37	44	97.6
ES-5-R	Seep (Reference)	60	22.8	2	12	Browse	Sagebrush	0.56	1 U	12	3 J	0.2 J	0.5 U	29	56	94.5
						Forage	Poa, yarrow	1.41	1 J	8	3 J	3.09	1.6 J	28	49	94.9
						Forb	Yarrow	1.57	2 J	9	2 J	3.1	2.3 J	32	44	94.6
						Grass	Poa	0.32	1 J	6	1 U	0.36	1 J	24	42	95.2
ES-5-S	Seep (Saturated)	70	45.4	1	10	Forage	Slender wheatgrass, Poa, timothy	0.1 J	2 J	3 J	1 J	153	1.4 J	14	50	95.3
						Grass	Slender wheatgrass, Poa, timothy	0.11 J	2 J	3 J	2 J	159	2 J	15	50	94.8

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(mg/Kg dry wt.)

Location	Station Type	Cover, Percent (%)	Biomass (g/m^2)	Litter (g/m^2)	Root Depth (in)	Vegetation Type	Species Included in the Sample	Cadmium	Chromium	Copper	Nickel	Selenium	Vanadium	Zinc	Moisture Content	Solids, Percent
Pole Canyon Dump																
PT-1	Upland	65	28.8	30	16	Browse	Aspen, snowberry	0.16 J	1 U	8	1 J	0.17 J	0.5 U	70	39	94.4
						Forage	Slender wheatgrass, Frageria, alfalfa, geranium	0.05 U	1 U	4 J	1 U	0.15 J	0.5 U	22	44	93.9
						Forb	Alfalfa	4.65	1 J	4 J	12	12.4	1.4 J	104	62	93.2
							Frageria	0.07 J	1 U	4 J	1 U	0.15 J	0.5 U	17	38	93.1
							Geranium	0.05 J	1 U	5 J	1 U	0.18 J	0.5 U	21	55	93.8
						Grass	Slender wheatgrass	0.05 U	1 U	4 J	1 U	0.14 J	0.5 U	25	39	95.1
PT-2	Upland	60	31.2	30	12	Browse	Aspen, snowberry	0.45	1 U	11	1 J	0.11 J	0.5 U	79	49	95
						Forage	Slender wheatgrass, geranium	0.05 U	1 U	6	1 U	0.1 J	0.5 U	29	51	94.4
						Forb	Geranium	0.06 J	1 U	4 J	1 U	0.24 J	0.5 U	22	45	93.2
						Grass	Slender wheatgrass	0.05 U	1 U	6	1 U	0.14 J	0.5 U	30	45	94.8
PT-3	Upland	65	23	20	14	Browse	Aspen	0.55	1 U	11	2 J	0.25 J	0.5 U	95	42	95.2
						Forage	Geranium, lupine, Poa	0.06 J	1 U	5	1 U	0.18 J	0.5 U	27	38	94
						Forb	Geranium	0.05 U	1 U	5	1 U	0.14 J	0.5 U	22	52	93.3
							Lupine	0.05 U	1 U	4 J	1 U	0.15 J	0.5 U	26	59	93.9
						Grass	Poa	0.06 J	1 U	4 J	1 U	0.22 J	0.5 U	23	28	95
PT-4	Upland	65	27.4	20	13	Browse	Aspen, snowberry	0.23 J	1 U	9	1 J	0.23 J	0.5 U	129	32	94.6
						Forage	Geranium, streambank wheatgrass, brome	0.05 U	1 U	4 J	1 U	0.34	0.5 U	26	46	94.4
						Forb	Geranium	0.07 J	1 U	4 J	1 U	0.67	0.5 U	27	53	93.1
						Grass	Streambank wheatgrass, brome	0.05 U	1 U	5	1 U	0.59	0.5 U	20	30	94.5
						Hyper-accumulator	Aster	2.22	1 U	11	1 U	1.04	0.5 U	84	33	92.9
PT-5	Upland	65	84.8	30	10	Browse	Snowberry, buffaloberry, Lonicera sp., gooseberry	0.15 J	1 U	7	1 U	0.36	0.5 U	27	38	94.2
						Forage	Geranium, yarrow, Streambank wheatgrass, brome, carex	0.22 J	1 U	4 J	1 U	0.36	0.5 U	20	40	94.4
						Forb	Geranium	0.07 J	1 U	5 J	1 U	1.24	0.5 U	21	47	93.2
							Yarrow	1.94	1 U	8	1 J	1.09	0.5 U	36	29	94.1
						Grass	Streambank wheatgrass, brome	0.12 J	1 U	4 J	1 U	0.49	0.5 U	17	43	94.7
						Hyper-accumulator	Aster	2.24	1 U	11	1 U	0.96	0.5 U	85	34	93.1

Appendix B
Terrestrial Vegetation COPC Concentrations
(mg/Kg dry wt.)

Location	Station Type	Cover, Percent (%)	Biomass (g/m^2)	Litter (g/m^2)	Root Depth (in)	Vegetation Type	Species Included in the Sample	Cadmium	Chromium	Copper	Nickel	Selenium	Vanadium	Zinc	Moisture Content	Solids, Percent
Pole Canyon Dump (continued)																
PT-6	Upland	65	57	30	10	Browse	Willow, Lonicera sp., gooseberry	0.53	1 U	4 J	1 U	0.3	0.5 U	69	40	96.8
						Forage	Carex, brome, juncus, Frageria	0.5	1 U	4 J	1 J	0.65	0.5 U	28	38	97.1
						Forb	Frageria	0.6	1 U	4 J	1 U	0.45	0.5 U	23	38	96.4
						Grass	Carex, brome, juncus	0.84	1 U	4 J	2 J	0.93	0.5 U	44	18	97.1
PT-7	Overburden Dump	35	136.2	5	9	Forage	Timothy, orchardgrass, brome, western wheatgrass, thickspike wheatgrass, alfalfa, yellow sweetclover	0.47	1 U	3 J	2 J	29.8	0.5 U	29	34	96.9
						Forb	Alfalfa	1.22	1 U	3 J	3 J	145	0.5 U	47	52	96.3
							Yellow sweet clover	0.5	1 U	4 J	2 J	61	0.5 U	27	47	95.7
						Grass	Timothy, orchardgrass, brome, western wheatgrass, thickspike wheatgrass	0.2 J	1 U	3 J	1 J	17.7	0.5 U	21	43	96.8
						Hyper-accumulator	Astragalus	0.97	1 U	3 J	3 J	74.8	0.5 U	36	49	96
PT-8	Overburden Dump	40	108	10	6	Forage	Thickspike wheatgrass, western wheatgrass, timothy, orchard grass, brome	0.07 J	1 U	3 J	1 U	1.6	0.5 U	19	40	96.8
						Grass	Thickspike wheatgrass, western wheatgrass, timothy, orchard grass, brome	0.09 J	1 U	4 J	1 U	1.96	0.5 U	21	37	94.8
						Hyper-accumulator	Astragalus	1.04	1 U	3 J	4 J	28.3	0.5 U	37	53	95.9
PT-9	Overburden Dump	20	36	10	7	Forage	Western wheatgrass, timothy, orchard grass, brome	0.28 J	2 J	3 J	2 J	1.1	0.8 J	22	29	94.8
						Grass	Western wheatgrass, timothy, orchard grass, brome	0.31	1 J	5 J	2 J	4.33	0.7 J	23	38	94.9
PT-10	Overburden Dump	60	71.2	5	11	Forage	Thickspike wheatgrass, timothy, orchard grass, brome, yellow sweetclover	3.04	1 U	5 J	4 J	3.77	1.1 J	56	57	94.2
						Forb	Yellow sweet clover	4.06	4 J	6	11	11.1	5.5	68	57	93.3
						Grass	Thickspike wheatgrass, timothy, orchard grass, brome	2.12	1 U	5 J	3 J	2.77	1.1 J	53	53	93.6

Appendix B
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Location	Station Type	Cover, Percent (%)	Biomass (g/m^2)	Litter (g/m^2)	Root Depth (in)	Vegetation Type	Species Included in the Sample	Cadmium	Chromium	Copper	Nickel	Selenium	Vanadium	Zinc	Moisture Content	Solids, Percent
Pole Canyon Dump (continued)																
PT-11	Overburden Dump	90	226.2	20	10	Forage	Thickspike wheatgrass, western wheatgrass, crested wheatgrass, brome, alfalfa	2.11	1 U	5 J	8	7.84	0.6 J	103	60	95
						Forb	Alfalfa	1.98	1 U	5 J	7	7.85	0.5 U	98	58	94.3
						Grass	Thickspike wheatgrass, western wheatgrass, crested wheatgrass, brome	0.82	1 U	6	6	2.52	0.5 U	97	51	94.7
PT-12	Overburden Dump	70	186.8	10	12	Forage	Thickspike wheatgrass, western wheatgrass, streambank wheatgrass, brome, alfalfa	1.83	1 U	3 J	4 J	8.74	0.5 U	56	63	94.8
						Forb	Alfalfa	2.21	1 U	4 J	15	30	0.5 U	96	58	94.3
						Grass	Thickspike wheatgrass, western wheatgrass, streambank wheatgrass, brome	0.49	1 U	4 J	2 J	3.97	0.5 U	43	48	95.5
PT-13	Overburden Dump	90	204.6	10	11	Forage	Western wheatgrass, streambank wheatgrass, brome, alfalfa	2.58	1 U	5 J	9	7.5	0.5 U	71	58	93.5
						Forb	Alfalfa	2.82	1 U	6	13	7.13	0.5 U	86	61	93.7
						Grass	Western wheatgrass, streambank wheatgrass, brome	1.39	1 U	4 J	1 U	3.93	0.5 U	52	53	94.7
PT-14	Upland	65	107.8	20	18	Browse	Sagebrush, aspen	0.22 J	1 U	14	1 J	0.11 J	0.5 U	26	61	95.2
						Forage	Timothy, western wheatgrass, yarrow, arrow leaved balsamroot	0.09 J	1 U	4 J	1 U	0.09 J	0.5 U	20	50	95.1
						Forb	Arrow leaved balsamroot	0.12 J	1 U	10	1 U	0.21 J	0.5 U	24	56	94.5
							Yarrow	0.66	1 U	5	1 U	0.2 J	0.5 U	22	44	94.7
						Grass	Timothy, western wheatgrass	0.05 U	1 U	3 J	1 U	0.09 J	0.5 U	22	49	95.2
PT-15	Upland	40	76	5	13	Browse	Snowberry, sagebrush, aspen	0.86	1 U	11	1 U	0.1 J	0.5 U	54	50	94.1
						Forage	Timothy, Poa, slender wheatgrass, streambank wheatgrass, alfalfa	0.11 J	1 U	2 J	1 U	0.1 J	0.5 U	20	33	94.9
						Forb	Alfalfa	0.11 J	1 U	3 J	1 U	0.09 J	0.5 U	516	69	95
							Eriogonum umbellatum	0.06 J	1 U	2 J	1 U	0.11 J	0.5 U	25	37	96.7
						Grass	Timothy, Poa, slender wheatgrass, streambank wheatgrass	0.05 U	1 U	3 J	1 U	0.05 U	0.5 U	21	33	95

Appendix B
Terrestrial Vegetation COPC Concentrations
(mg/Kg dry wt.)

