APPENDIX A: PERIPHYTON DATA

Appendix A.—Periphyton data for samples collected near Kensington Gold Mine, 2011–2012.

	July 2011			October 2011			February 2012			April/May 2012		
mg/m²	chlor-*a*	chlor-*b*	chlor-*c*	chlor-*a*	chlor-*b*	chlor-*c*	chlor-*a*	chlor-*b*	chlor-*c*	chlor-*a*	chlor-*b*	chlor-*c*
Upper Slate Creek												
	-	0.00	0.00	6.62	0.00	0.25	0.32	0.00	0.02	0.96	0.00	0.10
	0.32	0.00	0.04	0.46	0.00	0.02	0.75	0.00	0.06	0.53	0.00	0.01
	0.96	0.01	0.07	0.75	0.00	0.05	0.33	0.00	0.02	0.83	0.00	0.05
	0.11	0.00	0.00	0.53	0.00	0.04	1.14	0.00	0.01	**0.34**	-	-
	2.67	0.00	0.26	0.55	0.00	0.02	**0.07**	-	-	**0.34**	-	-
	-	0.00	0.00	1.47	0.00	0.03	1.15	0.00	0.04	0.45	0.01	0.04
	0.60	0.00	0.12	0.14	0.01	0.05	1.71	0.00	0.10	**0.34**	-	-
	1.14	0.00	0.01	-	0.00	0.15	0.21	0.00	0.03	0.60	0.00	0.02
	0.53	0.00	0.00	0.64	0.00	0.11	**0.07**	-	-	**0.34**	-	-
	0.60	0.00	0.02	-	-	-	0.64	0.00	0.01	2.24	0.00	0.15
mean	0.87	0.00	0.05	1.40	0.00	0.08	0.64	0.00	0.04	0.70	0.00	0.06
max	2.67	0.01	0.26	6.62	0.01	0.25	1.71	0.00	0.10	2.24	0.01	0.15
min	0.11	0.00	0.00	0.14	0.00	0.02	0.07	0.00	0.01	0.34	0.00	0.01
East Fork Slate Creek												
	9.51	2.16	0.24	18.90	7.97	1.11	0.53	0.00	0.00	7.80	0.74	0.34
	9.18	0.02	0.20	10.68	1.30	0.36	0.96	0.11	0.00	**0.34**	-	-
	1.28	0.03	0.00	2.99	0.79	0.12	1.34	0.37	0.09	5.23	0.00	0.16
	5.13	1.15	0.11	6.73	1.88	0.64	-	0.03	0.00	4.81	1.56	0.19
	16.02	0.18	0.44	22.53	5.43	0.99	1.07	0.09	0.00	7.48	0.00	0.50
	8.86	1.94	0.70	-	-	-	0.50	0.08	0.00	1.33	0.00	0.08
	4.70	0.70	0.13	-	-	-	6.41	2.04	0.09	2.78	0.00	0.09
	16.13	5.35	0.28	-	-	-	**0.07**	-	-	4.59	0.00	0.33
	4.91	0.49	0.12	-	-	-	5.55	1.44	0.19	4.59	0.00	0.17
	12.71	3.59	0.15	-	-	-	1.92	0.14	0.07	9.72	0.00	0.47
mean	8.84	1.56	0.24	12.37	3.47	0.64	2.04	0.48	0.05	4.87	0.26	0.26
max	16.13	5.35	0.70	22.53	7.97	1.11	6.41	2.04	0.19	9.72	1.56	0.50
min	1.28	0.02	0.00	2.99	0.79	0.12	0.07	0.00	0.00	0.34	0.00	0.08
West Fork Slate Creek												
	2.52	0.00	0.19	-	-	-	-	-	-	-	-	-
	4.70	0.00	0.43	-	-	-	-	-	-	-	-	-
	2.78	0.00	0.26	-	-	-	-	-	-	-	-	-
	3.35	0.00	0.04	-	-	-	-	-	-	-	-	-
	4.27	0.00	0.25	-	-	-	-	-	-	-	-	-
	4.91	0.00	0.42	-	-	-	-	-	-	-	-	-
	3.95	0.00	0.27	-	-	-	-	-	-	-	-	-
	3.10	0.00	0.25	-	-	-	-	-	-	-	-	-
	4.38	0.00	0.39	-	-	-	-	-	-	-	-	-
	5.23	0.00	0.20	-	-	-	-	-	-	-	-	-
mean	3.92	0.00	0.27	-	-	-	-	-	-	-	-	-
max	5.23	0.00	0.43	-	-	-	-	-	-	-	-	-
min	2.52	0.00	0.04	-	-	-	-	-	-	-	-	-
Lower Slate Creek												
	0.21	0.05	0.00	6.41	0.00	0.87	2.56	0.01	0.16	0.56	0.00	0.06
	1.28	0.02	0.11	11.85	1.30	0.99	2.46	0.00	0.21	0.46	0.00	0.07
	0.85	0.01	0.07	2.99	0.15	0.13	-	-	-	0.85	0.00	0.10
	3.31	0.08	0.25	2.10	0.00	0.21	2.14	0.04	0.14	0.50	0.00	0.13
	11.85	3.11	0.30	5.23	0.03	0.63	-	-	-	1.32	0.00	0.25
	18.05	0.42	0.91	1.50	0.00	0.18	0.41	0.04	0.04	2.15	0.00	0.20
	-	0.13	0.00	0.32	0.00	0.00	0.90	0.11	0.05	0.41	0.00	0.00
	0.43	0.05	0.00	8.22	0.25	0.77	2.23	0.10	0.10	1.60	0.16	0.13
	8.54	0.39	0.58	2.24	0.00	0.23	3.10	0.00	0.30	1.07	0.00	0.11
	6.30	0.03	0.38	5.87	0.00	0.85	0.00	0.03	0.05	0.69	0.00	0.07
mean	5.65	0.43	0.26	4.67	0.17	0.48	1.72	0.04	0.13	0.96	0.02	0.11
max	18.05	3.11	0.91	11.85	1.30	0.99	3.10	0.11	0.30	2.15	0.16	0.25
min	0.21	0.01	0.00	0.32	0.00	0.00	0.00	0.00	0.04	0.41	0.00	0.00

Note: Bolded values are the spectrophotometer error detection limit, chlor-*a* not detected.

	July 2012			October 2012		
mg/m²	chlor-*a*	chlor-*b*	chlor-*c*	chlor-*a*	chlor-*b*	chlor-*c*
Upper Slate Creek						
	2.03	0.00	0.14	**0.34**	-	-
	0.96	0.00	0.09	0.70	0.00	0.00
	0.75	0.00	0.00	0.84	0.00	0.00
	0.50	0.00	0.03	0.96	0.00	0.10
	2.03	0.00	0.14	2.67	0.00	0.23
	1.07	0.00	0.14	0.37	0.00	0.11
	0.55	0.00	0.02	0.32	0.00	0.01
	1.71	0.00	0.06	0.96	0.00	0.00
	2.14	0.00	0.12	**0.34**	-	-
	0.83	0.00	0.00	**0.34**	-	-
mean	1.26	0.00	0.08	0.78	0.00	0.07
max	2.14	0.00	0.14	2.67	0.00	0.23
min	0.50	0.00	0.00	0.32	0.00	0.00
East Fork Slate Creek						
	11.53	3.24	0.28	0.60	0.00	0.02
	0.41	0.04	0.04	0.73	0.00	0.07
	0.88	0.00	0.05	**0.34**	-	-
	0.50	0.00	0.03	1.50	0.00	0.16
	3.42	0.00	0.11	0.85	0.00	0.03
	0.64	0.08	0.05	0.64	0.00	0.07
	18.58	0.00	0.66	0.75	0.00	0.02
	13.67	2.32	0.57	1.34	0.00	0.02
	0.69	0.00	0.00	0.41	0.00	0.08
	0.43	0.00	0.00	0.64	0.00	0.07
mean	5.08	0.57	0.18	0.78	0.00	0.06
max	18.58	3.24	0.66	1.50	0.00	0.16
min	0.41	0.00	0.00	0.34	0.00	0.02
West Fork Slate Creek						
	1.15	0.00	0.04	-	-	-
	0.41	0.00	0.08	-	-	-
	0.53	0.00	0.02	-	-	-
	0.64	0.00	0.16	-	-	-
	3.62	0.00	0.24	-	-	-
	0.85	0.00	0.14	-	-	-
	0.96	0.01	0.07	-	-	-
	0.41	0.00	0.08	-	-	-
	0.60	0.00	0.12	-	-	-
	0.96	0.00	0.06	-	-	-
mean	1.01	0.00	0.10	-	-	-
max	3.62	0.01	0.24	-	-	-
min	0.41	0.00	0.02	-	-	-
Lower Slate Creek						
	1.60	0.13	0.07	0.96	0.00	0.08
	4.06	0.00	0.39	2.03	0.00	0.21
	2.03	0.00	0.18	0.75	0.00	0.05
	0.96	0.00	0.04	**0.34**	-	-
	2.56	0.04	0.22	1.92	0.00	0.20
	0.92	0.00	0.01	1.42	0.00	0.24
	1.49	0.13	0.13	4.06	0.00	0.33
	2.35	0.12	0.19	0.96	0.00	0.00
	6.19	0.05	0.54	**0.34**	-	-
	0.96	0.00	0.06	**0.34**	-	-
mean	2.31	0.05	0.18	1.31	0.00	0.16
max	6.19	0.13	0.54	4.06	0.00	0.33
min	0.92	0.00	0.01	0.34	0.00	0.00

Note: Bolded values are the spectrophotometer error detection limit, chlor-*a* not detected.

	July 2011			July 2012		
mg/m²	chlor-*a*	chlor-*b*	chlor-*c*	chlor-*a*	chlor-*b*	chlor-*c*
Sherman Creek Sample Site 1						
	1.28	0.00	0.05	1.07	0.00	0.14
	5.34	0.00	0.36	2.88	0.87	0.16
	5.98	0.00	0.54	0.41	0.04	0.04
	3.84	0.10	0.48	2.67	1.27	0.00
	15.59	3.98	0.17	0.60	0.00	0.12
	11.11	2.64	0.28	1.07	0.00	0.11
	19.33	0.00	1.65	3.63	1.56	0.03
	7.26	0.00	0.74	9.61	4.12	0.08
	1.92	0.04	0.19	2.99	1.43	0.02
	4.38	0.17	0.44	0.43	0.00	0.06
mean	7.60	0.69	0.49	2.54	0.93	0.08
max	19.33	3.98	1.65	9.61	4.12	0.16
min	1.28	0.00	0.05	0.41	0.00	0.00
Sherman Creek Sample Site 2						
	3.10	0.00	0.26	1.05	0.04	0.12
	6.30	0.19	0.62	0.64	0.00	0.11
	4.59	0.00	0.38	0.73	0.00	0.07
	0.32	0.00	0.00	0.50	0.07	0.10
	13.88	0.00	0.54	**0.34**	-	-
	7.37	0.00	0.46	0.51	0.00	0.06
	1.50	0.00	0.09	0.96	0.00	0.16
	14.31	0.00	0.59	0.37	0.00	0.00
	0.85	0.00	0.01	1.28	0.00	0.09
	3.84	0.00	0.25	**0.34**	-	-
mean	5.61	0.02	0.32	0.67	0.01	0.09
max	14.31	0.19	0.62	1.28	0.07	0.16
min	0.32	0.00	0.00	0.34	0.00	0.00

Note: Bolded values are the spectrophotometer error detection limit, chlor-*a* not detected.

APPENDIX B: BENTHIC MACROINVERTEBRATE DATA

Appendix B.—Benthic macroinvertebrate data for samples collected near Kensington Gold Mine, 2011-2012.

Lower Slate Creek Benthic Macroinvertebrate Sample Data			
	May 2011	Feb 2012	May 2012
Total Aquatic Invert Taxa Counted	29	30	32
Total Ephemeroptera	85	213	387
Total Plecoptera	70	297	274
Total Trichoptera	2	15	8
Total Aquatic Diptera	862	422	975
Total Other	129	421	116
% Ephemeroptera	7%	16%	22%
% Plecoptera	6%	22%	16%
% Trichoptera	0%	1%	1%
% Aquatic Diptera	75%	31%	55%
% Other	11%	31%	7%
% EPT	14%	38%	38%
% Chironomidae	72%	29%	53%
% Dominant Aquatic Taxon	72%	41%	53%
Total Aquatic Inverts Counted	1148	1368	1760
Total Terrestrial Inverts Counted	0	1	4
Total Inverts Counted	1148	1369	1764
% Sample Aquatic	100%	100%	100%
% Sample Terrestrial	0%	0%	0%
Sample Size (m^2)	0.093	0.093	0.093
Mean # Aquatic Inverts / Sample	191	228	293
1 StDev	97	88	172
Estimated Mean # Aquatic Inverts / m^2	2057	2452	3154
1 StDev	1046	944	1849
Juvenile Fish	1	0	0

East Fork Slate Creek Benthic Macroinvertebrate Sample Data			
	May 2011	Feb 2012	April 2012
Total Aquatic Invert Taxa Counted	27	33	33
Total Ephemeroptera	387	1069	490
Total Plecoptera	70	194	73
Total Trichoptera	28	44	23
Total Aquatic Diptera	507	1427	547
Total Other	1624	3238	1451
% Ephemeroptera	15%	18%	19%
% Plecoptera	3%	3%	3%
% Trichoptera	1%	1%	1%
% Aquatic Diptera	19%	24%	21%
% Other	62%	54%	56%
% EPT	19%	22%	23%
% Chironomidae	17%	20%	15%
% Dominant Aquatic Taxon	55%	46%	45%
Total Aquatic Inverts Counted	2616	5972	2585
Total Terrestrial Inverts Counted	3	0	1
Total Inverts Counted	2619	5972	2586
% Sample Aquatic	100%	100%	100%
% Sample Terrestrial	0%	0%	0%
Sample Size (m^2)	0.093	0.093	0.093
Mean # Aquatic Inverts / Sample	436	995	431
1 StDev	101	699	123
Estimated Mean # Aquatic Inverts / m^2	4688	10703	4633
1 StDev	1081	7521	1325
Juvenile Fish	0	0	0

West Fork Slate Creek Benthic Macroinvertebrate Sample Data	May 2011	May 2012
Total Aquatic Invert Taxa Counted	21	31
Total Ephemeroptera	181	634
Total Plecoptera	41	166
Total Trichoptera	3	11
Total Aquatic Diptera	35	175
Total Other	20	29
% Ephemeroptera	65%	63%
% Plecoptera	15%	16%
% Trichoptera	1%	1%
% Aquatic Diptera	13%	17%
% Other	7%	3%
% EPT	80%	80%
% Chironomidae	10%	15%
% Dominant Aquatic Taxon	39%	37%
Total Aquatic Inverts Counted	280	1015
Total Terrestrial Inverts Counted	2	0
Total Inverts Counted	282	1015
% Sample Aquatic	99%	100%
% Sample Terrestrial	1%	0%
Sample Size (m^2)	0.093	0.093
Mean # Aquatic Inverts / Sample	47	169
1 StDev	38	94
Estimated Mean # Aquatic Inverts / m^2	502	1819
1 StDev	410	1009
Juvenile Fish	0	0

Upper Slate Creek Benthic Macroinvertebrate Sample Data	May 2011	April 2012
Total Aquatic Invert Taxa Counted	33	39
Total Ephemeroptera	368	454
Total Plecoptera	401	349
Total Trichoptera	116	48
Total Aquatic Diptera	248	273
Total Other	275	135
% Ephemeroptera	26%	36%
% Plecoptera	29%	28%
% Trichoptera	8%	4%
% Aquatic Diptera	18%	22%
% Other	20%	11%
% EPT	63%	68%
% Chironomidae	15%	20%
% Dominant Aquatic Taxon	20%	24%
Total Aquatic Inverts Counted	1408	1259
Total Terrestrial Inverts Counted	1	0
Total Inverts Counted	1409	1259
% Sample Aquatic	100%	100%
% Sample Terrestrial	0%	0%
Sample Size (m^2)	0.093	0.093
Mean # Aquatic Inverts / Sample	235	210
1 StDev	109	123
Estimated Mean # Aquatic Inverts / m^2	2523	2256
1 StDev	1173	1321
Juvenile Fish	0	0

Upper Johnson Creek Benthic Macroinvertebrate Sample Data		
	May 2011	April 2012
Total Aquatic Invert Taxa Counted	24	28
Total Ephemeroptera	962	1139
Total Plecoptera	114	163
Total Trichoptera	59	118
Total Aquatic Diptera	619	586
Total Other	330	208
% Ephemeroptera	46%	51%
% Plecoptera	6%	7%
% Trichoptera	3%	5%
% Aq. Diptera	30%	27%
% Other	16%	9%
% EPT	55%	64%
% Chironomidae	29%	26%
% Dominant Aquatic Taxon	37%	34%
Total Aquatic Inverts Counted	2084	2214
Total Terrestrial Inverts Counted	1	1
Total Inverts Counted	2085	2215
% Sample Aquatic	100%	100%
% Sample Terrestrial	0%	0%
Sample Size (m^2)	0.093	0.093
Mean # Aquatic Inverts / Sample	347	369
1 StDev	178	214
Estimated Mean # Aquatic Inverts / m^2	3735	3968
1 StDev	1918	2305
Juvenile Fish	0	0

Sherman Creek Sample Point 1 Benthic Macroinvertebrate Sample Data		
	May 2011	April 2012
Total Aquatic Invert Taxa Counted	26	31
Total Ephemeroptera	157	876
Total Plecoptera	36	103
Total Trichoptera	7	14
Total Aquatic Diptera	89	160
Total Other	335	363
% Ephemeroptera	25%	58%
% Plecoptera	6%	7%
% Trichoptera	1%	1%
% Aquatic Diptera	14%	11%
% Other	54%	24%
% EPT	32%	66%
% Chironomidae	6%	8%
% Dominant Aquatic Taxon	53%	45%
Total Aquatic Inverts Counted	624	1525
Total Terrestrial Inverts Counted	1	0
Total Inverts Counted	625	1525
% Sample Aquatic	100%	100%
% Sample Terrestrial	0%	0%
Sample Size (m^2)	0.093	0.093
Mean # Aquatic Inverts / Sample	104	254
1 StDev	93	131
Estimated Mean # Aquatic Inverts / m^2	1118	2733
1 StDev	1000	1410
Juvenile Fish	10	12

Sherman Creek Sample Point 2 Benthic Macroinvertebrate Sample Data		
	May 2011	April 2012
Total Aquatic Invert Taxa Counted	30	37
Total Ephemeroptera	548	1143
Total Plecoptera	137	77
Total Trichoptera	14	26
Total Aquatic Diptera	143	254
Total Other	79	75
% Ephemeroptera	60%	73%
% Plecoptera	15%	5%
% Trichoptera	2%	2%
% Aquatic Diptera	16%	16%
% Other	9%	5%
% EPT	76%	79%
% Chironomidae	11%	15%
% Dominant Aquatic Taxon	30%	57%
Total Aquatic Inverts Counted	921	1575
Total Terrestrial Inverts Counted	1	2
Total Inverts Counted	922	1575
% Sample Aquatic	100%	100%
% Sample Terrestrial	0%	0%
Sample Size (m^2)	0.093	0.093
Mean # Aquatic Inverts / Sample	154	263
1 StDev	86	109
Estimated Mean # Aquatic Inverts / m^2	1651	2823
1 StDev	927	1174
Juvenile Fish	0	0

APPENDIX C: RESIDENT FISH POPULATION AND CONDITION DATA

Table C1.—East Fork and Upper Slate Creek resident fish capture data and population estimates by reach near Kensington Gold Mine, 2011–2012.

Site	Year	Species	FL (mm)	Number of Fish Captured				MLE	95% CI	Precision	Power
				Set 1	Set 2	Set 3	Total				
East Fork Slate Creek	2011	DV	105-140	6	2	2	10	40	---	n/a	---
	2012	DV	165-175	2	1	2	5	20	---	n/a	n/a
Upper Slate Creek	2011	DV	35-145	14	12	2	28	120	104-136	13%	---
	2012	DV	60-164	23	14	6	43	192	156-228	17%	0.44

Note*:* Precision and power of the East Fork Slate Creek population estimates could not calculated due to small sample size.

Table C2.—East Fork and Upper Slate Creek resident fish capture data and population estimates by habitat type and by reach near Kensington Gold Mine, 2011–2012.

Site	Year	Species	Habitat Type	Number of Fish Captured				MLE	95% CI
				Set 1	Set 2	Set 3	Total		
East Fork Slate Creek	2011	DV	Riffle	3	0	0	3	12	---
East Fork Slate Creek	2011	DV	Pool	3	1	2	6	24	---
East Fork Slate Creek	2011	DV	Glide	0	1	0	1	4	---
East Fork Slate Creek	2012	DV	Riffle	0	0	1	1	4	---
East Fork Slate Creek	2012	DV	Pool	2	1	1	4	16	---
East Fork Slate Creek	2012	DV	Glide	0	0	0	0	0	---
Upper Slate Creek	2011	DV	Riffle	2	2	0	4	16	---
Upper Slate Creek	2011	DV	Pool	11	9	1	22	88	76-100
Upper Slate Creek	2011	DV	Glide	1	1	1	3	12	---
Upper Slate Creek	2012	DV	Riffle	2	4	4	10	40	---
Upper Slate Creek	2012	DV	Pool	20	3	2	25	100	100-100
Upper Slate Creek	2012	DV	Glide	1	7	0	8	36	---

Table C3.—Fork length, weight and mean condition factor (K) of resident fish captured in East Fork and Upper Slate Creek near Kensington Gold Mine, 2011–2012.

East Slate Creek				
Pass #	Species	FL (mm)	Weight (g)	K
1	DV	166	58.2	1.27
1	DV	165	n/a	n/a
2	DV	165	44.5	0.99
3	DV	165	46.4	1.03
3	DV	175	55.6	1.04
			Mean K =	1.08

Upper Slate Creek				
Pass #	Species	FL (mm)	Weight (g)	K
1	DV	94	9.1	1.10
1	DV	96	9.7	1.10
1	DV	105	15.6	1.35
1	DV	97	13.9	1.52
1	DV	100	10.2	1.02
1	DV	86	6.35	1.00
1	DV	87	6.5	0.99
1	DV	92	8	1.03
1	DV	155	36.5	0.98
1	DV	96	8.8	0.99
1	DV	65	2.6	0.95
1	DV	68	2.9	0.92
1	DV	65	2.7	0.98
1	DV	66	3.7	1.29
1	DV	68	3.6	1.14
1	DV	66	2.3	0.80
1	DV	72	3.8	1.02
1	DV	71	2.7	0.75
1	DV	69	2.4	0.73
1	DV	68	3.1	0.99
1	DV	65	2	0.73
1	DV	70	3.4	0.99
1	DV	60	2.3	1.06
2	DV	134	23.9	0.99
2	DV	124	17	0.89
2	DV	114	12.6	0.85
2	DV	115	16	1.05
2	DV	90	6.7	0.92
2	DV	112	14.2	1.01
2	DV	118	15.7	0.96
2	DV	62	2.5	1.05
2	DV	60	2.1	0.97
2	DV	60	2.2	1.02
2	DV	60	2	0.93
2	DV	65	2.8	1.02
2	DV	70	2.7	0.79
2	DV	70	2.7	0.79
3	DV	164	43.4	0.98
3	DV	113	10.6	0.73
3	DV	70	3.8	1.11
3	DV	102	12.4	1.17
3	DV	98	9.8	1.04
3	DV	80	5.2	1.02
			Mean K =	0.99

APPENDIX D: RESIDENT FISH METALS CONCENTRATIONS LAB REPORT

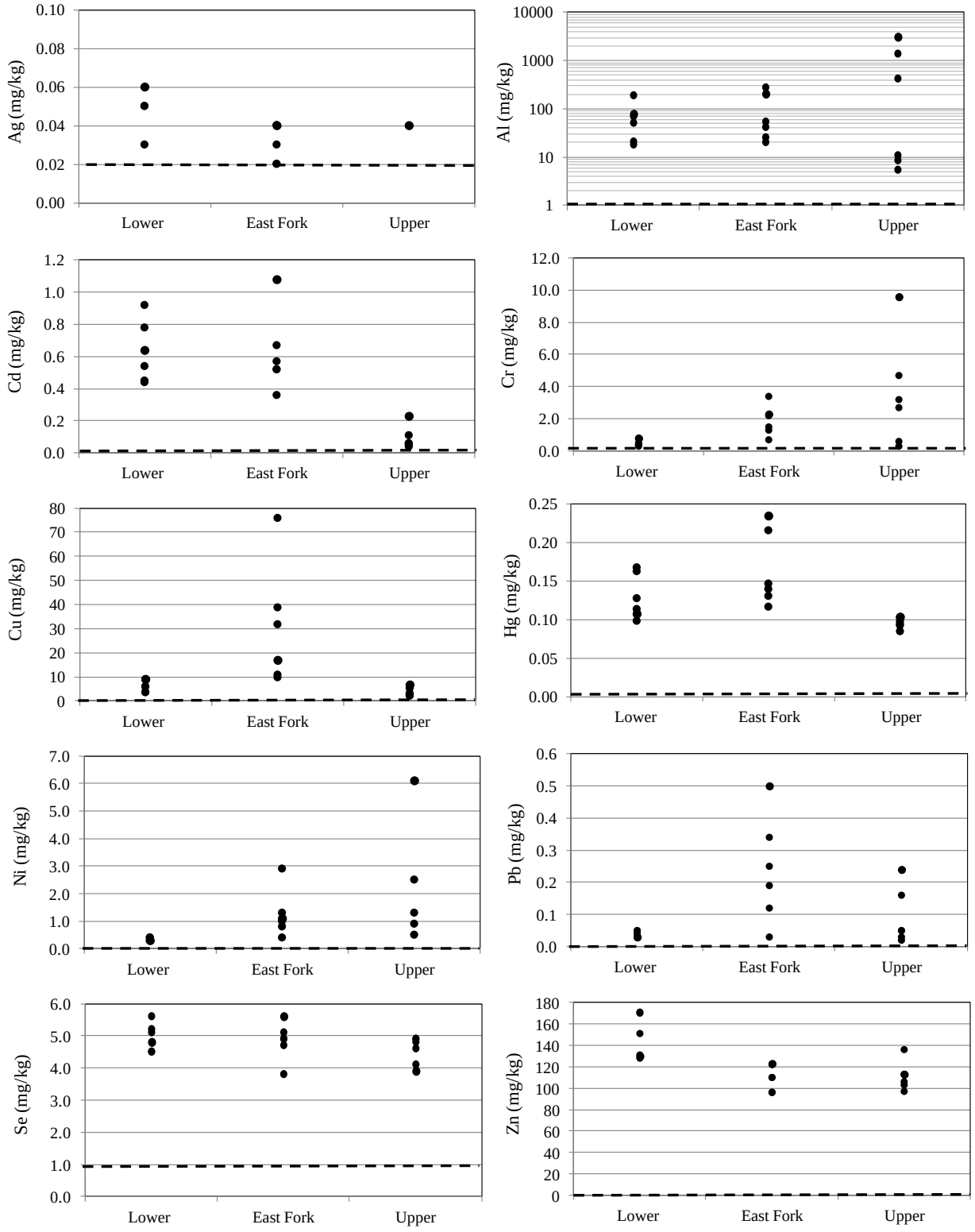

Figure D1.—Whole body metals concentrations for Dolly Varden char collected in Lower, East Fork, and Upper Slate Creek near Kensington Gold Mine in 2012.

Table D1.—Whole body metals concentrations data for Dolly Varden char collected in Lower, East Fork, and Upper Slate Creek near Kensington Gold Mine, 2011–2012.

Date Collected	Sample Site	FL (mm)	Mass (g)	Ag (mg/kg)	Al (mg/kg)	Cd (mg/kg)	Cr (mg/kg)	Cu (mg/kg)	Hg (mg/kg)	Ni (mg/kg)	Pb (mg/kg)	Se (mg/kg)	Zn (mg/kg)
	Method Reporting Limit			0.02	2.0	0.02	0.2	0.10	0.005	0.2	0.02	1.0	0.5
10/11/11	Lower Slate Creek	110-130	14.9-23.2	0.05	2430.0	0.72	17.3	15.5	0.0674	6.2	0.50	3.8	195
8/20/12	Lower Slate Creek	95	7.7	ND	50.9	0.45	0.5	3.5	0.167	0.3	0.05	5.6	128
8/20/12	Lower Slate Creek	115	15.5	0.06	78.0	0.64	0.8	9.0	0.107	0.3	0.03	4.8	130
8/20/12	Lower Slate Creek	110	14.2	0.05	20.8	0.54	0.4	6.0	0.162	ND	0.03	4.5	171
8/20/12	Lower Slate Creek	115	17.6	0.05	69.3	0.78	0.4	8.9	0.113	0.4	0.03	5.1	170
8/20/12	Lower Slate Creek	90	9.6	ND	18.0	0.44	0.3	3.6	0.0977	ND	0.04	4.5	131
8/20/12	Lower Slate Creek	105	12.7	0.03	189	0.92	0.8	5.8	0.127	0.4	0.05	5.2	151
9/13/11	East Fork Slate Creek	115-125	13.4-19.5	0.02	46.3	1.99	1.3	14.6	0.107	1.1	0.04	4.6	133
8/1/12	East Fork Slate Creek	166	58.2	0.04	53.8	0.57	1.5	75.8	0.130	1.0	0.03	5.1	96.3
8/1/12	East Fork Slate Creek	165	44.5	0.04	204	1.08	2.3	16.9	0.234	1.1	0.50	5.6	123
8/1/12	East Fork Slate Creek	165	46.4	0.02	20.2	0.52	0.7	10.8	0.116	0.4	0.12	4.9	95.9
8/1/12	East Fork Slate Creek	175	55.6	0.04	25.4	0.67	1.3	31.7	0.215	0.8	0.19	4.9	110
8/1/12	East Fork Slate Creek	163	56.4	0.02	275	0.52	3.4	9.7	0.146	2.9	0.25	4.7	122
8/1/12	East Fork Slate Creek	165	62.7	0.03	41.6	0.36	2.2	38.7	0.139	1.3	0.34	3.8	110
8/10/11	Upper Slate Creek	55-125	5-21.6	ND	1630	0.14	13.5	11.3	0.112	5.5	0.20	4.4	115
8/2/12	Upper Slate Creek	94	9.1	ND	1380	0.11	4.7	5.2	0.0919	2.5	0.16	4.8	103
8/2/12	Upper Slate Creek	96	9.7	0.04	3080	0.23	9.6	6.7	0.103	6.1	0.24	3.9	113
8/2/12	Upper Slate Creek	105	15.6	ND	421	0.06	2.7	3.1	0.0938	0.9	0.05	4.6	106
8/2/12	Upper Slate Creek	97	13.9	ND	5.4	0.05	0.6	2.1	0.102	ND	0.02	4.9	97.0
8/2/12	Upper Slate Creek	100	10.2	ND	10.8	0.04	0.3	2.2	0.0972	0.5	0.03	4.1	113
8/2/12	Upper Slate Creek	86	6.5	ND	8.5	0.06	3.2	2.6	0.0842	1.3	0.05	4.9	136

November 8, 2012 Analytical Report for Service Request No: K1209738

Ben Brewster
Alaska Department of Fish and Game
Division of Habitat
P.O. Box 110024
Juneau, AK 99811

RE: Kensington Gold Mine Whole Fish Analysis/Coeur Alaska Mining Company

Dear Ben:

Enclosed are the results of the samples submitted to our laboratory on September 28, 2012. For your reference, these analyses have been assigned our service request number K1209738.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3363. You may also contact me via Email at Lisa.Domenighini@alsglobal.com.

Respectfully submitted,

Columbia Analytical Services, Inc. dba ALS Environmental

Lisa Domenighini
Project Manager

LD/jw

Columbia Analytical Services
ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626
PHONE +1 360 577 7222 | FAX +1 360 636 1068
Columbia Analytical Services, Inc.
Part of the ALS Group A Campbell Brothers Limited Company

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2286
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L12-28
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Georgia DNR	http://www.gaepd.org/Documents/techguide_pcb.html#cel	881
Hawaii DOH	Not available	-
Idaho DHW	http://www.healthandwelfare.idaho.gov/Health/Labs/CertificationDrinkingWaterLabs/tabid/1833/Default.aspx	-
Indiana DOH	http://www.in.gov/isdh/24859.htm	C-WA-01
ISO 17025	http://www.pjlabs.com/	L12-27
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	3016
Louisiana DHH	Not available	LA110003
Maine DHS	Not available	WA0035
Michigan DEQ	http://www.michigan.gov/deq/0,1607,7-135-3307_4131_4156---,00.html	9949
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-368
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA35
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
New Mexico ED	http://www.nmenv.state.nm.us/dwb/Index.htm	-
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA200001
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	4704427-08-TX
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C1203
Wisconsin DNR	http://dnr.wi.gov/	998386840
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.caslab.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.caslab.com or at the accreditation bodies web site

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

ALS ENVIRONMENTAL

Client:	Alaska Department of Fish and Game	**Service Request No.:**	K1209738
Project:	Coeur Alaska Mining Company	**Date Received:**	9/28/12-10/9/12
Sample Matrix:	Tissue		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Additional quality control analyses reported herein include: Matrix/Duplicate Matrix Spike (MS/DMS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Eighteen tissue samples were received for analysis at ALS Environmental on 9/28/12-10/9/12. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC and frozen at –20ºC upon receipt at the laboratory.

Total Metals

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for the replicate analysis of Aluminum in sample East Fork Slate Creek #1 was outside the project specified control limits. The samples were homogenized, freeze dried, then ground prior to digestion, however this was not sufficient to achieve a completely uniform distribution of Aluminum in the tissue.

No other anomalies associated with the analysis of these samples were observed.

Approved by_____

Columbia Analytical Services
An Employee - Owned Company

CHAIN OF CUSTODY

SR#: K109738

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

PAGE 1 OF 1 COC #

PROJECT NAME	Kensington Gold Mine, Whole Fish Analysis
PROJECT NUMBER	Coeur Alaska Mine Company
PROJECT MANAGER	Kate Kanouse / ADFG Habitat
COMPANY/ADDRESS	Alaska Dept. Fish and Game
	802 west 3rd St.
CITY/STATE/ZIP	Juneau AK, 99801
E-MAIL ADDRESS	benjamin.brewster@alaska.gov
PHONE #	907-465-6160 FAX# 907-465-4759
SAMPLER'S SIGNATURE	Benjamin Brewster

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☐ 8260 ☐ 8021 ☐ BTEX ☐	Hydrocarbons (*see below) Gas ☐ Diesel ☐ Oil ☐	☐ Fuel Fingerprint (FIQ) ☐ NW-HCID ☐ Oil & Grease/TRPH 1664 HEM ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A ☐ 8141A ☐ 8151A ☐	Chlorophenolics - 8151M Tri ☐ Tetra ☐ PCP ☐	PAHS 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐	Hex-Chrom ☐	pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle)	NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐	Total Mercury 1631				REMARKS
See attached list of resident fish, whole body samples				tissue	18									X					X					

REPORT REQUIREMENTS

- ___ I. Routine Report: Method Blank, Surrogate, as required
- X II. Report Dup., MS, MSD as required
- ___ III. Data Validation Report (includes all raw data)
- ___ IV. CLP Deliverable Report
- ___ V. EDD

INVOICE INFORMATION

P.O. #

Bill To: Coeur Alaska
3031 Clinton Dr.
Ste 202

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: (Al) As Sb Ba Be B Ca (Cd) Co (Cr) (Cu) Fe (Pb) Mg Mn Mo (Ni) K (Ag) Na (Se) Sr Tl Sn V (Zn) Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

Dry wgt basis - Report % moisture
send e copy and hardcopy to Benjamin Brewster
ADFG, Habitat
802 west 3rd St.
Juneau AK, 99801

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Benjamin Brewster	Signature: Marla Smith	Signature	Signature
Date/Time:	Date/Time: 9/28/12 0940	Date/Time	Date/Time
Printed Name: Benjamin Brewster	Printed Name: Marla Smith	Printed Name	Printed Name
Firm: ADFG	Firm: ACS	Firm	Firm

K120 9738

Kensington Gold Mine Biomonitoring - 2012							
Resident Fish for Whole Body Metals				COOLER 1/1			
Basis, all samples: Dry Weight, Report %Moisture							
No preservative added; all fish frozen							
Requested Analyses: Al,Ag,Cd,Cr,Cu,Pb,Ni,Ag,Se,Zn,Total Hg							
Matrix	**Collector**	**Date Collected**	**Sample Number**	**Sample Location**	**Analysis Requested**	**Fk Length (mm)**	**Weight (g)**
Whole Body	ADF&G	7/21/2012	East Fork Slate Creek Sample #1	East Fork Slate Creek (EFSC)	Al,Ag, Cd, Cr,Cu, Pb, Ni,Se, Zn,Hg	166	58.2
Whole Body	ADF&G	7/21/2012	East Fork Slate Creek Sample #2	East Fork Slate Creek (EFSC)	Al,Ag, Cd, Cr,Cu, Pb, Ni,Se, Zn,Hg	165	44.5
Whole Body	ADF&G	7/21/2012	East Fork Slate Creek Sample #3	East Fork Slate Creek (EFSC)	Al,Ag, Cd, Cr,Cu, Pb, Ni,Se, Zn,Hg	165	46.4
Whole Body	ADF&G	7/21/2012	East Fork Slate Creek Sample #4	East Fork Slate Creek (EFSC)	Al,Ag, Cd, Cr,Cu, Pb, Ni,Se, Zn,Hg	175	55.6
Whole Body	ADF&G	7/21/2012	East Fork Slate Creek Sample #5	East Fork Slate Creek (EFSC)	Al,Ag, Cd, Cr,Cu, Pb, Ni,Se, Zn,Hg	163	56.4
Whole Body	ADF&G	7/21/2012	East Fork Slate Creek Sample #6	East Fork Slate Creek (EFSC)	Al,Ag, Cd, Cr,Cu, Pb, Ni,Se, Zn,Hg	165	62.7
Whole Body	ADF&G	8/2/2012	Upper Slate Creek Sample #1	Upper Slate Creek(USL)	Al,Ag, Cd, Cr,Cu, Pb, Ni,Se, Zn,Hg	94	9.1
Whole Body	ADF&G	8/2/2012	Upper Slate Creek Sample #2	Upper Slate Creek(USL)	Al,Ag, Cd, Cr,Cu, Pb, Ni,Se, Zn,Hg	96	9.7
Whole Body	ADF&G	8/2/2012	Upper Slate Creek Sample #3	Upper Slate Creek(USL)	Al,Ag, Cd, Cr,Cu, Pb, Ni,Se, Zn,Hg	105	15.6
Whole Body	ADF&G	8/2/2012	Upper Slate Creek Sample #4	Upper Slate Creek(USL)	Al,Ag, Cd, Cr,Cu, Pb, Ni,Se, Zn,Hg	97	13.9
Whole Body	ADF&G	8/2/2012	Upper Slate Creek Sample #5	Upper Slate Creek(USL)	Al,Ag, Cd, Cr,Cu, Pb, Ni,Se, Zn,Hg	100	10.2
Whole Body	ADF&G	8/2/2012	Upper Slate Creek Sample #6	Upper Slate Creek(USL)	Al,Ag, Cd, Cr,Cu, Pb, Ni,Se, Zn,Hg	86	6.5
Whole Body	ADF&G	7/22/2012	Lower Slate Creek Sample #1	Lower Slate Creek(LSC)	Al,Ag, Cd, Cr,Cu, Pb, Ni,Se, Zn,Hg	95	7.7
Whole Body	ADF&G	7/22/2012	Lower Slate Creek Sample #2	Lower Slate Creek(LSC)	Al,Ag, Cd, Cr,Cu, Pb, Ni,Se, Zn,Hg	115	15.5
Whole Body	ADF&G	7/22/2012	Lower Slate Creek Sample #3	Lower Slate Creek(LSC)	Al,Ag, Cd, Cr,Cu, Pb, Ni,Se, Zn,Hg	110	14.2
Whole Body	ADF&G	7/22/2012	Lower Slate Creek Sample #4	Lower Slate Creek(LSC)	Al,Ag, Cd, Cr,Cu, Pb, Ni,Se, Zn,Hg	115	17.6
Whole Body	ADF&G	7/22/2012	Lower Slate Creek Sample #5	Lower Slate Creek(LSC)	Al,Ag, Cd, Cr,Cu, Pb, Ni,Se, Zn,Hg	90	9.6
Whole Body	ADF&G	7/22/2012	Lower Slate Creek Sample #6	Lower Slate Creek(LSC)	Al,Ag, Cd, Cr,Cu, Pb, Ni,Se, Zn,Hg	105	12.7

PC Lee

Cooler Receipt and Preservation Form

Client / Project: Coeur Service Request K12 09738

Received: 9/28/12 Opened: 9/28/12 By: KO Unloaded: 9/28/12 By: KO

1. Samples were received via? *Mail* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other*_____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 1, Front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID (NA)	Tracking Number	NA	Filed
5.9	—	318		8015 3750 0702		

7. Packing material: *Inserts* (*Baggies*) *Bubble Wrap* (*Gel Packs*) *Wet Ice* *Dry Ice* *Sleeves* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA (Y) N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
15. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

COLUMBIA ANALYTICAL SERVICES, INC.

Now part of the ALS Group

Analytical Report

Client:	Alaska Department of Fish and Game	**Service Request:**	K1209738
Project:	Kensington Gold Mine Whole Fish Analysis/Coeur Alaska Mining Company	**Date Collected:**	07/21-08/02/12
Sample Matrix:	Tissue	**Date Received:**	09/28/12

Moisture

Prep Method:	NONE	Units:	PERCENT
Analysis Method:	Freeze Dry	Basis:	Wet
Test Notes:			

Sample Name	Lab Code	Date Analyzed	Result	Result Notes
East Fork Slate Creek Sample #1	K1209738-001	10/24/12	73.9	
East Fork Slate Creek Sample #2	K1209738-002	10/24/12	74.3	
East Fork Slate Creek Sample #3	K1209738-003	10/24/12	71.2	
East Fork Slate Creek Sample #4	K1209738-004	10/24/12	74.5	
East Fork Slate Creek Sample #5	K1209738-005	10/24/12	74.6	
East Fork Slate Creek Sample #6	K1209738-006	10/24/12	73.7	
Upper State Creek Sample #1	K1209738-007	10/24/12	75.6	
Upper State Creek Sample #2	K1209738-008	10/24/12	75.4	
Upper State Creek Sample #3	K1209738-009	10/24/12	76.5	
Upper State Creek Sample #4	K1209738-010	10/24/12	78.1	
Upper State Creek Sample #5	K1209738-011	10/24/12	75.9	
Upper State Creek Sample #6	K1209738-012	10/24/12	76.7	
Lower Slate Creek Sample #1	K1209738-013	10/24/12	75.5	
Lower Slate Creek Sample #2	K1209738-014	10/24/12	75.8	
Lower Slate Creek Sample #3	K1209738-015	10/24/12	77.2	
Lower Slate Creek Sample #4	K1209738-016	10/24/12	78.5	
Lower Slate Creek Sample #5	K1209738-017	10/24/12	74.9	
Lower Slate Creek Sample #6	K1209738-018	10/24/12	75.6	

COLUMBIA ANALYTICAL SERVICES, INC.

Now part of the ALS Group

QA/QC Report

Client:	Alaska Department of Fish and Game	**Service Request:**	K1209738
Project:	Kensington Gold Mine Whole Fish Analysis/Coeur Alaska Mining Company	**Date Collected:**	07/21/12
Sample Matrix:	Tissue	**Date Received:**	09/28/12
		Date Extracted:	NA
		Date Analyzed:	10/24/12

Duplicate Summary

Sample Name:	East Fork Slate Creek Sample #1	Units:	PERCENT
Lab Code:	K1209738-001D	Basis:	Wet
Test Notes:			

Analyte	Prep Method	Analysis Method	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Moisture	NA	Freeze Dry	73.9	72.8	73.4	1	

COLUMBIA ANALYTICAL SERVICES, INC.

Now part of the ALS Group

- Cover Page -
INORGANIC ANALYSIS DATA PACKAGE

Client: Alaska Department of Fish and Game
Project Name: Kensington Gold Mine Whole Fish Analysis
Project No.: Coeur Alaska Mining Company

Service Request: K1209738

Sample Name:	Lab Code:
East Fork Slate Creek Sample #1	K1209738-001
East Fork Slate Creek Sample #1D	K1209738-001D
East Fork Slate Creek Sample #1S	K1209738-001S
East Fork Slate Creek Sample #2	K1209738-002
East Fork Slate Creek Sample #3	K1209738-003
East Fork Slate Creek Sample #4	K1209738-004
East Fork Slate Creek Sample #5	K1209738-005
East Fork Slate Creek Sample #6	K1209738-006
Upper State Creek Sample #1	K1209738-007
Upper State Creek Sample #2	K1209738-008
Upper State Creek Sample #3	K1209738-009
Upper State Creek Sample #4	K1209738-010
Upper State Creek Sample #5	K1209738-011
Upper State Creek Sample #6	K1209738-012
Lower Slate Creek Sample #1	K1209738-013
Lower Slate Creek Sample #2	K1209738-014
Lower Slate Creek Sample #3	K1209738-015
Lower Slate Creek Sample #4	K1209738-016
Lower Slate Creek Sample #5	K1209738-017
Lower Slate Creek Sample #6	K1209738-018
Method Blank	K1209738-MB

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Alaska Department of Fish and Ga	**Service Request:**	K1209738
Project No.:	Coeur Alaska Mining Company	**Date Collected:**	07/21/12
Project Name:	Kensington Gold Mine Whole Fish	**Date Received:**	09/28/12
Matrix:	TISSUE	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: East Fork Slate Creek Sample #1 **Lab Code:** K1209738-001

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	200.8	2.0	5.0	10/23/12	11/05/12	53.8		*
Cadmium	200.8	0.02	5.0	10/23/12	11/05/12	0.57		
Chromium	200.8	0.2	5.0	10/23/12	11/05/12	1.5		
Copper	200.8	0.1	5.0	10/23/12	11/05/12	75.8		
Lead	200.8	0.02	5.0	10/23/12	11/05/12	0.03		
Nickel	200.8	0.2	5.0	10/23/12	11/05/12	1.0		
Selenium	200.8	1.0	5.0	10/23/12	11/05/12	5.1		
Silver	200.8	0.02	5.0	10/23/12	11/05/12	0.04		
Zinc	200.8	0.5	5.0	10/23/12	11/05/12	96.3		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Alaska Department of Fish and Ga	**Service Request:**	K1209738
Project No.:	Coeur Alaska Mining Company	**Date Collected:**	07/21/12
Project Name:	Kensington Gold Mine Whole Fish	**Date Received:**	09/28/12
Matrix:	TISSUE	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: East Fork Slate Creek Sample #2 **Lab Code:** K1209738-002

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	200.8	2.0	5.0	10/23/12	11/05/12	204		*
Cadmium	200.8	0.02	5.0	10/23/12	11/05/12	1.08		
Chromium	200.8	0.2	5.0	10/23/12	11/05/12	2.3		
Copper	200.8	0.1	5.0	10/23/12	11/05/12	16.9		
Lead	200.8	0.02	5.0	10/23/12	11/05/12	0.50		
Nickel	200.8	0.2	5.0	10/23/12	11/05/12	1.1		
Selenium	200.8	1.0	5.0	10/23/12	11/05/12	5.6		
Silver	200.8	0.02	5.0	10/23/12	11/05/12	0.04		
Zinc	200.8	0.5	5.0	10/23/12	11/05/12	123		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Alaska Department of Fish and Ga	**Service Request:**	K1209738
Project No.:	Coeur Alaska Mining Company	**Date Collected:**	07/21/12
Project Name:	Kensington Gold Mine Whole Fish	**Date Received:**	09/28/12
Matrix:	TISSUE	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: East Fork Slate Creek Sample #3 **Lab Code:** K1209738-003

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	200.8	2.0	5.0	10/23/12	11/05/12	20.2		*
Cadmium	200.8	0.02	5.0	10/23/12	11/05/12	0.52		
Chromium	200.8	0.2	5.0	10/23/12	11/05/12	0.7		
Copper	200.8	0.1	5.0	10/23/12	11/05/12	10.8		
Lead	200.8	0.02	5.0	10/23/12	11/05/12	0.12		
Nickel	200.8	0.2	5.0	10/23/12	11/05/12	0.4		
Selenium	200.8	1.0	5.0	10/23/12	11/05/12	4.9		
Silver	200.8	0.02	5.0	10/23/12	11/05/12	0.02		
Zinc	200.8	0.5	5.0	10/23/12	11/05/12	95.9		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Alaska Department of Fish and Ga	**Service Request:**	K1209738
Project No.:	Coeur Alaska Mining Company	**Date Collected:**	07/21/12
Project Name:	Kensington Gold Mine Whole Fish	**Date Received:**	09/28/12
Matrix:	TISSUE	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: East Fork Slate Creek Sample #4 **Lab Code:** K1209738-004

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	200.8	2.0	5.0	10/23/12	11/05/12	25.4		*
Cadmium	200.8	0.02	5.0	10/23/12	11/05/12	0.67		
Chromium	200.8	0.2	5.0	10/23/12	11/05/12	1.3		
Copper	200.8	0.1	5.0	10/23/12	11/05/12	31.7		
Lead	200.8	0.02	5.0	10/23/12	11/05/12	0.19		
Nickel	200.8	0.2	5.0	10/23/12	11/05/12	0.8		
Selenium	200.8	1.0	5.0	10/23/12	11/05/12	4.9		
Silver	200.8	0.02	5.0	10/23/12	11/05/12	0.04		
Zinc	200.8	0.5	5.0	10/23/12	11/05/12	110		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Alaska Department of Fish and Ga	**Service Request:**	K1209738
Project No.:	Coeur Alaska Mining Company	**Date Collected:**	07/21/12
Project Name:	Kensington Gold Mine Whole Fish	**Date Received:**	09/28/12
Matrix:	TISSUE	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: East Fork Slate Creek Sample #5 **Lab Code:** K1209738-005

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	200.8	2.0	5.0	10/23/12	11/05/12	275		*
Cadmium	200.8	0.02	5.0	10/23/12	11/05/12	0.52		
Chromium	200.8	0.2	5.0	10/23/12	11/05/12	3.4		
Copper	200.8	0.1	5.0	10/23/12	11/05/12	9.7		
Lead	200.8	0.02	5.0	10/23/12	11/05/12	0.25		
Nickel	200.8	0.2	5.0	10/23/12	11/05/12	2.9		
Selenium	200.8	1.0	5.0	10/23/12	11/05/12	4.7		
Silver	200.8	0.02	5.0	10/23/12	11/05/12	0.02		
Zinc	200.8	0.5	5.0	10/23/12	11/05/12	122		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Alaska Department of Fish and Ga	**Service Request:**	K1209738
Project No.:	Coeur Alaska Mining Company	**Date Collected:**	07/21/12
Project Name:	Kensington Gold Mine Whole Fish	**Date Received:**	09/28/12
Matrix:	TISSUE	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **East Fork Slate Creek Sample #6** **Lab Code:** **K1209738-006**

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	200.8	2.0	5.0	10/23/12	11/05/12	41.6		*
Cadmium	200.8	0.02	5.0	10/23/12	11/05/12	0.36		
Chromium	200.8	0.2	5.0	10/23/12	11/05/12	2.2		
Copper	200.8	0.1	5.0	10/23/12	11/05/12	38.7		
Lead	200.8	0.02	5.0	10/23/12	11/05/12	0.34		
Nickel	200.8	0.2	5.0	10/23/12	11/05/12	1.3		
Selenium	200.8	1.0	5.0	10/23/12	11/05/12	3.8		
Silver	200.8	0.02	5.0	10/23/12	11/05/12	0.03		
Zinc	200.8	0.5	5.0	10/23/12	11/05/12	110		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Alaska Department of Fish and Ga	**Service Request:**	K1209738
Project No.:	Coeur Alaska Mining Company	**Date Collected:**	08/02/12
Project Name:	Kensington Gold Mine Whole Fish	**Date Received:**	09/28/12
Matrix:	TISSUE	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **Upper State Creek Sample #1** **Lab Code:** **K1209738-007**

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	200.8	2.0	5.0	10/23/12	11/05/12	1380		*
Cadmium	200.8	0.02	5.0	10/23/12	11/05/12	0.11		
Chromium	200.8	0.2	5.0	10/23/12	11/05/12	4.7		
Copper	200.8	0.1	5.0	10/23/12	11/05/12	5.2		
Lead	200.8	0.02	5.0	10/23/12	11/05/12	0.16		
Nickel	200.8	0.2	5.0	10/23/12	11/05/12	2.5		
Selenium	200.8	1.0	5.0	10/23/12	11/05/12	4.8		
Silver	200.8	0.02	5.0	10/23/12	11/05/12	0.02	U	
Zinc	200.8	0.5	5.0	10/23/12	11/05/12	103		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Alaska Department of Fish and Ga	**Service Request:**	K1209738
Project No.:	Coeur Alaska Mining Company	**Date Collected:**	08/02/12
Project Name:	Kensington Gold Mine Whole Fish	**Date Received:**	09/28/12
Matrix:	TISSUE	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **Upper State Creek Sample #2** **Lab Code:** **K1209738-008**

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	200.8	2.0	5.0	10/23/12	11/05/12	3080		*
Cadmium	200.8	0.02	5.0	10/23/12	11/05/12	0.23		
Chromium	200.8	0.2	5.0	10/23/12	11/05/12	9.6		
Copper	200.8	0.1	5.0	10/23/12	11/05/12	6.7		
Lead	200.8	0.02	5.0	10/23/12	11/05/12	0.24		
Nickel	200.8	0.2	5.0	10/23/12	11/05/12	6.1		
Selenium	200.8	1.0	5.0	10/23/12	11/05/12	3.9		
Silver	200.8	0.02	5.0	10/23/12	11/05/12	0.04		
Zinc	200.8	0.5	5.0	10/23/12	11/05/12	113		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Alaska Department of Fish and Ga	**Service Request:**	K1209738
Project No.:	Coeur Alaska Mining Company	**Date Collected:**	08/02/12
Project Name:	Kensington Gold Mine Whole Fish	**Date Received:**	09/28/12
Matrix:	TISSUE	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **Upper State Creek Sample #3** **Lab Code:** **K1209738-009**

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	200.8	2.0	5.0	10/23/12	11/05/12	421		*
Cadmium	200.8	0.02	5.0	10/23/12	11/05/12	0.06		
Chromium	200.8	0.2	5.0	10/23/12	11/05/12	2.7		
Copper	200.8	0.1	5.0	10/23/12	11/05/12	3.1		
Lead	200.8	0.02	5.0	10/23/12	11/05/12	0.05		
Nickel	200.8	0.2	5.0	10/23/12	11/05/12	0.9		
Selenium	200.8	1.0	5.0	10/23/12	11/05/12	4.6		
Silver	200.8	0.02	5.0	10/23/12	11/05/12	0.02	U	
Zinc	200.8	0.5	5.0	10/23/12	11/05/12	106		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Alaska Department of Fish and Ga	**Service Request:**	K1209738
Project No.:	Coeur Alaska Mining Company	**Date Collected:**	08/02/12
Project Name:	Kensington Gold Mine Whole Fish	**Date Received:**	09/28/12
Matrix:	TISSUE	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **Upper State Creek Sample #4** **Lab Code:** **K1209738-010**

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	200.8	2.0	5.0	10/23/12	11/05/12	5.4		*
Cadmium	200.8	0.02	5.0	10/23/12	11/05/12	0.05		
Chromium	200.8	0.2	5.0	10/23/12	11/05/12	0.6		
Copper	200.8	0.1	5.0	10/23/12	11/05/12	2.1		
Lead	200.8	0.02	5.0	10/23/12	11/05/12	0.02		
Nickel	200.8	0.2	5.0	10/23/12	11/05/12	0.2	U	
Selenium	200.8	1.0	5.0	10/23/12	11/05/12	4.9		
Silver	200.8	0.02	5.0	10/23/12	11/05/12	0.02	U	
Zinc	200.8	0.5	5.0	10/23/12	11/05/12	97.0		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Alaska Department of Fish and Ga	**Service Request:**	K1209738
Project No.:	Coeur Alaska Mining Company	**Date Collected:**	08/02/12
Project Name:	Kensington Gold Mine Whole Fish	**Date Received:**	09/28/12
Matrix:	TISSUE	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **Upper State Creek Sample #5** **Lab Code:** **K1209738-011**

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	200.8	2.0	5.0	10/23/12	11/05/12	10.8		*
Cadmium	200.8	0.02	5.0	10/23/12	11/05/12	0.04		
Chromium	200.8	0.2	5.0	10/23/12	11/05/12	0.3		
Copper	200.8	0.1	5.0	10/23/12	11/05/12	2.2		
Lead	200.8	0.02	5.0	10/23/12	11/05/12	0.03		
Nickel	200.8	0.2	5.0	10/23/12	11/05/12	0.5		
Selenium	200.8	1.0	5.0	10/23/12	11/05/12	4.1		
Silver	200.8	0.02	5.0	10/23/12	11/05/12	0.02	U	
Zinc	200.8	0.5	5.0	10/23/12	11/05/12	113		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Alaska Department of Fish and Ga	**Service Request:**	K1209738
Project No.:	Coeur Alaska Mining Company	**Date Collected:**	08/02/12
Project Name:	Kensington Gold Mine Whole Fish	**Date Received:**	09/28/12
Matrix:	TISSUE	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: **Upper State Creek Sample #6** **Lab Code:** **K1209738-012**

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	200.8	2.0	5.0	10/23/12	11/05/12	8.5		*
Cadmium	200.8	0.02	5.0	10/23/12	11/05/12	0.06		
Chromium	200.8	0.2	5.0	10/23/12	11/05/12	3.2		
Copper	200.8	0.1	5.0	10/23/12	11/05/12	2.6		
Lead	200.8	0.02	5.0	10/23/12	11/05/12	0.05		
Nickel	200.8	0.2	5.0	10/23/12	11/05/12	1.3		
Selenium	200.8	1.0	5.0	10/23/12	11/05/12	4.9		
Silver	200.8	0.02	5.0	10/23/12	11/05/12	0.02	U	
Zinc	200.8	0.5	5.0	10/23/12	11/05/12	136		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Alaska Department of Fish and Ga	**Service Request:**	K1209738
Project No.:	Coeur Alaska Mining Company	**Date Collected:**	07/22/12
Project Name:	Kensington Gold Mine Whole Fish	**Date Received:**	09/28/12
Matrix:	TISSUE	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: Lower Slate Creek Sample #1 **Lab Code:** K1209738-013

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	200.8	2.0	5.0	10/23/12	11/05/12	50.9		*
Cadmium	200.8	0.02	5.0	10/23/12	11/05/12	0.45		
Chromium	200.8	0.2	5.0	10/23/12	11/05/12	0.5		
Copper	200.8	0.1	5.0	10/23/12	11/05/12	3.5		
Lead	200.8	0.02	5.0	10/23/12	11/05/12	0.05		
Nickel	200.8	0.2	5.0	10/23/12	11/05/12	0.3		
Selenium	200.8	1.0	5.0	10/23/12	11/05/12	5.6		
Silver	200.8	0.02	5.0	10/23/12	11/05/12	0.02	U	
Zinc	200.8	0.5	5.0	10/23/12	11/05/12	128		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	Alaska Department of Fish and Ga	**Service Request:**	K1209738
Project No.:	Coeur Alaska Mining Company	**Date Collected:**	07/22/12
Project Name:	Kensington Gold Mine Whole Fish	**Date Received:**	09/28/12
Matrix:	TISSUE	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: Lower Slate Creek Sample #2 **Lab Code:** K1209738-014

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	200.8	2.0	5.0	10/23/12	11/05/12	78.0		*
Cadmium	200.8	0.02	5.0	10/23/12	11/05/12	0.64		
Chromium	200.8	0.2	5.0	10/23/12	11/05/12	0.8		
Copper	200.8	0.1	5.0	10/23/12	11/05/12	9.0		
Lead	200.8	0.02	5.0	10/23/12	11/05/12	0.03		
Nickel	200.8	0.2	5.0	10/23/12	11/05/12	0.3		
Selenium	200.8	1.0	5.0	10/23/12	11/05/12	4.8		
Silver	200.8	0.02	5.0	10/23/12	11/05/12	0.06		
Zinc	200.8	0.5	5.0	10/23/12	11/05/12	130		

Comments:

Metals

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INORGANIC ANALYSIS DATA PACKAGE

Client:	Alaska Department of Fish and Ga	**Service Request:**	K1209738
Project No.:	Coeur Alaska Mining Company	**Date Collected:**	07/22/12
Project Name:	Kensington Gold Mine Whole Fish	**Date Received:**	09/28/12
Matrix:	TISSUE	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: Lower Slate Creek Sample #3 **Lab Code:** K1209738-015

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	200.8	2.0	5.0	10/23/12	11/05/12	20.8		*
Cadmium	200.8	0.02	5.0	10/23/12	11/05/12	0.54		
Chromium	200.8	0.2	5.0	10/23/12	11/05/12	0.4		
Copper	200.8	0.1	5.0	10/23/12	11/05/12	6.0		
Lead	200.8	0.02	5.0	10/23/12	11/05/12	0.03		
Nickel	200.8	0.2	5.0	10/23/12	11/05/12	0.2	U	
Selenium	200.8	1.0	5.0	10/23/12	11/05/12	4.5		
Silver	200.8	0.02	5.0	10/23/12	11/05/12	0.05		
Zinc	200.8	0.5	5.0	10/23/12	11/05/12	171		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Alaska Department of Fish and Ga	**Service Request:**	K1209738
Project No.:	Coeur Alaska Mining Company	**Date Collected:**	07/22/12
Project Name:	Kensington Gold Mine Whole Fish	**Date Received:**	09/28/12
Matrix:	TISSUE	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: Lower Slate Creek Sample #4 **Lab Code:** K1209738-016

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	200.8	2.0	5.0	10/23/12	11/05/12	69.3		*
Cadmium	200.8	0.02	5.0	10/23/12	11/05/12	0.78		
Chromium	200.8	0.2	5.0	10/23/12	11/05/12	0.4		
Copper	200.8	0.1	5.0	10/23/12	11/05/12	8.9		
Lead	200.8	0.02	5.0	10/23/12	11/05/12	0.03		
Nickel	200.8	0.2	5.0	10/23/12	11/05/12	0.4		
Selenium	200.8	1.0	5.0	10/23/12	11/05/12	5.1		
Silver	200.8	0.02	5.0	10/23/12	11/05/12	0.05		
Zinc	200.8	0.5	5.0	10/23/12	11/05/12	170		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Alaska Department of Fish and Ga	**Service Request:**	K1209738
Project No.:	Coeur Alaska Mining Company	**Date Collected:**	07/22/12
Project Name:	Kensington Gold Mine Whole Fish	**Date Received:**	09/28/12
Matrix:	TISSUE	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: Lower Slate Creek Sample #5 **Lab Code:** K1209738-017

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	200.8	2.0	5.0	10/23/12	11/05/12	18.0		*
Cadmium	200.8	0.02	5.0	10/23/12	11/05/12	0.44		
Chromium	200.8	0.2	5.0	10/23/12	11/05/12	0.3		
Copper	200.8	0.1	5.0	10/23/12	11/05/12	3.6		
Lead	200.8	0.02	5.0	10/23/12	11/05/12	0.04		
Nickel	200.8	0.2	5.0	10/23/12	11/05/12	0.2	U	
Selenium	200.8	1.0	5.0	10/23/12	11/05/12	4.5		
Silver	200.8	0.02	5.0	10/23/12	11/05/12	0.02	U	
Zinc	200.8	0.5	5.0	10/23/12	11/05/12	131		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client:	Alaska Department of Fish and Ga	**Service Request:**	K1209738
Project No.:	Coeur Alaska Mining Company	**Date Collected:**	07/22/12
Project Name:	Kensington Gold Mine Whole Fish	**Date Received:**	09/28/12
Matrix:	TISSUE	**Units:**	mg/Kg
		Basis:	DRY

Sample Name: Lower Slate Creek Sample #6 **Lab Code:** K1209738-018

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	200.8	2.0	5.0	10/23/12	11/05/12	189		*
Cadmium	200.8	0.02	5.0	10/23/12	11/05/12	0.92		
Chromium	200.8	0.2	5.0	10/23/12	11/05/12	0.8		
Copper	200.8	0.1	5.0	10/23/12	11/05/12	5.8		
Lead	200.8	0.02	5.0	10/23/12	11/05/12	0.05		
Nickel	200.8	0.2	5.0	10/23/12	11/05/12	0.4		
Selenium	200.8	1.0	5.0	10/23/12	11/05/12	5.2		
Silver	200.8	0.02	5.0	10/23/12	11/05/12	0.03		
Zinc	200.8	0.5	5.0	10/23/12	11/05/12	151		

Comments:

Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: Alaska Department of Fish and Ga
Service Request: K1209738
Project No.: Coeur Alaska Mining Company
Date Collected:
Project Name: Kensington Gold Mine Whole Fish
Date Received:
Matrix: TISSUE
Units: mg/Kg
Basis: DRY

Sample Name: Method Blank
Lab Code: K1209738-MB

Analyte	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	C	Q
Aluminum	200.8	2.0	5.0	10/23/12	11/05/12	2.0	U	*
Cadmium	200.8	0.02	5.0	10/23/12	11/05/12	0.02	U	
Chromium	200.8	0.2	5.0	10/23/12	11/05/12	0.2	U	
Copper	200.8	0.1	5.0	10/23/12	11/05/12	0.1	U	
Lead	200.8	0.02	5.0	10/23/12	11/05/12	0.02	U	
Nickel	200.8	0.2	5.0	10/23/12	11/05/12	0.2	U	
Selenium	200.8	1.0	5.0	10/23/12	11/05/12	1.0	U	
Silver	200.8	0.02	5.0	10/23/12	11/05/12	0.02	U	
Zinc	200.8	0.5	5.0	10/23/12	11/05/12	0.5	U	

Comments:

Metals
- 5A -
SPIKE SAMPLE RECOVERY

Client: Alaska Department of Fish and Ga **Service Request:** K1209738

Project No.: Coeur Alaska Mining Company **Units:** MG/KG

Project Name: Kensington Gold Mine Whole Fish **Basis:** DRY

Matrix: TISSUE

Sample Name: East Fork Slate Creek Samp **Lab Code:** K1209738-001S

Analyte	Control Limit %R	Spike Result	C	Sample Result	C	Spike Added	%R	Q	Method
Aluminum	70 - 130	217.5		53.8		199.3	82		200.8
Cadmium	70 - 130	5.60		0.57		4.98	101		200.8
Chromium	70 - 130	20.2		1.5		19.9	94		200.8
Copper	70 - 130	94.7		75.8		24.9	76		200.8
Lead	70 - 130	44.17		0.03		49.83	89		200.8
Nickel	70 - 130	47.2		1.0		49.8	93		200.8
Selenium	70 - 130	24.8		5.1		16.6	119		200.8
Silver	70 - 130	4.95		0.04		4.98	99		200.8
Zinc	70 - 130	137.9		96.3		49.8	84		200.8

An empty field in the Control Limit column indicates the control limit is not applicable

Metals

- 6 -

DUPLICATES

Client: Alaska Department of Fish and Ga **Service Request:** K1209738

Project No.: Coeur Alaska Mining Company **Units:** MG/KG

Project Name: Kensington Gold Mine Whole Fish **Basis:** DRY

Matrix: TISSUE

Sample Name: East Fork Slate Creek Sam **Lab Code:** K1209738-001D

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Aluminum	20	53.8		32.7		48.8	*	200.8
Cadmium	20	0.57		0.59		3.4		200.8
Chromium	20	1.5		1.3		14.3		200.8
Copper	20	75.8		73.6		2.9		200.8
Lead		0.03		0.03		0.0		200.8
Nickel		1.0		1.0		0.0		200.8
Selenium	20	5.1		5.2		1.9		200.8
Silver		0.04		0.03		28.6		200.8
Zinc	20	96.3		98.2		2.0		200.8

An empty field in the Control Limit column indicates the control limit is not applicable.

Metals

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LABORATORY CONTROL SAMPLE

Client: Alaska Department of Fish and Ga **Service Request:** K1209738

Project No.: Coeur Alaska Mining Company

Project Name: Kensington Gold Mine Whole Fish

Aqueous LCS Source: **CAS MIXED** **Solid LCS Source:**

Analyte	Aqueous (ug/L)			Solid (mg/kg)				
	True	Found	%R	True	Found	C	Limits	%R
Aluminum	2000.0	1860.0	93					
Cadmium	50.0	49.1	98					
Chromium	200.0	195.2	98					
Copper	250.0	235.5	94					
Lead	500.0	480.6	96					
Nickel	500.0	484.0	97					
Selenium	167.0	176.1	105					
Silver	50.0	52.3	105					
Zinc	500.0	453.7	91					

COLUMBIA ANALYTICAL SERVICES, INC.

Now part of the ALS Group

QA/QC Report

Client:	Alaska Department of Fish and Game	**Service Request:**	K1209738
Project:	Kensington Gold Mine Whole Fish Analysis/Coeur Alaska Mining Co.	**Date Collected:**	NA
LCS Matrix:	Tissue	**Date Received:**	NA
		Date Extracted:	10/23/12
		Date Analyzed:	11/05/12

Standard Reference Material Summary

Total Metals

Sample Name:	Standard Reference Material	Units:	mg/Kg (ppm)
Lab Code:	K1209738-SRM	Basis:	Dry
Test Notes:			

Source: N.R.C.C. Dorm-3

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	Control Limits	Result Notes
Cadmium	PSEP Tissue	200.8	0.29	0.30	103	0.216 - 0.372	
Chromium	PSEP Tissue	200.8	1.89	1.61	85	1.38 - 2.47	
Copper	PSEP Tissue	200.8	15.5	14.2	92	11.9 - 19.4	
Lead	PSEP Tissue	200.8	0.395	0.296	75	0.276 - 0.534	
Nickel	PSEP Tissue	200.8	1.28	1.18	92	0.83 - 1.82	
Zinc	PSEP Tissue	200.8	51.3	47.8	93	38.6 - 65.3	

COLUMBIA ANALYTICAL SERVICES, INC.

Now part of the ALS Group

QA/QC Report

Client:	Alaska Department of Fish and Game	**Service Request:**	K1209738
Project:	Kensington Gold Mine Whole Fish Analysis/Coeur Alaska Mining Co.	**Date Collected:**	NA
LCS Matrix:	Tissue	**Date Received:**	NA
		Date Extracted:	10/23/12
		Date Analyzed:	11/05/12

Standard Reference Material Summary

Total Metals

Sample Name:	Standard Reference Material	Units:	mg/Kg (ppm)
Lab Code:	K1209738-SRM	Basis:	Dry
Test Notes:			

Source: N.R.C.C. Tort-2

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	Control Limits	Result Notes
Cadmium	PSEP Tissue	200.8	26.7	28.8	108	20.9-32.8	
Chromium	PSEP Tissue	200.8	0.77	0.69	90	0.5-1.1	
Copper	PSEP Tissue	200.8	106	96.8	91	77-139	
Lead	PSEP Tissue	200.8	0.35	0.33	94	0.18-0.58	
Nickel	PSEP Tissue	200.8	2.5	2.3	92	1.85-3.23	
Selenium	PSEP Tissue	200.8	5.63	6.79	121	3.97-7.56	
Zinc	PSEP Tissue	200.8	180	180	100	139-223	

COLUMBIA ANALYTICAL SERVICES, INC.

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Analytical Report

Client:	Alaska Department of Fish and Game	**Service Request:**	K1209738
Project:	Kensington Gold Mine Whole Fish Analysis/Coeur Alaska Mining Company	**Date Collected:**	07/21-08/02/2012
Sample Matrix:	Animal tissue	**Date Received:**	09/28/12

Mercury, Total

Prep Method: METHOD
Analysis Method: 1631E
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
East Fork Slate Creek Sample #1	K1209738-001	5.0	100	10/22/12	10/23/12	130	
East Fork Slate Creek Sample #2	K1209738-002	4.9	100	10/22/12	10/23/12	234	
East Fork Slate Creek Sample #3	K1209738-003	4.9	100	10/22/12	10/23/12	116	
East Fork Slate Creek Sample #4	K1209738-004	5.0	100	10/22/12	10/23/12	215	
East Fork Slate Creek Sample #5	K1209738-005	5.0	100	10/22/12	10/23/12	146	
East Fork Slate Creek Sample #6	K1209738-006	4.8	100	10/22/12	10/23/12	139	
Upper State Creek Sample #1	K1209738-007	5.0	100	10/22/12	10/23/12	91.9	
Upper State Creek Sample #2	K1209738-008	5.0	100	10/22/12	10/23/12	103	
Upper State Creek Sample #3	K1209738-009	5.0	100	10/22/12	10/23/12	93.8	
Upper State Creek Sample #4	K1209738-010	5.0	100	10/22/12	10/23/12	102	
Upper State Creek Sample #5	K1209738-011	5.0	100	10/22/12	10/23/12	97.2	
Upper State Creek Sample #6	K1209738-012	5.0	100	10/22/12	10/23/12	84.2	
Lower Slate Creek Sample #1	K1209738-013	4.9	100	10/22/12	10/23/12	167	
Lower Slate Creek Sample #2	K1209738-014	5.0	100	10/22/12	10/23/12	107	
Lower Slate Creek Sample #3	K1209738-015	4.9	100	10/22/12	10/23/12	162	
Lower Slate Creek Sample #4	K1209738-016	4.8	100	10/22/12	10/23/12	113	
Lower Slate Creek Sample #5	K1209738-017	4.9	100	10/22/12	10/23/12	97.7	
Lower Slate Creek Sample #6	K1209738-018	5.0	100	10/22/12	10/23/12	127	
Method Blank 1	K1209738-MB1	1.0	100	10/22/12	10/23/12	ND	
Method Blank 2	K1209738-MB2	1.0	100	10/22/12	10/23/12	ND	
Method Blank 3	K1209738-MB3	1.0	100	10/22/12	10/23/12	ND	

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QA/QC Report

Client:	Alaska Department of Fish and Game	**Service Request:**	K1209738
Project:	Kensington Gold Mine Whole Fish Analysis/Coeur Alaska Mining Company	**Date Collected:**	07/21/12
Sample Matrix:	Animal tissue	**Date Received:**	09/28/12
		Date Extracted:	10/22/12
		Date Analyzed:	10/23/12

Matrix Spike/Duplicate Matrix Spike Summary
Total Metals

Sample Name:	East Fork Slate Creek Sample #1	Units:	ng/g
Lab Code:	K1209738-001MS, K1209738-001DMS	Basis:	Dry
Test Notes:			

				Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative Percent	
Analyte	**Prep Method**	**Analysis Method**	**MRL**	**MS**	**DMS**	**Result**	**MS**	**DMS**	**MS**	**DMS**	**Limits**	**Difference**	**Result Notes**
Mercury	METHOD	1631E	5.0	249	249	130	360	347	92	87	70-130	6	

COLUMBIA ANALYTICAL SERVICES, INC.
Now part of the ALS Group
QA/QC Report

Client:	Alaska Department of Fish and Game	**Service Request:**	K1209738
Project:	Kensington Gold Mine Whole Fish Analysis/Coeur Alaska Mining Company	**Date Collected:**	07/21/12
Sample Matrix:	Animal tissue	**Date Received:**	09/28/12
		Date Extracted:	10/22/12
		Date Analyzed:	10/23/12

Matrix Spike/Duplicate Matrix Spike Summary
Total Metals

Sample Name:	East Fork Slate Creek Sample #5	Units:	ng/g
Lab Code:	K1209738-005MS K1209738-005DMS	Basis:	Dry
Test Notes:			

				Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative Percent	
Analyte	**Prep Method**	**Analysis Method**	**MRL**	**MS**	**DMS**	**Result**	**MS**	**DMS**	**MS**	**DMS**	**Limits**	**Difference**	**Result Notes**
Mercury	METHOD	1631E	5.0	249	247	146	397	365	101	89	70-130	13	

COLUMBIA ANALYTICAL SERVICES, INC.

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QA/QC Report

Client:	Alaska Department of Fish and Game	**Service Request:**	K1209738
Project:	Kensington Gold Mine Whole Fish Analysis/Coeur Alaska Mining Company	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	NA
		Date Analyzed:	10/23/12

Ongoing Precision and Recovery (OPR) Sample Summary

Total Metals

Sample Name: Ongoing Precision and Recovery (Initial)

Units: ng/g

Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury	METHOD	1631E	5.00	5.30	106	70-130	

COLUMBIA ANALYTICAL SERVICES, INC.

Now part of the ALS Group

QA/QC Report

Client:	Alaska Department of Fish and Game	**Service Request:**	K1209738
Project:	Kensington Gold Mine Whole Fish Analysis/Coeur Alaska Mining Company	**Date Collected:**	NA
LCS Matrix:	Water	**Date Received:**	NA
		Date Extracted:	NA
		Date Analyzed:	10/23/12

Ongoing Precision and Recovery (OPR) Sample Summary

Total Metals

Sample Name: Ongoing Precision and Recovery (Final)

Units: ng/g

Basis: NA

Test Notes:

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury	METHOD	1631E	5.00	4.10	82	70-130	

COLUMBIA ANALYTICAL SERVICES, INC.

Now part of the ALS Group

QA/QC Report

Client:	Alaska Department of Fish and Game	**Service Request:**	K1209738
Project:	Kensington Gold Mine Whole Fish Analysis/Coeur Alaska Mining Company	**Date Collected:**	NA
LCS Matrix:	Animal tissue	**Date Received:**	NA
		Date Extracted:	10/22/12
		Date Analyzed:	10/23/12

Quality Control Sample (QCS) Summary

Total Metals

Sample Name: Quality Control Sample — Units: ng/g

Lab Code: — Basis: Dry

Test Notes:

Source: TORT

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Mercury	METHOD	1631E	270.0	278	103	70-130	

APPENDIX E: SEDIMENT METALS CONCENTRATIONS & TOXICITY LAB REPORTS

Table E1.—Sediment compositions for stream sediments sampled near Kensington Gold Mine, 2011–2012.

		Particle Size Data[a]								
Site	Sample Date	% Sand	% Silt	% Clay	% Course material (> 2 mm)	Texture	% Total Solids	% Total Volitile Solids	Acid Volitile Sulfide (µmoles/g)	% Total Organic Carbon[b]
Lower Slate Creek	10/03/11	94.0	4.0	2.0	0.44	sand	78.00	3.38	ND	2.04
East Fork Slate Creek	10/03/11	86.0	4.0	10.0	1.65	loamy sand	60.17	7.81	ND	11.00
Upper Slate Creek	10/06/11	94.0	2.0	4.0	ND	sand	72.10	4.12	1.39	5.46
Lower Johnson Creek	10/03/11	96.0	2.0	2.0	ND	sand	74.28	2.01	ND	0.89
Lower Sherman Creek	10/04/11	96.0	2.0	2.0	0.11	sand	73.15	2.75	1.50	0.54
Middle Sherman Creek	10/03/11	96.0	2.0	2.0	0.22	sand	72.45	2.82	1.01	1.17
Lower Slate Creek	07/03/12	98.0	ND	2.0	0.13	sand	79.22	3.37	0.99	1.67
East Fork Slate Creek	07/10/12	26.0	34.0	40.0	ND	clay	23.72	28.54	1.10	16.70
Upper Slate Creek	07/02/12	98.0	ND	2.0	0.32	sand	79.58	2.90	1.35	3.74
Lower Johnson Creek	07/02/12	92.0	ND	8.0	ND	sand	77.67	2.55	1.05	1.19
Lower Sherman Creek	07/03/12	96.0	ND	4.0	0.09	sand	78.55	3.05	ND	0.82
Middle Sherman Creek	07/03/12	96.0	ND	4.0	0.44	sand	77.09	4.10	0.93	1.05

[a] Particle size determined by using ASTM Method D422 and Modified ASA 15-5.
[b] Total organic carbon (dry) determined by using the Walkley Black Method.
ND = not detected at the method detection limit.

Table E2.—Sediment metallic and semi-metallic concentrations for stream sediments sampled near Kensington Gold Mine, 2011–2012.

		Analytical Data (mg/kg dry weight)[a]										
Site	Sample Date	Al	Ag	As	Cd	Cr	Cu	Hg	Ni	Se	Pb	Zn
Lower Slate Creek	10/03/11	13,600	0.134	16.2	1.460	29.4	56.7	0.0502	47.4	0.720	7.79	220
East Fork Slate Creek	10/03/11	20,100	0.233	30.0	**20.900**	29.5	88.4	**0.0692**	**143.0**	**1.410**	8.50	**1,360**
Upper Slate Creek	10/06/11	**22,500**	0.120	17.9	0.722	**127.0**	53.4	ND	87.5	0.809	3.37	130
Lower Johnson Creek	10/03/11	13,100	0.164	16.2	0.238	31.5	73.1	ND	27.3	ND	9.76	93.3
Lower Sherman Creek	10/04/11	18,200	0.137	28.9	0.389	46.2	94.0	ND	45.9	ND	6.70	110
Middle Sherman Creek	10/03/11	19,000	**0.633**	**55.7**	0.175	43.4	**97.1**	ND	44.0	ND	**17.30**	120
Lower Slate Creek	07/03/12	13,600	0.145	9.31	1.22	32.0	50.7	0.0994	43.2	ND	8.45	200
East Fork Slate Creek	07/10/12	15,300	**0.513**	24.0	**23.2**	38.9	**159.0**	**0.3270**	**153.0**	**0.934**	**14.20**	**1,490**
Upper Slate Creek	07/02/12	**20,300**	0.132	14.4	0.776	**125.0**	55.4	0.0625	78.4	0.606	4.05	134
Lower Johnson Creek	07/02/12	13,100	0.342	12.8	0.250	35.5	76.8	0.1190	23.4	ND	9.45	97.3
Lower Sherman Creek	07/03/12	17,900	0.289	24.3	0.578	51.4	79.1	0.0681	40.2	ND	8.43	128
Middle Sherman Creek	07/03/12	18,800	0.225	**56.1**	0.269	48.1	87.5	0.0581	39.3	ND	11.30	124

[a] As, Cd, Cr, Cu, Pb, Ni, Se and Ag by SW-846 Method 6020; Al and Zn by SW-846 Method 6010B; Hg by SW-846 7471B.

ND = not detected at the method detection limit.

Bolded values are the greatest amount observed for each analyte among sites each year.

AECOM
Environmental Toxicology
4303 West LaPorte Avenue, Fort Collins, Colorado 80521-2154
T 970.416.0916 F 970.490.2963 www.aecom.com

AECOM

September 28, 2012

Kevin Eppers
Coeur Alaska Inc.
Kensington Gold Mine
3031 Clinton Drive
Suite 202
Juneau AK 99801

Subject: Results of *Chironomus dilutus* sediment toxicity test

Dear Mr. Eppers:

Attached is a copy of the report for the sediment toxicity test conducted with *Chironomus dilutus* using sediment collected from six different sites. There were no statistically significant survival or growth (ash-free dry weight) effects in any of the six sampling sites. The analytical data including total metals, total organic carbon, and grain size determination and total solids and total suspended solids are included in this report.

We greatly appreciate the opportunity to complete this study for Coeur Alaska Inc.. Please do not hesitate to call us if you have any questions.

Sincerely,

Christina Needham
Data Analyst
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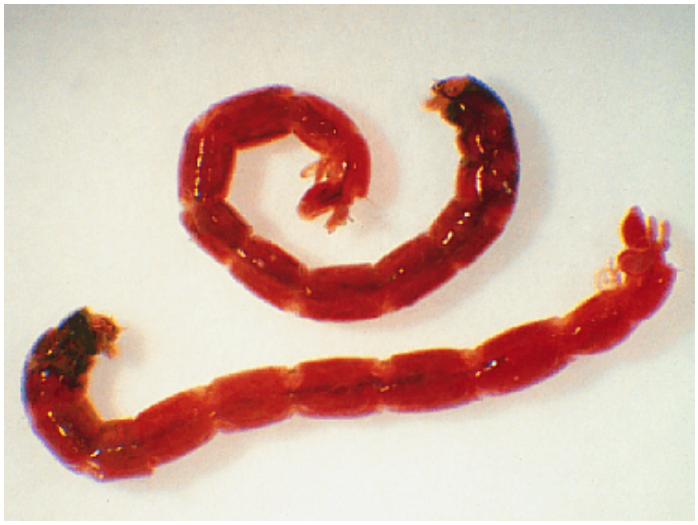
Attachment:

60225262-058-(090-095)

Coeur Alaska, Inc.
Juneau, Alaska

Report of Short-Term Toxicity of Whole Sediment to *Chironomus dilutus*



Prepared by

AECOM Environment
Environmental Toxicology
Fort Collins, CO

60225262-058-(090-095)
August / September 2012

Report of Short-Term Toxicity of Whole Sediment to Chironomus dilutus

Project IDs: 60225262-058-(090-095)
August / September 2012

Sponsor and Laboratory Information

Sponsor	Coeur Alaska Inc. Kensington Gold Mine 3031 Clinton Drive Suite 202 Juneau, Alaska 99801
Project Officer	Kevin Eppers (907) 523-3328
Testing Facility	AECOM Environment Fort Collins Environmental Toxicology Laboratory 4303 West LaPorte Ave. Fort Collins, CO 80521 Fax: (970) 490-2963 State of Florida NELAP Laboratory ID: E87972
Study Director	Rami B. Naddy, Ph.D. (970) 416-0916 email: rami.naddy@aecom.com
Report Author	Christina Needham (970) 416-0916 email: christina.needham@aecom.com

Test Information

Test	Short-term chronic screening toxicity test of sediment	
Basis	USEPA (2000) and ASTM (2009)	
Test Protocol	CT3AK.TIE058.008	
Test Period	August 31, 2012 @ 1330-1730 to September 10, 2012 @ 0845-1450	
Test Length	10 days	
Species	*Chironomus dilutus*	
Test Material	Whole sediment	
Sediment ID	Sample ID	AECOM Laboratory ID
	LJH	25938, 25941
	LSH	25939, 25942
	MSH	25940, 25943
	USC	25932, 25935
	LSLA	25933, 25936
	EFSC	25934, 25937
Control Sediments	Silica Sand, Formulated Sediment	
Overlying water	Moderately hard reconstituted water prepared according to USEPA (2002), augmented with approximately 50 mg/L Cl^- (as NaCl)	
Test Concentrations	0 (control) and 100% of each test sediment	

- *Results described in this report apply only to the samples submitted to the laboratory and analyzed, as listed in the report*
- *Test results comply with NELAC standards. Reports are intended to be considered in their entirety; AECOM is not responsible for consequences arising from use of a partial report*
- *This report contains 8 pages plus 3 appendices*

Sediment Collection and Receipt

Sample ID	Collection Date and Time	AECOM No.[a]	Date of Receipt	Temp. at Arrival (°C)[b]
LJH	07/02/12 @ 1200	25938	07/20/12	17.1
LSH	07/03/12 @ 1100	25939	07/20/12	17.1
MSH	07/03/12 @ 1200	25940	07/20/12	17.1
USC	07/02/12 @ 0900	25932	07/20/12	19.6
LSLA	07/03/12 @ 0900	25933	07/20/12	19.6
EFSC	07/10/12 @ 1400	25934	07/20/12	19.6

[a] Upon sample receipt, each 1-gallon sample container of sediment was assigned a different sample number than the 4-oz glass jar of the same sediment sample designated for AVS analysis. The number assigned to the 1-gallon sample container used for sediment testing will be used for reporting purposes.
[b] Air temperature of cooler
Note: See Appendix A for copies of chain of custody records

Control Sediment

The primary control sediment was coarse silica sand, obtained from a local commercial supplier (manufactured by Unimin® Corporation). A second control, sediment with a smaller grain size and higher organic matter content, was prepared in the laboratory. The composition of the formulated sediment is given in the following table (Kemble et al. 1999).

Composition of Laboratory Formulated Sediment (Control)

Material	Source	Pre-Treatment	Weight (g)
Coarse Quartz Sand	Unimin Corporation, Emmett, ID	Rinsed with gentle mixing in deionized water until water ran clear. Dried in oven.	1242
Silt/Clay (ASP400)	Mozel, St. Louis, MO. Distributor = Englehardt	None	219
Dolomite	Grey Rock Clay Center, Ft. Collins, CO.	None	7.5
α-cellulose	Sigma	None	77.3
Humic Acid	Fluka	None	0.15
Total			1545.95

Initial Overlying Water Characterization

Batch No.	pH	Hard. (mg/L)[a]	Alk. (mg/L)[a]	Spec. Cond. (µS/cm)	TRC (mg/L)[b]	NH_3-N (mg/L)[c]	Cl^- (mg/L)
10453	8.0	88	60	464	0.02	<1.0	50.1

[a] As $CaCO_3$
[b] Total residual chlorine
[c] Measured in source water

Test Sediment Preparation

Sample ID	Date Homogenized	Time Homogenized
Sand Control	August 30, 2012	1325 – 1328
Formulated Sediment		1327 - 1330
LJH		1340 – 1343
LSH		1346 – 1349
MSH		1332 – 1335
USC		1340 – 1344
LSLA		1321 – 1324
EFSC		1352 – 1355

Note: The formulated sediment was homogenized with overlying water on August 29, 2012 from 1607 to 1611and held at 25ºC overnight prior to test setup. Sediment was re-homogenized prior to addition to test chambers.

Overlying water was added to the sand control and formulated sediment during the homogenization process to wet both controls prior to placement in test chambers. Before, during, and after homogenization, any noticeable debris (including sticks and other plant material) and large stones were removed from the test sediment and discarded.

Test Conditions

Test Type	Static sediment with continuous replacement of overlying water
Test Duration	10 days
Overlying Water Delivery System	Continuous renewal (flow-through)[a]
Test Endpoints	Survival, AFDW[b] per original and surviving organism
Test Chambers	500 ml glass beakers
Test Sediment Volume	100 ml
Overlying Water Volume	175 ml
Replicates per Treatment	8
Organisms per Replicate	10[c]
Test Temperature	23 ± 1°C
Lighting	Fluorescent, 16 hours light:8 hours dark
Chamber Placement	Randomized
Test Sediment Renewal	None
Test Overlying Water Renewal	Approximately two volume additions per test chamber per day

[a] Continuous replacement via a drip system
[b] Ash-Free Dry Weight
[c] Due to insufficient number of test organisms provided by supplier, 12 test chambers were initiated with only five organisms. No more than 2 test chambers per sediment were initiated in this manner.

Test Organism

From the lot of *Chironomus dilutus* received for use in the test, 20 were collected, preserved, and used to determine head capsule widths. The mean head capsule width of lot 12-026 was 0.52 mm and the range was 0.35 to 0.70 mm. The average size of the measured organisms was slightly above the upper limit of the third instar range of 0.33 to 0.45 (USEPA 2000), and some organisms fell in the fourth instar range (USEPA 2000). Discussions with the organism supplier (Aquatic BioSystems [ABS]) confirmed that the organisms used to initiate the test were within the specified age range based upon their culture records. Fourth instar chironomids generally emerge within about four days. Since emergence during the 10 day test was minimal, it is reasonable to conclude that tested organisms were generally within the acceptable age range. Since organism placement within test treatments was unbiased, some variation in organism age should not have affected test outcome.

Species and Lot Number	*Chironomus dilutus*, Lot 12-026
Age	3rd to 4th instar
Source	Aquatic BioSystems (ABS), Fort Collins, CO
Overlying Water	Moderately Hard Reconstituted Water with added chloride (50 mg/L) as NaCl, RW # 10453
Reference Toxicant Testing	Initiated August 31, 2012 using sodium chloride (NaCl)

TEST RESULTS

For each test endpoint (survival, AFDW/original organism, and AFDW/surviving organism), the sand and formulated sediment controls were compared using a T-test. If there was not a significant difference between the two, the controls were pooled and comparisons were made against the pooled control data. Since there wasn't a significant difference between the two controls for any of the endpoints, all comparisons were made against the pooled control data. None of the test sediments had a significant reduction relative to the pooled control data for any of the three test endpoints.

Biological Data – Survival and Ash-Free Dry Weights

Sample ID	Percent Survival	Ash-Free Dry Weight (mg)	
		Per original organism	Per surviving organism
Sand Control	75.0	0.718	0.905
Formulated Sediment	70.0	0.647	1.024
LJH	77.9	0.861	1.122
LSH	66.2	0.699	1.060
MSH	70.8	0.802	1.211
USC	67.5	0.777	1.228
LSLA	71.2	0.872	1.243
EFSC	66.2	0.634	0.955

Note: None of the test sediments had any statistically significant reductions in survival or AFDW relative to the pooled control data. Analyses were completed using Toxstat Version 3.5 (WEST, Inc. and Gulley 1996). See Appendix B for test data sheets

Analytical Data

Parameter	Sample Identification							
	Sand	Form. Sed.	LJH	LSH	MSH	USC	LSLA	EFSC[a]
Metals (mg/kg-dry)[b]								
Aluminum	181	609	13,100	17,900	18,800	20,300	13,600	15,300
Chromium	4.25	8.25	35.5	51.4	48.1	125	32.0	38.9
Zinc	ND	ND	97.3	128	124	134	200	1,490
Arsenic	ND	ND	12.8	24.3	56.1	14.4	9.31	24.0
Cadmium	0.073	0.072	0.250	0.578	0.269	0.776	1.22	23.2
Copper	0.324	0.783	76.8	79.1	87.5	55.4	50.7	159
Lead	0.165	0.380	9.45	8.43	11.3	4.05	8.45	14.2
Nickel	0.511	0.820	23.4	40.2	39.3	78.4	43.2	153
Selenium	ND	ND	ND	ND	ND	0.606	ND	0.934 J
Silver	ND	ND	0.342	0.289	0.225 J	0.132 J	0.145 J	0.513 J
Mercury	ND	ND	0.119 J	0.0681 J	0.0581 J	0.0625 J	0.0994 J	0.327 J
Particle Size (%)[c]								
Clay	ND	10.0	8.0	4.0	4.0	2.0	2.0	40.0
Sand	96.0	86.0	92.0	96.0	96.0	98.0	98.0	26.0
Silt	4.0	4.0	ND	ND	ND	ND	ND	34.0
Texture	Sand	Loamy Sand	Sand	Sand	Sand	Sand	Sand	Clay
Coarse Material (2 mm)	ND	ND	ND	0.09 J	0.44	0.32	0.13	ND
TOC (%-dry)[d]	ND	28.7	1.19	0.82	1.05	3.74	1.67	16.7
Acid Volatile Sulfide (µmoles/g)	NM	NM	1.05 J	ND	0.93 J	1.35 J	0.99 J	1.10 J

[a] On one analytical report included in Appendix C, the sample ID for this site is labeled as “EFSA”; however, the correct sample ID is ”EFSC”.
[b] As, Cd, Cr, Cu, Pb, Ni, Se, and Ag by SW-846 Method 6020; Al and Zn by SW-846 Method 6010B; Hg by SW-846 7471B (USEPA 1986)
[c] Particle size was determined using ASTM Method D422 and Modified ASA 15-5
[d] TOC was determined using the Walkley Black Method
J = The concentration was below the reporting limit but above the method detection limit
ND = Not detected at the method detection limit
NM = Parameter not measured for this sample
Note: See Appendix C for a copy of the reports from the analytical laboratory (MSE Analytical Laboratory, Butte, MT)

Total and Total Volatile Solids

Sample ID	Percent Total Solids[a]	Percent Total Volatile Solids[b]
Sand	95.90	0.108
Formulated Sediment	86.96	6.97
LJH	77.67	2.55
LSH	78.55	3.05
MSH	77.09	4.10
USC	79.58	2.90
LSLA	79.22	3.37
EFSC	23.72	28.54

[a] Total solids were determined using Standard Methods 2540B (APHA 1998)
[b] Total volatile solids were determined using Standard Methods 2540E (APHA 1998)
Note: All values are means of duplicate analyses and determined at AECOM/FCETL. See Appendix C for data sheets.

Physical and Chemical Data (Min/Max)

Sample ID	pH (s.u.)	DO (mg/L)	Cond. (µS/cm)	Temp. (°C)[a]	Ammonia as N (mg/L)	Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)
Sand Control	7.8-8.1	5.5-6.5	448-527	22-24	<1.0-2.2	94-104	61-72
Formulated Sediment	7.8-8.1	4.6-6.5	479-577	22-24	<1.0	96-130	63-103
LJH	7.6-7.8	4.7-6.9	461-513	22-24	<1.0	94-102	62-64
LSH	7.7-8.1	4.5-6.4	456-521	22-24	<1.0	114	72-77
MSH	7.8-8.0	4.5-6.4	460-520	22-24	<1.0	94-106	60-65
USC	7.7-8.0	5.5-6.5	475-548	22-24	<1.0-2.1	112-120	71-85
LSLA	7.7-7.9	4.5-6.1	463-524	22-24	<1.0	114-116	65-71
EFSC	7.6-8.1	4.4-6.3	486-615	22-24	<1.0-3.9	120-172	92-128

[a] Temperature in test chambers

Reference Toxicant Test Results for *C. dilutus*

Organism Lot Number	Test Dates	96-Hour LC_{50}	AECOM/FCETL Historical 95% Control Limits	
			Low	High
12-026	08/31/12-09/04/12	3,486	2,621	6,723

Note: All values are expressed as mg/L chloride. This test did not meet the test acceptability criterion of ≥90% survival in the control; however, due to insufficient number of test organisms, this study could not be reset.

References

APHA. 1998. Standard Methods for the Examination of Water and Wastewater. Amer. Public Health Assoc., Amer. Water Works Assoc., Water Pollut. Control Fed., APHA, Washington, DC.

ASTM. 2009. Standard Test Method for Measuring the Toxicity of Sediment-Associated Contaminants with Fresh Water Invertebrates. Method E 1706-05 In *2009 Annual Book of ASTM Standards, Section 11, Water and Environmental Technology, Volume 11.06, Biological Effects and Environmental Fate; Biotechnology*. American Society of Testing and Materials. West Conshohocken, PA.

Kemble, N.E., F.J. Dwyer, C.G. Ingersoll, T.D. Dawson, and T.J. Norberg-King. 1999. Tolerance of Freshwater Test Organisms to Formulated Sediments for Use as Control Materials in Whole-Sediment Toxicity Test. *Environ. Toxicol. Chem.* 18:222-230.

USEPA. 1986. Test Methods for Evaluating Solid Waste. Third Edition. SW-846.

USEPA. 2000. Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates. EPA/600/R-99/064.

USEPA. 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms. Fifth Edition. EPA-821-R-02-012.

WEST, Inc. and D.D. Gulley. 1996. Toxstat Version 3.5. Western EcoSystems Technology, Inc., Cheyenne, WY.

Statement of Procedural Compliance

I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge, accurate and complete.

Rami Naddy, Ph.D.
Study Director

September 28, 2012
Date

Statement of Quality Assurance

The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with standard operating procedures, and that the resulting data and report meet the requirements of the NELAC standards. This report is an accurate reflection of the raw data.

Quality Assurance Unit

September 28, 2012
Date

APPENDIX A

Chain of Custody

AECOM

CHAIN OF CUSTODY RECORD

084-089

6·6·2012

Page 1 of 1

Client/Project Name: Coeur Alaska	Project Location: Fort.
Project Number: 60225202-058	Field Logbook No.:
Sampler (Print Name)/(Affiliation): Ben Brewster ADF+G	Chain of Custody Tape Nos.: 42700 (Intact)
Signature: Benjamin Brewster	Send Results/Report to: TAT:

Container Type: P – Plastic; A – Amber Glass; G – Clear Glass; V – VOA Vial; O – Other; E – Encore

Preservation: 1 – HCl, 4°; 2 – H2SO4, 4°; 3 – HNO3, 4°; 4 – NaOH, 4°; 5 – NaOH/ZnAc, 4°; 6 – Na2S2O3, 4°; 7 – 4°

Matrix Codes: DW – Drinking Water; WW – Wastewater; GW – Groundwater; SW – Surface Water; ST – Storm Water; W – Water; S – Soil; SL – Sludge; SD – Sediment; SO – Solid; A – Air; L – Liquid; P – Product

Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	Analysis Requested	Lab I.D.	Remarks
Sediment LJH	7/2/12	1200			1 gal	① SD	ICE		X	25938	
" LSH	7/3/12	1100			1 gal	① SD	ICE		X	25939	
" MSH	7/3/12	1200			1 gal	① SD	ICE		X	25940	
" LJH	7/2/12	1200			4oz	① SD	ICE		X	25941	
" LSH	7/3/12	1100			4oz	① SD	ICE		X	25942	
" MSH	7/3/12	1200			4oz	① SD	ICE		X	25943	
											(D69)

Relinquished by: (Print Name)/(Affiliation) Ben Brewster ADFG Signature: Benjamin Brewster	Date: Time:	Received by: (Print Name)/(Affiliation) Amber Potts/AECOM Signature: Amber Potts	Date: 7/20/12 Time: 1015	Analytical Laboratory (Destination): rec. via fed ex @ 17.1 Δ AECOM Toxicology Lab 4303 W. Laporte Avenue Fort Collins, CO 80521 (970) 416-0916 (970) 490-2963 (FAX) Δ cooler temperature
Relinquished by: (Print Name)/(Affiliation) Signature:	Date: Time:	Received by: (Print Name)/(Affiliation) Signature:	Date: Time:	
Relinquished by: (Print Name)/(Affiliation) Signature:	Date: Time:	Received by: (Print Name)/(Affiliation) Signature:	Date: Time:	

Sample Shipped Via: UPS FedEx Courier Other

Temp blank: Yes No

① W 6·5·2012 Er.

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Serial No. № 52344

AECOM

6.6.2012

084-089

CHAIN OF CUSTODY RECORD

Page 1 of 1

Client/Project Name: Coeur Alaska	Project Location: FCEIC
Project Number: 60225262-058	Field Logbook No.:
Sampler (Print Name)/(Affiliation): Ben Brewster ADFG	Chain of Custody Tape Nos.: 42588 *intact*
Signature: Benjamin Brewster	Send Results/Report to: / TAT:

Container Type: P – Plastic; A – Amber Glass; G – Clear Glass; V – VOA Vial; O – Other; E – Encore

Preservation: 1 – HCl, 4°; 2 – H2SO4, 4°; 3 – HNO3, 4°; 4 – NaOH, 4°; 5 – NaOH/ZnAc, 4°; 6 – Na2S2O3, 4°; 7 – 4°

Matrix Codes: DW – Drinking Water; WW – Wastewater; GW – Groundwater; SW – Surface Water; ST – Storm Water; W – Water; S – Soil; SL – Sludge; SD – Sediment; SO – Solid; A – Air; L – Liquid; P – Product

Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	Analysis Requested	Lab I.D.	Remarks
Sediment USC	7/2/12	0900	X		1 gal	SD	ICE		X	25932	
" LSLA	7/3/12	0900	X		1 gal	SD	ICE		X	25933	
" EFSC	7/10/12	1400	X		1 gal	SD	ICE		X	25934	
" USC	7/2/12	0900	X		4oz	SD	ICE		X	25935	
" LSLA	7/3/12	0900	X		4oz	SD	ICE		X	25936	
" EFSC	7/10/12	1400	X		4oz	SD	ICE		X	25937	

(DX9)

Relinquished by: (Print Name)/(Affiliation) Ben Brewster ADFG Signature: Benjamin Brewster	Date: Time:	Received by: (Print Name)/(Affiliation) Amber Potts/AECOM Signature: Amber Potts	Date: 7/20/12 Time: 1015	Analytical Laboratory (Destination): rec. via FedEx @ 19.6°C AECOM Toxicology Lab 4303 W. Laporte Avenue Fort Collins, CO 80521 (970) 416-0916 (970) 490-2963 (FAX) Cooler temp
Relinquished by: (Print Name)/(Affiliation) Signature:	Date: Time:	Received by: (Print Name)/(Affiliation) Signature:	Date: Time:	
Relinquished by: (Print Name)/(Affiliation) Signature:	Date: Time:	Received by: (Print Name)/(Affiliation) Signature:	Date: Time:	

Sample Shipped Via: UPS (FedEx) Courier Other

Temp blank: Yes (No)

(1) WO 6.5.2012 Er.

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Serial No. № 52343

APPENDIX B

Data Sheets

cw 9/19/12
AR: AR 09/27/12

10-day Survival and Growth, Testing Cover Page

② ~~H. azteca~~ C. dilutus

Project Number: 60225262-058-(090-095)

Protocol #: ③ USEPA (2000) + ASTM (2009) CTSAK.TIE058.008 (Protocol)

Test Substance: Sediment

Test Species: *C. dilutus** Lot #: 12-0816 Age: 2nd Instar Supplier: ABS

Test Type: Chronic, Static-Renewal

Overlying Water: Reconstituted Fresh Water (Smith et al., 1997) (RW# 10453)

Investigators: ~~AM~~ /MT/AG/AS/AD/KB/JL/CW

Sampling Date(s): 07/02/12, 07/03/12, 07/10/12 (see COC)

Sampling Time(s): ④ ~~0900-1200, 0900-1200, 1400~~ 1200, 1100, 1200, 0900, 0900, 1400

FCETL Sample #(s): 25938, 25939, 25940, 25932, 25933, 25934

Test Initiation Date/Time: 8/31/12 @ 1330 - ~~1530~~ ⑤ 1730

Test Termination Date/Time: 9/10/12 @ 0845-1450

Renewal Frequency: Cont. drip, 2+ vol/day Feeding Freq: daily Food Type/Amount: 1.5 ml of 4 g/L Tetrafin Test Temp: 23 +/- 1 deg C

Test Chamber Capacity: 500 ml Test Soltn. Vol: 100 mL sed/175 mL H2O # Repl's/Trtmnt: 8

Test Duration: 10 days # Org.'s/Repl: 10/5 ▲ Env. Chmbr/Bath: 3

Water Characterization: Minimum of Hardness, Alkalinity, & Conductivity on days 0 and 10; Ammonia on days 0, 3, 7, and 10; No TRC; pH, temperature & DO daily on overlying water

aerate if dissolved oxygen <2.5 mg/L

Test Sediment (s):

1) Sand (cont)	2) Form Sed. (Cont.)	3) LJH
4) LSH	5) MSH	6) USC
7) LSLA	8) EFSC	9)
10)	11)	

⑥ Reference Tox. Dates: 8/31/12 - 9/4/12

LC50: ③ ~~3896~~ 3486 mg/L Cl⁻

Hist. Limits: ⑤ ~~1189 - 2959~~ 2621 - 6723 ⑤

Method: S-K

Study Director Initials: CW for BBN

Date: August 28, 2012

⑥ This ref tox study did not meet the minimum survival requirement in the control (90%); however, there were not enough organisms to re-run the study.