Location	Station Type	Cover, Percent (%)	Biomass (g/m^2)	Litter (g/m^2)	Root Depth (in)	Vegetation Type	Species Included in the Sample	Cadmium	Chromium	Copper	Nickel	Selenium	Vanadium	Zinc	Moisture Content	Solids, Percent
Pole Canyon Dump (continued)																
DT-30	Overburden Dump	85	325.6	30	10	Forage	Brome, timothy, orchardgrass, thickspike wheatgrass, western wheatgrass, yellow sweetclover, alfalfa	0.66	1 U	6	10	26.6	0.5 U	52	46	96.3
						Forb	Alfalfa	3.04	1 U	4 J	10	14.8	0.5 U	87	52	96.5
							Yellow sweet clover	3.67	1 U	6	12	37	0.5 U	78	50	94.7
						Grass	Brome, timothy, orchardgrass, thickspike wheatgrass, western wheatgrass	0.25 J	1 U	5 J	6	4.51	0.5 U	32	30	96.6
DT-31	Overburden Dump	95	231.6	30	14	Forage	Pubescent wheatgrass, western wheatgrass, thickspike wheatgrass, timothy, orchardgrass, brome, alfalfa	0.75	1 U	4 J	1 J	6.97	0.5 U	32	38	96.3
						Forb	Alfalfa	1.49	1 U	6	4 J	13.8	0.5 U	47	54	95.9
						Grass	Pubescent wheatgrass, western wheatgrass, thickspike wheatgrass, timothy, orchardgrass, brome	0.11 J	1 U	4 J	1 U	0.39	0.5 U	21	41	96.7
DT-32	Upland	60	265.2	10	12	Browse	Snowberry, Lonicera, sagebrush	0.32	1 U	4 J	1 U	1.5	0.5 U	29	25	96.1
						Forage	Streambank wheatgrass, western wheatgrass, thickspike wheatgrass, timothy, orchardgrass, brome, alfalfa, yellow sweetclover	1.12	1 U	5 J	3 J	7.77	0.5 U	45	47	95.5
						Forb	Alfalfa	2.26	1 U	5 J	5 J	12.1	0.5 U	57	50	95.9
							Yellow sweet clover	2.15	1 U	5 J	5 J	11.4	0.5 U	56	52	95.8
						Grass	Streambank wheatgrass, western wheatgrass, thickspike wheatgrass, timothy, orchardgrass, brome	0.22 J	1 U	4 J	1 U	1.81	0.5 U	30	44	95.7
						Hyper-accumulator	Aster	1.8	1 U	5	1 U	3.26	0.5 U	49	45	95.4

Appendix B
Terrestrial Vegetation COPC Concentrations
(mg/Kg dry wt.)

Location	Station Type	Cover, Percent (%)	Biomass (g/m^2)	Litter (g/m^2)	Root Depth (in)	Vegetation Type	Species Included in the Sample	Cadmium	Chromium	Copper	Nickel	Selenium	Vanadium	Zinc	Moisture Content	Solids, Percent
Pole Canyon Dump (continued)																
DT-33	Upland	65	58.6	10	11	Browse	Aspen, snowberry	1.42	1 U	8	3 J	0.86	0.5 U	51	28	95.9
						Forage	Streambank wheatgrass, western wheatgrass, thickspike wheatgrass, timothy, orchardgrass, brome, alfalfa, yellow sweetclover	1.55	1 U	5	4 J	4.53	0.5 U	57	44	95.7
						Forb	Alfalfa	2.44	1 U	6	5 J	14.1	0.5 U	51	54	95.4
							Yellow sweet clover	2.95	1 U	6	10	9.6	0.5 U	56	40	94.7
						Grass	Streambank wheatgrass, western wheatgrass, thickspike wheatgrass, timothy, orchardgrass, brome	0.09 J	1 U	3 J	1 U	0.12 J	0.5 U	16	33	95.9
DT-34	Upland	95	94.2	30	12	Browse	Snowberry	0.33	1 U	8	3 J	2.99	0.5 U	54	20	95.7
						Forage	Pubescent wheatgrass, western wheatgrass, thickspike wheatgrass, timothy, orchardgrass, brome, alfalfa	1.21	1 U	4 J	3 J	12.3	0.5 U	46	44	95.9
						Forb	Alfalfa	2.4	1 U	4 J	7	46.6	0.5 U	62	54	94.9
							Yellow sweet clover	4.04	1 J	6	21	104	0.8 J	76	52	93.8
						Grass	Pubescent wheatgrass, western wheatgrass, thickspike wheatgrass, timothy, orchardgrass, brome	0.35	1 U	4 J	3 J	3.64	0.6 J	34	33	96.4
Sage Valley																
SV-1A	Pasture	85	72.4	10	10	Browse	Sagebrush	0.33	1 U	14	1 J	0.28 J	0.5 U	29	48	95.5
						Forage	Poa, thickspike wheatgrass, lupine, yarrow	0.18 J	1 U	5 J	1 U	0.28 J	0.6 J	25	48	94.6
						Forb	Lupine	0.07 J	1 U	3 J	1 J	0.46	0.5 U	32	51	93.9
							Yarrow	0.97	1 U	12	1 J	0.32	1.1 J	36	48	94.2
						Grass	Poa, thickspike wheatgrass	0.15 J	1 U	6	1 U	0.21 J	0.5 U	20	40	95
SV-2	Pasture	80	23	10	12	Browse	Sagebrush	0.64	1 U	14	1 J	0.32	0.5 U	33	52	94.6
						Forage	Streambank wheatgrass, Stipa, Poa, lupine, yarrow	0.23 J	1 U	5 J	1 U	0.18 J	0.6 J	22	49	95.1
						Forb	Lupine	0.07 J	1 U	3 J	1 J	0.84	0.5 U	22	61	94.6
							Yarrow	0.64	1 U	7	1 U	0.11 J	0.6 J	23	45	94.7
						Grass	Streambank wheatgrass, Stipa, Poa	0.21 J	1 U	7	1 J	0.17 J	1.1 J	28	40	95.8

Appendix B
Terrestrial Vegetation COPC Concentrations
(mg/Kg dry wt.)

Location	Station Type	Cover, Percent (%)	Biomass (g/m^2)	Litter (g/m^2)	Root Depth (in)	Vegetation Type	Species Included in the Sample	Cadmium	Chromium	Copper	Nickel	Selenium	Vanadium	Zinc	Moisture Content	Solids, Percent
Sage Valley (continued)																
SV-3	Pasture	80	14.6	7	13	Browse	Sagebrush, snakeweed	0.43	1 U	13	1 J	0.16 J	0.9 J	30	50	94.7
						Forage	Poa, yarrow	1.04	1 U	6	1 J	0.16 J	0.9 J	27	40	94.2
						Forb	Yarrow	0.75	1 U	8	1 U	0.21 J	0.5 J	29	49	94.3
						Grass	Poa	0.2 J	1 U	6	1 J	0.24 J	0.6 J	22	39	95.1
SV-4	Pasture	60	34.2	15	13	Browse	Sagebrush	0.63	1 U	16	1 J	0.26 J	0.5 U	38	53	94.4
						Forage	Poa, streambank wheatgrass, lupine, Eriogonum umbellatum	0.36	1 J	6	2 J	0.25 J	1.3 J	51	44	94.6
						Forb	Eriogonum umbellatum	0.12 J	1 J	4 J	1 J	0.23 J	0.9 J	37	46	93.1
							Lupine	0.15 J	1 U	4 J	2 J	0.96	0.6 J	39	60	92.9
						Grass	Poa, streambank wheatgrass	0.35	1 U	5	1 U	0.27 J	0.5 J	24	43	93.3
						Hyper-accumulator	Aster	0.23 J	1 U	9	1 U	1.71	0.5 U	35	45	94.4
SV-5	Pasture	65	23	5	13	Browse	Sagebrush	0.71	1 U	10	1 U	0.61	0.5 U	24	52	93.1
						Forage	Poa, timothy, thickspike wheatgrass, yarrow, lupine	0.31	1 U	5	1 J	0.35	0.5 U	27	35	93.2
						Forb	Lupine	0.1 J	1 J	3 J	1 J	0.31	0.6 J	33	56	93.3
							Yarrow	0.61	1 J	8	1 J	0.26 J	0.7 J	26	47	93.1
						Grass	Poa, timothy, thickspike wheatgrass	0.2 J	1 U	5	1 J	0.22 J	0.5 U	29	38	94
SV-6	Pasture	70	20	5	14	Browse	Sagebrush	1.28	1 J	11	2 J	5.5	1.1 J	37	52	93.5
						Forage	Poa, lupine, yarrow	0.49	1 U	6	1 J	0.46	0.8 J	29	46	93.4
						Forb	Lupine	0.09 J	1 U	2 J	1 J	7.05	0.7 J	21	55	94.7
							Yarrow	0.53	1 U	8	1 J	1.4	0.6 J	26	55	95
						Grass	Poa	0.3	1 J	6	1 J	0.19 J	1.3 J	22	35	95.2
SV-7	Pasture	75	46.4	5	14	Browse	Sagebrush	0.37	1 U	11	1 J	1.14	0.5 U	25	47	94.1
						Forage	Timothy, Poa, yarrow, lupine	0.26 J	1 U	4 J	1 U	0.59	0.5 U	19	39	94.7
						Forb	Lupine	0.06 J	1 U	4 J	1 J	5.3	0.5 U	23	53	93.8
						Forb	Yarrow	0.55	1 U	8	1 U	0.39	0.5 U	23	53	95.2
						Grass	Timothy, Poa	0.28 J	1 U	5 J	1 U	0.17 J	0.5 J	26	23	95.5
						Hyper-accumulator	Aster	0.53	1 J	12	2 J	1.05	1.1 J	40	49	94.4
SV-8	Pasture	90	95	7	14	Browse	Snakeweed, sagebrush	0.21 J	1 U	8	1 U	0.08 J	0.5 U	21	49	94.6
						Forage	Timothy, slender wheatgrass, Poa, yarrow, lupine	0.38	1 U	6	1 J	0.05 U	0.5 U	21	48	97.2
						Forb	Lupine	0.05 J	1 U	4 J	2 J	0.06 J	0.5 U	26	50	96.8
							Yarrow	0.69	1 U	7	1 U	0.11 J	0.5 U	23	47	96.7
						Grass	Timothy, slender wheatgrass, Poa	0.25 J	1 U	4 J	1 U	0.08 J	0.5 U	25	43	97.3
						Hyper-accumulator	Aster	0.53	1 U	9	1 J	0.14 J	0.5 U	32	48	94.4

Appendix B
Terrestrial Vegetation COPC Concentrations
(mg/Kg dry wt.)