Overlying water added at a minimum of 2 volume additions/day; equivalent to >350 ml/day or >0.24 ml/min

* formerly known as *C. tentans*

① AD 8/31/12

② CW 9/19/12 CF

③ CW 9/26/12 E

④ AR 09/27/12 CF

⑤ AR 09/28/12 E (corrected ref tox database)

▲ due to insufficient # of organisms, some beakers were initiated with only 5 organisms. See biological page for specific test chambers initiated in this manner.

SEDIMENT/SOIL PREPARATION

Project Number: 60225262-058-(090-095)

ow 9/19/12

Artificial soil	QA: AE 09/27/12
Constituent/source	**Amount added (g)**
Coarse Silica Sand	1242
Silt/Clay (ASP 400)	219
Dolomite	7.5
α-cellulose	77.3
Humic Acid	0.15
Total	1545.95

Notes: Container was placed into tumbler for a minimum of an hour to homogenize prior to use

See TIE Sheet Daily Log for notes on the preparation of the formulated sediment

Form sed was homogenized with overlying water on 8/29/12 and placed in 25°C chamber until test setup (day -1). Form sed was re-homogenized for at least 3 minutes on 8/30/12 prior to placing in beakers.

Soil/sediment	FCETL#	Homogenization			
		Date	From	To	Analyst
Sand (Cont.) ▲	NA	8/30/12	1325	1328	AM
Form Sed. (Cont.)	NA	8/29/12	1607	1611	AG
LJH	25938	8/30/12	1340	1343	AM
LSH	25939	8/30/12	1346	1349	mt
MSH	25940	8/30/12	1332	1335	mt
USC	25932	8/30/12	1340	1344	AM
LSLA	25933	8/30/12	1321	1324	mt
EFSC	25934	8/30/12	1352	1355	AM
Form Sed. (Cont.)	NA	8/30/12	1327	1330	AG

▲ Added overlying water during homogenization process to wet the sand.

AG 8/31/12

CW 9/19/12
QA: AR 09/27/12

This page is an exact copy of the page from studies 084-089 w/ H. azteca, except for text notation on page.

SUBJECT: DAILY LOG

ALL ENTRIES MUST BE INITIALLED WITH DATE AND TIME:

60225262-058 H. azteca | C. dilutus

Preparation of formulated Sediment

- Combined the following ingredients together in a 4-L glass jar:
  - 3105 g Coarse Silica Sand (washed w/ DI + baked until dry)
  - 547.5 g Silt/Clay (ASP400)
  - 18.75 g Dolomite
  - 193.25 g α-cellulose (C09-054 (end), C12-087 (start))
  - 0.375 g Humic Acid (Lot# C10-034)

Total = 3864.875 g

- Mixed Ingredients together on 8/6/12 @ 1110 - 1130 CW
- Placed Jar in ~~tumbler~~ tumbler from 1145 - 1450 CW

- Homogenized ~1/2 of the formulated sediment with a small amount of Mod Hard + 50 mg/L Cl^- to wet the sediment from 1459 to 1502. AB
  - Placed the wet sediment @ 4°C in the dark. CW

8/8/12 - Pulled wet formulated sediment out of 4°C chamber and placed it in the 25°C chamber @ 0815 CW.

Applies only to study 60225262-058-(084-089) H. azteca

CW 8/16/12 E

BIOLOGICAL DATA — *C. dilutus** — Chronic, Static-Renewal — Project No. 60225262-058-(090-095) — QA: AR 09/27/12, CW 9/19/12

Sediment	Test Termination	A	B	C	D	E	F	G	H	Remarks: V. Survival
Sand (cont)	# Surviving	2□	9	7	9	4□	9	8	6	75%
	# Observed Dead	1	0	0	0	0	0	0	1	
	# Not Found	2	1	3	1	1	1	1	3	
	Initials	KB	AR	AR	KB	CW			CW	
Form Sed. (Cont.)	# Surviving	7	7	7*⑥	4	4□	5□	7	6	70% ~~68.8%~~ ③
	# Observed Dead	0	0	0	0	0	0	0	0	
	# Not Found	3	3	3	6	1	0	3	4	
	Initials	AR	AR		KB	KB	CW		CW	
LJH	# Surviving	9	6	8	8	5□	3	4□	8	77.9%
	# Observed Dead	0	0	0	0	0	0	0	0	
	# Not Found	1	4	2	2	0	6	0	2	
	Initials	AR	AR	CW	KB	KB	AR	KB		
LSH	# Surviving	7	5	7*⑥	8	5□	7	2□	5	66.2% ~~65%~~ ⑥
	# Observed Dead	0	0	0	0	0	0	0	0	
	# Not Found	3	5	3	2	0	3	3	5	
	Initials	AR	AR	KB	AR	CW	CW	KB	KB	
MSH	# Surviving	9	9	7	4*	7*	6Δ	4	5□	70.8%
	# Observed Dead	0	0	0	0	0	0	0	0	
	# Not Found	1	1	3	6	3	3	6	0	
	Initials	AR	AR		KB	CW	CW		AR	
USC	# Surviving	6	6	7*	3	8	9	7	8	67.5%
	# Observed Dead	0	0	1	0	0	0	0	0	
	# Not Found	4	4	2	7	2	1	3	2	
	Initials	AR	AR	CW	KB	KB		AR	CW	
LSLA	# Surviving	6	7	8	9	7	7	4□	5	71.2%
	# Observed Dead	0	0	0	0	0	0	0	0	
	# Not Found	4	3	2	1	3	3	1	5	
	Initials	CW	AR		AR	AR	KB		CW	
EFSC	# Surviving	5	5	6	7	8	8	3□	4□	66.2%
	# Observed Dead	0	0	0	0	0	0	0	0	
	# Not Found	5	5	4	3	2	2	2	1	
	Initials	AR	AR	AR		KB	CW	CW	AR	
	# Surviving									
	# Observed Dead									
	# Not Found									
	Initials									
	Date/Time:	09/10/12 @ 0845 - 1450								**Key:**
										Δ Emerged (Excluded from Surv. and growth)
										* = Pupa (Included in Survival count,
										but excluded from growth analysis)

□ 5 original organisms

① KB 9/14/12 E ③ CW 9/14/12 E ⑥ 9/14/12 E

CHEMICAL DATA (Composite of Overlying Water) *C. dilutus** Chronic, Static Renewal Project No. 60225262-058-(090-095) QA: AR 09/27/12

Parameter	Sediment	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day	Meter	Date	Time	Initials
Dissolved Oxygen (mg/l)	Sand (cont)	6.2	6.4	5.5	6.5	6.4	6.2	6.3	6.3	6.3	6.0	6.2	0	6	8/31/12	1315	mt
	Form Sed. (Cont.)	6.2	6.4	4.6	5.8	6.1	5.9	5.8	5.2	5.0	6.0	6.5	1	6	9/1/12	1615	AS
	LJH	6.2	6.2	4.7	6.2	5.7	6.3	6.5	5.8	6.9	5.3	5.9	2	5	9/2/12	0930	AS
	LSH	6.2	6.4	4.5	6.2	6.2	5.8	5.5	6.0	6.4	6.2	6.2	3	5	9/3/12	1540	AS
	MSH	6.2	6.2	4.5	6.3	6.2	6.2	6.4	5.9	6.2	5.9	6.4	4	5	9/4/12	1430	AD
	USC	6.1	6.2	6.5	6.2	5.8	5.7	6.3	5.5	5.9	5.9	6.1	5	5	9/5/12	1440	AD
	LSLA	6.0	6.0	4.5	6.1	5.7	5.9	5.7	5.4	5.7	6.0	6.0	6	5	9/6/12	0905	AD
	EFSC	6.0	6.0	4.4	6.1	6.8	4.9	6.3	5.6	6.2	5.3	6.0	7	5	9/7/12	1505	mt
													8	5	9/8/12	1125	mt
													9	5	9/9/12	1310	mt
													10	5	9/10/12	0940	AD
	Replicate	A	B	C	D	E	F	G	H	A	B	C					
Temp (deg C)	Sand (cont)	24	22	24	22	22	23	22	22	22	23	22	0	D40	8/31/12	1315	mt
	Form Sed. (Cont.)	23	22	24	22	23	23①	22	22	22	22	22	1	D40	9/1/12	1615	AS
	LJH	23	22	24	22	22	22	22	22	23	23	22	2	D40	9/2/12	0925	AS
	LSH	23	23	24	22	23	22	22	22	22	23	22	3	D40	9/3/12	1540	AS
	MSH	23	23	24	22	23	22	22	22	23	23	22	4	D40	9/4/12	1420	AD
	USC	24	23	24	22	22	22	22	22	23	23	22	5	D40	9/5/12	1440	AD
	LSLA	23	23	24	22	22	23	22	22	22	23	22	6	D40	9/6/12	0905	AD
	EFSC	23	23	24	22	22	22	22	22	22	22	22	7	D40	9/7/12②	1505	mt
													8	D40	9/8/12	1125	mt
													9	D40	9/9/12	1310	mt
													10	N63	9/10/12	0830	KR
	Replicate	A	B	C	D	E	F	G	H	A	B	C					
pH (s.u.)	Sand (cont)	8.1	8.0	8.0	8.0	7.9	7.9	7.9	7.8	8.0	8.0	7.9	0	16	8/31/12	1315	mt
	Form Sed. (Cont.)	8.1	7.9	7.9	7.8	7.9	7.8	7.8	7.8	7.9	8.0	8.1	1	16	9/1/12	1615	AS
	LJH	7.7	7.7	7.8	7.7	7.6	7.7	7.7	7.6	7.8	7.7	7.7	2	16	9/2/12	0925	AS
	LSH	8.0	8.1	7.7	8.0	7.9	7.9	7.8	7.9	8.0	8.0	8.0	3	16	9/3/12	1540	AS
	MSH	8.0	7.8	7.8	8.0	7.9	7.8	7.8	7.8	7.8	7.8	7.9	4	16	9/4/12	1450	AD
	USC	8.0	7.9	7.8	7.9	7.8	7.7	7.9	7.7	7.8	7.9	8.0	5	16	9/5/12	1440	AD
	LSLA	7.9	7.9	7.7	7.8	7.7	7.8	7.7	7.7	7.7	7.9	7.9	6	16	9/6/12	0905	AD
	EFSC	7.8	8.0	7.6	8.1	8.0	8.0	8.1	7.9	8.0	8.0	8.0	7	16	9/7/12	1505	mt
													8	16	9/8/12	1125	mt
													9	16	9/9/12	1310	mt
	Replicate	A	B	C	D	E	F	G	H	A	B	C	10	FM20	9/10/12	0935	AD

① AD 9/5/12 CF: 23

② mt 9/7/12 E

@ 9/19/12

OVERLYING WATER CHARACTERIZATION | *C. dilutus** | Chronic, Static-Renewal | Project No. 60225262-058-(090-095)

QA: AR 09/27/12

	Conductivity (µs/cm)		Hardness (mg/L as CaCO3)		Alkalinity (mg/l as CaCO3)		Ammonia (mg/l)			
Sediment	Day 0	Day 10	Day 0	Day 10	Day 0	Day 10	Day 0	Day 3	Day 7	Day 10
Sand (cont)	448	527	94	104	61	72	<1.0	<1.0	⑤2.0 2.2▲	2.1▲
Form Sed. (Cont.)	479	577	96	130	63	103	<1.0	<1.0	<1.0	<1.0
LJH	461	513 ~~521~~ ①	94	102	64	62	<1.0	<1.0	<1.0	<1.0
LSH	456	521	114	114	72	77	<1.0	<1.0	<1.0	<1.0
MSH	460	520	94	106	60	65	<1.0	<1.0	<1.0	<1.0
USC	475	548	112	120	71	85	<1.0	<1.0	<1.0	2.1▲
LSLA	463	524	114	116	65	71	<1.0	<1.0	<1.0	<1.0
EFSC	486	615	120	172	92	128	②~~1.4~~ 1.6▲	③~~3.1~~ 3.9▲	②~~1.9~~ 1.6▲	<1.0▲
Overlying water										
(RW10453) 8/29/12	464		88		60		<1.0⊛			
TRC=0.02 PH=8.0										
Cl⁻=30.1										
Meter #	15	15	Titr	Titr	Titr	Titr	HA#1	HA 1	HA#1	HA#1
Date:	8/31/12	9/10/12	8/31/12	9/10/12	8/31/12	9/10/12	8/31/12	9/3/12	9/7/12	9/10/12
Time:	1315	1340	1150	1340	1150	1340	1700	1770	1530	1420
Initials:	NA	ow for ANP	~~NA~~ for KB①	ow for ANP	~~NA~~ for DM	ow for ANP	~~NA~~ for KB		~~NA~~	ow for DM

① ~~NA~~ 9/8/12 CF, DM

② ow for (7) 9/19/12 CF; value measured on meter #4

▲measured 9/13/12 on preserved samples (meter #4)

⊛measured in source water

DAILY TESTING LOG | *C. dilutus** | Chronic, Static-Renewal | Project No. 60225262-058-(090-095)QA: PR 09/27/12

Day -1	Sediment Homogenized @ 1321-1355 Overlying water added to chambers @ 1400			RM/AB Initials/Date: 8/30/12
Day 0	Bath CT = 22.8 °C	Range = 20.6 - 23.8 °C		AB/~~AD~~/AD
	Test organisms added to chambers @ 1330-1730		Feeding: 1736	Initials/Date: 8/31/12
	Due to insufficient chironomid numbers, some replicates have only 5 organisms			
Day 1	Bath CT = 22.8 °C	Range = 22.4 – 23.4 °C	Feeding: 1625 ~~AB~~	Initials/Date: ~~AB~~ 9/1/12
Day 2	Bath CT = 22.4 °C	Range = 22.4 – 22.6 °C	Feeding: 1455 ~~AB~~	Initials/Date: 9/2/12 AD
Day 3	Bath CT = 22.4 °C	Range = 22.4 - 22.6 °C	Feeding: 1730 ~~AB~~	Initials/Date: 9/3/12 ~~AB~~
Day 4	Bath CT = 22.4 °C	Range = 22.4 - 22.6 °C	Feeding: 1430 AD	Initials/Date: 9/4/12 AD
Day 5	Bath CT = 22.4 °C	Range = 22.0 - 22.6 °C	Feeding: 1445 AD	Initials/Date: AD 9/5/12
Day 6	Bath CT = 22.2 °C	Range = 22.0 - 22.6 °C	Feeding: 1550 mt	Initials/Date: AD 9/6/12
Day 7	Bath CT = 22.4 °C	Range = 22.0 - 22.6 °C	Feeding: 1545 mt	Initials/Date: mt 9/7/12
Day 8	Bath CT = 22.4 °C	Range = 22.0 - 23.0 °C	Feeding: 1400 mt	Initials/Date: mt 9/8/12
Day 9	Bath CT = 22.2 °C	Range = 22.0 - 22.6 °C	Feeding: 1325 mt	Initials/Date: mt 9/9/12
Day 10	Bath CT = 22.4 °C	Range = 22.0 - 22.6 °C	Feeding: N/A	Initials/Date: ow/AB/AM/AB

Length/Width of Objects Using a Micrometer

AB: MR 09/27/12
CW 9/10/12

Project/Study Number: 60225262-058-090-095	**Project Name:** Coeur 2012
Study Initiation Date: 08/31/12	**Species:** Chironomus dilutus
Source of Organisms: ABS	**Organism Batch/Lot #:** 12-026
Collected by: AB	**Date Collected:** 08/31/12
Analyzed by: CW	**Date Analyzed:** 09/10/12

Specimen Number	Magnif.	# of Squares	Length of One Square (mm)	Total (mm)	Remarks
1	100X	6	0.07	0.42	
2	100X	9	0.07	0.63	
3	100X	9	0.07	0.63	
4	100X	6	0.07	0.42	
5	100X	9	0.07	0.63	
6	100X	10	0.07	0.70	
7	100X	7.5	0.07	0.52	
8	100X	5.5	0.07	0.38	
9	100X	5	0.07	0.35	
10	100X	8	0.07	0.56	
11	100X	5.5	0.07	0.38	
12	40X	4	0.175	0.70	
13	100X	5	0.07	0.35	
14	100X	10	0.07	0.70	
15	100X	9	0.07	0.63	
16	100X	9	0.07	0.63	
17	100X	6	0.07	0.42	
18	100X	5	0.07	0.35	
19	100X	5.5	0.07	0.38	
20	100X	8.5	0.07	0.60	
Total		142.5		10.38	
Mean		7.12		0.52	

3rd Instar = 0.33 to 0.45 mm

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TEST ORGANISM DRY WEIGHT AND ASH-FREE DRY WEIGHT (AFDW)

QA: PR 9/27/12 BS 9/14/12

Project No: 60225262-058-(090-095) TARE: Date/time: 9/12/12 @ 1130-1230 Analyst: CW
Species: Chironomus dilutus DRY GROSS: Date/time: 9/13/12 @ 0915-1030 Analyst: CW
Lot/Batch No.: 12-026 ASHED GROSS: Date/time: 9/14/12 @ 0915-1015 Analyst: CW
Analytical Balance ID: Sart #1

Dried in Oven # 3 from Date: 9/12/12 Time: 1415
Oven °C: 60-90 to Date: 9/13/12 Time: 0825
Ashed in Furnace from Date: 9/13/12 Time: 1100
Furnace °C: 500-550 to Date: 9/13/12 Time: 1550

Indicate mean weight is **Dry Weight** or **(AFDW)** (Circle one)

Boat No.	Treatment	Rep	Tare Weight (g) A	Dry Gross Weight (g) B	Dry Net Weight (g) (B-A)	Adjusted Dry Net Weight (g)[1]	Ashed Gross Weight (g) (D)	AFDW (g) (B-D)	No. of Original Org.	Mean Wt. per Original Organism (mg)	Mean Wt. per Treatment (mg) (Original)	No. of Surv. Org.	Mean Wt. per Surviving Organism (mg)	Mean Wt. per Treatment (mg) (Surviving)
1	Sand	A	1.98756	1.99077	0.00321		1.98791	0.00286 ~~1.98791~~ ②	5			2		
2		B	2.20278	2.21517	0.01239		2.20784	0.00733	10			9		
3		C	1.88501	1.89180	0.00679		1.88723	0.00457	10			7		
4		D	1.89544	1.90275	0.00731		1.89667	0.00608	10			9		
5		E	2.35705	2.36483	0.00778		2.35980	0.00503	5			4		
6		F	1.95055	1.95962	0.00907		1.95331	0.00631	10			9		
7		G	2.03168	2.03826	0.00658		2.03240	0.00586	10			8		
8		H	2.22210	2.22930	0.00720		2.22315	0.00615	10			6		
9	Farm Sed	A	1.94347	1.95557	0.01210		1.94803	0.00754	10			7		
10		B	2.21541	2.22572	0.01031		2.21922	0.00650	10			7		
11		C	2.26877	2.27663	0.00786		2.27169	0.00494	9			0 ~~8~~ ~~6~~ ③		
12		D	2.35656	2.36347	0.00691		2.35918	0.00429	10			4		
13		E	2.17949	2.18759	0.00810		2.18200	0.00559	5			4		
Blank A			2.35279	2.35274	-0.00005		2.35271	-0.00003						

[1] Add in weight loss of blank boat, if appropriate.

① MB 9/12/12 ② CW 9/14/12 WP ③ CW 9/14/12 CF; 6 organisms in crucible

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QA: AR 09/27/12
AS 9/14/12

TEST ORGANISM DRY WEIGHT AND ASH-FREE DRY WEIGHT (AFDW)

Project No: 60225262-058 (090-095) | TARE: Date/time: 9/12/12 @ 1130 - 1230 Analyst: CW | Dried in Oven # 3 from Date: 9/12/12 Time: 1415 to Date: 9/13/12 Time: 0825

Species: Chironomus dilutus | DRY GROSS: Date/time: 9/13/12 @ 0915 - 1030 Analyst: CW | Ashed in Furnace from Date: 9/13/12 Time: 1100 to Date: 9/13/12 Time: 1550

Lot/Batch No.: 12-026 | Furnace °C: 500-550

Analytical Balance ID: Sart #1 | ASHED GROSS: Date/time: 9/14/12 @ 0915 - 1015 Analyst: CW

Indicate mean weight is **Dry Weight** or **AFDW** (Circle one)

Boat No.	Treatment	Rep	Tare Weight (g) A	Dry Gross Weight (g) B	Dry Net Weight (g) (B-A)	Adjusted Dry Net Weight (g)[1]	Ashed Gross Weight (g) (D)	AFDW (g) (B-D)	No. of Original Org.	Mean Wt. per Original Organism (mg)	Mean Wt. per Treatment (mg) (Original)	No. of Surv. Org.	Mean Wt. per Surviving Organism (mg)	Mean Wt. per Treatment (mg) (Surviving)
14	Form Sed	F	2.21723	2.22731	0.01008		2.22233	0.00498	5			5		
15		G	2.29085	2.30258	0.01173		2.29476	0.00782	10			7		
16		H	1.96478	1.97220	0.00742		1.96728	0.00492	10			6		
17	LSH	A	2.29303	2.30837	0.01534		2.29925	0.00912	10			9		
18		B	2.23689	2.24753	0.01064		2.24092	0.00661	10			6		
19		C	2.11464	2.12834	0.01370		2.12061	0.00773	10			8		
20		D	2.37652	2.38894	0.01242		2.38155	0.00739	10			8		
21		E	1.87370	1.88519	0.01149		1.87858	0.00661	5			5		
22		F	1.82782	1.83526	0.00744		1.83082	0.00444	9			3		
23		G	2.07917	2.09101	0.01184		2.08475	0.00626	5			5		
24		H	2.32530	2.33960	0.01430		2.33195	0.00765	10			8		
25	LSH	A	2.20604	2.21994	0.01390		2.21273	0.00721	10			7		
26		B	2.27462	2.28379	0.00917		2.27808	0.00571	10			5		
Blank														

① CW 9/14/12 WP

[1] Add in weight loss of blank boat, if appropriate.

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TEST ORGANISM DRY WEIGHT AND ASH-FREE DRY WEIGHT (AFDW)

QA: AR 09/27/12
AR 9/14/12

Project No: 60825262.058-(090.095) TARE: Date/time: 9/12/12 @ 1130 - 1230 Analyst: CW

Species: Chironomus dilutus

Lot/Batch No.: 12-026

DRY GROSS: Date/time: 9/13/12 @ 0915-1030 Analyst: CW

Analytical Balance ID: Sart #1

ASHED GROSS: Date/time: 9/14/12 @ 0915 - 1015 Analyst: CW

Dried in Oven # 3 from Date: 9/12/12 Time: 1415
Oven °C: 60 - 90 to Date: 9/13/12 Time: 0825

Ashed in Furnace from Date: 9/13/12 Time: 1100
Furnace °C: 500-550 to Date: 9/13/12 Time: 1550

Indicate mean weight is **Dry Weight** or **(AFDW)** (Circle one)

Boat No.	Treatment	Rep	Tare Weight (g) A	Dry Gross Weight (g) B	Dry Net Weight (g) (B-A)	Adjusted Dry Net Weight (g)[1]	Ashed Gross Weight (g) (D)	AFDW (g) (B-D)	No. of Original Org.	Mean Wt. per Original Organism (mg)	Mean Wt. per Treatment (mg) (Original)	No. of Surv. Org.	Mean Wt. per Surviving Organism (mg)	Mean Wt. per Treatment (mg) (Surviving)
27	LSH	C	1.98080	1.99208	0.01128		1.98557	0.00651	9			6		
28		D	2.20957	2.22405	0.01448		2.21663	0.00742	10			8		
29		E	2.24449	2.25467	0.01018		2.24893	0.00574	5			5		
30		F	2.05890	2.07054	0.01164		2.06362	0.00692	10			7		
31		G	2.23133	2.23391	0.00258		2.23234	0.00157	5			2		
32		H	2.30198	2.31323	0.01125		2.30611	0.00712	10			5		
33	MSH	A	2.24650	2.26156	0.01506		2.25383	0.00773	10			9		
34		B	1.82239	1.83549	0.01310		1.82778	0.00771	10			9		
35		C	2.08130	2.09439	0.01309		2.08716	0.00723	10			7		
36		D	2.02149	2.02861	0.00712		2.02413	0.00448	9			3		
37		E	1.87732	1.89018	0.01286		1.88244	0.00774	9			6		
38		F	2.24643	2.25856	0.01213		2.25164	0.00692	9			6		
39		G	1.94711	1.95797	0.01086		1.95132	0.00665	10			4		
Blank														

[1] Add in weight loss of blank boat, if appropriate.

FCETL QA Form No.108
Revision 0
Effective 08/99

TEST ORGANISM DRY WEIGHT AND ASH-FREE DRY WEIGHT (AFDW)

QA: AR09 9/7/12
AS 9/4/12

Project No: 60225262.038 (090.095) TARE: Date/time: 9/12/12 @1130-1230 Analyst: CU

Species: Chironomus dilutus
Lot/Batch No.: 12-026

DRY GROSS: Date/time: 9/13/12 @0915-1030 Analyst: CU

Analytical Balance ID: Sart #1

ASHED GROSS: Date/time: 9/14/12 @0915-1015 Analyst: CU

Dried in Oven # 3 from Date: 9/12/12 Time: 1415
Oven °C: 60-90 to Date: 9/13/12 Time: 0825

Ashed in Furnace from Date: 9/13/12 Time: 1100
Furnace °C: 500-550 to Date: 9/13/12 Time: 1550

Indicate mean weight is **Dry Weight** or **(AFDW)** (Circle one)

Boat No.	Treatment	Rep	Tare Weight (g) A	Dry Gross Weight (g) B	Dry Net Weight (g) (B-A)	Adjusted Dry Net Weight (g)[1]	Ashed Gross Weight (g) (D)	AFDW (g) (B-D)	No. of Original Org.	Mean Wt. per Original Organism (mg)	Mean Wt. per Treatment (mg) (Original)	No. of Surv. Org.	Mean Wt. per Surviving Organism (mg)	Mean Wt. per Treatment (mg) (Surviving)
40	MSH	H	1.75885	1.77139	0.01254		1.76447	0.00692	5			5		
41	USC	A	1.88188	1.89160	0.00972		1.88452	0.00708	10			6		
42		B	1.93583	1.94754	0.01171		1.93983	0.00771	10			6		
43		C	2.21730	2.22704	0.00974		2.21981	0.00723	9			6		
44		D	2.24505	2.25303	0.00798		2.24706	0.00597	10			3		
45		E	2.24056	2.25283	0.01227		2.24468	0.00815	10			8		
46		F	1.87051	1.88372	0.01321		1.87399	0.00973	10			9		
47		G	1.87599	1.88581	0.00982		1.87827	0.00754	10			7		
48		H	1.98057	1.99141	0.01084		1.98322	0.00819	10			8		
49	LSLA	A	2.12128	2.13411	0.01283		2.12684	0.00727	10			6		
50		B	2.12989	2.14410	0.01421		2.13546	0.00864	10			7		
51		C	2.22980	2.24498	0.01518		2.23561	0.00937	10			8		
52		D	2.03553	2.05163	0.01610		2.04247	0.00916	10			9		
Blank														

[1] Add in weight loss of blank boat, if appropriate.

FCETL QA Form No.108
Revision 0
Effective 08/99

TEST ORGANISM DRY WEIGHT AND ASH-FREE DRY WEIGHT (AFDW)

QA: AR 9/27/12
AS 9/14/12

Project No: 60225262.058 (090.095) TARE: Date/time: 9/12/12 @ 1130-1230 Analyst: cw
Species: Chironomus dilutus
Lot/Batch No.: 12-026
DRY GROSS: Date/time: 9/13/12 @ 0915-1030 Analyst: cw
Analytical Balance ID: Bart #1
ASHED GROSS: Date/time: 9/14/12 @ 0915-1015 Analyst: cw

Dried in Oven # 3 from Date: 9/12/12 Time: 1415
Oven °C: 60-90 to Date: 9/13/12 Time: 0825
Ashed in Furnace from Date: 9/13/12 Time: 1100
Furnace °C: 500-550 to Date: 9/13/12 Time: 1550

Indicate mean weight is **Dry Weight** or **AFDW** (Circle one)

Boat No.	Treatment	Rep	Tare Weight (g) A	Dry Gross Weight (g) B	Dry Net Weight (g) (B-A)	Adjusted Dry Net Weight (g)[1]	Ashed Gross Weight (g) (D)	AFDW (g) (B-D)	No. of Original Org.	Mean Wt. per Original Organism (mg)	Mean Wt. per Treatment (mg) (Original)	No. of Surv. Org.	Mean Wt. per Surviving Organism (mg)	Mean Wt. per Treatment (mg) (Surviving)
53	LSLA	E	2.03753	2.05100	0.01347		2.04255	0.00845	10			7		
54		F	2.22819	2.24175	0.01356		2.23268	0.00907	10			7		
55		G	1.85794	1.86489	0.00695		1.85971	0.00518	5			4		
56		H	2.56437	2.57765	0.01328		2.56990	0.00775	10			5		
57	EFSC	A	1.93448	1.94146	0.00698		① 1.93606 2nd 3	0.00540	10			5		
58		B	2.06912	2.07440	0.00528		2.07054	0.00386	10			5		
59		C	1.93999	1.94572	0.00573		1.94130	0.00442	10			6		
60		D	2.06067	2.06908	0.00841		2.06250	0.00658	10			7		
61		E	2.14745	2.15603	0.00858		2.14940	0.00663	10			8		
62		F	1.85407	1.86264	0.00857		1.85608	0.00656	10			8		
63		G	2.33456	2.33125	0.00469		2.33583	0.00372	5			3		
64		H	2.15885	2.16546	0.00661		2.16038	0.00508	5			4		
Blank														

[1] Add in weight loss of blank boat, if appropriate.

CW 9/14/12 wp

Spreadsheet for AFDW

QA: AR 09/27/12
QA: EW 09/14/12
BS 9/14/12

Test Start Date:	8/31/2012	**Test End Date:**	9/10/2012
Test Number(s):	60225262-058-(090-095)	**Test Material:**	Sediment
Species:	*C. dilutus*	**Entered by:**	Andrea Sternenberger

Boat #	Treatment	Rep	Tare wt (dry) (g)	Gross wt (dry) (g)	Dry net wt (g)	Dry adjusted net wt (g)	Ashed gross wt (g)	AFDW (g)	Adjusted AFDW (g)	Number original organisms	Mean wt per orig (mg)	Mean wt per treatment (orig) (mg)	Number surviving	Mean wt per surviving	Mean wt per treatment (surv) (mg)
1	Sand Control	A	1.98756	1.99077	0.00321	0.00326	1.98791	0.00286	0.00283	5	0.5660	0.6473	2	1.4150	0.9054
2	Sand Control	B	2.20278	2.21517	0.01239	0.01244	2.20784	0.00733	0.00730	10	0.7300		9	0.8111	
3	Sand Control	C	1.88501	1.89180	0.00679	0.00684	1.88723	0.00457	0.00454	10	0.4540		7	0.6486	
4	Sand Control	D	1.89544	1.90275	0.00731	0.00736	1.89667	0.00608	0.00605	10	0.6050		9	0.6722	
5	Sand Control	E	2.35705	2.36483	0.00778	0.00783	2.35980	0.00503	0.00500	5	1.0000		4	1.2500	
6	Sand Control	F	1.95055	1.95962	0.00907	0.00912	1.95331	0.00631	0.00628	10	0.6280		9	0.6978	
7	Sand Control	G	2.03168	2.03826	0.00658	0.00663	2.03240	0.00586	0.00583	10	0.5830		8	0.7288	
8	Sand Control	H	2.22210	2.22930	0.00720	0.00725	2.22315	0.00615	0.00612	10	0.6120		6	1.0200	
9	Form Sed Control	A	1.94347	1.95557	0.01210	0.01215	1.94803	0.00754	0.00751	10	0.7510	0.7174	7	1.0729	1.0235
10	Form Sed Control	B	2.21541	2.22572	0.01031	0.01036	2.21922	0.00650	0.00647	10	0.6470		7	0.9243	
11	Form Sed Control	C	2.26877	2.27663	0.00786	0.00791	2.27169	0.00494	0.00491	9	0.5456		6	0.8183	
12	Form Sed Control	D	2.35656	2.36347	0.00691	0.00696	2.35918	0.00429	0.00426	10	0.4260		4	1.0650	
13	Form Sed Control	E	2.17949	2.18759	0.00810	0.00815	2.18200	0.00559	0.00556	5	1.1120		4	1.3900	
14	Form Sed Control	F	2.21723	2.22731	0.01008	0.01013	2.22233	0.00498	0.00495	5	0.9900		5	0.9900	
15	Form Sed Control	G	2.29085	2.30258	0.01173	0.01178	2.29476	0.00782	0.00779	10	0.7790		7	1.1129	
16	Form Sed Control	H	1.96478	1.97220	0.00742	0.00747	1.96728	0.00492	0.00489	10	0.4890		6	0.8150	
17	LJH	A	2.29303	2.30837	0.01534	0.01539	2.29925	0.00912	0.00909	10	0.9090	0.8609	9	1.0100	1.1217
18	LJH	B	2.23689	2.24753	0.01064	0.01069	2.24092	0.00661	0.00658	10	0.6580		6	1.0967	
19	LJH	C	2.11464	2.12834	0.01370	0.01375	2.12061	0.00773	0.00770	10	0.7700		8	0.9625	
20	LJH	D	2.37652	2.38894	0.01242	0.01247	2.38155	0.00739	0.00736	10	0.7360		8	0.9200	
21	LJH	E	1.87370	1.88519	0.01149	0.01154	1.87858	0.00661	0.00658	5	1.3160		5	1.3160	
22	LJH	F	1.82782	1.83526	0.00744	0.00749	1.83082	0.00444	0.00441	9	0.4900		3	1.4700	
23	LJH	G	2.07917	2.09101	0.01184	0.01189	2.08475	0.00626	0.00623	5	1.2460		5	1.2460	
24	LJH	H	2.32530	2.33960	0.01430	0.01435	2.33195	0.00765	0.00762	10	0.7620		8	0.9525	
25	LSH	A	2.20604	2.21994	0.01390	0.01395	2.21273	0.00721	0.00718	10	0.7180	0.6991	7	1.0257	1.0600
26	LSH	B	2.27462	2.28379	0.00917	0.00922	2.27808	0.00571	0.00568	10	0.5680		5	1.1360	
27	LSH	C	1.98080	1.99208	0.01128	0.01133	1.98557	0.00651	0.00648	9	0.7200		6	1.0800	
28	LSH	D	2.20957	2.22405	0.01448	0.01453	2.21663	0.00742	0.00739	10	0.7390		8	0.9238	
29	LSH	E	2.24449	2.25467	0.01018	0.01023	2.24893	0.00574	0.00571	5	1.1420		5	1.1420	
30	LSH	F	2.05890	2.07054	0.01164	0.01169	2.06362	0.00692	0.00689	10	0.6890		7	0.9843	
31	LSH	G	2.23133	2.23391	0.00258	0.00263	2.23234	0.00157	0.00154	5	0.3080		2	0.7700	
32	LSH	H	2.30198	2.31323	0.01125	0.01130	2.30611	0.00712	0.00709	10	0.7090		5	1.4180	

Spreadsheet for AFDW

Test Start Date:	8/31/2012	**Test End Date:**	9/10/2012
Test Number(s):	60225262-058-(090-095)	**Test Material:**	Sediment
Species:	*C. dilutus*	**Entered by:**	Andrea Sternenberger

QA: ow 09/14/12
AS 9/14/12

Boat #	Treatment	Rep	Tare wt (dry) (g)	Gross wt (dry) (g)	Dry net wt (g)	Dry adjusted net wt (g)	Ashed gross wt (g)	AFDW (g)	Adjusted AFDW (g)	Number original organisms	Mean wt per orig (mg)	Mean wt per treatment (orig) (mg)	Number surviving	Mean wt per surviving	Mean wt per treatment (surv) (mg)
33	MSH	A	2.24650	2.26156	0.01506	0.01511	2.25383	0.00773	0.00770	10	0.7700	0.8018	9	0.8556	1.2109
34	MSH	B	1.82239	1.83549	0.01310	0.01315	1.82778	0.00771	0.00768	10	0.7680		9	0.8533	
35	MSH	C	2.08130	2.09439	0.01309	0.01314	2.08716	0.00723	0.00720	10	0.7200		7	1.0286	
36	MSH	D	2.02149	2.02861	0.00712	0.00717	2.02413	0.00448	0.00445	9	0.4944		3	1.4833	
37	MSH	E	1.87732	1.89018	0.01286	0.01291	1.88244	0.00774	0.00771	9	0.8567		6	1.2850	
38	MSH	F	2.24643	2.25856	0.01213	0.01218	2.25164	0.00692	0.00689	9	0.7656		6	1.1483	
39	MSH	G	1.94711	1.95797	0.01086	0.01091	1.95132	0.00665	0.00662	10	0.6620		4	1.6550	
40	MSH	H	1.75885	1.77139	0.01254	0.01259	1.76447	0.00692	0.00689	5	1.3780		5	1.3780	
41	USC	A	1.88188	1.89160	0.00972	0.00977	1.88452	0.00708	0.00705	10	0.7050	0.7770	6	1.1750	1.2276
42	USC	B	1.93583	1.94754	0.01171	0.01176	1.93983	0.00771	0.00768	10	0.7680		6	1.2800	
43	USC	C	2.21730	2.22704	0.00974	0.00979	2.21981	0.00723	0.00720	9	0.8000		6	1.2000	
44	USC	D	2.24505	2.25303	0.00798	0.00803	2.24706	0.00597	0.00594	10	0.5940		3	1.9800	
45	USC	E	2.24056	2.25283	0.01227	0.01232	2.24468	0.00815	0.00812	10	0.8120		8	1.0150	
46	USC	F	1.87051	1.88372	0.01321	0.01326	1.87399	0.00973	0.00970	10	0.9700		9	1.0778	
47	USC	G	1.87599	1.88581	0.00982	0.00987	1.87827	0.00754	0.00751	10	0.7510		7	1.0729	
48	USC	H	1.98057	1.99141	0.01084	0.01089	1.98322	0.00819	0.00816	10	0.8160		8	1.0200	
49	LSLA	A	2.12128	2.13411	0.01283	0.01288	2.12684	0.00727	0.00724	10	0.7240	0.8725	6	1.2067	1.2430
50	LSLA	B	2.12989	2.14410	0.01421	0.01426	2.13546	0.00864	0.00861	10	0.8610		7	1.2300	
51	LSLA	C	2.22980	2.24498	0.01518	0.01523	2.23561	0.00937	0.00934	10	0.9340		8	1.1675	
52	LSLA	D	2.03553	2.05163	0.01610	0.01615	2.04247	0.00916	0.00913	10	0.9130		9	1.0144	
53	LSLA	E	2.03753	2.05100	0.01347	0.01352	2.04255	0.00845	0.00842	10	0.8420		7	1.2029	
54	LSLA	F	2.22819	2.24175	0.01356	0.01361	2.23268	0.00907	0.00904	10	0.9040		7	1.2914	
55	LSLA	G	1.85794	1.86489	0.00695	0.00700	1.85971	0.00518	0.00515	5	1.0300		4	1.2875	
56	LSLA	H	2.56437	2.57765	0.01328	0.01333	2.56990	0.00775	0.00772	10	0.7720		5	1.5440	
57	EFSC	A	1.93448	1.94146	0.00698	0.00703	1.93606	0.00540	0.00537	10	0.5370	0.6344	5	1.0740	0.9551
58	EFSC	B	2.06912	2.07440	0.00528	0.00533	2.07054	0.00386	0.00383	10	0.3830		5	0.7660	
59	EFSC	C	1.93999	1.94572	0.00573	0.00578	1.94130	0.00442	0.00439	10	0.4390		6	0.7317	
60	EFSC	D	2.06067	2.06908	0.00841	0.00846	2.06250	0.00658	0.00655	10	0.6550		7	0.9357	
61	EFSC	E	2.14745	2.15603	0.00858	0.00863	2.14940	0.00663	0.00660	10	0.6600		8	0.8250	
62	EFSC	F	1.85407	1.86264	0.00857	0.00862	1.85608	0.00656	0.00653	10	0.6530		8	0.8163	
63	EFSC	G	2.33456	2.33925	0.00469	0.00474	2.33553	0.00372	0.00369	5	0.7380		3	1.2300	
64	EFSC	H	2.15885	2.16546	0.00661	0.00666	2.16038	0.00508	0.00505	5	1.0100		4	1.2625	
Blank	A		2.35279	2.35274	-0.00005		2.35271	-0.00003							

Coeur Alaska, Inc.
C. dilutus Chronic Study
List Data and Summary Statistics for Growth (AFDW) PER ORIGINAL (CONTROLS ONLY)

QA: AR 09/27/12
QA: OW 9/19/12
AS 9/17/12

Title: 60225262-058-(090-095) C.dilutus-Growth PO-controls
File: 058cgpo.dat Transform: NO TRANSFORMATION
Number of Groups: 2

GRP	IDENTIFICATION	REP	VALUE	TRANS VALUE
1	Form Sed	1	0.7510	0.7510
1	Form Sed	2	0.6470	0.6470
1	Form Sed	3	0.5456	0.5456
1	Form Sed	4	0.4260	0.4260
1	Form Sed	5	1.1120	1.1120
1	Form Sed	6	0.9900	0.9900
1	Form Sed	7	0.7790	0.7790
1	Form Sed	8	0.4890	0.4890
2	Sand	1	0.5660	0.5660
2	Sand	2	0.7300	0.7300
2	Sand	3	0.4540	0.4540
2	Sand	4	0.6050	0.6050
2	Sand	5	1.0000	1.0000
2	Sand	6	0.6280	0.6280
2	Sand	7	0.5830	0.5830
2	Sand	8	0.6120	0.6120

Title: 60225262-058-(090-095) C.dilutus-Growth PO-controls
File: 058cgpo.dat Transform: NO TRANSFORMATION

Summary Statistics on Data TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	Form Sed	8	0.4260	1.1120	0.7175
2	Sand	8	0.4540	1.0000	0.6472

Title: 60225262-058-(090-095) C.dilutus-Growth PO-controls
File: 058cgpo.dat Transform: NO TRANSFORMATION

Summary Statistics on Data TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	Form Sed	0.0581	0.2410	0.0852	33.5882
2	Sand	0.0261	0.1616	0.0571	24.9639

Coeur Alaska, Inc.
C. dilutus Chronic Study
Analysis of Growth PER ORIGINAL (CONTROLS ONLY) - AFDW

QA: AR 9/27/12
DS 9/17/12
QA: wall 9/11/12

Title: 60225262-058-(090-095) C.dilutus-Growth PO-controls
File: 058cgpo.dat Transform: NO TRANSFORMATION

Shapiro - Wilk's Test for Normality

D = 0.5892
W = 0.9262

Critical W = 0.8440 (alpha = 0.01 , N = 16)
W = 0.8870 (alpha = 0.05 , N = 16)

Data PASS normality test (alpha = 0.01). Continue analysis.

Title: 60225262-058-(090-095) C.dilutus-Growth PO-controls
File: 058cgpo.dat Transform: NO TRANSFORMATION

F-Test for Equality of Two Variances

GROUP	IDENTIFICATION	VARIANCE	F
1	Form Sed	0.0581	
2	Sand	0.0261	2.2243

(p-value = 0.3135)

Critical F = 8.8854 (P=0.01, 7, 7)
4.9949 (P=0.05, 7, 7)

Since F <= Critical F, FAIL TO REJECT Ho: Equal Variances (alpha = 0.01).

Coeur Alaska, Inc.
C. dilutus Chronic Study
Analysis of Growth PER ORIGINAL (CONTROLS ONLY) -AFDW

QA: AR 09/27/12
OS 9/17/12
AR: CW 9/19/12

Title: 60225262-058-(090-095) C.dilutus-Growth PO-controls
File: 058cgpo.dat Transform: NO TRANSFORMATION

ANOVA Table

SOURCE	DF	SS	MS	F
Between	1	0.0197	0.0197	0.4683
Within (Error)	14	0.5892	0.0421	
Total	15	0.6090		

(p-value = 0.5049)

Critical F = 8.8616 (alpha = 0.01, df = 1,14)
= 4.6001 (alpha = 0.05, df = 1,14)
Since F < Critical F FAIL TO REJECT Ho: All equal (alpha = 0.05)

Title: 60225262-058-(090-095) C.dilutus-Growth PO-controls
File: 058cgpo.dat Transform: NO TRANSFORMATION

2 Sample t-Test - TABLE 1 OF 2 Ho: Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	t STAT	SIG 0.05
1	Form Sed	0.7175	0.7175		
2	Sand	0.6472	0.6472	0.6844	

Equal Var: t critical value = 1.7613 (1 Tailed, alpha = 0.05, df = 14)
(p-value = 0.2525)

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG 0.05
1	Form Sed	0.7175	0.7175		
2	Sand	0.6472	0.6472	0.6844	

Unequal Var: t critical value = 1.7823 (1 Tailed, alpha = 0.05, df = 12)
(p-value = 0.2534)

no difference statistically so controls can be pooled together

2 Sample t-Test - TABLE 2 OF 2 Ho: Control<Treatment

Equal Variances:

GROUP	IDENTIFICATION	NUM OF REPS	MIN SIG DIFF (IN ORIG. UNITS)	% OF CONTROL	DIFFERENCE FROM CONTROL
1	Form Sed	8			
2	Sand	8	0.1807	25.2	0.0702

Unequal Variances:

GROUP	IDENTIFICATION	NUM OF REPS	MIN SIG DIFF (IN ORIG. UNITS)	% OF CONTROL	DIFFERENCE FROM CONTROL
1	Form Sed	8			
2	Sand	8	0.1828	25.5	0.0702

Coeur Alaska, Inc.
C. dilutus Chronic Study
List Data for Growth PER ORIGINAL (All sites and pooled controls) -AFDW

AS 9/17/12
QA: CW 9/19/12
QA: AKO 9/27/12

Title: 60225262-058-(090-095) C.dilutus-Growth PO-pooled&sites
File: 058PGPO.DAT Transform: NO TRANSFORMATION
Number of Groups: 7

GRP	IDENTIFICATION	REP	VALUE	TRANS VALUE
1	Form Sed\Sand	1	0.7510	0.7510
1	Form Sed\Sand	2	0.6470	0.6470
1	Form Sed\Sand	3	0.5456	0.5456
1	Form Sed\Sand	4	0.4260	0.4260
1	Form Sed\Sand	5	1.1120	1.1120
1	Form Sed\Sand	6	0.9900	0.9900
1	Form Sed\Sand	7	0.7790	0.7790
1	Form Sed\Sand	8	0.4890	0.4890
1	Form Sed\Sand	9	0.5660	0.5660
1	Form Sed\Sand	10	0.7300	0.7300
1	Form Sed\Sand	11	0.4540	0.4540
1	Form Sed\Sand	12	0.6050	0.6050
1	Form Sed\Sand	13	1.0000	1.0000
1	Form Sed\Sand	14	0.6280	0.6280
1	Form Sed\Sand	15	0.5830	0.5830
1	Form Sed\Sand	16	0.6120	0.6120
2	LJH	1	0.9090	0.9090
2	LJH	2	0.6580	0.6580
2	LJH	3	0.7700	0.7700
2	LJH	4	0.7360	0.7360
2	LJH	5	1.3160	1.3160
2	LJH	6	0.4900	0.4900
2	LJH	7	1.2460	1.2460
2	LJH	8	0.7620	0.7620
3	LSH	1	0.7180	0.7180
3	LSH	2	0.5680	0.5680
3	LSH	3	0.7200	0.7200
3	LSH	4	0.7390	0.7390
3	LSH	5	1.1420	1.1420
3	LSH	6	0.6890	0.6890
3	LSH	7	0.3080	0.3080
3	LSH	8	0.7090	0.7090
4	MSH	1	0.7700	0.7700
4	MSH	2	0.7680	0.7680
4	MSH	3	0.7200	0.7200
4	MSH	4	0.4944	0.4944
4	MSH	5	0.8567	0.8567
4	MSH	6	0.7656	0.7656
4	MSH	7	0.6620	0.6620
4	MSH	8	1.3780	1.3780
5	USC	1	0.7050	0.7050
5	USC	2	0.7680	0.7680
5	USC	3	0.8000	0.8000
5	USC	4	0.5940	0.5940
5	USC	5	0.8120	0.8120
5	USC	6	0.9700	0.9700
5	USC	7	0.7510	0.7510
5	USC	8	0.8160	0.8160
6	LSLA	1	0.7240	0.7240
6	LSLA	2	0.8610	0.8610
6	LSLA	3	0.9340	0.9340

09/17/12
QA:CW 9/19/12
QA: KRC 09/27/12

6	LSLA	4	0.9130	0.9130
6	LSLA	5	0.8420	0.8420
6	LSLA	6	0.9040	0.9040
6	LSLA	7	1.0300	1.0300
6	LSLA	8	0.7720	0.7720
7	EFSC	1	0.5370	0.5370
7	EFSC	2	0.3830	0.3830
7	EFSC	3	0.4390	0.4390
7	EFSC	4	0.6550	0.6550
7	EFSC	5	0.6600	0.6600
7	EFSC	6	0.6530	0.6530
7	EFSC	7	0.7380	0.7380
7	EFSC	8	1.0100	1.0100

Title: 60225262-058-(090-095) C.dilutus-Growth PO-pooled&sites
File: 058PGPO.DAT Transform: NO TRANSFORMATION

Summary Statistics on Data TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	Form Sed\Sand	16	0.4260	1.1120	0.6824
2	LJH	8	0.4900	1.3160	0.8609
3	LSH	8	0.3080	1.1420	0.6991
4	MSH	8	0.4944	1.3780	0.8018
5	USC	8	0.5940	0.9700	0.7770
6	LSLA	8	0.7240	1.0300	0.8725
7	EFSC	8	0.3830	1.0100	0.6344

Title: 60225262-058-(090-095) C.dilutus-Growth PO-pooled&sites
File: 058PGPO.DAT Transform: NO TRANSFORMATION

Summary Statistics on Data TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	Form Sed\Sand	0.0406	0.2015	0.0504	29.5285
2	LJH	0.0814	0.2854	0.1009	33.1505
3	LSH	0.0527	0.2296	0.0812	32.8357
4	MSH	0.0656	0.2561	0.0906	31.9428
5	USC	0.0114	0.1069	0.0378	13.7547
6	LSLA	0.0092	0.0959	0.0339	10.9964
7	EFSC	0.0377	0.1942	0.0687	30.6191

Coeur Alaska, Inc.
C. dilutus Chronic Study
Analysis of Growth PER ORIGINAL (All sites and pooled controls) - AFDW

Note: Shapiro-Wilk's test cannot be run b/c # of replicates is >50

OS 9/17/12
QA: CW 9/19/12
QA: AR 09/27/12

Title: 60225262-058-(090-095) C.dilutus-Growth PO-pooled&sites
File: 058PGPO.DAT Transform: NO TRANSFORMATION

Chi-Square Test for Normality

Actual and Expected Frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	4.2880	15.4880	24.4480	15.4880	4.2880
OBSERVED	3	15	34	3	9

Chi-Square = 19.3813 (p-value = 0.0007)

Critical Chi-Square = 13.277 (alpha = 0.01 , df = 4)
= 9.488 (alpha = 0.05 , df = 4)

Data FAIL normality test (alpha = 0.01). Try another transformation.

Warning - The first three homogeneity tests are sensitive to non-normality and should not be performed with this data as is.

Title: 60225262-058-(090-095) C.dilutus-Growth PO-pooled&sites
File: 058PGPO.DAT Transform: NO TRANSFORMATION

Bartlett's Test for Homogeneity of Variance

Calculated B1 statistic = 11.5850 (p-value = 0.0719)

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

Critical B = 16.8119 (alpha = 0.01, df = 6)
= 12.5916 (alpha = 0.05, df = 6)

Using Average Degrees of Freedom
(Based on average replicate size of 9.14)

Calculated B2 statistic = 13.2653 (p-value = 0.0390)

Data PASS B2 homogeneity test at 0.01 level. Continue analysis.