Location	Station Type	Cover, Percent (%)	Biomass (g/m^2)	Litter (g/m^2)	Root Depth (in)	Vegetation Type	Species Included in the Sample	Cadmium	Chromium	Copper	Nickel	Selenium	Vanadium	Zinc	Moisture Content	Solids, Percent
Sage Valley (continued)																
SV-9	Pasture	90	87.2	10	16	Forage	Timothy, brome, lupine, red clover	0.11 J	1 U	5 J	1 U	0.07 J	0.5 U	19	41	97.2
						Forb	Lupine	0.05 U	1 U	2 J	1 U	0.08 J	0.5 U	14	56	96.9
							Red clover	0.05 U	1 U	4 J	1 U	0.09 J	0.5 U	24	47	96.7
						Grass	Timothy, brome	0.25 J	1 U	5 J	1 U	0.05 J	0.5 U	21	47	97.4
						Hyper-accumulator	Aster	0.49	1 U	11	1 U	0.1 J	0.5 U	41	42	97.1
SV-10	Pasture	90	148	5	12	Forage	Timothy, brome, lupine, red clover	0.05 U	1 U	3 J	1 U	16.6	0.5 U	17	54	96.9
						Forb	Lupine	0.1 J	1 U	2 J	1 U	12.5	0.5 U	18	59	94.5
						Grass	Timothy, brome	0.17 J	1 U	4 J	1 J	27.3	0.5 U	25	45	94.8
SV-11	Pasture	95	84.8	7	15	Forage	Timothy, dandelion	0.14 J	1 U	3 J	1 U	0.64	0.5 J	12	50	94.8
						Forb	Dandelion	0.53	1 U	8	1 U	2.22	0.5 U	28	55	93.2
						Grass	Timothy	0.12 J	1 U	4 J	1 U	1.26	0.5 U	18	41	94.5
						Hyper-accumulator	Aster	0.59	1 U	9	1 U	0.18 J	0.5 U	34	41	94
SV-12	Pasture	100	155	15	16	Forage	Timothy, red clover	0.11 J	1 U	6	1 U	0.08 J	0.5 U	32	61	94.1
						Forb	Red clover	0.08 J	1 U	6	1 U	0.06 J	0.5 U	40	62	94
						Grass	Timothy	0.08 J	1 U	4 J	1 U	0.08 J	0.5 U	20	56	94.2
						Hyper-accumulator	Aster	0.49	1 U	7	1 U	0.07 J	0.5 U	30	43	93.9
SV-13	Pasture	100	151	25	14	Forage	Timothy	0.16 J	1 U	4 J	1 J	30	0.5 U	27	58	94.1
						Grass	Timothy	0.15 J	1 U	4 J	1 U	37.9	0.5 U	29	58	94
SV-14	Pasture	100	113	30	12	Forage	Timothy	0.05 J	1 U	4 J	1 U	2.27	0.5 U	20	55	94.2
						Grass	Timothy	0.05 U	1 U	4 J	1 U	1.63	0.5 U	17	55	94.2
SV-15	Pasture	95	206.4	15	13	Forage	Timothy, Poa	0.05 U	1 U	4 J	1 U	0.08 J	0.5 U	20	59	94.5
						Grass	Timothy, Poa	0.05 U	1 U	4 J	1 U	0.07 J	0.5 U	19	59	94.3
						Hyper-accumulator	Aster	0.48	1 U	6	1 U	0.18 J	0.5 U	30	60	93.1
SV-16	Pasture	100	138.2	15	14	Forage	Timothy	0.05 U	1 U	3 J	1 U	0.05 J	0.5 U	16	52	94.4
						Grass	Timothy	0.05 U	1 J	3 J	1 U	0.12 J	1 J	18	52	94.1
SV-17	Pasture	95	86.6	20	12	Forage	Dandelion, timothy	0.25 J	1 U	7	1 U	0.12 J	0.5 U	20	57	94.1
						Forb	Dandelion	0.54	1 U	14	1 U	0.19 J	0.5 U	34	71	92.8
						Grass	Timothy	0.19 J	1 U	5	1 U	0.16 J	0.5 U	16	50	94
SV-18	Pasture	100	148.8	15	15	Forage	Timothy, dandelion	0.36	1 U	6	1 U	0.11 J	0.5 U	23	63	93.8
						Forb	Dandelion	2.1	1 U	8	1 U	0.08 J	0.5 U	20	71	93.1
						Grass	Timothy	0.43	1 U	6	1 U	0.16 J	0.5 U	23	56	94.3
						Hyper-accumulator	Aster	1.11	1 U	7	1 U	0.15 J	0.5 U	34	59	93
SV-19	Pasture	100	105.6	20	12	Forage	Timothy, Poa, wildrye, red clover	0.26 J	1 U	6	1 U	0.39	0.5 U	39	52	93.6
						Forb	Red clover	0.62	1 U	15	1 U	0.23 J	0.5 U	35	49	92.6
						Grass	Timothy, Poa, wildrye	0.32	1 U	6	1 U	0.53	0.5 U	25	52	93.3
SV-20	Pasture	100	62.8	20	12	Forage	Timothy	0.28 J	1 U	6	1 U	0.4	0.6 J	24	48	94
						Grass	Timothy	0.18 J	1 U	5	1 U	0.24 J	0.5 U	23	48	94.4

Appendix B
Riparian and Aquatic Vegetation COPC Concentrations (mg/Kg dry wt.)

Location	Cover (%)	Litter (g/m^2)	Biomass (g/m^2)	Vegetation Type	Species Included in the Sample	Cadmium	Chromium	Copper	Nickel	Selenium	Vanadium	Zinc	Moisture Content	Solids, Percent
Smoky Creek														
USm	90	20	150	Browse	Willow	1.37	2 J	6	2 J	0.33	1.4 J	177	54	94.1
				Forage	Timothy, brome, Poa, Carex, yarrow	0.1 J	1 U	4 J	1 U	0.23 J	0.6 J	20	56	94.1
				Forb	Yarrow	0.29 J	1 J	8	1 J	0.22 J	0.7 J	21	53	94
				Grass	Timothy, brome, Poa, Carex	0.3 J	1 J	4 J	1 U	0.31	0.6 J	33	60	94.5
				Macrophytes	Bryophyte	1.18	25	19	19	1.37	26.2	87	80	
					Bryophyte, submerged	1.22	26	19	20	1.54	28.4	97	82	
					Equisetum	0.35	4 J	5	3 J	0.45	2.3 J	45	86	
				Periphyton		6	40 J	60 J	60 J	2 J	40 J	230	100	
LSmS			90	Browse	Willow	1.33	1 U	4 J	1 U	0.27 J	0.5 U	43	54	93.2
				Grass	Timothy, Carex, Poa	0.19 J	1 J	4 J	1 U	0.21 J	0.6 J	35	50	94.5
				Macrophytes	Filamentous algae	0.53	4 J	2 J	5 U	0.78	2.9 J	20 J	84	
					Juncas	0.15 J	1 J	2 J	1 U	0.22 J	0.7 J	50	77	
					Milfoil	0.84	6	2 J	5 J	1.4	4	37	88	
				Periphyton		1.9 J	36 J	58	25 J	2.1	21	5700	100	
LSm	95	15	150	Browse	Willow	6.03	1 U	5 J	1 U	0.29 J	0.5 U	183	48	94.9
				Forage	Carex	0.08 J	1 U	2 J	1 U	0.12 J	0.5 U	30	53	94
				Grass	Carex	0.09 J	1 U	3 J	1 U	0.12 J	0.5 U	31	53	93.8
				Macrophytes	Juncas	0.05 U	1 J	2 J	1 J	0.09 J	0.6 J	25	67	
Tygee Creek														
LT-5	90	10	75	Forage	Carex	0.05 U	1 U	2 J	1 U	0.41	0.5 U	23	50	93.3
				Grass	Carex	0.06 J	1 U	2 J	1 U	0.46	0.6 J	24	50	93.7
				Macrophytes	Equisetum	1.45	15	7	9	1.17	18.1	47	82	
					Juncas	0.12 J	3 J	2 J	1 J	0.42	1.6 J	18	75	
					Milfoil	2	24	12	15	1.2	28.2	75	80	
				Periphyton		1.77	22	11	13	2.42	24.6	70	90	
Roberts Creek														
UR-3	85	10	40	Browse	Willow	2.8	1 U	5 J	1 J	0.1 J	0.5 U	150	50	95.9
				Forage	Carex	0.07 J	1 U	2 J	1 U	0.11 J	0.5 U	24	40	96.6
				Grass	Carex	0.07 J	1 U	2 J	1 U	0.12 J	0.5 U	24	40	96.6
				Macrophytes	Bryophyte	3.84	12	8	8 J	2.3	12.5	81	87	
					Bullrush	0.17 J	1 U	3 J	1 U	0.09 J	0.5 U	44	79	
					Juncas	0.08 J	1 U	2 J	1 U	0.16 J	0.5 U	19	70	
				Periphyton		6	53	68	23 J	1	29	152	100	
Pole Canyon Creek														
UP	95	15	100	Browse	Willow	0.29 J	1 U	4 J	1 U	0.13 J	0.5 U	73	55	95.7
				Forage	Streambank wheatgrass, Poa, brome, geranium	0.05 U	1 U	5 J	1 U	0.2 J	0.5 U	18	60	95.5
				Forb	Geranium	0.05 U	1 U	5	1 U	0.26 J	0.5 U	18	56	95.3
				Grass	Streambank wheatgrass, Poa, brome	0.05 U	1 U	5 J	1 U	0.17 J	0.5 U	26	54	96.7
				Macrophytes	Bryophyte	0.47	12	10	9 J	1.7	15	56	89	
					Equisetum	0.34	3 J	4 J	2 J	0.48	3.5	41	91	
					Filamentous algae	0.69	16	12	13	1.64	21.1	64	89	
				Periphyton		2 J	50 J	610	60 J	3 J	30 J	210	100	
LP	75	5	50	Browse	Aspen, snowberry	0.07 J	1 U	5	5	60.3	0.5 U	53	48	93.7
				Forage	Slender wheatgrass, Poa, brome, geranium	0.68	1 U	6	5	26.3	0.6 J	50	60	94
				Forb	Geranium	0.35	1 J	5 J	3 J	26.9	1.1 J	32	63	93
				Grass	Slender wheatgrass, Poa, brome	2.32	2 J	6	8	15.7	1.3 J	59	64	94.5
				Macrophytes	Bryophyte, moss	52	223	53	553	66.1	166	2680	67	
					Water cress	37	63	22	236	87.7	53	1250	85	
				Periphyton		59.6	186	55	349	69.1	147	2850	88	

Appendix B
Riparian and Aquatic Vegetation COPC Concentrations (mg/Kg dry wt.)

Location	Cover (%)	Litter (g/m^2)	Biomass (g/m^2)	Vegetation Type	Species Included in the Sample	Cadmium	Chromium	Copper	Nickel	Selenium	Vanadium	Zinc	Moisture Content	Solids, Percent
North Sage Valley														
NSV-5				Macrophytes	Duckweed	0.52	4 J	6	3 J	0.65	6.1	38	99	
					Juncas	0.19 J	2 J	4 J	1 J	0.18 J	1.3 J	23	81	
Sage Creek														
US	90	20	110	Browse	Honeysuckle	0.05 U	1 U	3 J	1 U	0.27 J	0.5 U	20	48	94.9
				Forage	Slender wheatgrass, Poa, Carex, Solidago	0.11 J	1 U	5	1 U	0.06 J	0.5 U	20	57	96.7
				Forb	Solidago	0.05 U	1 U	7	1 U	0.09 J	0.5 U	20	59	94.1
				Grass	Slender wheatgrass, Poa, Carex	0.05 U	1 U	2 J	1 U	0.07 J	0.5 U	14	57	96.5
				Macrophytes	Bryophyte	0.88	19	13	14	2.51	21.6	69	88	
				Periphyton		0.61	12	12	9	1.84	13.5	49	85	
US-4	90	10	120	Browse	Willow, Rhus trilobata	0.72	1 U	4 J	1 J	0.3	0.5 U	63	55	93.7
				Forage	Streambank wheatgrass, Poa, brome, geranium	0.1 J	1 U	4 J	1 U	0.39	0.5 U	22	60	93.6
				Forb	Geranium	0.1 J	1 U	5	1 U	0.46	0.7 J	23	64	93.5
				Grass	Streambank wheatgrass, Poa, brome	0.24 J	1 U	2 J	1 U	0.17 J	0.5 U	18	53	94.3
				Macrophytes	Bryophyte	1.15	15	10	12	2.11	15.5	60	79	
				Periphyton		0.83	18	11	13	1.45	18.1	57	75	
LS	65	2	50	Browse	Honeysuckle	1.49	1 U	4 J	1 J	0.29 J	0.5 U	81	51	93.5
				Forage	Poa, brome, timothy, solidago	0.19 J	1 U	3 J	1 U	0.54	0.5 U	14	57	94.2
				Forb	Leafy aster	0.59	1 U	4 J	1 U	0.17 J	0.5 U	14	57	93.5
					Solidago	0.2 J	1 U	3 J	1 U	0.62	0.5 U	15	55	94.3
				Grass	Poa, brome, timothy	0.05 U	1 U	4 J	1 U	0.28 J	0.5 U	20	49	94
				Macrophytes	Milfoil	1.12	14	5	8	0.88	10.4	68	92	
				Periphyton		1.63	20	8	13	2.14	16.6	77	72	
LSV-4	90	10	80	Browse	Willow	1.25	1 U	6	1 U	0.19 J	0.5 U	155	53	94.5
				Forage	Brome, Poa, timothy, yarrow	0.07 J	1 U	5	1 U	0.25 J	0.5 U	16	55	95.6
				Forb	Yarrow	0.24 J	1 U	10	1 U	0.2 J	0.5 U	21	55	95
				Grass	Brome, Poa, timothy	0.07 J	1 U	4 J	1 U	0.29 J	0.5 U	16	50	96.3
				Macrophytes	Bullrush	0.25 J	5 J	2 J	2 J	2.29	3.1	32	83	
					Milfoil	0.66	4 J	4 J	6 U	7.67	5	54	91	
					Unknown submergent, possibly Potemagetan or vallisneria	0.53	8	3 J	5 J	5.52	8.7	44	92	
					Water cress	0.62	6	6	5 U	6.89	6	65	97	
				Periphyton		1	16	9 J	9 J	4	15	51	100	

Appendix B
Riparian and Aquatic Vegetation COPC Concentrations (mg/Kg dry wt.)

Location	Cover (%)	Litter (g/m^2)	Biomass (g/m^2)	Vegetation Type	Species Included in the Sample	Cadmium	Chromium	Copper	Nickel	Selenium	Vanadium	Zinc	Moisture Content	Solids, Percent
Hoopes Spring														
HS	100	20	120	Browse	Willow	3.13	1 U	4 J	2 J	1.08	0.5 U	168	54	94.1
				Forage	Timothy, Agrostis, Carex, yarrow	0.18 J	1 U	4 J	1 U	0.37	0.5 U	39	52	93.7
				Forb	Yarrow	0.29 J	1 U	6	1 U	0.27 J	0.5 U	23	57	93.2
				Grass	Timothy, Agrostis, Carex	0.05 U	1 U	2 J	1 U	1.61	0.5 U	19	51	94.6
				Macrophytes	Water cress, abundant - clogged flow path	0.84	10	5 J	7	17.3	7.8	121	93	
				Periphyton		0.68	10	261	52	7.15	10	183	94	
South Fork Sage Creek														
USS	70	5	60	Browse	Honeysuckle, aspen, alder	0.77	1 U	5 J	1 U	0.12 J	0.5 U	65	58	93.5
				Forage	Poa, geranium	0.16 J	1 U	4 J	1 U	0.22 J	0.5 U	27	58	96
				Forb	Geranium	0.07 J	1 U	5	1 U	0.28 J	0.5 U	24	59	94.2
				Grass	Poa	0.27 J	1 U	3 J	1 U	0.14 J	0.5 U	41	51	96
				Macrophytes	Bryophyte	2.1	24	12	15	0.83	27.3	85	70	
				Periphyton		2.29	37	16	21	1.02	37.1	113	67	
LSS	90	5	40	Browse	Willow	2.48	1 U	5 J	1 J	0.15 J	0.5 U	97	53	94.7
				Forage	Timothy, carex, Poa, brome, yarrow	0.5	1 U	3 J	1 U	0.38	0.5 U	319	46	95.6
				Forb	Yarrow	0.45	1 U	8	1 U	0.35	0.5 U	25	57	94.6
				Grass	Timothy, carex, Poa, brome	0.24 J	1 U	3 J	1 U	0.4	0.5 U	19	50	96.1
				Macrophytes	Bryophyte	1.05	7	6	8	4.95	8.1	67	85	
					Bullrush	0.13 J	3 J	5	3 J	0.24 J	1.9 J	24	77	
					Water cress	1.88	12	7	9	4.7	11.4	131	96	
				Periphyton		3	24	8	11	1.58	27.7	161	86	

Appendix B
Fish Length, Weight and Count

Reach	Location	Species	Length (cm)	Weight (g)	Pass	Notes
Tygee Creek	LT5	cutthroat trout	27	231.5	1	
		leatherback chub	8.5	7.4	1	
			9	5.8	1	
			8	4.9	1	
		longnose dace	11	13	1	
			10	13	1	
		sculpin	12.5	30.4	1	
			12.5	30.2	1	
			12	25	1	
			11	23	1	
			11	21.5	1	
			11	20.9	1	
			10.5	16.9	1	
			10	13.4	1	
			8.5	10	1	
			8.5	8.9	1	
			8.5	7.7	1	
			7	5.6	1	
			6.5	4.5	1	
			7	4.2	1	
Upper Smoky Creek	USM	Site sampled, no fish collected			1	
Lower Smoky Creek	LSMS	Site not sampled - not fishable			0	
	LSM	Site sampled, no fish collected			1	
Roberts Creek	UR-3	longnose dace	7	3.4	1	Only one fish collected or observed
Upper Pole Creek	UP	Site sampled, no fish collected			1	
Lower Pole Creek	LP3	Site not sampled			0	Reach was continuous with the LP site
	LP	Site sampled, no fish collected			1	
Upper Sage Creek	US	cutthroat trout	18	67.5	1	fish not retained for tissues - decided to sample further downstream at US-3
	US-3	cutthroat trout	26.2	185	1	
			25.1	147.1	1	
			24.1	143.7	1	
			21.6	116.2	1	
	US-4	cutthroat trout	23.3	118.1	1	
			19	73.2	1	
			11	13.2	1	
			7	3.5	1	
Lower Sage Creek	LS	cutthroat trout	22	119.3	1	
			21	99	1	
			19	67.5	1	
			17	53.2	1	
			17	48.3	1	
			16	34	1	
			15	33.2	1	
			15	31.2	1	
		sculpin	10	13.2	1	
			10	12.4	1	
			10	11.1	1	
			9.5	10.5	1	
			8.5	7.9	1	
			8	7.8	1	
			9	7.6	1	
			<8	2.4	1	average weight of this size class n=166, total weight = 392.1 g

Appendix B
Fish Length, Weight and Count

Reach	Location	Species	Length (cm)	Weight (g)	Pass	Notes
Hoopes Spring	HS	brown trout	31	340	1	
			30	234.5	1	
			26	160.3	1	
			22.5	111.5	1	
			21	101.5	1	
			19.5	78.6	1	
			17	48.1	1	
			17.5	47	1	
		sculpin	9.5	11.7	1	
			9	10.5	1	
			9	10.3	1	
			9	10.1	1	
			7	7.9	1	
			8.5	7.5	1	
			8	7.3	1	
			7.5	6.8	1	
			8	6.7	1	
			7	6.4	1	
			7.5	6.1	1	
			6.5	6	1	
			7.5	5.7	1	
			8	5.6	1	
			7.5	5.4	1	
			7.5	5.3	1	
			6.5	5.1	1	
			6	4.5	1	
			7	4.5	1	
			5	4.4	1	
			7.5	4.3	1	
			6.5	4.3	1	
			6	4	1	
			6	3.9	1	
			7.5	3.9	1	
			6	3.2	1	
			6.5	3	1	
			6	2.9	1	
			6	2.9	1	
			7	2.9	1	
			6	2.9	1	
			5.5	2.8	1	
			6	2.7	1	
			5.5	2.5	1	
			6	2.5	1	
			6	2.4	1	
			5.5	2.3	1	
			5	2.3	1	
			5	2.2	1	
			5	2	1	
			6	1.8	1	
			5	1.7	1	
			5	1.6	1	
			4	1.2	1	

Appendix B
Fish Length, Weight and Count

Reach	Location	Species	Length (cm)	Weight (g)	Pass	Notes
Upper South Fork Sage Creek	USS	sampled, no fish collected			1	
Lower South Fork Sage Creek	LSS	brown trout	28	220	1	
			26.5	187	1	
			26.5	183	1	
			26	181	1	
			24	160.7	1	
			24	138	1	
			22	126.3	1	
			21	91.6	1	
			17	64	1	
			18	61	1	
			17	58	1	
			17.5	58	1	
			17.5	55	1	
			10	9.8	1	
		cutthroat trout	24.5	150	1	
			19	79	1	
			17	54	1	
			17.5	53	1	
		sculpin	7.5	5.7	1	
			7.5	5.6	1	
	LSS-SP1	Site not sampled				Reach was continuous with the LSS site
North Sage Valley	NSV-5	Site not fishable				
Lower Sage Valley Lower	LSV4	brown trout	41.5	960	2	
			38	553	2	
			35.5	519	1	
			35.5	514	1	
			34	443.7	2	
			36	436	1	
			36	432.5	2	
			27.5	247	2	
			28	236	2	
			28	219	2	
			27	219	2	
			26.5	174	2	
			25.5	160.1	2	
			24.5	158	2	
			22.5	131	2	
			23.6	125.6	1	
			23	124	1	
			21	108	1	
			21.5	97.2	2	
			22	96	2	
			22.5	95.6	2	
			19	87	1	
			19.5	72.3	2	
			18.5	71.3	2	
			18.5	67.9	1	
			18.5	61.4	2	
			16	51.9	1	
			16	49.4	2	
			15	47.5	2	
			29	23	1	
			6	2.6	1	
		cutthroat trout	17.5	56.2	2	
			16	33.3	2	
			14.5	26.5	2	

Appendix B
Fish Length, Weight and Count

Reach	Location	Species	Length (cm)	Weight (g)	Pass	Notes
Lower Sage Valley Lower	LSV4	sculpin	9.5	12.5	1	
			9	11.9	2	
			9	10.8	1	
			9.5	10.4	1	
			8	8.5	2	
			8.5	8.2	1	
			8	8.1	2	
			8	7.9	1	
			8	7.7	1	
			8.5	7.5	1	
			8.5	7.4	2	
			7.5	7.3	1	
			8	7.1	1	
			8	6.9	1	
			3.1	6.5	2	
			7	6.5	2	
			7	6.4	2	
			7	6.3	2	
			7.5	6.2	2	
			7.5	6	1	
			8	6	1	
			7.5	5.9	1	
			7.5	5.8	1	
			7.5	5.6	1	
			7	5.5	2	
			7.5	5.4	1	
			8	5.3	1	
			7	4.9	2	
			6.5	4.5	1	
			6.5	4.5	2	
			7	4.4	1	
			6.5	4.2	1	
			5.5	4	1	
			6.5	3.8	1	
			6	3.6	1	
			6.5	3.6	1	
			6.5	3.5	1	
			6.5	3.5	1	
			5	3.5	2	
			6	3.3	1	
			5.5	3.3	1	
			6.5	3	1	