Coeur Alaska, Inc.
C. dilutus Chronic Study
Analysis of Growth PER ORIGINAL AFDW (All sites and pooled controls)

AS 9/17/12
QA: CW 9/19/12
QA: MR 09/27/12

Title: 60225262-058-(090-095) C.dilutus-Growth PO-pooled&sites
File: 058PGPO.DAT Transform: NO TRANSFORMATION

Wilcoxon's Rank Sum Test w/ Bonferroni Adjustment Ho: Control<Treatment

GROUP	IDENTIFICATION	MEAN IN ORIGINAL UNITS	RANK SUM	CRIT. VALUE	REPS	SIG 0.05
1	Form Sed\Sand	0.6824				
2	LJH	0.8609	129.00	60	8	
3	LSH	0.6991	108.00	60	8	
4	MSH	0.8018	124.00	60	8	
5	USC	0.7770	127.50	60	8	
6	LSLA	0.8725	138.00	60	8	
7	EFSC	0.6344	96.00	60	8	

Critical values are 1 tailed (k = 6)

Coeur Alaska, Inc.
C. dilutus Chronic Study
List Data and Summary Statistics for Growth PER SURVIVING (CONTROLS ONLY) -AFDW

AR 9/17/12
anow 9/19/12
OK: AR 09/27/12

Title: 60225262-058-(090-095) C.dilutus-Growth PS-controls
File: 058cgps.dat Transform: NO TRANSFORMATION
Number of Groups: 2

GRP	IDENTIFICATION	REP	VALUE	TRANS VALUE
1	Sand	1	1.4150	1.4150
1	Sand	2	0.8111	0.8111
1	Sand	3	0.6486	0.6486
1	Sand	4	0.6722	0.6722
1	Sand	5	1.2500	1.2500
1	Sand	6	0.6978	0.6978
1	Sand	7	0.7288	0.7288
1	Sand	8	1.0200	1.0200
2	Form Sed	1	1.0729	1.0729
2	Form Sed	2	0.9243	0.9243
2	Form Sed	3	0.8183	0.8183
2	Form Sed	4	1.0650	1.0650
2	Form Sed	5	1.3900	1.3900
2	Form Sed	6	0.9900	0.9900
2	Form Sed	7	1.1129	1.1129
2	Form Sed	8	0.8150	0.8150

Title: 60225262-058-(090-095) C.dilutus-Growth PS-controls
File: 058cgps.dat Transform: NO TRANSFORMATION

Summary Statistics on Data TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	Sand	8	0.6486	1.4150	0.9054
2	Form Sed	8	0.8150	1.3900	1.0235

Title: 60225262-058-(090-095) C.dilutus-Growth PS-controls
File: 058cgps.dat Transform: NO TRANSFORMATION

Summary Statistics on Data TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	Sand	0.0850	0.2916	0.1031	32.2018
2	Form Sed	0.0347	0.1863	0.0659	18.2038

Coeur Alaska, Inc.
C. dilutus Chronic Study
Analysis of Growth PER SURVIVING AFDW (CONTROLS ONLY)

DS 9/17/12
QA: CW 9/19/12
QA: AR 09/27/12

Title: 60225262-058-(090-095) C.dilutus-Growth PS-controls
File: 058cgps.dat Transform: NO TRANSFORMATION

Shapiro - Wilk's Test for Normality

D = 0.8381
W = 0.8857

Critical W = 0.8440 (alpha = 0.01 , N = 16)
W = 0.8870 (alpha = 0.05 , N = 16)

Data PASS normality test (alpha = 0.01). Continue analysis.

Title: 60225262-058-(090-095) C.dilutus-Growth PS-controls
File: 058cgps.dat Transform: NO TRANSFORMATION

F-Test for Equality of Two Variances

GROUP	IDENTIFICATION	VARIANCE	F
1	Sand	0.0850	
2	Form Sed	0.0347	2.4487

(p-value = 0.2603)

Critical F = 8.8854 (P=0.01, 7, 7)
4.9949 (P=0.05, 7, 7)

Since F <= Critical F, FAIL TO REJECT Ho: Equal Variances (alpha = 0.01).

QA: AR 09/27/12
QA: CW 09/27/12
AS 9/27/12

Title: 60225262-058-(090-095) C.dilutus-Growth PS-controls
File: 058cgps.dat Transform: NO TRANSFORMATION

ANOVA Table

SOURCE	DF	SS	MS	F
Between	1	0.0558	0.0558	0.9321
Within (Error)	14	0.8381	0.0599	
Total	15	0.8939		

(p-value = 0.3507)

Critical F = 8.8616 (alpha = 0.01, df = 1,14)
= 4.6001 (alpha = 0.05, df = 1,14)

Since F < Critical F FAIL TO REJECT Ho: All equal (alpha = 0.05)

Title: 60225262-058-(090-095) C.dilutus-Growth PS-controls
File: 058cgps.dat Transform: NO TRANSFORMATION

2 Sample t-Test - TABLE 1 OF 2 Ho: Control>Treatment

hypothesis reversed to detect difference

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	t STAT	SIG 0.05
1	Sand	0.9054	0.9054		
2	Form Sed	1.0235	1.0235	0.9655	

← no difference statistically so control data can be pooled together

Equal Var: t critical value = 1.7613 (1 Tailed, alpha = 0.05, df = 14)
(p-value = 0.1753)

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG 0.05
1	Sand	0.9054	0.9054		
2	Form Sed	1.0235	1.0235	0.9655	

Unequal Var: t critical value = 1.7823 (1 Tailed, alpha = 0.05, df = 12)
(p-value = 0.1767)

2 Sample t-Test - TABLE 2 OF 2 Ho: Control>Treatment

Equal Variances:

GROUP	IDENTIFICATION	NUM OF REPS	MIN SIG DIFF (IN ORIG. UNITS)	% OF CONTROL	DIFFERENCE FROM CONTROL
1	Sand	8			
2	Form Sed	8	0.2155	23.8	0.1181

Unequal Variances:

GROUP	IDENTIFICATION	NUM OF REPS	MIN SIG DIFF (IN ORIG. UNITS)	% OF CONTROL	DIFFERENCE FROM CONTROL
1	Sand	8			
2	Form Sed	8	0.2180	24.1	0.1181

Coeur Alaska, Inc.
C. dilutus Chronic Study
List Data for Growth PER SURVIVING (All sites and pooled controls)-AFDW

AS 9/17/12
QA:CW 9/19/12
QA: AR09/27/12

Title: 60225262-058-(090-095) C.dilutus-Growth PS-pooled&sites
File: 058pgps.dat Transform: NO TRANSFORMATION
Number of Groups: 7

GRP	IDENTIFICATION	REP	VALUE	TRANS VALUE
1	Form Sed/Sand	1	1.4150	1.4150
1	Form Sed/Sand	2	0.8111	0.8111
1	Form Sed/Sand	3	0.6486	0.6486
1	Form Sed/Sand	4	0.6722	0.6722
1	Form Sed/Sand	5	1.2500	1.2500
1	Form Sed/Sand	6	0.6978	0.6978
1	Form Sed/Sand	7	0.7288	0.7288
1	Form Sed/Sand	8	1.0200	1.0200
1	Form Sed/Sand	9	1.0729	1.0729
1	Form Sed/Sand	10	0.9243	0.9243
1	Form Sed/Sand	11	0.8183	0.8183
1	Form Sed/Sand	12	1.0650	1.0650
1	Form Sed/Sand	13	1.3900	1.3900
1	Form Sed/Sand	14	0.9900	0.9900
1	Form Sed/Sand	15	1.1129	1.1129
1	Form Sed/Sand	16	0.8150	0.8150
2	LJH	1	1.0100	1.0100
2	LJH	2	1.0967	1.0967
2	LJH	3	0.9625	0.9625
2	LJH	4	0.9200	0.9200
2	LJH	5	1.3160	1.3160
2	LJH	6	1.4700	1.4700
2	LJH	7	1.2460	1.2460
2	LJH	8	0.9525	0.9525
3	LSH	1	1.0257	1.0257
3	LSH	2	1.1360	1.1360
3	LSH	3	1.0800	1.0800
3	LSH	4	0.9238	0.9238
3	LSH	5	1.1420	1.1420
3	LSH	6	0.9843	0.9843
3	LSH	7	0.7700	0.7700
3	LSH	8	1.4180	1.4180
4	MSH	1	0.8556	0.8556
4	MSH	2	0.8533	0.8533
4	MSH	3	1.0286	1.0286
4	MSH	4	1.4833	1.4833
4	MSH	5	1.2850	1.2850
4	MSH	6	1.1483	1.1483
4	MSH	7	1.6550	1.6550
4	MSH	8	1.3780	1.3780
5	USC	1	1.1750	1.1750
5	USC	2	1.2800	1.2800
5	USC	3	1.2000	1.2000
5	USC	4	1.9800	1.9800
5	USC	5	1.0150	1.0150
5	USC	6	1.0778	1.0778
5	USC	7	1.0729	1.0729
5	USC	8	1.0200	1.0200
6	LSLA	1	1.2067	1.2067
6	LSLA	2	1.2300	1.2300
6	LSLA	3	1.1675	1.1675

Coeur Alaska, Inc.
C. dilutus Chronic Study
List Data and Summary Statistics for Growth PER SURVIVING – AFDW
(All sites and pooled controls)

DS 9/17/12
QA:CW 9/19/12
QA: MR 09/27/12

6	LSLA	4	1.0144	1.0144
6	LSLA	5	1.2029	1.2029
6	LSLA	6	1.2914	1.2914
6	LSLA	7	1.2875	1.2875
6	LSLA	8	1.5440	1.5440
7	EFSC	1	1.0740	1.0740
7	EFSC	2	0.7660	0.7660
7	EFSC	3	0.7317	0.7317
7	EFSC	4	0.9357	0.9357
7	EFSC	5	0.8250	0.8250
7	EFSC	6	0.8163	0.8163
7	EFSC	7	1.2300	1.2300
7	EFSC	8	1.2625	1.2625

Title: 60225262-058-(090-095) C.dilutus-Growth PS-pooled&sites
File: 058pgps.dat Transform: NO TRANSFORMATION

Summary Statistics on Data TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	Form Sed/Sand	16	0.6486	1.4150	0.9645
2	LJH	8	0.9200	1.4700	1.1217
3	LSH	8	0.7700	1.4180	1.0600
4	MSH	8	0.8533	1.6550	1.2109
5	USC	8	1.0150	1.9800	1.2276
6	LSLA	8	1.0144	1.5440	1.2431
7	EFSC	8	0.7317	1.2625	0.9552

Title: 60225262-058-(090-095) C.dilutus-Growth PS-pooled&sites
File: 058pgps.dat Transform: NO TRANSFORMATION

Summary Statistics on Data TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	Form Sed/Sand	0.0596	0.2441	0.0610	25.3105
2	LJH	0.0403	0.2008	0.0710	17.9021
3	LSH	0.0358	0.1892	0.0669	17.8511
4	MSH	0.0852	0.2918	0.1032	24.0996
5	USC	0.1010	0.3178	0.1124	25.8895
6	LSLA	0.0223	0.1493	0.0528	12.0086
7	EFSC	0.0438	0.2092	0.0740	21.9053

Coeur Alaska, Inc.
C. dilutus Chronic Study
Analysis of Growth PER SURVIVING (All sites and pooled controls) -AFDW

AS 9/17/12
QA: CW 9/19/12
QA: AR 09/27/12

Title: 60225262-058-(090-095) C.dilutus-Growth PS-pooled&sites
File: 058pgps.dat Transform: NO TRANSFORMATION

Chi-Square Test for Normality

Actual and Expected Frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	4.2880	15.4880	24.4480	15.4880	4.2880
OBSERVED	2	22	24	9	7

Chi-Square = 8.4001 (p-value = 0.0780)

Critical Chi-Square = 13.277 (alpha = 0.01 , df = 4)
= 9.488 (alpha = 0.05 , df = 4)

Data PASS normality test (alpha = 0.01). Continue analysis.

Note: Shapiro-Wilk's test cannot be run because # of replicates is > 50

Title: 60225262-058-(090-095) C.dilutus-Growth PS-pooled&sites
File: 058pgps.dat Transform: NO TRANSFORMATION

Bartlett's Test for Homogeneity of Variance

Calculated B1 statistic = 5.3461 (p-value = 0.5003)

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

Critical B = 16.8119 (alpha = 0.01, df = 6)
= 12.5916 (alpha = 0.05, df = 6)

Using Average Degrees of Freedom
(Based on average replicate size of 9.14)

Calculated B2 statistic = 6.1056 (p-value = 0.4115)

Data PASS B2 homogeneity test at 0.01 level. Continue analysis.

Coeur Alaska, Inc.
C. dilutus Chronic Study
Analysis of Growth PER SURVIVING (All sites and pooled controls) -AFDW

AS 9/17/12
QA:CW 9/19/12
QA: AR 09/27/12

Title: 60225262-058-(090-095) C.dilutus-Growth PS-pooled&sites
File: 058pgps.dat Transform: NO TRANSFORMATION

ANOVA Table

SOURCE	DF	SS	MS	F
Between	6	0.8678	0.1446	2.5823
Within (Error)	57	3.1924	0.0560	
Total	63	4.0601		

(p-value = 0.0278)

Critical F = 3.1364 (alpha = 0.01, df = 6,57)
= 2.2625 (alpha = 0.05, df = 6,57)

Since F > Critical F REJECT Ho: All equal (alpha = 0.05)

Title: 60225262-058-(090-095) C.dilutus-Growth PS-pooled&sites
File: 058pgps.dat Transform: NO TRANSFORMATION

Bonferroni t-Test - TABLE 1 OF 2 Ho: Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	t STAT	SIG 0.05
1	Form Sed/Sand	0.9645	0.9645		
2	LJH	1.1217	1.1217	-1.5342	
3	LSH	1.0600	1.0600	-0.9317	
4	MSH	1.2109	1.2109	-2.4044	
5	USC	1.2276	1.2276	-2.5674	
6	LSLA	1.2431	1.2431	-2.7183	
7	EFSC	0.9552	0.9552	0.0912	

Bonferroni t critical value = 2.4667 (1 Tailed, alpha = 0.05, df = 6,57)

Title: 60225262-058-(090-095) C.dilutus-Growth PS-pooled&sites
File: 058pgps.dat Transform: NO TRANSFORMATION

Bonferroni t-Test - TABLE 2 OF 2 Ho: Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	MIN SIG DIFF (IN ORIG. UNITS)	% OF CONTROL	DIFFERENCE FROM CONTROL
1	Form Sed/Sand	16			
2	LJH	8	0.2528	26.2	-0.1572
3	LSH	8	0.2528	26.2	-0.0955
4	MSH	8	0.2528	26.2	-0.2464
5	USC	8	0.2528	26.2	-0.2631
6	LSLA	8	0.2528	26.2	-0.2786
7	EFSC	8	0.2528	26.2	0.0093

Toxstat version 3.5, Study #60225262-058-(090-095)
Coeur Alaska, Inc.
Chironomus dilutus 10-day Chronic Study
Summary and Analysis of Control Survival

AR 09/28/12
Antcw 09/28/12

File: 058chcon.dat Transform: NO TRANSFORMATION

Summary Statistics on Data TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	Sand	8	0.4000	0.9000	0.7500
2	Form Sed	8	0.4000	1.0000	0.7000

File: 058chcon.dat Transform: NO TRANSFORMATION

Summary Statistics on Data TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	Sand	0.0314	0.1773	0.0627	23.6375
2	Form Sed	0.0286	0.1690	0.0598	24.1473

File: 058chcon.dat Transform: ARC SINE(SQUARE ROOT(Y))

Shapiro - Wilk's Test for Normality

D = 0.5808
W = 0.9651

Critical W = 0.8440 (alpha = 0.01 , N = 16)
W = 0.8870 (alpha = 0.05 , N = 16)

Data PASS normality test (alpha = 0.01). Continue analysis.

File: 058chcon.dat Transform: ARC SINE(SQUARE ROOT(Y))

F-Test for Equality of Two Variances

GROUP	IDENTIFICATION	VARIANCE	F
1	Sand	0.0410	
2	Form Sed	0.0419	1.0220

(p-value = 0.9779)

Critical F = 8.8854 (P=0.01, 7, 7)
4.9949 (P=0.05, 7, 7)

Since F <= Critical F, FAIL TO REJECT Ho: Equal Variances (alpha = 0.01).

Toxstat version 3.5, Study #60225262-058-(090-095)
Coeur Alaska, Inc.
Chironomus dilutus 10-day Chronic Study
Summary and Analysis of Control Survival

AR 09/28/12
QA:CU 09/28/12

File: 058chsur.dat Transform: ARC SINE(SQUARE ROOT(Y))

t-Test of Solvent and Blank Controls Ho: GRP1 Mean = GRP2 Mean

GRP1 (Solvent cntl) Mean =	1.0654	Calculated t value =	0.5754
GRP2 (Blank cntl) Mean =	1.0068	Degrees of freedom =	14
Difference in means =	0.0586		

2-sided t value (0.05,14) = 2.1448 No significant difference at alpha=0.05
2-sided t value (0.01,14) = 2.9768 No significant difference at alpha=0.01

WARNING: This procedure assumes normality and equal variances!

Since no difference between controls, control data were pooled for further analysis

Toxstat version 3.5, Study #60225262-058-(090-095)
Coeur Alaska, Inc.
Chironomus dilutus 10-day Chronic Study
List Data for Survival (all treatments)

AR 09/28/12
QA:CU 09/28/12

File: 058chsur.dat Transform: NO TRANSFORMATION
Number of Groups: 8

GRP	IDENTIFICATION	REP	VALUE	TRANS VALUE
1	Sand	1	0.4000	0.4000
1	Sand	2	0.9000	0.9000
1	Sand	3	0.7000	0.7000
1	Sand	4	0.9000	0.9000
1	Sand	5	0.8000	0.8000
1	Sand	6	0.9000	0.9000
1	Sand	7	0.8000	0.8000
1	Sand	8	0.6000	0.6000
2	Form Sed	1	0.7000	0.7000
2	Form Sed	2	0.7000	0.7000
2	Form Sed	3	0.7000	0.7000
2	Form Sed	4	0.4000	0.4000
2	Form Sed	5	0.8000	0.8000
2	Form Sed	6	1.0000	1.0000
2	Form Sed	7	0.7000	0.7000
2	Form Sed	8	0.6000	0.6000
3	LJH	1	0.9000	0.9000
3	LJH	2	0.6000	0.6000
3	LJH	3	0.8000	0.8000
3	LJH	4	0.8000	0.8000
3	LJH	5	1.0000	1.0000
3	LJH	6	0.3330	0.3330
3	LJH	7	1.0000	1.0000
3	LJH	8	0.8000	0.8000
4	LSH	1	0.7000	0.7000
4	LSH	2	0.5000	0.5000
4	LSH	3	0.7000	0.7000
4	LSH	4	0.8000	0.8000
4	LSH	5	1.0000	1.0000
4	LSH	6	0.7000	0.7000
4	LSH	7	0.4000	0.4000
4	LSH	8	0.5000	0.5000
5	MSH	1	0.9000	0.9000
5	MSH	2	0.9000	0.9000
5	MSH	3	0.7000	0.7000
5	MSH	4	0.4000	0.4000
5	MSH	5	0.7000	0.7000
5	MSH	6	0.6660	0.6660
5	MSH	7	0.4000	0.4000
5	MSH	8	1.0000	1.0000
6	USC	1	0.6000	0.6000
6	USC	2	0.6000	0.6000
6	USC	3	0.7000	0.7000
6	USC	4	0.3000	0.3000
6	USC	5	0.8000	0.8000
6	USC	6	0.9000	0.9000
6	USC	7	0.7000	0.7000
6	USC	8	0.8000	0.8000
7	LSLA	1	0.6000	0.6000
7	LSLA	2	0.7000	0.7000
7	LSLA	3	0.8000	0.8000
7	LSLA	4	0.9000	0.9000
7	LSLA	5	0.7000	0.7000
7	LSLA	6	0.7000	0.7000
7	LSLA	7	0.8000	0.8000
7	LSLA	8	0.5000	0.5000

Toxstat version 3.5, Study #60225262-058-(090-095)
Coeur Alaska, Inc.
Chironomus dilutus 10-day Chronic Study
List Data and Summary Statistics for Survival (all treatments)

AR 09/28/12
QA:CW 09/28/12

8	EFSC	1	0.5000	0.5000
8	EFSC	2	0.5000	0.5000
8	EFSC	3	0.6000	0.6000
8	EFSC	4	0.7000	0.7000
8	EFSC	5	0.8000	0.8000
8	EFSC	6	0.8000	0.8000
8	EFSC	7	0.6000	0.6000
8	EFSC	8	0.8000	0.8000

File: 058chsur.dat Transform: NO TRANSFORMATION

Summary Statistics on Data TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	Sand	8	0.4000	0.9000	0.7500
2	Form Sed	8	0.4000	1.0000	0.7000
3	LJH	8	0.3330	1.0000	0.7791
4	LSH	8	0.4000	1.0000	0.6625
5	MSH	8	0.4000	1.0000	0.7083
6	USC	8	0.3000	0.9000	0.6750
7	LSLA	8	0.5000	0.9000	0.7125
8	EFSC	8	0.5000	0.8000	0.6625

Title: 60225262-058 Chironomus survival
File: 058chsur.dat Transform: NO TRANSFORMATION

Summary Statistics on Data TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	Sand	0.0314	0.1773	0.0627	23.6375
2	Form Sed	0.0286	0.1690	0.0598	24.1473
3	LJH	0.0492	0.2219	0.0784	28.4776
4	LSH	0.0370	0.1923	0.0680	29.0205
5	MSH	0.0501	0.2238	0.0791	31.5993
6	USC	0.0336	0.1832	0.0648	27.1445
7	LSLA	0.0155	0.1246	0.0441	17.4937
8	EFSC	0.0170	0.1302	0.0460	19.6599

QA:cw 09/28/12
AR 09/28/12

Toxstat version 3.5, Study #60225262-058-(090-095)
Coeur Alaska, Inc.
Chironomus dilutus 10-day Chronic Study
Analysis of Survival (all treatments, pooled controls)

File: 058cpool.dat Transform: ARC SINE(SQUARE ROOT(Y))

Shapiro - Wilk's Test for Normality

******** Shapiro - Wilk's Test is aborted ********

This test can not be performed because total number of replicates is greater than 50.

Total number of replicates = 64

File: 058cpool.dat Transform: ARC SINE(SQUARE ROOT(Y))

Chi-Square Test for Normality

Actual and Expected Frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	4.2880	15.4880	24.4480	15.4880	4.2880
OBSERVED	5	13	25	18	3

Chi-Square = 1.3247 (p-value = 0.8572)

Critical Chi-Square = 13.277 (alpha = 0.01 , df = 4)
= 9.488 (alpha = 0.05 , df = 4)

Data PASS normality test (alpha = 0.01). Continue analysis.

File: 058cpool.dat Transform: ARC SINE(SQUARE ROOT(Y))

Bartlett's Test for Homogeneity of Variance

Calculated B1 statistic = 4.8448 (p-value = 0.5639)

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

Critical B = 16.8119 (alpha = 0.01, df = 6)
= 12.5916 (alpha = 0.05, df = 6)

Using Average Degrees of Freedom
(Based on average replicate size of 9.14)

Calculated B2 statistic = 5.5015 (p-value = 0.4813)

Data PASS B2 homogeneity test at 0.01 level. Continue analysis.

Toxstat version 3.5, Study #60225262-058-(090-095)
Coeur Alaska, Inc.
Chironomus dilutus 10-day Chronic Study
Analysis of Survival (all treatments, pooled controls)

AR 09/28/12
QA:aw 09/28/12

File: 058cpool.dat Transform: ARC SINE(SQUARE ROOT(Y))

ANOVA Table

SOURCE	DF	SS	MS	F
Between	6	0.1408	0.0235	0.5331
Within (Error)	57	2.5086	0.0440	
Total	63	2.6494		

(p-value = 0.7808)

Critical F = 3.1364 (alpha = 0.01, df = 6,57)
= 2.2625 (alpha = 0.05, df = 6,57)

Since F < Critical F FAIL TO REJECT Ho: All equal (alpha = 0.05)

File: 058cpool.dat Transform: ARC SINE(SQUARE ROOT(Y))

Bonferroni t-Test - TABLE 1 OF 2 Ho: Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	TRANS t STAT	SIG 0.05
1	GRPS 1&2 POOLED	1.0361	0.7250		
2	LJH	1.1120	0.7791	-0.8349	
3	LSH	0.9685	0.6625	0.7442	
4	MSH	1.0271	0.7083	0.0998	
5	USC	0.9747	0.6750	0.6764	
6	LSLA	1.0135	0.7125	0.2487	
7	EFSC	0.9569	0.6625	0.8716	

Bonferroni t critical value = 2.4667 (1 Tailed, alpha = 0.05, df = 6,57)

File: 058cpool.dat Transform: ARC SINE(SQUARE ROOT(Y))

Bonferroni t-Test - TABLE 2 OF 2 Ho: Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	MIN SIG DIFF (IN ORIG. UNITS)	% OF CONTROL	DIFFERENCE FROM CONTROL
1	GRPS 1&2 POOLED	16			
2	LJH	8	0.2137	28.9	-0.0541
3	LSH	8	0.2137	28.9	0.0625
4	MSH	8	0.2137	28.9	0.0167
5	USC	8	0.2137	28.9	0.0500
6	LSLA	8	0.2137	28.9	0.0125
7	EFSC	8	0.2137	28.9	0.0625

APPENDIX C

Analytical Data

FCETL QA Form No.131
Revision 0
Effective 10/06
CW 09/13/12
AA: AA 09/25/12

PERCENT TOTAL SOLIDS AND PERCENT TOTAL VOLATILE SOLIDS (TVS)

Project No: 60225262-058-(084-089) & (090-095)

TARE: Date/time: 8/30/12 @ 1440-1515 Analyst: CW

DRY GROSS: Date/time: 8/31/12 @ 0840-0850 Analyst: CW

Analytical Balance ID: AND *2

ASHED GROSS: Date/time: 9/4/12 @ 0830-0840 Analyst: CW

Dried in Oven # 1 from Date: 8/30/12 Time: 1520
Oven °C: 104 to Date: 8/31/12 Time: 0735

Ashed in Furnace from Date: 8/31/12 Time: 0855
Furnace °C: 550 to Date: 8/31/12 Time: 1550

Dish No.	Treatment	Rep	Tare Weight of Dish (g) A	Dish + Wet Sample (g) B	Dry Gross Weight (g) (dish + dry sample) C	% Total Solids (g) [(C-A)(100)]/(B-A)	Ashed Gross Weight (dish + sample)(g) D	% Total Volatile Solids (g) [(C-D)(100)]/(C-A)
10	Sand	A	18.0146	28.2266	27.8083		27.7974	
8		B	12.0275	23.2549	22.7950		22.7835	
21	Farm Sed	A	19.9277	29.1327	27.9679		27.4246	
9A		B	12.3792	22.3766	21.0345		20.4131	
3A	LJH	A	10.4477	21.1086	18.7410		18.5258	
6A		B	12.1577	21.2732	19.2273		19.0506	
14A	LSH	A	12.3597	22.0940	20.0165		19.7829	
10A		B	12.0625	22.0877	19.9266		19.6866	
20A	USC	A	11.2564	21.4682	19.1632		18.8393	
7A		B	12.0204	22.2977	19.9080		19.5836	
19A	MSH	A	10.7019	20.5502	18.5951		18.3622	
18A		B	10.6860	21.1700	18.9697		18.7328	
Blank			20.2110	N/A	20.2112		20.2115	

[1] Add in weight loss of blank boat, if appropriate.

QA: 09/04/12 CC

FCETL QA Form No.131
Revision 0
Effective 10/06
ow 09/13/12
QA: MR 09/25/12

PERCENT TOTAL SOLIDS AND PERCENT TOTAL VOLATILE SOLIDS (TVS)

Project No: 60225262.058 - (084-089) + (090-095)

TARE: Date/time: 08/30/12 @ 1440-1515 Analyst: ow

DRY GROSS: Date/time: 8/31/12 @ 0840-0850 Analyst: ow

ASHED GROSS: Date/time: 9/4/12 @ 0830-0840 Analyst: ow

Analytical Balance ID: A+D #2

Dried in Oven # 1 from Date: 8/30/12 Time: 1520
Oven °C: 104 to Date: 8/31/12 Time: 0735

Ashed in Furnace from Date: 8/31/12 Time: 0855
Furnace °C: 550 to Date: 8/31/12 Time: 1550

Dish No.	Treatment	Rep	Tare Weight of Dish (g) A	Dish + Wet Sample (g) B	Dry Gross Weight (g) (dish + dry sample) C	% Total Solids (g) [(C-A)(100)]/(B-A)	Ashed Gross Weight (dish + sample)(g) D	% Total Volatile Solids (g) [(C-D)(100)]/(C-A)
17	LSLA	A	11.9310	21.4140	19.4808		19.2242	
5A		B	12.0068	22.6386	20.3870		20.1074	
4A	EFSC	A	10.7730	20.3986	13.0271		12.3821	
12A		B	10.7977	21.2357	13.3044		12.5907	
Blank								

[1] Add in weight loss of blank boat, if appropriate.

QA: CW 09/13/12
QA: AR 09/25/12

Percent Total Solids and Percent Total Volatile Solids

Project Number: 60225262-058-(084-089), (090-095)

Treatment	Rep		Tare Weight (g) A	Dish + Wet Sample (g) B	Dry Gross Weight (g) (dish + dry sample) C	% Total Solids [(C-A)(100)]/(B-A)	Treatment Mean % Total Solids	Ashed Gross Weight (g) (dish + sample) D	% Total Volatile Solids [(C-D)(100)]/(C-A)	Treatment Mean % Total Volatile Solids
Sand	A		18.0146	28.2266	27.8082	95.9029	95.9033	27.7974	0.1103	0.1085
	B		12.0275	23.2549	22.7950	95.9038		22.7835	0.1068	
Form Sed	A		19.9277	29.1327	27.9679	87.3460	86.9608	27.4246	6.7573	6.9684
	B		12.3792	22.3766	21.0345	86.5755		20.4131	7.1794	
LJH	A		10.4477	21.1086	18.7410	77.7917	77.6738	18.5258	2.5949	2.5471
	B		12.1577	21.2732	19.2273	77.5558		19.0506	2.4994	
LSH	A		12.3597	22.0940	20.0165	78.6579	78.5506	19.7829	3.0509	3.0514
	B		12.0625	22.0877	19.9266	78.4433		19.6866	3.0518	
USC	A		11.2564	21.4682	19.1632	77.4281	77.0879	18.8393	4.0965	4.1046
	B		12.0204	22.2977	19.9080	76.7478		19.5836	4.1128	
MSH	A		10.7019	20.5502	18.5951	80.1478	79.5803	18.3622	2.9506	2.9052
	B		10.6860	21.1700	18.9697	79.0128		18.7328	2.8598	
LSLA	A		11.9310	21.4140	19.4808	79.6140	79.2180	19.2242	3.3988	3.3676
	B		12.0068	22.6386	20.3870	78.8220		20.1074	3.3364	
EFSC	A		10.7730	20.3986	13.0271	23.4178	23.7164	12.3821	28.6145	28.5431
	B		10.7977	21.2357	13.3044	24.0151		12.5907	28.4717	
Blank			20.2110		20.2112			20.2115		

Friday, December 02, 2011

Analytical Laboratory

Rami Naddy
AECOM
4303 W Laporte Ave
Fort Collins, CO 80521

RE: FCETL/AECOM Work Order: 1111062

Dear Rami Naddy:

MSE Lab Services received 7 sample(s) on 11/15/2011 for the analyses presented in the following report.

Please find enclosed analytical results for the sample(s) received at the MSE Laboratory.

If you have any questions regarding these test results, please feel free to call.

Sincerely,

Sara Ward

Sara Ward
Laboratory Manager
406-494-7334

Enclosure

MSE Analytical Laboratory
P.O. Box 4078
200 Technology Way
Butte, MT 59701
Lab: 406-494-7334
Fax: 406-494-7230
labinfo@mse-ta.com

12/2/11 SW

MSE Lab Services

Date: *02-Dec-11*

CLIENT:	AECOM	**Client Sample ID:**	FORM SED
Lab Order:	1111062	**Tag Number:**	
Project:	FCETL/AECOM	**Collection Date:**	11/10/2011 11:00:00 AM
Lab ID:	1111062-001A	**Matrix:**	SEDIMENT

Analyses	Result	MDL	Rpt. Limit	Qual	Units	DF	Date Analyzed
ICP-MS METALS, SOLID SAMPLES			**SW6020**	**SW3050B**			Analyst: **kgw**
Aluminum	1050	4.45	14.2		mg/Kg-dry	4	11/23/2011 3:10:21 PM
Arsenic	ND	0.103	0.354		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Cadmium	0.061	0.006	0.024		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Chromium	7.31	0.130	0.472		mg/Kg-dry	2	11/30/2011 2:00:59 PM
Copper	0.940	0.097	0.295		mg/Kg-dry	2	11/30/2011 2:00:59 PM
Lead	0.390	0.011	0.047		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Nickel	0.986	0.068	0.236		mg/Kg-dry	2	11/30/2011 2:00:59 PM
Selenium	ND	0.160	0.472		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Silver	ND	0.087	0.236		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Zinc	3.92	0.216	0.708		mg/Kg-dry	2	11/30/2011 2:00:59 PM
MERCURY IN SOIL/SEDIMENT - SW846 7471B			**E245.5**	**SW7471A**			Analyst: **tr**
Mercury	ND	0.0366	0.126		mg/Kg-dry	1	11/18/2011 9:32:00 AM
ORGANIC MATTER-WALKLEY BLACK			**OM_WALKLEYBLACK**				Analyst: **dk**
Organic Matter - Walkley Black	25.3	0.09	0.20		%	1	11/18/2011 2:19:00 PM
PERCENT COARSE MATERIAL			**ASTMD422**				Analyst: **dk**
1" Gradation	ND	0.05	0.10		%	1	11/17/2011 4:55:00 PM
2mm Gradation	ND	0.05	0.10		%	1	11/17/2011 4:55:00 PM
RAPID HYDROMETER (2 HOUR) MOD ASA 15-5			**MSA15-5**				Analyst: **dk**
% Clay	8.0	0.1	0.1		%	1	11/17/2011 5:50:00 PM
% Sand	86.0	0.1	0.1		%	1	11/17/2011 5:50:00 PM
% Silt	6.0	0.1	0.1		%	1	11/17/2011 5:50:00 PM
Soil Class	LOAMYSAND					1	11/17/2011 5:50:00 PM
PERCENT MOISTURE			**D2216**				Analyst: **BO**
Percent Moisture	15.2	0.01	0.05		wt%	1	11/16/2011 3:00:00 PM

Qualifiers:	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded	
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit	
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)	

MSE Lab Services

Date: *02-Dec-11*

CLIENT:	AECOM	**Client Sample ID:**	LOWER SLATE
Lab Order:	1111062	**Tag Number:**	
Project:	FCETL/AECOM	**Collection Date:**	11/10/2011 11:00:00 AM
Lab ID:	1111062-002A	**Matrix:**	SEDIMENT

Analyses	Result	MDL	Rpt. Limit	Qual	Units	DF	Date Analyzed
ICP-MS METALS, SOLID SAMPLES			**SW6020**	**SW3050B**			Analyst: **kgw**
Aluminum	13600	5.04	16.0		mg/Kg-dry	4	11/23/2011 3:10:21 PM
Arsenic	16.2	0.116	0.401		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Cadmium	1.46	0.007	0.027		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Chromium	29.4	0.147	0.535		mg/Kg-dry	2	11/30/2011 2:00:59 PM
Copper	56.7	0.110	0.334		mg/Kg-dry	2	11/30/2011 2:00:59 PM
Lead	7.79	0.012	0.054		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Nickel	47.4	0.077	0.267		mg/Kg-dry	2	11/30/2011 2:00:59 PM
Selenium	0.720	0.182	0.535		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Silver	0.134	0.098	0.267	J	mg/Kg-dry	2	11/21/2011 5:39:56 PM
Zinc	220	0.244	0.802		mg/Kg-dry	2	11/30/2011 2:00:59 PM
MERCURY IN SOIL/SEDIMENT - SW846 7471B			**E245.5**	**SW7471A**			Analyst: **tr**
Mercury	0.0502	0.0393	0.136	J	mg/Kg-dry	1	11/18/2011 9:32:00 AM
ORGANIC MATTER-WALKLEY BLACK			**OM_WALKLEYBLACK**				Analyst: **dk**
Organic Matter - Walkley Black	2.04	0.09	0.20		%	1	11/18/2011 2:19:00 PM
PERCENT COARSE MATERIAL			**ASTMD422**				Analyst: **dk**
1" Gradation	ND	0.05	0.10		%	1	11/17/2011 4:55:00 PM
2mm Gradation	0.44	0.05	0.10		%	1	11/17/2011 4:55:00 PM
RAPID HYDROMETER (2 HOUR) MOD ASA 15-5			**MSA15-5**				Analyst: **dk**
% Clay	2.0	0.1	0.1		%	1	11/17/2011 5:50:00 PM
% Sand	94.0	0.1	0.1		%	1	11/17/2011 5:50:00 PM
% Silt	4.0	0.1	0.1		%	1	11/17/2011 5:50:00 PM
Soil Class	SAND					1	11/17/2011 5:50:00 PM
PERCENT MOISTURE			**D2216**				Analyst: **BO**
Percent Moisture	25.2	0.01	0.05		wt%	1	11/16/2011 3:00:00 PM

Qualifiers:	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: *02-Dec-11*

CLIENT:	AECOM	**Client Sample ID:**	LOWER SLATE
Lab Order:	1111062	**Tag Number:**	
Project:	FCETL/AECOM	**Collection Date:**	10/3/2011
Lab ID:	1111062-002B	**Matrix:**	SEDIMENT

Analyses	Result	MDL	Rpt. Limit	Qual	Units	DF	Date Analyzed
ACID VOLATILE SULFIDE-SIM. EXT. METALS			**AVS-SEM**	**AVS-SEM**			Analyst: **kgw**
Sulfide	ND	0.55	1.50		µmoles/g	1	11/18/2011 9:32:00 AM

Qualifiers:				
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: *02-Dec-11*

CLIENT:	AECOM	**Client Sample ID:**	INLET UPPER SLATE
Lab Order:	1111062	**Tag Number:**	
Project:	FCETL/AECOM	**Collection Date:**	11/10/2011 11:00:00 AM
Lab ID:	1111062-003A	**Matrix:**	SEDIMENT

Analyses	Result	MDL	Rpt. Limit	Qual	Units	DF	Date Analyzed
ICP-MS METALS, SOLID SAMPLES			**SW6020**	**SW3050B**			Analyst: **kgw**
Aluminum	22500	5.25	16.7		mg/Kg-dry	4	11/23/2011 3:10:21 PM
Arsenic	17.9	0.121	0.418		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Cadmium	0.722	0.007	0.028		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Chromium	127	0.153	0.557		mg/Kg-dry	2	11/30/2011 2:00:59 PM
Copper	53.4	0.114	0.348		mg/Kg-dry	2	11/30/2011 2:00:59 PM
Lead	3.37	0.012	0.056		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Nickel	87.5	0.080	0.278		mg/Kg-dry	2	11/30/2011 2:00:59 PM
Selenium	0.809	0.189	0.557		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Silver	0.120	0.103	0.278	J	mg/Kg-dry	2	11/21/2011 5:39:56 PM
Zinc	130	0.254	0.835		mg/Kg-dry	2	11/30/2011 2:00:59 PM
MERCURY IN SOIL/SEDIMENT - SW846 7471B			**E245.5**	**SW7471A**			Analyst: **tr**
Mercury	ND	0.0489	0.169		mg/Kg-dry	1	11/18/2011 9:32:00 AM
ORGANIC MATTER-WALKLEY BLACK			**OM_WALKLEYBLACK**				Analyst: **dk**
Organic Matter - Walkley Black	5.46	0.09	0.20		%	1	11/18/2011 2:19:00 PM
PERCENT COARSE MATERIAL			**ASTMD422**				Analyst: **dk**
1" Gradation	ND	0.05	0.10		%	1	11/17/2011 4:55:00 PM
2mm Gradation	ND	0.05	0.10		%	1	11/17/2011 4:55:00 PM
RAPID HYDROMETER (2 HOUR) MOD ASA 15-5			**MSA15-5**				Analyst: **dk**
% Clay	4.0	0.1	0.1		%	1	11/17/2011 5:50:00 PM
% Sand	94.0	0.1	0.1		%	1	11/17/2011 5:50:00 PM
% Silt	2.0	0.1	0.1		%	1	11/17/2011 5:50:00 PM
Soil Class	SAND					1	11/17/2011 5:50:00 PM
PERCENT MOISTURE			**D2216**				Analyst: **BO**
Percent Moisture	28.2	0.01	0.05		wt%	1	11/16/2011 3:00:00 PM

Qualifiers:	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: *02-Dec-11*

CLIENT:	AECOM	**Client Sample ID:**	INLET UPPER SLATE
Lab Order:	1111062	**Tag Number:**	
Project:	FCETL/AECOM	**Collection Date:**	10/4/2011
Lab ID:	1111062-003B	**Matrix:**	SEDIMENT

Analyses	Result	MDL	Rpt. Limit	Qual	Units	DF	Date Analyzed
ACID VOLATILE SULFIDE-SIM. EXT. METALS			**AVS-SEM**	**AVS-SEM**			Analyst: kgw
Sulfide	1.39	0.55	1.50	J	µmoles/g	1	11/18/2011 9:32:00 AM

Qualifiers:				
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: *02-Dec-11*

CLIENT:	AECOM	**Client Sample ID:**	MIDDLE SLATE
Lab Order:	1111062	**Tag Number:**	
Project:	FCETL/AECOM	**Collection Date:**	11/10/2011 11:00:00 AM
Lab ID:	1111062-004A	**Matrix:**	SEDIMENT

Analyses	Result	MDL	Rpt. Limit	Qual	Units	DF	Date Analyzed
ICP-MS METALS, SOLID SAMPLES			**SW6020**	**SW3050B**			Analyst: **kgw**
Aluminum	20100	6.31	20.1		mg/Kg-dry	4	11/23/2011 3:10:21 PM
Arsenic	30.0	0.146	0.502		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Cadmium	20.9	0.009	0.034		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Chromium	29.5	0.184	0.669		mg/Kg-dry	2	11/30/2011 2:00:59 PM
Copper	88.4	0.137	0.418		mg/Kg-dry	2	11/30/2011 2:00:59 PM
Lead	8.50	0.015	0.067		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Nickel	143	0.096	0.335		mg/Kg-dry	2	11/30/2011 2:00:59 PM
Selenium	1.41	0.227	0.669		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Silver	0.233	0.123	0.335	J	mg/Kg-dry	2	11/21/2011 5:39:56 PM
Zinc	1360	0.306	1.00		mg/Kg-dry	2	11/30/2011 2:00:59 PM
MERCURY IN SOIL/SEDIMENT - SW846 7471B			**E245.5**	**SW7471A**			Analyst: **tr**
Mercury	0.0692	0.0545	0.188	J	mg/Kg-dry	1	11/18/2011 9:32:00 AM
ORGANIC MATTER-WALKLEY BLACK			**OM_WALKLEYBLACK**				Analyst: **dk**
Organic Matter - Walkley Black	11.0	0.09	0.20		%	1	11/18/2011 2:19:00 PM
PERCENT COARSE MATERIAL			**ASTMD422**				Analyst: **dk**
1" Gradation	ND	0.05	0.10		%	1	11/17/2011 4:55:00 PM
2mm Gradation	1.65	0.05	0.10		%	1	11/17/2011 4:55:00 PM
RAPID HYDROMETER (2 HOUR) MOD ASA 15-5			**MSA15-5**				Analyst: **dk**
% Clay	10.0	0.1	0.1		%	1	11/17/2011 5:50:00 PM
% Sand	86.0	0.1	0.1		%	1	11/17/2011 5:50:00 PM
% Silt	4.0	0.1	0.1		%	1	11/17/2011 5:50:00 PM
Soil Class	LOAMYSAND					1	11/17/2011 5:50:00 PM
PERCENT MOISTURE			**D2216**				Analyst: **BO**
Percent Moisture	40.2	0.01	0.05		wt%	1	11/16/2011 3:00:00 PM

Qualifiers:	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: *02-Dec-11*

CLIENT:	AECOM	**Client Sample ID:**	MIDDLE SLATE
Lab Order:	1111062	**Tag Number:**	
Project:	FCETL/AECOM	**Collection Date:**	10/4/2011
Lab ID:	1111062-004B	**Matrix:**	SEDIMENT

Analyses	Result	MDL	Rpt. Limit	Qual	Units	DF	Date Analyzed
ACID VOLATILE SULFIDE-SIM. EXT. METALS			**AVS-SEM**	**AVS-SEM**			Analyst: kgw
Sulfide	ND	0.55	1.50		µmoles/g	1	11/18/2011 9:32:00 AM

Qualifiers:				
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: *02-Dec-11*

CLIENT:	AECOM	**Client Sample ID:**	MIDDLE SHERMAN
Lab Order:	1111062	**Tag Number:**	
Project:	FCETL/AECOM	**Collection Date:**	11/10/2011 11:00:00 AM
Lab ID:	1111062-005A	**Matrix:**	SEDIMENT

Analyses	Result	MDL	Rpt. Limit	Qual	Units	DF	Date Analyzed
ICP-MS METALS, SOLID SAMPLES			**SW6020**	**SW3050B**			Analyst: **kgw**
Aluminum	19000	5.06	16.1		mg/Kg-dry	4	11/23/2011 3:10:21 PM
Arsenic	55.7	0.117	0.402		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Cadmium	0.175	0.007	0.027		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Chromium	43.4	0.147	0.536		mg/Kg-dry	2	11/30/2011 2:00:59 PM
Copper	97.1	0.110	0.335		mg/Kg-dry	2	11/30/2011 2:00:59 PM
Lead	17.3	0.012	0.054		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Nickel	44.0	0.077	0.268		mg/Kg-dry	2	11/30/2011 2:00:59 PM
Selenium	ND	0.182	0.536		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Silver	0.633	0.099	0.268		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Zinc	120	0.245	0.804		mg/Kg-dry	2	11/30/2011 2:00:59 PM
MERCURY IN SOIL/SEDIMENT - SW846 7471B			**E245.5**	**SW7471A**			Analyst: **tr**
Mercury	ND	0.0412	0.142		mg/Kg-dry	1	11/18/2011 9:32:00 AM
ORGANIC MATTER-WALKLEY BLACK			**OM_WALKLEYBLACK**				Analyst: **dk**
Organic Matter - Walkley Black	1.17	0.09	0.20		%	1	11/18/2011 2:19:00 PM
PERCENT COARSE MATERIAL			**ASTMD422**				Analyst: **dk**
1" Gradation	ND	0.05	0.10		%	1	11/17/2011 4:55:00 PM
2mm Gradation	0.22	0.05	0.10		%	1	11/17/2011 4:55:00 PM
RAPID HYDROMETER (2 HOUR) MOD ASA 15-5			**MSA15-5**				Analyst: **dk**
% Clay	2.0	0.1	0.1		%	1	11/17/2011 5:50:00 PM
% Sand	96.0	0.1	0.1		%	1	11/17/2011 5:50:00 PM
% Silt	2.0	0.1	0.1		%	1	11/17/2011 5:50:00 PM
Soil Class	SAND					1	11/17/2011 5:50:00 PM
PERCENT MOISTURE			**D2216**				Analyst: **BO**
Percent Moisture	25.4	0.01	0.05		wt%	1	11/16/2011 3:00:00 PM

Qualifiers:	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: *02-Dec-11*

CLIENT:	AECOM	**Client Sample ID:**	MIDDLE SHERMAN
Lab Order:	1111062	**Tag Number:**	
Project:	FCETL/AECOM	**Collection Date:**	10/4/2011
Lab ID:	1111062-005B	**Matrix:**	SEDIMENT

Analyses	Result	MDL	Rpt. Limit	Qual	Units	DF	Date Analyzed
ACID VOLATILE SULFIDE-SIM. EXT. METALS		**AVS-SEM**	**AVS-SEM**				Analyst: **kgw**
Sulfide	1.01	0.55	1.50	J	µmoles/g	1	11/18/2011 9:32:00 AM

Qualifiers:	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: *02-Dec-11*

CLIENT:	AECOM	**Client Sample ID:**	LOWER SHERMAN
Lab Order:	1111062	**Tag Number:**	
Project:	FCETL/AECOM	**Collection Date:**	11/10/2011 11:00:00 AM
Lab ID:	1111062-006A	**Matrix:**	SEDIMENT

Analyses	Result	MDL	Rpt. Limit	Qual	Units	DF	Date Analyzed
ICP-MS METALS, SOLID SAMPLES			**SW6020**	**SW3050B**			Analyst: **kgw**
Aluminum	18200	4.88	15.5		mg/Kg-dry	4	11/23/2011 3:10:21 PM
Arsenic	28.9	0.112	0.388		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Cadmium	0.389	0.007	0.026		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Chromium	46.2	0.142	0.517		mg/Kg-dry	2	11/30/2011 2:00:59 PM
Copper	94.0	0.106	0.323		mg/Kg-dry	2	11/30/2011 2:00:59 PM
Lead	6.70	0.012	0.052		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Nickel	45.9	0.074	0.259		mg/Kg-dry	2	11/30/2011 2:00:59 PM
Selenium	ND	0.176	0.517		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Silver	0.137	0.095	0.259	J	mg/Kg-dry	2	11/21/2011 5:39:56 PM
Zinc	110	0.236	0.776		mg/Kg-dry	2	11/30/2011 2:00:59 PM
MERCURY IN SOIL/SEDIMENT - SW846 7471B			**E245.5**	**SW7471A**			Analyst: **tr**
Mercury	ND	0.0455	0.157		mg/Kg-dry	1	11/18/2011 9:32:00 AM
ORGANIC MATTER-WALKLEY BLACK			**OM_WALKLEYBLACK**				Analyst: **dk**
Organic Matter - Walkley Black	0.54	0.09	0.20		%	1	11/18/2011 2:19:00 PM
PERCENT COARSE MATERIAL			**ASTMD422**				Analyst: **dk**
1" Gradation	ND	0.05	0.10		%	1	11/17/2011 4:55:00 PM
2mm Gradation	0.11	0.05	0.10		%	1	11/17/2011 4:55:00 PM
RAPID HYDROMETER (2 HOUR) MOD ASA 15-5			**MSA15-5**				Analyst: **dk**
% Clay	2.0	0.1	0.1		%	1	11/17/2011 5:50:00 PM
% Sand	96.0	0.1	0.1		%	1	11/17/2011 5:50:00 PM
% Silt	2.0	0.1	0.1		%	1	11/17/2011 5:50:00 PM
Soil Class	SAND					1	11/17/2011 5:50:00 PM
PERCENT MOISTURE			**D2216**				Analyst: **BO**
Percent Moisture	22.7	0.01	0.05		wt%	1	11/16/2011 3:00:00 PM

Qualifiers:				
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: *02-Dec-11*

CLIENT:	AECOM	**Client Sample ID:**	LOWER SHERMAN
Lab Order:	1111062	**Tag Number:**	
Project:	FCETL/AECOM	**Collection Date:**	10/3/2011
Lab ID:	1111062-006B	**Matrix:**	SEDIMENT

Analyses	Result	MDL	Rpt. Limit	Qual	Units	DF	Date Analyzed
ACID VOLATILE SULFIDE-SIM. EXT. METALS			**AVS-SEM**	**AVS-SEM**			Analyst: kgw
Sulfide	1.50	0.55	1.50		µmoles/g	1	11/18/2011 9:32:00 AM

Qualifiers:	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: *02-Dec-11*

CLIENT:	AECOM	**Client Sample ID:**	LOWER JOHNSON
Lab Order:	1111062	**Tag Number:**	
Project:	FCETL/AECOM	**Collection Date:**	11/10/2011 11:00:00 AM
Lab ID:	1111062-007A	**Matrix:**	SEDIMENT

Analyses	Result	MDL	Rpt. Limit	Qual	Units	DF	Date Analyzed
ICP-MS METALS, SOLID SAMPLES			**SW6020**	**SW3050B**			Analyst: **kgw**
Aluminum	13100	5.02	16.0		mg/Kg-dry	4	11/23/2011 3:10:21 PM
Arsenic	16.2	0.116	0.399		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Cadmium	0.238	0.007	0.027		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Chromium	31.5	0.146	0.533		mg/Kg-dry	2	11/30/2011 2:00:59 PM
Copper	73.1	0.109	0.333		mg/Kg-dry	2	11/30/2011 2:00:59 PM
Lead	9.76	0.012	0.053		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Nickel	27.3	0.076	0.266		mg/Kg-dry	2	11/30/2011 2:00:59 PM
Selenium	ND	0.181	0.533		mg/Kg-dry	2	11/21/2011 5:39:56 PM
Silver	0.164	0.098	0.266	J	mg/Kg-dry	2	11/21/2011 5:39:56 PM
Zinc	93.3	0.243	0.799		mg/Kg-dry	2	11/30/2011 2:00:59 PM
MERCURY IN SOIL/SEDIMENT - SW846 7471B			**E245.5**	**SW7471A**			Analyst: **tr**
Mercury	ND	0.0386	0.133		mg/Kg-dry	1	11/18/2011 9:32:00 AM
ORGANIC MATTER-WALKLEY BLACK			**OM_WALKLEYBLACK**				Analyst: **dk**
Organic Matter - Walkley Black	0.89	0.09	0.20		%	1	11/18/2011 2:19:00 PM
PERCENT COARSE MATERIAL			**ASTMD422**				Analyst: **dk**
1" Gradation	ND	0.05	0.10		%	1	11/17/2011 4:55:00 PM
2mm Gradation	ND	0.05	0.10		%	1	11/17/2011 4:55:00 PM
RAPID HYDROMETER (2 HOUR) MOD ASA 15-5			**MSA15-5**				Analyst: **dk**
% Clay	2.0	0.1	0.1		%	1	11/17/2011 5:50:00 PM
% Sand	96.0	0.1	0.1		%	1	11/17/2011 5:50:00 PM
% Silt	2.0	0.1	0.1		%	1	11/17/2011 5:50:00 PM
Soil Class	SAND					1	11/17/2011 5:50:00 PM
PERCENT MOISTURE			**D2216**				Analyst: **BO**
Percent Moisture	24.9	0.01	0.05		wt%	1	11/16/2011 3:00:00 PM

Qualifiers:	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: *02-Dec-11*

CLIENT:	AECOM	**Client Sample ID:**	LOWER JOHNSON
Lab Order:	1111062	**Tag Number:**	
Project:	FCETL/AECOM	**Collection Date:**	10/3/2011
Lab ID:	1111062-007B	**Matrix:**	SEDIMENT