Appendix B
Fish Species and Abundance Data Collected During July 2004

Drainage/ Station Name	Reach	Brown trout *(Salmo trutta)*	Cutthroat trout *(Oncorhynchus clarkii)*	Sculpin *(Cottus sp.)*	Longnose dace *(Rhinichthys cataractae)*	Leatherside chub *(Gila copei)*	Site-Specific Abundance	Taxa Richness	Distance sampled (ft)
Tygee Creek									
LT5	Tygee Creek	---	1	14	2	3	20	4	300
Smoky Creek									
USM	Upper Smoky Creek	---	---	---	---	---	0	0	300
LSMS	Lower Smoky Creek	---	---	---	---	---	NS	---	0
LSM		---	---	---	---	---	0	0	350
Roberts Creek									
UR3	Roberts Creek	---	---	---	1	---	1	1	300
Pole Creek									
UP	Upper Pole Creek	---	---	---	---	---	0	0	300
LP	Lower Pole Creek	---	---	---	---	---	0	0	300
LP-3		---	---	---	---	---	NS	---	---
Sage Creek									
US	Upper Sage Creek	---	1	---	---	---	1	1	300
US3		---	4	---	---	---	4	1	100
US4		---	4	---	---	---	4	1	300
LS	Lower Sage Creek	---	8	173	---	---	181	2	470
Hoopes Spring									
HS	Hoopes Spring	8	---	44	---	---	52	2	300
South Fork Sage Creek									
USS	Upper South Fork Sage Creek	---	---	---	---	---	0	0	300
LSS-SP1	Lower South Fork Sage	---	---	---	---	---	NS		0
LSS	Lower South Fork Sage Creek	14	4	2	---	---	20	3	333
North Sage Valley									
NSV5	North Sage Valley	---	---	---	---	---	NS	---	0
Lower Sage Valley									
LSV4[1]	Lower Sage Valley Lower	11	---	29	---	---	37	2	660
LSV4[2]		20	3	13	---	---	36	3	660
Species Abundance		53	25	275	3	3	---	---	---

[1]Pass one
[2] Pass two

Appendix B
Fish Tissue COPC Concentrations
(mg/Kg wet weight)

Drainage/Station Name	Reach	Sample weight (g)	Composite	Solids, Percent	Cadmium	Chromium	Copper	Nickel	Selenium	Vanadium	Zinc
Tygee Creek											
LT5	Tygee Creek	58.6		25.5	0.06 J	0.8 J	1 J	0.3 U	2.08	0.8 J	28.9
		27.7	n	26.7	0.03 J	0.5 J	1.3 J	0.4 U	0.56	0.2 J	18.3
				23.3	0.04 J	0.5 J	1.1 J	0.4 U	1.77	0.8 J	28.4
Roberts Creek											
UR3	Roberts Creek	3.4	n	26.1	0.04 J	0.4 U	1.2 J	0.4 U	1.27	0.2 U	50.3
Sage Creek											
US3	Upper Sage Creek	143.7	n	23.9	0.03 J	0.3 U	1.5 J	0.3 U	0.78	0.2 U	17.8
		147.3	n	19.5	0.08 J	0.4 U	1.9 J	0.4 U	0.95	0.2 U	18.6
		185	n	23.1	0.07 J	0.3 U	2.4	0.3 U	0.91	0.2 U	17.9
		21.6	n	25	0.08 J	0.5 U	1.4 J	0.5 U	0.86	0.2 U	23.2
US4		118.1	n	23.5	0.09 J	0.5 U	1.6 J	0.5 U	1.33	0.2 U	42.3
		73.2	n	29.3	0.06 J	0.3 J	1.8	0.3 U	0.95	0.2 J	18.3
		13.2	n	28.1	0.04 J	0.4 J	1.9 J	0.4 U	0.88	0.2 U	22.2
		3.5	n	22.4	0.04 J	1.1 J	1.4 J	0.4 U	0.93	0.2 U	25.5
LS	Lower Sage Creek	33.2	n	27.7	0.02 U	0.3 U	0.8 J	0.3 U	0.9	0.2 U	22.1
		34	n	26.2	0.13	0.5 J	1.2 J	0.4 U	1.1	0.2 U	26.5
		53.2	n	24.6	0.04 J	0.4 U	1 J	0.4 U	0.94	0.2 U	17.9
		31.2	n	29.1	0.02 U	0.4 U	0.9 J	0.4 U	0.92	0.2 U	23
Hoopes Spring											
HS	Hoopes Spring	234.5	n	23.3	0.04 J	0.4 U	8.3	0.4 U	7.43	0.2 U	36.3
		78.6	n	27.4	0.06 J	0.4 U	2.4	0.4 U	5.26	0.2 U	42.7
		47	n	24	0.03 J	0.4 J	3.2	0.3 U	3.4	0.2 U	33.8
		19.5	y	24.2	0.03 J	0.4 U	0.7 J	0.4 U	6.98	0.2 U	22.5
South Fork Sage Creek											
LSS	Lower South Fork Sage Creek	160.7	n	31.3	0.07 J	0.4 U	1.9 J	0.4 U	1.7	0.2 U	53.2
		126.3	n	28.7	0.04 J	0.3 U	1.4	0.3 U	1.45	0.1 U	31
Lower Sage Valley											
LSV4	Lower Sage Valley Lower	235.5	n	25.4	0.02 U	0.4 J	0.9 J	0.3 U	4.38	0.2 J	18.2
		22.9	y	27.1	0.02 U	0.3 U	4.4	0.3 U	3.76	0.2 U	30.2
		518.5	n	23.2	0.03 J	0.4 U	3.4	0.4 U	3.88	0.2 U	21.8
		83	n	29.9	0.08 J	0.4 U	2.4	0.4 U	5.78	0.2 U	45.7
		549.8	n	27.4	0.02 U	0.4 U	1.5 J	0.4 U	3.7	0.2 U	37.8

Note: Validation qualifiers are reported with individual sample results. U = Not detected above MDL and J = result is an estimated quantity.

Appendix B
Habitat Quality Data - July 2004

Parameter		Smoky Creek		Tygee Creek	Roberts Creek	Pole Creek		Hoopes Spring	Upper Sage Creek		Lower Sage Creek		South Fork Sage Creek	
		USM	LSM	LT5	UR3	UP	LP	HS	US	US4	LS	LSV4	USS	LSS
Discharge (cfs)		0.19	0.892	0.69	0.11	0.433	0.19	1.5	5.72		2.5	11.6	0.36	5.4
Cross-section Depth (ft)			0.31	0.48		0.14		0.63	0.41		0.48	0.48	0.15	0.49
Mean Width (ft)		2	1.5-2	2	1.5-2	2.5-3.0	1.5	4	3.5-4	4.5	3.5-4	22	2.5-3	11
Reach Length (ft)		300	350	300	300	300	300	300	300	300	470	660	300	333
Rosgen Stream Type		E	E	B	E	A	G	B	A	A	G/B	C	A	B
Sinuosity		1.8	<1.5	1.9	<1.5	<1	<1	1.3	<1.5	<1	1.5	2	<1	1.3
Substrate		cobble boulder	Sand, gravel, macrophytes	Sand, cobble	Sand, gravel, macrophytes	cobble/cobble	gravel, sand silt	Gravel, Sand	Cobble/Boulder	Cobble/boulder	cobble/gravel	Cobble/gravel	Cobble/boulder	Gravel/cobble
Stream Bank Condition		stable/ covered	stable/ covered	unstable/ uncovered	Stable/ Covered	Stable/ Covered	unstable/ covered	Stable/ Covered	stable/ covered	stable/ covered	unstable/ covered	unstable/ covered	stable/ covered	Stable/ covered
Bank Stability		Stable	Stable	unstable	Covered/stabe	Stable	unstable	Stable	Stable	Stable	unstable	unstable	Stable	Stable
Stream Bank Cover		vegetated	vegetated	uncovered		vegetated	vegetated	vegetated	vegetated	vegetated	vegetated	vegetated	vegetated	vegetated
Canopy Closure (%)	LB	10	30	0	0	100	90	0	30	100	<5	2	80	2
	M	10	30	0	0	50	90	0	20	50	0	0	80	0
	RB	10	30	0	0	100	90	0	40	100	5	2	80	1
Large Wood Debris (LWD)		20-30%	0	0	0	70-80	20	0	60-70	50	<1%	<5%	70	0
# pools		2	4	2	4	12	1	2	8	12	4	10	12	2
pool variability				4								16		
Predominant Habitat		riffle run	Run	Glide/Pool	Run	Riffle/ run	Riffle/ run	Riffle/ run	Riffle/run	Riffle/run	Riffle/run	Glide/Pool	Riffle/ run	Riffle/ run
Embeddedness score		3	3	6	3	16	5	16	18	10	16	18	13	18
Pool substrate character				6								18		
Channel Shape		5	11	5	11	16	2	7	12	18	6	18	10	15
Disruptive Pressure		5	8	2	8	10	5	9	10	9	5	9	8	5
Zone of Influence		6	6	2	6	8	2	8	9	8	2	10	6	2
Instream Cover		LWD/ overhead vegetation	macrophytes	macrophytes	macrophytes	vegetated, LWD, substrate	LWD	Heavy macrophytes	LWD, substrate	LWD, substrate	substrate only	vegetated/undercut banks	LWD, boulders, canopy	vegetated/ undercut banks
Bank Angle		40-50	70-80	40-50	90	>140	10-20	120-130	110-120	>140	50-60	>140	90-100	>140
Instream Cover Score		5	6	2	6	18	5	15	17	18	10	18	20	11
% Undercut banks		<10%	<5%	none	<5%	50%	<1%	<5%	30%	40%	<5%	60%	30%	20%
Notes		Large amount of fines deposition from flume to culvert under haul road	Heavy macrophyte growth in channel, channel almost undefined	Several high cut banks-eroding	Heavy macrophyte growth in channel	2 to 3x volume of flows present at UP as opposed to LP - good to high quality habitat, pools are plunge/step pools over LWD and boulders	Low flow volume, substrated heavily embedded, deeply entrenched, cattle grazing causing bank failures, lack of scour velocity flows.	Some erosion near mouth of flume	High quality habitat, plunge pools present, but small holding areas, several large beaver pond downstream	Stream bank cover consisted of LWD and vegetation, good quality habitat, some embeddness due to detention pond blowout.	Some high banks with no cover - grazing pressure	Some erosion, bank slumping evident	Width difficult to determine due to heavy vegetative cover - LWD abundant. Many downed trees	

Appendix B
Benthic Macroinvertebrates COPC Concentrations
(mg/Kg wet weight)

Drainage/Station Name	Reach	Date	Cadmium, Total	Chromium, Total	Copper, Total	Nickel, Total	Selenium, Total	Vanadium, Total	Zinc, Total
Tygee Creek									
LT-5	Tygee Creek	7/23/2004	1.24	1.9 J	3.1	0.7 J	4.01	1.3	37.6
Smoky Creek									
USm	Upper Smoky Creek	7/24/2004	0.76	1 J	7 J	2 J	0.64	1.7 J	53
LSm	Lower Smoky Creek	7/25/2004	0.83	1.1 J	12.1	1.1 J	0.68	1.3 J	32.7
LSmS	Lower Smoky Creek	7/25/2004	0.26	1.9 J	3	1.3 J	0.52	1.9	35.6
Roberts Creek									
UR3	Roberts Creek								
Pole Creek									
UP	Upper Pole Creek	7/24/2004	0.31	0.5 U	5.3	0.5 U	0.57	0.9 J	28.4
LP	Lower Pole Creek	7/22/2004	2.33	3.5	5.2	9.8	16.6	4.1	90.3
Sage Creek									
US	Upper Sage Creek	7/23/2004	0.42	1.4 J	3.8	1.2 J	0.6	1.8	28.3
US-4	Upper Sage Creek	7/23/2004	0.39	0.8 J	4.5	1.1 J	0.63	0.8 J	32.1
LS	Lower Sage Creek	7/22/2004	0.06 J	0.5 U	3.7	0.5 U	0.57	0.5 J	35.4
Hoopes Spring									
HS	Hoopes Spring	7/21/2004	0.19 J	1.1 J	4 J	0.8 U	4.51	0.9 J	93.3
South Fork Sage Creek									
USS	Upper South Fork Sage Creek	7/22/2004	5.93	1.5 J	4.9	2.2	3.13	2	53.4
LSS	Lower South Fork Sage Creek	7/21/2004	0.56	1.2 J	3.6	0.9 J	1.48	1.4	76.1
North Sage Valley									
NSV-5	North Sage Valley	7/22/2004	0.11	0.5 J	3.9	0.5 U	1.09	1.2	19.5
Lower Sage Valley									
LSV-4	Lower Sage Valley Lower	7/20/2004	0.22	2.2	2.3	1.4 J	3.66	1.1	21.5

Note: Validation qualifiers are reported with individual sample results. U = Not detected above MDL and J = result is an estimated quantity.

Appendix B
Summary of Benthic Macroinvertebrate Community Data, July 2004

		Reach	Upper Smoky Creek			Tygee Creek			Roberts Creek	Upper Pole Creek			Lower Pole Creek			Upper Sage Creek			Lower Sage Creek		
		SITE	USM			LT5			UR3	UP			LP			US			LS		
		REP	1	2	3	1	2	3	1	1	2	3	1	2	3	1	2	3	1	2	3
Family	**Genus/species**	**Tolerance**																			
Ephemeroptera	Ameletus spp.	0			1							1									
	Atenella margarita	3																			
	Baetis spp.	5	11	27	15	46	39	26	2	8	4	10		1		89	101	94	141	62	108
	Cinygmula spp.	4		2	8				2	21	16	21				76	67	126	5	10	17
	Diphetor hageni	5				4	3		1										3	2	
	Drunella coloradensis	0		7	9					26	31	12				41	33	49	4		1
	Drunella doddsi	0								1	2					11	7	4			
	Ecdyonurus criddlei	2				26	23	98													
	Epeorus longimanus	0												1		1			5	32	14
	Ephemerella dorothea infrequens	1				2															
	Paraleptophlebia spp.	1					4		8		1										
	Serratella tiabilis	2	1	4	1											1		1	7	11	15
	Tricorythodes minutus	4																			
Plecoptera	Amphinemura sp.	2																			
	Paraperla sp.	2									1	3				1	1	2			
	Hesperoperla pacifica	1																	1	1	2
	Isoperla sp.	2																			
	Kogotus sp.	2		2	1					2	1	5				1		6			
	Malenka sp.	2		9	12	9	6		22										121	41	96
	Skwala sp.	2														5					
	Sweltsa sp.	1			3	1				1	2	19						2	31	13	22
	Zapada sp.	2	15	39	22					7	5	5				6	4	12			
Trichoptera	Agapetus sp.	0														1					
	Brachycentrus sp.	1																			2
	Cryptochia sp.	0																			1
	Desmona sp.	1								1	1										
	Dicosmoecus sp.	1				4		1	1									1		1	1
	Ecclisomyia sp.	2								2						2					
	Helicopsyche sp.	3																			
	Hesperophylax sp.	5				16	6	3													
	Hydropsyche sp.	4				1															1
	Hydroptila sp.	6				1															
	Lepidostoma spp.	1				2	5	1													
	Micrasema sp.	1							3										2	4	6
	Neothremma sp.	0	3	15	58				12	32	36	3				86	26	68			
	Oligophlebodes sp.	1															1				
	Onocosmoecus unicolor	1					1										1		1	1	
	Parapsyche sp.	1														5	5	5			
	Psychoglypha sp.	1					3														
	Rhyacophila spp.	0	2	4	6				8	7	14	24				14	18	16	13	6	10
	Wormaldia spp.	3							1												
Odonata	Enallagma sp.	9					1														
Coleoptera	Ametor sp.	5																		2	
	Brychius sp.	7				3	3	1													
	Cleptelmis sp.	4				1			3												
	Agabus sp.	8				10	8	1													
	Haliplus sp.	7																			
	Helophorus sp.					1															
	Heterlimnius corpulentus	4	2	4	1				37	6	13	12				26	15	28			
	Optioservus quadrimaculatus	4				106	124	58	1										5	4	7
	Oreodytes sp.	5				2	7	6													
	Zaitzevia paravula	4																			
Megaloptera	Sialis sp.	4					1														
Diptera	Antocha sp.	3						2					1						3	2	3
	Caloparyphus sp.	7																			
	Chelifera sp.	6		1													1		3	2	3
	Dicranota sp.	3											4	1	6						
	Empididae	6																	2	7	6
	Ephydridae	6																			
	Euparyphus sp.		1	1																	
	Glutops sp.	3								1	1	4				2		2			
	Hexatoma sp.	2				2	3	6												1	1
	Limnophila sp.	4																			
	Muscidae	6				3								2							
	Probezzia sp.	6	1																		
	Prosimulium sp.	3	1	1	8									26		12	17				
	Simulium sp.	6				46	122	3	84		1	1		1	3				18	5	8
	Tabanidae	8					1														
	Tipula sp.	4					2		5												
Chironomidae (family)	Chironomidae	6	96	43	21	31	28	26	3	4	6	3	119	148	40	21	13	28	32	18	27
Hirudinea (class)	Helobdella sp.	6				1	1	1													
Oligochaeta (class)	Oligochaeta	5	9	46	1	7	11	116	10			1	1			6	2	2	4	3	8
Nematoda (phylum)	Nematoda	5																			
Nematomorpha	Nematomorpha																				
Bivalvia (class)	Pisidium sp.	8				4	6	11	17										4	5	7
Gastropoda (class)	Fossaria sp.	8				6	11	2													
	Amnicola sp.	5							2												
	Physella sp.	8				10	8	17													
	Stagnicola sp.	10				1	2	1													
Amphipoda	Gammarus sp.	6																			
	Hyalella azteca	8			1	3		2	40												
Ostracoda	Ostracoda	8	6		1				4	2	3					17	12	22			
Tricladida	Polycelis coronata	1	5	24	66				28	13	28	24				11	16	67			
Acari (subclass)	Acari	8				1	3									4					
		Total abundance	**153**	**229**	**235**	**350**	**432**	**382**	**294**	**134**	**166**	**148**	**125**	**180**	**49**	**439**	**340**	**535**	**405**	**233**	**366**
		Total taxa	**13**	**16**	**18**	**29**	**27**	**20**	**22**	**16**	**18**	**16**	**4**	**7**	**3**	**23**	**18**	**19**	**20**	**22**	**23**

Appendix B
Summary of Benthic Macroinvertebrate Community Data, July 2004

		Reach	Hoopes Spring			Upper South Fork Sage Creek			Lower South Fork Sage Creek			Lower Sage Valley Lower		
		SITE	HS			USS			LSS			LSV4		
		REP	1	2	3	1	2	3	1	2	3	1	2	3
Family	**Genus/species**	**Tolerance**												
Ephemeroptera	Ameletus spp.	0						1						
	Atenella margarita	3										21	1	2
	Baetis spp.	5	4	3		39	46	32	6	7	8	102	78	67
	Cinygmula spp.	4				32	53	37	28	4	9			
	Diphetor hageni	5							3	2	3	11	13	16
	Drunella coloradensis	0				12	14	45	4	6	2			
	Drunella doddsi	0												
	Ecdyonurus criddlei	2												
	Epeorus longimanus	0					16		1	3	2			
	Ephemerella dorothea infrequens	1							21	14	31	4	1	2
	Paraleptophlebia spp.	1	1	16	4				21	38	14	8	4	1
	Serratella tiabilis	2					3							
	Tricorythodes minutus	4										86	3	7
Plecoptera	Amphinemura sp.	2				4	10	2	16	14	24			
	Paraperla sp.	2												
	Hesperoperla pacifica	1	1		3				6	8	6		1	1
	Isoperla sp.	2								2	1			
	Kogotus sp.	2												
	Malenka sp.	2				85	30	6				9	24	31
	Skwala sp.	2				1	1							
	Sweltsa sp.	1				1			3	2				
	Zapada sp.	2												
Trichoptera	Agapetus sp.	0												
	Brachycentrus sp.	1	1						32	71	8	2		1
	Cryptochia sp.	0												
	Desmona sp.	1												
	Dicosmoecus sp.	1					1	1						
	Ecclisomyia sp.	2												
	Helicopsyche sp.	3												1
	Hesperophylax sp.	5												
	Hydropsyche sp.	4										1		
	Hydroptila sp.	6												
	Lepidostoma spp.	1												
	Micrasema sp.	1							6	5	2			
	Neothremma sp.	0			1				52	44	19			
	Oligophlebodes sp.	1												
	Onocosmoecus unicolor	1					2	4						
	Parapsyche sp.	1												
	Psychoglypha sp.	1												
	Rhyacophila spp.	0					3	1	5	2	2		6	
	Wormaldia spp.	3								1		38	11	
Odonata	Enallagma sp.	9												
Coleoptera	Ametor sp.	5												
	Brychius sp.	7												
	Cleptelmis sp.	4							1	2	1	2		
	Agabus sp.	8												
	Haliplus sp.	7												
	Helophorus sp.													
	Heterlimnius corpulentus	4	1									1		
	Optioservus quadrimaculatus	4							7	6	11	62	131	82
	Oreodytes sp.	5										2		
	Zaitzevia paravula	4											7	3
Megaloptera	Sialis sp.	4												
Diptera	Antocha sp.	3						2	1	2	1	2		
	Caloparyphus sp.	7						1						
	Chelifera sp.	6												
	Dicranota sp.	3					1	1						
	Empididae	6												
	Ephydridae	6										1		
	Euparyphus sp.													
	Glutops sp.	3												
	Hexatoma sp.	2							2	1	6	3		2
	Limnophila sp.	4												
	Muscidae	6												
	Probezzia sp.	6											1	
	Prosimulium sp.	3												
	Simulium sp.	6							1		6	4	8	9
	Tabanidae	8												
	Tipula sp.	4							1	1		1	1	
Chironomidae (family)	Chironomidae	6	5	11	9	11	3	51	17	12	9	12	14	7
Hirudinea (class)	Helobdella sp.	6	1		6									
Oligochaeta (class)	Oligochaeta	5	11	8	58	2	15	4	1	3	6	2	2	16
Nematoda (phylum)	Nematoda	5												
Nematomorpha	Nematomorpha													1
Bivalvia (class)	Pisidium sp.	8	2		8	1			4	4	11	11		3
Gastropoda (class)	Fossaria sp.	8	22	4	8				2	7	2	2		
	Amnicola sp.	5							1	3	11			
	Physella sp.	8	16	4	17							2	1	4
	Stagnicola sp.	10												
Amphipoda	Gammarus sp.	6												
	Hyalella azteca	8												
Ostracoda	Ostracoda	8	1									10		1
Tricladida	Polycelis coronata	1								4				
Acari (subclass)	Acari	8										4		
		Total abundance	**66**	**46**	**114**	**188**	**198**	**188**	**242**	**268**	**195**	**403**	**307**	**257**
		Total taxa	**12**	**6**	**9**	**10**	**14**	**14**	**25**	**27**	**24**	**26**	**18**	**20**