Analyses	Result	MDL	Rpt. Limit	Qual	Units	DF	Date Analyzed
ACID VOLATILE SULFIDE-SIM. EXT. METALS			**AVS-SEM**	**AVS-SEM**			Analyst: **kgw**
Sulfide	ND	0.55	1.50		µmoles/g	1	11/18/2011 9:32:00 AM

Qualifiers:				
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Analytical Laboratory
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Date: 02-Dec-11
Report Date: 02-Dec-11

QA/QC SUMMARY REPORT

Client: AECOM
Project: FCETL/AECOM
Work Order: 1111062
BatchID: 5060

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
*Sample ID: **5060-PB FILTERED***			*Method: **SW6020***		*Batch ID: **5060***				*Analysis Date: 11/21/2011 5:39:56 PM*	
Arsenic	0.070	0.150	mg/Kg							J
Cadmium	0.012	0.010	mg/Kg							
Lead	0.020	0.020	mg/Kg							
Selenium	ND	0.200	mg/Kg							
Silver	0.078	0.100	mg/Kg							J
*Sample ID: **5060-PB UNFILTERED***			*Method: **SW6020***		*Batch ID: **5060***				*Analysis Date: 11/21/2011 5:39:56 PM*	
Arsenic	0.150	0.150	mg/Kg							
Cadmium	0.004	0.010	mg/Kg							J
Lead	0.022	0.020	mg/Kg							
Selenium	ND	0.200	mg/Kg							
Silver	ND	0.100	mg/Kg							
*Sample ID: **5060-LCS***			*Method: **SW6020***		*Batch ID: **5060***				*Analysis Date: 11/21/2011 5:39:56 PM*	
Arsenic	85.9	0.300	mg/Kg	85.30	101	80	120			
Cadmium	153	0.020	mg/Kg	159.0	96.4	80	120			
Lead	44.4	0.040	mg/Kg	46.30	96.0	80	120			
Selenium	39.3	0.400	mg/Kg	45.20	87.0	80	120			
Silver	24.7	0.200	mg/Kg	24.30	102	80	120			
*Sample ID: **1111062-007A MS***			*Method: **SW6020***		*Batch ID: **5060***				*Analysis Date: 11/21/2011 5:39:56 PM*	
Arsenic	146	0.399	mg/Kg-dry	113.6	114	75	125			
Cadmium	202	0.027	mg/Kg-dry	211.7	95.2	75	125			
Lead	67.2	0.053	mg/Kg-dry	61.65	93.1	75	125			
Selenium	56.8	0.533	mg/Kg-dry	60.19	94.3	75	125			
Silver	33.1	0.266	mg/Kg-dry	32.36	102	75	125			
*Sample ID: **1111062-007A MSD***			*Method: **SW6020***		*Batch ID: **5060***				*Analysis Date: 11/21/2011 5:39:56 PM*	
Arsenic	141	0.399	mg/Kg-dry	113.6	110	75	125	3.23	20	
Cadmium	201	0.027	mg/Kg-dry	211.7	94.7	75	125	0.527	20	
Lead	68.1	0.053	mg/Kg-dry	61.65	94.5	75	125	1.31	20	
Selenium	58.3	0.533	mg/Kg-dry	60.19	96.9	75	125	2.70	20	
Silver	32.8	0.266	mg/Kg-dry	32.36	101	75	125	0.878	20	
*Sample ID: **1111062-007A MST***			*Method: **SW6020***		*Batch ID: **5060***				*Analysis Date: 11/21/2011 5:39:56 PM*	
Arsenic	129	0.399	mg/Kg-dry	113.6	99.2	75	125	12.4	20	
Cadmium	198	0.027	mg/Kg-dry	211.7	93.4	75	125	1.84	20	
Lead	66.1	0.053	mg/Kg-dry	61.65	91.4	75	125	1.56	20	
Selenium	55.3	0.533	mg/Kg-dry	60.19	91.9	75	125	2.53	20	
Silver	33.3	0.266	mg/Kg-dry	32.36	102	75	125	0.576	20	
*Sample ID: **5060-PB FILTERED***			*Method: **SW6020***		*Batch ID: **5060***				*Analysis Date: 11/23/2011 3:10:21 PM*	
Aluminum	ND	3.00	mg/Kg							

Qualifiers: NA Sample conc. is > 4*spike level S Spike Recovery outside accepted recovery limits

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Lab: 406-494-7334
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labinfo@mse-ta.com

Date: 02-Dec-11
Report Date: 02-Dec-11

QA/QC SUMMARY REPORT

Client: AECOM
Project: FCETL/AECOM

Work Order: 1111062
BatchID: 5060

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
*Sample ID: **5060-PB UNFILTERED***			*Method: **SW6020***		*Batch ID: **5060***			*Analysis Date: 11/23/2011 3:10:21 PM*		
Aluminum	ND	3.00	mg/Kg							
*Sample ID: **5060-LCS***			*Method: **SW6020***		*Batch ID: **5060***			*Analysis Date: 11/23/2011 3:10:21 PM*		
Aluminum	9920	6.00	mg/Kg	11250	88.2	80	120			
*Sample ID: **1111062-007A MS***			*Method: **SW6020***		*Batch ID: **5060***			*Analysis Date: 11/23/2011 3:10:21 PM*		
Aluminum	28100	16.0	mg/Kg-dry	14980	100	75	125			
*Sample ID: **1111062-007A MSD***			*Method: **SW6020***		*Batch ID: **5060***			*Analysis Date: 11/23/2011 3:10:21 PM*		
Aluminum	29500	16.0	mg/Kg-dry	14980	109	75	125	4.57	20	
*Sample ID: **1111062-007A MST***			*Method: **SW6020***		*Batch ID: **5060***			*Analysis Date: 11/23/2011 3:10:21 PM*		
Aluminum	30100	16.0	mg/Kg-dry	14980	113	75	125	6.57	20	
*Sample ID: **5060-PB FILTERED***			*Method: **SW6020***		*Batch ID: **5060***			*Analysis Date: 11/30/2011 2:00:59 PM*		
Chromium	3.03	0.200	mg/Kg							
Copper	0.141	0.125	mg/Kg							
Nickel	0.103	0.100	mg/Kg							
Zinc	0.352	0.300	mg/Kg							
*Sample ID: **5060-PB UNFILTERED***			*Method: **SW6020***		*Batch ID: **5060***			*Analysis Date: 11/30/2011 2:00:59 PM*		
Chromium	2.79	0.200	mg/Kg							
Copper	0.175	0.125	mg/Kg							
Nickel	0.068	0.100	mg/Kg							J
Zinc	0.332	0.300	mg/Kg							
*Sample ID: **5060-LCS***			*Method: **SW6020***		*Batch ID: **5060***			*Analysis Date: 11/30/2011 2:00:59 PM*		
Chromium	337	0.400	mg/Kg	294.0	115	80	120			
Copper	71.9	0.250	mg/Kg	63.20	114	80	120			
Nickel	186	0.200	mg/Kg	163.0	114	80	120			
Zinc	270	0.600	mg/Kg	262.0	103	80	120			
*Sample ID: **1111062-007A MS***			*Method: **SW6020***		*Batch ID: **5060***			*Analysis Date: 11/30/2011 2:00:59 PM*		
Chromium	489	0.533	mg/Kg-dry	391.5	117	75	125			
Copper	171	0.333	mg/Kg-dry	84.16	117	75	125			
Nickel	271	0.266	mg/Kg-dry	217.1	112	75	125			
Zinc	441	0.799	mg/Kg-dry	348.9	99.7	75	125			
*Sample ID: **1111062-007A MSD***			*Method: **SW6020***		*Batch ID: **5060***			*Analysis Date: 11/30/2011 2:00:59 PM*		
Chromium	515	0.533	mg/Kg-dry	391.5	124	75	125	5.16	20	
Copper	168	0.333	mg/Kg-dry	84.16	113	75	125	1.72	20	
Nickel	276	0.266	mg/Kg-dry	217.1	115	75	125	2.03	20	
Zinc	449	0.799	mg/Kg-dry	348.9	102	75	125	1.69	20	
*Sample ID: **1111062-007A MST***			*Method: **SW6020***		*Batch ID: **5060***			*Analysis Date: 11/30/2011 2:00:59 PM*		
Chromium	486	0.533	mg/Kg-dry	391.5	116	75	125	0.795	20	

Qualifiers: NA Sample conc. is > 4*spike level S Spike Recovery outside accepted recovery limits

MSE Analytical Laboratory
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200 Technology Way
Butte, MT 59701
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Fax: 406-494-7230
labinfo@mse-ta.com

Date: 02-Dec-11
Report Date: 02-Dec-11

QA/QC SUMMARY REPORT

Client: AECOM
Project: FCETL/AECOM

Work Order: 1111062
BatchID: 5060

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
*Sample ID: **1111062-007A MST***			*Method: **SW6020***		*Batch ID: **5060***			*Analysis Date: 11/30/2011 2:00:59 PM*		
Copper	159	0.333	mg/Kg-dry	84.16	103	75	125	7.18	20	
Nickel	265	0.266	mg/Kg-dry	217.1	110	75	125	2.05	20	
Zinc	436	0.799	mg/Kg-dry	348.9	98.2	75	125	1.24	20	

Qualifiers: NA Sample conc. is > 4*spike level
S Spike Recovery outside accepted recovery limits

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Date: 02-Dec-11
Report Date: 02-Dec-11

QA/QC SUMMARY REPORT

Client: AECOM
Project: FCETL/AECOM

Work Order: 1111062
BatchID: 5064

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
Sample ID: ***5064-PB***			*Method:* ***E245.5***		*Batch ID:* ***5064***				*Analysis Date: 11/18/2011 9:32:00 AM*	
Mercury	ND	0.100	mg/Kg							
Sample ID: ***LCS-5064***			*Method:* ***E245.5***		*Batch ID:* ***5064***				*Analysis Date: 11/18/2011 9:32:00 AM*	
Mercury	14.0	0.553	mg/Kg	16.00	87.8	80	120			
Sample ID: ***1111062-002A-MS***			*Method:* ***E245.5***		*Batch ID:* ***5064***				*Analysis Date: 11/18/2011 9:32:00 AM*	
Mercury	18.2	1.66	mg/Kg-dry	21.40	84.9	75	125			
Sample ID: ***1111062-002A-MSD***			*Method:* ***E245.5***		*Batch ID:* ***5064***				*Analysis Date: 11/18/2011 9:32:00 AM*	
Mercury	21.3	1.66	mg/Kg-dry	21.40	99.2	75	125	15.5	20	

Qualifiers: NA Sample conc. is > 4*spike level

S Spike Recovery outside accepted recovery limits

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labinfo@mse-ta.com

Date: 02-Dec-11
Report Date: 02-Dec-11

QA/QC SUMMARY REPORT

Client: AECOM
Project: FCETL/AECOM

Work Order: 1111062
BatchID: 5079

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
Sample ID: ***1111062-002B-D***			*Method:* ***AVS-SEM***		*Batch ID:* ***5079***			*Analysis Date: 11/18/2011 9:32:00 AM*		
Sulfide	ND	1.50	µmoles/g					0	35	
Sample ID: ***1111062-002B-S***			*Method:* ***AVS-SEM***		*Batch ID:* ***5079***			*Analysis Date: 11/18/2011 9:32:00 AM*		
Sulfide	11.1	1.50	µmoles/g	10.59	105	80	120			
Sample ID: ***LCS-5079***			*Method:* ***AVS-SEM***		*Batch ID:* ***5079***			*Analysis Date: 11/18/2011 9:32:00 AM*		
Sulfide	13.7	1.50	µmoles/g	12.58	109	85	115			
Sample ID: ***5079-PB***			*Method:* ***AVS-SEM***		*Batch ID:* ***5079***			*Analysis Date: 11/18/2011 9:32:00 AM*		
Sulfide	0.89	1.50	µmoles/g							J

Qualifiers:
NA Sample conc. is > 4*spike level
S Spike Recovery outside accepted recovery limits

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labinfo@mse-ta.com

Date: 02-Dec-11
Report Date: 02-Dec-11

QA/QC SUMMARY REPORT

Client: AECOM
Project: FCETL/AECOM

Work Order: 1111062
BatchID: R18192

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
Sample ID: ***1111062-006A-D***			*Method:* ***ASTMD422***		*Batch ID:* ***R18192***			*Analysis Date: 11/17/2011 4:55:00 PM*		
1" Gradation	ND	0.10	%					0	35	
2mm Gradation	0.13	0.10	%					12.9	35	

Qualifiers: NA Sample conc. is > 4*spike level
S Spike Recovery outside accepted recovery limits

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Date: 02-Dec-11
Report Date: 02-Dec-11

QA/QC SUMMARY REPORT

Client: AECOM
Project: FCETL/AECOM

Work Order: 1111062
BatchID: R18203

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
Sample ID: ***1111062-004A-D***			*Method:* ***MSA15-5***		*Batch ID:* ***R18203***			*Analysis Date: 11/17/2011 6:50:00 PM*		
% Clay	10.0	0.1	%					0	35	
% Sand	86.0	0.1	%					0	35	
% Silt	4.0	0.1	%					0	35	
Soil Class	LOAMYSAND									

Qualifiers: NA Sample conc. is > 4*spike level
S Spike Recovery outside accepted recovery limits

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Date: 02-Dec-11
Report Date: 02-Dec-11

QA/QC SUMMARY REPORT

Client: AECOM
Project: FCETL/AECOM

Work Order: 1111062
BatchID: R18208

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
Sample ID: ***1111062-002A-D***			*Method:* ***OM_WALKLE*** *Batch ID:* ***R18208***						*Analysis Date: 11/18/2011 2:19:00 PM*	
Organic Matter - Walkl	2.29	0.20	%					11.9	35	
Sample ID: ***LCSQ5771***			*Method:* ***OM_WALKLE*** *Batch ID:* ***R18208***						*Analysis Date: 11/18/2011 2:19:00 PM*	
Organic Matter - Walkl	0.55	0.20	%	0.5965	92.9	70.7	109			
Sample ID: ***PB***			*Method:* ***OM_WALKLE*** *Batch ID:* ***R18208***						*Analysis Date: 11/18/2011 2:19:00 PM*	
Organic Matter - Walkl	ND	0.20	%							

Qualifiers: NA Sample conc. is > 4*spike level
S Spike Recovery outside accepted recovery limits

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Date: 02-Dec-11
Report Date: 02-Dec-11

QA/QC SUMMARY REPORT

Client: AECOM
Project: FCETL/AECOM

Work Order: 1111062
BatchID: R18241

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
Sample ID: ***1111062-001A-D***			*Method:* ***D2216***		*Batch ID:* ***R18241***			*Analysis Date: 11/16/2011 3:00:00 PM*		
Percent Moisture	14.9	0.05	wt%					2.14	35	
Sample ID: ***1111062-007A-D***			*Method:* ***D2216***		*Batch ID:* ***R18241***			*Analysis Date: 11/16/2011 3:00:00 PM*		
Percent Moisture	25.8	0.05	wt%					3.45	35	

Qualifiers: NA Sample conc. is > 4*spike level

S Spike Recovery outside accepted recovery limits

AECOM

CHAIN OF CUSTODY RECORD

1111062-

7.4°C Received in cooler w/ice custody seal on cooler

Page 1 of 1

Client/Project Name: 058	Project Location: FCETL/AECOM
Project Number: 60225262-058	Field Logbook No.:
Sampler (Print Name)/(Affiliation): Gordon von Coeur Christina Needham/AECOM	Chain of Custody Tape Nos.: 42986
Signature: Christina Needham	Send Results/Report to: Roni.Maddy@aecom.com TAT: Std

Analysis Requested

Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Matl)	Matrix	Preserv.	Field Filtered	TOC (Lumiex Black)	Total Metals (As, Cd, Cu, Pb, Se) (Al, Cr, Ni, Ag, Zn)	Mercury	% Coarse Material	Rapid Hydro. (% clay/sand/silt)	AVS					Lab I.D.	Remarks
Farm Sed	11/10/11	1100		X	8oz P Jar	Sed	0001		X	X	X	X	X						001A	
Lower Slate	11/10/11	1100			8oz P Jar				X	X	X	X	X						002A	
Lower Slate	10/3/11	unk			4oz glass									X					002B	
Inlet Upper Slate	11/10/11	1100			8oz P				X	X	X	X	X						003A	
Inlet Upper Slate	10/4/11	unk			4oz glass									X					003B	
Middle Slate	11/10/11	1100			8oz P				X	X	X	X	X						004A	
Middle Slate	10/4/11	unk			4oz glass									X					004B	
Middle Sherman	11/10/11	1100			8oz P				X	X	X	X	X						005A	
Middle Sherman	10/4/11	unk			4oz glass									X					005B	
Lower Sherman	11/10/11	1100			8oz P				X	X	X	X	X						006A	
Lower Sherman	10/3/11	unk			4oz glass									X					006B	
Lower Johnson	11/10/11	1100			8oz P				X	X	X	X	X						007A	
Lower Johnson	10/3/11	unk		↓	4oz glass	↓	↓							X					007B	

Container Type: P – Plastic; A – Amber Glass; G – Clear Glass; V – VOA Vial; O – Other; E – Encore

Preservation: 1 – HCl, 4°; 2 – H2SO4, 4°; 3 – HNO3, 4°; 4 – NaOH, 4°; 5 – NaOH/ZnAc, 4°; 6 – Na2S2O3, 4°; 7 – 4°

Matrix Codes: DW – Drinking Water; WW – Wastewater; GW – Groundwater; SW – Surface Water; ST – Storm Water; W – Water; S – Soil; SL – Sludge; SD – Sediment; SO – Solid; A – Air; L – Liquid; P – Product

Relinquished by: (Print Name)/(Affiliation) Christina Needham/AECOM	Date: 11/14/11	Received by: (Print Name)/(Affiliation) Kitrina Wilkins	Date: 11/15/11
Signature: Christina Needham	Time: 1300	Signature: Kitrina Wilkins	Time: 11:00
Relinquished by: (Print Name)/(Affiliation)	Date:	Received by: (Print Name)/(Affiliation)	Date:
Signature:	Time:	Signature:	Time:
Relinquished by: (Print Name)/(Affiliation)	Date:	Received by: (Print Name)/(Affiliation)	Date:
Signature:	Time:	Signature:	Time:

Analytical Laboratory (Destination):

AECOM Toxicology Lab
4303 W. Laporte Avenue
Fort Collins, CO 80521
(970) 416-0916
(970) 490-2963 (FAX)

MSE

Sample Shipped Via: UPS FedEx Courier Other

Temp blank: Yes No

Q:\GRAPHICS\FORMS\Chain of Custody (COC)\Chain-of-Custody_FL Collins_10_07.doc

Serial No. No 51788

MSE Lab Services

Sample Receipt Checklist

Client Name AECOM_INC

Date and Time Received: 11/15/2011 11:32:02 AM

Work Order Number 1111062 RcptNo: 1

Received by kgw

COC_ID: CoolerID:

Checklist completed by [signature] 11/15/11 (Signature / Date)

Reviewed by SW 11/16/11 (Initials / Date)

Matrix: Carrier name FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☐	No ☑	
Water - VOA vials have zero headspace?	No VOA vials submitted ☑	Yes ☐	No ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Blank ☐

Adjusted? NA Checked by BO 11/15/11

Sediments

Any No and/or NA (not applicable) response must be detailed in the comments section be

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: TEMP = 7.4 - SEDIMENT SAMPLES

Corrective Action _____

Tuesday, September 25, 2012

Analytical Laboratory

Rami Naddy
AECOM
4303 W Laporte Ave
Fort Collins, CO 80521

RE: 60225262-058 Work Order: 1207139

Dear Rami Naddy:

MSE Lab Services received 6 sample(s) on 7/25/2012 for the analyses presented in the following report.

Please find enclosed analytical results for the sample(s) received at the MSE Laboratory.

If you have any questions regarding these test results, please feel free to call.

Sincerely,

Sara Ward

Sara Ward
Laboratory Manager
406-494-7334

Enclosure

MSE Analytical Laboratory
P.O. Box 4078
200 Technology Way
Butte, MT 59701
Lab: 406-494-7334
Fax: 406-494-7230
labinfo@mse-ta.com

9/26/12 SW

MSE Lab Services

Date: *25-Sep-12*

CLIENT: AECOM
Lab Order: 1207139
Project: 60225262-058
Lab ID: 1207139-001

Client Sample ID: LSH (#25942)
Collection Date: 7/3/2012

Matrix: SEDIMENT

Analyses	Result	MDL	Rpt Limit	Qualifier	Units	DF	Date Analyzed
AVS-SEM METALS			**AVS-SEM**	**SW3005A**			Analyst: **tj**
Cadmium	0.00137	0.00002	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Copper	0.2112	0.00020	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
Lead	0.01701	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Nickel	0.04684	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Simultaneously Extracted Metal	0.6375	0.00051	0.00191		µmoles/g	1	9/13/2012 12:12:08 PM
Zinc	0.3611	0.00050	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
PERCENT SOLIDS			**A2540G**				Analyst: **dk/jr**
Percent Solids	79.6	0.01	0.1		%	1	8/21/2012 3:40:00 PM
ACID VOLATILE SULFIDE-SIM. EXT. METALS			**AVS-SEM**				Analyst: **jo**
Sulfide	ND	0.55	1.50		µmoles/g	1	8/29/2012 8:00:00 AM

Qualifiers:				
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE-TA Analytical Laboratory
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Lab: 406-494-7334
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labinfo@mse-ta.com

MSE Lab Services

Date: *25-Sep-12*

CLIENT: AECOM
Lab Order: 1207139
Project: 60225262-058
Lab ID: 1207139-002

Client Sample ID: MSH (#25943)
Collection Date: 7/3/2012
Matrix: SEDIMENT

Analyses	Result	MDL	Rpt Limit	Qualifier	Units	DF	Date Analyzed
AVS-SEM METALS			**AVS-SEM**	**SW3005A**			Analyst: **tj**
Cadmium	0.00070	0.00002	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Copper	0.2810	0.00020	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
Lead	0.03112	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Nickel	0.05961	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Simultaneously Extracted Metal:	0.6320	0.00051	0.00191		µmoles/g	1	9/13/2012 12:12:08 PM
Zinc	0.2595	0.00050	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
PERCENT SOLIDS			**A2540G**				Analyst: **dk/jr**
Percent Solids	84.8	0.01	0.1		%	1	8/21/2012 3:40:00 PM
ACID VOLATILE SULFIDE-SIM. EXT. METALS			**AVS-SEM**				Analyst: **jo**
Sulfide	0.93	0.55	1.50	J	µmoles/g	1	8/29/2012 8:00:00 AM

Qualifiers:				
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: *25-Sep-12*

CLIENT: AECOM
Lab Order: 1207139
Project: 60225262-058
Lab ID: 1207139-003

Client Sample ID: USC (#25935)
Collection Date: 7/2/2012

Matrix: SEDIMENT

Analyses	Result	MDL	Rpt Limit	Qualifier	Units	DF	Date Analyzed
AVS-SEM METALS			**AVS-SEM**	**SW3005A**			Analyst: **tj**
Cadmium	0.00192	0.00002	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Copper	0.08115	0.00020	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
Lead	0.00379	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Nickel	0.05206	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Simultaneously Extracted Metal	0.4368	0.00051	0.00191		µmoles/g	1	9/13/2012 12:12:08 PM
Zinc	0.2979	0.00050	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
PERCENT SOLIDS			**A2540G**				Analyst: **dk/jr**
Percent Solids	78.8	0.01	0.1		%	1	8/21/2012 3:40:00 PM
ACID VOLATILE SULFIDE-SIM. EXT. METALS			**AVS-SEM**				Analyst: **jo**
Sulfide	1.35	0.55	1.50	J	µmoles/g	1	8/29/2012 8:00:00 AM

Qualifiers:				
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: *25-Sep-12*

CLIENT: AECOM
Lab Order: 1207139
Project: 60225262-058
Lab ID: 1207139-004

Client Sample ID: EFSC (#25937)
Collection Date:

Matrix: SEDIMENT

Analyses	Result	MDL	Rpt Limit	Qualifier	Units	DF	Date Analyzed
AVS-SEM METALS			**AVS-SEM**	**SW3005A**			Analyst: **tj**
Cadmium	0.06460	0.00002	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Copper	0.3021	0.00020	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
Lead	0.00944	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Nickel	0.5195	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Simultaneously Extracted Metal:	7.827	0.00051	0.00191		µmoles/g	1	9/13/2012 12:12:08 PM
Zinc	6.931	0.00050	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
PERCENT SOLIDS			**A2540G**				Analyst: **dk/jr**
Percent Solids	72.3	0.01	0.1		%	1	8/21/2012 3:40:00 PM
ACID VOLATILE SULFIDE-SIM. EXT. METALS			**AVS-SEM**				Analyst: **jo**
Sulfide	1.10	0.55	1.50	J	µmoles/g	1	8/29/2012 8:00:00 AM

Qualifiers:				
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: *25-Sep-12*

CLIENT: AECOM
Lab Order: 1207139
Project: 60225262-058
Lab ID: 1207139-005

Client Sample ID: LJH (#25941)
Collection Date: 7/2/2012

Matrix: SEDIMENT

Analyses	Result	MDL	Rpt Limit	Qualifier	Units	DF	Date Analyzed
AVS-SEM METALS			**AVS-SEM**	**SW3005A**			Analyst: **tj**
Cadmium	0.00101	0.00002	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Copper	0.3437	0.00020	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
Lead	0.02664	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Nickel	0.03198	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Simultaneously Extracted Metal	0.6427	0.00051	0.00191		µmoles/g	1	9/13/2012 12:12:08 PM
Zinc	0.2393	0.00050	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
PERCENT SOLIDS			**A2540G**				Analyst: **dk/jr**
Percent Solids	80.8	0.01	0.1		%	1	8/21/2012 3:40:00 PM
ACID VOLATILE SULFIDE-SIM. EXT. METALS			**AVS-SEM**				Analyst: **jo**
Sulfide	1.05	0.55	1.50	J	µmoles/g	1	8/29/2012 8:00:00 AM

Qualifiers:				
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: *25-Sep-12*

CLIENT: AECOM
Lab Order: 1207139
Project: 60225262-058
Lab ID: 1207139-006

Client Sample ID: LSLA (#25936)
Collection Date: 7/3/2012
Matrix: SEDIMENT

Analyses	Result	MDL	Rpt Limit	Qualifier	Units	DF	Date Analyzed
AVS-SEM METALS			**AVS-SEM**	**SW3005A**			Analyst: **tj**
Cadmium	0.00573	0.00002	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Copper	0.1204	0.00020	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
Lead	0.01162	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Nickel	0.07371	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Simultaneously Extracted Metal	1.049	0.00051	0.00191		µmoles/g	1	9/13/2012 12:12:08 PM
Zinc	0.8376	0.00050	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
PERCENT SOLIDS			**A2540G**				Analyst: **dk/jr**
Percent Solids	77.4	0.01	0.1		%	1	8/21/2012 3:40:00 PM
ACID VOLATILE SULFIDE-SIM. EXT. METALS			**AVS-SEM**				Analyst: **jo**
Sulfide	0.99	0.55	1.50	J	µmoles/g	1	8/29/2012 8:00:00 AM

Qualifiers:				
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Analytical Laboratory
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200 Technology Way
Butte, MT 59701
Lab: 406-494-7334
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labinfo@mse-ta.com

Date: 25-Sep-12
Report Date: 25-Sep-12

QA/QC SUMMARY REPORT

Client: AECOM
Project: 60225262-058
Work Order: 1207139
BatchID: 5937

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
*Sample ID: **X-PB-5937***			*Method: **AVS-SEM***	*Batch ID: **5937***				*Analysis Date: 9/13/2012 12:12:08 PM*		
Cadmium	ND	0.00010	µmoles/g							
Copper	0.00079	0.00100	µmoles/g							J
Lead	0.00009	0.00010	µmoles/g							J
Nickel	0.00074	0.00010	µmoles/g							
Simultaneously Extract	0.05240	0.00191	µmoles/g							
Zinc	0.05076	0.00100	µmoles/g							
*Sample ID: **PB-5937***			*Method: **AVS-SEM***	*Batch ID: **5937***				*Analysis Date: 9/13/2012 12:12:08 PM*		
Cadmium	ND	0.00010	µmoles/g							
Copper	0.00050	0.00100	µmoles/g							J
Lead	0.00001	0.00010	µmoles/g							J
Nickel	0.00055	0.00010	µmoles/g							
Simultaneously Extract	0.00500	0.00191	µmoles/g							
Zinc	0.00393	0.00100	µmoles/g							
*Sample ID: **LCS-5937***			*Method: **AVS-SEM***	*Batch ID: **5937***				*Analysis Date: 9/13/2012 12:12:08 PM*		
Cadmium	0.08513	0.00010	µmoles/g	0.08900	95.7	80	120			
Copper	0.1891	0.00100	µmoles/g	0.1570	120	80	120			
Lead	0.05578	0.00010	µmoles/g	0.04800	116	80	120			
Nickel	0.2018	0.00010	µmoles/g	0.1700	119	80	120			
Simultaneously Extract	0.7109	0.00191	µmoles/g	0.6170	115	80	120			
Zinc	0.1790	0.00100	µmoles/g	0.1530	117	80	120			
*Sample ID: **1207139-002A-D***			*Method: **AVS-SEM***	*Batch ID: **5937***				*Analysis Date: 9/13/2012 12:12:08 PM*		
Cadmium	0.00081	0.00010	µmoles/g					15.7	20	
Copper	0.2736	0.00100	µmoles/g					2.68	20	
Lead	0.02635	0.00010	µmoles/g					16.6	20	
Nickel	0.04883	0.00010	µmoles/g					19.9	20	
Simultaneously Extract	0.5976	0.00191	µmoles/g					5.60	20	
Zinc	0.2480	0.00100	µmoles/g					4.56	20	
*Sample ID: **1207139-002A-MS***			*Method: **AVS-SEM***	*Batch ID: **5937***				*Analysis Date: 9/13/2012 12:12:08 PM*		
Cadmium	0.06259	0.00010	µmoles/g	0.08278	74.8	75	125			
Copper	0.4461	0.00100	µmoles/g	0.1460	113	75	125			
Lead	0.07930	0.00010	µmoles/g	0.04464	108	75	125			
Nickel	0.2381	0.00010	µmoles/g	0.1581	113	75	125			
Simultaneously Extract	1.244	0.00191	µmoles/g	0.5739	107	75	125			
Zinc	0.4176	0.00100	µmoles/g	0.1423	111	75	125			
*Sample ID: **1207139-002A-MSD***			*Method: **AVS-SEM***	*Batch ID: **5937***				*Analysis Date: 9/13/2012 12:12:08 PM*		
Cadmium	0.06279	0.00010	µmoles/g	0.08278	75.0	75	125	0.327	20	
Copper	0.4282	0.00100	µmoles/g	0.1460	101	75	125	4.09	20	
Lead	0.07550	0.00010	µmoles/g	0.04464	99.4	75	125	4.90	20	

Qualifiers: NA Sample conc. is > 4*spike level S Spike Recovery outside accepted recovery limits

MSE Analytical Laboratory
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200 Technology Way
Butte, MT 59701
Lab: 406-494-7334
Fax: 406-494-7230
labinfo@mse-ta.com

Date: 25-Sep-12
Report Date: 25-Sep-12

QA/QC SUMMARY REPORT

Client: AECOM
Project: 60225262-058

Work Order: 1207139
BatchID: 5937

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
*Sample ID: **1207139-002A-MSD***			*Method: **AVS-SEM***	*Batch ID: **5937***				*Analysis Date: 9/13/2012 12:12:08 PM*		
Nickel	0.2249	0.00010	µmoles/g	0.1581	105	75	125	5.73	20	
Simultaneously Extract	1.189	0.00191	µmoles/g	0.5739	97.1	75	125	4.46	20	
Zinc	0.3980	0.00100	µmoles/g	0.1423	97.3	75	125	4.81	20	

Qualifiers:
NA Sample conc. is > 4*spike level
S Spike Recovery outside accepted recovery limits

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labinfo@mse-ta.com

Date: 25-Sep-12
Report Date: 25-Sep-12

QA/QC SUMMARY REPORT

Client: AECOM
Project: 60225262-058

Work Order: 1207139
BatchID: R20694

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
Sample ID: ***1207139-001A***			*Method:* ***A2540G***		*Batch ID:* ***R20694***			*Analysis Date: 8/21/2012 3:40:00 PM*		
Percent Solids	79.4	0.1	%					0.251	35	

Qualifiers:
NA Sample conc. is > 4*spike level
S Spike Recovery outside accepted recovery limits

MSE Analytical Laboratory
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200 Technology Way
Butte, MT 59701
Lab: 406-494-7334
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labinfo@mse-ta.com

Date: 25-Sep-12
Report Date: 25-Sep-12

QA/QC SUMMARY REPORT

Client: AECOM
Project: 60225262-058

Work Order: 1207139
BatchID: R20853

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
Sample ID: ***1207139-002A-D***			*Method:* ***AVS-SEM***		*Batch ID:* ***R20853***			*Analysis Date: 8/29/2012 8:00:00 AM*		
Sulfide	0.93	1.50	µmoles/g					0	35	J
Sample ID: ***1207139-003A-S***			*Method:* ***AVS-SEM***		*Batch ID:* ***R20853***			*Analysis Date: 8/29/2012 8:00:00 AM*		
Sulfide	9.85	1.50	µmoles/g	10.64	79.9	80	120			
Sample ID: ***LCS-WC 2634***			*Method:* ***AVS-SEM***		*Batch ID:* ***R20853***			*Analysis Date: 8/29/2012 8:00:00 AM*		
Sulfide	3.63	1.50	µmoles/g	4.194	86.6	85	105			
Sample ID: ***PB***			*Method:* ***AVS-SEM***		*Batch ID:* ***R20853***			*Analysis Date: 8/29/2012 8:00:00 AM*		
Sulfide	ND	1.50	µmoles/g							

Qualifiers:
NA Sample conc. is > 4*spike level
S Spike Recovery outside accepted recovery limits

AECOM

CHAIN OF CUSTODY RECORD

1207139

Page 1 of 1

Client/Project Name: 058	Project Location: FCETL/AECOM
Project Number: 60325262-058 2012	Field Logbook No.:
Sampler (Print Name)/(Affiliation): Client	Chain of Custody Tape Nos.: 43266
Signature:	Send Results/Report to: Raml.Naddy@aecom.com — TAT: Std

Analysis Requested: AVS

Container Type: P – Plastic; A – Amber Glass; G – Clear Glass; V – VOA Vial; O – Other; E – Encore

Preservation: 1 – HCl, 4°; 2 – H2SO4, 4°; 3 – HNO3, 4°; 4 – NaOH, 4°; 5 – NaOH/ZnAc, 4°; 6 – Na2S2O3, 4°; 7 – 4°

Matrix Codes: DW – Drinking Water; WW – Wastewater; GW – Groundwater; SW – Surface Water; ST – Storm Water; W – Water; S – Soil; SL – Sludge; SD – Sediment; SO – Solid; A – Air; L – Liquid; P – Product

Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	Lab I.D.	Remarks
LSH (# 25942)	7/3/12	Unk.			40z Glass	Sed	Ice		001	
MSH (# 25943)	7/3/12								002	
USC (# 25935)	7/2/12								003	
BFSC (# 25937)	Unk.								004	
LSH (# 25941)	7/2/12								005	
LSLA (# 25936)	7/3/12	↓			↓	↓	↓			

Relinquished by: (Print Name)/(Affiliation) Christina Needham (AECOM)	Date: 7/24/12	Received by: (Print Name)/(Affiliation) B.O'Donnell	Date: 7/25/12
Signature: Christina Needham	Time: 1300	Signature: B. O'Donnell	Time: 1330
Relinquished by: (Print Name)/(Affiliation)	Date:	Received by: (Print Name)/(Affiliation)	Date:
Signature:	Time:	Signature:	Time:
Relinquished by: (Print Name)/(Affiliation)	Date:	Received by: (Print Name)/(Affiliation)	Date:
Signature:	Time:	Signature:	Time:

Analytical Laboratory (Destination):

AECOM Toxicology Lab
4303 W. Laporte Avenue
Fort Collins, CO 80521
(970) 416-0916
(970) 490-2963 (FAX)

MSE

Sample Shipped Via: UPS (FedEx) Courier Other

Temp blank: Yes No

Overnight

Serial No. № 52449

O:\GRAPHICS\FORMS\Chain of Custody\COC\Chain-of-Custody_FL Collins_10_07.doc

MSE Lab Services

Sample Receipt Checklist

Client Name AECOM_INC

Date and Time Received: 7/25/2012 1:30:00 PM

Work Order Number 1207139 RcptNo: 1

Received by BO

COC_ID:

CoolerID:

Checklist completed by [signature] 7/25/12
Signature Date

Reviewed by [initials] 7/26/12
Initials Date

Matrix:

Carrier name Priority US Mail

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Water - VOA vials have zero headspace?	No VOA vials submitted ☑	Yes ☐	No ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Blank ☐

Adjusted? Na Checked by [initials] 7/25/12

Sediments

Any No and/or NA (not applicable) response must be detailed in the comments section be

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: TEMP = 1.2 DEGREE C - COOLER ON ICE.

Corrective Action _____

AECOM
Environmental Toxicology
4303 West LaPorte Avenue, Fort Collins, Colorado 80521-2154
T 970.416.0916 F 970.490.2963 www.aecom.com

AECOM

September 27, 2012

Kevin Eppers
Coeur Alaska Inc.
Kensington Gold Mine
3031 Clinton Drive
Suite 202
Juneau AK 99801

Subject: Results of *Hyalella azteca* sediment toxicity test

Dear Mr. Eppers:

Attached is a copy of the report for the sediment toxicity test conducted with *Hyalella azteca* using sediment collected from six different sites. There were no statistically significant survival or growth effects in any of the six sampling sites. The analytical data including total metals, total organic carbon, and grain size determination and total solids and total suspended solids are included in this report.

We greatly appreciate the opportunity to complete this study for Coeur Alaska Inc.. Please do not hesitate to call us if you have any questions.

Sincerely,

Andrea Sternenberger, M.S.
Data Analyst
andrea.sternenberger@aecom.com

Rami B. Naddy, Ph.D.
Study Director / Environmental Toxicologist
rami.naddy@aecom.com

Attachment:

60225262-058-(084-089)

Coeur Alaska, Inc.
Juneau, Alaska

Report of Short-Term Chronic Toxicity of Whole Sediment to *Hyalella azteca*

Prepared by

AECOM Environment
Environmental Toxicology
Fort Collins, CO

60225262-058-(084-089)
September 2012

Report of Short-Term Chronic Toxicity of Whole Sediment to Hyalella azteca

Project IDs: 60225262-058-(084-089)
September 2012

Sponsor and Laboratory Information

Sponsor	Coeur Alaska Inc. Kensington Mine 3031 Clinton Drive Suite 202 Juneau, Alaska 99801
Project Officer	Kevin Eppers (907) 523-3328
Testing Facility	AECOM Environment Fort Collins Environmental Toxicology Laboratory 4303 West LaPorte Ave. Fort Collins, CO 80521 Fax: (970) 490-2963 State of Florida NELAP Laboratory ID: E87972
Study Director	Rami B. Naddy, Ph.D (970) 416-0916 email: rami.naddy@aecom.com
Report Author	Andrea Sternenberger, M.S. (970) 416-0916 email: andrea.sternenberger@aecom.com

Test Information

Test	Short-term chronic screening toxicity test of sediment	
Basis	USEPA (2000) and ASTM (2009)	
Test Protocol	HA3AK.TIE058.007	
Test Period	August 10, 2012 @ 1510-1530 to August 20, 2012 @ 0830-1215	
Test Length	10 days	
Species	*Hyalella azteca*	
Test Material	Whole sediment	
Sediment ID	Sample ID	AECOM Laboratory ID
	LJH	25938, 25941
	LSH	25939, 25942
	MSH	25940, 25943
	USC	25932, 25935
	LSLA	25933, 25936
	EFSC	25934, 25937
Control Sediments	Silica Sand, Formulated Sediment	
Overlying water	Moderately hard reconstituted water prepared according to USEPA (2002), augmented with approximately 50 mg/L Cl^- (as NaCl)	
Test Concentrations	0 (control) and 100% of each test sediment	

- *Results described in this report apply only to the samples submitted to the laboratory and analyzed, as listed in the report*
- *Test results comply with NELAC standards. Reports are intended to be considered in their entirety; AECOM is not responsible for consequences arising from use of a partial report*
- *This report contains 8 pages plus 3 appendices*

Sediment Collection and Receipt

Sample ID	Collection Date and Time	AECOM No.[a]	Date of Receipt	Temp. at Arrival (°C)[b]
LJH	07/02/12 @ 1200	25938	07/20/12	17.1
LSH	07/03/12 @ 1100	25939	07/20/12	17.1
MSH	07/03/12 @ 1200	25940	07/20/12	17.1
USC	07/02/12 @ 0900	25932	07/20/12	19.6
LSLA	07/03/12 @ 0900	25933	07/20/12	19.6
EFSC	07/10/12 @ 1400	25934	07/20/12	19.6

[a] Upon sample receipt, each 1-gallon sample container of sediment was assigned a different sample number than the 4-oz glass jar of the same sediment sample designated for AVS analysis. The number assigned to the 1-gallon sample container used for sediment testing will be used for reporting purposes.
[b] Air temperature of cooler
Note: See Appendix A for copies of chain of custody records

Control Sediment

The primary control sediment was coarse silica sand, obtained from a local commercial supplier (manufactured by Unimin® Corporation). A second control, sediment with a smaller grain size and higher organic matter content, was prepared in the laboratory. The composition of the formulated sediment is given in the following table (Kemble et al. 1999).

Composition of Laboratory Formulated Sediment (Control)

Material	Source	Pre-Treatment	Weight (g)
Coarse Quartz Sand	Unimin Corporation, Emmett, ID	Rinsed with gentle mixing in deionized water until water ran clear. Dried in oven.	1242
Silt/Clay (ASP400)	Mozel, St. Louis, MO. Distributor = Englehardt	None	219
Dolomite	Grey Rock Clay Center, Ft. Collins, CO.	None	7.5
α-cellulose	Sigma	None	77.3
Humic Acid	Fluka	None	0.15
Total			1545.95

Initial Overlying Water Characterization

Batch No.	pH	Hard. (mg/L)[a]	Alk. (mg/L)[a]	Spec. Cond. (µS/cm)	TRC (mg/L)[b]	NH_3-N (mg/L)	Cl^- (mg/L)
10425	8.1	92	60	457	0.03	<1.0	50.2

[a] As $CaCO_3$
[b] Total residual chlorine

Test Sediment Preparation

Sample ID	Date Homogenized	Time Homogenized
Sand Control	August 9, 2012	1015-1018
Formulated Sediment		1010-1013
LJH		1029-1032
LSH		1107-1110
MSH		1017-1024
USC		1102-1107
LSLA		1106-1109
EFSC		1040-1043

Note: The formulated sediment was homogenized with overlying water on August 6, 2012 from 1459 to 1502 and held at 4ºC. On August 8, 2012 the wetted control sediment was placed at 25ºC overnight prior to test setup. Sediment was re-homogenized prior to addition to test chambers.

Overlying water was added to the sand control and formulated sediment during the homogenization process to wet both controls prior to placement in test chambers. Before, during, and after homogenization, any noticeable debris (including sticks and other plant material) and large stones were removed from the test sediment and discarded.

Test Conditions

Test Type	Static sediment with continuous replacement of overlying water
Test Duration	10 days
Overlying Water Delivery System	Continuous renewal (flow-through)[a]
Test Endpoints	Survival, dry weight per original and surviving organism
Test Chambers	500-ml glass beakers
Test Sediment Volume	100 ml
Overlying Water Volume	175 ml
Replicates per Treatment	8
Organisms per Replicate	10
Test Temperature	$23 \pm 1°C$[b]
Lighting	Fluorescent, 16 hours light:8 hours dark
Chamber Placement	Randomized
Test Sediment Renewal	None
Test Overlying Water Renewal	Approximately two volume additions per test chamber per day

[a] Continuous replacement via a drip system

[b] The instantaneous temperatures in overlying water fell below the lower limit of 22°C but did not exceed the 3ºC differential on Day 6 in the sand control and test sediments (USC and EFSC only), and on Days 5 and 8 in one test sediment (EFSC) (temperature measured in one replicate per treatment each day).

Test Organism

Species and Lot Number	*Hyalella azteca*, FCETL Lot 12-022
Age	9 – 11 days
Size (pre-test wt.)	0.018 mg/organism (mean)
Source	Aquatic BioSystems (ABS), Fort Collins, CO
Overlying Water	Moderately Hard Reconstituted Water with added chloride (50.2 and 50.1 mg/L) as NaCl, RW # 10425 and 10438, respectively
Reference Toxicant Testing	Initiated August 10, 2012 using sodium chloride (NaCl)

TEST RESULTS

Biological Data – Survival and Dry Weight

Sample ID	Percent Survival	Dry Weight (mg)	
		Per original organism	Per surviving organism
Sand Control	97.5	0.084	0.086
Formulated Sediment	91.2	0.057	0.063
LJH	95.0	0.070	0.074
LSH	98.8	0.088	0.089
MSH	92.5	0.075	0.082
USC	98.8	0.082	0.083
LSLA	98.8	0.095	0.096
EFSC	96.2	0.060	0.062

Note: None of the test sediments had any statistically significant reductions in survival or growth relative to the formulated sediment. See Appendix B for test data sheets

Analytical Data

Parameter	Sample Identification							
	Sand	Form. Sed.	LJH	LSH	MSH	USC	LSLA	EFSC[a]
Metals (mg/kg-dry)[b]								
Aluminum	181	609	13,100	17,900	18,800	20,300	13,600	15,300
Chromium	4.25	8.25	35.5	51.4	48.1	125	32.0	38.9
Zinc	ND	ND	97.3	128	124	134	200	1,490
Arsenic	ND	ND	12.8	24.3	56.1	14.4	9.31	24.0
Cadmium	0.073	0.072	0.250	0.578	0.269	0.776	1.22	23.2
Copper	0.324	0.783	76.8	79.1	87.5	55.4	50.7	159
Lead	0.165	0.380	9.45	8.43	11.3	4.05	8.45	14.2
Nickel	0.511	0.820	23.4	40.2	39.3	78.4	43.2	153
Selenium	ND	ND	ND	ND	ND	0.606	ND	0.934 J
Silver	ND	ND	0.342	0.289	0.225 J	0.132 J	0.145 J	0.513 J
Mercury	ND	ND	0.119 J	0.0681 J	0.0581 J	0.0625 J	0.0994 J	0.327 J
Particle Size (%)[c]								
Clay	ND	10.0	8.0	4.0	4.0	2.0	2.0	40.0
Sand	96.0	86.0	92.0	96.0	96.0	98.0	98.0	26.0
Silt	4.0	4.0	ND	ND	ND	ND	ND	34.0
Texture	Sand	Loamy Sand	Sand	Sand	Sand	Sand	Sand	Clay
Coarse Material (2 mm)	ND	ND	ND	0.09 J	0.44	0.32	0.13	ND
TOC (%-dry)[d]	ND	28.7	1.19	0.82	1.05	3.74	1.67	16.7
Acid Volatile Sulfide (µmoles/g)	NM	NM	1.05 J	ND	0.93 J	1.35 J	0.99 J	1.10 J

[a] On one analytical report included in Appendix C, the sample ID for this site is labeled as “EFSA”; however, the correct sample ID is ”EFSC”.
[b] As, Cd, Cr, Cu, Pb, Ni, Se, and Ag by SW-846 Method 6020; Al and Zn by SW-846 Method 6010B; Hg by SW-846 7471B (USEPA 1986)
[c] Particle size was determined using ASTM Method D422 and Modified ASA 15-5
[d] TOC was determined using the Walkley Black Method
J = The concentration was below the reporting limit but above the method detection limit
ND = Not detected at the method detection limit
NM = Parameter not measured for this sample
Note: See Appendix C for a copy of the reports from the analytical laboratory (MSE Analytical Laboratory, Butte, MT)

Total and Total Volatile Solids

Sample ID	Percent Total Solids[a]	Percent Total Volatile Solids[b]
Sand	95.90	0.108
Formulated Sediment	86.96	6.97
LJH	77.67	2.55
LSH	78.55	3.05
MSH	77.09	4.10
USC	79.58	2.90
LSLA	79.22	3.37
EFSC	23.72	28.54

[a] Total solids were determined using Standard Methods 2540B (APHA 1998)
[b] Total volatile solids were determined using Standard Methods 2540E (APHA 1998)
Note: All values are means of duplicate analyses and determined at AECOM/FCETL. See Appendix C for data sheets.

Physical and Chemical Data

Sample ID	pH (s.u.)	DO (mg/L)	Cond. (µS/cm)	Temp. (°C)[a]	Ammonia as N (mg/L)	Hardness (mg/L as $CaCO_3$)	Alkalinity (mg/L as $CaCO_3$)
Sand Control	8.0-8.3	6.3-6.9	475-496	21-23	<1.0	94-100	61-65
Formulated Sediment	8.0-8.3	5.4-6.6	512-524	22-23	<1.0	114-116	65-81
LJH	7.7-8.1	5.8-6.5	452-517	22-23	<1.0	92-106	56-61
LSH	7.8-8.2	5.9-6.6	481-580	22-23	<1.0	106-124	72-85
MSH	7.8-8.2	5.9-6.8	462-504	22-23	<1.0	98-102	62-68
USC	7.9-8.1	5.8-6.5	469-516	21-22	<1.0	98-112	68-74
LSLA	7.8-8.1	5.8-6.5	475-549	22-23	<1.0	100-112	72-74
EFSC	7.7-8.1	5.2-6.4	497-561	21-22	<1.0-1.5	128-136	93-97

[a] Temperature in test chambers

Reference Toxicant Test Results for *H. azteca*

Organism Lot Number	Test Dates	96-Hour LC_{50}	AECOM/FCETL Historical 95% Control Limits	
			Low	High
12-022	08/10/12 to 08/14/12	2,552	1,184	3,274

Note: Values are expressed as mg/L chloride

References

APHA. 1998. Standard Methods for the Examination of Water and Wastewater. Amer. Public Health Assoc., Amer. Water Works Assoc., Water Pollut. Control Fed., APHA, Washington, DC.

ASTM. 2009. Standard Test Method for Measuring the Toxicity of Sediment-Associated Contaminants with Fresh Water Invertebrates. Method E 1706-05 In *2009 Annual Book of ASTM Standards, Section 11, Water and Environmental Technology, Volume 11.06, Biological Effects and Environmental Fate; Biotechnology*. American Society of Testing and Materials. West Conshohocken, PA.

Kemble, N.E., F.J. Dwyer, C.G. Ingersoll, T.D. Dawson, and T.J. Norberg-King. 1999. Tolerance of Freshwater Test Organisms to Formulated Sediments for Use as Control Materials in Whole-Sediment Toxicity Test. *Environ. Toxicol. Chem.* 18:222-230.

USEPA. 1986. Test Methods for Evaluating Solid Waste. Third Edition. SW-846.

USEPA. 2000. Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates. EPA/600/R-99/064.

USEPA. 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms. Fifth Edition. EPA-821-R-02-012.

Statement of Procedural Compliance

I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge, accurate and complete.

Rami Naddy, Ph.D. — Date: September 27, 2012
Study Director

Statement of Quality Assurance

The test data were reviewed by the Quality Assurance Unit to assure that the study was performed in accordance with standard operating procedures, and that the resulting data and report meet the requirements of the NELAC standards. This report is an accurate reflection of the raw data.

Quality Assurance Unit — Date: September 27, 2012

APPENDIX A

Chain of Custody

AECOM

CHAIN OF CUSTODY RECORD

084-089

6·6·2012

Page 1 of 1

Client/Project Name: Coeur Alaska

Project Number: 60252102-058

Sampler (Print Name)/(Affiliation): Ben Brewster ADF&G

Signature: Ben Brewster

Project Location: FCETL

Field Logbook No.:

Chain of Custody Tape Nos.: 42700 (Intact)

Send Results/Report to:

TAT:

Analysis Requested

Container Type: P – Plastic; A – Amber Glass; G – Clear Glass; V – VOA Vial; O – Other; E – Encore

Preservation: 1 – HCl, 4°; 2 – H2SO4, 4°; 3 – HNO3, 4°; 4 – NaOH, 4°; 5 – NaOH/ZnAc, 4°; 6 – Na2S2O3, 4°; 7 – 4°

Matrix Codes: DW – Drinking Water; WW – Wastewater; GW – Groundwater; SW – Surface Water; ST – Storm Water; W – Water; S – Soil; SL – Sludge; SD – Sediment; SO – Solid; A – Air; L – Liquid; P – Product

Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered											Lab I.D.	Remarks
Sediment LJH	7/2/12	1200			1 gal	① SD	ICE		X										25938	
" LSH	7/3/12	1100			1 gal	① SD	ICE		X										25939	
" MSH	7/3/12	1200			1 gal	① SD	ICE		X										25940	
" LJH	7/2/12	1200			4oz	① SD	ICE		X										25941	
" LSH	7/3/12	1100			4oz	① SD	ICE		X										25942	
" MSH	7/3/12	1200			4oz	① SD	ICE		X										25943	
																				(D69)

Relinquished by: (Print Name)/(Affiliation): Ben Brewster ADFG
Signature: Ben Brewster
Date:
Time:

Received by: (Print Name)/(Affiliation): Amber Potts/AECOM
Signature: Amber Potts
Date: 7/20/12
Time: 1015

Relinquished by: (Print Name)/(Affiliation)
Signature:
Date:
Time:

Received by: (Print Name)/(Affiliation)
Signature:
Date:
Time:

Relinquished by: (Print Name)/(Affiliation)
Signature:
Date:
Time:

Received by: (Print Name)/(Affiliation)
Signature:
Date:
Time:

Analytical Laboratory (Destination):
rec. via FedEx @ 17.1°
AECOM Toxicology Lab
4303 W. Laporte Avenue
Fort Collins, CO 80521
(970) 416-0916
(970) 490-2963 (FAX)
a cooler temperature

Sample Shipped Via: UPS FedEx Courier Other

Temp blank: Yes No

① W 6·5·2012 Er.

Q:\GRAPHICS\FORMS\Chain of Custody (COC)\Chain-of-Custody_Ft. Collins_10_07.doc

Serial No. № 52344

AECOM

CHAIN OF CUSTODY RECORD

6·6·2012

084-089

Page 1 of 1

Client/Project Name: Coeur Alaska	Project Location: FCEIC
Project Number: 60225262-058	Field Logbook No.:
Sampler (Print Name)/(Affiliation): Ben Brewster ADFG	Chain of Custody Tape Nos.: 42588 *intact*
Signature: Benjamin Brewster	Send Results/Report to: TAT:

Container Type: P – Plastic; A – Amber Glass; G – Clear Glass; V – VOA Vial; O – Other; E – Encore

Preservation: 1 – HCl, 4°; 2 – H2SO4, 4°; 3 – HNO3, 4°; 4 – NaOH, 4°; 5 – NaOH/ZnAc, 4°; 6 – Na2S2O3, 4°; 7 – 4°

Matrix Codes: DW – Drinking Water; WW – Wastewater; GW – Groundwater; SW – Surface Water; ST – Storm Water; W – Water; S – Soil; SL – Sludge; SD – Sediment; SO – Solid; A – Air; L – Liquid; P – Product

Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	Analysis Requested	Lab I.D.	Remarks
Sediment (USC)	7/2/12	0900	X		1 gal	SD	ICE		X	25932	
" LSLA	7/3/12	0900	X		1 gal	SD	ICE		X	25933	
" EFSC	7/10/12	1400	X		1 gal	SD	ICE		X	25934	
" USC	7/2/12	0900	X		4oz	SD	ICE		X	25935	
" LSLA	7/3/12	0900	X		4oz	SD	ICE		X	25936	
" EFSC	7/10/12	1400	X		4oz	SD	ICE		X	25937	

(Dx9)

Relinquished by: (Print Name)/(Affiliation) Ben Brewster ADFG	Date:	Received by: (Print Name)/(Affiliation) Amber Potts/AECOM	Date: 7/20/12
Signature: Benjamin Brewster	Time:	Signature: Amber Potts	Time: 1015
Relinquished by: (Print Name)/(Affiliation)	Date:	Received by: (Print Name)/(Affiliation)	Date:
Signature:	Time:	Signature:	Time:
Relinquished by: (Print Name)/(Affiliation)	Date:	Received by: (Print Name)/(Affiliation)	Date:
Signature:	Time:	Signature:	Time:

Analytical Laboratory (Destination): rec. via FedEx @ 19.6°C

AECOM Toxicology Lab
4303 W. Laporte Avenue
Fort Collins, CO 80521
(970) 416-0916
(970) 490-2963 (FAX)

Δ Cooler temp

Sample Shipped Via: UPS (FedEx) Courier Other

Temp blank: Yes (No)

(1) w 6·5·2012 Er.

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Serial No. № 52343

APPENDIX B

Data Sheets

H. azteca 10-day Survival and Growth, Testing Cover Page

Project Number: 60225262-058-(084-089)
Test Substance: Sediment
Test Species: *H. azteca* Lot #: 12-022
Protocol #: HABAK.ITE058.007 AS 9/18/12 QA: APE 09/25/12
Age: 9-11 d (7-14 days) Supplier: ABS

Test Type: Chronic, Static-Renewal
Overlying Water: Reconstituted Fresh Water (Smith et al., 1997) - (RW# 10425 & 10438) + 60 mg/L Cl
Sampling Date(s): 07/02/12 - 07/10/12
FCETL Sample #(s): 25938, 25939, 25940, 25932, 25933, 25934 ▲
Test Initiation Date/Time: 08/10/12 @ 1510 - 1530
Test Termination Date/Time: 08/20/12 @ 0820 - 1215
Investigators: CW/AB/KB/DM/AD/AM/AP/AP/MT/
Sampling Time(s): LJH = 7/2/12 @ 1200, LSH = 7/3/12 @ 1100, MSH = 7/3/12 @ 1200, USC = 7/2/12 @ 0900, LSLA = 7/3/12 @ 0900, EFSC = 7/10/12 @ 1400

Renewal Frequency: Cont. drip, 2+ vol/day
Test Chamber Capacity: 500-ML
Test Duration: 10 days
Feeding Freq: daily
Test Soltn. Vol: 100 mL sed/175 mL H2O
Org.'s/Repl: 10
Food Type/Amount: 1 ml YTC daily
Repl's/Trtmnt: 8
Env. Chmb(r)/Bath: 3
Test Temp: 23 +/- 1 deg C

Water Characterization: Minimum of Hardness, Alkalinity, & Conductivity on days 0 and 10; Ammonia on days 0, 3, 7, and 10; No TRC; pH, temperature & DO daily on overlying water
aerate if dissolved oxygen <2.5 mg/L

Test Sediment (s):

1) Sand (cont)	2) Form Sed. (Cont.)	3) LJH
4) LSH	5) MSH	6) USC
7) LSLA	8) EFSC	9)
10)	11)	

Reference Tox. Dates: 8/10/12 - 8/14/12
Study Director Initials: CW for RBN
LC50: 2.552 mg/L Cl
Date: August 8, 2012
Hist. Limits: 1.184-3.274
Method: Probit

Overlying water added at a minimum of 2 volume additions/day; equivalent to >350 ml/day or >0.24 ml/min

▲ Upon sample receipt, each container of sediment was assigned a different sample number resulting in each site having two sample ID's. Since both containers for each site contained aliquots of the same sediment, only one number will be used for reporting purposes.

(*) started using new overlying water on 8/19/12

SEDIMENT/SOIL PREPARATION

Project Number: 60225262-058-(084-089)

QA: AR 09/25/12
DS 9/18/12

Artificial soil	
Constituent/source	**Amount added (g)**
Coarse Silica Sand	1242
Silt/Clay (ASP 400)	219
Dolomite	7.5
α-cellulose	77.3
Humic Acid	0.15
Total	1545.95

Notes: Container was placed into tumbler for a minimum of an hour to homogenize prior to use

See TIE Sheet Daily Log for notes on the preparation of the formulated sediment (page 3)

Soil/sediment	FCETL#	Homogenization			
		Date	From	To	Analyst
Sand (Cont.)	NA	8/9/12	1015	1018	AB
Form Sed. (Cont.)④	NA	8/9/12	1010	1013	CW
LJH	25938	8/9/12	~~1015~~① 1029	~~1018~~① 1032	~~AB~~① CW
LSH	25939	8/9/12	1107	1110	AB
MSH	25940	8/9/12	1017	1024	AB
USC	25932	8/9/12	1102	1107	AB
LSLA	25933	8/9/12	1106	1109	CW
EFSC	25934	②8/9/12	1040	1043	AB

④ Re-homogenized form. sed. wetted on monday 8/6/12

①AB 8/9/12. WP
②DS for AB 9/18/12 CF = date = 8/9/12

FCETL QA Form No. 15
Effective: 5/90

DS 9/18/12
QA: AR 09/25/12

SUBJECT: DAILY LOG

ALL ENTRIES MUST BE INITIALLED WITH DATE AND TIME:

602252628-058 H. azteca | C. dilutus

Preparation of formulated Sediment

- Combined the following ingredients together in a 4-L glass jar:
  - 3105 g Coarse Silica Sand (washed w/ DI + baked until dry)
  - 547.5 g Silt/clay (ASP 400)
  - 18.75 g Dolomite
  - 193.25 g α-cellulose (C09-054 (end), C12-087 (start))
  - 0.375 g Humic Acid (Lot# C10-034)

Total = 3864.875 g

- Mixed Ingredients together on 8/6/12 @ 1110 - 1130 CW
- Placed Jar in ~~tumbler~~ tumbler from 1145 - 1450 CW

- Homogenized ~1/2 of the formulated sediment with a small amount of Mod Hard + 50 mg/L Cl⁻ to wet the sediment from 1459 to 1502. AS
  - Placed the wet sediment @ 4°C in the dark. CW

8/8/12 - Pulled wet formulated sediment out of 4°C chamber and placed it in the 25°C chamber @ 0815 CW.

CW 8/6/12 E

BIOLOGICAL DATA *H. azteca* Chronic, Static-Renewal Project No, 60225262-058-(084-089) QA: CW 09/14/12

Test terminated on 08/20/12 @ 0830 - 1215 QA: MR 09/25/12 - 1. SURVIVAL

Sediment	Test Termination	A	B	C	D	E	F	G	H	Remarks:
Sand (cont)	# Surviving	10	10	8	10	10	10	10	10▲	97.5
	# Observed Dead	0	0	0	0	0	0	0	0	
	# Not Found	0	0	2	0	0	0	0	0	
	Initials	AP	KB	mt	KB	CW	KB	AP	AP	
Form Sed. (Cont.)	# Surviving	10	7	7	10	10	10	9	10	▲1 organism injured during teardown not included in growth analysis
	# Observed Dead	0	0	0	0	0	0	0	0	
	# Not Found	0	3	3	0	0	0	1	0	
	Initials	KB	CW	mt	KB	AP	AP	CW	AP	91.2
LJH	# Surviving	10	10	10	10	9	10	8	9	95
	# Observed Dead	0	0	0	0	1	0	0	0	
	# Not Found	0	0	0	0	0	0	2	1	
	Initials	AP	KB	KB	CW	mt	mt	KB	AP	
LSH	# Surviving	10 ~~10~~ 9	10	10	10	10	10	9	10	98.8
	# Observed Dead	0	0	0	0	0	0	0	0	
	# Not Found	0 ~~0~~ 1	0	0	0	0	0	1	0	
	Initials	AP	AP	CW	CW	CW	mt	AP	AP	
MSH	# Surviving	9	10	10	8	10	10	10	7	92.5
	# Observed Dead	0	0	0	0	0	0	0	1	
	# Not Found	1	0	0	2	0	0	0	0 2	
	Initials	KB	CW	AP	mt	CW	CW	mt	AP	
USC	# Surviving	10	10	10	9	10	10	10	10	98.8
	# Observed Dead	0	0	0	1	0	0	0	0	
	# Not Found	0	0	0	0	0	0	0	0	
	Initials	AP	KB	KB	CW	CW	AP	AP	AP	
LSLA	# Surviving	10	10	10	10	9	10	10	10	98.8
	# Observed Dead	0	0	0	0	0	0	0	0	
	# Not Found	0	0	0	0	1	0	0	0	
	Initials	KB AP	AP	AP	KB	mt	CW	AP	AP	
EFSC	# Surviving	10	10	10	10	10	9	10 AP①	10	96.2
	# Observed Dead	0	0	0	0	0	0	0	0	
	# Not Found	0	0	0	0	0	1	0	0	
	Initials	AP	AP	KB	CW	AP	mt	AP	AP	
	# Surviving									
	# Observed Dead									
	# Not Found									
	Initials									
	# Surviving									
	# Observed Dead									
	# Not Found									
	Initials									

① AP 8/21/12 E ② CW 9/20/12 WP

QA: MRD 9/25/12 AS 9/18/12

CHEMICAL DATA (Composite of Overlying Water) *H. azteca* Chronic, Static-Renewal Project No. 60225262-058-(084-089)

Parameter	Sediment	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day	Meter	Date	Time	Initials
Dissolved Oxygen (mg/l)	Sand (cont)	6.6	6.6	6.5	6.3	6.5	6.7	6.6	6.4	6.6	6.9	6.7	0	5	8/10/12	1335	CW
	Form Sed. (Cont.)	6.6	6.0	6.0	5.4	5.9	6.6	6.1	5.7	5.7	6.6	6.2	1	5	8/11/12	1615	KB
	LJH	6.5	5.9	5.9	5.8	6.2	6.3	6.2	6.1	6.2	6.2	6.4	2	5	8/12/12	1620	KB
	LSH	6.2	6.0	6.0	5.9	6.3	6.6	6.2	6.2	6.1	6.1	6.5	3	5	8/13/12	1515	DM
	MSH	6.4	6.1	6.0	5.9	6.3	6.4	6.0	6.2	6.4	6.8	6.7	4	5	8/14/12	1600	AD
	USC	6.3	6.2	6.0	5.8	6.4	6.3	6.0	6.2	6.0	6.4	6.5	5	5	8/15/12	1350	DM
	LSLA	6.1	5.9	5.9	5.8	5.9	6.5	6.0	6.1	5.9	6.2	6.5	6	5	8/16/12	1350	DM
	EFSC	5.8	5.4	5.6	5.2	5.3	6.4	5.7	5.6	6.0	5.7	6.4	7	6	8/17/12	1040	AD
													8	6	8/18/12	1330	DM
													9	6	~~8/19/12~~ 8/19/12	1510	DM
													10	5	8/20/12	1015	CW
	Replicate	A	B	C	D	E	F	G	H	A	B	C					
Temp (deg C)	Sand (cont)	22	23	22	22	23	23	21	22	22	22	22	0	D45	8/10/12	1325	CW
	Form Sed. (Cont.)	22	23	22	22	23	23	22	22	22	22	22	1	D45	8/11/12	1615	KB
	LJH	22	22	22	22	23	22	22	22	22	22	22	2	D45	8/12/12	1615	KB
	LSH	22	22	22	22	23	22	22	22	22	22	22	3	D45	8/13/12	1515	DM
	MSH	22	22	22	22	23	22	22	22	22	22	22	4	D63	8/14/12	1600	AD
	USC	22	22	22	22	22	22	21	22	22	22	22	5	D45	8/15/12	1335	DM
	LSLA	22	22	22	22	23	22	22	22	22	22	22	6	D45	8/16/12	1345	DM
	EFSC	22	22	22	22	22	21	21	22	21	22	22	7	D45	8/17/12	1030	AD
													8	D45	8/18/12	1530	DM
													9	D45	8/19/12	1510	DM
													10	D45	8/20/12	0830	CW
	Replicate	A	B	C	D	E	F	G	H	A	B	C					
pH	Sand (cont)	8.2	8.3	8.1	8.2	8.0	8.2	8.1	8.1	8.2	8.1	8.2	0	FM20	8/10/12	1335	CW
	Form Sed. (Cont.)	8.3	8.0	8.1	8.0	8.0	8.2	8.0	8.0	8.0	8.0	8.1	1	FM20	8/11/12	1615	KB
	LJH	8.1	7.8	7.8	7.7	7.7	7.8	7.9	8.0	7.9	7.8	8.0	2	FM20	8/12/12	1620	KB
	LSH	8.1	8.1	8.0	8.2	8.0	8.2	8.0	8.1	8.0	7.8	8.1	3	FM20	8/13/12	1515	DM
	MSH	8.1	7.8	7.9	8.0	7.8	8.0	7.9	8.1	8.1	8.0	8.2	4	FM20	8/14/12	1600	AD
	USC	8.0	8.0	8.0	8.0	7.9	8.0	7.9	8.1	7.9	8.0	8.1	5	FM20	8/15/12	1350	DM
	LSLA	7.9	7.9	7.9	7.9	7.8	8.1	7.9	8.0	7.9	8.0	8.1	6	FM20	8/16/12	1350	DM
	EFSC	7.9	7.9	7.8	7.8	7.7	8.1	7.7	7.9	7.9	7.8	8.0	7	FM20	8/17/12	1035	AD
													8	FM20	8/18/12	1330	DM
													9	FM20	8/19/12	1510	DM
	Replicate	A	B	C	D	E	F	G	H	A	B	C	10	FM20	8/20/12	1015	CW

① DM 8/19/12 C

note: all data transcribed from WET Chemistry Log

AS 9/18/12
QA: AR 9/25/12

Sediment	Conductivity (µS/cm) Day 0	Conductivity (µS/cm) Day 10	Hardness (mg/L as CaCO3) Day 0	Hardness (mg/L as CaCO3) Day 10	Alkalinity (mg/L as CaCO3) Day 0	Alkalinity (mg/L as CaCO3) Day 10	Ammonia (mg/L) Day 0	Ammonia (mg/L) Day 3	Ammonia (mg/L) Day 7	Ammonia (mg/L) Day 10
Sand (cont)	475	496	94	100	61	65	<1.0	<1.0	<1.0	<1.0
Form Sed. (Cont.)	512	524	114	116	65	81	<1.0	<1.0	<1.0	<1.0
LJH	452	517	92	106	56	61	<1.0	<1.0	<1.0	<1.0
LSH	481	580	106	124	72	85	<1.0	<1.0	<1.0	<1.0
MSH	462	504	98	102	62	68	<1.0	<1.0	<1.0	<1.0
USC	469	516	98	112	68	74	<1.0	<1.0	<1.0	<1.0
LSLA	475	549	100	112	74	72	<1.0	<1.0	<1.0	<1.0
EFSC	497	561	128	136	93	97	1.46 Δ	<1.0	<1.0	<1.0
Overlying Water										
RW#10425 (Cl=50.2 mg/L)	457		92		60		<1.0			
RW#10430 (Cl=50.1 mg/L)	472		90		59		<1.0*			
Meter #	15	15	TITR	TITR	TITR	TITR	HA#1	HA#1	HA#1	HA#1
Date:	8/10/12/8/19/12	8/20/12	8/10/12/8/19/12	8/20/12	8/10/12/8/19/12	8/20/12	8/10/12	8/13/12	8/17/12	8/20/12
Time:	1500/0945	1200	1430/0945	1500	1430/0945	1500	1550	1600	1100	1600
Initials:	AS for AMP & AB	AS for AR JC	AS for AMP & AB	AS for AR	AS for AMP & AB	AS for AR	AS for AMP & AB	AS for DM	AS for AR	AS for AR

TRL: (#21)
→ 0.03 (8/10/12) pH=8.1 (8/10/12)
→ <0.02 (8/19/12) pH=8.0 (8/19/12)

QA AS 9/18/12 ε

*measured in source water
Δ measured in a preserved sample on 8/29/12

DAILY TESTING LOG | *H. azteca* | Chronic, Static-Renewal | Project No. 60225262-058-(084-089)

AP: AR 09/25/12 AB 9/18/12

Day -1	Sediment Homogenized @ 1010 to 1110 Overlying water added to chambers @ 1150			Initials/Date: 8/9/12 CW/AB
Day 0	Test organisms added to chambers @ 1510-1530			
	Bath CT = 23.2°C	Range = 23.0-23.4 °C	Feeding: @ 1535 AB	Initials/Date: CW/AB 08/10/12
Day 1	Bath CT = 23.2 °C	Range = 23.0 - 23.4°C	Feeding: @ 1630 KB	Initials/Date: KB 8/11/12
Day 2	Bath CT = 23.2°C	Range = 23.0 - 23.4°C	Feeding: @ 1625 KB	Initials/Date: KB 8/12/12
Day 3	Bath CT = 23.2 °C	Range = 23.0 - 23.4°C	Feeding: @ 1610 DM	Initials/Date: DM 8/13/12
Day 4	Bath CT = 23.2 °C	Range = 23.0 - 23.4 °C	Feeding: @ 1605 AD	Initials/Date: AD 8/14/12
Day 5	Bath CT = 23.2 °C	Range = 23.0 - 23.8 °C	Feeding: @ 1340	Initials/Date: DM 8/15/12
Day 6	Bath CT = 23.2 °C	Range = 23.0 - 23.4 °C	Feeding: @ 1400	Initials/Date: DM 8/16/12
Day 7	Bath CT = 23.2°C	Range = 22.6 - 23.4°C	Feeding: @ 1635	Initials/Date: 8/17/12
Day 8	Bath CT = 23.4 °C	Range = 22.6 - 23.8 °C	Feeding: @ 1335	Initials/Date: DM 8/18/12
Day 9	Bath CT = 23.4 °C	Range = 23.0 - 23.8 °C	Feeding: @ 1520	Initials/Date: DM 8/19/12
Day 10	Bath CT = 23.4 °C	Range = 23.0 - 23.8 °C	Feeding: NA	Initials/Date: CW/AP/KB 8/20/12

TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

cw 09/14/12
QA: MR 09/25/12

Project Number: 60225262-058-(084-089)	Test Substance: Pre-weights	Comments:
Species: Hyalella azteca	Analyst Tare: cw Analyst Gross: cw	Analytical Balance ID: Sart #1
Date/Time of Tare Wt.: 8/10/12 @ 1530	Date/Time of Gross Wt.: 8/17/12 @ 0825	Dried in Oven # 3 from Date: 8/10/12 Time: 1610 to Date: 8/17/12 Time: 0750

Weight Type (Circle): Wet Blot Dry (Dry) (~~>100°C~~) (60-90°C) AFDW (>500°C) Lot or Batch Number: 12-022

Boat No.	Treatment	Rep.	Length Units:	Tare Weight (g)	Gross Weight (g)	Net Weight (g)	Adjusted Net Weight (g)[1]	No. of Orig. Organisms	Mean Wt. per Original Organism (mg)	Mean Wt. per Treatment (mg) (Original)	No. of Surv. Organisms	Mean Wt. per Surviving Organism (mg)	Mean Wt. per Treatment (mg) (Surviving)
	Pre-weights	1		0.94193	0.94210	0.00017		~~15~~ 11 ②			11 ▲		
		2		0.94450	0.94473	0.00023		15			15		
		3		0.94157	0.94186	0.00029		15			15		
		4		0.94769	0.94794	0.00025		15			15		
		5		0.95018	0.95044	0.00026		15			15		
Blank				0.94638	0.94636	-0.00002							
Range													
Mean													

Test Solution Volume: Loading Rate:

[1] Add in weight loss of blank boat, if appropriate.

① cw 8/10/12 cf
② cw 8/17/12 E

▲ Pan was knocked when moving into desiccator and 4 organisms were lost. cw

FCETL QA Form No. 010a
Revision 0
Effective 10/06

TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

qa: AR 09/25/12
qa: CW 09/14/12
AE 8/23/12

Project Number: 60225262-058-(084-089) Species: *Hyalella azteca*

Treatment	Rep	Length Units:	Tare Weight (g)	Gross Weight (g)	Net Weight (g)	Adjusted Net Weight (g)	No of Org. Organisms	Mean Wt./ Original Organism (mg)	Mean Wt./ Treatment (mg) (Original)	Number of Surv. Organisms	Mean Wt./ Surviving Organism (mg)	Mean Wt./ Treatment (mg) (Surviving)
Initial wts	A		0.94193	0.94210	0.00017	0.00019	11	0.017	0.0183	11	0.017	0.0183
	B		0.94450	0.94473	0.00023	0.00025	15	0.017		15	0.017	
	C		0.94157	0.94186	0.00029	0.00031	15	0.021		15	0.021	
	D		0.94769	0.94794	0.00025	0.00027	15	0.018		15	0.018	
	E		0.95018	0.95044	0.00026	0.00028	15	0.019		15	0.019	
Blank			0.94638	0.94636	-0.00002							

Summary Statistics for Growth Data (dry wt per original)

Treatment	N	Min	Max	Mean	SD	C.V.
Initial wts	5	0.017	0.021	0.0183	0.0015	8.459%

Summary Statistics for Growth Data (dry wt per surviving organism)

Treatment	N	Min	Max	Mean	SD	C.V.
Initial wts	5	0.017	0.021	0.0183	0.0015	8.459%

FCETL QA Form No. 010
Revision 5
Effective 08/99

TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

CW 09/14/12
AA: AR 09/25/12

Project Number: 00225262-058-(084-089) | Test Substance: Sediment

Species: H. azteca | Analyst Tare: CW | Analyst Gross: CW

Date/Time of Tare Wt.: 08/20/12 @1230-1320 | Date/Time of Gross Wt.: 08/22/12 @1115-1315

Comments:
Analytical Balance ID: Sart #1
Dried in Oven # 3 from Date: 08/20/12 Time: 1450
to Date: 08/22/12 Time: 0840

Weight Type (Circle): Wet Blot Dry Dry (60-90°C) (>100°C) AFDW (>500°C) | Lot or Batch Number: 12-022

Boat No.	Treatment	Rep.	Length Units:	Tare Weight (g)	Gross Weight (g)	Net Weight (g)	Adjusted Net Weight (g)[1]	No. of Orig. Organisms	Mean Wt. per Original Organism (mg)	Mean Wt. per Treatment (mg) (Original)	No. of Surv. Organisms	Mean Wt. per Surviving Organism (mg)	Mean Wt. per Treatment (mg) (Surviving)
	(control) Sand	A		0.93169	0.93246	0.00077					10		
		B		0.93758①	0.93848	0.00097 ✱					10		
		C		0.94671	0.94735	0.00064					8		
		D		0.94757	0.94835	0.00078					10		
		E		0.94344	0.94405	0.00061		9			9 ▲		
		F		0.93778	0.93862	0.00084					10		
		G		0.93100	0.93188②[88]	0.00088					10		
		H		0.92728	0.92804	0.00076		9			9 ●		
	(control) Form. Sed.	A		0.92539	0.92595	0.00056 ✱					10		
		B		0.94624	0.94669	0.00045					7		
		C		0.92820①[20]	0.92860	0.00040					7		
		D		0.94663	0.94729	0.00066 ✱					10		
Blank				0.93359①[59]	0.93355	-0.00004							
Range													
Mean													

Test Solution Volume: | Loading Rate:

[1] Add in weight loss of blank boat, if appropriate.

①CW 8/20/12 E ②CW 08/22/12 E; re-weighed pan

●one organism was injured during takedown process and was excluded from dry wt. analysis

▲one organism was lost during transfer from oven to dessicator.

✱removed organisms from original pan and re-weighed on a new pan and got the same net weight.

TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

cw 09/14/12
QA: AR 09/25/12

Project Number: 60225262-050-(084-089) | Test Substance: Sediment | Comments: Analytical Balance ID: Sart #1

Species: H. azteca | Analyst Tare: cw | Analyst Gross: cw | Dried in Oven # 3 from Date: 08/20/12 Time: 1450 to Date: 08/22/12 Time: 0840

Date/Time of Tare Wt.: 08/20/12 @ 1230 - 1320 | Date/Time of Gross Wt.: 08/22/12 @ 1115 - 1315

Weight Type (Circle): Wet Blot Dry (Dry (60-90°C) / Dry (>100°C)) AFDW (>500°C) | Lot or Batch Number: 12-022

Boat No.	Treatment	Rep.	Length Units:	Tare Weight (g)	Gross Weight (g)	Net Weight (g)	Adjusted Net Weight (g)[1]	No. of Orig. Organisms	Mean Wt. per Original Organism (mg)	Mean Wt. per Treatment (mg) (Original)	No. of Surv. Organisms	Mean Wt. per Surviving Organism (mg)	Mean Wt. per Treatment (mg) (Surviving)
	(control) Form Sed.	E		0.94365	0.94414	0.00049					10		
		F		0.94006	0.94056	0.00050					10		
		G		0.92886	0.92949	0.00063 ②					9		
		H		0.93050	0.93105	0.00055					10		
	LJH	A		0.93916	0.93990	0.00074					10		
		B		0.94254	0.94323	0.00069					10		
		C		0.94702	0.94773	0.00071					10		
		D		0.946 27	0.946 88	0.000 61					10		
		E		0.94755	0.94809	0.00054					9		
		F		0.94702	0.94769	0.00067					10		
		G		0.93450	0.93532	0.00082 ②					8 ④		
		H		0.93164	0.93209	0.00045					9 *		
Blank													
Range													
Mean													

Test Solution Volume: | Loading Rate:

[1] Add in weight loss of blank boat, if appropriate.

① cw 08/20/12 E ② cw 08/22/12 E; re-weighed pan

② Removed organisms from original pan and weighed on a new tared Pan. Net Weight remained the same.
* 2 very small organisms ④ 3 Large organisms

TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

cw 09/14/12
QA: AR09/25/12

Project Number: 60225262-058-(084-089) Test Substance: Sediment

Species: H. azteca

Analyst Tare: cw Analyst Gross: cw

Date/Time of Tare Wt.: 08/20/12 @1230 - 1320

Date/Time of Gross Wt.: 08/22/12 @1115 - 1315

Comments:
Analytical Balance ID: Sart #1
Dried in Oven # 3 from Date: 08/20/12 Time: 1450
to Date: 08/22/12 Time: 0840

Weight Type (Circle): Wet Blot Dry (60-90°C) Dry (>100°C) AFDW (>500°C)

Lot or Batch Number: 12-022

Boat No.	Treatment	Rep.	Length Units:	Tare Weight (g)	Gross Weight (g)	Net Weight (g)	Adjusted Net Weight (g)[1]	No. of Orig. Organisms	Mean Wt. per Original Organism (mg)	Mean Wt. per Treatment (mg) (Original)	No. of Surv. Organisms	Mean Wt. per Surviving Organism (mg)	Mean Wt. per Treatment (mg) (Surviving)
	LSH	A		0.94005	0.94085	0.00080					10		
		B		0.93956	0.94047	0.00091					10		
		C		0.93512	0.93590	0.00078					10		
		D		0.94621	0.94707	0.00086					10		
		E		0.94469	0.94559	0.00090					10		
		F		0.94040	0.94113	0.00073					10*		
		G		0.92564	0.92652	0.00088 ⑧					9		
		H		0.92713	0.92795	0.00082					10		
	MSH	A		0.93101	0.93182	0.00081					9		
		B		0.92765	0.92830	0.00065 ⑧②k					10Δ		
		C		0.92202	0.92281	0.00079					10		
		D		0.93663	0.93730	0.00067					8		
Blank													
Range													
Mean													

Test Solution Volume:

Loading Rate:

[1] Add in weight loss of blank boat, if appropriate.

①cw 08/22/12 E; re-weighed pan
②cw 08/22/12 wp

*2 very small organisms Δorganisms visibly smaller

⑧Removed organisms from original pan and re-weighed in a new tared pan. Net weight did not change.

TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

CW 09/14/12
QA: AR 09/25/12

Project Number: 60225262-058-084-089
Test Substance: Sediment
Species: H. azteca
Analyst Tare: CW Analyst Gross: CW
Date/Time of Tare Wt.: 08/20/12 @ 1230 - 1320
Date/Time of Gross Wt.: 08/22/12 @ 1115 - 1315
Comments:
Analytical Balance ID: Sart #1
Dried in Oven # 3 from Date: 08/20/12 Time: 1450
to Date: 08/22/12 Time: 0840

Weight Type (Circle): Wet Blot Dry (Dry (60-90°C) AFDW (>500°C)
Lot or Batch Number: 12-022

Boat No.	Treatment	Rep.	Length Units:	Tare Weight (g)	Gross Weight (g)	Net Weight (g)	Adjusted Net Weight (g)[1]	No. of Orig. Organisms	Mean Wt. per Original Organism (mg)	Mean Wt. per Treatment (mg) (Original)	No. of Surv. Organisms	Mean Wt. per Surviving Organism (mg)	Mean Wt. per Treatment (mg) (Surviving)
	MSH	E		0.92769	0.92831	0.00062					10 *		
		F		0.92657	0.92733	0.00076					10		
		G		0.91700	0.91788	0.00088 (*)					10		
		H		0.91740	0.91791	0.00051					7		
	USC	A		0.91800	0.91905	0.00105 (*)					10 (A)		
		B		0.92199	0.92287	0.00088 (*)					10		
		C		0.92328	0.92404	0.00076 (*)					10		
		D		0.92342	0.92407	0.00065					9		
		E		0.92551	0.92619	0.00068					10 *		
		F		0.92722	0.92808	0.00086					10 (1)		
		G		0.92905	0.92974	0.00069					10 *		
		H		0.92489	0.92553	0.00064 (*)					10 *		
Blank													
Range													
Mean													

Test Solution Volume:
Loading Rate:

[1] Add in weight loss of blank boat, if appropriate.

CW 08/22/12 E

*3 very small organisms (A) organisms visibly large
(*) Removed organisms from original pan and re-weighed on a new tared Pan. Net weight did not change.
(1) 2 very small organisms

FCETL QA Form No. 010
Revision 5
Effective 08/99

TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

cw 09/14/12
QA: AR 09/25/12

Project Number: 0022S262-088-089 (084) | Test Substance: Sediment | Comments:
Species: H. azteca | Analyst Tare: cw Analyst Gross: cw | Analytical Balance ID: Sart #1
Date/Time of Tare Wt.: 08/20/12 @ 1230-1320 | Date/Time of Gross Wt.: 08/22/12 @ 1115-1315 | Dried in Oven # 3 from Date: 08/20/12 Time: 1450 to Date: 08/22/12 Time: 0840

Weight Type (Circle): Wet Blot Dry (60-90°C) Dry (>100°C) AFDW (>500°C) | Lot or Batch Number: 12-022

Boat No.	Treatment	Rep.	Length Units:	Tare Weight (g)	Gross Weight (g)	Net Weight (g)	Adjusted Net Weight (g)[1]	No. of Orig. Organisms	Mean Wt. per Original Organism (mg)	Mean Wt. per Treatment (mg) (Original)	No. of Surv. Organisms	Mean Wt. per Surviving Organism (mg)	Mean Wt. per Treatment (mg) (Surviving)
	LSLA	A		0.93206	0.93315	0.00109					10 Ⓐ		
		B		0.93683	0.93764	0.00081					10		
		C		0.94179	0.94275	0.00096					10		
		D		0.94462	0.94552	0.00090					10		
		E		0.94596	0.94674	0.00078					9		
		F		0.94679	0.94771	0.00092					10		
		G		0.94089	0.94181	0.00092					10		
		H		0.93311	0.93399	0.00088					10		
	EFSC	A		0.92987	0.93048	0.00061					10		
		B		0.93466	0.93511	0.00045					8		
		C		0.93144	0.93206	0.00062					10		
		D		0.93077	0.93137	0.00060					10		
Blank													
Range													
Mean													

Test Solution Volume: | Loading Rate:

[1] Add in weight loss of blank boat, if appropriate.

Ⓐ organisms visibly very large

FCETL QA Form No. 010
Revision 5
Effective 08/99

TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

cw 09/14/12
QA: AR 09/25/12

Project Number: 60225262-058-089 084 | Test Substance: Sediment

Species: H. azteca | Analyst Tare: cw | Analyst Gross: cw

Date/Time of Tare Wt.: 08/20/12 @ 1230 - 1320 | Date/Time of Gross Wt.: 08/22/12 @ 1115 - 1315

Comments:
Analytical Balance ID: Sart #1
Dried in Oven # 3 from Date: 08/20/12 Time: 1450
to Date: 08/22/12 Time: 0840

Weight Type (Circle): Wet Blot Dry Dry (60-90°C) (>100°C) AFDW (>500°C)

Lot or Batch Number: 12-022

Boat No.	Treatment	Rep.	Length Units:	Tare Weight (g)	Gross Weight (g)	Net Weight (g)	Adjusted Net Weight (g)[1]	No. of Orig. Organisms	Mean Wt. per Original Organism (mg)	Mean Wt. per Treatment (mg) (Original)	No. of Surv. Organisms	Mean Wt. per Surviving Organism (mg)	Mean Wt. per Treatment (mg) (Surviving)
	EFSC	E		0.92648	0.92696	0.00048					10*		
		F		0.92586	0.92631	0.00045					9@		
		G		0.92668	0.92726	0.00058					10*		
		H		0.93488	0.93559	0.00071					10		
Blank													
Range													
Mean													

Test Solution Volume:

Loading Rate:

[1] Add in weight loss of blank boat, if appropriate.

* 1 very small organism @ 2 small organisms

QA: CW 09/14/12
QA: MC 09/25/12

TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

Project Number: 60225262-058-(084-089) Species: *Hyalella azteca*

AS 8/23/12

Treatment	Rep	Length Units:	Tare Weight (g)	Gross Weight (g)	Net Weight (g)	Adjusted Net Weight (g)	No of Orig. Organisms	Mean Wt./ Original Organism (mg)	Mean Wt./ Treatment (mg) (Original)	Number of Surv. Organisms	Mean Wt./ Surviving Organism (mg)	Mean Wt./ Treatment (mg) (Surviving)
Sand Control	A		0.93169	0.93246	0.00077	0.00081	10	0.081		10	0.081	
	B		0.93751	0.93848	0.00097	0.00101	10	0.101		10	0.101	
	C		0.94671	0.94735	0.00064	0.00068	10	0.068		8	0.085	
	D		0.94757	0.94835	0.00078	0.00082	10	0.082		10	0.082	
	E		0.94344	0.94405	0.00061	0.00065	9	0.072		9	0.072	
	F		0.93778	0.93862	0.00084	0.00088	10	0.088		10	0.088	
	G		0.93100	0.93188	0.00088	0.00092	10	0.092		10	0.092	
	H		0.92728	0.92804	0.00076	0.00080	9	0.089	0.0841	9	0.089	0.0863
Blank			0.93359	0.93355	-0.00004							

Project Number: 60225262-058-(084-089) Species: *Hyalella azteca*

Summary Statistics for Growth Data (dry wt per original organism)

Treatment	N	Min	Max	Mean	SD	C.V.
Sand Control	8	0.068	0.101	0.0841	0.0107	12.709%

Summary Statistics for Growth Data (dry wt per surviving organism)

Treatment	N	Min	Max	Mean	SD	C.V.
Sand Control	8	0.072	0.101	0.0863	0.0085	9.842%

QA: aw 09/14/12
QA: MR 09/25/12

AS 8/23/12

TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

Project Number: 60225262-058-(084-089) Species: *Hyalella azteca*

Treatment	Rep	Length Units:	Tare Weight (g)	Gross Weight (g)	Net Weight (g)	Adjusted Net Weight (g)	No of Orig. Organisms	Mean Wt./ Original Organism (mg)	Mean Wt./ Treatment (mg) (Original)	Number of Surv. Organisms	Mean Wt./ Surviving Organism (mg)	Mean Wt./ Treatment (mg) (Surviving)
Form Sed Control	A		0.92539	0.92595	0.00056	0.00060	10	0.060		10	0.060	
	B		0.94624	0.94669	0.00045	0.00049	10	0.049		7	0.070	
	C		0.92820	0.92860	0.00040	0.00044	10	0.044		7	0.063	
	D		0.94663	0.94729	0.00066	0.00070	10	0.070		10	0.070	
	E		0.94365	0.94414	0.00049	0.00053	10	0.053		10	0.053	
	F		0.94006	0.94056	0.00050	0.00054	10	0.054		10	0.054	
	G		0.92886	0.92949	0.00063	0.00067	10	0.067		9	0.074	
	H		0.93050	0.93105	0.00055	0.00059	10	0.059	0.0570	10	0.059	0.0629
Blank			0.93359	0.93355	-0.00004							

Project Number: 60225262-058-(084-089) Species: *Hyalella azteca*

Summary Statistics for Growth Data (dry wt per original organism)

Treatment	N	Min	Max	Mean	SD	C.V.
Form Sed Control	8	0.044	0.070	0.0570	0.0088	15.409%

Summary Statistics for Growth Data (dry wt per surviving organism)

Treatment	N	Min	Max	Mean	SD	C.V.
Form Sed Control	8	0.053	0.074	0.0629	0.0079	12.529%

QA:CW 09/14/12
QA: AR 09/25/12

TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

Project Number: 60225262-058-(084-089) Species: *Hyalella azteca*

AS 8/23/12

Treatment	Rep	Length Units:	Tare Weight (g)	Gross Weight (g)	Net Weight (g)	Adjusted Net Weight (g)	No of Orig. Organisms	Mean Wt./ Original Organism (mg)	Mean Wt./ Treatment (mg) (Original)	Number of Surv. Organisms	Mean Wt./ Surviving Organism (mg)	Mean Wt./ Treatment (mg) (Surviving)
LJH	A		0.93916	0.93990	0.00074	0.00078	10	0.078		10	0.078	
	B		0.94254	0.94323	0.00069	0.00073	10	0.073		10	0.073	
	C		0.94702	0.94773	0.00071	0.00075	10	0.075		10	0.075	
	D		0.94627	0.94695	0.00068	0.00072	10	0.072		10	0.072	
	E		0.94755	0.94809	0.00054	0.00058	10	0.058		9	0.064	
	F		0.94702	0.94769	0.00067	0.00071	10	0.071		10	0.071	
	G		0.93450	0.93532	0.00082	0.00086	10	0.086		8	0.108	
	H		0.93164	0.93209	0.00045	0.00049	10	0.049	0.0703	9	0.054	0.0744
Blank			0.93359	0.93355	-0.00004							

Project Number: 60225262-058-(084-089) Species: *Hyalella azteca*

Summary Statistics for Growth Data (dry wt per original organism)

Treatment	N	Min	Max	Mean	SD	C.V.
LJH	8	0.049	0.086	0.0703	0.0116	16.526%

Summary Statistics for Growth Data (dry wt per surviving organism)

Treatment	N	Min	Max	Mean	SD	C.V.
LJH	8	0.054	0.108	0.0744	0.0152	20.476%

QA: CW 09/14/12
QA: AR 09/25/12
AS 8/23/12

TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

Project Number: 60225262-058-(084-089) Species: *Hyalella azteca*

Treatment	Rep	Length Units:	Tare Weight (g)	Gross Weight (g)	Net Weight (g)	Adjusted Net Weight (g)	No of Orig. Organisms	Mean Wt./ Original Organism (mg)	Mean Wt./ Treatment (mg) (Original)	Number of Surv. Organisms	Mean Wt./ Surviving Organism (mg)	Mean Wt./ Treatment (mg) (Surviving)
LSH	A		0.94005	0.94085	0.00080	0.00084	10	0.084		10	0.084	
	B		0.93956	0.94047	0.00091	0.00095	10	0.095		10	0.095	
	C		0.93512	0.93590	0.00078	0.00082	10	0.082		10	0.082	
	D		0.94621	0.94707	0.00086	0.00090	10	0.090		10	0.090	
	E		0.94469	0.94559	0.00090	0.00094	10	0.094		10	0.094	
	F		0.94040	0.94113	0.00073	0.00077	10	0.077		10	0.077	
	G		0.92564	0.92652	0.00088	0.00092	10	0.092		9	0.102	
	H		0.92713	0.92795	0.00082	0.00086	10	0.086	0.0875	10	0.086	0.0888
Blank			0.93359	0.93355	-0.00004							

Project Number: 60225262-058-(084-089) Species: *Hyalella azteca*

Summary Statistics for Growth Data (dry wt per original organism)

Treatment	N	Min	Max	Mean	SD	C.V.
LSH	8	0.077	0.095	0.0875	0.0063	7.228%

Summary Statistics for Growth Data (dry wt per surviving organism)

Treatment	N	Min	Max	Mean	SD	C.V.
LSH	8	0.077	0.102	0.0888	0.0081	9.165%

QA: aw 09/14/12
QA: AR 09/25/12
AR 8/29/12

TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

Project Number: 60225262-058-(084-089) Species: *Hyalella azteca*

Treatment	Rep	Length Units:	Tare Weight (g)	Gross Weight (g)	Net Weight (g)	Adjusted Net Weight (g)	No of Orig. Organisms	Mean Wt./ Original Organism (mg)	Mean Wt./ Treatment (mg) (Original)	Number of Surv. Organisms	Mean Wt./ Surviving Organism (mg)	Mean Wt./ Treatment (mg) (Surviving)
MSH	A		0.93101	0.93182	0.00081	0.00085	10	0.085		9	0.094	
	B		0.92765	0.92830	0.00065	0.00069	10	0.069		10	0.069	
	C		0.92202	0.92281	0.00079	0.00083	10	0.083		10	0.083	
	D		0.93663	0.93730	0.00067	0.00071	10	0.071		8	0.089	
	E		0.92769	0.92831	0.00062	0.00066	10	0.066		10	0.066	
	F		0.92657	0.92733	0.00076	0.00080	10	0.080		10	0.080	
	G		0.91700	0.91788	0.00088	0.00092	10	0.092		10	0.092	
	H		0.91740	0.91791	0.00051	0.00055	10	0.055	0.0751	7	0.079	0.0815
Blank			0.93359	0.93355	-0.00004							

Project Number: 60225262-058-(084-089) Species: *Hyalella azteca*

Summary Statistics for Growth Data (dry wt per original organism)

Treatment	N	Min	Max	Mean	SD	C.V.
MSH	8	0.055	0.092	0.0751	0.0120	15.996%

Summary Statistics for Growth Data (dry wt per surviving organism)

Treatment	N	Min	Max	Mean	SD	C.V.
MSH	8	0.066	0.094	0.0815	0.0103	12.620%

QA:CW 09/14/12
QA: AR 09/25/12
AS 8/23/12

TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

Project Number: 60225262-058-(084-089) Species: *Hyalella azteca*

Treatment	Rep	Length Units:	Tare Weight (g)	Gross Weight (g)	Net Weight (g)	Adjusted Net Weight (g)	No of Orig. Organisms	Mean Wt./ Original Organism (mg)	Mean Wt./ Treatment (mg) (Original)	Number of Surv. Organisms	Mean Wt./ Surviving Organism (mg)	Mean Wt./ Treatment (mg) (Surviving)
USC	A		0.91800	0.91905	0.00105	0.00109	10	0.109		10	0.109	
	B		0.92199	0.92287	0.00088	0.00092	10	0.092		10	0.092	
	C		0.92328	0.92404	0.00076	0.00080	10	0.080		10	0.080	
	D		0.92342	0.92407	0.00065	0.00069	10	0.069		9	0.077	
	E		0.92551	0.92619	0.00068	0.00072	10	0.072		10	0.072	
	F		0.92722	0.92808	0.00086	0.00090	10	0.090		10	0.090	
	G		0.92905	0.92974	0.00069	0.00073	10	0.073		10	0.073	
	H		0.92489	0.92553	0.00064	0.00068	10	0.068	0.0816	10	0.068	0.0826
Blank			0.93359	0.93355	-0.00004							

Project Number: 60225262-058-(084-089) Species: *Hyalella azteca*

Summary Statistics for Growth Data (dry wt per original organism)

Treatment	N	Min	Max	Mean	SD	C.V.
USC	8	0.068	0.109	0.0816	0.0144	17.583%

Summary Statistics for Growth Data (dry wt per surviving organism)

Treatment	N	Min	Max	Mean	SD	C.V.
USC	8	0.068	0.109	0.0826	0.0136	16.500%

QA: CW 09/14/12
QA: AK 09/25/12
QS 8/23/12

TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

Project Number: 60225262-058-(084-089) Species: *Hyalella azteca*

Treatment	Rep	Length Units:	Tare Weight (g)	Gross Weight (g)	Net Weight (g)	Adjusted Net Weight (g)	No of Orig. Organisms	Mean Wt./ Original Organism (mg)	Mean Wt./ Treatment (mg) (Original)	Number of Surv. Organisms	Mean Wt./ Surviving Organism (mg)	Mean Wt./ Treatment (mg) (Surviving)
LSLA	A		0.93206	0.93315	0.00109	0.00113	10	0.113		10	0.113	
	B		0.93683	0.93764	0.00081	0.00085	10	0.085		10	0.085	
	C		0.94179	0.94275	0.00096	0.00100	10	0.100		10	0.100	
	D		0.94462	0.94552	0.00090	0.00094	10	0.094		10	0.094	
	E		0.94596	0.94674	0.00078	0.00082	10	0.082		9	0.091	
	F		0.94679	0.94771	0.00092	0.00096	10	0.096		10	0.096	
	G		0.94089	0.94181	0.00092	0.00096	10	0.096		10	0.096	
	H		0.93311	0.93399	0.00088	0.00092	10	0.092	0.0948	10	0.092	0.0959
Blank			0.93359	0.93355	-0.00004							

Project Number: 60225262-058-(084-089) Species: *Hyalella azteca*

Summary Statistics for Growth Data (dry wt per original organism)

Treatment	N	Min	Max	Mean	SD	C.V.
LSLA	8	0.082	0.113	0.0948	0.0095	10.009%

Summary Statistics for Growth Data (dry wt per surviving organism)

Treatment	N	Min	Max	Mean	SD	C.V.
LSLA	8	0.085	0.113	0.0959	0.0082	8.544%

QA:CW 09/14/12
QA: AR 09/25/12
AR 8/23/18

TEST ORGANISM LENGTHS, WEIGHTS, AND LOADING

Project Number: 60225262-058-(084-089) Species: *Hyalella azteca*

Treatment	Rep	Length Units:	Tare Weight (g)	Gross Weight (g)	Net Weight (g)	Adjusted Net Weight (g)	No of Orig. Organisms	Mean Wt./ Original Organism (mg)	Mean Wt./ Treatment (mg) (Original)	Number of Surv. Organisms	Mean Wt./ Surviving Organism (mg)	Mean Wt./ Treatment (mg) (Surviving)
EFSC	A		0.92987	0.93048	0.00061	0.00065	10	0.065		10	0.065	
	B		0.93466	0.93511	0.00045	0.00049	10	0.049		8	0.061	
	C		0.93144	0.93206	0.00062	0.00066	10	0.066		10	0.066	
	D		0.93077	0.93137	0.00060	0.00064	10	0.064		10	0.064	
	E		0.92648	0.92696	0.00048	0.00052	10	0.052		10	0.052	
	F		0.92586	0.92631	0.00045	0.00049	10	0.049		9	0.054	
	G		0.92668	0.92726	0.00058	0.00062	10	0.062		10	0.062	
	H		0.93488	0.93559	0.00071	0.00075	10	0.075	0.0603	10	0.075	0.0625
Blank			0.93359	0.93355	-0.00004							

Project Number: 60225262-058-(084-089) Species: *Hyalella azteca*

Summary Statistics for Growth Data (dry wt per original organism)

Treatment	N	Min	Max	Mean	SD	C.V.
EFSC	8	0.049	0.075	0.0603	0.0093	15.513%

Summary Statistics for Growth Data (dry wt per surviving organism)

Treatment	N	Min	Max	Mean	SD	C.V.
EFSC	8	0.052	0.075	0.0625	0.0071	11.384%

Coeur Alaska, Inc.
Hyalella azteca 10-day Sub Chronic Study
List Data and Summary for Growth Per ORIGINAL Organism-Controls only

aa:aw 09/14/12
aa: AR 09/25/12
QC 8/24/12

Title: 60225262-058-(084-089) H.azteca-Growth PO-controls
File: 0584cgpo.dat Transform: NO TRANSFORMATION
Number of Groups: 2

GRP	IDENTIFICATION	REP	VALUE	TRANS VALUE
1	Sand	1	0.0810	0.0810
1	Sand	2	0.1010	0.1010
1	Sand	3	0.0680	0.0680
1	Sand	4	0.0820	0.0820
1	Sand	5	0.0720	0.0720
1	Sand	6	0.0880	0.0880
1	Sand	7	0.0920	0.0920
1	Sand	8	0.0890	0.0890
2	Form Sed	1	0.0600	0.0600
2	Form Sed	2	0.0490	0.0490
2	Form Sed	3	0.0440	0.0440
2	Form Sed	4	0.0700	0.0700
2	Form Sed	5	0.0530	0.0530
2	Form Sed	6	0.0540	0.0540
2	Form Sed	7	0.0670	0.0670
2	Form Sed	8	0.0590	0.0590

Title: 60225262-058-(084-089) H.azteca-Growth PO-controls
File: 0584cgpo.dat Transform: NO TRANSFORMATION

Summary Statistics on Data TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	Sand	8	0.0680	0.1010	0.0841
2	Form Sed	8	0.0440	0.0700	0.0570

Title: 60225262-058-(084-089) H.azteca-Growth PO-controls
File: 0584cgpo.dat Transform: NO TRANSFORMATION

Summary Statistics on Data TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	Sand	0.0001	0.0107	0.0038	12.7623
2	Form Sed	0.0001	0.0088	0.0031	15.4089

Coeur Alaska, Inc.
Hyalella azteca 10-day Sub Chronic Study
Analysis of Growth Per ORIGINAL Organism-Controls only (Sand and Form Sed)

QA: aw 09/14/12
QA: AR 09/25/12
AS 8/24/12

Title: 60225262-058-(084-089) H.azteca-Growth PO-controls
File: 0584cgpo.dat Transform: NO TRANSFORMATION

Shapiro - Wilk's Test for Normality

D = 0.0013
W = 0.9794

Critical W = 0.8440 (alpha = 0.01 , N = 16)
W = 0.8870 (alpha = 0.05 , N = 16)

Data PASS normality test (alpha = 0.01). Continue analysis.

Title: 60225262-058-(084-089) H.azteca-Growth PO-controls
File: 0584cgpo.dat Transform: NO TRANSFORMATION

F-Test for Equality of Two Variances

GROUP	IDENTIFICATION	VARIANCE	F
1	Sand	0.0001	
2	Form Sed	0.0001	1.4942

(p-value = 0.6093)

Critical F = 8.8854 (P=0.01, 7, 7)
4.9949 (P=0.05, 7, 7)

Since F <= Critical F, FAIL TO REJECT Ho: Equal Variances (alpha = 0.01).