Appendix B

Terrestrial Invertebrate COPC Concentrations and Field Measurements

Site	Location Type	Cadmium (mg/Kg)	Chromium (mg/Kg)	Copper (mg/Kg)	Nickel (mg/Kg)	Selenium (mg/Kg)	Vanadium (mg/Kg)	Zinc (mg/Kg)	Sample weight (Field)	Sample weight (Wet)	Solids (%)	Total grams (WW)	Order	Family	Common name	Count
A Panel																
AM-1	Native	1.8	5 U	16 J	5 U	2.4	2 U	148	> 60	0.22		0.22	Araneae		Spider	1
													Coleoptera	Coccinellidae	Ladybug beetle	3
													Diptera	Sareophagidae	Flesh fly	2
													Hymenoptera	Formicidae	Ant	18
AM-2	Overburden	0.93	1.1 J	8.6	1.5 J	5.82	0.7 J	75.7	15	1.5		1.5	Coleoptera	Carabidae	Green ground beetle	3
														Coccinellidae	Ladybug beetle	2
														Tenebrionidae	False mealworm	2
													Hymenoptera	Formicidae	Ant	5
													Orthoptera	Acridae	Grasshopper	7
													Plecoptera		Stonefly	1
AM-3	Overburden	0.96	0.6 J	6.9	1.6 J	7.23	0.2 J	84	21	2.13	36.4	2.13	Coleoptera	Coccinellidae	Ladybug beetle	3
														Tenebrionidae	False mealworm	11
													Diptera	Sareophagidae	Flesh fly	7
													Hemiptera	Pentatomidae	Stinkbug	2
													Hymenoptera	Formicidae	Ant	8
													Orthoptera	Acridae	Grasshopper	11
D Panel																
DM-1	Native	0.3 J	3 U	4 J	3 U	0.5 J	1 U	49	> 60	0.3		0.3	Coleoptera	Meloidae	Blister beetle	1
													Diptera	Sareophagidae	Flesh fly	1
													Hymenoptera	Formicidae	Ant	3
													Lepidoptera		Larvae stage	1
													Orthoptera	Acridae	Grasshopper	1
DM-2	Overburden	1.02	1.4 J	7.4	2.1	5.45	1	79.2	> 60	1.75	48.9	1.75	Coleoptera	Carabidae	Green ground beetle	9
														Coccinellidae	Ladybug beetle	14
													Diptera	Sareophagidae	Flesh fly	2
													Hymenoptera	Formicidae	Ant	1
															Winged, green/brown	5
													Orthoptera	Acridae	Grasshopper	9
DM-3	Overburden	1.04	1.5 J	8	2.1	8.42	0.9 J	72.2	49	1.3		1.3	Coleoptera	Carabidae	Green ground beetle	1
														Coccinellidae	Ladybug beetle	3
														Tenebrionidae	False mealworm	3
													Hemiptera	Pentatomidae	Stinkbug	1
													Hymenoptera	Formicidae	Ant	3
															Winged, green/brown	6
													Orthoptera	Acridae	Grasshopper	6
DM-4	Native	0.38	0.9 J	9.9	0.8 J	0.55	0.4 J	66.1	> 60	1.14		1.14	Coleoptera	Coccinellidae	Ladybug beetle	3
														Tenebrionidae	False mealworm	3
													Diptera	Mydidae	Mydas fly	1
													Diptera	Sareophagidae	Flesh fly	3
													Embidiina	Oligotomidae	Webspinner	2
													Hymenoptera	Formicidae	Ant	26
															Winged, green/brown	4
													Lepidoptera		Moth	2
													Orthoptera	Acridae	Grasshopper	5

Appendix B

Terrestrial Invertebrate COPC Concentrations and Field Measurements

Site	Location Type	Cadmium (mg/Kg)	Chromium (mg/Kg)	Copper (mg/Kg)	Nickel (mg/Kg)	Selenium (mg/Kg)	Vanadium (mg/Kg)	Zinc (mg/Kg)	Sample weight (Field)	Sample weight (Wet)	Solids (%)	Total grams (WW)	Order	Family	Common name	Count
D Panel																
DM-5	Overburden	1.11	1.3 J	11.6	2 J	9.76	0.7 J	90.3	13	2.2	40.2	2.2	Coleoptera	Carabidae	Green ground beetle	4
														Coccinellidae	Ladybug beetle	4
														Tenebrionidae	False mealworm	6
															Small black beetle	5
													Hemiptera	Pentatomidae	Stinkbug	1
													Orthoptera	Acridae	Grasshopper	8
													Plecoptera		Stonefly	1
DM-6	Overburden	1.28	2.4 J	10.7	2.5 J	4.63	1.9	74.7	25	1.2		1.2	Coleoptera	Carabidae	Green ground beetle	7
															Small black beetle, 2mm	12
													Hymenoptera	Apidae	Bumble bee	1
													Lepidoptera		Moth	1
													Orthoptera	Acridae	Grasshopper	8
													Trichoptera	Limnephilidae	Caddisfly	1
Pole Pile																
PM-1	Native	0.4 J	3 U	20	3 U	0.5 J	1 U	77	32	0.37		0.37	Coleoptera	Coccinellidae	Ladybug beetle	1
													Diptera	Rhagionidae	Snipe fly	1
													Hymenoptera	Formicidae	Ant	4
													Orthoptera	Acridae	Grasshopper	2
PM-2	Overburden	1.03	4.2	11.5	3	5.98	3.2	83.7	28	1.71	37.8	1.71	Coleoptera	Carabidae	Green ground beetle	2
														Coccinellidae	Ladybug beetle	3
														Tenebrionidae	False mealworm	2
													Diptera	Sareophagidae	Flesh fly	4
													Hemiptera	Pentatomidae	Stinkbug	1
													Hymenoptera	Formicidae	Ant	1
														Vespidae	Yellow jacket	1
													Orthoptera	Acridae	Grasshopper	9
														Gryllidae	Field cricket	2
PM-3	Overburden	1.14	0.6 J	6.9	3.3	6.08	0.4 J	64.9	> 60	3.1	37	3.1	Coleoptera	Coccinellidae	Ladybug beetle	13
													Diptera	Mydidae	Mydas fly	2
														Sareophagidae	Flesh fly	33
													Hemiptera	Pentatomidae	Stinkbug	1
													Hymenoptera	Formicidae	Ant	8
															Winged, green/brown	15
													Orthoptera	Acridae	Grasshopper	24
													Plecoptera		Stonefly	1
													Trichoptera	Limnephilidae	Caddisfly	1

Appendix B

Terrestrial Invertebrate COPC Concentrations and Field Measurements

Site	Location Type	Cadmium (mg/Kg)	Chromium (mg/Kg)	Copper (mg/Kg)	Nickel (mg/Kg)	Selenium (mg/Kg)	Vanadium (mg/Kg)	Zinc (mg/Kg)	Sample weight (Field)	Sample weight (Wet)	Solids (%)	Total grams (WW)	Order	Family	Common name	Count
Seep Areas																
S-1	DP-10 Area	1.39	2 J	10.6	1.5 J	7.59	1.3	69	> 60	1.6		1.6	Araneae		Spider	2
													Coleoptera	Carabidae	Green ground beetle	2
														Coccinellidae	Ladybug beetle	1
														Tenebrionidae	False mealworm	1
															Small black beetle	2
															Winged beetle, 3mm	8
													Diptera	Mydidae	Mydas fly	4
														Sareophagidae	Flesh fly	2
													Hymenoptera	Formicidae	Ant	27
															Winged, green/brown	4
													Lepidoptera		Moth	1
													Odonata		Dragon fly	1
													Orthoptera	Acridae	Grasshopper	12
													Plecoptera		Stonefly	2
S-2	DS-7 Seep	1.47	1.2 J	13.4	1.7 J	15	0.8 J	84.3	17	1.16		1.16	Araneae		Spider	1
													Coleoptera	Carabidae	Green ground beetle	1
														Coccinellidae	Ladybug beetle	1
														Tenebrionidae	False mealworm	1
													Diptera	Sareophagidae	Flesh fly	2
													Hymenoptera	Formicidae	Ant	3
													Orthoptera	Acridae	Grasshopper	11
													Plecoptera		Stonefly	3
S-3	ES-3 Seep	0.27	1 J	5.1	0.7 J	0.2	0.8 J	35.4	21	1.8	60.2	1.8	Coleoptera	Coccinellidae	Ladybug beetle	5
													Diptera	Sareophagidae	Flesh fly	4
													Hemiptera	Pentatomidae	Stinkbug	1
													Hymenoptera	Formicidae	Ant	9
															Winged, green/brown	4
													Lepidoptera		Larvae stage	25
													Orthoptera	Acridae	Grasshopper	5
S-4	ES-4 Seep	1.43	6 J	11	2 J	93.6	3.7	77	6	0.59		0.59	Coleoptera	Coccinellidae	Ladybug beetle	5
													Hymenoptera	Formicidae	Ant	1
															Winged, green/brown	4
													Lepidoptera		Larvae stage	9
													Orthoptera	Acridae	Grasshopper	1
													Plecoptera		Stonefly	1
S-5	ES-5 Seep	2.3	7 U	18 J	7 U	15.3	4 U	134	17.5	0.17		0.17	Coleoptera	Coccinellidae	Ladybug beetle	6
													Diptera	Sareophagidae	Flesh fly	2
													Hymenoptera	Formicidae	Ant	2
													Orthoptera	Acridae	Grasshopper	2
													Plecoptera		Stonefly	1

Notes: Location S-1 is at DP-10
Location S-2 is at DP-7, DS-7
Location S-3 is at ES-3, EP-3
Location S-4 is at ES-4, EP-4
Location S-5 is at ES-5, EP-5

Validation qualifiers are reported with individual sample results. U = Not detected above MDL and J = result is an estimated quantity.