Coeur Alaska, Inc.
Hyalella azteca 10-day Sub Chronic Study
Analysis of Growth Per ORIGINAL Organism-Controls only (Sand and Form Sed)

QA: AR 9/25/12
QA: CW 09/14/12
QA 8/24/12

Title: 60225262-058-(084-089) H.azteca-Growth PO-controls
File: 0584cgpo.dat Transform: NO TRANSFORMATION

ANOVA Table

SOURCE	DF	SS	MS	F
Between	1	0.0029	0.0029	30.5915
Within (Error)	14	0.0013	0.0001	
Total	15	0.0043		

(p-value = 0.0001)

Critical F = 8.8616 (alpha = 0.01, df = 1,14)
= 4.6001 (alpha = 0.05, df = 1,14)

Since F > Critical F REJECT Ho: All equal (alpha = 0.05)

Title: 60225262-058-(084-089) H.azteca-Growth PO-controls
File: 0584cgpo.dat Transform: NO TRANSFORMATION

2 Sample t-Test - TABLE 1 OF 2 Ho: Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	t STAT	SIG 0.05
1	Sand	0.0841	0.0841		
2	Form Sed	0.0570	0.0570	5.5310	*

Equal Var: t critical value = 1.7613 (1 Tailed, alpha = 0.05, df = 14)
(p-value = 0.0000)

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG 0.05
1	Sand	0.0841	0.0841		
2	Form Sed	0.0570	0.0570	5.5310	*

Unequal Var: t critical value = 1.7709 (1 Tailed, alpha = 0.05, df = 13)
(p-value = 0.0000)

2 Sample t-Test - TABLE 2 OF 2 Ho: Control<Treatment

Equal Variances:

GROUP	IDENTIFICATION	NUM OF REPS	MIN SIG DIFF (IN ORIG. UNITS)	% OF CONTROL	DIFFERENCE FROM CONTROL
1	Sand	8			
2	Form Sed	8	0.0086	10.3	0.0271

Unequal Variances:

GROUP	IDENTIFICATION	NUM OF REPS	MIN SIG DIFF (IN ORIG. UNITS)	% OF CONTROL	DIFFERENCE FROM CONTROL
1	Sand	8			
2	Form Sed	8	0.0087	10.3	0.0271

Coeur Alaska, Inc.
Hyalella azteca 10-day Sub Chronic Study
List Data and Summary of Growth Per SURVIVING Organism-Controls only

AS 8/24/12
QA: CW 09/14/12
QA: MC 09/25/12

Title: 60225262-058-(084-089) H.azteca-Growth PS-controls
File: 0584cgps.dat Transform: NO TRANSFORMATION
Number of Groups: 2

GRP	IDENTIFICATION	REP	VALUE	TRANS VALUE
1	Sand	1	0.0810	0.0810
1	Sand	2	0.1010	0.1010
1	Sand	3	0.0850	0.0850
1	Sand	4	0.0820	0.0820
1	Sand	5	0.0720	0.0720
1	Sand	6	0.0880	0.0880
1	Sand	7	0.0920	0.0920
1	Sand	8	0.0890	0.0890
2	Form Sed	1	0.0600	0.0600
2	Form Sed	2	0.0700	0.0700
2	Form Sed	3	0.0630	0.0630
2	Form Sed	4	0.0700	0.0700
2	Form Sed	5	0.0530	0.0530
2	Form Sed	6	0.0540	0.0540
2	Form Sed	7	0.0740	0.0740
2	Form Sed	8	0.0590	0.0590

Title: 60225262-058-(084-089) H.azteca-Growth PS-controls
File: 0584cgps.dat Transform: NO TRANSFORMATION

Summary Statistics on Data TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	Sand	8	0.0720	0.1010	0.0862
2	Form Sed	8	0.0530	0.0740	0.0629

Title: 60225262-058-(084-089) H.azteca-Growth PS-controls
File: 0584cgps.dat Transform: NO TRANSFORMATION

Summary Statistics on Data TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	Sand	0.0001	0.0085	0.0030	9.9109
2	Form Sed	0.0001	0.0078	0.0028	12.3909

Coeur Alaska, Inc.
Hyalella azteca 10-day Sub Chronic Study
Analysis of Growth Per SURVIVING Organism-Controls only (Sand and Form Sed)

DS 8/24/12
QA'ed 09/14/12
QA: MC 09/25/12

Title: 60225262-058-(084-089) H.azteca-Growth PS-controls
File: 0584cgps.dat Transform: NO TRANSFORMATION

Shapiro - Wilk's Test for Normality

D = 0.0009
W = 0.9882

Critical W = 0.8440 (alpha = 0.01 , N = 16)
W = 0.8870 (alpha = 0.05 , N = 16)

Data PASS normality test (alpha = 0.01). Continue analysis.

Title: 60225262-058-(084-089) H.azteca-Growth PS-controls
File: 0584cgps.dat Transform: NO TRANSFORMATION

F-Test for Equality of Two Variances

GROUP	IDENTIFICATION	VARIANCE	F
1	Sand	0.0001	
2	Form Sed	0.0001	1.2039

(p-value = 0.8129)

Critical F = 8.8854 (P=0.01, 7, 7)
4.9949 (P=0.05, 7, 7)

Since F <= Critical F, FAIL TO REJECT Ho: Equal Variances (alpha = 0.01).

Coeur Alaska, Inc.
Hyalella azteca 10-day Sub Chronic Study
Analysis of Growth Per SURVIVING Organism-Controls only (Sand and Form Sed)

08/24/12
QA: CW 09/14/12
QA: MR 09/25/12

Title: 60225262-058-(084-089) H.azteca-Growth PS-controls
File: 0584cgps.dat Transform: NO TRANSFORMATION

ANOVA Table

SOURCE	DF	SS	MS	F
Between	1	0.0022	0.0022	32.6769
Within (Error)	14	0.0009	0.0001	
Total	15	0.0031		

(p-value = 0.0001)

Critical F = 8.8616 (alpha = 0.01, df = 1,14)
= 4.6001 (alpha = 0.05, df = 1,14)

Since F > Critical F REJECT Ho: All equal (alpha = 0.05)

2 Sample t-Test - TABLE 1 OF 2 Ho: Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	t STAT	SIG 0.05
1	Sand	0.0862	0.0862		
2	Form Sed	0.0629	0.0629	5.7164	*

Equal Var: t critical value = 1.7613 (1 Tailed, alpha = 0.05, df = 14)
(p-value = 0.0000)

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG 0.05
1	Sand	0.0862	0.0862		
2	Form Sed	0.0629	0.0629	5.7164	*

Unequal Var: t critical value = 1.7613 (1 Tailed, alpha = 0.05, df = 14)
(p-value = 0.0000)

2 Sample t-Test - TABLE 2 OF 2 Ho: Control<Treatment

Equal Variances:

GROUP	IDENTIFICATION	NUM OF REPS	MIN SIG DIFF (IN ORIG. UNITS)	% OF CONTROL	DIFFERENCE FROM CONTROL
1	Sand	8			
2	Form Sed	8	0.0072	8.4	0.0234

Unequal Variances:

GROUP	IDENTIFICATION	NUM OF REPS	MIN SIG DIFF (IN ORIG. UNITS)	% OF CONTROL	DIFFERENCE FROM CONTROL
1	Sand	8			
2	Form Sed	8	0.0072	8.4	0.0234

Coeur Alaska, Inc.
Hyalella azteca 10-day Sub Chronic Study
List Data for Growth Per SURVIVING Organism - Form Sediment as control

AM.CW 09/14/12
DS 8/24/12

Title: 60225262-058-(084-089)-H.azteca-Growth PS-Form Sed
File: 0584FGPS.DAT Transform: NO TRANSFORMATION
Number of Groups: 7

GRP	IDENTIFICATION	REP	VALUE	TRANS VALUE
1	Form Sed	1	0.0600	0.0600
1	Form Sed	2	0.0700	0.0700
1	Form Sed	3	0.0630	0.0630
1	Form Sed	4	0.0700	0.0700
1	Form Sed	5	0.0530	0.0530
1	Form Sed	6	0.0540	0.0540
1	Form Sed	7	0.0740	0.0740
1	Form Sed	8	0.0590	0.0590
2	LJH	1	0.0780	0.0780
2	LJH	2	0.0730	0.0730
2	LJH	3	0.0750	0.0750
2	LJH	4	0.0720	0.0720
2	LJH	5	0.0640	0.0640
2	LJH	6	0.0710	0.0710
2	LJH	7	0.1080	0.1080
2	LJH	8	0.0540	0.0540
3	LSH	1	0.0840	0.0840
3	LSH	2	0.0950	0.0950
3	LSH	3	0.0820	0.0820
3	LSH	4	0.0900	0.0900
3	LSH	5	0.0940	0.0940
3	LSH	6	0.0770	0.0770
3	LSH	7	0.1020	0.1020
3	LSH	8	0.0860	0.0860
4	MSH	1	0.0940	0.0940
4	MSH	2	0.0690	0.0690
4	MSH	3	0.0830	0.0830
4	MSH	4	0.0890	0.0890
4	MSH	5	0.0660	0.0660
4	MSH	6	0.0800	0.0800
4	MSH	7	0.0920	0.0920
4	MSH	8	0.0790	0.0790
5	USC	1	0.1090	0.1090
5	USC	2	0.0920	0.0920
5	USC	3	0.0800	0.0800
5	USC	4	0.0770	0.0770
5	USC	5	0.0720	0.0720
5	USC	6	0.0900	0.0900
5	USC	7	0.0730	0.0730
5	USC	8	0.0680	0.0680
6	LSLA	1	0.1130	0.1130
6	LSLA	2	0.0850	0.0850
6	LSLA	3	0.1000	0.1000
6	LSLA	4	0.0940	0.0940
6	LSLA	5	0.0910	0.0910
6	LSLA	6	0.0960	0.0960
6	LSLA	7	0.0960	0.0960
6	LSLA	8	0.0920	0.0920
7	EFSC	1	0.0650	0.0650
7	EFSC	2	0.0610	0.0610
7	EFSC	3	0.0660	0.0660

QA:cw 09/14/12
QA: MR09/25/12
AS 8/24/12

7	EFSC	4	0.0640	0.0640
7	EFSC	5	0.0520	0.0520
7	EFSC	6	0.0540	0.0540
7	EFSC	7	0.0620	0.0620
7	EFSC	8	0.0750	0.0750

Title: 60225262-058-(084-089)-H.azteca-Growth PS-Form Sed
File: 0584FGPS.DAT Transform: NO TRANSFORMATION

Summary Statistics on Data TABLE 1 of 2

GRP	IDENTIFICATION	N	MIN	MAX	MEAN
1	Form Sed	8	0.0530	0.0740	0.0629
2	LJH	8	0.0540	0.1080	0.0744
3	LSH	8	0.0770	0.1020	0.0888
4	MSH	8	0.0660	0.0940	0.0815
5	USC	8	0.0680	0.1090	0.0826
6	LSLA	8	0.0850	0.1130	0.0959
7	EFSC	8	0.0520	0.0750	0.0624

Title: 60225262-058-(084-089)-H.azteca-Growth PS-Form Sed
File: 0584FGPS.DAT Transform: NO TRANSFORMATION

Summary Statistics on Data TABLE 2 of 2

GRP	IDENTIFICATION	VARIANCE	SD	SEM	C.V. %
1	Form Sed	0.0001	0.0078	0.0028	12.3909
2	LJH	0.0002	0.0155	0.0055	20.8659
3	LSH	0.0001	0.0081	0.0029	9.1092
4	MSH	0.0001	0.0102	0.0036	12.5301
5	USC	0.0002	0.0136	0.0048	16.4672
6	LSLA	0.0001	0.0082	0.0029	8.5546
7	EFSC	0.0001	0.0072	0.0025	11.5271

Coeur Alaska, Inc.
Hyalella azteca 10-day Sub Chronic Study
Analysis of Growth Per SURVIVING Organism - Form Sediment as control

AS 9/24/12
QA: W 09/14/12
QA: AE 09/25/12

Title: 60225262-058-(084-089)-H.azteca-Growth PS-Form Sed
File: 0584FGPS.DAT Transform: NO TRANSFORMATION

Shapiro - Wilk's Test for Normality

******** Shapiro - Wilk's Test is aborted ********

This test can not be performed because total number of replicates is greater than 50.

Total number of replicates = 56

Title: 60225262-058-(084-089)-H.azteca-Growth PS-Form Sed
File: 0584FGPS.DAT Transform: NO TRANSFORMATION

Chi-Square Test for Normality

Actual and Expected Frequencies

INTERVAL	<-1.5	-1.5 to <-0.5	-0.5 to 0.5	>0.5 to 1.5	>1.5
EXPECTED	3.7520	13.5520	21.3920	13.5520	3.7520
OBSERVED	1	15	23	12	5

Chi-Square = 2.8870 (p-value = 0.5769)

Critical Chi-Square = 13.277 (alpha = 0.01 , df = 4)
= 9.488 (alpha = 0.05 , df = 4)

Data PASS normality test (alpha = 0.01). Continue analysis.

Title: 60225262-058-(084-089)-H.azteca-Growth PS-Form Sed
File: 0584FGPS.DAT Transform: NO TRANSFORMATION

Bartlett's Test for Homogeneity of Variance

Calculated B1 statistic = 7.6941 (p-value = 0.2614)

Data PASS B1 homogeneity test at 0.01 level. Continue analysis.

Critical B = 16.8119 (alpha = 0.01, df = 6)
= 12.5916 (alpha = 0.05, df = 6)

Coeur Alaska, Inc.
Hyalella azteca 10-day Sub Chronic Study
Analysis of Growth Per SURVIVING Organism - Form Sediment as control

AS 8/24/12
QA: CW 09/14/12
QA: MC 09/24/12 ②

Title: 60225262-058-(084-089)-H.azteca-Growth PS-Form Sed
File: 0584FGPS.DAT Transform: NO TRANSFORMATION

ANOVA Table

SOURCE	DF	SS	MS	F
Between	6	0.0076	0.0013	11.4846
Within (Error)	49	0.0054	0.0001	
Total	55	0.0131		

(p-value = 0.0000)

Critical F = 3.1948 (alpha = 0.01, df = 6,49)
= 2.2904 (alpha = 0.05, df = 6,49)

Since F > Critical F REJECT Ho: All equal (alpha = 0.05)

Title: 60225262-058-(084-089)-H.azteca-Growth PS-Form Sed
File: 0584FGPS.DAT Transform: NO TRANSFORMATION

Dunnett's Test - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG 0.05
1	Form Sed	0.0629	0.0629		
2	LJH	0.0744	0.0744	-2.1855	
3	LSH	0.0888	0.0888	-4.9174	
4	MSH	0.0815	0.0815	-3.5396	
5	USC	0.0826	0.0826	-3.7534	
6	LSLA	0.0959	0.0959	-6.2714	
7	EFSC	0.0624	0.0624	0.0950	

Dunnett critical value = 2.3700 (1 Tailed, alpha = 0.05, df [used] = 6,40)
(Actual df = 6,49)

Title: 60225262-058-(084-089)-H.azteca-Growth PS-Form Sed
File: 0584FGPS.DAT Transform: NO TRANSFORMATION

Dunnett's Test - TABLE 2 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	MIN SIG DIFF (IN ORIG. UNITS)	% OF CONTROL	DIFFERENCE FROM CONTROL
1	Form Sed	8			
2	LJH	8	0.0125	19.8	-0.0115
3	LSH	8	0.0125	19.8	-0.0259
4	MSH	8	0.0125	19.8	-0.0186
5	USC	8	0.0125	19.8	-0.0198
6	LSLA	8	0.0125	19.8	-0.0330
7	EFSC	8	0.0125	19.8	0.0005

①MC 09/25/12 E

APPENDIX C

Analytical Data

FCETL QA Form No.131
Revision 0
Effective 10/06
cw 09/13/12
AA: AA 09/25/12

PERCENT TOTAL SOLIDS AND PERCENT TOTAL VOLATILE SOLIDS (TVS)

Project No: 60225262-058-(084-089) & (090-095)

TARE: Date/time: 8/30/12 @ 1440-1515 Analyst: cw

DRY GROSS: Date/time: 8/31/12 @ 0840-0850 Analyst: cw

Analytical Balance ID: AND #2

ASHED GROSS: Date/time: 9/4/12 @ 0820-0840 Analyst: cw

Dried in Oven # 1 from Date: 8/30/12 Time: 1520
Oven °C: 104 to Date: 8/31/12 Time: 0735

Ashed in Furnace from Date: 8/31/12 Time: 0855
Furnace °C: 550 to Date: 8/31/12 Time: 1550

Dish No.	Treatment	Rep	Tare Weight of Dish (g) A	Dish + Wet Sample (g) B	Dry Gross Weight (g) (dish + dry sample) C	% Total Solids (g) [(C-A)(100)]/(B-A)	Ashed Gross Weight (dish + sample)(g) D	% Total Volatile Solids (g) [(C-D)(100)]/(C-A)
10	Sand	A	18.0146	28.2266	27.8082		27.7974	
8		B	12.0875	23.2549	22.7950		22.7835	
21	Farm Sed	A	19.9277	29.1327	27.9679		27.4246	
9A		B	12.3792	22.3766	21.0345		20.4131	
3A	LJH	A	10.4477	21.1086	18.7410		18.5258	
6A		B	12.1577	21.2732	19.2273		19.0506	
14A	LSH	A	12.3597	22.0940	20.0165		19.7829	
10A		B	12.0685	22.0877	19.9266		19.6866	
20A	USC	A	11.2564	21.4682	19.1632		18.8393	
7A		B	12.0204	22.2977	19.9080		19.5836	
19A	MSH	A	10.7019	20.5502	18.5951		18.3622	
18A		B	10.6860	21.1700	18.9697		18.7328	
Blank			20.2110	N/A	20.2112		20.2115	

[1] Add in weight loss of blank boat, if appropriate.

@cw 09/04/12 CC

FCETL QA Form No.131
Revision 0
Effective 10/06
ow 09/13/12
QA: AR 09/25/12

PERCENT TOTAL SOLIDS AND PERCENT TOTAL VOLATILE SOLIDS (TVS)

Project No: 60223262.058 ~ (084-089) + (090-095)

TARE: Date/time: 08/30/12 @ 1440-1515 Analyst: ow

DRY GROSS: Date/time: 8/31/12 @ 0840-0850 Analyst: ow

Analytical Balance ID: A+D #2

ASHED GROSS: Date/time: 9/4/12 @ 0830-0840 Analyst: ow

Dried in Oven # 1 from Date: 8/30/12 Time: 1520
Oven °C: 104 to Date: 8/31/12 Time: 0735

Ashed in Furnace from Date: 8/31/12 Time: 0855
Furnace °C: 550 to Date: 8/31/12 Time: 1550

Dish No.	Treatment	Rep	Tare Weight of Dish (g) A	Dish + Wet Sample (g) B	Dry Gross Weight (g) (dish + dry sample) C	% Total Solids (g) [(C-A)(100)]/(B-A)	Ashed Gross Weight (dish + sample)(g) D	% Total Volatile Solids (g) [(C-D)(100)]/(C-A)
17	LSLA	A	11.9310	21.4140	19.4808		19.2242	
5A		B	12.00168	22.6386	20.3870		20.1074	
4A	EFSC	A	10.7730	20.3986	13.0271		12.3821	
12A		B	10.7977	21.2357	13.3044		12.5907	
Blank								

[1] Add in weight loss of blank boat, if appropriate.

QA: CW 09/13/12
QA: AR 09/25/12

Percent Total Solids and Percent Total Volatile Solids

Project Number: 60225262-058-(084-089), (090-095)

Treatment	Rep		Tare Weight (g) A	Dish + Wet Sample (g) B	Dry Gross Weight (g) (dish + dry sample) C	% Total Solids [(C-A)(100)]/(B-A)	Treatment Mean % Total Solids	Ashed Gross Weight (g) (dish + sample) D	% Total Volatile Solids [(C-D)(100)]/(C-A)	Treatment Mean % Total Volatile Solids
Sand	A		18.0146	28.2266	27.8082	95.9029	95.9033	27.7974	0.1103	0.1085
	B		12.0275	23.2549	22.7950	95.9038		22.7835	0.1068	
Form Sed	A		19.9277	29.1327	27.9679	87.3460	86.9608	27.4246	6.7573	6.9684
	B		12.3792	22.3766	21.0345	86.5755		20.4131	7.1794	
LJH	A		10.4477	21.1086	18.7410	77.7917	77.6738	18.5258	2.5949	2.5471
	B		12.1577	21.2732	19.2273	77.5558		19.0506	2.4994	
LSH	A		12.3597	22.0940	20.0165	78.6579	78.5506	19.7829	3.0509	3.0514
	B		12.0625	22.0877	19.9266	78.4433		19.6866	3.0518	
USC	A		11.2564	21.4682	19.1632	77.4281	77.0879	18.8393	4.0965	4.1046
	B		12.0204	22.2977	19.9080	76.7478		19.5836	4.1128	
MSH	A		10.7019	20.5502	18.5951	80.1478	79.5803	18.3622	2.9506	2.9052
	B		10.6860	21.1700	18.9697	79.0128		18.7328	2.8598	
LSLA	A		11.9310	21.4140	19.4808	79.6140	79.2180	19.2242	3.3988	3.3676
	B		12.0068	22.6386	20.3870	78.8220		20.1074	3.3364	
EFSC	A		10.7730	20.3986	13.0271	23.4178	23.7164	12.3821	28.6145	28.5431
	B		10.7977	21.2357	13.3044	24.0151		12.5907	28.4717	
Blank			20.2110		20.2112			20.2115		

Tuesday, September 25, 2012

Analytical Laboratory

Rami Naddy
AECOM
4303 W Laporte Ave
Fort Collins, CO 80521

RE: Sediment Analysis - 60225262-058 Work Order: 1208087

Dear Rami Naddy:

MSE Lab Services received 8 sample(s) on 8/14/2012 for the analyses presented in the following report.

Please find enclosed analytical results for the sample(s) received at the MSE Laboratory.

If you have any questions regarding these test results, please feel free to call.

Sincerely,

Sara Ward

Sara Ward
Laboratory Manager
406-494-7334

Enclosure

MSE Analytical Laboratory
P.O. Box 4078
200 Technology Way
Butte, MT 59701
Lab: 406-494-7334
Fax: 406-494-7230
labinfo@mse-ta.com

9/25/12

MSE Lab Services

Date: 25-Sep-12

CLIENT: AECOM
Lab Order: 1208087
Project: Sediment Analysis - 60225262-058
Lab ID: 1208087-001

Client Sample ID: Sand
Collection Date: 8/9/2012 11:10:00 AM
Matrix: SOIL

Analyses	Result	MDL	Rpt Limit	Qualifier	Units	DF	Date Analyzed
SW-846-ICP-AES TOTAL METALS			**SW6010B**	**SW3050B**			Analyst: **SW**
Aluminum	181	6.19	15.6		mg/Kg-dry	1	9/19/2012 12:12:00 PM
Zinc	ND	3.93	15.6		mg/Kg-dry	1	9/19/2012 12:12:00 PM
ICP-MS METALS, SOLID SAMPLES			**SW6020**	**SW3050B**			Analyst: **tj**
Arsenic	ND	0.091	0.312		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Cadmium	0.073	0.005	0.021		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Chromium	4.25	0.114	0.417		mg/Kg-dry	2	9/24/2012 1:00:05 PM
Copper	0.324	0.085	0.260		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Lead	0.165	0.009	0.042		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Nickel	0.511	0.060	0.208		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Selenium	ND	0.141	0.417		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Silver	ND	0.077	0.208		mg/Kg-dry	2	9/24/2012 1:00:05 PM
MERCURY IN SOIL/SEDIMENT - SW846 7471B			**SW7471**	**SW7471A**			Analyst: **jc**
Mercury	ND	0.0754	0.260		mg/Kg-dry	1	8/28/2012 12:41:55 PM
ORGANIC MATTER-WALKLEY BLACK			**OM_WALKLEYBLACK**				Analyst: **hb**
Organic Matter - Walkley Black	ND	0.09	0.20		%	1	8/30/2012 10:00:00 AM
PERCENT COARSE MATERIAL			**ASTMD422**				Analyst: **dk**
1" Gradation	ND	0.05	0.10		%	1	8/23/2012 9:50:00 AM
2mm Gradation	ND	0.05	0.10		%	1	8/23/2012 9:50:00 AM
RAPID HYDROMETER (2 HOUR) MOD ASA 15-5			**MSA15-5**				Analyst: **bo/jr**
% Clay	ND	0.1	0.1		%	1	8/30/2012 4:00:00 PM
% Sand	96.0	0.1	0.1		%	1	8/30/2012 4:00:00 PM
% Silt	4.0	0.1	0.1		%	1	8/30/2012 4:00:00 PM
Soil Class	SAND					1	8/30/2012 4:00:00 PM
PERCENT MOISTURE			**D2216**				Analyst: **dk/jr**
Percent Moisture	4.00	0.01	0.05		wt%	1	8/22/2012 9:35:00 AM

Qualifiers:

E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE-TA Analytical Laboratory
P.O. Box 4078
200 Technology Way
Butte, MT 59701
Lab: 406-494-7334
Fax: 406-494-7230
labinfo@mse-ta.com

MSE Lab Services

Date: *25-Sep-12*

CLIENT: AECOM
Lab Order: 1208087
Project: Sediment Analysis - 60225262-058
Lab ID: 1208087-002

Client Sample ID: FORM SED
Collection Date: 8/9/2012 11:10:00 AM
Matrix: SOIL

Analyses	Result	MDL	Rpt Limit	Qualifier	Units	DF	Date Analyzed
SW-846-ICP-AES TOTAL METALS			**SW6010B**	**SW3050B**			Analyst: **SW**
Aluminum	609	6.73	17.0		mg/Kg-dry	1	9/19/2012 12:12:00 PM
Zinc	ND	4.27	17.0		mg/Kg-dry	1	9/19/2012 12:12:00 PM
ICP-MS METALS, SOLID SAMPLES			**SW6020**	**SW3050B**			Analyst: **tj**
Arsenic	ND	0.099	0.340		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Cadmium	0.072	0.006	0.023		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Chromium	8.25	0.125	0.453		mg/Kg-dry	2	9/24/2012 1:00:05 PM
Copper	0.783	0.093	0.283		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Lead	0.380	0.010	0.045		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Nickel	0.820	0.065	0.227		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Selenium	ND	0.154	0.453		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Silver	ND	0.083	0.227		mg/Kg-dry	2	9/24/2012 1:00:05 PM
MERCURY IN SOIL/SEDIMENT - SW846 7471B			**SW7471**	**SW7471A**			Analyst: **jc**
Mercury	ND	0.0326	0.113		mg/Kg-dry	1	8/28/2012 12:41:55 PM
ORGANIC MATTER-WALKLEY BLACK			**OM_WALKLEYBLACK**				Analyst: **bo/hb**
Organic Matter - Walkley Black	28.7	0.09	0.20		%	1	9/12/2012 12:00:00 PM
PERCENT COARSE MATERIAL			**ASTMD422**				Analyst: **dk**
1" Gradation	ND	0.05	0.10		%	1	8/23/2012 9:50:00 AM
2mm Gradation	ND	0.05	0.10		%	1	8/23/2012 9:50:00 AM
RAPID HYDROMETER (2 HOUR) MOD ASA 15-5			**MSA15-5**				Analyst: **bo/jr**
% Clay	10.0	0.1	0.1		%	1	8/30/2012 4:00:00 PM
% Sand	86.0	0.1	0.1		%	1	8/30/2012 4:00:00 PM
% Silt	4.0	0.1	0.1		%	1	8/30/2012 4:00:00 PM
Soil Class	LOAMY SAND					1	8/30/2012 4:00:00 PM
PERCENT MOISTURE			**D2216**				Analyst: **dk/jr**
Percent Moisture	11.8	0.01	0.05		wt%	1	8/22/2012 9:35:00 AM

Qualifiers:				
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: *25-Sep-12*

CLIENT: AECOM
Lab Order: 1208087
Project: Sediment Analysis - 60225262-058
Lab ID: 1208087-003

Client Sample ID: LJH(#25938)
Collection Date: 8/9/2012 11:10:00 AM
Matrix: SOIL

Analyses	Result	MDL	Rpt Limit	Qualifier	Units	DF	Date Analyzed
SW-846-ICP-AES TOTAL METALS			**SW6010B**	**SW3050B**			Analyst: **SW**
Aluminum	13100	7.32	18.5		mg/Kg-dry	1	9/19/2012 12:12:00 PM
Zinc	97.3	4.64	18.5		mg/Kg-dry	1	9/19/2012 12:12:00 PM
ICP-MS METALS, SOLID SAMPLES			**SW6020**	**SW3050B**			Analyst: **tj**
Arsenic	12.8	0.107	0.369		mg/Kg-dry	2	9/18/2012 12:12:08 PM
Cadmium	0.250	0.006	0.025		mg/Kg-dry	2	9/18/2012 12:12:08 PM
Chromium	35.5	0.135	0.493		mg/Kg-dry	2	9/24/2012 1:00:05 PM
Copper	76.8	0.101	0.308		mg/Kg-dry	2	9/18/2012 12:12:08 PM
Lead	9.45	0.011	0.049		mg/Kg-dry	2	9/18/2012 12:12:08 PM
Nickel	23.4	0.071	0.246		mg/Kg-dry	2	9/18/2012 12:12:08 PM
Selenium	ND	0.167	0.493		mg/Kg-dry	2	9/18/2012 12:12:08 PM
Silver	0.342	0.091	0.246		mg/Kg-dry	2	9/24/2012 1:00:05 PM
MERCURY IN SOIL/SEDIMENT - SW846 7471B			**SW7471**	**SW7471A**			Analyst: **jc**
Mercury	0.119	0.0356	0.123	J	mg/Kg-dry	1	8/28/2012 12:41:55 PM
ORGANIC MATTER-WALKLEY BLACK			**OM_WALKLEYBLACK**				Analyst: **hb**
Organic Matter - Walkley Black	1.19	0.09	0.20		%	1	8/30/2012 10:00:00 AM
PERCENT COARSE MATERIAL			**ASTMD422**				Analyst: **dk**
1" Gradation	ND	0.05	0.10		%	1	8/23/2012 9:50:00 AM
2mm Gradation	ND	0.05	0.10		%	1	8/23/2012 9:50:00 AM
RAPID HYDROMETER (2 HOUR) MOD ASA 15-5			**MSA15-5**				Analyst: **bo/jr**
% Clay	8.0	0.1	0.1		%	1	8/30/2012 4:00:00 PM
% Sand	92.0	0.1	0.1		%	1	8/30/2012 4:00:00 PM
% Silt	ND	0.1	0.1		%	1	8/30/2012 4:00:00 PM
Soil Class	SAND					1	8/30/2012 4:00:00 PM
PERCENT MOISTURE			**D2216**				Analyst: **dk/jr**
Percent Moisture	18.8	0.01	0.05		wt%	1	8/22/2012 9:35:00 AM

Qualifiers:				
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: *25-Sep-12*

CLIENT: AECOM
Lab Order: 1208087
Project: Sediment Analysis - 60225262-058
Lab ID: 1208087-004

Client Sample ID: LSH(#25939)
Collection Date: 8/9/2012 11:10:00 AM
Matrix: SOIL

Analyses	Result	MDL	Rpt Limit	Qualifier	Units	DF	Date Analyzed
SW-846-ICP-AES TOTAL METALS			**SW6010B**	**SW3050B**			Analyst: **SW**
Aluminum	17900	7.61	19.2		mg/Kg-dry	1	9/19/2012 12:12:00 PM
Zinc	128	4.83	19.2		mg/Kg-dry	1	9/19/2012 12:12:00 PM
ICP-MS METALS, SOLID SAMPLES			**SW6020**	**SW3050B**			Analyst: **tj**
Arsenic	24.3	0.111	0.384		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Cadmium	0.578	0.007	0.026		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Chromium	51.4	0.141	0.512		mg/Kg-dry	2	9/24/2012 1:00:05 PM
Copper	79.1	0.105	0.320		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Lead	8.43	0.012	0.051		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Nickel	40.2	0.074	0.256		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Selenium	ND	0.174	0.512		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Silver	0.289	0.094	0.256		mg/Kg-dry	2	9/24/2012 1:00:05 PM
MERCURY IN SOIL/SEDIMENT - SW846 7471B			**SW7471**	**SW7471A**			Analyst: **jc**
Mercury	0.0681	0.0360	0.124	J	mg/Kg-dry	1	8/28/2012 12:41:55 PM
ORGANIC MATTER-WALKLEY BLACK			**OM_WALKLEYBLACK**				Analyst: **hb**
Organic Matter - Walkley Black	0.82	0.09	0.20		%	1	8/30/2012 10:00:00 AM
PERCENT COARSE MATERIAL			**ASTMD422**				Analyst: **dk**
1" Gradation	ND	0.05	0.10		%	1	8/23/2012 9:50:00 AM
2mm Gradation	0.09	0.05	0.10	J	%	1	8/23/2012 9:50:00 AM
RAPID HYDROMETER (2 HOUR) MOD ASA 15-5			**MSA15-5**				Analyst: **bo/jr**
% Clay	4.0	0.1	0.1		%	1	8/30/2012 4:00:00 PM
% Sand	96.0	0.1	0.1		%	1	8/30/2012 4:00:00 PM
% Silt	ND	0.1	0.1		%	1	8/30/2012 4:00:00 PM
Soil Class	SAND					1	8/30/2012 4:00:00 PM
PERCENT MOISTURE			**D2216**				Analyst: **dk/jr**
Percent Moisture	21.9	0.01	0.05		wt%	1	8/22/2012 9:35:00 AM

Qualifiers:

E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: 25-Sep-12

CLIENT: AECOM
Lab Order: 1208087
Project: Sediment Analysis - 60225262-058
Lab ID: 1208087-005

Client Sample ID: MSH(#25940)
Collection Date: 8/9/2012 11:10:00 AM
Matrix: SOIL

Analyses	Result	MDL	Rpt Limit	Qualifier	Units	DF	Date Analyzed
SW-846-ICP-AES TOTAL METALS			**SW6010B**	**SW3050B**			Analyst: **SW**
Aluminum	18800	7.43	18.8		mg/Kg-dry	1	9/19/2012 12:12:00 PM
Zinc	124	4.72	18.8		mg/Kg-dry	1	9/19/2012 12:12:00 PM
ICP-MS METALS, SOLID SAMPLES			**SW6020**	**SW3050B**			Analyst: **tj**
Arsenic	56.1	0.109	0.375		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Cadmium	0.269	0.007	0.025		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Chromium	48.1	0.138	0.501		mg/Kg-dry	2	9/24/2012 1:00:05 PM
Copper	87.5	0.103	0.313		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Lead	11.3	0.011	0.050		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Nickel	39.3	0.072	0.250		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Selenium	ND	0.170	0.501		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Silver	0.225	0.092	0.250	J	mg/Kg-dry	2	9/24/2012 1:00:05 PM
MERCURY IN SOIL/SEDIMENT - SW846 7471B			**SW7471**	**SW7471A**			Analyst: **jc**
Mercury	0.0581	0.0359	0.124	J	mg/Kg-dry	1	8/28/2012 12:41:55 PM
ORGANIC MATTER-WALKLEY BLACK			**OM_WALKLEYBLACK**				Analyst: **hb**
Organic Matter - Walkley Black	1.05	0.09	0.20		%	1	8/30/2012 10:00:00 AM
PERCENT COARSE MATERIAL			**ASTMD422**				Analyst: **dk**
1" Gradation	ND	0.05	0.10		%	1	8/23/2012 9:50:00 AM
2mm Gradation	0.44	0.05	0.10		%	1	8/23/2012 9:50:00 AM
RAPID HYDROMETER (2 HOUR) MOD ASA 15-5			**MSA15-5**				Analyst: **bo/jr**
% Clay	4.0	0.1	0.1		%	1	8/30/2012 4:00:00 PM
% Sand	96.0	0.1	0.1		%	1	8/30/2012 4:00:00 PM
% Silt	ND	0.1	0.1		%	1	8/30/2012 4:00:00 PM
Soil Class	SAND					1	8/30/2012 4:00:00 PM
PERCENT MOISTURE			**D2216**				Analyst: **dk/jr**
Percent Moisture	20.1	0.01	0.05		wt%	1	8/22/2012 9:35:00 AM

Qualifiers:

E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: *25-Sep-12*

CLIENT: AECOM
Lab Order: 1208087
Project: Sediment Analysis - 60225262-058
Lab ID: 1208087-006

Client Sample ID: USC(#25932)
Collection Date: 8/9/2012 11:10:00 AM
Matrix: SOIL

Analyses	Result	MDL	Rpt Limit	Qualifier	Units	DF	Date Analyzed
SW-846-ICP-AES TOTAL METALS			**SW6010B**	**SW3050B**			Analyst: **SW**
Aluminum	20300	7.61	19.2		mg/Kg-dry	1	9/19/2012 12:12:00 PM
Zinc	134	4.83	19.2		mg/Kg-dry	1	9/19/2012 12:12:00 PM
ICP-MS METALS, SOLID SAMPLES			**SW6020**	**SW3050B**			Analyst: **tj**
Arsenic	14.4	0.111	0.384		mg/Kg-dry	2	9/18/2012 12:12:08 PM
Cadmium	0.776	0.007	0.026		mg/Kg-dry	2	9/18/2012 12:12:08 PM
Chromium	125	0.141	0.513		mg/Kg-dry	2	9/24/2012 1:00:05 PM
Copper	55.4	0.105	0.320		mg/Kg-dry	2	9/18/2012 12:12:08 PM
Lead	4.05	0.012	0.051		mg/Kg-dry	2	9/18/2012 12:12:08 PM
Nickel	78.4	0.074	0.256		mg/Kg-dry	2	9/18/2012 12:12:08 PM
Selenium	0.606	0.174	0.513		mg/Kg-dry	2	9/18/2012 12:12:08 PM
Silver	0.132	0.094	0.256	J	mg/Kg-dry	2	9/24/2012 1:00:05 PM
MERCURY IN SOIL/SEDIMENT - SW846 7471B			**SW7471**	**SW7471A**			Analyst: **jc**
Mercury	0.0625	0.0365	0.126	J	mg/Kg-dry	1	8/28/2012 12:41:55 PM
ORGANIC MATTER-WALKLEY BLACK			**OM_WALKLEYBLACK**				Analyst: **hb**
Organic Matter - Walkley Black	3.74	0.09	0.20		%	1	8/30/2012 10:00:00 AM
PERCENT COARSE MATERIAL			**ASTMD422**				Analyst: **dk**
1" Gradation	ND	0.05	0.10		%	1	8/23/2012 9:50:00 AM
2mm Gradation	0.32	0.05	0.10		%	1	8/23/2012 9:50:00 AM
RAPID HYDROMETER (2 HOUR) MOD ASA 15-5			**MSA15-5**				Analyst: **bo/jr**
% Clay	2.0	0.1	0.1		%	1	8/30/2012 4:00:00 PM
% Sand	98.0	0.1	0.1		%	1	8/30/2012 4:00:00 PM
% Silt	ND	0.1	0.1		%	1	8/30/2012 4:00:00 PM
Soil Class	SAND					1	8/30/2012 4:00:00 PM
PERCENT MOISTURE			**D2216**				Analyst: **dk/jr**
Percent Moisture	22.0	0.01	0.05		wt%	1	8/22/2012 9:35:00 AM

Qualifiers:

E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: *25-Sep-12*

CLIENT: AECOM
Lab Order: 1208087
Project: Sediment Analysis - 60225262-058
Lab ID: 1208087-007

Client Sample ID: LSLA(#25933)
Collection Date: 8/9/2012 11:10:00 AM
Matrix: SOIL

Analyses	Result	MDL	Rpt Limit	Qualifier	Units	DF	Date Analyzed
SW-846-ICP-AES TOTAL METALS			**SW6010B**	**SW3050B**			Analyst: **SW**
Aluminum	13600	7.43	18.8		mg/Kg-dry	1	9/19/2012 12:12:00 PM
Zinc	200	4.72	18.8		mg/Kg-dry	1	9/19/2012 12:12:00 PM
ICP-MS METALS, SOLID SAMPLES			**SW6020**	**SW3050B**			Analyst: **tj**
Arsenic	9.31	0.109	0.375		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Cadmium	1.22	0.007	0.025		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Chromium	32.0	0.138	0.500		mg/Kg-dry	2	9/24/2012 1:00:05 PM
Copper	50.7	0.103	0.313		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Lead	8.45	0.011	0.050		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Nickel	43.2	0.072	0.250		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Selenium	ND	0.170	0.500		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Silver	0.145	0.092	0.250	J	mg/Kg-dry	2	9/24/2012 1:00:05 PM
MERCURY IN SOIL/SEDIMENT - SW846 7471B			**SW7471**	**SW7471A**			Analyst: **jc**
Mercury	0.0994	0.0355	0.122	J	mg/Kg-dry	1	8/28/2012 12:41:55 PM
ORGANIC MATTER-WALKLEY BLACK			**OM_WALKLEYBLACK**				Analyst: **hb**
Organic Matter - Walkley Black	1.67	0.09	0.20		%	1	8/30/2012 10:00:00 AM
PERCENT COARSE MATERIAL			**ASTMD422**				Analyst: **dk**
1" Gradation	ND	0.05	0.10		%	1	8/23/2012 9:50:00 AM
2mm Gradation	0.13	0.05	0.10		%	1	8/23/2012 9:50:00 AM
RAPID HYDROMETER (2 HOUR) MOD ASA 15-5			**MSA15-5**				Analyst: **bo/jr**
% Clay	2.0	0.1	0.1		%	1	8/30/2012 4:00:00 PM
% Sand	98.0	0.1	0.1		%	1	8/30/2012 4:00:00 PM
% Silt	ND	0.1	0.1		%	1	8/30/2012 4:00:00 PM
Soil Class	SAND					1	8/30/2012 4:00:00 PM
PERCENT MOISTURE			**D2216**				Analyst: **dk/jr**
Percent Moisture	20.1	0.01	0.05		wt%	1	8/22/2012 9:35:00 AM

Qualifiers:

E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: *25-Sep-12*

CLIENT: AECOM
Lab Order: 1208087
Project: Sediment Analysis - 60225262-058
Lab ID: 1208087-008

Client Sample ID: EFSA(#25934)
Collection Date: 8/9/2012 11:10:00 AM
Matrix: SOIL

Analyses	Result	MDL	Rpt Limit	Qualifier	Units	DF	Date Analyzed
SW-846-ICP-AES TOTAL METALS			**SW6010B**	**SW3050B**			Analyst: **SW**
Aluminum	15300	22.0	55.5		mg/Kg-dry	1	9/19/2012 12:12:00 PM
Zinc	1490	13.9	55.5		mg/Kg-dry	1	9/19/2012 12:12:00 PM
ICP-MS METALS, SOLID SAMPLES			**SW6020**	**SW3050B**			Analyst: **tj**
Arsenic	24.0	0.322	1.11		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Cadmium	23.2	0.019	0.074		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Chromium	38.9	0.406	1.48		mg/Kg-dry	2	9/24/2012 1:00:05 PM
Copper	159	0.303	0.924		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Lead	14.2	0.033	0.148		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Nickel	153	0.212	0.739		mg/Kg-dry	2	9/13/2012 12:12:08 PM
Selenium	0.934	0.502	1.48	J	mg/Kg-dry	2	9/13/2012 12:12:08 PM
Silver	0.513	0.272	0.739	J	mg/Kg-dry	2	9/24/2012 1:00:05 PM
MERCURY IN SOIL/SEDIMENT - SW846 7471B			**SW7471**	**SW7471A**			Analyst: **jc**
Mercury	0.327	0.107	0.369	J	mg/Kg-dry	1	8/28/2012 12:41:55 PM
ORGANIC MATTER-WALKLEY BLACK			**OM_WALKLEYBLACK**				Analyst: **BO**
Organic Matter - Walkley Black	16.7	0.09	0.20		%	1	8/31/2012 3:00:00 PM
PERCENT COARSE MATERIAL			**ASTMD422**				Analyst: **dk**
1" Gradation	ND	0.05	0.10		%	1	8/23/2012 9:50:00 AM
2mm Gradation	ND	0.05	0.10		%	1	8/23/2012 9:50:00 AM
RAPID HYDROMETER (2 HOUR) MOD ASA 15-5			**MSA15-5**				Analyst: **bo/jr**
% Clay	40.0	0.1	0.1		%	1	8/30/2012 4:00:00 PM
% Sand	26.0	0.1	0.1		%	1	8/30/2012 4:00:00 PM
% Silt	34.0	0.1	0.1		%	1	8/30/2012 4:00:00 PM
Soil Class	CLAY					1	8/30/2012 4:00:00 PM
PERCENT MOISTURE			**D2216**				Analyst: **dk/jr**
Percent Moisture	73.0	0.01	0.05		wt%	1	8/22/2012 9:35:00 AM

Qualifiers:

E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Analytical Laboratory
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Date: 25-Sep-12
Report Date: 25-Sep-12

QA/QC SUMMARY REPORT

Client: AECOM
Project: Sediment Analysis - 60225262-058

Work Order: 1208087
BatchID: 5917

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
Sample ID: PB-UNFILTERED-5917			*Method: SW6010B*		*Batch ID: 5917*					*Analysis Date: 9/19/2012 12:12:00 PM*
Aluminum	ND	15.0	mg/Kg							
Zinc	ND	15.0	mg/Kg							
Sample ID: PB-FILTERED-5917			*Method: SW6010B*		*Batch ID: 5917*					*Analysis Date: 9/19/2012 12:12:00 PM*
Aluminum	ND	15.0	mg/Kg							
Zinc	ND	15.0	mg/Kg							
Sample ID: LCS-5917			*Method: SW6010B*		*Batch ID: 5917*					*Analysis Date: 9/19/2012 12:12:00 PM*
Aluminum	6630	15.0	mg/Kg	9672	68.5	80	120			S*
Zinc	193	15.0	mg/Kg	198.0	97.7	80	120			
Sample ID: 1208087-003A-MS			*Method: SW6010B*		*Batch ID: 5917*					*Analysis Date: 9/19/2012 12:12:00 PM*
Aluminum	27900	18.5	mg/Kg-dry	11910	124	75	125			
Zinc	347	18.5	mg/Kg-dry	243.8	103	75	125			
Sample ID: 1208087-003A-MSD			*Method: SW6010B*		*Batch ID: 5917*					*Analysis Date: 9/19/2012 12:12:00 PM*
Aluminum	23400	18.5	mg/Kg-dry	11910	87.2	75	125	17.3	20	
Zinc	334	18.5	mg/Kg-dry	243.8	97.1	75	125	3.89	20	
Sample ID: 1208087-003A-MST			*Method: SW6010B*		*Batch ID: 5917*					*Analysis Date: 9/19/2012 12:12:00 PM*
Aluminum	25400	18.5	mg/Kg-dry	11910	104	75	125	9.28	20	
Zinc	357	18.5	mg/Kg-dry	243.8	107	75	125	2.86	20	
Sample ID: PB-UNFILTERED-5917			*Method: SW6020*		*Batch ID: 5917*					*Analysis Date: 9/13/2012 12:12:08 PM*
Cadmium	0.018	0.020	mg/Kg							J
Copper	0.136	0.250	mg/Kg							J
Lead	0.016	0.040	mg/Kg							J
Nickel	0.495	0.200	mg/Kg							
Sample ID: PB-FILTERED-5917			*Method: SW6020*		*Batch ID: 5917*					*Analysis Date: 9/13/2012 12:12:08 PM*
Cadmium	0.020	0.020	mg/Kg							
Copper	0.138	0.250	mg/Kg							J
Lead	0.016	0.040	mg/Kg							J
Nickel	0.444	0.200	mg/Kg							
Sample ID: LCS-5917			*Method: SW6020*		*Batch ID: 5917*					*Analysis Date: 9/13/2012 12:12:08 PM*
Cadmium	247	0.020	mg/Kg	274.0	90.1	80	120			
Copper	271	0.250	mg/Kg	242.0	112	80	120			
Lead	261	0.040	mg/Kg	240.0	109	80	120			
Nickel	85.7	0.200	mg/Kg	74.70	115	80	120			
Sample ID: 1208087-003A-MS			*Method: SW6020*		*Batch ID: 5917*					*Analysis Date: 9/13/2012 12:12:08 PM*
Cadmium	338	0.025	mg/Kg-dry	337.4	100	75	125			
Copper	451	0.308	mg/Kg-dry	298.0	126	75	125			S*
Lead	366	0.049	mg/Kg-dry	295.6	121	75	125			

Qualifiers: NA Sample conc. is > 4*spike level

S* Spike Recovery outside limits; within Manufacturer Limits
Manufacturer Limits for Aluminum 4270-15100 mg/Kg; Copper 184-326 mg/Kg; Mercury 2.97-80.4 mg/Kg; Silver 16.1-37.5 mg/Kg; Arsenic 39.7-100 mg/Kg; Selenium 121-340 mg/Kg; Nickel 63.3-100 mg/Kg

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Date: 25-Sep-12
Report Date: 25-Sep-12

QA/QC SUMMARY REPORT

Client: AECOM
Project: Sediment Analysis - 60225262-058

Work Order: 1208087
BatchID: 5917

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
*Sample ID: **1208087-003A-MS***			*Method: **SW6020***		*Batch ID: **5917***		*Analysis Date: 9/13/2012 12:12:08 PM*			
Nickel	141	0.246	mg/Kg-dry	92.00	127	75	125			S*
*Sample ID: **1208087-003A-MSD***			*Method: **SW6020***		*Batch ID: **5917***		*Analysis Date: 9/13/2012 12:12:08 PM*			
Cadmium	300	0.025	mg/Kg-dry	337.4	89.0	75	125	11.7	20	
Copper	387	0.308	mg/Kg-dry	298.0	104	75	125	15.2	20	
Lead	323	0.049	mg/Kg-dry	295.6	106	75	125	12.7	20	
Nickel	122	0.246	mg/Kg-dry	92.00	107	75	125	14.2	20	
*Sample ID: **1208087-003A-MST***			*Method: **SW6020***		*Batch ID: **5917***		*Analysis Date: 9/13/2012 12:12:08 PM*			
Cadmium	317	0.025	mg/Kg-dry	337.4	93.8	75	125	6.34	20	
Copper	424	0.308	mg/Kg-dry	298.0	116	75	125	6.20	20	
Lead	346	0.049	mg/Kg-dry	295.6	114	75	125	5.80	20	
Nickel	133	0.246	mg/Kg-dry	92.00	119	75	125	5.36	20	
*Sample ID: **PB-UNFILTERED-5917***			*Method: **SW6020***		*Batch ID: **5917***		*Analysis Date: 9/13/2012 12:12:08 PM*			
Arsenic	ND	0.300	mg/Kg							
Selenium	ND	0.400	mg/Kg							
*Sample ID: **PB-FILTERED-5917***			*Method: **SW6020***		*Batch ID: **5917***		*Analysis Date: 9/13/2012 12:12:08 PM*			
Arsenic	ND	0.300	mg/Kg							
Selenium	ND	0.400	mg/Kg							
*Sample ID: **LCS-5917***			*Method: **SW6020***		*Batch ID: **5917***		*Analysis Date: 9/13/2012 12:12:08 PM*			
Arsenic	66.3	0.300	mg/Kg	59.10	112	80	120			
Selenium	192	0.400	mg/Kg	178.0	108	80	120			
*Sample ID: **1208087-003A-MS***			*Method: **SW6020***		*Batch ID: **5917***		*Analysis Date: 9/13/2012 12:12:08 PM*			
Arsenic	121	0.369	mg/Kg-dry	72.78	149	75	125			S*
Selenium	276	0.493	mg/Kg-dry	219.2	126	75	125			S*
*Sample ID: **1208087-003A-MSD***			*Method: **SW6020***		*Batch ID: **5917***		*Analysis Date: 9/13/2012 12:12:08 PM*			
Arsenic	99.4	0.369	mg/Kg-dry	72.78	119	75	125	19.7	20	
Selenium	239	0.493	mg/Kg-dry	219.2	109	75	125	14.6	20	
*Sample ID: **1208087-003A-MST***			*Method: **SW6020***		*Batch ID: **5917***		*Analysis Date: 9/13/2012 12:12:08 PM*			
Arsenic	108	0.369	mg/Kg-dry	72.78	131	75	125	11.2	20	S*
Selenium	255	0.493	mg/Kg-dry	219.2	116	75	125	7.97	20	
*Sample ID: **PB-UNFILTERED-5917***			*Method: **SW6020***		*Batch ID: **5917***		*Analysis Date: 9/24/2012 1:00:05 PM*			
Chromium	5.83	0.400	mg/Kg							
Silver	ND	0.200	mg/Kg							
*Sample ID: **PB-FILTERED-5917***			*Method: **SW6020***		*Batch ID: **5917***		*Analysis Date: 9/24/2012 1:00:05 PM*			
Chromium	5.03	0.400	mg/Kg							
Silver	ND	0.200	mg/Kg							

Qualifiers:
NA Sample conc. is > 4*spike level
S* Spike Recovery outside limits; within Manufacturer Limits
Manufacturer Limits for Aluminum 4270-15100 mg/Kg; Copper 184-326 mg/Kg; Mercury 2.97-80.4 mg/Kg; Silver 16.1-37.5 mg/Kg; Arsenic 39.7-100 mg/Kg; Selenium 121-340 mg/Kg; Nickel 63.3-100 mg/Kg

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Date: 25-Sep-12
Report Date: 25-Sep-12

QA/QC SUMMARY REPORT

Client: AECOM
Project: Sediment Analysis - 60225262-058

Work Order: 1208087
BatchID: 5917

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
*Sample ID: **LCS-5917***			*Method: **SW6020***		*Batch ID: **5917***			*Analysis Date: 9/24/2012 1:00:05 PM*		
Chromium	166	0.400	mg/Kg	150.0	110	80	120			
Silver	32.3	0.200	mg/Kg	24.90	130	80	120			S*
*Sample ID: **1208087-003A-MS***			*Method: **SW6020***		*Batch ID: **5917***			*Analysis Date: 9/24/2012 1:00:05 PM*		
Chromium	257	0.493	mg/Kg-dry	184.7	120	75	125			
Silver	42.0	0.246	mg/Kg-dry	30.67	136	75	125			S*
*Sample ID: **1208087-003A-MSD***			*Method: **SW6020***		*Batch ID: **5917***			*Analysis Date: 9/24/2012 1:00:05 PM*		
Chromium	228	0.493	mg/Kg-dry	184.7	104	75	125	11.9	20	
Silver	38.3	0.246	mg/Kg-dry	30.67	124	75	125	9.13	20	
*Sample ID: **1208087-003A-MST***			*Method: **SW6020***		*Batch ID: **5917***			*Analysis Date: 9/24/2012 1:00:05 PM*		
Chromium	239	0.493	mg/Kg-dry	184.7	110	75	125	7.28	20	
Silver	38.5	0.246	mg/Kg-dry	30.67	124	75	125	8.64	20	

Qualifiers:
NA Sample conc. is > 4*spike level
S* Spike Recovery outside limits; within Manufacturer Limits
Manufacturer Limits for Aluminum 4270-15100 mg/Kg; Copper 184-326 mg/Kg; Mercury 2.97-80.4 mg/Kg; Silver 16.1-37.5 mg/Kg; Arsenic 39.7-100 mg/Kg; Selenium 121-340 mg/Kg; Nickel 63.3-100 mg/Kg

MSE Analytical Laboratory
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Butte, MT 59701
Lab: 406-494-7334
Fax: 406-494-7230
labinfo@mse-ta.com

Date: 25-Sep-12
Report Date: 25-Sep-12

QA/QC SUMMARY REPORT

Client: AECOM
Project: Sediment Analysis - 60225262-058

Work Order: 1208087
BatchID: 5924

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
Sample ID: ***5924-PB***			*Method:* ***SW7471***		*Batch ID:* ***5924***					*Analysis Date: 8/28/2012 12:41:55 PM*
Mercury	ND	0.100	mg/Kg							
Sample ID: ***LCS-5924***			*Method:* ***SW7471***		*Batch ID:* ***5924***					*Analysis Date: 8/28/2012 12:41:55 PM*
Mercury	17.3	2.45	mg/Kg	27.80	62.2	80	120			S*
Sample ID: ***1208087-001A-MS***			*Method:* ***SW7471***		*Batch ID:* ***5924***					*Analysis Date: 8/28/2012 12:41:55 PM*
Mercury	19.2	2.51	mg/Kg-dry	28.96	66.4	75	125			S*
Sample ID: ***1208087-001A-MSD***			*Method:* ***SW7471***		*Batch ID:* ***5924***					*Analysis Date: 8/28/2012 12:41:55 PM*
Mercury	19.8	2.60	mg/Kg-dry	28.96	68.2	75	125	2.74	20	S*

Qualifiers:
NA Sample conc. is > 4*spike level
S* Spike Recovery outside limits; within Manufacturer Limits
Manufacturer Limits for Aluminum 4270-15100 mg/Kg; Copper 184-328 mg/Kg; Mercury 2.97-80.4 mg/Kg; Silver 16.1-37.5 mg/Kg; Arsenic 39.7-100 mg/Kg; Selenium 121-340 mg/Kg; Nickel 63.3-100 mg/Kg

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Date: 25-Sep-12
Report Date: 25-Sep-12

QA/QC SUMMARY REPORT

Client: AECOM
Project: Sediment Analysis - 60225262-058

Work Order: 1208087
BatchID: R20713

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
*Sample ID: **1208087-005A-D***			*Method: **D2216***		*Batch ID: **R20713***			*Analysis Date: 8/22/2012 9:35:00 AM*		
Percent Moisture	20.6	0.05	wt%					2.26	35	

Qualifiers:

NA Sample conc. is > 4*spike level

S* Spike Recovery outside limits; within Manufacturer Limits
Manufacturer Limits for Aluminum 4270-15100 mg/Kg; Copper 184-326 mg/Kg; Mercury 2.97-80.4 mg/Kg; Silver 16.1-37.5 mg/Kg; Arsenic 39.7-100 mg/Kg; Selenium 121-340 mg/Kg; Nickel 63.3-100 mg/Kg

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Date: 25-Sep-12
Report Date: 25-Sep-12

QA/QC SUMMARY REPORT

Client: AECOM
Project: Sediment Analysis - 60225262-058

Work Order: 1208087
BatchID: R20774

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
Sample ID: ***1208087-003A-D***			*Method:* ***ASTMD422***	*Batch ID:* ***R20774***				*Analysis Date: 8/23/2012 9:50:00 AM*		
1" Gradation	ND	0.10	%					0	35	
2mm Gradation	ND	0.10	%					0	35	

Qualifiers:
NA Sample conc. is > 4*spike level
S* Spike Recovery outside limits; within Manufacturer Limits
Manufacturer Limits for Aluminum 4270-15100 mg/Kg; Copper 184-326 mg/Kg; Mercury 2.97-80.4 mg/Kg; Silver 16.1-37.5 mg/Kg; Arsenic 39.7-100 mg/Kg; Selenium 121-340 mg/Kg; Nickel 63.3-100 mg/Kg

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Date: 25-Sep-12
Report Date: 25-Sep-12

QA/QC SUMMARY REPORT

Client: AECOM
Project: Sediment Analysis - 60225262-058

Work Order: 1208087
BatchID: R20826

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
*Sample ID: **LCS***			*Method: **OM_WALKLE** Batch ID: **R20826***					*Analysis Date: 8/31/2012 3:00:00 PM*		
Organic Matter - Walkl	48.8	0.20	%	49.60	98.3	70.7	109			
*Sample ID: **PB***			*Method: **OM_WALKLE** Batch ID: **R20826***					*Analysis Date: 8/31/2012 3:00:00 PM*		
Organic Matter - Walkl	ND	0.20	%							
*Sample ID: **1208165-001A-D***			*Method: **OM_WALKLE** Batch ID: **R20826***					*Analysis Date: 8/31/2012 3:00:00 PM*		
Organic Matter - Walkl	1.05	0.20	%					3.06	35	

Qualifiers:
NA Sample conc. is > 4*spike level
S* Spike Recovery outside limits; within Manufacturer Limits
Manufacturer Limits for Aluminum 4270-15100 mg/Kg; Copper 184-326 mg/Kg; Mercury 2.97-80.4 mg/Kg; Silver 16.1-37.5 mg/Kg; Arsenic 39.7-100 mg/Kg; Selenium 121-340 mg/Kg; Nickel 63.3-100 mg/Kg

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labinfo@mse-ta.com

Date: 25-Sep-12
Report Date: 25-Sep-12

QA/QC SUMMARY REPORT

Client: AECOM
Project: Sediment Analysis - 60225262-058

Work Order: 1208087
BatchID: R20829

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
Sample ID: ***1208114-001A-D***			*Method:* ***OM_WALKLE*** *Batch ID:* ***R20829***						*Analysis Date: 8/30/2012 10:00:00 AM*	
Organic Matter - Walkl	0.83	0.20	%					2.00	35	
Sample ID: ***LCS***			*Method:* ***OM_WALKLE*** *Batch ID:* ***R20829***						*Analysis Date: 8/30/2012 10:00:00 AM*	
Organic Matter - Walkl	54.6	0.20	%	49.60	110	80	120			
Sample ID: ***PB***			*Method:* ***OM_WALKLE*** *Batch ID:* ***R20829***						*Analysis Date: 8/30/2012 10:00:00 AM*	
Organic Matter - Walkl	ND	0.20	%							

Qualifiers:
NA Sample conc. is > 4*spike level
S* Spike Recovery outside limits; within Manufacturer Limits
Manufacturer Limits for Aluminum 4270-15100 mg/Kg; Copper 184-326 mg/Kg; Mercury 2.97-80.4 mg/Kg; Silver 16.1-37.5 mg/Kg; Arsenic 39.7-100 mg/Kg; Selenium 121-340 mg/Kg; Nickel 63.3-100 mg/Kg

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Date: 25-Sep-12
Report Date: 25-Sep-12

QA/QC SUMMARY REPORT

Client: AECOM
Work Order: 1208087
Project: Sediment Analysis - 60225262-058
BatchID: R20843

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
*Sample ID: **1208087-001A-D***			*Method: **MSA15-5***		*Batch ID: **R20843***			*Analysis Date: 8/30/2012 4:00:00 PM*		
% Clay	ND	0.1	%					0	35	
% Sand	96.0	0.1	%					0	35	
% Silt	4.0	0.1	%					0	35	
Soil Class	SAND									

Qualifiers: NA Sample conc. is > 4*spike level

S* Spike Recovery outside limits; within Manufacturer Limits
Manufacturer Limits for Aluminum 4270-15100 mg/Kg; Copper 184-326 mg/Kg; Mercury 2.97-80.4 mg/Kg; Silver 16.1-37.5 mg/Kg; Arsenic 39.7-100 mg/Kg; Selenium 121-340 mg/Kg; Nickel 63.3-100 mg/Kg

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Date: 25-Sep-12
Report Date: 25-Sep-12

QA/QC SUMMARY REPORT

Client: AECOM
Project: Sediment Analysis - 60225262-058

Work Order: 1208087
BatchID: R20928

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
*Sample ID: **1208157-001A-D***			*Method: **OM_WALKLE** Batch ID: **R20928***						*Analysis Date: 9/12/2012 12:00:00 PM*	
Organic Matter - Walkl	0.61	0.20	%					2.81	35	
*Sample ID: **LCS***			*Method: **OM_WALKLE** Batch ID: **R20928***						*Analysis Date: 9/12/2012 12:00:00 PM*	
Organic Matter - Walkl	49.9	0.20	%	49.60	101	70.7	109			
*Sample ID: **PB***			*Method: **OM_WALKLE** Batch ID: **R20928***						*Analysis Date: 9/12/2012 12:00:00 PM*	
Organic Matter - Walkl	ND	0.20	%							

Qualifiers:
NA Sample conc. is > 4*spike level
S* Spike Recovery outside limits; within Manufacturer Limits
Manufacturer Limits for Aluminum 4270-15100 mg/Kg; Copper 184-326 mg/Kg; Mercury 2.97-80.4 mg/Kg; Silver 16.1-37.5 mg/Kg; Arsenic 39.7-100 mg/Kg; Selenium 121-340 mg/Kg; Nickel 63.3-100 mg/Kg

AECOM

CHAIN OF CUSTODY RECORD

1208087

Page 1 of 1

Client/Project Name: 058 (2012)	Project Location: AECOM/FCETL
Project Number: 60225262-058	Field Logbook No.:
Sampler (Print Name)/(Affiliation): Christina Needham (AECOM)/ Karel Barnett-(AECOM)	Chain of Custody Tape Nos.: 42721
Signature: Christina Needham	Send Results/Report to: Rami.Naddy@aecom.com TAT: std

Analysis Requested: TOC (Walkley Black); Total Metals (Ag, Cr, Ni, Pb, Zn, As, Co, Cu, Pb, Se); Mercury; % Coarse Material; Rapid Hydro (% clay, Sand, Silt)

Container Type: P – Plastic; A – Amber Glass; G – Clear Glass; V – VOA Vial; O – Other; E – Encore

Preservation: 1 – HCl, 4°; 2 – H2SO4, 4°; 3 – HNO3, 4°; 4 – NaOH, 4°; 5 – NaOH/ZnAc, 4°; 6 – Na2S2O3, 4°; 7 – 4°

Matrix Codes: DW – Drinking Water; WW – Wastewater; GW – Groundwater; SW – Surface Water; ST – Storm Water; W – Water; S – Soil; SL – Sludge; SD – Sediment; SO – Solid; A – Air; L – Liquid; P – Product

Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	Lab I.D.	Remarks
Sand	8/9/12	1110		X	80z Plastic	Soil	(4oC) ice		001	
Form Sed	↓	↓		↓	↓	↓	↓		002	
LJH (#25938)									003	
LSH (#25939)									004	
MSH (#25940)									005	
USC (#25932)									006	
LSLA (#25933)									007	
EFSA (#25934)	↓	↓		↓	↓	↓	↓		008	

Relinquished by: (Print Name)/(Affiliation) Christina Needham (AECOM)	Date: 8/13/12	Received by: (Print Name)/(Affiliation) Tyler Johnston (MSE Lab Services)	Date: 8/14/12
Signature: Christina Needham	Time: 1130	Signature: Tyler Johnston	Time: 1020
Relinquished by: (Print Name)/(Affiliation)	Date:	Received by: (Print Name)/(Affiliation)	Date:
Signature:	Time:	Signature:	Time:
Relinquished by: (Print Name)/(Affiliation)	Date:	Received by: (Print Name)/(Affiliation)	Date:
Signature:	Time:	Signature:	Time:

Analytical Laboratory (Destination):

AECOM Toxicology Lab
4303 W. Laporte Avenue
Fort Collins, CO 80521 MSE
(970) 416-0916
(970) 490-2963 (FAX)

Temp 5°C Received In cooler On Ice Sealed containers

Sample Shipped Via: UPS (FedEx) Courier Other

Temp blank: Yes (No)

Q:\GRAPHICS\FORMS\Chain of Custody (COC\Chain-of-Custody_Ft Collins_10_07.doc

Serial No. NC 52557

MSE Lab Services

Sample Receipt Checklist

Client Name AECOM_INC

Date and Time Received: 8/14/2012 10:20:00 AM

Work Order Number 1208087 RcptNo: 1

Received by tr Tyler J

COC_ID: 1208087 CoolerID:

Checklist completed by Debbee Ortega 8-15-12 Reviewed by Do 8/17/12
Signature Date Initials Date

Matrix: Carrier name FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☑	No ☐	Not Present ☐
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Water - VOA vials have zero headspace?	No VOA vials submitted ☑	Yes ☐	No ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Blank ☐

Adjusted? N/A Checked by DF 8/15/12
Soils

Any No and/or NA (not applicable) response must be detailed in the comments section be

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: REC'D IN COOLER/ICE; TEMP=5 DEGREE C

Corrective Action _____

Tuesday, September 25, 2012

Analytical Laboratory

Rami Naddy
AECOM
4303 W Laporte Ave
Fort Collins, CO 80521

RE: 60225262-058 Work Order: 1207139

Dear Rami Naddy:

MSE Lab Services received 6 sample(s) on 7/25/2012 for the analyses presented in the following report.

Please find enclosed analytical results for the sample(s) received at the MSE Laboratory.

If you have any questions regarding these test results, please feel free to call.

Sincerely,

Sara Ward

Sara Ward
Laboratory Manager
406-494-7334

Enclosure

MSE Analytical Laboratory
P.O. Box 4078
200 Technology Way
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Lab: 406-494-7334
Fax: 406-494-7230
labinfo@mse-ta.com

9/26/12 SW

MSE Lab Services

Date: *25-Sep-12*

CLIENT: AECOM
Lab Order: 1207139
Project: 60225262-058
Lab ID: 1207139-001

Client Sample ID: LSH (#25942)
Collection Date: 7/3/2012

Matrix: SEDIMENT

Analyses	Result	MDL	Rpt Limit	Qualifier	Units	DF	Date Analyzed
AVS-SEM METALS			**AVS-SEM**	**SW3005A**			Analyst: **tj**
Cadmium	0.00137	0.00002	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Copper	0.2112	0.00020	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
Lead	0.01701	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Nickel	0.04684	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Simultaneously Extracted Metal	0.6375	0.00051	0.00191		µmoles/g	1	9/13/2012 12:12:08 PM
Zinc	0.3611	0.00050	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
PERCENT SOLIDS			**A2540G**				Analyst: **dk/jr**
Percent Solids	79.6	0.01	0.1		%	1	8/21/2012 3:40:00 PM
ACID VOLATILE SULFIDE-SIM. EXT. METALS			**AVS-SEM**				Analyst: **jo**
Sulfide	ND	0.55	1.50		µmoles/g	1	8/29/2012 8:00:00 AM

Qualifiers:

E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

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MSE Lab Services

Date: *25-Sep-12*

CLIENT: AECOM
Lab Order: 1207139
Project: 60225262-058
Lab ID: 1207139-002

Client Sample ID: MSH (#25943)
Collection Date: 7/3/2012
Matrix: SEDIMENT

Analyses	Result	MDL	Rpt Limit	Qualifier	Units	DF	Date Analyzed
AVS-SEM METALS			**AVS-SEM**	**SW3005A**			Analyst: **tj**
Cadmium	0.00070	0.00002	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Copper	0.2810	0.00020	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
Lead	0.03112	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Nickel	0.05961	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Simultaneously Extracted Metal:	0.6320	0.00051	0.00191		µmoles/g	1	9/13/2012 12:12:08 PM
Zinc	0.2595	0.00050	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
PERCENT SOLIDS			**A2540G**				Analyst: **dk/jr**
Percent Solids	84.8	0.01	0.1		%	1	8/21/2012 3:40:00 PM
ACID VOLATILE SULFIDE-SIM. EXT. METALS			**AVS-SEM**				Analyst: **jo**
Sulfide	0.93	0.55	1.50	J	µmoles/g	1	8/29/2012 8:00:00 AM

Qualifiers:				
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

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MSE Lab Services

Date: *25-Sep-12*

CLIENT: AECOM
Lab Order: 1207139
Project: 60225262-058
Lab ID: 1207139-003

Client Sample ID: USC (#25935)
Collection Date: 7/2/2012

Matrix: SEDIMENT

Analyses	Result	MDL	Rpt Limit	Qualifier	Units	DF	Date Analyzed
AVS-SEM METALS			**AVS-SEM**	**SW3005A**			Analyst: **tj**
Cadmium	0.00192	0.00002	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Copper	0.08115	0.00020	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
Lead	0.00379	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Nickel	0.05206	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Simultaneously Extracted Metal	0.4368	0.00051	0.00191		µmoles/g	1	9/13/2012 12:12:08 PM
Zinc	0.2979	0.00050	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
PERCENT SOLIDS			**A2540G**				Analyst: **dk/jr**
Percent Solids	78.8	0.01	0.1		%	1	8/21/2012 3:40:00 PM
ACID VOLATILE SULFIDE-SIM. EXT. METALS			**AVS-SEM**				Analyst: **jo**
Sulfide	1.35	0.55	1.50	J	µmoles/g	1	8/29/2012 8:00:00 AM

Qualifiers:				
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: *25-Sep-12*

CLIENT: AECOM
Lab Order: 1207139
Project: 60225262-058
Lab ID: 1207139-004

Client Sample ID: EFSC (#25937)
Collection Date:

Matrix: SEDIMENT

Analyses	Result	MDL	Rpt Limit	Qualifier	Units	DF	Date Analyzed
AVS-SEM METALS			**AVS-SEM**		**SW3005A**		Analyst: **tj**
Cadmium	0.06460	0.00002	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Copper	0.3021	0.00020	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
Lead	0.00944	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Nickel	0.5195	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Simultaneously Extracted Metal	7.827	0.00051	0.00191		µmoles/g	1	9/13/2012 12:12:08 PM
Zinc	6.931	0.00050	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
PERCENT SOLIDS			**A2540G**				Analyst: **dk/jr**
Percent Solids	72.3	0.01	0.1		%	1	8/21/2012 3:40:00 PM
ACID VOLATILE SULFIDE-SIM. EXT. METALS			**AVS-SEM**				Analyst: **jo**
Sulfide	1.10	0.55	1.50	J	µmoles/g	1	8/29/2012 8:00:00 AM

Qualifiers:				
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: *25-Sep-12*

CLIENT: AECOM
Lab Order: 1207139
Project: 60225262-058
Lab ID: 1207139-005

Client Sample ID: LJH (#25941)
Collection Date: 7/2/2012

Matrix: SEDIMENT

Analyses	Result	MDL	Rpt Limit	Qualifier	Units	DF	Date Analyzed
AVS-SEM METALS			**AVS-SEM**	**SW3005A**			Analyst: **tj**
Cadmium	0.00101	0.00002	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Copper	0.3437	0.00020	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
Lead	0.02664	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Nickel	0.03198	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Simultaneously Extracted Metal:	0.6427	0.00051	0.00191		µmoles/g	1	9/13/2012 12:12:08 PM
Zinc	0.2393	0.00050	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
PERCENT SOLIDS			**A2540G**				Analyst: **dk/jr**
Percent Solids	80.8	0.01	0.1		%	1	8/21/2012 3:40:00 PM
ACID VOLATILE SULFIDE-SIM. EXT. METALS			**AVS-SEM**				Analyst: **jo**
Sulfide	1.05	0.55	1.50	J	µmoles/g	1	8/29/2012 8:00:00 AM

Qualifiers:				
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

MSE Lab Services

Date: *25-Sep-12*

CLIENT: AECOM
Lab Order: 1207139
Project: 60225262-058
Lab ID: 1207139-006

Client Sample ID: LSLA (#25936)
Collection Date: 7/3/2012
Matrix: SEDIMENT

Analyses	Result	MDL	Rpt Limit	Qualifier	Units	DF	Date Analyzed
AVS-SEM METALS			**AVS-SEM**	**SW3005A**			Analyst: **tj**
Cadmium	0.00573	0.00002	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Copper	0.1204	0.00020	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
Lead	0.01162	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Nickel	0.07371	0.00001	0.00010		µmoles/g	1	9/13/2012 12:12:08 PM
Simultaneously Extracted Metal	1.049	0.00051	0.00191		µmoles/g	1	9/13/2012 12:12:08 PM
Zinc	0.8376	0.00050	0.00100		µmoles/g	1	9/13/2012 12:12:08 PM
PERCENT SOLIDS			**A2540G**				Analyst: **dk/jr**
Percent Solids	77.4	0.01	0.1		%	1	8/21/2012 3:40:00 PM
ACID VOLATILE SULFIDE-SIM. EXT. METALS			**AVS-SEM**				Analyst: **jo**
Sulfide	0.99	0.55	1.50	J	µmoles/g	1	8/29/2012 8:00:00 AM

Qualifiers:				
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below the Reporting Limit	Limit	Reporting Limit
	MDL	Method Detection Limit	ND	Not Detected at the Method Detection Limit (MDL)

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Date: 25-Sep-12
Report Date: 25-Sep-12

QA/QC SUMMARY REPORT

Client: AECOM
Project: 60225262-058
Work Order: 1207139
BatchID: 5937

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
*Sample ID: **X-PB-5937***			*Method: **AVS-SEM***	*Batch ID: **5937***				*Analysis Date: 9/13/2012 12:12:08 PM*		
Cadmium	ND	0.00010	µmoles/g							
Copper	0.00079	0.00100	µmoles/g							J
Lead	0.00009	0.00010	µmoles/g							J
Nickel	0.00074	0.00010	µmoles/g							
Simultaneously Extract	0.05240	0.00191	µmoles/g							
Zinc	0.05076	0.00100	µmoles/g							
*Sample ID: **PB-5937***			*Method: **AVS-SEM***	*Batch ID: **5937***				*Analysis Date: 9/13/2012 12:12:08 PM*		
Cadmium	ND	0.00010	µmoles/g							
Copper	0.00050	0.00100	µmoles/g							J
Lead	0.00001	0.00010	µmoles/g							J
Nickel	0.00055	0.00010	µmoles/g							
Simultaneously Extract	0.00500	0.00191	µmoles/g							
Zinc	0.00393	0.00100	µmoles/g							
*Sample ID: **LCS-5937***			*Method: **AVS-SEM***	*Batch ID: **5937***				*Analysis Date: 9/13/2012 12:12:08 PM*		
Cadmium	0.08513	0.00010	µmoles/g	0.08900	95.7	80	120			
Copper	0.1891	0.00100	µmoles/g	0.1570	120	80	120			
Lead	0.05578	0.00010	µmoles/g	0.04800	116	80	120			
Nickel	0.2018	0.00010	µmoles/g	0.1700	119	80	120			
Simultaneously Extract	0.7109	0.00191	µmoles/g	0.6170	115	80	120			
Zinc	0.1790	0.00100	µmoles/g	0.1530	117	80	120			
*Sample ID: **1207139-002A-D***			*Method: **AVS-SEM***	*Batch ID: **5937***				*Analysis Date: 9/13/2012 12:12:08 PM*		
Cadmium	0.00081	0.00010	µmoles/g					15.7	20	
Copper	0.2736	0.00100	µmoles/g					2.68	20	
Lead	0.02635	0.00010	µmoles/g					16.6	20	
Nickel	0.04883	0.00010	µmoles/g					19.9	20	
Simultaneously Extract	0.5976	0.00191	µmoles/g					5.60	20	
Zinc	0.2480	0.00100	µmoles/g					4.56	20	
*Sample ID: **1207139-002A-MS***			*Method: **AVS-SEM***	*Batch ID: **5937***				*Analysis Date: 9/13/2012 12:12:08 PM*		
Cadmium	0.06259	0.00010	µmoles/g	0.08278	74.8	75	125			
Copper	0.4461	0.00100	µmoles/g	0.1460	113	75	125			
Lead	0.07930	0.00010	µmoles/g	0.04464	108	75	125			
Nickel	0.2381	0.00010	µmoles/g	0.1581	113	75	125			
Simultaneously Extract	1.244	0.00191	µmoles/g	0.5739	107	75	125			
Zinc	0.4176	0.00100	µmoles/g	0.1423	111	75	125			
*Sample ID: **1207139-002A-MSD***			*Method: **AVS-SEM***	*Batch ID: **5937***				*Analysis Date: 9/13/2012 12:12:08 PM*		
Cadmium	0.06279	0.00010	µmoles/g	0.08278	75.0	75	125	0.327	20	
Copper	0.4282	0.00100	µmoles/g	0.1460	101	75	125	4.09	20	
Lead	0.07550	0.00010	µmoles/g	0.04464	99.4	75	125	4.90	20	

Qualifiers: NA Sample conc. is > 4*spike level

S Spike Recovery outside accepted recovery limits

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Date: 25-Sep-12
Report Date: 25-Sep-12

QA/QC SUMMARY REPORT

Client: AECOM
Project: 60225262-058

Work Order: 1207139
BatchID: 5937

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
*Sample ID: **1207139-002A-MSD***			*Method: **AVS-SEM***	*Batch ID: **5937***				*Analysis Date: 9/13/2012 12:12:08 PM*		
Nickel	0.2249	0.00010	µmoles/g	0.1581	105	75	125	5.73	20	
Simultaneously Extract	1.189	0.00191	µmoles/g	0.5739	97.1	75	125	4.46	20	
Zinc	0.3980	0.00100	µmoles/g	0.1423	97.3	75	125	4.81	20	

Qualifiers:
NA Sample conc. is > 4*spike level
S Spike Recovery outside accepted recovery limits

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Date: 25-Sep-12
Report Date: 25-Sep-12

QA/QC SUMMARY REPORT

Client: AECOM
Project: 60225262-058

Work Order: 1207139
BatchID: R20694

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
Sample ID: ***1207139-001A***			*Method:* ***A2540G***		*Batch ID:* ***R20694***			*Analysis Date:* ***8/21/2012 3:40:00 PM***		
Percent Solids	79.4	0.1	%					0.251	35	

Qualifiers:
NA Sample conc. is > 4*spike level
S Spike Recovery outside accepted recovery limits

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Date: 25-Sep-12
Report Date: 25-Sep-12

QA/QC SUMMARY REPORT

Client: AECOM
Project: 60225262-058

Work Order: 1207139
BatchID: R20853

Analyte	Result	RL	Units	Spike Lvl	% Rec	Low Limit	High Limit	RPD	RPD Limit	Qualifier
Sample ID: ***1207139-002A-D***			*Method:* ***AVS-SEM***		*Batch ID:* ***R20853***			*Analysis Date: 8/29/2012 8:00:00 AM*		
Sulfide	0.93	1.50	µmoles/g					0	35	J
Sample ID: ***1207139-003A-S***			*Method:* ***AVS-SEM***		*Batch ID:* ***R20853***			*Analysis Date: 8/29/2012 8:00:00 AM*		
Sulfide	9.85	1.50	µmoles/g	10.64	79.9	80	120			
Sample ID: ***LCS-WC 2634***			*Method:* ***AVS-SEM***		*Batch ID:* ***R20853***			*Analysis Date: 8/29/2012 8:00:00 AM*		
Sulfide	3.63	1.50	µmoles/g	4.194	86.6	85	105			
Sample ID: ***PB***			*Method:* ***AVS-SEM***		*Batch ID:* ***R20853***			*Analysis Date: 8/29/2012 8:00:00 AM*		
Sulfide	ND	1.50	µmoles/g							

Qualifiers:
NA Sample conc. is > 4*spike level
S Spike Recovery outside accepted recovery limits

AECOM

CHAIN OF CUSTODY RECORD

1207139

Page 1 of 1

Client/Project Name: 058	Project Location: FCETL/AECOM
Project Number: 60255262-058 2012	Field Logbook No.:
Sampler (Print Name)/(Affiliation): Client	Chain of Custody Tape Nos.: 43266
Signature:	Send Results/Report to: Rami.Naddy@aecom.com — TAT: Std

Analysis Requested: AVS

Container Type: P – Plastic; A – Amber Glass; G – Clear Glass; V – VOA Vial; O – Other; E – Encore

Preservation: 1 – HCl, 4°; 2 – H2SO4, 4°; 3 – HNO3, 4°; 4 – NaOH, 4°; 5 – NaOH/ZnAc, 4°; 6 – Na2S2O3, 4°; 7 – 4°

Matrix Codes: DW – Drinking Water; WW – Wastewater; GW – Groundwater; SW – Surface Water; ST – Storm Water; W – Water; S – Soil; SL – Sludge; SD – Sediment; SO – Solid; A – Air; L – Liquid; P – Product

Field Sample No./Identification	Date	Time	COMP	GRAB	Sample Container (Size/Mat'l)	Matrix	Preserv.	Field Filtered	AVS	Lab I.D.	Remarks
LSH (# 25942)	7/3/12	Unk.			40z Glass	Sed	Ice		X	001	
MSH (# 25943)	7/3/12								X	002	
USC (# 25935)	7/2/12								X	003	
EFSC (# 25937)	Unk.								X	004	
LSH (# 25941)	7/2/12								X	005	
LSLA (# 25936)	7/3/12	↓			↓	↓	↓		X		

Relinquished by: (Print Name)/(Affiliation) Christina Needham (AECOM)	Date: 7/24/12	Received by: (Print Name)/(Affiliation) P.O'Donnell	Date: 7/25/12	Analytical Laboratory (Destination): AECOM Toxicology Lab, 4303 W. Laporte Avenue, Fort Collins, CO 80521, (970) 416-0916, (970) 490-2963 (FAX) MSE
Signature:	Time: 1300	Signature:	Time: 1330	
Relinquished by: (Print Name)/(Affiliation)	Date:	Received by: (Print Name)/(Affiliation)	Date:	
Signature:	Time:	Signature:	Time:	
Relinquished by: (Print Name)/(Affiliation)	Date:	Received by: (Print Name)/(Affiliation)	Date:	
Signature:	Time:	Signature:	Time:	

Sample Shipped Via: UPS FedEx Courier Other — overnight

Temp blank: Yes No

Serial No. Nº 52449

O:\GRAPHICS\FORMS\Chain of Custody (COC)\Chain-of-Custody FL Collins_10_07.doc

MSE Lab Services

Sample Receipt Checklist

Client Name AECOM_INC

Date and Time Received: 7/25/2012 1:30:00 PM

Work Order Number 1207139 RcptNo: 1 Received by BO

COC_ID: CoolerID:

Checklist completed by Bo O'Donnell 7/25/12 Reviewed by JW 7/26/12

Signature Date Initials Date

Matrix: Carrier name Priority US Mail

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Water - VOA vials have zero headspace?	No VOA vials submitted ☑	Yes ☐	No ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	Blank ☐

Adjusted? Na Checked by Bo 7/25/12

Sediments

Any No and/or NA (not applicable) response must be detailed in the comments section be

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: TEMP = 1.2 DEGREE C - COOLER ON ICE.

Corrective Action _____

APPENDIX F: SPAWNING SUBSTRATE QUALITY DATA

Appendix F.–2012 spawning substrate data for sites sampled near Kensington Gold Mine.

Slate Creek Sample Point 1, Sampled on 7/9/2012

	Volume (mL/L) Retained Per Sieve (Sieve Size in mm)									Sample Depth
Sample No.	101.6	50.8	25.4	12.7	6.35	1.68	0.42	0.15	Imhoff	(cm)
1	1050	140	140	280	190	395	95	15	24	20
2	0	0	200	225	140	325	140	15	24	20
3	0	515	310	225	250	580	240	27	65	21
4	0	570	510	260	290	750	415	53	54	20

Slate Creek Sample Point 2, Sampled on 7/9/12

	Volume (mL/L) Retained Per Sieve (Sieve Size in mm)									Sample Depth
Sample No.	101.6	50.8	25.4	12.7	6.35	1.68	0.42	0.15	Imhoff	(cm)
1	101.6	250	380	270	260	475	195	23	46.5	20
2	600	75	395	295	180	375	135	15	18.5	20
3	0	450	340	370	340	590	295	30	18	20
4	0	0	320	460	285	545	300	28	16.5	19

Johnson Creek Sample Point 1, Sampled on 7/11/12

	Volume (mL/L) Retained Per Sieve (Sieve Size in mm)									Sample Depth
Sample No.	101.6	50.8	25.4	12.7	6.35	1.68	0.42	0.15	Imhoff	(cm)
1	0	0	205	655	725	290	170	60	51.5	25
2	0	0	75	265	670	755	340	100	55.5	25
3	0	0	80	560	605	620	100	89	65.5	25
4	0	0	90	450	560	575	195	65	66.5	25

Johnson Creek Sample Point 2, Sampled on 7/11/12

	Volume (mL/L) Retained Per Sieve (Sieve Size in mm)									Sample Depth
Sample No.	101.6	50.8	25.4	12.7	6.35	1.68	0.42	0.15	Imhoff	(cm)
1	0	0	15	260	440	940	1040	150	38	25
2	0	0	215	450	350	370	250	35	16.5	25
3	0	0	510	1000	605	355	55	41	91	25
4	0	190	510	725	350	200	30	25	11	25

Sherman Creek Sample Point 1, Sampled on 7/10/12

	Volume (mL/L) Retained Per Sieve (Sieve Size in mm)									Sample Depth
Sample No.	101.6	50.8	25.4	12.7	6.35	1.68	0.42	0.15	Imhoff	(cm)
1	0	500	350	350	300	635	240	25	24.5	17
2	0	600	450	350	350	1350	500	96	191	22
3	0	425	200	290	300	650	245	26	17.5	20
4	0	590	425	295	235	300	150	25	16.5	20

Sherman Creek Sample Point 2, Sampled on 7/16/12

	Volume (mL/L) Retained Per Sieve (Sieve Size in mm)									Sample Depth
Sample No.	101.6	50.8	25.4	12.7	6.35	1.68	0.42	0.15	Imhoff	(cm)
1	0	975	290	310	350	660	375	75	49	20
2	0	250	400	375	340	450	180	25	5.5	17
3	0	400	240	500	425	630	210	25	6.5	17
4	0	200	515	400	300	550	390	50	48	17

APPENDIX G: ADULT SALMON COUNT DATA

Table G1.–2012 Slate Creek adult pink salmon counts by reach.

	7/16/2012 Pink Salmon Counts				7/25/2012 Pink Salmon Counts				7/31/2012 Pink Salmon Counts			
Stream Reach	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**
0-100m	0	0	0	0	0	0	0	0	30	32	31	0
100-200m	0	0	0	0	0	0	0	0	29	41	35	0
200-300m	0	0	0	0	0	0	0	0	112	98	105	1
300-400m	0	0	0	0	0	0	0	0	110	115	112	1
400-500m	0	0	0	0	0	0	0	0	82	79	80	0
500-600m	0	0	0	0	0	0	0	0	1	1	1	0
600-700m	0	0	0	0	0	0	0	0	0	0	0	0
700-800m	0	0	0	0	0	0	0	0	0	0	0	0
800-900m	0	0	0	0	0	0	0	0	0	0	0	0
900-barrier	0	0	0	0	0	0	0	0	**0**	**0**	**0**	0
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**364**	**366**	**364**	**2**

	8/6/2012 Pink Salmon Counts				8/13/2012 Pink Salmon Counts				8/20/2012 Pink Salmon Counts			
Stream Reach	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**
0-100m	21	58	39	0	495	455	475	15	270	250	260	300
100-200m	175	217	196	0	490	460	475	16	358	465	411	250
200-300m	317	325	321	0	570	540	555	35	550	590	570	350
300-400m	97	107	102	3	600	460	530	40	510	400	455	200
400-500m	210	144	177	3	390	410	400	25	200	165	182	100
500-600m	214	225	219	0	211	260	235	15	167	170	168	50
600-700m	25	19	22	0	270	275	272	25	270	300	285	50
700-800m	28	17	22	1	160	190	175	5	0	0	0	0
800-900m	14	2	8	0	36	35	35	0	0	0	0	0
900-barrier	0	0	0	0	0	0	0	0	0	0	0	0
Total	**1101**	**1114**	**1106**	**7**	**3222**	**3085**	**3152**	**176**	**2325**	**2340**	**2331**	**1300**

	8/27/2012 Pink Salmon Counts				9/3/2012 Pink Salmon Counts				9/10/2012 Pink Salmon Counts			
Stream Reach	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**
0-100m	48	60	54	0	0	0	0	37	0	0	0	0
100-200m	73	80	76	0	1	1	1	43	0	0	0	0
200-300m	97	100	98	0	0	0	0	46	0	0	0	0
300-400m	28	17	22	0	0	0	0	32	0	0	0	0
400-500m	27	20	23	0	0	0	0	17	0	0	0	0
500-600m	17	17	17	0	0	0	0	0	0	0	0	0
600-700m	23	23	23	0	0	0	0	0	0	0	0	0
700-800m	5	6	5	0	0	0	0	0	0	0	0	0
800-900m	0	0	0	0	0	0	0	0	0	0	0	0
900-barrier	0	0	0	0	0	0	0	0	0	0	0	0
Total	**318**	**323**	**318**	**0**	**1**	**1**	**1**	**175**	**0**	**0**	**0**	**0**

Table G2.–2012 Johnson Creek adult pink salmon counts by reach.

	7/17/2012 Pink Salmon Counts				7/24/2012 Pink Salmon Counts				7/31/2012 Pink Salmon Counts			
Stream Reach	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**
Con-Lace	0	0	0	0	25	35	30	0	120	0	60	0
Lace-JM	0	0	0	0	0	0	0	0	50	0	25	0
JM-Trap	0	0	0	0	33	30	31	0	100	0	50	0
Trap-#4	0	0	0	0	0	0	0	0	50	65	57	0
#4-#7	0	0	0	0	0	25	12	0	150	130	140	0
#7-#10	0	0	0	0	0	0	0	0	158	0	79	0
#10-Power	0	0	0	0	0	0	0	0	0	0	0	0
Power-LF	0	0	0	0	0	0	0	0	0	0	0	0
LF-#15	0	0	0	0	0	0	0	0	0	0	0	0
#15-Falls pool	0	0	0	0	0	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**58**	**90**	**73**	**0**	**628**	**195**	**411**	**0**

	8/7/2012 Pink Salmon Counts				8/14/2012 Pink Salmon Counts				8/21/2012 Pink Salmon Counts			
Stream Reach	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**
Con-Lace	0	0	0	0	1	0	0	3	0	6	3	0
Lace-JM	0	0	0	0	7	0	3	3	51	3	27	2
JM-Trap	30	26	28	0	400	1	200	0	450	75	262	10
Trap-#4	17	56	36	0	400	300	350	0	560	225	392	25
#4-#7	150	130	140	0	300	260	280	0	350	240	295	10
#7-#10	462	320	391	0	840	550	695	20	550	350	450	50
#10-Power	250	2	126	0	150	100	125	0	520	180	350	120
Power-LF	0	0	0	0	10	0	5	0	40	10	25	10
LF-#15	50	15	32	0	50	30	40	0	15	10	12	15
#15-Falls pool	0	0	0	0	0	0	0	0	0	0	0	0
Total	**959**	**549**	**753**	**0**	**2158**	**1241**	**1698**	**26**	**2536**	**1099**	**1816**	**242**

	8/29/2012 Pink Salmon Counts				9/3/2012 Pink Salmon Counts				9/11/2012 Pink Salmon Counts			
Stream Reach	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**
Con-Lace	0	0	0	0	0	0	0	0	0	0	0	0
Lace-JM	0	0	0	0	0	0	0	0	0	0	0	0
JM-Trap	50	39	45	0	60	16	38	0	5	0	2	0
Trap-#4	50	58	54	0	17	7	12	0	1	0	0	0
#4-#7	32	13	23	0	5	4	4	0	5	3	4	0
#7-#10	100	14	57	0	8	3	5	0	0	0	0	0
#10-Power	30	10	20	0	1	1	1	0	0	0	0	0
Power-LF	0	2	1	0	0	0	0	0	0	2	1	0
LF-#15	0	0	0	0	0	0	0	0	0	0	0	0
#15-Falls pool	0	0	0	0	0	0	0	0	0	0	0	0
Total	**262**	**136**	**198**	**0**	**91**	**31**	**60**	**0**	**11**	**5**	**7**	**0**

	9/19/2012 Pink Salmon Counts			
Stream Reach	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**
Con-Lace	0	0	0	0
Lace-JM	0	0	0	0
JM-Trap	0	0	0	0
Trap-#4	0	0	0	0
#4-#7	0	0	0	0
#7-#10	0	0	0	0
#10-Power	0	0	0	0
Power-LF	0	0	0	0
LF-#15	0	0	0	0
#15-Falls pool	0	0	0	0
Total	**0**	**0**	**0**	**0**

Table G3.–2012 Johnson Creek adult chum salmon counts by reach.

	7/17/2012 Chum Salmon Counts				7/24/2012 Chum Salmon Counts				7/31/2012 Chum Salmon Counts			
Stream Reach	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**
Con-Lace	0	0	0	0	0	0	0	0	0	30	15	0
Lace-JM	0	0	0	0	0	0	0	0	0	3	2	0
JM-Trap	0	0	0	0	0	0	0	0	2	50	26	0
Trap-#4	0	0	0	0	0	2	1	0	0	0	0	0
#4-#7	0	0	0	0	2	35	19	0	4	6	5	0
#7-#10	0	0	0	0	65	0	33	0	0	0	0	0
#10-Power	0	0	0	0	0	0	0	0	0	0	0	0
Power-LF	0	0	0	0	0	0	0	0	0	0	0	0
LF-#15	0	0	0	0	0	0	0	0	0	0	0	0
#15-Falls pool	0	0	0	0	0	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**67**	**37**	**52**	**0**	**6**	**89**	**48**	**0**

	8/7/2012 Chum Salmon Counts				8/14/2012 Chum Salmon Counts			
Stream Reach	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**
Con-Lace	0	0	0	0	0	0	0	0
Lace-JM	0	0	0	0	0	0	0	0
JM-Trap	0	0	0	0	0	0	0	0
Trap-#4	1	1	1	0	0	0	0	0
#4-#7	0	0	0	0	0	0	0	0
#7-#10	0	0	0	0	0	0	0	0
#10-Power	0	0	0	0	0	0	0	0
Power-LF	0	0	0	0	0	0	0	0
LF-#15	0	0	0	0	0	0	0	0
#15-Falls pool	0	0	0	0	0	0	0	0
Total	**1**	**1**	**1**	**0**	**0**	**0**	**0**	**0**

Table G4.–2012 Johnson Creek adult coho salmon counts by reach.

	9/26/2012 Coho Salmon Counts				10/2/2012 Coho Salmon Counts				10/9/2012 Coho Salmon Counts			
Stream Reach	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**
Con-Lace	0	0	0	0	0	0	0	0	0	0	0	0
Lace-JM	0	0	0	0	0	0	0	0	0	0	0	0
JM-Trap	0	0	0	0	0	0	0	0	0	0	0	0
Trap-#4	0	0	0	0	0	0	0	0	0	0	0	0
#4-#7	31	31	31	0	30	30	30	0	5	5	5	0
#7-#10	2	2	2	0	10	10	10	0	0	0	0	0
#10-Power	0	0	0	0	0	0	0	0	0	0	0	0
Power-LF	0	0	0	0	0	0	0	0	0	0	0	0
LF-#15	0	0	0	0	0	0	0	0	0	0	0	0
#15-Falls pool	0	0	0	0	0	0	0	0	0	0	0	0
Total	**33**	**33**	**33**	**0**	**40**	**40**	**40**	**0**	**5**	**5**	**5**	**0**

	10/16/2012 Coho Salmon Counts				10/25/2012 Coho Salmon Counts				10/30/2012 Coho Salmon Counts			
Stream Reach	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**
Con-Lace	0	0	0	0	0	-	-	0	0	-	-	0
Lace-JM	0	0	0	0	0	-	-	0	0	-	-	0
JM-Trap	0	0	0	0	0	-	-	0	0	-	-	0
Trap-#4	0	0	0	0	0	-	-	0	0	-	-	0
#4-#7	0	0	0	0	4	-	-	0	2	-	-	0
#7-#10	0	0	0	0	0	-	-	0	0	-	-	0
#10-Power	0	0	0	0	1	-	-	0	1	-	-	0
Power-LF	0	0	0	0	0	-	-	0	0	-	-	0
LF-#15	0	0	0	0	0	-	-	0	0	-	-	0
#15-Falls pool	0	0	0	0	0	-	-	0	0	-	-	0
Total	**0**	**0**	**0**	**0**	**5**	**-**	**-**	**0**	**3**	**-**	**-**	**0**

	11/5/2012 Coho Salmon Counts			
Stream Reach	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**
Con-Lace	0	-	-	0
Lace-JM	0	-	-	0
JM-Trap	0	-	-	0
Trap-#4	1	-	-	0
#4-#7	2	-	-	0
#7-#10	0	-	-	0
#10-Power	1	-	-	0
Power-LF	0	-	-	0
LF-#15	0	-	-	0
#15-Falls pool	0	-	-	0
Total	**4**	**-**	**-**	**0**

Note: snorkel surveys on 10/25, 10/30, and 11/5 were performed by a single observer.

Table G5.–2012 Sherman Creek adult pink salmon counts by reach.

	7/16/2012 Pink Salmon Counts				7/26/2012 Pink Salmon Counts				7/31/2012 Pink Salmon Counts			
Stream Reach	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**
0-50m	0	0	0	0	2	2	2	0	3	2	2	0
50-100m	0	0	0	0	0	0	0	0	0	0	0	0
100-150m	0	0	0	0	0	0	0	0	0	0	0	0
150-200m	0	0	0	0	0	0	0	0	7	7	7	0
200-250m	0	0	0	0	0	0	0	0	1	0	0	0
250-300m	0	0	0	0	0	0	0	0	0	0	0	0
300-350m	0	0	0	0	0	0	0	0	0	0	0	0
350-Falls Pool	0	0	0	0	0	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**2**	**2**	**2**	**0**	**11**	**9**	**9**	**0**

	8/6/2012 Pink Salmon Counts				8/13/2012 Pink Salmon Counts				8/20/2012 Pink Salmon Counts			
Stream Reach	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**
0-50m	10	6	8	0	48	40	44	3	60	45	52	3
50-100m	4	4	4	0	49	18	33	0	62	45	53	3
100-150m	6	5	5	0	5	4	4	1	36	16	26	6
150-200m	21	15	18	0	30	19	24	2	76	85	80	10
200-250m	15	14	14	0	55	43	49	0	81	90	85	0
250-300m	16	13	14	0	50	40	45	0	54	60	57	3
300-350m	26	19	22	1	45	27	36	3	77	65	71	10
350-Falls Pool	11	13	12	1	55	46	50	3	99	95	97	7
Total	**109**	**89**	**97**	**2**	**337**	**237**	**285**	**12**	**545**	**501**	**521**	**42**

	8/27/2012 Pink Salmon Counts				9/3/2012 Pink Salmon Counts				9/10/2012 Pink Salmon Counts			
Stream Reach	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**
0-50m	75	70	72	3	24	7	15	3	2	1	1	0
50-100m	83	70	76	4	31	32	31	6	10	8	9	0
100-150m	25	25	25	3	6	3	4	3	1	1	1	0
150-200m	80	75	77	15	54	63	58	23	3	3	3	0
200-250m	100	108	104	25	12	18	15	9	2	0	1	0
250-300m	80	56	68	16	9	8	8	7	8	8	8	0
300-350m	60	29	44	0	19	9	14	0	2	2	2	0
350-Falls Pool	55	56	55	0	0	0	0	0	0	0	0	0
Total	**558**	**489**	**521**	**66**	**155**	**140**	**145**	**51**	**28**	**23**	**25**	**0**

	9/18/2012 Pink Salmon Counts			
Stream Reach	**Obs. 1**	**Obs. 2**	**Mean**	**Carcass**
0-50m	0	0	0	0
50-100m	1	1	1	0
100-150m	0	0	0	0
150-200m	0	0	0	0
200-250m	0	0	0	0
250-300m	2	2	2	0
300-350m	0	0	0	0
350-Falls Pool	0	0	0	0
Total	**3**	**3**	**3**	**0**

Table G6.–Adult salmon counts for pink, chum, and coho salmon by statistical week in Slate, Sherman and Johnson Creeks, 2011–2012.

Pink Salmon Survey Data						
Statistical	Slate Creek		Johnson Creek		Sherman Creek	
Week	2011	2012	2011	2012	2011	2012
29	-	0	-	0	-	0
30	0	0	1	73	1	2
31	0	364	180	411	300	9
32	370	1106	1892	753	774	97
33	764	3152	3850	1698	1051	285
34	1396	2331	5264	1816	399	521
35	1648	318	1351	198	159	521
36	1815	1	3712	60	873	145
37	231	0	672	7	417	25
38	46	-	437	0	611	3
39	0	-	145	-	36	-

Chum Salmon Survey Data						
Statistical	Slate Creek		Johnson Creek		Sherman Creek	
Week	2011	2012	2011	2012	2011	2012
29	-	0	-	0	0	0
30	0	0	2	52	0	0
31	0	0	14	48	0	0
32	52	0	0	1	0	0
33	8	1	0	0	0	0
34	0	0	5	0	0	0
35	0	0	0	0	0	0

Coho Salmon Survey Data						
Statistical	Slate Creek		Johnson Creek		Sherman Creek	
Week	2011	2012	2011	2012	2011	2012
39	-	0	-	33	-	-
40	-	0	-	40	-	-
41	-	0	-	5	-	-
42	-	0	-	0	-	-
43	0	-	15	5	-	-
44	0	-	9	3	-	-
45	0	-	-	4	-	-
46	0	-	9	-	-	-

Note: “-” indicates we did not survey for fish.

APPENDIX H: SHERMAN CREEK CATALOG NOMINATION

State of Alaska
Department of Fish and Game
Sportfish Division

Nomination Details For
Anadromous Waters Catalog
Nomination Number 12-506

Region Southeastern **USGS Quad** Juneau D-4

Upper Reach Latitude 0.0000 **Longitude** 0.0000 (NAD83/WGS84)

Lower Reach Latitude 0.0000 **Longitude** 0.0000 (NAD83/WGS84)

AWC Waterbody # 115-31-10330

AWC Waterbody Name Sherman Creek

Observations		
Species	**Date Observed**	**Activity**

Comments:

Delete coho salmon rearing from stream. Coho rearing was added in 2010 according to an observation made on 5/25/09 by field technician Charmagne Guitierez on behalf of Aquatic Science Inc. In published biomonitoring results from Aquatic Science Inc. 2009 coho were not cited as being observed. The 2005-2010 NPDES annual reports for the Kensington Gold mine have never cited coho as being observed in Sherman Creek. The most recent biomonitoring field work in 2011 which was conducted by Juneau area habitat biologists also confirmed that coho are not present in Sherman creek.

Name of Observer: Benjamin Brewster **Submission Date:** 03/08/12

ADFG Biologist: **Nomination Status:** Change

Nomination Changes To The AWC

Region Map(quad) AWC Stream #	Stream Name	Action Taken	Species*	Comments
Southeastern JUNEAU D-4 115-31-10330		Delete species from existing stream or lake	CO	

Addition files included with this nomination.

File Name	File Size
12-506-Kensington Aquatic Studies ADFG 11-08 FINAL.pdf	12462909
12-506-2005 Annual Report.pdf	19672091
12-506-2009 Kensington Annual Rpt Vol 2.pdf	46812081

This nomination available as a PDF.

12-506.pdf

*** Best to right click and open in a new window or tab. ***

***Species Codes:**

AC	- Arctic char	AL	- Arctic lamprey	AW	- Arctic cisco
BC	- broad whitefish	BW	- Bering cisco	CH	- chum salmon
CO	- coho salmon	CT	- cutthroat trout	DV	- Dolly Varden
HW	- humpback whitefish	K	- chinook salmon	LC	- least cisco
LP	- lamprey, undifferentiated	LV	- river lamprey	OL	- longfin smelt
OM	- rainbow smelt	OU	- eulachon	P	- pink salmon
PC	- Pacific lamprey	S	- sockeye salmon	SF	- inconnu
SH	- Steelhead trout	SM	- smelt, undifferentiated	ST	- sturgeon, undifferentiated
W	- whitefish, undifferentiated				

***Activity Codes:**

s	- Spawning	r	- Rearing	p	- Present