Appendix B

Small Mammal Tissue COPC Concentrations
(mg/Kg wet weight)

Site	Location Type	Species	Cadmium	Chromium	Copper	Nickel	Selenium	Vanadium	Zinc
A Panel									
AM-1	Native	deer mouse	0.16	0.4 J	2.9	0.4 J	1.58	0.2 U	111
		boreal redback vole	0.3	0.6 J	2.6	0.3 U	1.16	0.2 U	205
		least chipmunk	0.03 J	1 J	2.5	0.4 J	0.23	0.3 J	282
AM-2	Overburden	deer mouse	0.44	0.7 J	3.3	0.4 U	3.74	0.3 J	54.3
		golden-mantled squirrel	0.56	1.5 J	2.5	0.8 J	2.48	1	49.4
		boreal redback vole	0.2	0.7 J	2.8	0.6 J	1.22	0.5 J	32.5
AM-3		deer mouse	0.24	0.4 J	3.2	0.4 J	2.81	0.2 U	69.1
		deer mouse	0.22	0.5 J	3	0.4 U	6.66	0.2 U	34.7
		deer mouse	0.2	0.6 J	3.4	0.4 U	11	0.2 U	40
D Panel									
DM-1	Native	least chipmunk	0.03 J	0.5 J	2.4	0.3 U	0.25	0.2 U	164
		boreal redback vole	0.21	0.4 J	2.9	0.3 J	0.6	0.1 U	394
		boreal redback vole	0.05 J	0.5 J	2.6	0.3 U	0.19	0.1 U	201
DM-2	Overburden	deer mouse	0.06 J	0.9 J	2.6	0.4 J	3.88	0.2 J	85.4
		deer mouse	0.01 U	0.5 J	3.4	0.3 U	0.48	0.1 U	107
		deer mouse	0.13	0.9 J	2.5	0.3 U	9.58	0.2 U	113
DM-3		deer mouse	0.12	0.8 J	3.2	0.3 U	9.85	0.1 U	74.6
		deer mouse	0.16	0.9 J	3	0.3 U	15	0.1 U	188
		deer mouse	0.15	1.1	2.8	0.8 J	11	0.3 J	91.8
DM-4	Native	deer mouse	0.03 J	0.5 J	2.6	0.3 U	0.54	0.1 U	111
		deer mouse	0.03 J	0.5 J	2.9	0.3 U	0.49	0.1 U	89.4
		deer mouse	0.02 J	0.5 J	2.6	0.3 U	0.37	0.1 J	116
DM-5	Overburden	boreal redback vole	0.1	1 J	2.4	0.3 J	2.73	0.2 U	136
		boreal redback vole	0.06 J	0.6 J	2.8	0.3 U	1.27	0.2 U	65.4
		deer mouse	0.06 J	0.8 J	2.4	0.4 J	0.56	0.2 J	199
DM-6		deer mouse	0.23	0.7 J	3	0.3 J	0.91	0.2 J	123
		deer mouse	0.39	0.8 J	3.1	0.3 U	2.46	0.1 J	99.2
		golden-mantled squirrel	0.26	1.2	2.3	0.6 J	0.8	0.3 J	414
Pole Pile									
PM-1	Native	boreal redback vole	0.07 J	0.5 J	2.7	0.3 U	0.6	0.1 J	194
		deer mouse	0.02 J	0.5 J	2.9	0.3 J	0.39	0.2 U	66.2
		boreal redback vole	0.08	0.4 J	3.1	0.2 J	0.5	0.1 U	90.8
PM-2	Overburden	deer mouse	0.05 J	0.6 J	3	0.4 U	1.62	0.2 J	92.9
		deer mouse	0.07 J	0.6 J	2.5	0.5 J	2.32	0.2 J	85.3
		deer mouse	0.24	0.7 J	2.7	0.7 J	3.73	0.3 J	118
PM-3		deer mouse	0.09 J	0.8 J	2.6	0.4 U	8.49	0.3 J	73.7
		deer mouse	0.11	0.6 J	2.7	0.3 U	9.36	0.1 U	105
		deer mouse	0.09	0.5 J	2.5	0.4 J	5.09	0.2 U	93.2
Overburden Seep Areas									
S-1	DP-10 Seep	deer mouse	0.11	0.6 J	2.9	0.3 U	3.89	0.1 J	83.1
		deer mouse	0.12	1 J	2.9	0.3 U	3.7	0.2 U	154
		deer mouse	0.05 J	0.9 J	2.8	0.3 U	0.94	0.2 U	54.9
S-2	DS-7 Seep	deer mouse	0.07 J	0.9 J	3.2	0.4 U	1.34	0.2 J	182
		boreal redback vole	0.13	0.4 U	2.3	0.4 U	6.59	0.3 J	182
		deer mouse	0.48	0.4 U	2.6	0.4 U	2.74	0.2 U	60.8
S-3	ES-3 Seep	deer mouse	0.3	0.4 U	3.2	0.4 U	0.28	0.2 U	94.5
		least chipmunk	0.07 J	0.4 U	2.6	0.4 U	0.17	0.2 U	376
		deer mouse	0.22	0.4 U	3.3	0.4 U	0.32	0.2 J	90.4
S-4	ES-4 Seep	deer mouse	0.05 J	0.4 U	2.9	0.4 U	1.9	0.2 U	66.1
		uinta ground squirrel	0.21	0.3 U	2.1	0.3 U	2.85	0.2 J	65.8
		deer mouse	0.1	0.4 U	3.2	0.4 U	0.57	0.2 U	99.6
S-5	ES-5 Seep	deer mouse	0.07 J	0.4 U	3.1	0.4 U	0.55	0.2 U	113

Notes: Location S-1 is at DP-10
Location S-2 is at DP-7, DS-7
Location S-3 is at ES-3, EP-3
Location S-4 is at ES-4, EP-4
Location S-5 is at ES-5, EP-5

Validation qualifiers are reported with individual sample results. U = Not detected above MDL and J = result is an estimated quantity.

Appendix B

Small Mammal Field Notes

Site	Location Type	Species	Age/Sex	Lactating	Weight (gm)	Nose-vent Length (cm)	Collected	Sample ID
A Panel								
AM-1	Native	boreal redback vole	AF	Y	23	10	Y	AM1-TM1-808
			AM	---	9	25	N	
		deer mouse	AF	N-preg?	22	8.5	Y	AM1-TM1-807
			JUnk	---	19	8	N	
					19	8	N	
					17	8	N	
					17	8.5	N	
		least chipmunk	JUnk	---	39	11.5	Y	AM1-TM1-809
AM-2	Overburden	boreal redback vole	AF	Y	31	9	Y	AM2-TM1-803
		deer mouse	AM	---	21	8.5	Y	AM2-TM1-801
			AF	N	23	8	N	
				N	21	9	N	
				N	19	9	N	
			JUnk	---	12	8	N	
		golden-mantled squirrel	AM	---	>60	18	Y	AM2-TM1-802
AM-3	Overburden	deer mouse	AM	---	20	9	Y	AM3-TM1-806
			AF	Y	20	9	Y	AM3-TM1-804
				N	20	9	Y	AM3-TM1-805
				Y-preg?	23	8	N	
				N	20	9	N	
			JUnk	---	18	7.5	N	
					17	7	N	
					15	7	N	
					15	7.5	N	
					15	6.5	N	
					14	7	N	
					14	7.5	N	
D Panel								
DM-1	Native	least chipmunk	AM	---	45	11.5	Y	DM1-TM1-819
		boreal redback vole	AF	Y	25	9.5	Y	DM1-TM1-820
			JUnk	---	14	7.5	Y	DM1-TM1-821
					15	9	N	
					15	9	N	
DM-2	Overburden	deer mouse	AM	---	19	9	Y	DM2-TM1-824
					17	9	N	
			AF	N	19	9	Y	DM2-TM1-822
			AF	N	16	8.5	Y	DM2-TM1-823
			JUnk	---	16	8	N	
					15	8	N	
DM-3	Overburden	boreal redback vole	JUnk	---	16	8	N	
		deer mouse	AM	---	18	8	Y	DM3-TM1-827
			AF	N-preg?	25	10	Y	DM3-TM1-826
			AF	N-preg?	22	9	Y	DM3-TM1-825
			AF	N-preg?	26	9	N	
			JUnk	---	17	7.5	N	
			---	---	---	---	---	
DM-4	Native	boreal redback vole	AF	Y	43	12	N	
		deer mouse	AM	---	23	8.5	N	
			AF	N	22	9	Y	DM4-TM1-829
			JUnk	---	17	8	Y	DM4-TM1-828
					17	9	Y	DM4-TM1-830
					17	8	N	

Appendix B

Small Mammal Field Notes

Site	Location Type	Species	Age/Sex	Lactating	Weight (gm)	Nose-vent Length (cm)	Collected	Sample ID
D Panel (continued)								
DM-5	Overburden	boreal redback vole	AM	---	24	9.5	Y	DM5-TM1-831
					23	9.5	Y	DM5-TM1-833
		deer mouse	AM	---	22	9	Y	DM5-TM1-832
					25	9	N	
					22	8.5	N	
			AF	Y	19	9	N	
			JUnk	---	16.5	8	N	
					12.5	7.5	N	
DM-6	Overburden	deer mouse	AM	---	19.5	8.5	Y	DM6-TM1-835
					16	8.5	Y	DM6-TM1-834
			AF	Y	20	8.5	N	
				Y	20	9	N	
			JUnk	---	16	9	N	
					16	7.5	N	
					15	7	N	
					14	7.5	N	
					9	5.5	N	
		golden-mantled squirrel	AF	N	>60	15	Y	DM6-TM1-836
Pole Pile								
PM-1	Native	boreal redback vole	AM	---	24	10	Y	PM1-TM1-810
			AF	Y			Y	PM1-TM1-812
		deer mouse	AF	N	19	8.5	Y	PM1-TM1-811
PM-2	Overburden	boreal redback vole	JUnk	---	14	8.5	N	
		deer mouse	AF	N	21	9.5	Y	PM2-TM1-815
			JUnk	---	14	7.5	N	
					15	8	Y	PM2-TM1-814
					13	7	Y	PM2-TM1-813
					17	7	N	
					15	7.5	N	
PM-3	Overburden	deer mouse	AM	---	17	7.5	Y	PM3-TM1-816
					16	8	Y	PM3-TM1-818
					---	---	---	
			JUnk	---	17	8	Y	PM3-TM1-817
					16	9	N	
					15	7.5	N	
Overburden Seep Areas								
S-1	DP-10 Seep	boreal redback vole	JUnk	---	11.5	7.5	N	
		deer mouse	AM	---	20	9.5	Y	S1-TM1-837
					18.5	9	Y	S1-TM1-839
			AF	N	18.5	8.5	Y	S1-TM1-838
S-2	DS-7 Seep	boreal redback vole	AM	---	34	11.5	Y	S2-TM1-841
		deer mouse	AF	Y	24	9.5	Y	S2-TM1-842
			JUnk	---	14	7.5	Y	S2-TM1-840
S-3	ES-3 Seep	least chipmunk	AM	---	46	10	N	
					34	10	Y	S3 -TM1-844
		deer mouse	AF	N	20	8.5	Y	S3 -TM1-843
			JUnk	---	15	7	Y	S3 -TM1-845
S-4	ES-4 Seep	uinta ground squirrel	AM	---	>60	24	Y	S4-TM1-847
		deer mouse	JUnk	---	15	7	Y	S4-TM1-846
					15	6	Y	S4-TM1-848
S-5	ES-5 Seep	deer mouse	AF	N	20	8.5	Y	S5-TM1-849

Notes:
AM = Adult Male
AF = Adult Female
JUnk = Juvenile Unknown Sex

Electronic Data Tables
On CD in the back of Volume 2